

Preservation Plan

*for the
Adkins Parcel at Fort Lowell Park*



November 2009

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Preservation Plan

for the Adkins Parcel at Fort Lowell Park

(A Companion to the Fort Lowell Park Master Plan)

November 2009

Prepared under contract to:

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Fort Lowell Park Master Plan
Adkins Parcel Preservation Plan
Project Team and Stakeholders

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NOV. 2009

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Fort Lowell Park Master Plan

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Image Sources / Photography Credits

AHS	Arizona Historical Society
BWS	BWS Architects
CE	ConsultEcon, Inc.
DAI	Desert Archaeology, Inc.
NPS	National Park Service
PFA	Poster Frost Associates
SAGE	SAGE Landscape Architecture and Environmental



Overview

The Adkins Parcel at Fort Lowell Park contains the best preserved building as well as many ruins and subsurface features dating to Fort Lowell (1873-1891). Officer's Quarters #3, still largely intact from its Fort-Era incarnation, is among the most significant local buildings remaining from the end of the 19th Century.

Over the past two years, a comprehensive Master Plan has been developed for Fort Lowell Park, including the Adkins Parcel. This Master Plan emphasizes the importance of Fort Lowell and places a high priority on making this local and national story more visible on the site. Through implementation of the Master Plan, visitors to Fort Lowell Park will have the opportunity to better understand the important role the United States Military played in the history of this region.

According to the American Institute of Architects (AIA) Guide to Historic Preservation, a Preservation Plan is a document that "describes how the property can be stabilized, preserved, used, and interpreted by means of schematic plans, elevations, and text. The plan summarizes all of the decisions made regarding the property's treatment, along with a recommended schedule and budget for further investigation and the actual work." The Adkins Parcel Preservation Plan summarizes the decisions made during the Master Plan for the resources on the Adkins Parcel.

The Secretary of the Interior's Standards for Historic Properties have been used to inform the planning processes for the historic resources on the Adkins Parcel. During design and construction, the Standards will be used to develop the specific treatments recommended by this Preservation Plan. In brief, the four standards can be summarized as follows:

- **Preservation** focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.
- **Rehabilitation** acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- **Restoration** depicts a property at a particular period of time in its history, while removing

evidence of other periods.

- **Reconstruction** re-creates vanished or non surviving portions of a property for interpretive purposes.

The Adkins Parcel Preservation Plan (Preservation Plan) is a companion document to the Fort Lowell Park Master Plan (Master Plan). The approved Master Plan provides guidance on the future of Fort Lowell Park's (Park) entire 70 acres, including the Adkins Parcel. The Preservation Plan develops the broad principles outlined in the Master Plan into a set of specific recommendations pertaining solely to the 5.2 acre Adkins Parcel.

The Preservation Plan is referred to as a Restoration Plan in the 2004 Pima County Bond Agreement. The title of this document has been changed to the Preservation Plan because preservation is a more accurate and precise definition for the treatment of the Adkins Parcel.

Available funding, remaining from the 2004 Pima County Bonds, for implementation of the Preservation Plan is approximately 1.2 million dollars. This remaining money will be used to preserve and protect fragile Fort-Period resources, including Officer's Quarters #1, 2 and 3. If funding for additional items is available, it will be spent on the rehabilitation of the site, including the reestablishment of Cottonwood Lane and the replanting of cottonwood trees around the Parade Ground. Interpretive panels and displays may also be included in this phase of the project.

Furthermore, the Preservation Plan represents a significant project milestone, and signals the transition from preservation planning activities to construction and public enjoyment of the site. Over the next two years, it is anticipated that the Adkins Parcel will become an integral component of Fort Lowell Park and the broader City of Tucson Park's system. At the conclusion of Phase 1, the site will be clean and safe for visitors. All hazardous materials will have been removed, the buildings will be secured, and a management structure will be in place to allow for visitation to the site.

Project Background:

The Adkins Parcel, a 5.2 acre parcel with significant resources dating to the Fort Lowell Period, is located at the southwest corner of Craycroft and Fort Lowell Roads and lies within the local Fort Lowell Historic District Overlay Zone. On May 18, 2004, the citizens of Pima County voted to allocate bond funding for the acquisition, planning, design and construction of historic resources on the Adkins Parcel. Using this funding and a land swap, the City of Tucson acquired the property in 2006.

The Adkins Parcel is named for the Adkins Family who maintained ownership of this portion of historic Fort Lowell from 1928 to 2006. Importantly, the Adkins Parcel includes extant remains of three original Officer's Quarters constructed in the mid 1870s. In addition to providing stewardship of the three Officer's Quarters, the Adkins Family constructed a number of buildings and structures on the site, including a residence and steel fabrication shed. A more complete overview of the history of the Adkins Parcel can be found in Desert Archaeology's *Cultural Resource Assessment for Fort Lowell - Adkins Steel Property within Historic Fort Lowell*.

Since acquiring the site, the City and County have cooperated on site and environmental clean-up and the emergency stabilization of the three Officer's Quarters. Building Condition Assessment Reports

were completed for the Officer's Quarters and the Adkins Residence.

Purchase of the Adkins Parcel was the last of several acquisitions completed by the City of Tucson over the past two decades to re-unite the parcels formerly occupied by Fort Lowell. In 1985, the City of Tucson acquired the Donaldson-Hardy parcel at the north side of the Park that includes the remains of the Fort-era Cavalry Corrals. In 2002, the Commissary Apartments, located at the northwest corner of Fort Lowell and Craycroft Roads, were acquired. The Commissary Apartments were created on the foundations of the Fort-era Commissary by the Bolsius Family in the 1930s and 40s. With the acquisition of the Adkins Parcel a comprehensive Master Plan for all these parcels and the existing Fort Lowell Park was needed.

The Fort Lowell Park Master Plan commenced in June 2008. Over the course of a year, the plan was developed through an involved public process that included three public meetings, numerous meetings with local recreational and historical groups and consultation with Native American Tribes. The Fort Lowell Restoration Advisory Committee was established to provide oversight to the process and to make a final recommendation on the Master Plan and Preservation Plan.

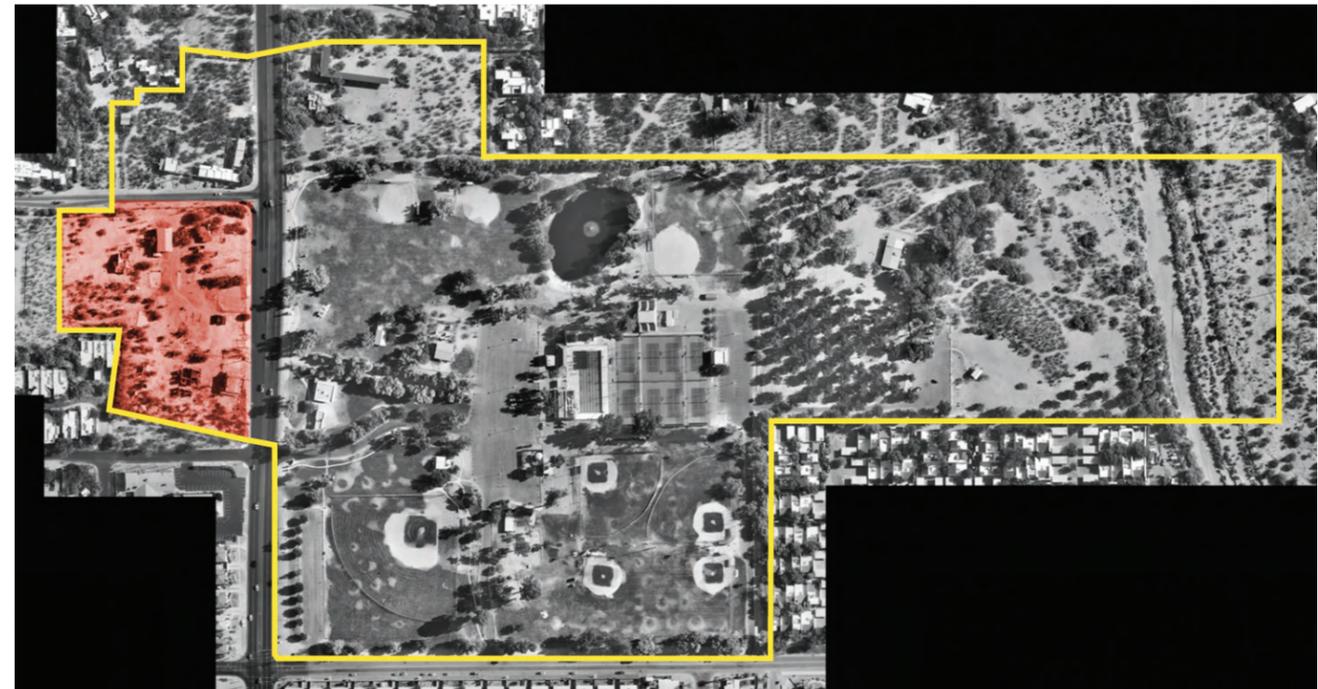


Figure 5: Adkins Parcel (in red) shown within the boundary of Fort Lowell Park.

Historical Summary

The Tucson Valley is the historical context of the current site of Fort Lowell Park. While it is true that this particular stretch of riparian eco-system along the western bank of the Pantano Wash (at its confluence with the Tanque Verde Wash to form the Rillito) has relatively recent inhabitation, the valley context of Fort Lowell Park itself has been occupied by a wide range of people, over a long period of time, evolving through a series of historical periods:

- Paleoindian Period (11,500? -7500 B.C.)
- Archaic Period (7500-2100 B.C.)
- Early Agricultural Period (2100 B.C.-A.D. 50)
- Early Ceramic Period (A.D. 50-500)
- Hohokam Sequence [the first period of human occupation of this Fort Lowell site] (A.D. 500-1450)
- Protohistoric Period (A.D. 1450-1697)
- Spanish and Mexican Periods (A.D. 1697-1856)
- and the American Period (1856-Present).

Highlights of the history of Fort Lowell are included below. Following the written description is a more detailed timeline of the Tucson Valley and Fort Lowell.

Prehistoric archaeological resources were first noted at Fort Lowell in 1884 by Adolf Bandelier (Gregonis 1997:viii). An archaeological excavation was conducted between 1976 and 1978 by the Arizona State Museum. The 1976-1978 excavations took place on the eastern side of the park near the pecan grove; 36 features were documented including nine pit structures, “caliche borrow pits, possible storage pits, a work area, roasting pits, a cemetery-offertory area, and enigmatic groups of postholes” (Gregonis 1997:11). The features dated from about A.D. 650 to A.D. 1300, and indicate the occupation was both lengthy and intensive. This period includes the Snaketown phase, the early Cañada del Oro phase, the Rillito phase, the Late Rincon phase, and the Tanque Verde phase. Artifacts and/or pithouses from all these phases, were found scattered throughout the Fort Lowell Park area.

Camp Lowell and Fort Lowell

Camp Lowell was initially established by the U.S. Army in the downtown portion of Tucson in 1856. For various reasons, commanders recommended that

the camp be relocated along the Rillito, at a point along the creek 6 miles northeast of Tucson. In March 1873, the troops were relocated, initially living in canvas tents (Peterson 1976).

At completion, the Fort was centered around a large parade ground with a flagstaff in its center south side. The seven officer’s quarters were located along the southern edge with a double row of cottonwood trees along their front, known as Officer’s Row. The commanding officer’s quarters was in the center, with three officer’s quarters on each side. Adobe walls enclosed the backyards of each of the houses, and a picket fence framed their front (Peterson 1976:13). A map drafted in 1876 shows the layout of the post (Figure 6).

The original buildings at the Fort had adobe brick walls. Pine beams brought from the Santa Catalina Mountains were laid across the tops of the walls. Over these beams, saguaro ribs were positioned, and earth was packed on top. During the rainy seasons of 1876, 1877, and 1878 the roofs leaked, and earth and mud fell into the rooms (Weaver 1947:73). Tin roofs were not installed until sometime after mid-1879. Porches and screen doors were added in 1882; the milled lumber and other materials required were easier to transport after the 1880 railroad arrival in Tucson. Overall, little money was spent for maintenance, repair, and new construction at the fort (Peterson 1976:10).

Post-Fort Lowell Era:

The removal of soldiers from the fort probably led to the systematic salvaging of furniture, ordinance, and other useful items by the United States military. Some of the building materials were apparently stripped from structures and taken to Fort Yuma for reuse (David Faust, personal communication 2007).

In 1896, the Arizona Daily Citizen reported that the Department of the Interior, General Land Office, had authorized the sale of buildings and the land. An auction was held on 18 November 1896, and many of the buildings were sold. The auction raised a total of \$1,080. The purchasers stripped the windows, doors, and their frames; beams, tin roofing, and wood flooring. Many items were later incorporated into homes built in downtown Tucson (Fort Lowell ephemeral file, AHS). Afterwards, some buildings became the residences of local Mexican-American families, although little is known about these individuals. Other buildings

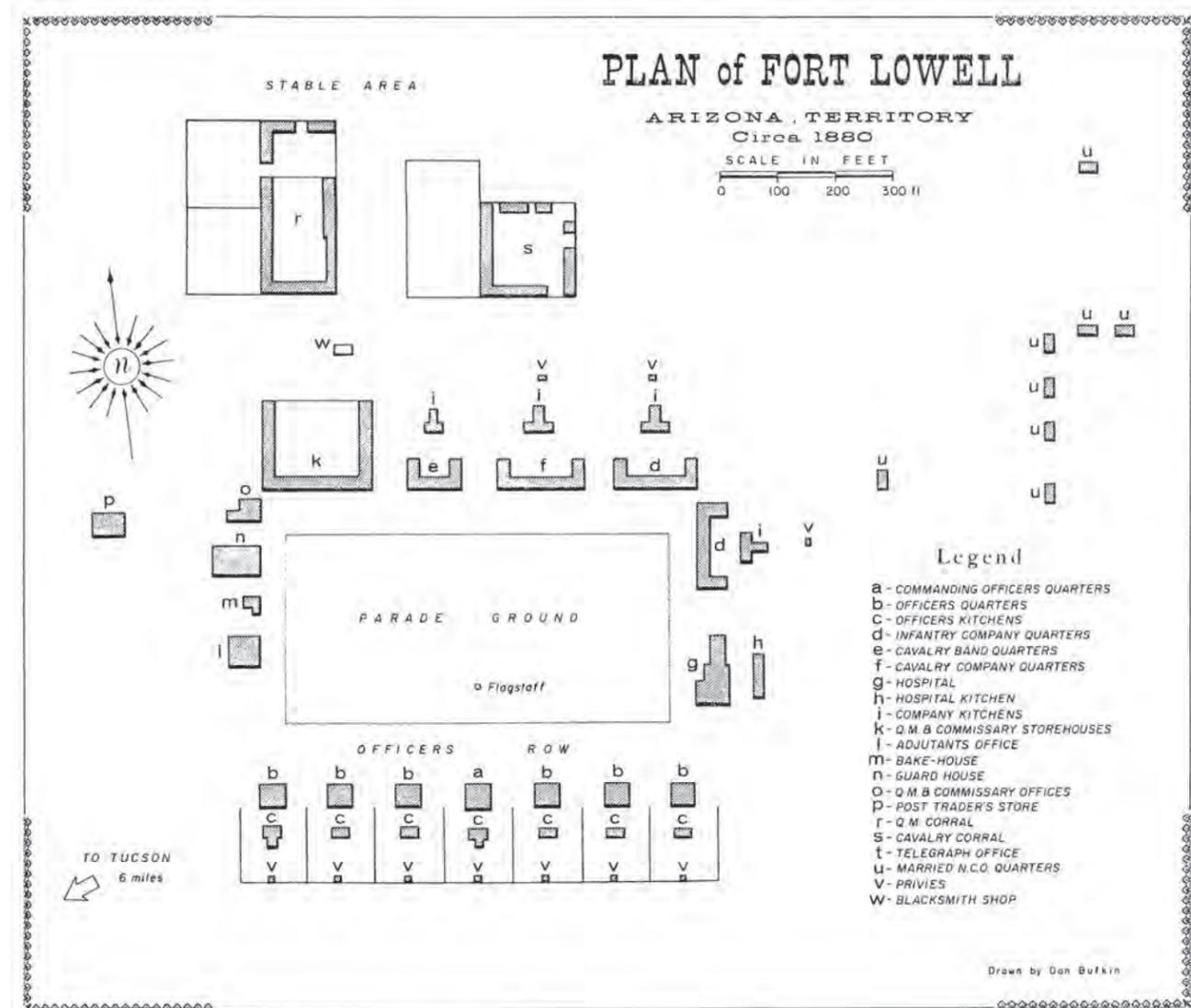


Figure 6: The 1876 map of Fort Lowell, redrawn by Don Bufkin.

decayed due to neglect and vandalism.

Sanatorium Period and Other Uses

The early 1900s also saw the opening of at least three sanitariums in and around Fort Lowell. Dollie Cate operated one on the south side of Fort Lowell Road beginning in 1908 (Thiel et al. 2008), taking care of tubercular patients in Officers Quarters 1, 2, and 3. Dollie Cate was born in 1871 in Tennessee and had moved to Tucson with her husband Dixie in search for a cure for his tuberculosis. Unfortunately, he died in 1908. Mrs. Cate’s sold her sanitarium to Harvey and Fronia Adkins in February 1928. The Adkins had moved to Tucson to try to cure their daughter Minerva’s tuberculosis, but like Dixie Cate, Minerva Adkins died from the disease in 1927 (Thiel et al. 2008). The Adkins operated a rest home in the

Officers Quarters into the 1940s. In the 1930s son Marion Adkins started the Adkins Trucking and Steel Manufacturing Company. The family built two small adobe homes, a concrete-clad manufacturing barn, a windmill, and several other buildings on the property. Steel tank production lasted up into the 2000s (Thiel et al. 2008).

Figure 11 shows the relationship between Historic Fort Lowell and existing development in and around Fort Lowell Park.

Historical Timeline

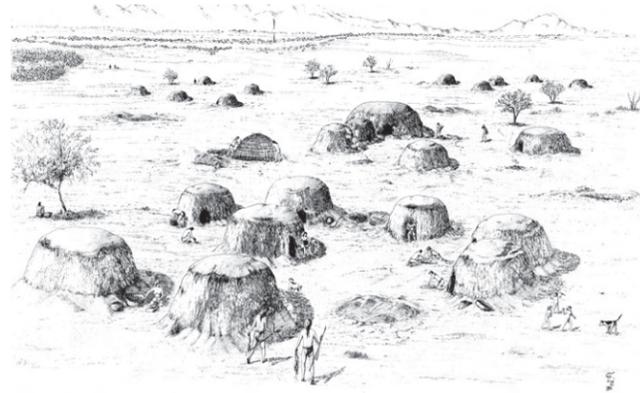


Figure 7: Pithouse village.



Figure 8: Officer's Row around 1904 with Officer's Quarters #1 in the foreground.



Figure 9: Adkins Residence looking northeast.

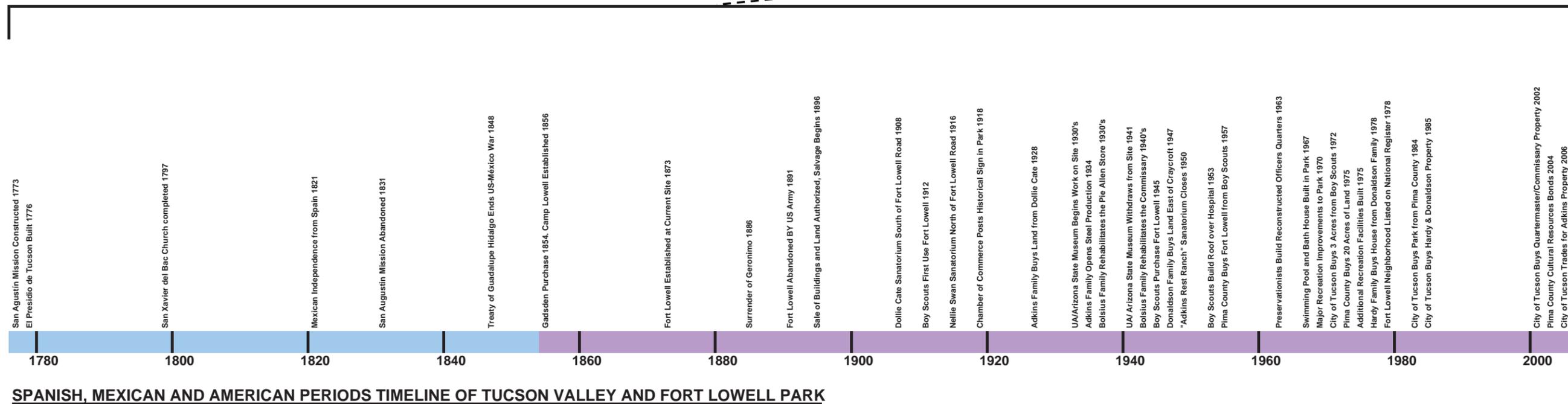
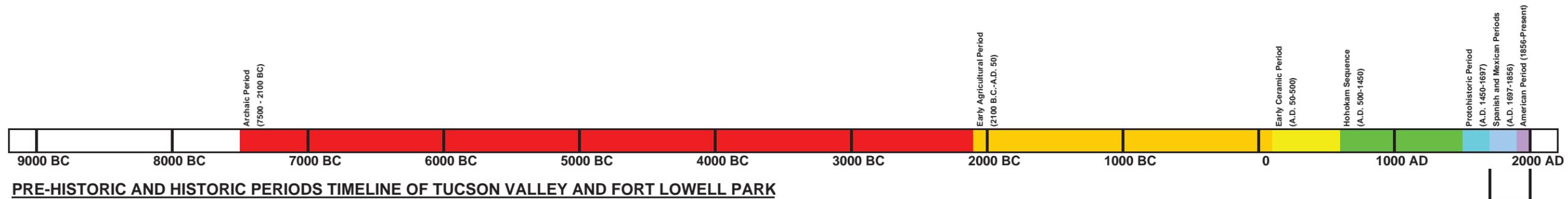


Figure 10: Timeline of Tucson Valley and Fort Lowell Park.

Historical Overlay

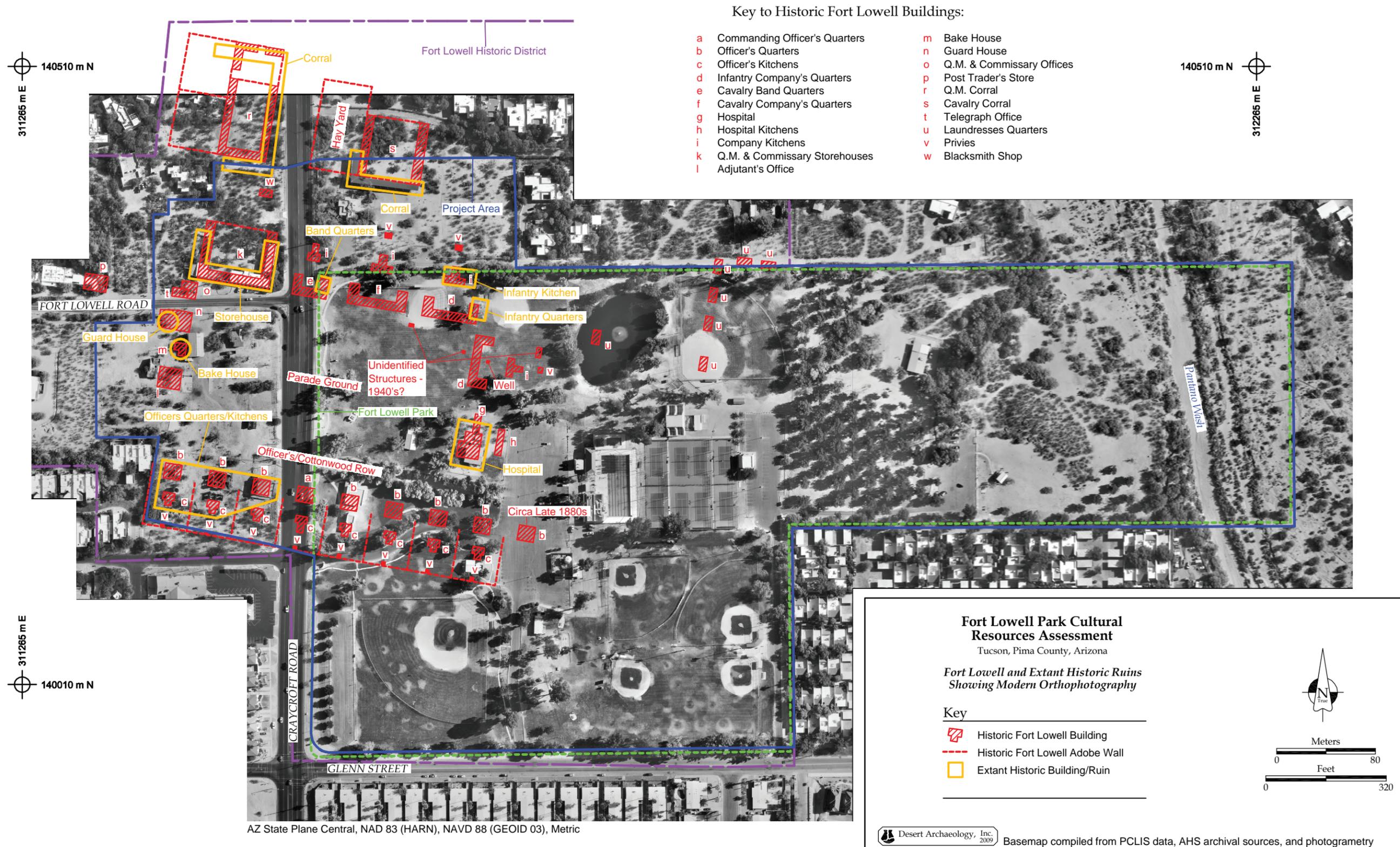


Figure 11: Fort Lowell-era buildings overlain on modern aerial photograph.

Fort Lowell Park Master Plan - Final Concept Plan



- A** Preserve Officer's Quarters #1 Ruins and add ghosting.
- B** Protect Officer's Quarters #2 and Kitchen Ruins with a protective roof that defines original volumes.
- C** Rehabilitate Officer's Quarter #3 to interpret a late Fort-Era Building, circa mid 1880s. Interpretive ghosting or reconstruction of #3 kitchen and privy, if further investigation determines its former existence.
- D** Interpretive ghosting of Officer's Quarters #6 and #7 for use as picnic ramada. At 1963 reconstruction, use footprint to indicate the correct location for OQ #5.
- E** Preserve Fort Lowell Hospital walls as a stabilized ruin with 1950s protective roof. Cap walls not included under the existing protective roof. Use interpretive ghosting to reveal the full footprint of the hospital.
- F** Interpretive ghosting of two Infantry Company Quarters. No functional use proposed.
- G** Contemporary building, at the location of a Fort-Era building, to serve as public restrooms and storage.
- H** Interpretive ghosting of Cavalry Company Quarters. Use as a picnic ramada, shade structure and for special events.
- I** Re-use Hardy - Donaldson House for community use and meeting space. Use adobe cottage as support space for the Community Garden.
- J** Raised-bed Community Garden.
- K** Stabilize and preserve Cavalry Corrals ruins. Remove protective roof to mitigate visual impact.
- L** Commissary Apartments – Transition from residential to public cultural uses. Uses may included interpretive exhibits, gift shop and limited food service. Existing zoning allows a maximum of two residential units.
- M** Contemporary building, at the location of the Fort-Era Adjutant's Office, with new self-guided exhibits, park restrooms, office and storage.
- N** Cottonwood Lane – Transition existing misaligned rows to the correct location with selective removal and replanting. Extend Cottonwood Lane across Craycroft Road and along the east and west edges of the parade ground. Reconstruct picket fence based on documentation.

- O** Adkins Residence to be stabilized to allow for future decision once Master Plan is partially implemented.
- P** Preserve 1963 reconstructed Officer's Quarters and Kitchen. Maintain existing museum use until a future new museum is constructed on the site. May be reused by preservation groups following completion of a new museum.
- Q** "Hawk" Crossing at Craycroft Road. Crosswalk with push-button activated signal at the Cottonwood Lane alignment.
- R** Potential location for proposed Apache Bronze Statue.
- S** Potential Location for existing Chief Trumpeter Statue.
- T** Expand Fort Lowell Park Pool Building, including new bathhouse at south end of pool. Include new concession area to serve all park functions. Renovate existing pool building.

- U** Maintenance Shed and limited materials storage adjacent to reclaimed water site.
 - V** Re-use existing maintenance building for environmental education center and sustainability demonstration area for conservation groups like Tucson Audubon Society.
 - W** Hohokam Pit House Village Re-Creation and Interpretive Area. Consider "mock-dig" area.
 - X** Native American and Environmental History "Gateway Portal." Refresh existing Hardy site interpretive area with new exhibits that introduce visitors to natural areas along the Pantano wash.
 - Y** Play areas.
 - Z** Fitness area and equipment.
 - AA** New Fort Lowell Museum at Phase 3. Building may contain food service and activities for all Park visitors.
 - BB** Existing pond with new water conservation features and additional landscape.
 - CC** Championship baseball diamond.
 - DD** Multi-purpose soccer and football fields.
 - EE** Tee-ball / Little League Fields. 4 Existing fields to remain. Skinned infields will continue to be over-seeded in October for use during F.L. Shoot-Out.
 - FF** Existing Tennis Courts and Tennis Building to remain. Lighting to be improved. Adjacent racquetball courts to be removed.
 - GG** Pool / tennis viewing area. Provide shaded bleacher seating for viewing tennis and swimming.
 - HH** Preserve and enhance existing pecan grove.
 - II** Craycroft and Fort Lowell Road Intersection. Provide north-bound left turn lane from Craycroft to Fort Lowell. Eliminate south-bound merge lane from Fort Lowell Road to Craycroft Road.
 - JJ** Multi-use recreational path.
 - KK** Preserve as open space / archaeological preserve.
 - LL** Interpretive ghosting of Bake House.
 - MM** Interpretive ghosting / footprint of Guard House.
 - NN** Storage for recreational sports uses.
 - OO** New entry plaza at pool.
 - PP** New Allée of trees for use during special events such as the Fort Lowell Soccer Shootout.
- Total Parking = 464 Spaces

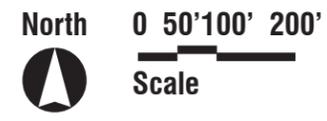
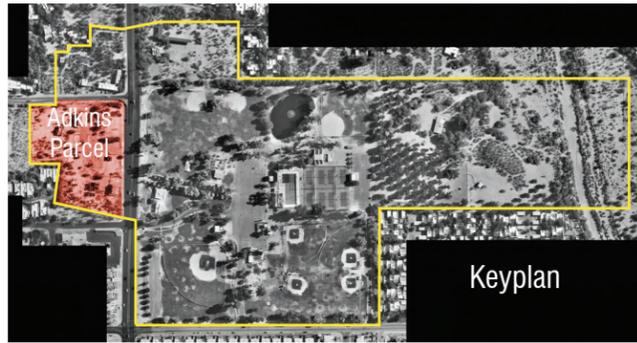


Figure 12: Fort Lowell Park Master Plan - Final Concept.

Existing Conditions - Adkins Parcel



KEY	RESOURCE	TREATMENT
1	OFFICER'S QUARTERS #1 (RUINS)	PRESERVE / ADD GHOSTING
1a	OFFICER'S QUARTERS #1 KITCHEN (RUINS)	PRESERVE / NO GHOSTING
2	OFFICER'S QUARTERS #2 (PARTIAL RUINS)	PRESERVE / ADD GHOSTING
2a	OQ #2 KITCHEN (PARTIAL RUINS)	PRESERVE / ADD GHOSTING
3	OFFICER'S QUARTERS #3	REHABILITATE TO MID-1880s FORT PERIOD
4	FORT-ERA GUARD HOUSE (RUINS)	PRESERVE
5	ADKINS RESIDENCE	STABILIZE FOR FUTURE DECISION
6	ADKINS STEEL FABRICATION SHED	DOCUMENT AND REMOVE
7	RC MAGOR RESIDENCE (RUINS)	DOCUMENT AND REMOVE
8	ADKINS-ERA WATER TOWER	STABILIZE FOR FUTURE DECISION
9	ADKINS-ERA WINDMILL BASE	DOCUMENT AND REMOVE
10	ADKINS-ERA CONCRETE SLAB	DOCUMENT AND REMOVE
11	EARLY 20TH C. CONC. WATER TANK	DOCUMENT AND REMOVE
12	ENTRY GATE IN EXISTING FENCE	TO REMAIN IN USE INDEFINATELY
13	EXISTING PERIMETER FENCE	TO REMAIN IN USE INDEFINATELY
14	ASPHALT SLAB	REMOVE

Portions of the three western-most original Officer's Quarters remain on the Adkins Parcel. There are also two buildings and a number of site structures and objects from the Adkins Period. Underlying these later occupations are the prehistorical archaeological remains of the Hohokam.

The Adkins Parcel contains the best preserved Officer's Quarters, including largely intact Officer's Quarters #3 and partial ruins of Officer's Quarters #2 and 1. Officer's Quarters #2 also has a portion of its kitchen building still intact.

Located at the northeast corner of the parcel, the Adkins Residence is a small vernacular bungalow constructed around 1934. It was the main residence for the Adkins Family from the 1934 to 2006. The building consists of an adobe core with a two room concrete block addition, added around 1950. The building features a low-slope red clay tile roof. South of the residence are the Adkin's Era Water Tower and Windmill Base.

West of the Adkins Residence is the Adkins Steel Fabrication Shed, constructed about 1950. This structure is an innovative, site-built, rectangular structure measuring 36 feet x 60 feet. In close proximity of the shed are a number of concrete slabs used by the Adkins in the manufacturing of steel water tanks.

The west side of the parcel is mostly vacant, with the exception of the ruins of a former RC Magor residence and some asphalt paving in the far northwest corner.

The Adkins Parcel contains mostly native vegetation including mesquite, creosote, acacia sp., prickly pear, barrel cactus, cholla and saguaros. A pomegranate, pecan, and lemon tree are also present on the Adkins Parcel.

The site is entirely fenced and temporary security lighting has been installed. A neighborhood resident walks the site daily to provide additional oversight.

Figure 13: Adkins Parcel - Existing Conditions.

Master Plan Detail - Adkins Parcel

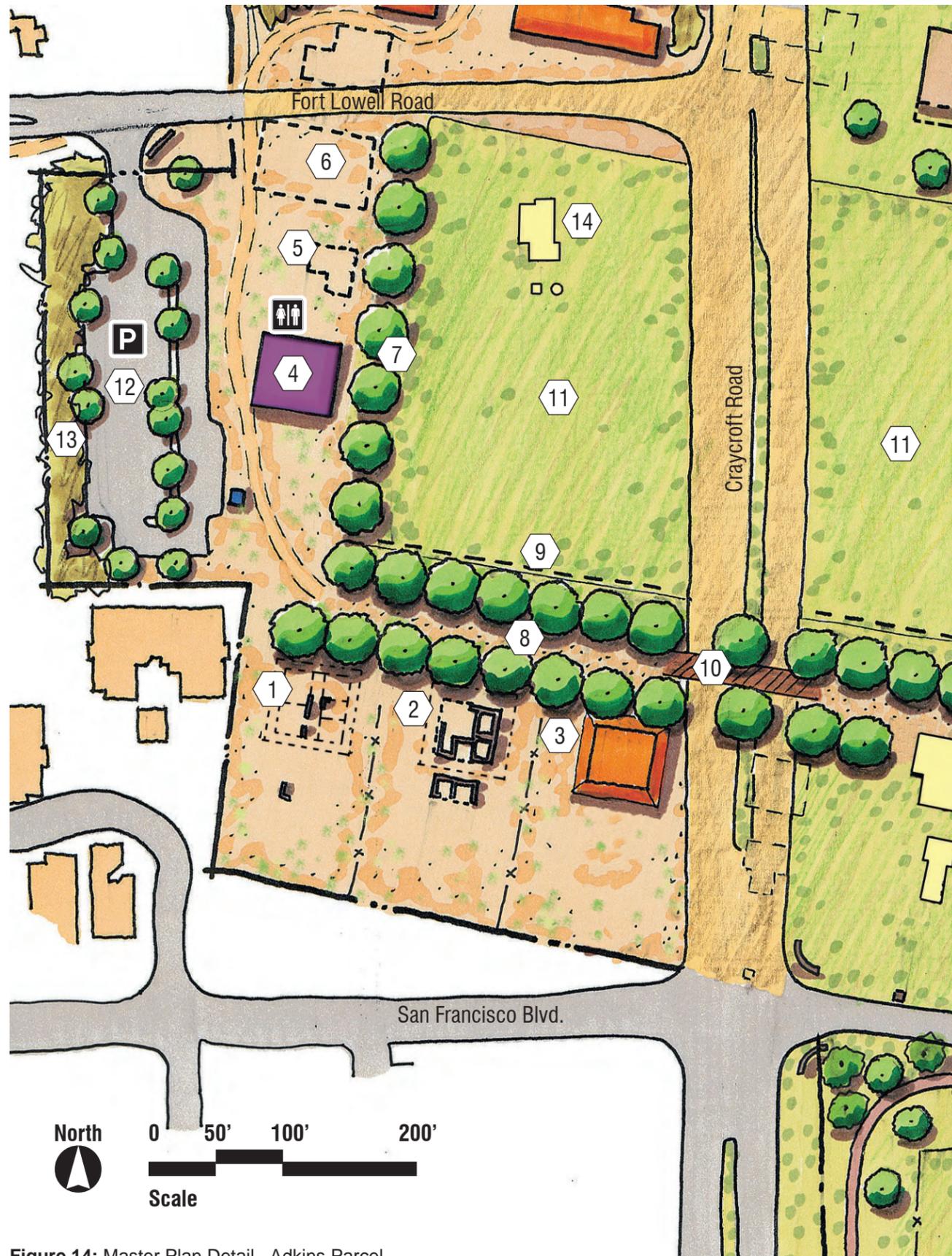


Figure 14: Master Plan Detail - Adkins Parcel.

Master Plan Overview - Adkins Parcel

The Adkins Parcel is a key component of the Master Plan due to the important historic resources and its location at the western side of the former Fort. Many important Fort Lowell buildings and features were originally located on the Adkins Parcel. The southwest corner of the Parade Ground and several of the buildings arranged along the western and southern edges of the Parade Ground were present within the boundary of the Adkins Parcel.

Revealing the spatial organization of Fort Lowell is a primary principle of the overall Master Plan. On the Adkins Parcel, this principle is applied in several ways:

- The remains of three original Officers Quarters (#1,2,3 on plan), at the southern edge of the former Parade Ground, are preserved. Restoration and interpretive “ghosting” will be used to re-create the historic scale and feel of this area.
- A contemporary building (#4) will be constructed at the location of the Adjutant’s Office. This building will be a primary point-of contact for visitors arriving at the Adkins Parcel and contain self-guided exhibit space explaining all eras of history on the site, restrooms, an office and storage. Currently, no surface remains of this building are exposed.
- Further to the north, the former Bake House (#5) and Guard House (#6) will be re-created using interpretive ghosting to define the buildings at the western edge of the Parade Ground. Surface and subsurface remains of these two structures have previously been recorded.
- Cottonwood trees (#7) around large portions of the Parade Ground, an important character-defining feature, will be restored. On the Adkins Parcel, cottonwood trees will be replanted at the western and southern sides of the Parade Ground. On the southern side, a double row of cottonwoods will be replanted to create “Cottonwood Lane,” (#8) a shady allée that separated the Officer’s Quarters from the Parade Ground. The reestablishment of Cottonwood Lane on the Adkins Parcel will follow the historic alignment rather than the more northern

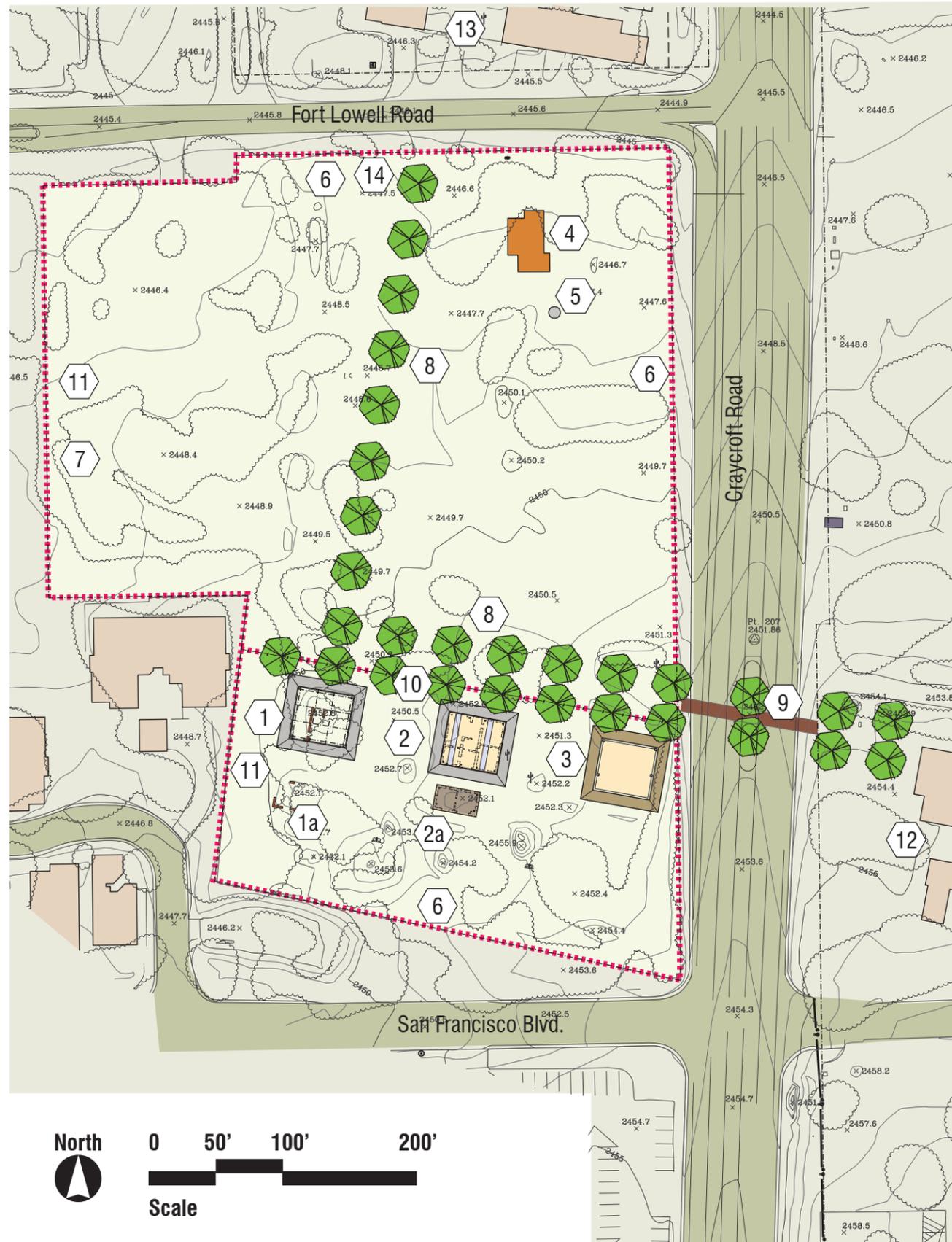
alignment chosen for the Fort Lowell Museum and Cottonwood Lane when they were reconstructed in the early 1960s. The picket fence (#9) between Cottonwood Lane and the Parade Ground will also be reconstructed.

- Cottonwood Lane is the primary pedestrian route linking the Adkins Parcel with the portions of Fort Lowell Park east of Craycroft Road. A push-button activated HAWK signal is proposed for the Cottonwood Lane alignment at Craycroft Road (#10). A landscape median containing two cottonwood trees is also included at Craycroft.
- The Parade Ground (#11) is the other feature that will visually connect and unify the Adkins Parcel with the portions of Fort Lowell Park east of Craycroft Road. The Parade Ground east of Craycroft will continue to function as a multi use area including limited use by tee-ball groups and soccer teams. The Parade Ground at the Adkins Parcel will be used less intensively and informally. The surface material on the east side will remain turf while the surface on the Adkins Parcel may be turf or native, drought-tolerant grasses.

A new parking lot (#12) is proposed for the western edge of the Adkins Parcel. This parking lot will be accessed from Fort Lowell Road and will be screened from adjacent parcels to the west and south with native vegetation (#13).

Located in the middle of the Parade Ground, the Adkins Residence, will be preserved until more of the Fort-Era buildings and features are reestablished in their historic locations. Once the spatial definition of the Parade ground is reestablished, the Adkins Residence will be reevaluated to determine if its presence is intrusive.

Adkins Parcel - Phase 1 Detail



KEYNOTES

- 1 OFFICER'S QUARTERS #1 (RUINS) PROVIDE NEW GHOSTING TO DEFINE THE ORIGINAL FOOTPRINT AND VOLUME. STABILIZE EXISTING ADOBE WALLS AND PROVIDE SACRIFICIAL MUD CAP.
- 1a OFFICER'S QUARTERS #1 KITCHEN (RUINS) STABILIZE EXISTING ADOBE WALLS AND PROVIDE SACRIFICIAL MUD CAP.
- 2 OFFICER'S QUARTERS #2 (PARTIAL RUINS) PROVIDE NEW GHOSTING TO DEFINE THE ORIGINAL FOOTPRINT AND VOLUME. STABILIZE EXISTING ADOBE WALLS USING NEW GHOSTED STRUCTURE FOR SUPPORT AND PROTECTION.
- 2a OFFICER'S QUARTERS #2 KITCHEN (PARTIAL RUINS) PROVIDE NEW GHOSTING TO DEFINE THE ORIGINAL FOOTPRINT AND VOLUME. STABILIZE EXISTING ADOBE WALLS USING NEW GHOSTED STRUCTURE FOR SUPPORT AND PROTECTION.
- 3 OFFICER'S QUARTERS #3 - REHABILITATE BUILDING TO MID-1880S FORT PERIOD.
- 4 ADKINS RESIDENCE - STABILIZE AND PROTECT UNTIL DETERMINATION IS MADE CONCERNING RE-USE.
- 5 ADKINS-ERA WATER TOWER STABILIZE AND PROTECT UNTIL DETERMINATION IS MADE CONCERNING RE-USE.
- 6 EXISTING FENCE AT PROPERTY LINE TO REMAIN. RELOCATE FENCE ON WEST SIDE TO CORRECT LOCATION.
- 7 RELOCATE FENCE TO PROPERTY LINE ALONG THIS SIDE OF PROPERTY.
- 8 PLANT NEW COTTONWOODS ALONG THE SOUTH AND WEST SIDE OF THE HISTORIC PARADE GROUND.
- 9 NEW HAWK CROSSING AND LANDSCAPE MEDIAN WITH COTTONWOOD TREES. (ALT. FUNDING SOURCE REQUIRED.)
- 10 NEW FENCING AT SOUTHERN ROW OF COTTONWOODS TO SECURE THREE OFFICER'S QUARTERS.
- 11 INCREASE DENSITY OF LANDSCAPE BUFFER.
- 12 EXISTING FORT LOWELL MUSEUM TO REMAIN.
- 13 EXISTING COMMISSARY APARTMENTS TO REMAIN.
- 14 STONES FROM FORT LOWELL GUARDHOUSE TO BE PRESERVED.

This detail plan for the Adkins Parcel represents the items considered priorities for completion during Phase 1. Some of these items may be deferred to a future phase if the current level of funding is not adequate. The preservation, rehabilitation, and interpretation of Officer's Quarters #1, #2, and 3 are considered the highest priorities. Other priorities are protection of the Adkins Residence to allow a future determination of its long-term viability and the replanting of cottonwood trees at the perimeter of the Parade Ground.

An important element to incorporate early in the implementation of the Master Plan is the HAWK crossing at Craycroft Road. The HAWK provides a safe place to cross Craycroft Road within the boundaries of Fort Lowell Park. A safe and convenient crossing encourages visitors to visit the resources on both sides of Craycroft Road.

Figure 15: Adkins Parcel - Phase 1 Detail

Treatments

The Master Plan process examined a number of variables, including historic treatments, for the buildings on the Adkins Parcel. These seven variables were analyzed to arrive at the final recommendations included in the Master Plan.

- 1 **Uses:** The balance between recreation uses and history
- 2 **Stories:** The eras of history that will be represented
- 3 **Treatments:** The preservation approach(es) to be used (Preservation, Rehabilitation, Restoration, Reconstruction.)
- 4 **Circulation:** The treatment of Craycroft Rd.
- 5 **Landscape:** The approach to the landscape
- 6 **Management:** Organizational structures and costs
- 7 **Capital Investment:** Capital costs

Officer's Quarters #2 provides a good example of how the decision-making process worked. During preliminary versions of the Master Plan, both preservation and restoration treatments were proposed. A key point to keep in mind when considering various treatments is that *preservation* and *rehabilitation* are generally favored over *restoration* and *reconstruction* because those approaches maintain and honor the existing historic material (fabric) and do not involve the addition of features that could be considered speculative.

A restoration treatment for OQ#2 would have required rebuilding portions of the building, including adobe walls, roof framing and wood doors and windows damaged during the fire in the early 1970s. The documentary evidence required to construct these missing features is available in Fort-Era Army correspondence and Historic American Building Survey (HABS) documents dating to the late 1930s. Furthermore, OQ#3 still exists and can be used to reconstruct missing features. Given the amount of information available, restoration could be considered a valid preservation treatment for OQ#2.

The relationship of the seven variables further directed the recommended treatment for OQ#2. Since no programmatic need for exhibit or usable space was identified during the planning process, there was not a large demand for a restored building.



Figure 16: Fort Lowell Hospital, with its protective roof is an example of *preservation*.



Figure 17: The Commissary Apartments were developed in the 1930s and 40s before the Secretary of the Interior's Standards were created. The approach mixed *restoration* and *reconstruction* with the artistic license of the builder.



Figure 18: The Fort Lowell Museum, built in 1963, is an example of *reconstruction*.

The additional capital and management costs associated with a restored building also influenced the final recommendation. Preservation became the preferred treatment once future use, capital cost, management, and interpretive value (stories) were also considered.

Ultimately, the treatments selected for the three Officer's Quarters are based on a strategy to maximize the interpretive value of the three Officer's Quarters, as a whole, rather than as individual elements; that the way to best reveal one of the most powerful narratives on the Adkins Parcel, the varying condition of the three Officer's Quarters, is to preserve the buildings and ruins, rather than unifying them through restoration. The contrasting condition of the resources lends itself to a dynamic experience where visitors will see how fire, weather and time have impacted fragile resources.

More detailed information on the specific treatments selected is included in the Analysis and Drawings Section.



Figure 19: Officer's Quarters #1.



Figure 20: Officer's Quarters #2.



Figure 21: Officer's Quarters #3.

Interpretation

A primary objective of the management of the Adkins Parcel is to provide meaningful interpretation to visitors. While interpretation takes many forms, Freeman Tilden's definition captures the essence of the process. He defines interpretation as "an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information" (Tilden, 8).

Fort Lowell Park already contains many excellent interpretive features, including the Fort Lowell Museum, interpretive signs placed around the Parade Ground, and the Hohokam interpretive area that will be expanded upon during implementation of the Master Plan. Museum exhibits, interpretive site signage and docent-led tours will all add value to the experience of visiting the Adkins Parcel.

A unique aspect of the Master Plan is the use of interpretive "ghosting" to delineate the outline of a missing or partially missing building. This technique has been used effectively at Franklin Court in Philadelphia to create a spatial experience for Ben Franklin's former residence. At Fort Lowell Park, there is currently little experiential understanding of how Fort Lowell was spatially organized; much of the historic fabric has been lost or has been heavily impacted by development and transportation corridors. The use of interpretive ghosting supports one of the primary goals of the Master Plan: *To tell all stories but give priority to the Fort era. Define the spatial character of the Fort.*

At Fort Lowell Park, interpretive ghosting will be used to define the volume of buildings located historically along the edges of the Parade Ground. In turn, these ghosted structures will reinforce the Parade Ground as the primary organized space at Fort Lowell. The definition of the Parade Ground is especially important in a military setting of ceremony and uniformity. Furthermore, at Officer's Quarters #2, ghosting will be used to both define the volume of the original building and protect the remaining adobe walls. Unlike the protective roof built in the 1950s above the Hospital Ruins, the ghosted roof on Officer's Quarters #2 will be visually compatible with the historic volume of the building form.

At locations where it is not feasible to construct



Figure 22: Interpretive "ghosting" at Franklin Court in Philadelphia.



Figure 24: Protective roof over Fort Lowell Hospital ruins.



Figure 23: Fort Lowell Park Master Plan - Proposed Ghosting of Officer's Quarters #6 and 7 for Picnic Ramada.

a three-dimensional outline of a building, such as for the location of Officer's Quarters #4 located in the middle of Craycroft Road, a "footprint" of the building's outline will be created. At Craycroft Road, the outline of Officer's Quarters #4 will be indicated through a change in the color and / or texture of the pavement. This technique was successfully used at the Santa Barbara Presidio. This technique could be used to create a more immediate predecessor to full "ghosting" at an earlier phase of implementation.

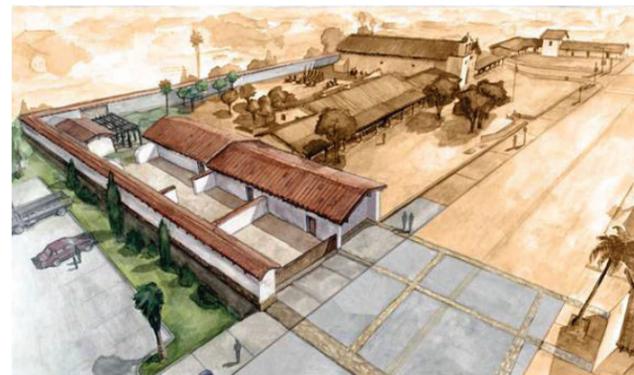


Figure 25: Santa Barbara Presidio showing footprint of building in pavement.

Preservation and management of the site should carefully consider one of the primary goals of the Master Plan, the reveal all of the stories at Fort Lowell Park. Beginning with the site's natural history and continuing with the use of the site by the prehistoric Hohokam, United States Army and pioneering Cate and Adkins families, the Adkins Parcel has many stories to tell. The fragile and fleeting nature of the stories, as revealed in both the physical remains and human and cultural memories and interactions of the former inhabitants need to be considered during implementation of the Master Plan.

A comprehensive interpretive plan for the Adkins Parcel and Fort Lowell Park is likely several years away. In the meantime, a process for collecting stories and artifacts should be established. The key elements worthy of collecting include:

- Prepare a more detailed history of the Adkins Family and their sanatorium and steel water tank businesses through oral history and historical research. This is of particularly importance given the removal of many of the Adkins' buildings and industrial structures.
- Salvage and reuse Adkins' era building and site elements for use in exhibits and during implementation of the Master Plan. In the spirit of the Adkins resourcefulness, elements of the steel fabrication shed could be re-used in site elements, like signage and other site features.
- Since acquisition in 2006, the City and County have documented the preservation and environmental clean-up activities that have taken place on site through photography and video recordings. This valuable information should be incorporated into future exhibits, to provide a richer and deeper visitor experience. A policy of documenting the clean up and preservation activities on site, no matter how mundane, should be continued. Given the lack of information on the mis-alignment of the 1963 reconstructed Officer's Quarters, it is important to leave a record of activity for future planning and interpretation.

Guiding Principles

The Adkins Parcel contains sensitive historic and prehistoric resources that require specialized management strategies. The City of Tucson Parks and Recreation Department, as the lead agency responsible for the Adkins Parcel and Fort Lowell Park, should develop practices that will facilitate management of this complex site. Other agencies, such as the National Park Service (NPS) have useful management models that could provide guidance when developing new approaches. NPS's Cultural Resource Management Guidelines (NPS-28) contains a thorough approach to resource management based on integrating research, planning and stewardship.

Integrated, Team Approach

Due to the fragile resources and multiple use of the site, the expertise of a variety of disciplines is critical to the successful stewardship and management of the site. Department managers, recreation staff and maintenance personnel, among others, should all play significant role in how the resources are managed and maintained. The cooperative planning process demonstrate by the City and County through site acquisition, environmental clean-up and preservation planning is a positive example of how various experts can work together.

Community Outreach and Education

One of the wonderful things about Fort Lowell Park is that visitors can get up-close to resources that have local and national significance. This is both an asset and potential problem as visitors will have the opportunity to learn from this experience, but may have a detrimental impact if too much access is granted. Irreversible harm to historic adobe fabric can be caused by people climbing over and through the ruins and people carving their names in the walls. Additionally, fragments of prehistoric potsherds are ubiquitous on the site.

Fort Lowell Park should continue to offer educational programs to increase the public's understanding and appreciation for the irreplaceable resources at Fort Lowell Park. Existing events including La Reunion de el Fuerte and the Old Fort Lowell Neighborhood Association Lecture Series are well-established public events that help connect the public with the neighborhoods unique natural and

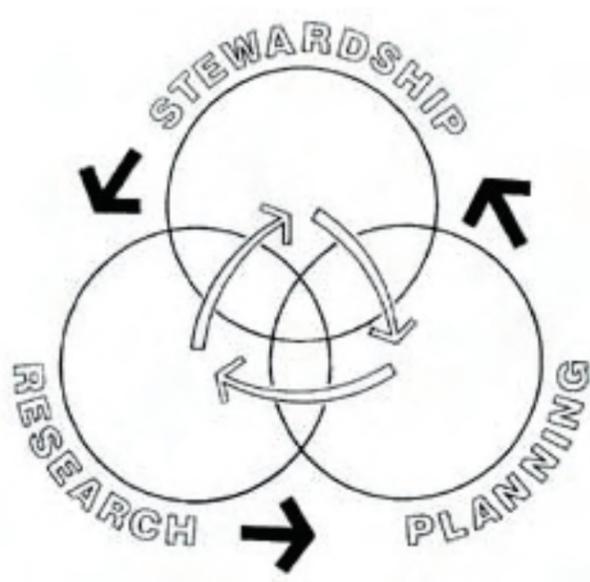


Figure 26: NPS-28 Management Model



Figure 27: On-Site Management Meeting with multiple departments and disciplines represented.



Figure 28: La Reunión de el Fuerte site tour.

cultural history. In the past, these events have drawn from both the local neighborhood and other areas of the city. On-going efforts by the Santa Cruz Valley Heritage Alliance to make Fort Lowell Park a part of an array of other historic attractions in Southern Arizona should be continued.

Cyclical Maintenance

Park maintenance staff members are the first line of defense in identifying and managing problems with historic structures. Because maintenance staff will be in contact with the resources most frequently, they need to have a good understanding of historic properties and building materials to help identify potential problems.

It should not be expected that the City will develop the in-house expertise to complete all the repairs on the historic adobe buildings and ruins within the Park. Many of the tasks are highly specialized and require the knowledge of experts who specialize in earthen buildings. What is important is for City Staff to recognize minor issues before they become major problems. This identification should be a part of a cyclical maintenance plan where regularly scheduled observation and maintenance is performed.

If repairs are attempted, they should be performed after proper training, as incompatible repairs can cause unintended damage to a historic building. For example, concrete *contrapareds* installed in the 20th century to repair erosion at the base of adobe walls often caused additional damage to those areas by trapping moisture in the wall.

A good way to build skills and familiarity with historic buildings and materials is through hands-on trainings provided by local preservation experts. In February of 2009, David Yubeta, an adobe specialist with the National Park Service, taught a five day adobe workshop attended by management and maintenance staff from the City and County. This introductory workshop was meant to expose City and County staff to the unique properties and maintenance requirements of adobe. This workshop was enthusiastically received; additional workshops should be considered to expand the knowledge and skills of City and County staff.

In the future, a hands-on maintenance manual should be created that can be used by City staff to

manage and maintain the historic resources on the Adkins Parcel and at other City-owned historic properties. In recent years, there have been a number of comprehensive documents prepared by the National Park Service to address maintenance of historic properties. *The Maintenance Guides for the Treatment of Historic Properties at Petrified Forest National Park* is a useful example that showcases techniques for assessing and evaluating historic properties while conducting routine maintenance.



Figure 29: Applying mud-plaster rendering wash to Officer's Quarters #2, east wall, February 2009.



Figure 30: Hands-on maintenance workshop, 2009.

Schedule

Over the next two years, a great deal of activity is proposed for the Adkins Parcel. The Preservation Plan will be implemented using remaining 2004 Pima County Bond Funds. This amount is currently projected to be approximately \$1.2 million dollars.

Prior to implementation of the Preservation Plan, The City of Tucson will complete environmental remediation of the site. The remediation is required because much of the soil was contaminated during the former industrial use of the site. The City received a grant from the Environmental Protection Agency (EPA) to complete the remediation. Over the next few months, a project workplan will be developed by the City's Environmental Services Department. Because it is likely that prehistoric and historic archaeological artifacts will be encountered during the remediation, a Treatment Plan for mitigating the impacts on these resources will also be developed.

While the environmental clean-up is a distinct and separate project from the Preservation Plan, there are benefits to including selected elements of the Preservation Plan in this earlier work. Removal of the selected elements prior to environmental clean-up will allow for a one-time, complete remediation of the site. Otherwise, it is possible that additional environmental clean-up will be required at a future date and that could be a cost and inconvenience that would have to be planned for.

It would be beneficial to remove the following items in conjunction with the City of Tucson's environmental remediation project.

- Document and remove the Adkins Steel Fabrication Shed. Consider salvaging portions of the steel fabrication shed for reuse and for use in future interpretation / site amenities.
- Document and remove miscellaneous Adkins-era concrete slabs and the roller trench.
- Document and remove the round concrete water tower adjacent to Officer's Quarters #1.
- Document and Remove the Adkins Period Windmill Base. The Water Tower appears to be in good condition and could be protected in-place if it does not need to be removed to complete the environmental clean-up. Store and protect portions of the windmill base that could be returned to the site if the Adkins Residence is eventually preserved and re-used. The Master Plan suggests revisiting the decision on the Adkins residence once the Master Plan is partially implemented, in approximately 3- 5 years.

If funding is available, the removal of the RC Magor House, partially collapsed at the western side of the Adkins Parcel, should also be completed. The RC Magor House is an unsafe building that presents multiple risks to visitors including bees and environmental hazards. Completion of all of these items helps prepare the site for public use following

completion of Phase 1 of the Master Plan.

Implementation of the Preservation Plan at the Adkins Parcel is considered Phase 1 of the approved Master Plan. The design phase for this work, which will conclude with a set of construction documents, is scheduled to begin immediately after final approval of the Master Plan and Preservation Plan by the City of Tucson Mayor and Council and Pima County Board of Supervisors. The design phase will begin in late 2009 with a bid set complete by the middle of 2010. Construction on the Adkins Parcel can begin once the City of Tucson's environmental remediation is complete. It is expected that the remediation will be complete by the middle of 2010. Bidding and construction is expected to take one year. Public access to the Adkins Parcel could occur by the middle of 2011.

Completion of the Master Plan, including those elements of the Preservation Plan not completed during Phase 1, are currently unfunded. Fort Lowell Park is currently on a short list of projects being considered for inclusion in a future Pima County Bond election. This election could occur in November 2010. A successful 2010 Bond Election could allow for additional elements of the Master Plan to be implemented in 2012. Other sources of funding will need to be leveraged to complete the Master Plan.

	2009				2010				2011				2012				2013			
Quarter	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
	Preservation and Management Plan for the Adkins Parcel													Master Plan and Business Plan Reviewed and Updated						
Environmental Clean-Up by City of Tucson	Environmental Clean-up (Include buildings and site features slated for removal, if feasible)																			
Phase 1- Adkins Parcel Preservation Using 2004 Pima County Bonds		Design		Bidding	Construction				Phase 1 Opening											
Future Phases (Currently Unfunded)					Nov. 2010 Possible PC Bond Election					Potential Construction at Future Phases				Potential Future Phase Opening						

Figure 31: Schedule for Adkins Parcel Implementation with Future Master Plan Phases Shown.

Business Plan

The Business Plan for Fort Lowell Park Master Plan has been completed by the economic and heritage tourism specialists, *ConsultEcon, Inc.* The Business Plan estimates the impact of the proposed Master Plan on the cost to operate and maintain the site. Their report is included in the Final Report for the Master Plan. The Preservation Plan for the Adkins Parcel is included as Phase 1 of the Business Plan Excerpts from the Business Plan are included in this document.

The Adkins Parcel grounds will be maintained by existing park maintenance staff. The grounds will require regular maintenance to include: trash/litter removal, grass/turf watering and cutting, and other plant pruning and watering as required by the types of landscape.

The Adkins Parcel historic and cultural resources will be maintained by the Parks and Recreation Department. After restoration is completed, building interiors and exteriors will need to be inspected on a regular basis to check for cracks, sags, bulges and other damage. The historic adobe structures require specialized knowledge of and familiarity with adobe maintenance. Therefore, it is recommended that the Parks and Recreation Department contract with specialists in to provide ongoing maintenance of adobe structures. Inspections by staff should occur regularly.

Building access will be limited to special events conducted by the Parks and Recreation Department and its partners, including the Arizona Historical Society, Old Fort Lowell Neighborhood Association and the Fort Lowell Historic Zone Advisory Board. Special events could include:

- Building tours to school and other groups
- Living history and other related demonstrations
- Temporary historical exhibits during other events, such as La Reunión de El Fuerte / Fort Lowell Day Celebration and the Fort Lowell Shootout

As subsequent phases of the Master Plan are completed, the use of the Adkins Parcel will intensify

due to better physical connections, new parking lot on-site, and expanded and integrated heritage interpretation throughout Fort Lowell Park. This increased level of usage will require more frequent structural and landscape maintenance to the Adkins Parcel.

At the completion of Phase 1, a modest increase to the overall Fort Lowell Park Budget (entire 70 acres) is expected. Currently, it costs the City of Tucson \$293,000 dollars to operate Fort Lowell Park. Once the Adkins Parcel is brought on-line, the total cost to operate the Park increases to \$334,069.

The Business Plan assumes that the City of Tucson Parks and Recreation Department will continue to maintain Fort Lowell Park and the numerous recreational components both existing and proposed for the site. Additionally, City of Tucson Parks and Recreation is assumed to take a more active role in providing heritage programming at Fort Lowell Park and other City-owned historical and cultural properties. The City will be assisted in these efforts by the Arizona Historical Society who despite severe budget cutbacks in 2008 and 2009 is assumed to continue to operate the existing Fort Lowell Museum and the proposed final-phase new museum. A new half-time city position for a Heritage Program Coordinator is proposed for Phase 1. The following table provides an overview of the impact of the this new part-time position on the current park staffing. No increase in maintenance personnel is proposed for Phase 1.

Personnel Schedule ^{1/}	Annual Salaries (FTE)	Number of Full Time Positions	Number of Part Time Positions	Salary Budget
<i>Heritage</i>				
Heritage Program Coordinator	40,321		1	20,160
Heritage Educator/Volunteer Coordinator	40,321			0
Concessions Worker	15,371			0
<i>Maintenance</i>				
Groundskeeper/Custodian	30,802	1	1	46,203
Subtotal Salaries		1	2	\$66,363
<i>Taxes, Insurance and Benefits</i>				
Pension	12.71%	of Salary		\$8,435
FICA	7.65%	of Salary		\$5,077
Industrial Insurance	1.84%	of Salary		\$1,221
Group Insurance	\$7,220	per Employee		\$21,660
Unemployment Insurance	\$25	per Employee		\$75
Subtotal Taxes, Insurance and Benefits				\$36,468
Total Salaries, Taxes, Insurance and Benefits				\$102,831
Total Full-Time Equivalent Employees ^{3/}		2.00		

NOTE: Does not include costs associates with Aquatics, Tennis Center, Commissary Residences.

1/ All positions assumed to be civil service employees of City of Tucson. Salaries based on midpoint of salary range for positions in City of Tucson Compensation Plan, available at http://www.tucsonaz.gov/compensation/comp_plan_11-02-06.pdf. Taxes, insurance and benefits from Tucson Parks and Recreation Department.

2/ Part-time employees at 50% of full-time employees.
Source: City of Tucson and ConsultEcon, Inc.

Figure 32: Phase 1 staffing at Fort Lowell Park. Taken from Fort Lowell Park Master Plan Final Report.

Capital Costs

This summary of the Capital Costs for the Adkins Parcel includes information about three discreet efforts: 1. Demolition of items that would best be removed in conjunction with the environmental remediation of the site. 2. Priority preservation and rehabilitation items on the Adkins Parcel and 3. A new pedestrian activated "HAWK" Crossing at Craycroft Road. Remaining 2004 Pima County Bond Funds can be only used for the items listed under #2, the Preservation and Rehabilitation of the Adkins Parcel. There is currently no dedicated funding source for #1, the removal of site items and #3 the new HAWK crossing.

All Items include the following markups: Estimating Contingency (15%), General Conditions (15%), Contractor Fee (6%), Bonds & Insurance (3%) and Tax (5.27%). Total Markups = 52%

Escalation is based on current Engineering News Record rate of .8% per year. Hazardous Material or Asbestos Abatement is Excluded. More detailed break-downs of the cost estimates are included in the Appendices.

Demolition Prior to Phase 1 (No Dedicated Funding Source)

	Total
Remove Adkins Steel Fabrication Shed	\$19,646
Remove Adkins-era Roller Trench Slab	\$ 1,923
Remove Adkins-era Roller Trench	\$ 9,466
Remove 4" Slab-on-grade	\$ 2,917
Remove RC Magor House	\$14,592
Remove Windmill Tower Base	\$ 3,344
Remove Concrete Silo	\$ 3,800
Total Building and Site Costs	\$55,700
Escalation to January 2010 @ .20%	\$ 112
Total Demolition Prior to Phase 1 with Escalation	\$ 55,812

Phase 1 - Adkins Parcel Priorities (2004 Pima County Bond Funding)

Item	Total
Officer's Quarters #3	\$537,200
Officer's Quarters #2 Ruins	\$243,100
Officer's Quarters #1 Ruins	\$125,900
Stabilize Adkins Residence and Water Tower	\$ 47,800
Adkins Site Work	\$ 59,100
Miscellaneous Site and Electrical Work	\$ 70,000
Adkins Parcel Parking Lot	\$ 58,000
Interpretive Signage	\$ 25,000
Total Building and Site Costs	\$1,166,100
Escalation to January 2011 @ 1.01%	\$ 11,719
Total Phase 1 Adkins Parcel Priorities with Escalation	\$1,177,819
Phase 1 - HAWK Crossing (No Dedicated Funding Source)	
	Total
HAWK Crossing at Cottonwood Lane	\$ 91,200
Landscape Median	\$ 11,400
Colored Concrete Crosswalk	\$ 38,000
Total Site Costs	\$140,600
Escalation to July 2010 @ .67%	\$ 942
Total Phase 1 HAWK Crossing	\$141,542

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Fort Lowell Park Master Plan
Adkins Parcel Preservation Plan
Management

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NOV. 2009

Fort Lowell Resources

Officer's Quarters #1, #2, and #3 are the best preserved Fort Lowell resources on the Adkins Parcel. A small area of stones remains from the Guardhouse near Fort Lowell Road. Subsurface remains of the Bake House were encountered during the removal of an underground tank in 2007.

Taken as a whole, the three Officer's Quarters will present a unique experience to the visitor. The varying condition of the three buildings is an interpretive opportunity to see the impact of time on the transient nature of adobe. The decay of Officer's Quarters #1 and #2 will be "frozen" beneath a ghosted steel structure that reveals how a fully realized building would appear. The ghosting will complement the preservation and rehabilitation of Officer's Quarters #3, an almost fully intact Officer's Quarters with most of its Fort-era features. Looking northwest along Cottonwood Lane, the three Officer's Quarters will appear unified in volume and scale, providing an order and regularity to Fort Lowell Park.

Officer's Quarters #3 will be experienced as a late 19th Century building, providing the visitor a glimpse into how an Officer and his family lived. It is anticipated that Officer's Quarters #3 will be open periodically for docent-led tours. The building will not be mechanically heated and cooled to further exhibit how a thick-walled adobe helps to mitigate the diurnal temperature swings of the desert.

Many of the interior features, including wood floors, fireplaces, wood trim, and plaster ceilings and walls appear to date to the mid 1880s. These features will be preserved. A number of doors and windows dating to the Fort-era exist will be restored. Features that were added in the early 20th Century, including built-in cabinets, interior and exterior concrete slabs, and exterior porches, will be documented and removed.

Features that no longer exist will be reconstructed based on available documentation. The most significant feature that will be reconstructed is the porch that is shown in images dating to the final decade of the Fort. The porches are believed to have been added by the mid 1880s. Unfortunately, there are no pictures showing the south wall of the Officer's Quarters to provide information on the presence of a porch on all four sides. Archaeologist Al Johnson determined that a ramada linked Officer's Quarters

#5 with its kitchen building when conducting investigations in 1960. Additional research will need to be conducted during the design phase to collaborate the exact details of the Fort-era porches.

Officer's Quarters #2 was modified for use as a sanatorium rest-home in the early 20th Century. In the early 1970s, a fire caused significant damage to the wood elements on the building, exposing the adobe walls to prolonged damage over the past three decades. Even with these changes, the outline of an original Fort-era building remains. Furthermore, portions of Officer's Quarters #2 Kitchen remain intact, providing a good indication of the relationship between the main building and ancillary kitchen. As noted above, the detail of how the two buildings were connected is unclear as historic documents and previous site drawings and models are inconclusive.

Officer's Quarters #1 offers visitors an opportunity to see the effects of time on adobe. This building, appearing greatly modified from its Fort-era appearance, as an outbuilding or stable, in a 1940s aerial image, contains a few segments of adobe walls surrounded by significant adobe melt. Cyclical maintenance should be applied to the remaining adobe walls to preserve them as a ruin. Sacrificial mud caps and the repair of basal coving to prevent collapse will be required to preserve the walls.

As the western-most building, the placement of Officer's Quarters #1 anchors the southwest corner of the site. To give this location the "weight" it needs to anchor the corner, a steel ghosted structure will be placed over the remaining walls to illustrate the original footprint and volume of the building. The lower wrap-around porch will also be constructed. The ghosting on Officer's Quarters #1 will be visually consistent with the ghosting employed on Officer's Quarters #2. The major difference will be that Officer's Quarters #2 will have a solid roof and Officer's Quarters #1 will be open on top. The lower porches at both structures will be the same perforated metal.

Visitors will be able to walk around the outside of Officer's Quarters #1 and #2. If additional protection of the fragile adobe walls is required, ocotillo fencing could be placed at the exterior of the ghosted porches to secure the ruins. This treatment is consistent with the ocotillo fencing shown in historical photographs.

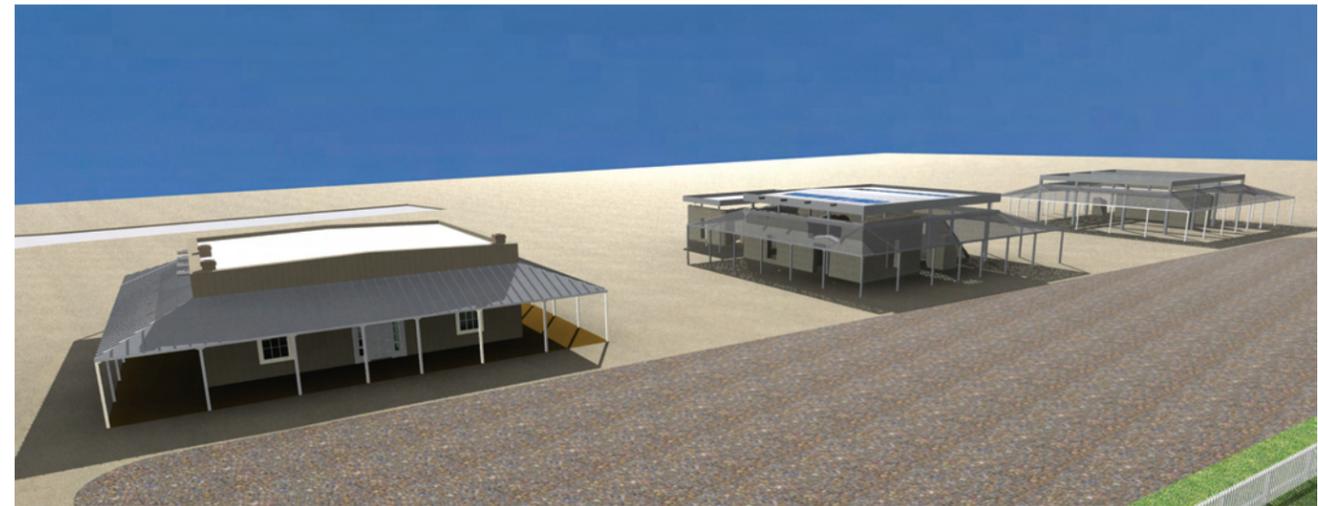


Figure 33: From left to right, OQ#3, #2, and #1 showing proposed treatments, including ghosting on #2 and #1.



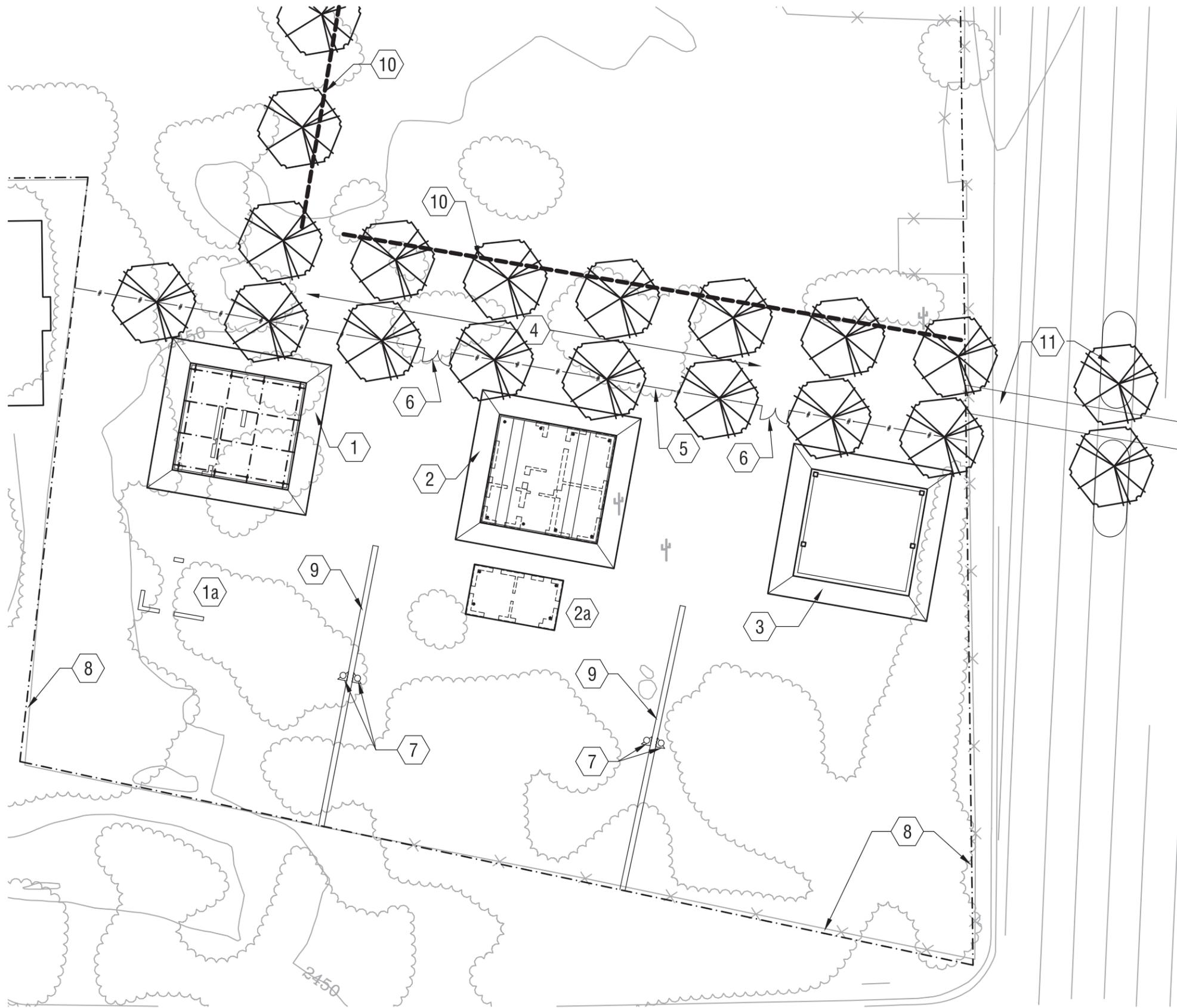
Figure 34: View from Parade Ground looking southeast across Cottonwood Lane towards Officer's Quarters #3. Picket fence will be reconstructed during implementation of the Master Plan. Note: Image was produced during the master planning process and does not accurately depict the final design for the area behind Officer's Quarters #2 or the area east of Craycroft Road.



KEYNOTES

- ① OFFICER'S QUARTERS #1 (RUINS)
- ①a OFFICER'S QUARTERS #1 KITCHEN (RUINS)
- ② OFFICER'S QUARTERS #2 (PARTIAL RUINS)
- ②a OFFICER'S QUARTERS #2 KITCHEN (PARTIAL RUINS)
- ③ OFFICER'S QUARTERS #3
- ④ EARLY 20TH CENTURY CONCRETE WATER TANK
- ⑤ ENTRY GATE IN EXISTING FENCE
- ⑥ EXISTING SECURITY FENCE
- ⑦ EXISTING SECURITY LIGHT
- ⑧ EXISTING SITE FENCE AT PERIMETER OF PROPERTY
- ⑨ DIRECTION OF NATURAL FLOW
- ⑩ DRAINAGE SWALE CREATED TO MOVE WATER AWAY FROM ADOBE WALLS
- ⑪ HIGH POINT OF SWALES
- ⑫ EXISTING SAGUARO TO BE RELOCATED (ALT. IS TO LEAVE AND INCORPORATE INTO PORCH WITH INTERPRETATION.)

1 Partial Adkins Parcel Site Plan (Existing)
SCALE 1"=40'-0"



KEYNOTES

- 1 OFFICER'S QUARTERS #1 (RUINS). PROVIDE NEW GHOSTING TO DEFINE THE ORIGINAL FOOTPRINT AND VOLUME. STABILIZE EXISTING ADOBE WALLS AND PROVIDE SACRIFICIAL MUD CAP.
- 1a OFFICER'S QUARTERS #1 KITCHEN (RUINS). STABILIZE EXISTING ADOBE WALLS AND PROVIDE SACRIFICIAL MUD CAP.
- 2 OFFICER'S QUARTERS #2 (PARTIAL RUINS). PROVIDE NEW GHOSTING TO DEFINE THE ORIGINAL FOOTPRINT AND VOLUME. STABILIZE EXISTING ADOBE WALLS USING GHOSTED STRUCTURE FOR SUPPORT AND PROTECTION.
- 2a OFFICER'S QUARTERS #2 KITCHEN (PARTIAL RUINS). PROVIDE NEW GHOSTING TO DEFINE THE ORIGINAL FOOTPRINT AND VOLUME. STABILIZE EXISTING ADOBE WALLS USING GHOSTED STRUCTURE FOR SUPPORT AND PROTECTION.
- 3 OFFICER'S QUARTERS #3. REHABILITATE BUILDING TO MID-1880S FORT-PERIOD.
- 4 REPLANT COTTONWOOD LANE.
- 5 NEW FENCING TO ENCLOSE AREA AROUND OFFICER'S QUARTERS.
- 6 NEW GATE TO PROVIDE LIMITED ACCESS TO THE AREA AROUND THE OFFICER'S QUARTERS.
- 7 NEW LIGHTING. CONSIDER ARCHITECTURAL LIGHTING OF OFFICER'S QUARTERS TO ADD IMPACT.
- 8 EXISTING FENCING TO REMAIN INDEFINITELY.
- 9 NEW LOW ADOBE SITE WALL PER HISTORICAL PLANS. CONSIDER ADOBE WALL AT SOUTH PROPERTY LINE ALSO.
- 10 NEW PICKET FENCE BETWEEN COTTONWOOD LANE AND THE PARADE GROUND BASED ON HISTORICAL PLANS AND IMAGES.
- 11 NEW HAWK CROSSING AND LANDSCAPE MEDIAN WITH COTTONWOOD TREES.

1 Partial Adkins Parcel Site Plan (Proposed)
SCALE 1"=40'-0"

Officer's Quarters #1



Figure 35: Officer's Quarters #1 looking southwest from Cottonwood Lane.



Figure 36: Officer's Quarters #1 looking west.



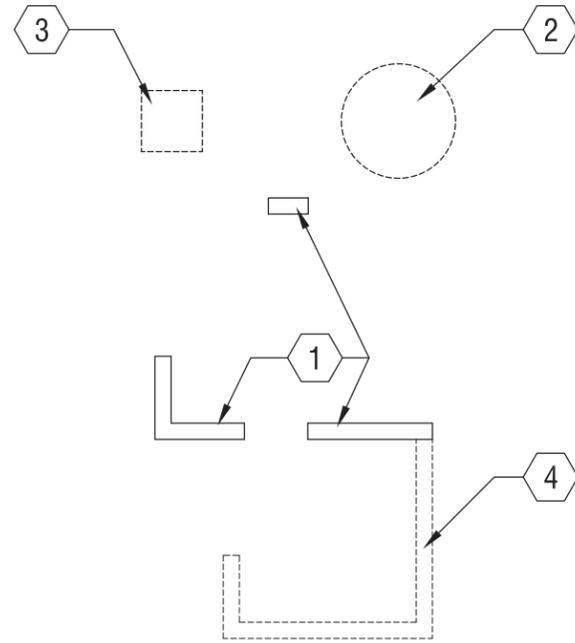
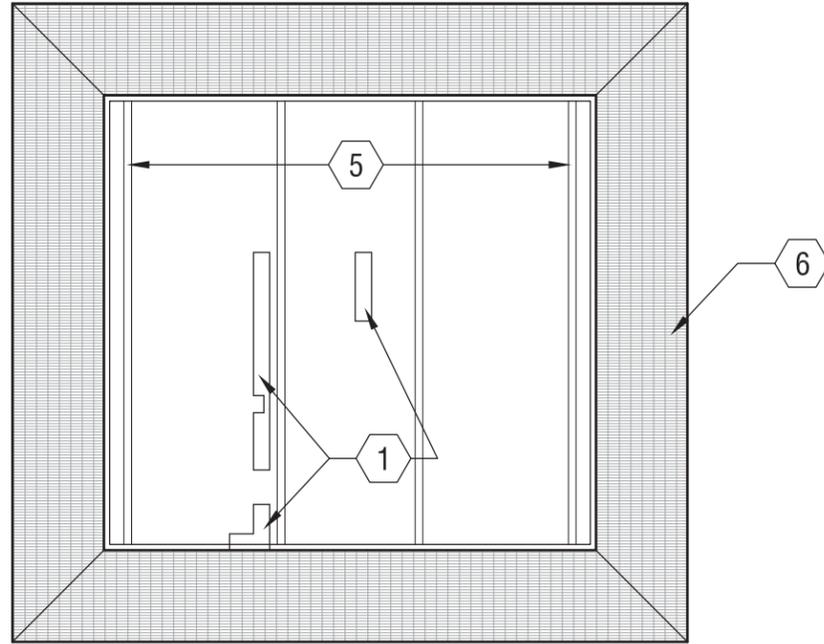
Figure 37: Sacrificial mud cap on historic adobe wall.



Figure 38: Officer's Quarters #1 looking south.



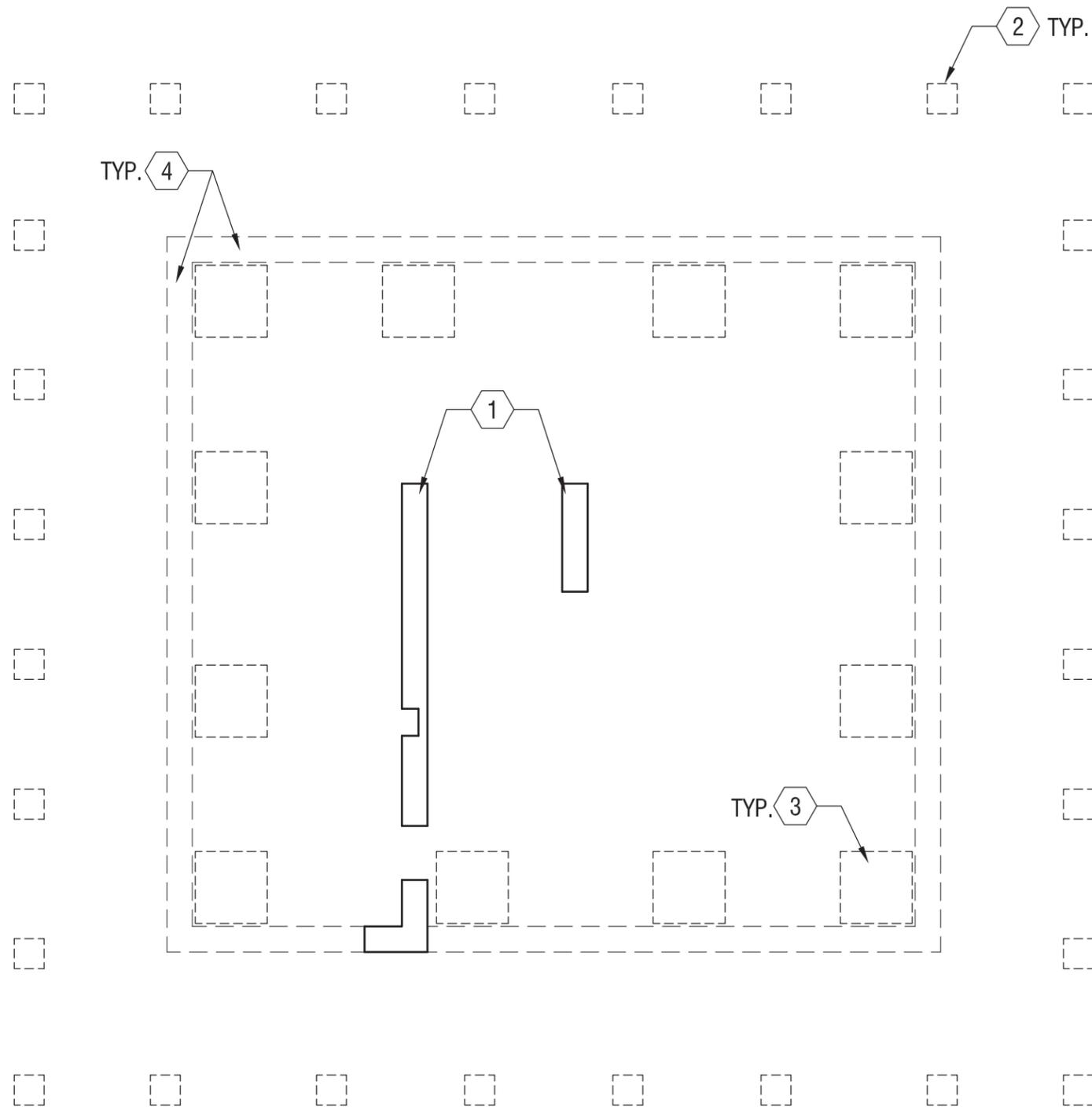
Figure 39: Officer's Quarters #1 looking northwest.



KEYNOTES

- ① EXISTING ADOBE WALLS TO BE PRESERVED IN PLACE. PROTECT TOP OF WALL WITH SACRIFICIAL MUD CAP.
- ② CONCRETE WATER TANK TO BE REMOVED.
- ③ WELL TO BE FILLED DURING ENVIRONMENTAL CLEAN-UP PHASE.
- ④ LOW ADOBE WALL AND ADOBE "MELT".
- ⑤ BEAMS AT OPEN ROOF.
- ⑥ STEEL FRAMING WITH PERFORATED METAL ROOF AT FORMER PORCHES.

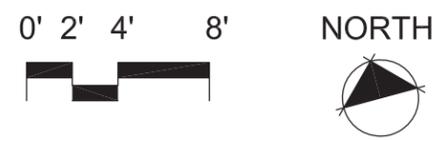
Officer's Quarters #1

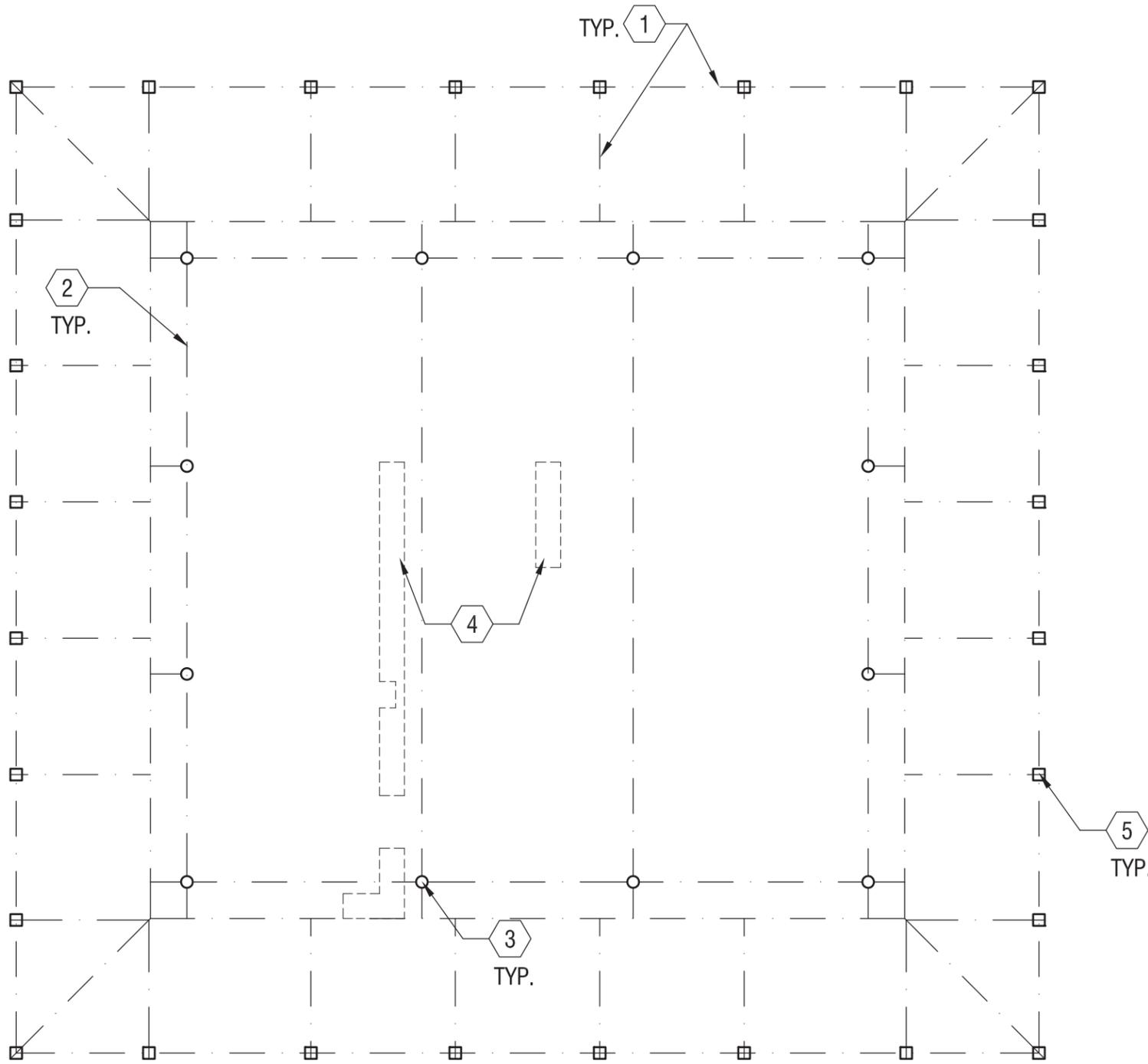


KEYNOTES

- ① EXISTING ADOBE WALL TO BE PRESERVED. REPAIR BASAL COVING.
- ② NEW FOOTING AT STEEL GHOST COLUMN.
- ③ NEW FOOTING AT STEEL SUPPORT COLUMN FOR PROTECTIVE ROOF.
- ④ SUB-SURFACE ADOBE WALLS POSSIBLE IN THIS LOCATION. PLACE NEW COLUMN FOOTING AWAY FROM ORIGINAL WALL ALIGNMENT.

1 Foundation Plan
SCALE 1/8"=1'-0"





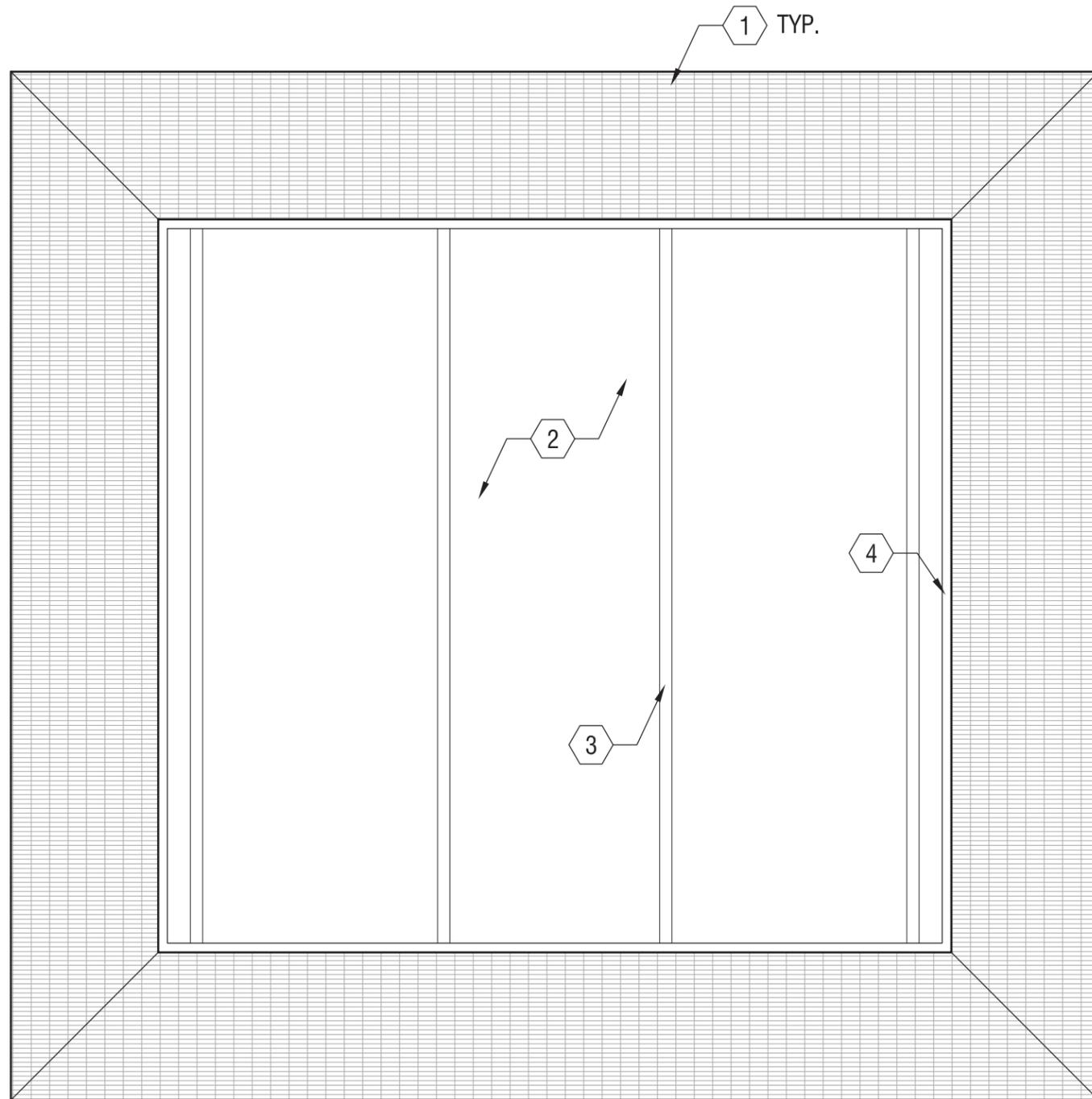
KEYNOTES

- ① NEW STEEL FRAMING.
- ② NEW STEEL BEAMS AT COLUMNS. SET BEAMS TO RECEIVE NEW STEEL PORCH FRAMING.
- ③ NEW STEEL COLUMN TO SUPPORT UPPER GHOSTED FRAMING.
- ④ EXISTING ADOBE WALLS TO BE PRESERVED IN PLACE. PROTECT TOP OF WALL WITH SACRIFICIAL MUD CAP.
- ⑤ NEW STEEL COLUMN AT GHOSTED LOWER PORCH.

① Framing Plan
SCALE 1/8"=1'-0"



Officer's Quarters #1



KEYNOTES

- 1 NEW PERFORATED METAL OVER NEW STEEL FRAMING AT PORCH ROOF.
- 2 OPEN AIR ROOF.
- 3 EXPOSED STEEL BEAM AT OPEN AIR ROOF.
- 4 STEEL PARAPET. HEIGHT TO MATCH ORIGINAL OFFICER'S QUARTERS.

POSTER
FROST
ASSOCIATES, INC

Fort Lowell Park Master Plan
Adkins Parcel Preservation Plan
Analysis and Drawings

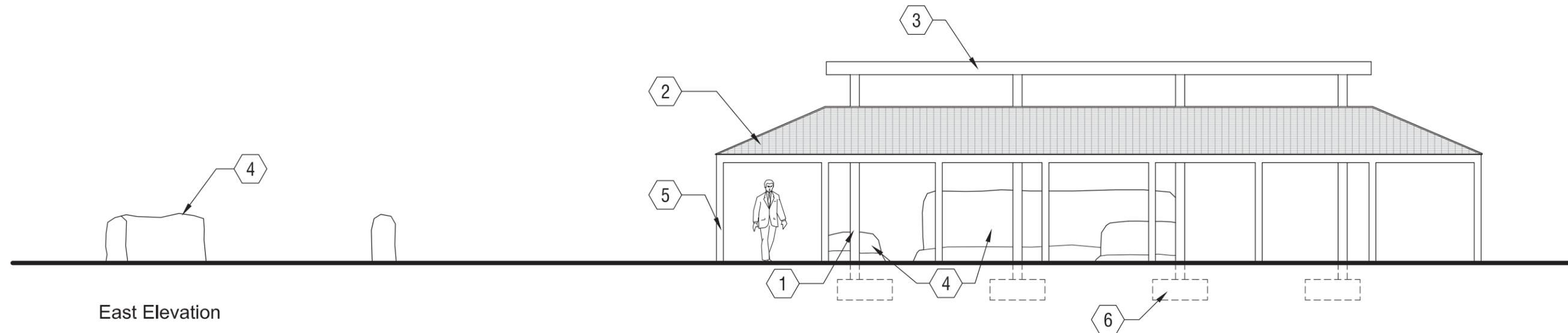
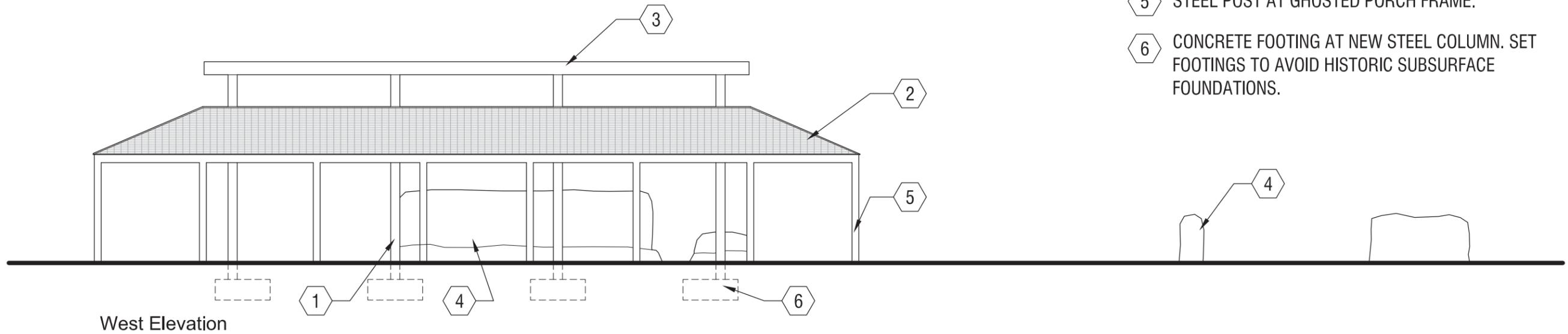
1 Roof Plan
SCALE 1/8"=1'-0"



Officer's Quarters #1

KEYNOTES

- ① NEW STEEL COLUMN TO SUPPORT GHOSTING.
- ② NEW STEEL FRAME WITH PERFORATED METAL ROOF AT PORCH GHOSTING.
- ③ UPPER GHOST FRAMING TO DEFINE EXTENT OF FORMER FORT-ERA BUILDING.
- ④ EXISTING ADOBE WALLS TO BE PRESERVED IN PLACE. PROTECT TOP OF WALL WITH SACRIFICIAL MUD CAP.
- ⑤ STEEL POST AT GHOSTED PORCH FRAME.
- ⑥ CONCRETE FOOTING AT NEW STEEL COLUMN. SET FOOTINGS TO AVOID HISTORIC SUBSURFACE FOUNDATIONS.



1 East and West Elevations
SCALE 1/8"=1'-0"



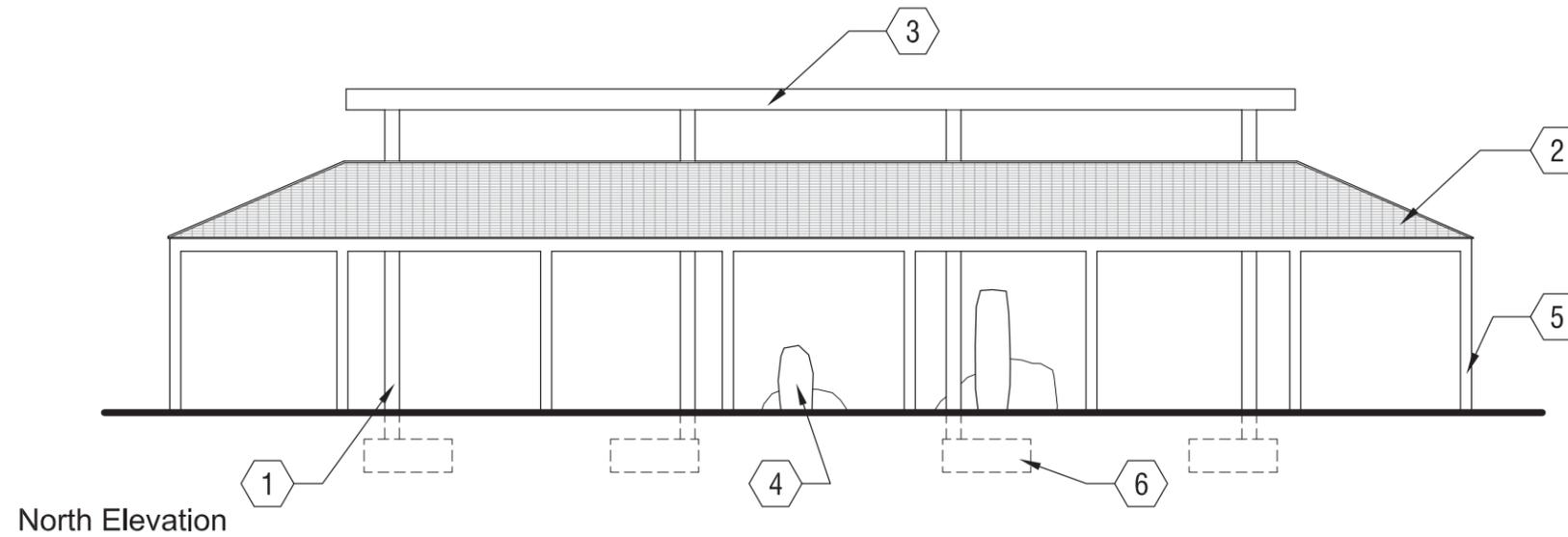
Officer's Quarters #1

KEYNOTES

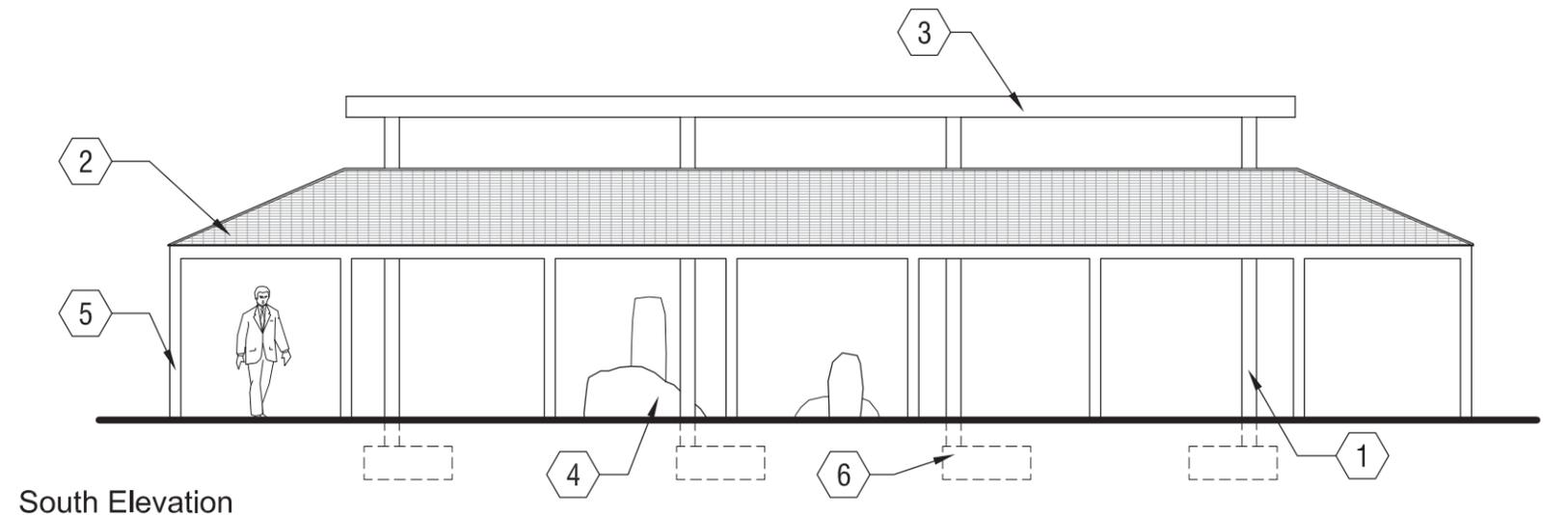
- ① NEW STEEL COLUMN TO SUPPORT GHOSTING.
- ② NEW STEEL FRAME WITH PERFORATED METAL ROOF AT PORCH GHOSTING.
- ③ UPPER GHOST FRAMING TO DEFINE EXTENT OF FORMER FORT-ERA BUILDING.
- ④ EXISTING ADOBE WALLS TO BE PRESERVED IN PLACE. PROTECT TOP OF WALL WITH SACRIFICIAL MUD CAP.
- ⑤ STEEL POST AT GHOSTED PORCH FRAME.
- ⑥ CONCRETE FOOTING AT NEW STEEL COLUMN. SET FOOTINGS TO AVOID HISTORIC SUBSURFACE FOUNDATIONS.

POSTER
FROST
ASSOCIATES, INC

Fort Lowell Park Master Plan
Adkins Parcel Preservation Plan
Analysis and Drawings



North Elevation



South Elevation

1 North and South Elevations
SCALE 1/8"=1'-0"



Officer's Quarters #2



Figure 40: Officer's Quarters #2 looking southwest from Cottonwood Lane.



Figure 41: Officer's Quarters #2 & Kitchen looking NW.



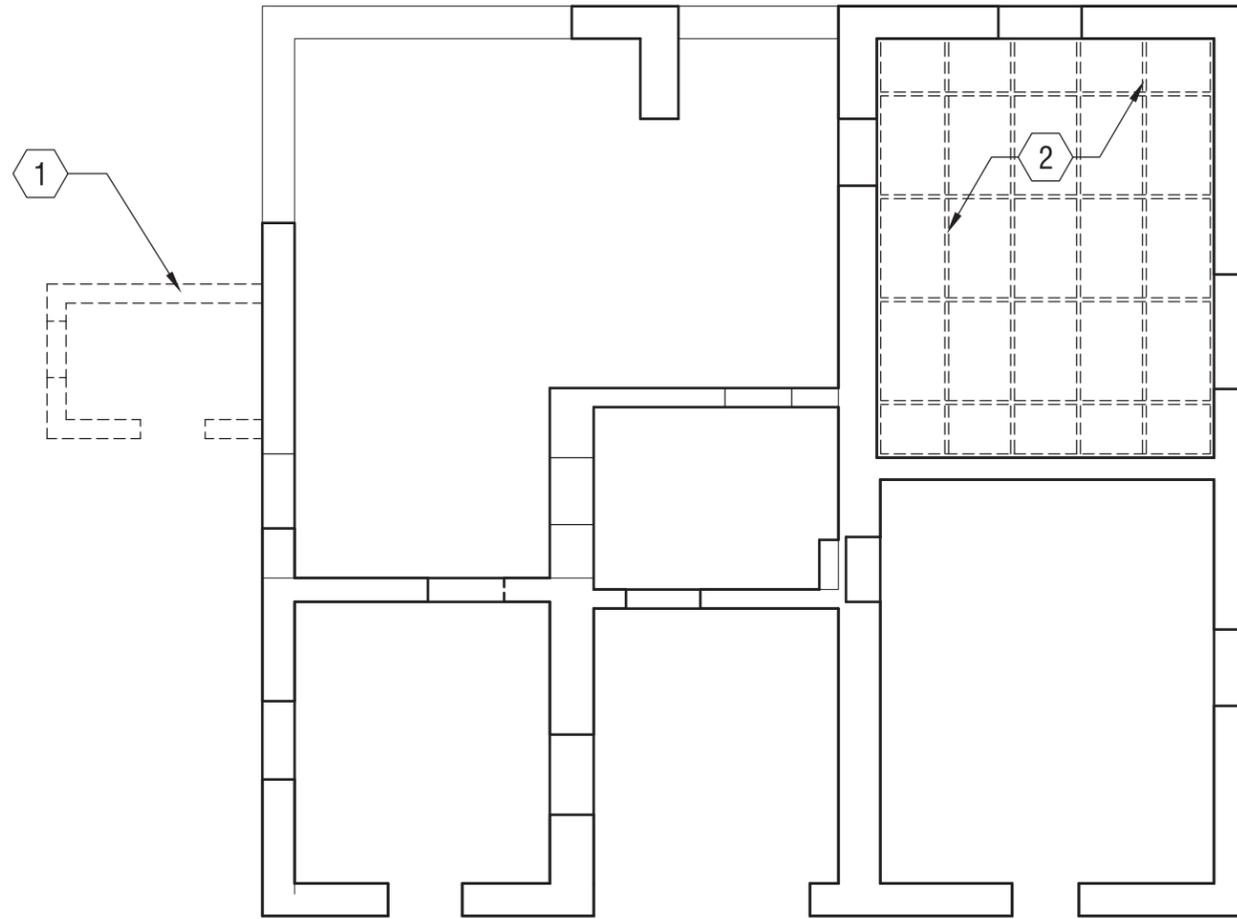
Figure 42: Officer's Quarters #2 northeast corner.



Figure 43: Officer's Quarters #2 southeast corner.



Figure 44: Officer's Quarters #2 Kitchen, south wall.



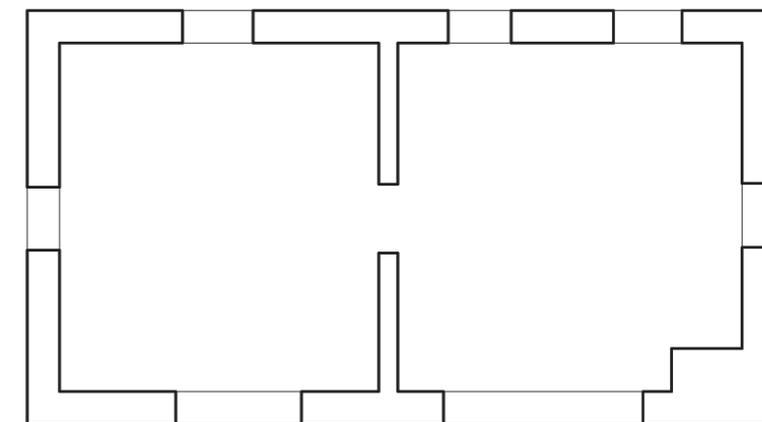
1 Officer's Quarters De-Construction Floor Plan
SCALE 1/8"=1'-0"

0' 2' 4' 8'



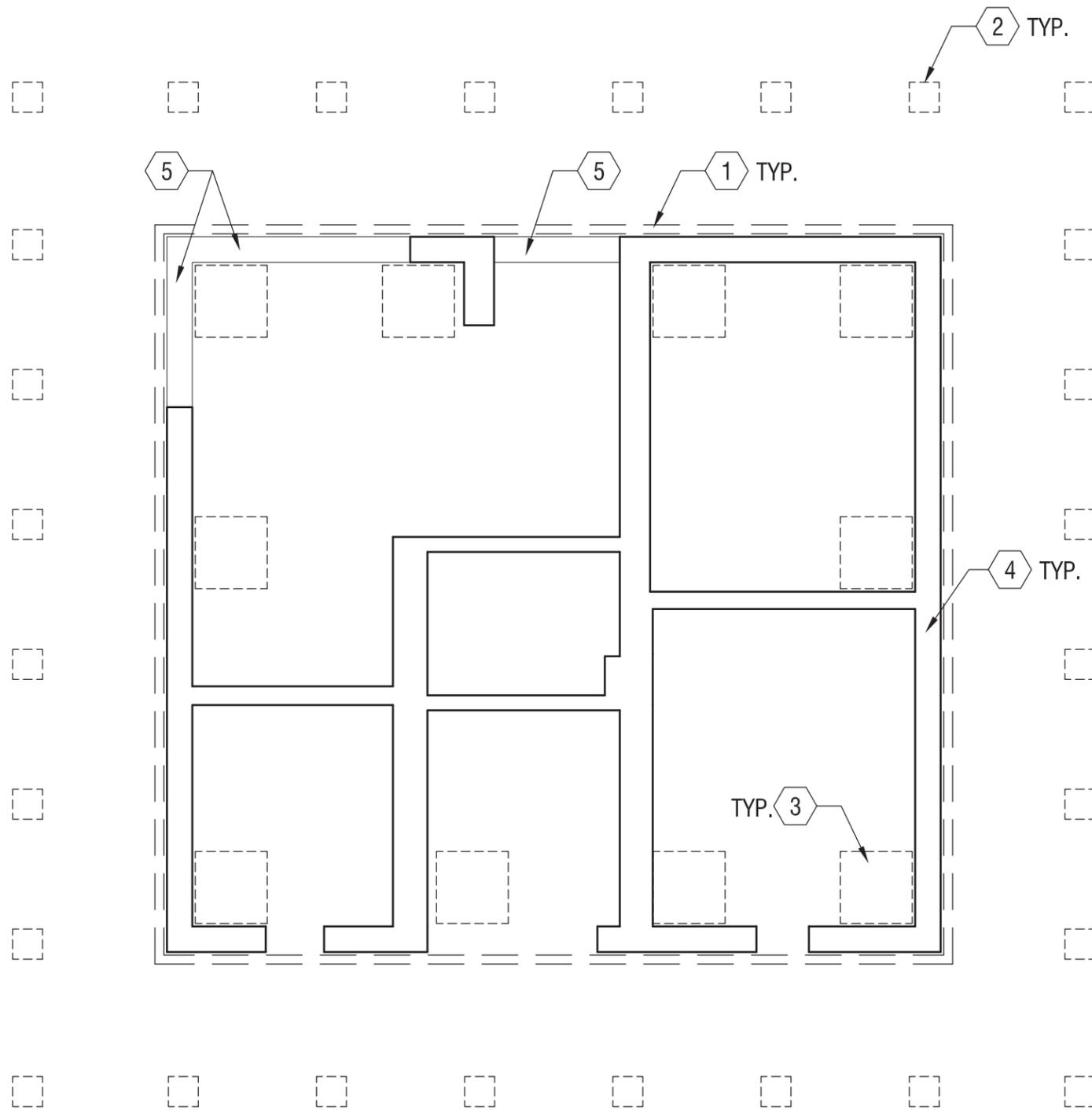
KEYNOTES

- 1** REMOVE POURED-IN-PLACE CONCRETE ROOM. STABILIZE ADOBE WALL PRIOR TO REMOVAL.
- 2** REMOVE REMAINING WOOD FLOOR SLEEPERS IN THIS ROOM. IF DRAINAGE AND TERMITES ARE NOT AN ISSUE ONCE THE PROTECTIVE ROOF IS INSTALLED, THE SLEEPERS COULD REMAIN FOR INTERPRETIVE PURPOSES.



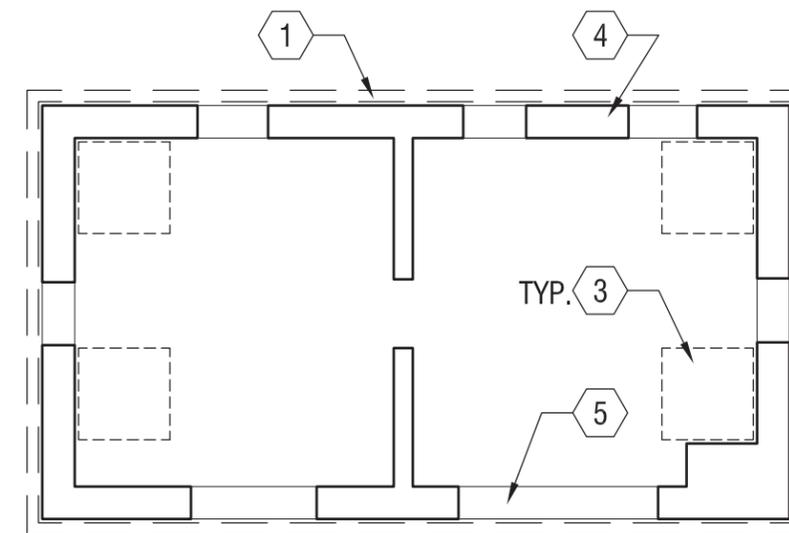
2 Kitchen De-Construction Floor Plan
SCALE 1/8"=1'-0"

Officer's Quarters #2



KEYNOTES

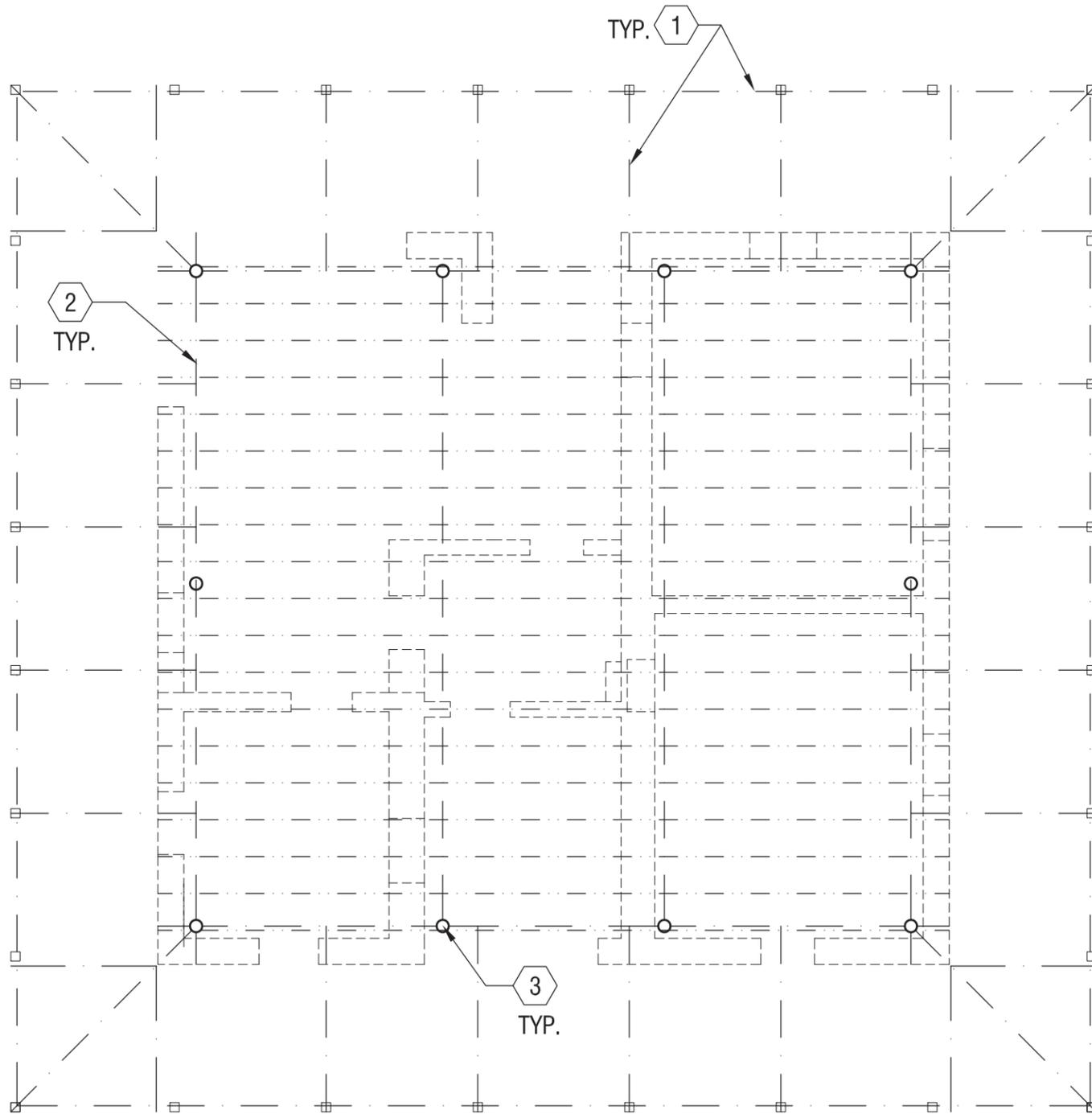
- ① FOUNDATION DRAIN.
- ② NEW FOOTING AT STEEL GHOST COLUMN.
- ③ NEW FOOTING AT STEEL SUPPORT COLUMN FOR PROTECTIVE ROOF.
- ④ EXISTING ADOBE WALL. REPAIR AS REQUIRED
- ⑤ SUB-SURFACE ADOBE WALLS POSSIBLE IN THIS LOCATION. PLACE NEW COLUMN FOOTING AWAY FROM ORIGINAL WALL ALIGNMENT.



① Officer's Quarters Foundation Plan
SCALE 1/8"=1'-0"

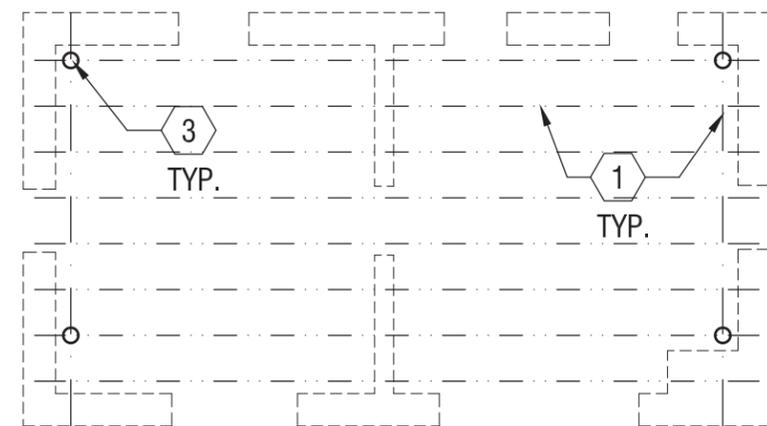


② Kitchen Foundation Plan
SCALE 1/8"=1'-0"



KEYNOTES

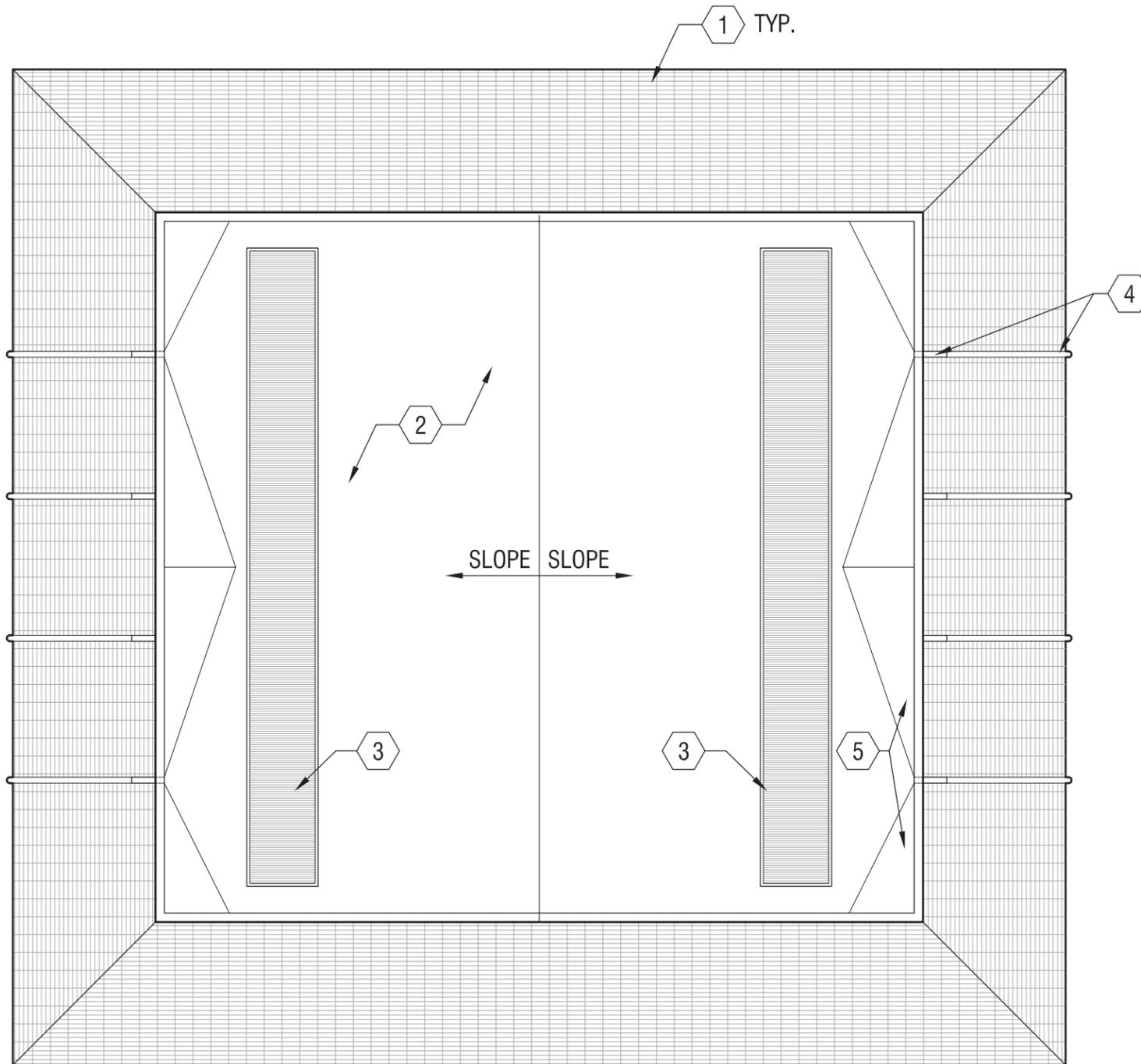
- ① NEW STEEL FRAMING.
- ② NEW STEEL BEAMS AT COLUMNS. SET BEAMS TO RECEIVE NEW STEEL PORCH FRAMING.
- ③ NEW STEEL COLUMN.



① Officer's Quarters Framing Plan
SCALE 1/8"=1'-0"



② Kitchen Framing Plan
SCALE 1/8"=1'-0"

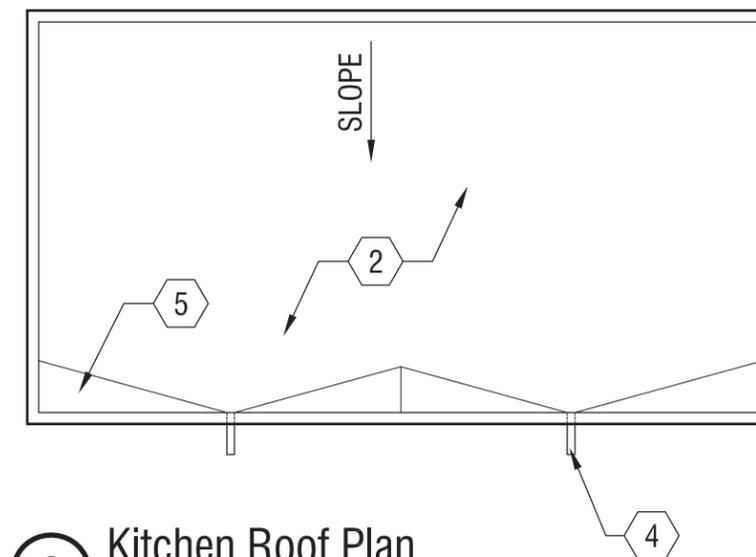


1 Officer's Quarters Roof Plan
SCALE 1/8"=1'-0"



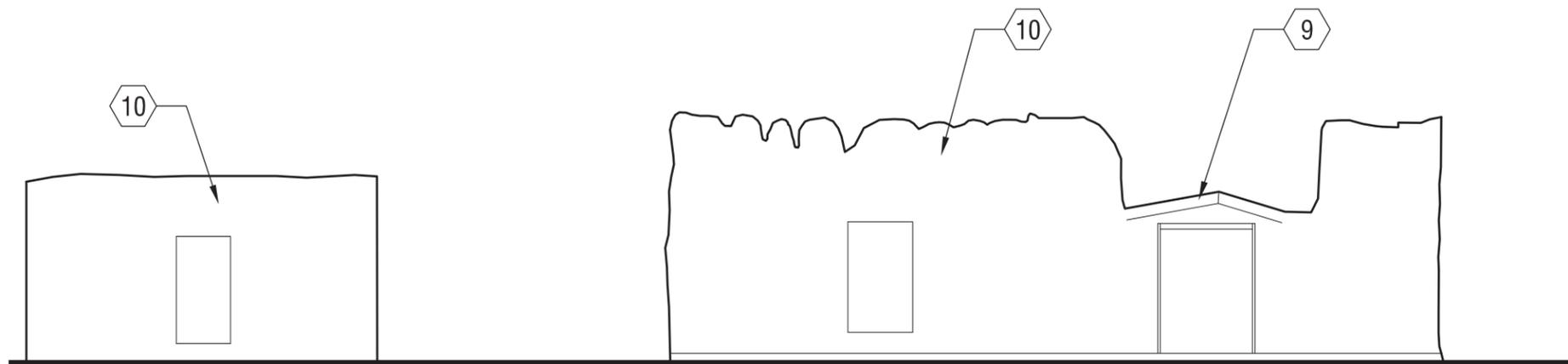
KEYNOTES

- 1 NEW PERFORATED METAL OVER NEW STEEL FRAMING AT PORCH ROOF.
- 2 NEW SLOPED METAL ROOF.
- 3 NEW GLASS PANEL AT METAL ROOF.
- 4 CUSTOM FABRICATE HISTORICAL CANALES AND LEADERS (WHERE SHOWN) BASED ON DOCUMENTATION.
- 5 NEW ROOF CRICKET.



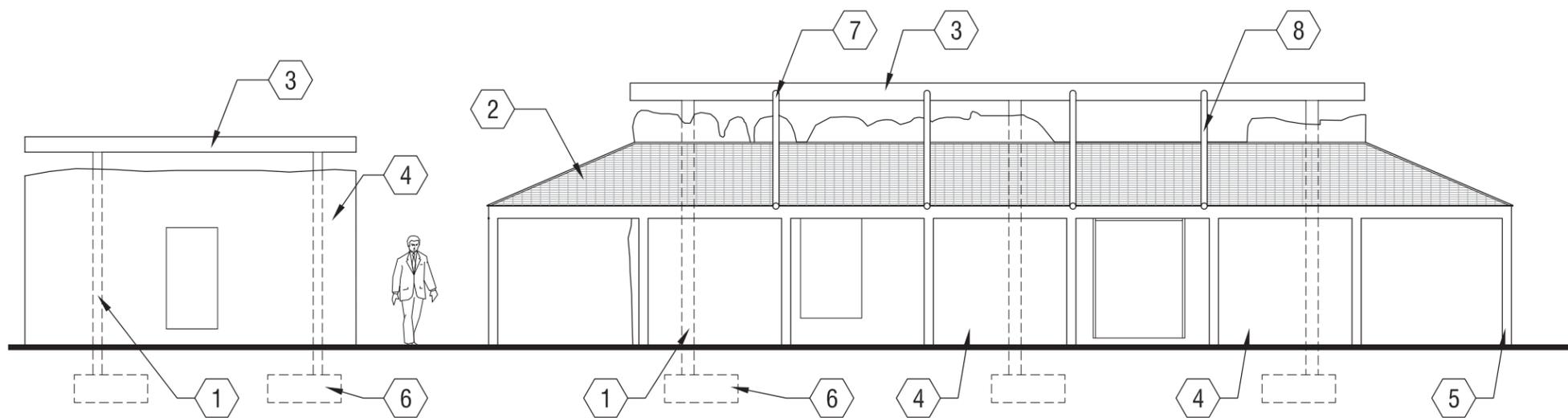
2 Kitchen Roof Plan
SCALE 1/8"=1'-0"

Officer's Quarters #2



Kitchen
Existing East Elevation

Officer's Quarters #2



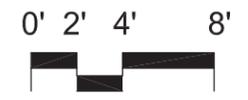
Kitchen
Proposed East Elevation

Officer's Quarters #2

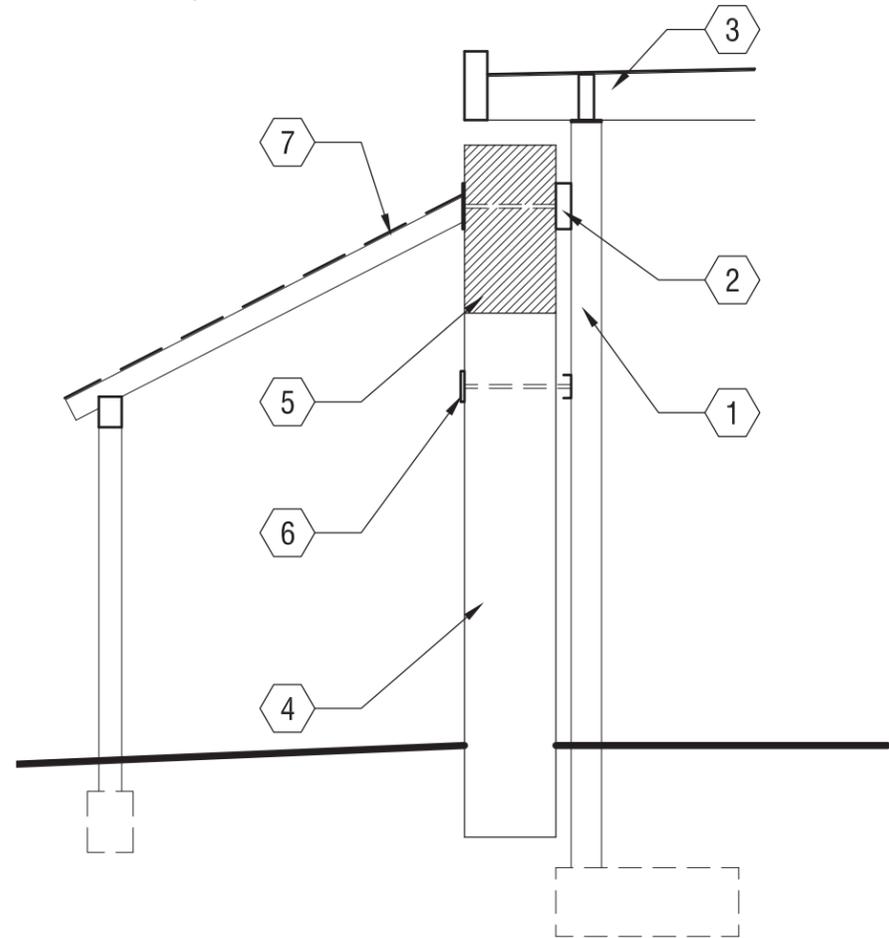
KEYNOTES

- 1 NEW STEEL COLUMN TO SUPPORT GHOSTING.
- 2 NEW STEEL FRAME WITH PERFORATED METAL ROOF AT PORCH GHOSTING.
- 3 UPPER GHOST FRAMING TO DEFINE EXTENT OF FORMER FORT-ERA BUILDING.
- 4 EXISTING ADOBE WALLS TO BE PRESERVED IN PLACE. REPAIR UNSTABLE AREAS WITH LIKE MATERIALS. CONSIDER POLYESTER WEBBING ATTACHED TO NEW STEEL COLUMNS TO PROVIDE ADDITIONAL STABILITY.
- 5 STEEL POST AT GHOSTED PORCH FRAME.
- 6 CONCRETE FOOTING AT NEW STEEL COLUMN. SET FOOTINGS TO AVOID HISTORIC SUBSURFACE FOUNDATIONS.
- 7 STEEL CANALE TO DRAIN UPPER ROOF.
- 8 STEEL RAIN WATER LEADER FROM CANALE TO EDGE OF PORCH GHOSTING.
- 9 REPAIR DETERIORATED LINTEL IN THIS AREA. CONSIDER NEW ADOBE INFILL TO STABILIZE WALLS.
- 10 EXISTING ADOBE WALL.

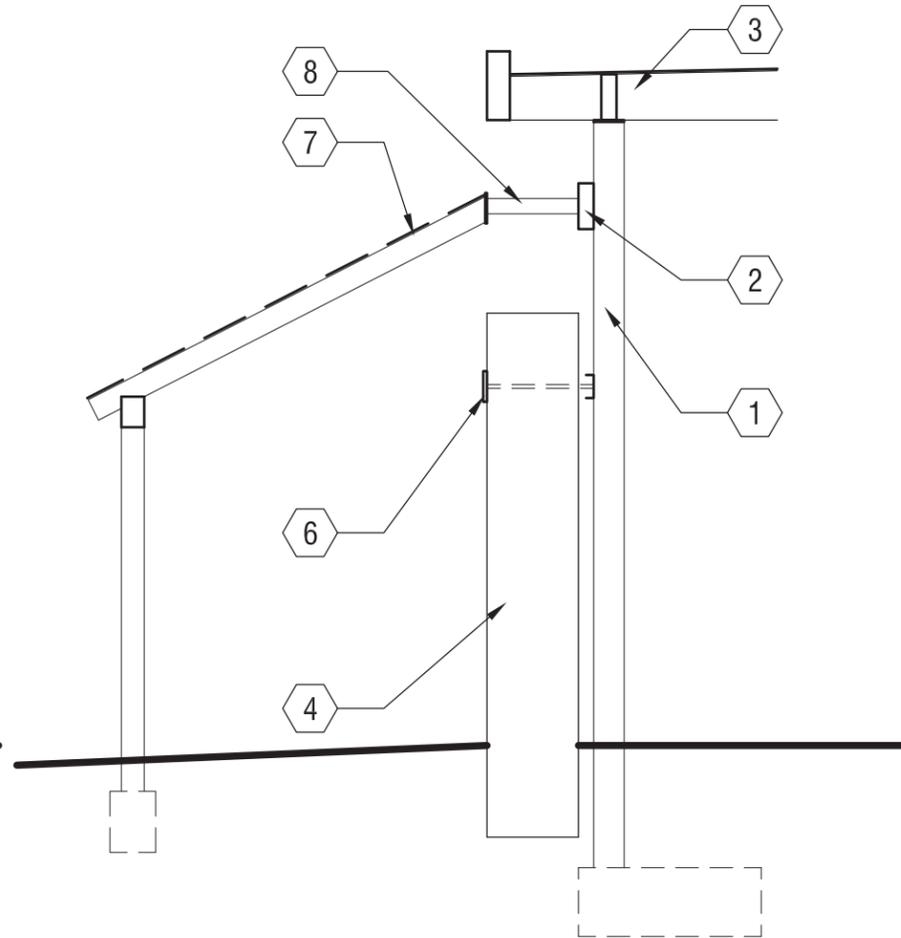
NOTE: THE EXTERIOR FINISH ON THE EXISTING ADOBE WALLS HAS NOT BEEN DETERMINED. THE FINISH WILL BE DETERMINED DURING THE DESIGN PHASE. AN EXPERIMENTAL MUD PLASTER COATING (SEE FIGURE 29) WAS INSTALLED ON THE EAST WALL OF THE KITCHEN BUILDING IN FEBRUARY 2009 AS AN EXAMPLE OF ONE POSSIBLE FINISH. A MUD PLASTER FINISH WOULD COMPLETELY COVER THE PROPOSED POLYESTER WEBBING. THE MUD PLASTER WOULD PROVIDE ADDITIONAL PROTECTION TO THE ADOBE WALLS, BUT REQUIRE PERIODIC MAINTENANCE APPROXIMATELY EVERY 5- 7 YEARS. THE MUD PLASTER CHANGES THE VISUAL APPEARANCE OF THE RUIN AND WOULD IMPACT THE VISITOR EXPERIENCE BY NOT ALLOWING THE CONSTRUCTION TECHNIQUES TO BE AS APPARENT.



Officer's Quarters #2



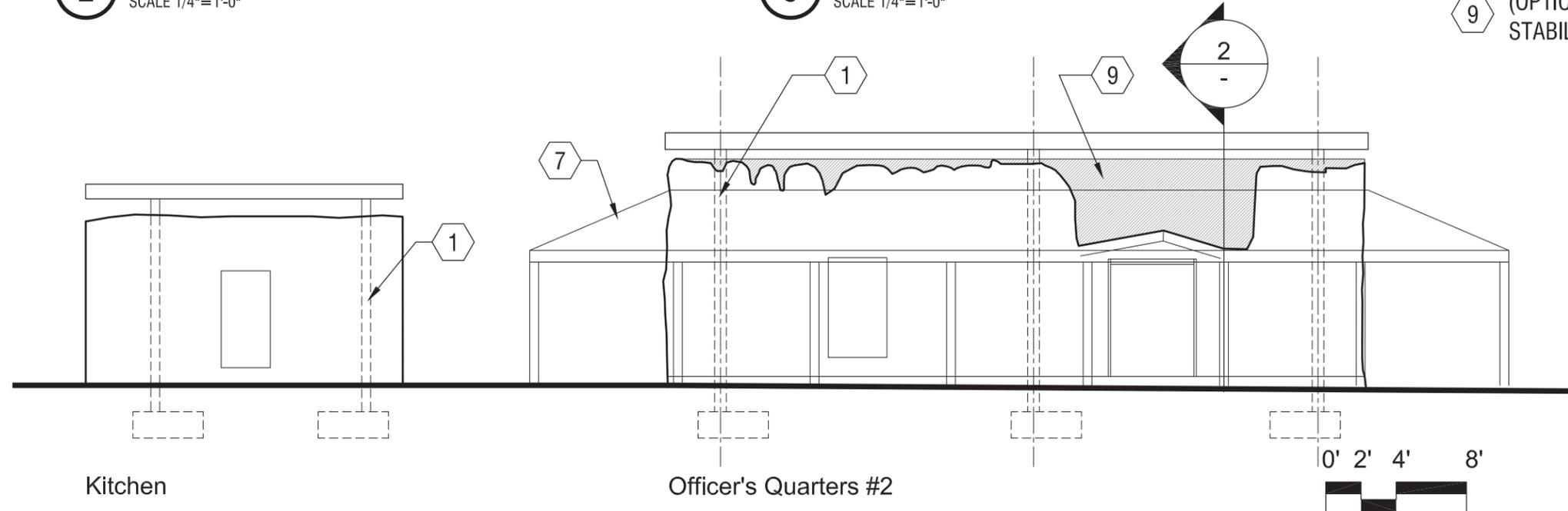
2 Optional Wall Section at New Porch Roof
SCALE 1/4"=1'-0"



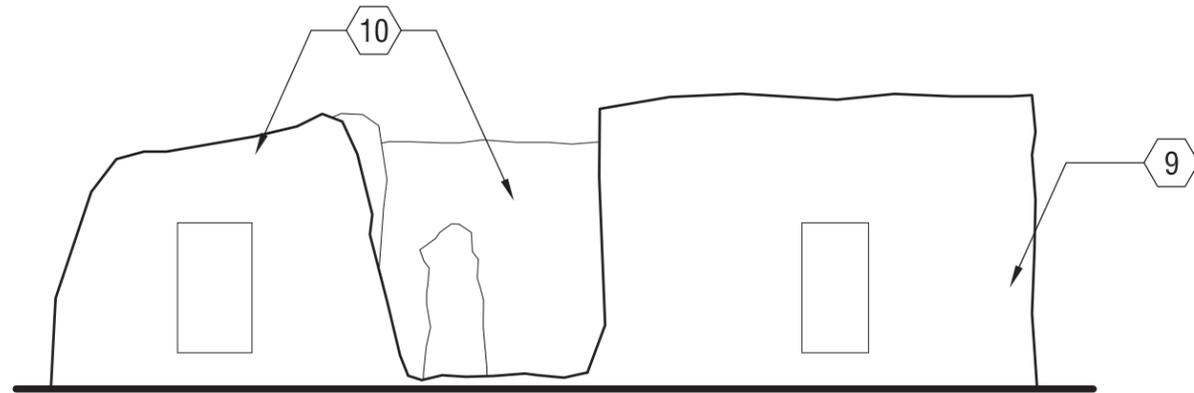
3 Wall Section at New Porch Roof
SCALE 1/4"=1'-0"

KEYNOTES

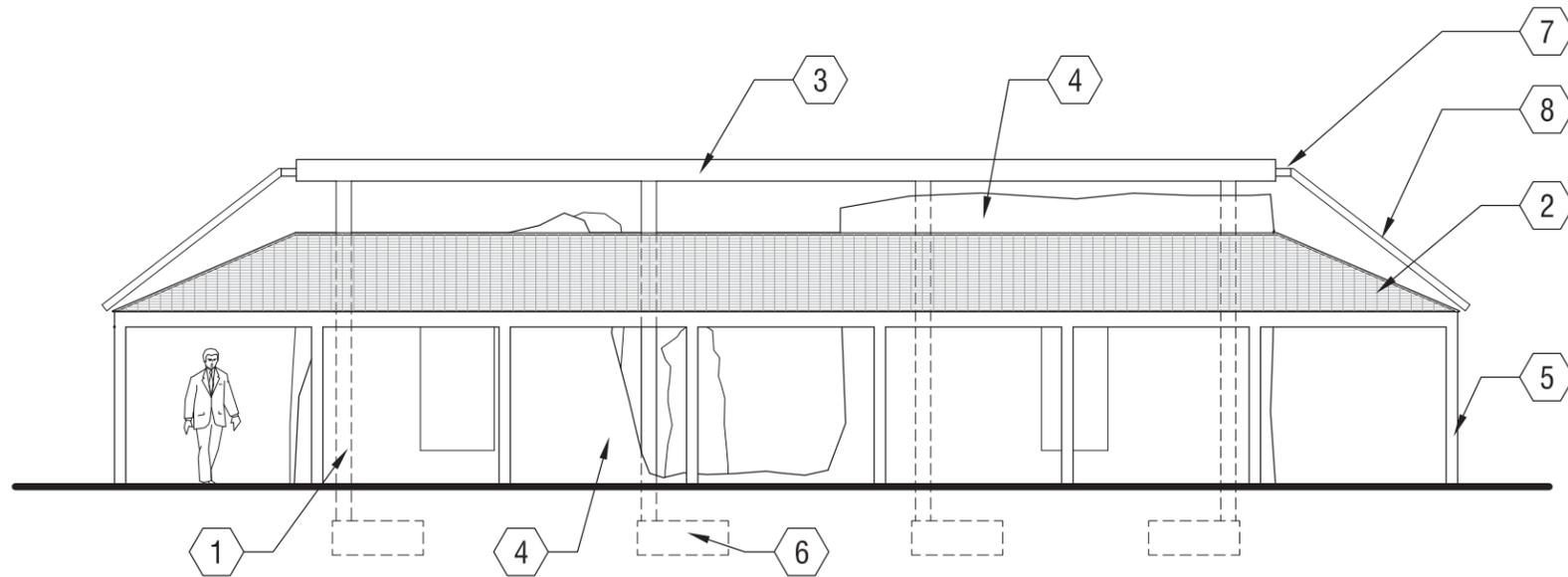
- 1 NEW STEEL COLUMN AT INSIDE OF EXISTING ADOBE WALL.
- 2 NEW STEEL TUBE ATTACHED TO NEW STEEL COLUMN. WELD THREADED ROD TO STEEL TUBE AND CORE THROUGH ADOBE WALL. ATTACH STEEL PLATE THREADED ROD. WELD NEW STEEL PORCH JOIST TO STEEL PLATE.
- 3 NEW STEEL FRAME WITH METAL ROOF.
- 4 EXISTING ADOBE WALL. REPAIR AS REQUIRED.
- 5 EXISTING ADOBE OR NEW ADOBE INFILL, IF REQUIRED. CONSIDER DISTINGUISHING NEW ADOBE FROM OLD WITH MUD PLASTER OR DIFFERENT COLOR OF ADOBE.
- 6 12,000 LB. TEST POLYESTER WEBBING (IF REQUIRED) AT LINTEL HEIGHT. TIE TO WOOD LINTELS AND TO INTERIOR STEEL COLUMNS.
- 7 PERFORATED METAL ROOF.
- 8 STEEL STRUT TO CARRY GHOSTED PORCH FRAME.
- 9 (OPTIONAL) NEW ADOBE INFILL, AS REQUIRED TO STABILIZE WALL.



1 Optional East Elevation with Adobe Infill
SCALE 1/8"=1'-0"



Existing South Elevation



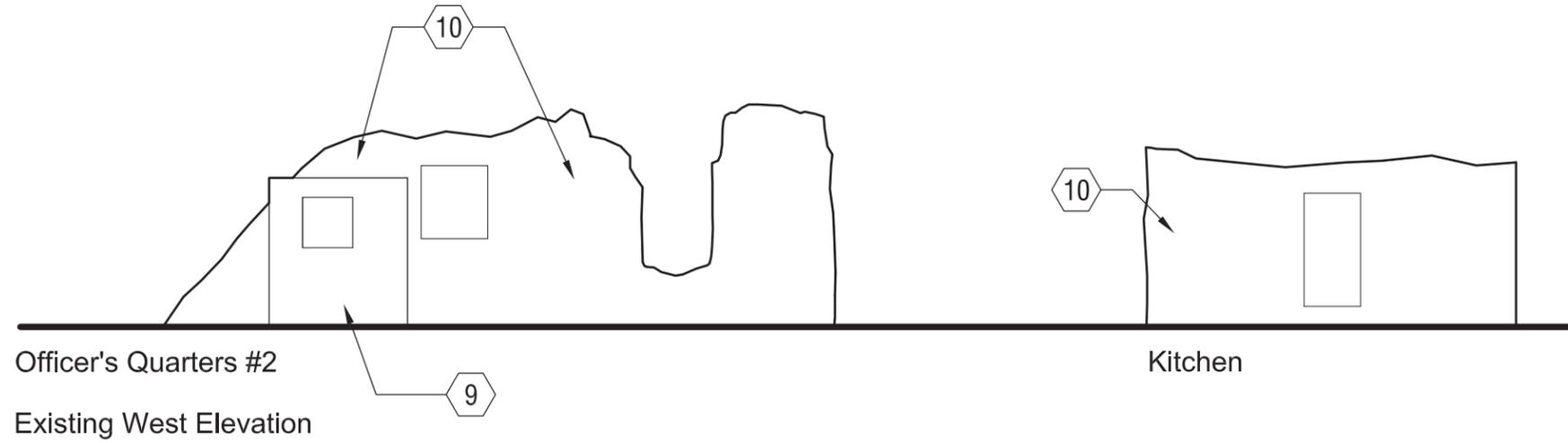
Proposed South Elevation

KEYNOTES

- 1 NEW STEEL COLUMN TO SUPPORT GHOSTING.
- 2 NEW STEEL FRAME WITH PERFORATED METAL ROOF AT PORCH GHOSTING.
- 3 UPPER GHOST FRAMING TO DEFINE EXTENT OF FORMER FORT-ERA BUILDING.
- 4 EXISTING ADOBE WALLS TO BE PRESERVED IN PLACE. REPAIR UNSTABLE AREAS WITH LIKE MATERIALS. CONSIDER POLYESTER WEBBING ATTACHED TO NEW STEEL COLUMNS TO PROVIDE ADDITIONAL STABILITY.
- 5 STEEL POST AT GHOSTED PORCH FRAME.
- 6 CONCRETE FOOTING AT NEW STEEL COLUMN. SET FOOTINGS TO AVOID HISTORIC SUBSURFACE FOUNDATIONS.
- 7 STEEL CANALE TO DRAIN UPPER ROOF.
- 8 STEEL RAIN WATER LEADER FROM CANALE TO EDGE OF PORCH GHOSTING.
- 9 POST FORT-ERA POURED-IN-PLACE CONCRETE ROOM TO BE REMOVED.
- 10 EXISTING ADOBE WALL.

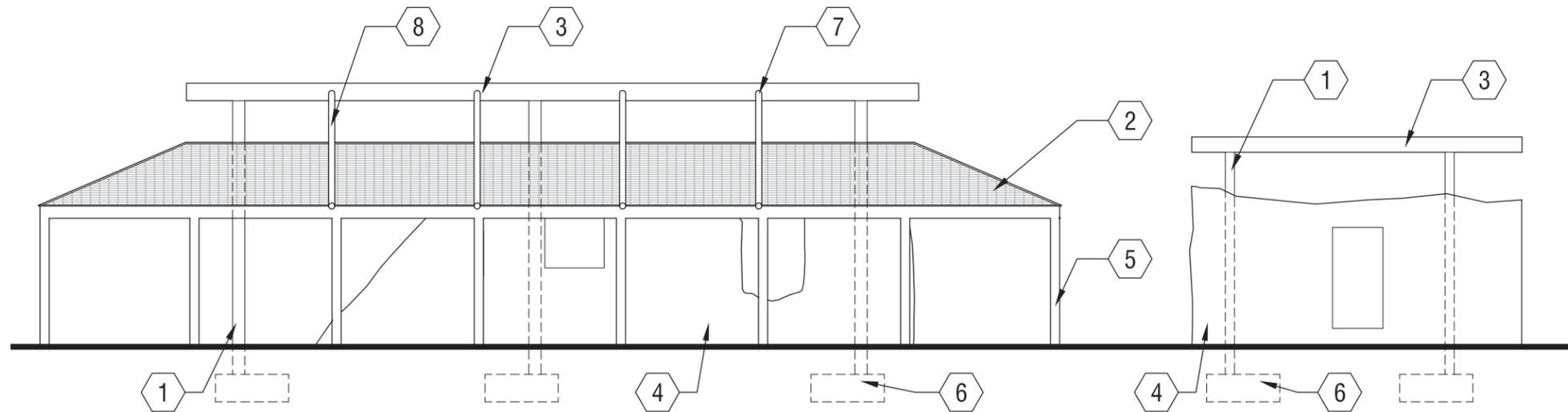


Officer's Quarters #2



Officer's Quarters #2
Existing West Elevation

Kitchen



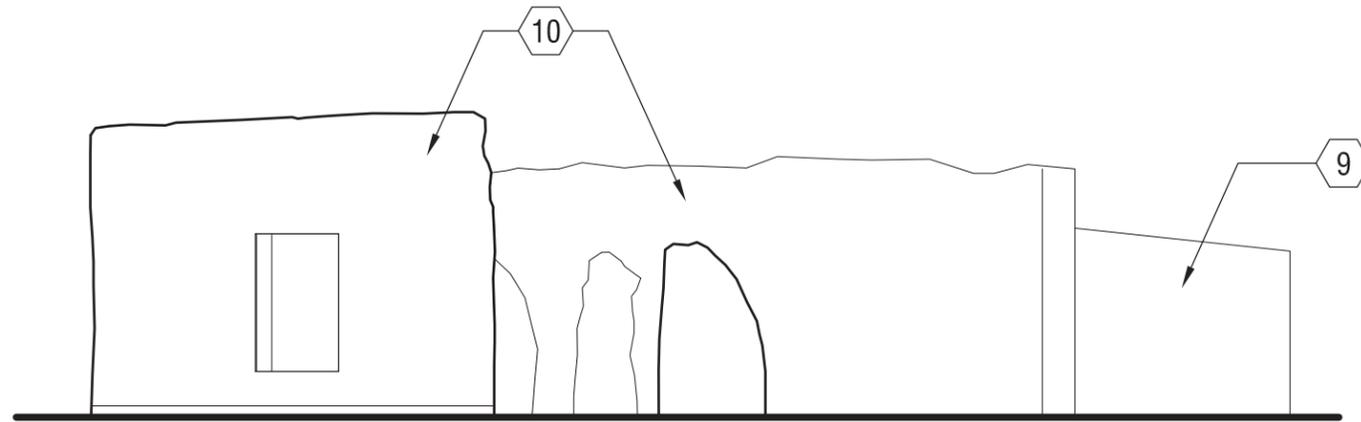
Officer's Quarters #2
Proposed West Elevation

Kitchen

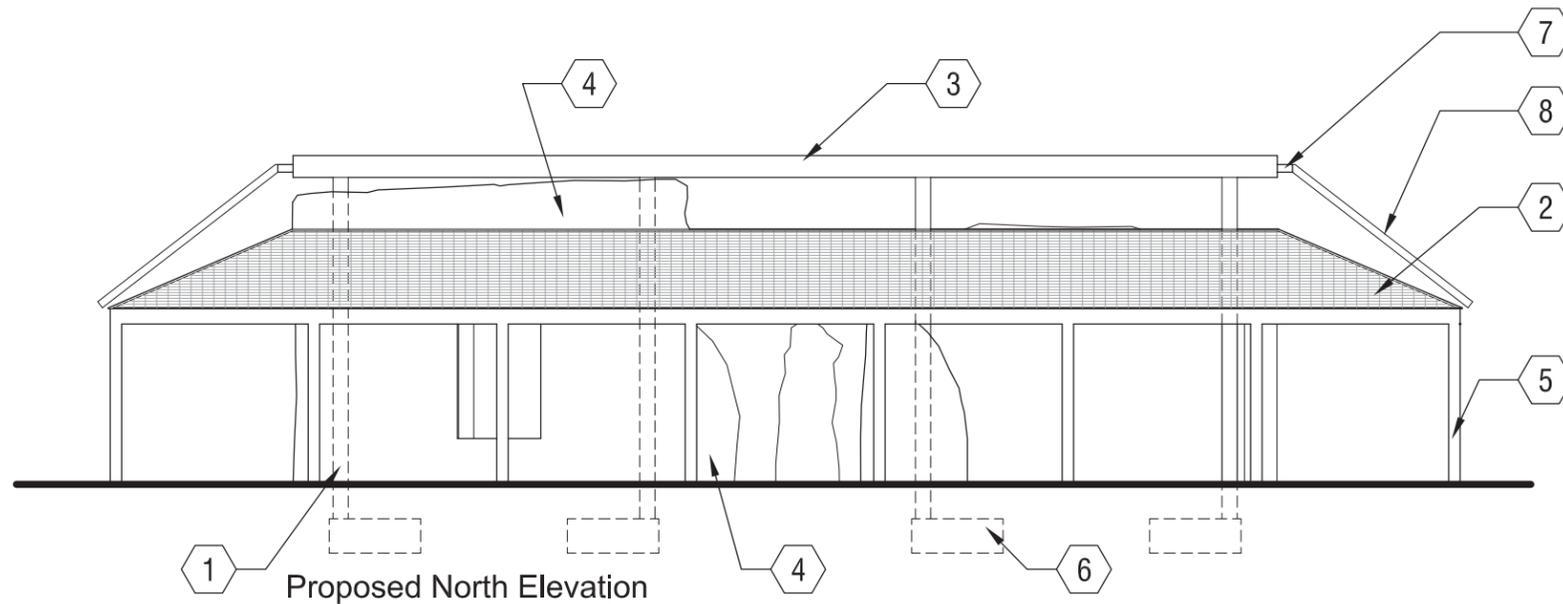
KEYNOTES

- 1 NEW STEEL COLUMN TO SUPPORT GHOSTING.
- 2 NEW STEEL FRAME WITH PERFORATED METAL ROOF AT PORCH GHOSTING.
- 3 UPPER GHOST FRAMING TO DEFINE EXTENT OF FORMER FORT-ERA BUILDING.
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- 7 STEEL CANALE TO DRAIN UPPER ROOF.
- 8 STEEL RAIN WATER LEADER FROM CANALE TO EDGE OF PORCH GHOSTING.
- 9 POST FORT-ERA POURED-IN-PLACE CONCRETE ROOM TO BE REMOVED.
- 10 EXISTING ADOBE WALL.

Officer's Quarters #2



Existing North Elevation



Proposed North Elevation

KEYNOTES

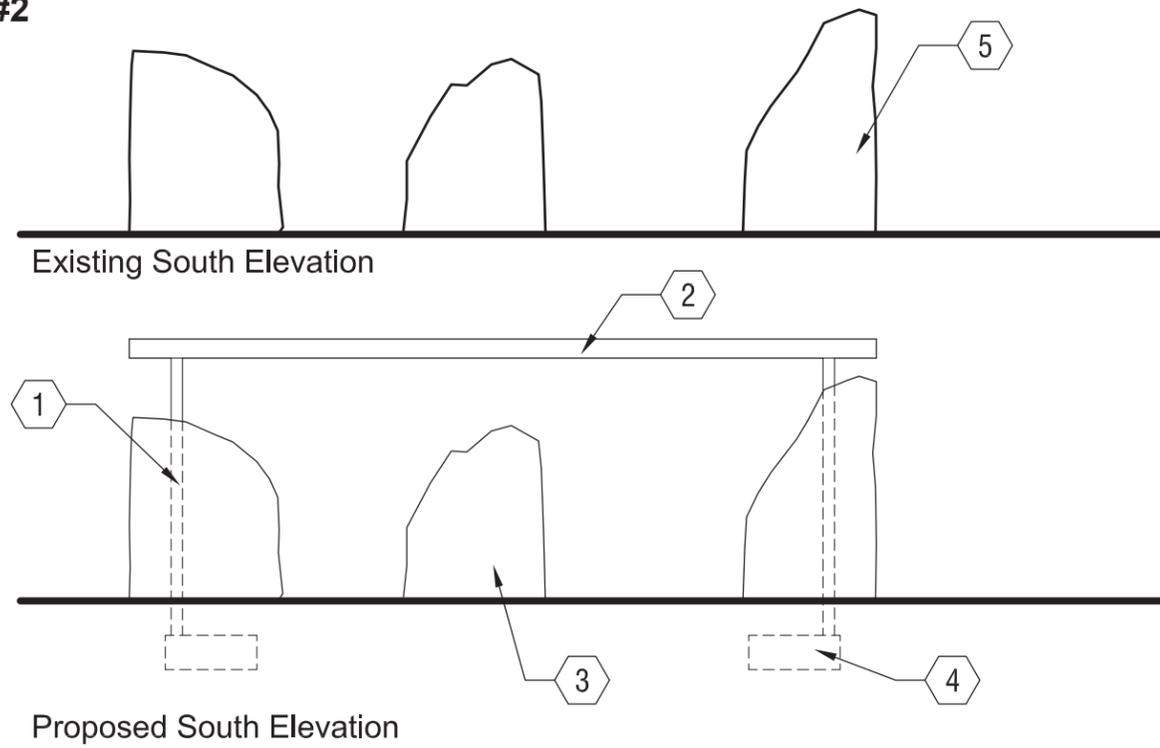
- 1 NEW STEEL COLUMN TO SUPPORT GHOSTING.
- 2 NEW STEEL FRAME WITH PERFORATED METAL ROOF AT PORCH GHOSTING.
- 3 UPPER GHOST FRAMING TO DEFINE EXTENT OF FORMER FORT-ERA BUILDING.
- 4 EXISTING ADOBE WALLS TO BE PRESERVED IN PLACE. REPAIR UNSTABLE AREAS WITH LIKE MATERIALS. CONSIDER POLYESTER WEBBING ATTACHED TO NEW STEEL COLUMNS TO PROVIDE ADDITIONAL STABILITY.
- 5 STEEL POST AT GHOSTED PORCH FRAME.
- 6 CONCRETE FOOTING AT NEW STEEL COLUMN. SET FOOTINGS TO AVOID HISTORIC SUBSURFACE FOUNDATIONS.
- 7 STEEL CANALE TO DRAIN UPPER ROOF.
- 8 STEEL RAIN WATER LEADER FROM CANALE TO EDGE OF PORCH GHOSTING.
- 9 POST FORT-ERA POURED-IN-PLACE CONCRETE ROOM TO BE REMOVED.
- 10 EXISTING ADOBE WALL.

POSTER
FROST
ASSOCIATES, INC

Fort Lowell Park Master Plan
Adkins Parcel Preservation Plan
Analysis and Drawings

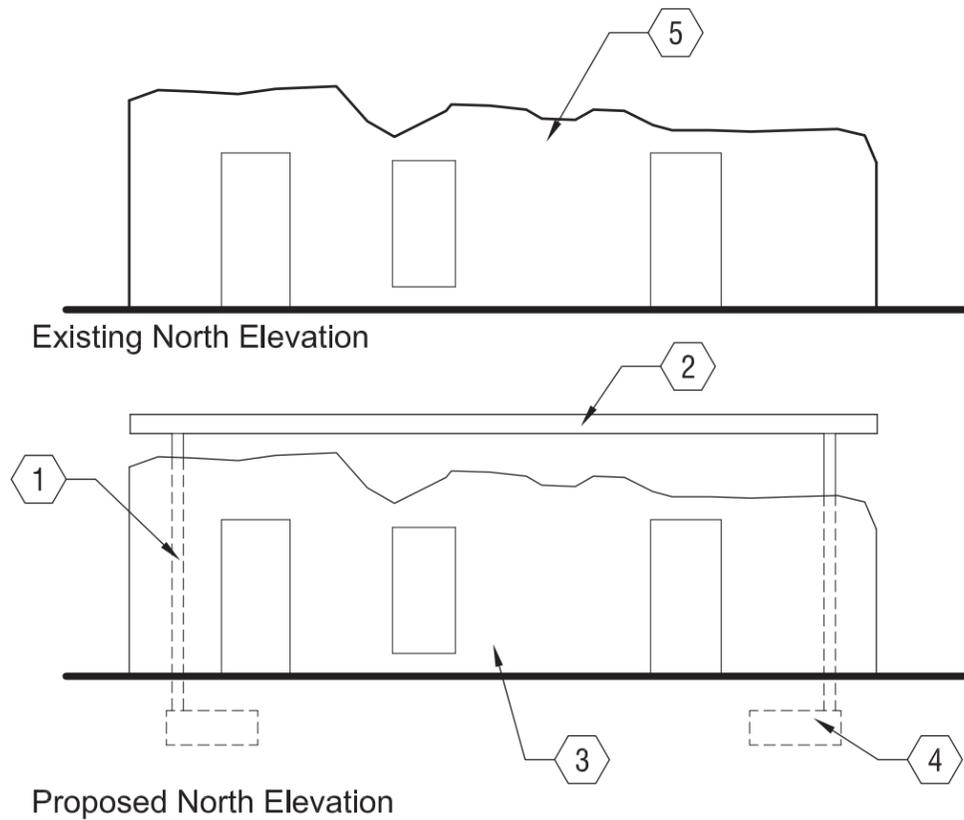


Officer's Quarters #2



KEYNOTES

- 1 NEW STEEL COLUMN TO SUPPORT GHOSTING.
- 2 UPPER GHOST FRAMING TO DEFINE EXTENT OF FORMER FORT-ERA BUILDING.
- 3 EXISTING ADOBE WALLS TO BE PRESERVED IN PLACE. REPAIR UNSTABLE AREAS WITH LIKE MATERIALS. CONSIDER POLYESTER WEBBING ATTACHED TO NEW STEEL COLUMNS TO PROVIDE ADDITIONAL STABILITY.
- 4 CONCRETE FOOTING AT NEW STEEL COLUMN. SET FOOTINGS TO AVOID HISTORIC SUBSURFACE FOUNDATIONS.
- 5 EXISTING ADOBE WALL.



1 North and South Kitchen Elevations
SCALE 1/8"=1'-0"

Officer's Quarters #3



Figure 45: Officer's Quarters #3 looking southwest from Cottonwood Lane.



Figure 46: Officer's Quarters #3, looking northwest.



Figure 47: Officer's Quarters #3, north elevation.

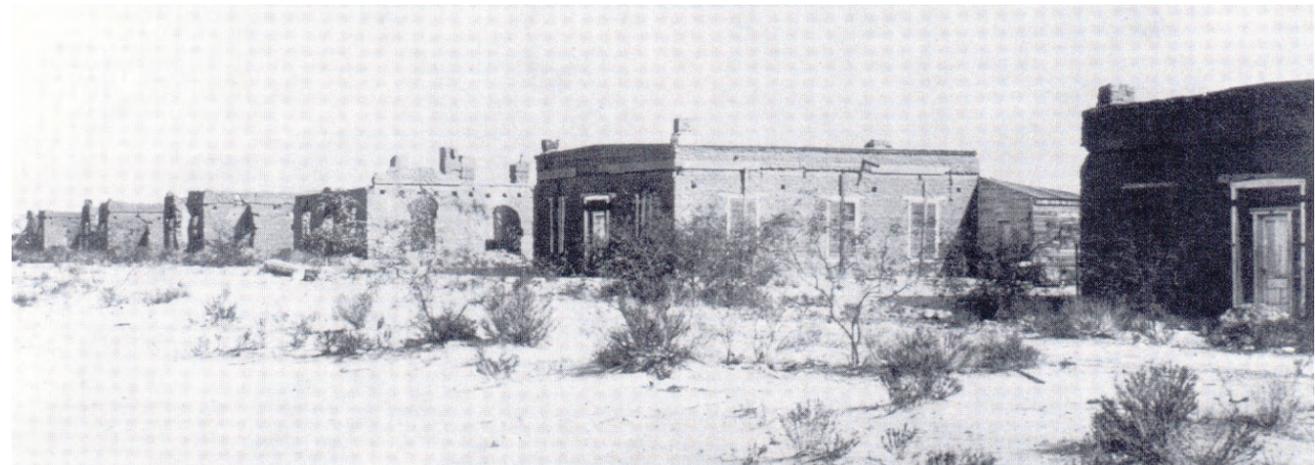


Figure 48: Fort Lowell Officer's Row, around 1904, with Officer's Quarters #3 and its wooden addition.

Officer's Quarters #3
Site



Figure 49: Drainage swale to the east of the building.

Existing:

The back-of-curb line along Craycroft Road is higher than Officer's Quarter's # 3 causing water to drain towards the east wall of the building. A drainage swale was created in 2007 to capture this runoff and evacuate it away from the building. Water drains in two swales, starting at a high point at the southeast corner of the building. One swale carries water north, parallel to the east side of the building, and discharges this water north of the building. The second swale runs parallel to the south side of the building. The water discharges towards the northwest.

Additional runoff is conveyed by a swale created between the south side of Officer's Quarters #2 and the north elevation of Officer's Quarters #2 Kitchen. The natural flow of water at the Adkins Parcel is from southeast to northwest.

Proposed:

A comprehensive grading and drainage plan for the entire Adkins Parcel will be developed during project implementation. Water harvesting opportunities should be pursued to enhance the landscape. A foundation drainage system is proposed for the Officer's Quarters #2 and #3 to alleviate the moisture around the building.

Foundation



Figure 50: West wall after removal of the *contrapared*.

Existing:

The buildings at Fort Lowell were constructed without foundations. According to an archaeological report prepared by Johnson in 1960, 4 to 5 courses of adobe, the same thickness of the wall above, were laid in shallow trenches on top of the local caliche subsurface. In the 20th century, concrete contra-pared and cement-based parging was applied to the walls at the ground level to presumably stop deterioration. These non-pervious treatments have contributed to basal erosion. The condition of subsurface adobes has not been evaluated. The most notable area of subsidence is at the northeast corner of the building where moisture has caused the wall to settle.

Proposed:

Areas of the foundation walls that have settled will need to be repaired. Two options have been recommended: Option one is to stabilize the existing walls using low impact "adobe cages" per the design of architectural conservators, Crocker, Ltd. The other option is to over-excavate and compact the soil before rebuilding the walls. A foundation drain is proposed to be installed at the outside edge of the reconstructed wrap-around porch.

Exterior Walls



Figure 51: East Elevation

Existing:

Exterior walls are constructed of unfired adobe brick with a dimension of 20" x 12" x 4". Adobe bricks were laid crosswise at exterior walls to give the walls a 20" thickness. Exterior walls do not appear to have been plastered during the Fort Period. Plaster was likely added in the early decades of the 20th Century during the Sanatorium Period. Exterior adobe walls are in fair condition. The northeast corner has separated and subsided presumably due to moisture being held in the soil on the east side of the building. As a whole, the east wall suffers from basal coving as a result of moisture that has wicked into the adobe and is trapped by the impervious cement stucco. Deterioration is also present around window openings and below scuppers on both the east and west walls. Large cracks are visible on the north wall, possibly as a result of the movement in the northeast corner.

Proposed:

The removal of the existing plaster will be necessary to completely evaluate the condition of the adobe walls. A combination of mud leveling coats and partial and full adobe blocks will be required, depending upon the depth of the adobe to be repaired. Although no exterior plaster was present on the building during the Fort Period, it is desirable from a maintenance and security standpoint. New mud plaster leveling and finish coats, tested for adhesion and resistance to cracking, will be used.

Exterior Doors



Figure 52: North wall showing Fort-era door at center.

Existing:

It is probable that main entry door on north side of building dates to the Fort Period as it appears in the 1904 photo of Officer's Row. This door is also well documented in the HABS drawings. Doors are 4-panel, wood. The door opening leading into Bedroom 1 at the northeast corner was added during the early 20th Century. It appears to have been a window during Fort Period. The door in this 20th century opening does appear to date to the Fort-era, however. The exterior door at Bedroom 2 is also original, but in very poor condition. The exterior doors at the Dining Room and Kitchen are 5-panel doors that appear to have been added during the early 20th Century.

Proposed:

Restore remaining Fort-era doors. Reconstruct new doors to replace non Fort-era doors, based on extant material and HABS documentation. Frosted glass detail shown on HABS drawings should be restored on the north door. Salvage any existing historic hardware and reuse, if possible. New hardware should be customized to match Fort-era hardware.

The following pages summarize the treatments for the different building components at Officer's Quarters #3. More information, including an assessment by Crocker Ltd., is included in the Appendix.

Officer's Quarters #3, Continued

Exterior Windows



Figure 53: Original window to be restored.

Existing:

By all appearances, many of the existing windows date to the Fort-era. The windows are well documented in the HABS drawings and are in good to fair condition. The windows are double-hung, 6 over 6 with wood sashes and frames. Counterbalances within the jamb are on braided cords. The glass is clear. Window condition varies, with a window in the Living Room nearly intact. Other windows have broken and replacement sashes and muntins that will need to be repaired. The two windows on the east wall have a slightly different frame profile. These two windows appear to have been replaced at an unknown date.

Proposed:

Repair the existing wood windows to working condition. Historic material should be preserved whenever possible. Where window frames have to be removed to repair adjacent adobe walls or lintels, the frames should be documented, removed and reinstalled. The two window frames and sashes for the windows on the east wall will need to be replicated to match an original Fort-era window.

Roof Framing



Figure 54: View of the ceiling showing wood beams.

Existing:

Existing roof framing consists of several layers of framing members over original Fort-era framing. The original framing system consisted of 3" x 9" rough sawn beams at 16" O.C. These beams run from east to west and appear to bear on the interior walls at the Dining Room and Zaquan. Some of the 3" x 9" framing members are visible at exposed areas of ceiling. At the exterior bearing walls, where much of the ceiling has come loose, the beams are badly damaged and will need to be repaired. Furthermore, There is no connection between the beams and adobe walls. During the first decade of existence, the roof was dirt supported by saguaro ribs. Below the ceiling was mantas (cloth) to collect any dirt that came loose.

Later framing consists of 3" x 4" wood members placed perpendicular to the original framing. 1" x 6" was placed on top of the later framing. The date of this later framing is from the 20th Century.

Proposed:

The existing roofing material will need to be removed to access the roof framing below. Where beam ends are decayed, new wood sections will be spliced to the solid ends of existing beams using new glass fiber rods. Wood that is structurally non-threatened may be repaired with epoxy. Beams will be attached to the exterior adobe walls. Polyester webbing is one approach being considered.

Roofing



Figure 55: Roof prior to installation of temporary roof.

Existing:

The early Fort-era roof consisted of dirt on saguaro ribs. After problems with leaking, tin was installed over the dirt roofs. Later layers of framing and roofing were added throughout the 20th Century. In 2007, a temporary roof was placed over the entire building that consists of an asphalt emulsion seal coat, a layer of yellow fiberglass fabric and another emulsion coat.

Proposed:

The entire roof is proposed to be rebuilt, starting from the original framing. Since the new roof will be hidden from view, insulation may be added on top of the existing roof. A new built-up or membrane roof will be installed over the entire building.

Eaves/ Gutters/ Downspouts



Figure 56: Existing canales at east wall.

Existing:

The upper roof drains to the east and west parapets where there are 4 canales near the top of each wall. The canales have been problematic, especially above the window at the northwest corner where the adobe and wood lintel above the window are severely deteriorated and supported with bracing. Although the 1904 shows one remaining canale on the west side of the building, the existing canales do not appear to be from the Fort Period. Fort-era photographs show extensions from the canales to the edge of the wrap-around porch.

Proposed:

New canales and leaders from the canales to the edge of the lower roof will be reconstructed based on historic documentation. The discharge of water will be coordinated with new drains placed at the edge of the porch. Passive water harvesting strategies should be utilized to direct rainwater towards planting areas and away from foundations.

Officer's Quarters #3, Continued

Chimneys



Figure 57: Northeast chimney prior to de-construction.

Existing:

Due to their fragile condition, four chimneys were documented then de-constructed in 2007. Chimneys were constructed of local, smooth-faced red brick measuring 8-3/8" x 2-3/8" x 4". Three chimneys, including the chimney in the Kitchen, appear on the 1904 photograph. The chimney in Bedroom 2 is not visible in the photograph.

Proposed:

The chimneys will be reconstructed with the bricks salvaged during the deconstruction. Additional bricks will be needed to reconstruct the four chimneys. The new bricks should match the historic bricks in size, color and texture. A modern flue liner should be utilized at fireplaces that will be operational.

Fireplaces



Figure 58: Original Firebrick.

Existing:

The three fireplaces are in fair to poor condition. None of the fireplaces have been tested to determine if they are functional. The fireplace at the northeast corner is part of the exterior wall that has separated from the building. This fireplace will likely need to be completely rebuilt. The other two fireplaces, depending upon how adjacent walls are repaired, can be preserved and repaired. A modern flue should be installed for any fireplaces that will be operational. The firebrick is stamped TCARR, a product that was imported from England between 1827-1918.

The 1940 HABS drawings includes detailed drawings of the fireplaces in the northwest and northeast rooms.

Proposed:

The three fireplaces will be preserved and restored based on physical evidence and HABS documentation. It is desirable to make at least one fireplace fully functional for use in interpretation and for special events. Fireplaces that have to be reconstructed, should be completely documented during the de-construction process, with materials salvaged and reused whenever possible.

Interior Walls



Figure 59: Fort-era plaster with later paint finish.

Existing:

The interior walls are adobe with two coats of plaster. The base coat consists of mud plaster and the finish coat is lime plaster. According to historic documentation this plaster likely dates to the mid 1880s. The plaster appears to have been painted in many locations. The exact chronology of existing finishes will be determined during the design phase.

Interior walls do not appear connected to the exterior walls allowing differential movement between the interior and exterior walls to occur. This movement has caused some cracking of the interior plaster.

Proposed:

The goal is to preserve the existing plaster wherever possible. Preserving the plaster helps to maintain the building's high level of integrity. Plaster that is firmly attached to the adobe walls should be preserved. Loose plaster should be removed and replaced with a new base coat of mud plaster and a finish coat of lime plaster. Loose paint should be removed without damaging the lime plaster below. Additional research and design is required to determine the age of the paint and if it should be removed in its entirety.

Interior Doors



Figure 60: Historic interior door at northwest room.

Existing:

Interior doors are stile and rail wood doors. The doors appear to date to the Fort-era. Not all opening currently have doors; it's possible that doors being stored in the Dining Room are original doors that can be re-hung. Most of the hardware on the doors has been replaced, although several sets of original hinges remain.

According to the HABS drawings, the door between Dining Room and Bedroom #2 was removed and remodeled as a china cabinet around 1909 or 1910.

Proposed:

Original wood doors and original hardware will be preserved. Doors being stored in the Dining Room will be re-hung in their original openings. The china cabinet between the Dining Room and Bedroom #2 will be removed and a new door, to match the historic style will be installed.

Historic hardware should be utilized to re-create the look and feel of the Fort-era interiors.

Officer's Quarters #3, Continued

Flooring



Figure 61: Original wood floor.

Existing:

Following initial construction, the floors were earthen with a good amount of sand and gravel. In 1882, wood floors were installed. 2" x 6" sleepers were installed directly on the ground with redwood boards placed perpendicular to the sleepers. The 1940 HABS drawings note that floors were pine, not redwood. Since the floors appear to date to the Fort-era, more analysis is needed to determine if all the floors are original and if the floors are pine or redwood. The wood floors have been covered with particleboard and vinyl flooring in the Kitchen and Pantry. The wood floors are in fair to good condition with most of the decay occurring in areas where water has entered the building.

The wood floors in the northeast and northwest rooms were replaced with colored concrete slabs. This change appears to have occurred around the same time as the HABS documentation.

Proposed:

Concrete floors will be removed and replaced with new wood floors. Where wood floors are severely damaged, they will be replaced. Floors that are minimally damaged should be preserved and a wood restoration system will be applied to protect the floors. If an accessible path through the building is desired, the floors will need to have transitions from the northern room to the southern rooms. The is currently a 2-3 inch change in elevation. Since the rooms are accessible from the exterior, the need to create interior accessibility may not be required.

Ceilings



Figure 62: Exposed saguaro ribs above plaster ceiling.

Existing:

The ceilings of buildings constructed at Fort Lowell were originally manta cloth hung below the structural wood beams. The manta cloth was designed to catch any material that fell through the saguaro ribs that created a "ceiling" between the wood beams and the earth placed on the roof. Plastered ceilings were added, along with tin roofs, because the original earthen roofs proved to be problematic. Ceiling heights vary. The date of the ceilings appears to have been the mid to late 1880s; additional research will be completed during the design phase to confirm. Ceiling are in fair condition with the ceilings adjacent to the exterior walls more severely damaged due to excessive water damage.

Proposed:

Wherever possible, existing plaster ceilings should remain. Damaged ceilings should be repaired with new lath and plaster. Because the roof cavity will be de-constructed from above, it may be possible to make the necessary structural repairs without disturbing the existing ceilings....

A "truth window" should be installed to be used during interpretation of the building. The "truth window" will allow the visitor to understand the construction system used in the building by displaying the saguaro ribs and wood beams.

Interior Wood Trim



Figure 63: Original wood base.

Existing:

Flat pine and redwood trim measuring 4-1/4" typical is installed around all windows and doors. There is also a picture rail at the Dining Room and Bedroom #1. The date of the trim is unknown, but presumably dates to the Fort-era. The trim is in fair to good condition.

Proposed:

The existing wood trim will be preserved. Any severely damaged areas will be replaced with in-kind material. Wood trim that is minimally damaged will be restored using a wood restoration system. Any wood trim that has to be removed to complete other repairs should be labeled and reinstalled. Existing finishes will be analyzed to determine the finish during the Fort-era.

Built-In Features



Figure 64: 20th Century bead board cabinets.

Existing:

According to the HABS documents, a number of built-in features, constructed from beadboard, were added in 1909 or 1910. These features include cabinets in the Kitchen and a china cabinet in the doorway between the Dining Room and Bedroom #2. The wainscot at the exterior door at Bedroom #1 is constructed of the same beadboard and was likely installed at the same time.

Proposed:

Features added following the abandonment of the Fort, including any built-in features from the early 20th Century, will be removed. This includes all built-in beadboard cabinets.

Officer's Quarters #3, Continued
Insulation and Weather-stripping



Figure 65: Existing ceiling cavity without insulation.

Existing:

No insulation currently exists in the roof cavity. When originally constructed, the earthen roof helped to temper the inside environment. The high ceilings also helped to moderate indoor temperatures. It is not clear if any of the original earthen material has been retained above the saguaro ribs. De-construction of the existing roof and loose beams placed on top will allow a more thorough evaluation of the composition of the existing roof cavity.

Proposed:

Tapered roof insulation should be added to create a thermal barrier at the roof. Since the building will likely not be mechanically conditioned, circulation will be done passively. Small gaps in the exterior envelope will help alleviate the build-up of heat on this interior.

Mechanical (HVAC)



Figure 66: Historic fireplace.

Existing:

The building most recently contained through-the-wall swamp coolers and wood-burning fireplaces and stoves. These features, with the exception of the original fireplaces, have been removed.

Proposed:

No modern heating, ventilation and air conditioning (HVAC) system is proposed for the building. Visitors will be able to experience how early settlers used climatically appropriate design strategies for mitigating the harsh conditions. Thick walls with good thermal mass, high ceilings, fireplaces, and porches are examples of the techniques used before the advent of mechanical heating and cooling.

Electrical / Lighting / Special Systems



Figure 67: Knob & tube wiring.

Existing:

The building features knob and tube wiring dating from the Cate period, circa 1910. Some additional wiring, without conduit, was added after the knob and tube. The power in the building is currently turned-off.

Proposed:

Existing knob and tube wiring will be removed. Because the windows will be well shaded by the reconstructed porches, there will be a need for auxiliary light source. A lighting system that is of minimal impact should be considered for use during tours and special events. The concept would be to provide adequate lighting that is so well disguised as to be unnoticeable to the visitor. New outdoor lighting for security and to accentuate the building should also be considered.

Electrical receptacles for use during tours or special events should also be considered. Like the lighting, the receptacles should be designed to fit seamlessly with the interior.

Plumbing



Figure 68: Sink in southwest corner.

Existing:

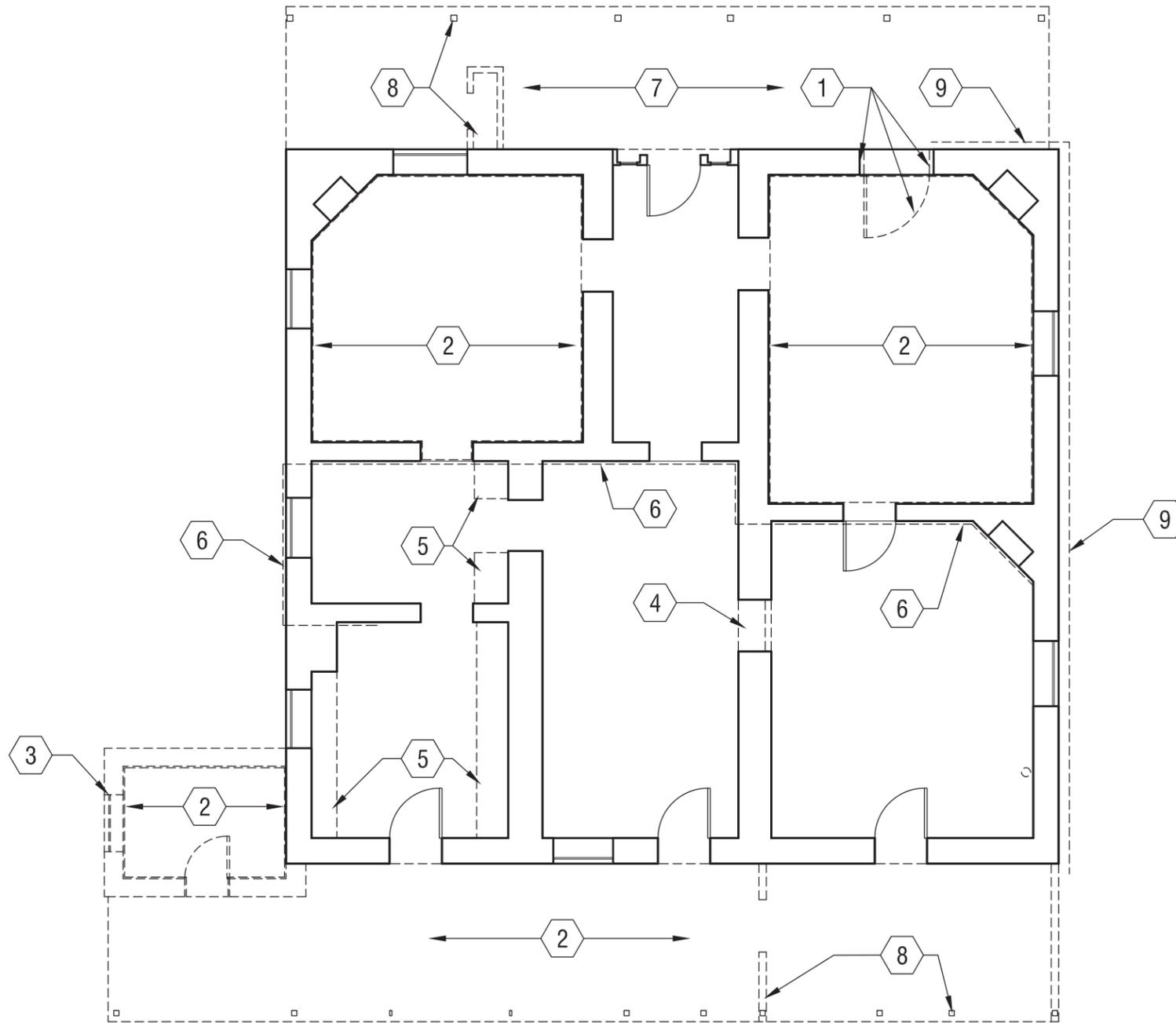
The existing bathroom is in an adobe addition at the southwest corner of the building. This addition appears as a wooden addition in a photograph dating to 1904. The date it was converted to an adobe structure is unknown. The existing Kitchen has a sink and water heater. Gas service enters the building on east side and crosses to the water heater located in the Kitchen.

Proposed:

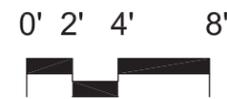
Since the plumbing was added following the Fort-era, all plumbing fixtures and piping will be removed from the building. Removing all water from the building will alleviate a major threat to the building, the opportunity for a water pipe to rupture and saturate the adobe walls.

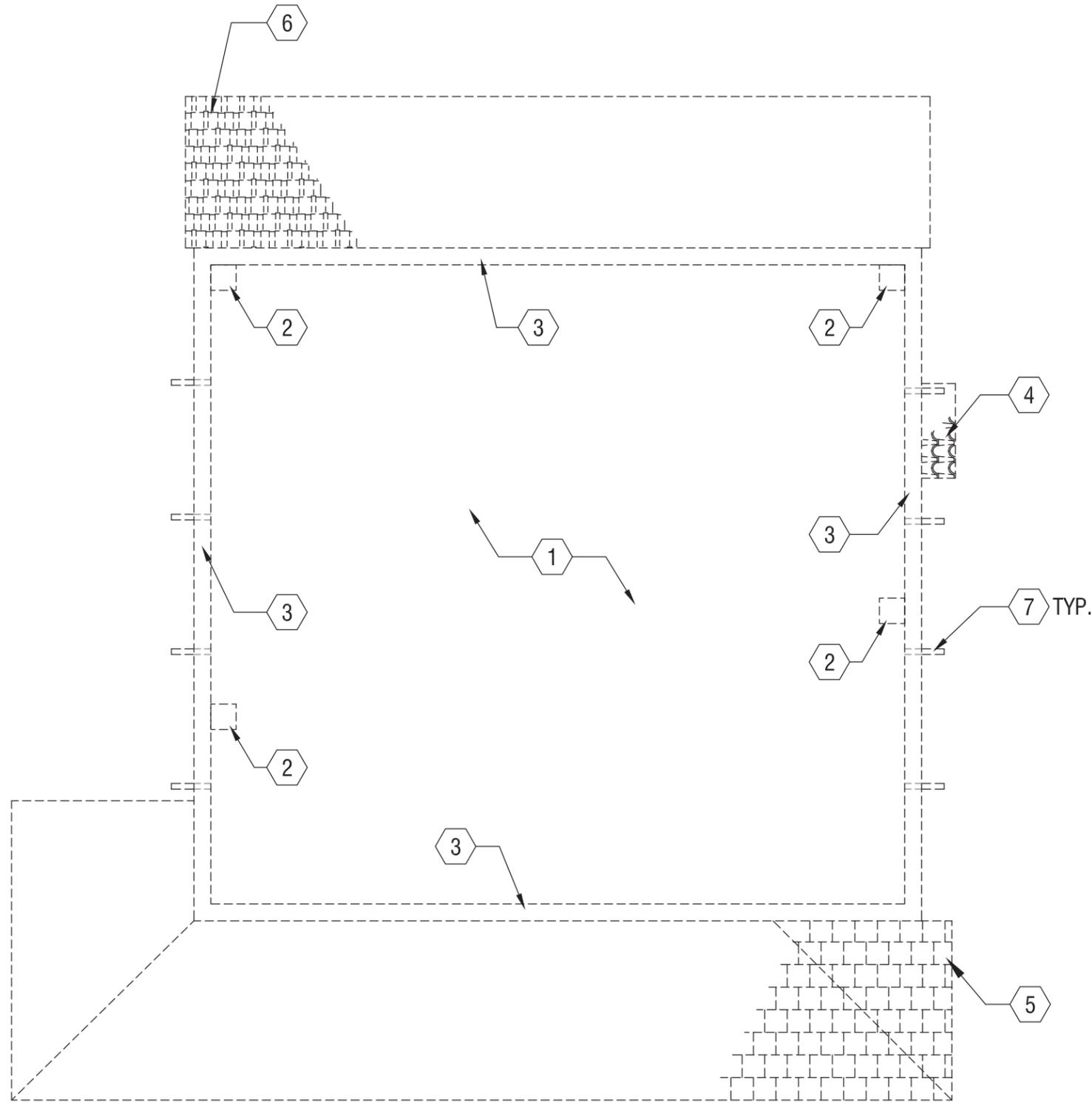
KEYNOTES

- ① REMOVE POST FORT-ERA DOOR AND BEADBOARD WAINSCOT.
- ② REMOVE ADKINS-ERA CONCRETE SLAB.
- ③ REMOVE ADOBE BATHROOM ADDITION.
- ④ REMOVE 20TH CENTURY CABINET PLACED IN ORIGINAL DOOR OPENING.
- ⑤ REMOVE 20TH CENTURY BEADBOARD CABINETS.
- ⑥ REMOVE EXISTING GAS LINE.
- ⑦ REMOVE WOOD FLOOR, INCLUDING SLEEPERS AT NORTH PORCH.
- ⑧ REMOVE WOOD FRAMING AND POSTS AT PORCHES.
- ⑨ REMOVE CONCRETE *CONTRAPARED*.



① De-Construction Floor Plan
SCALE 1/8"=1'-0"





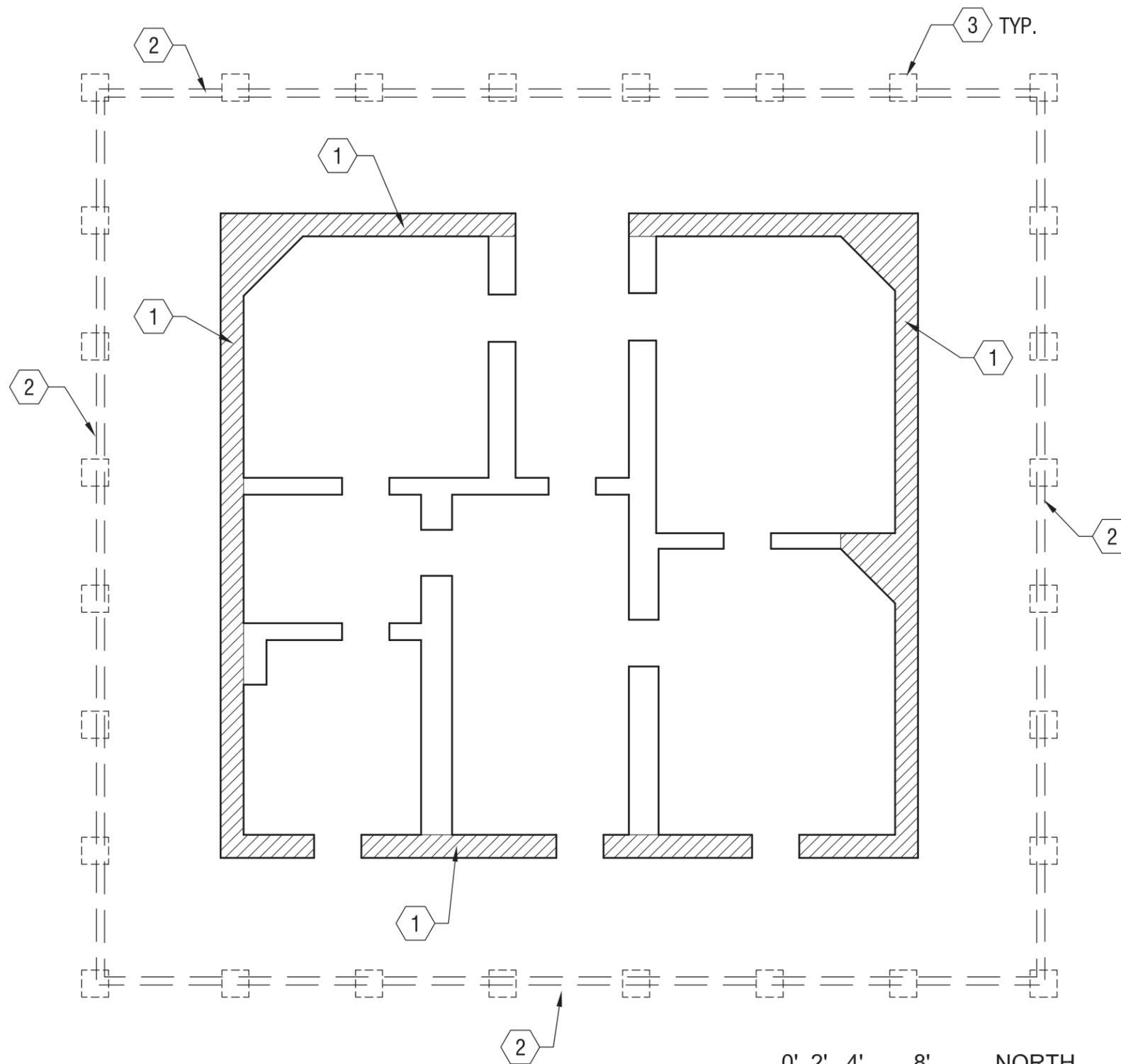
KEYNOTES

- ① REMOVE BUILT-UP ROOF AND DECKING TO EXPOSE WOOD FRAMING BELOW. REMOVE ALL LOOSE BOARDS AND FRAMING PLACED ABOVE ORIGINAL ROOF FRAMING. ORIGINAL ROOF FRAMING CONSISTS OF 2-3/4" X 9" BEAMS WITH SAGUARO RIBS AND EARTH ABOVE.
- ② REMOVE TEMPORARY ROOF PATCH AT ROOF IN PREPARATION OF CHIMNEY RESTORATION. BRICK SALVAGED FROM ORIGINAL CHIMNEYS IN 2007 IS TO BE USED IN THE NEW CHIMNEYS.
- ③ REMOVE CONCRETE CAP FROM TOP OF ADOBE PARAPET WALL.
- ④ REMOVAL CLAY TILE WINDOW AWNING AND ALL ASSOCIATED FRAMING.
- ⑤ REMOVE FIBER CEMENT SHINGLE ROOF AND ALL FRAMING AT SOUTH PORCH.
- ⑥ REMOVE WOOD SHINGLE ROOF AND ALL FRAMING AT NORTH PORCH.
- ⑦ REMOVE EXISTING CANALE.

① De-Construction Roof Plan
SCALE 1/8"=1'-0"



Officer's Quarters #3



KEYNOTES

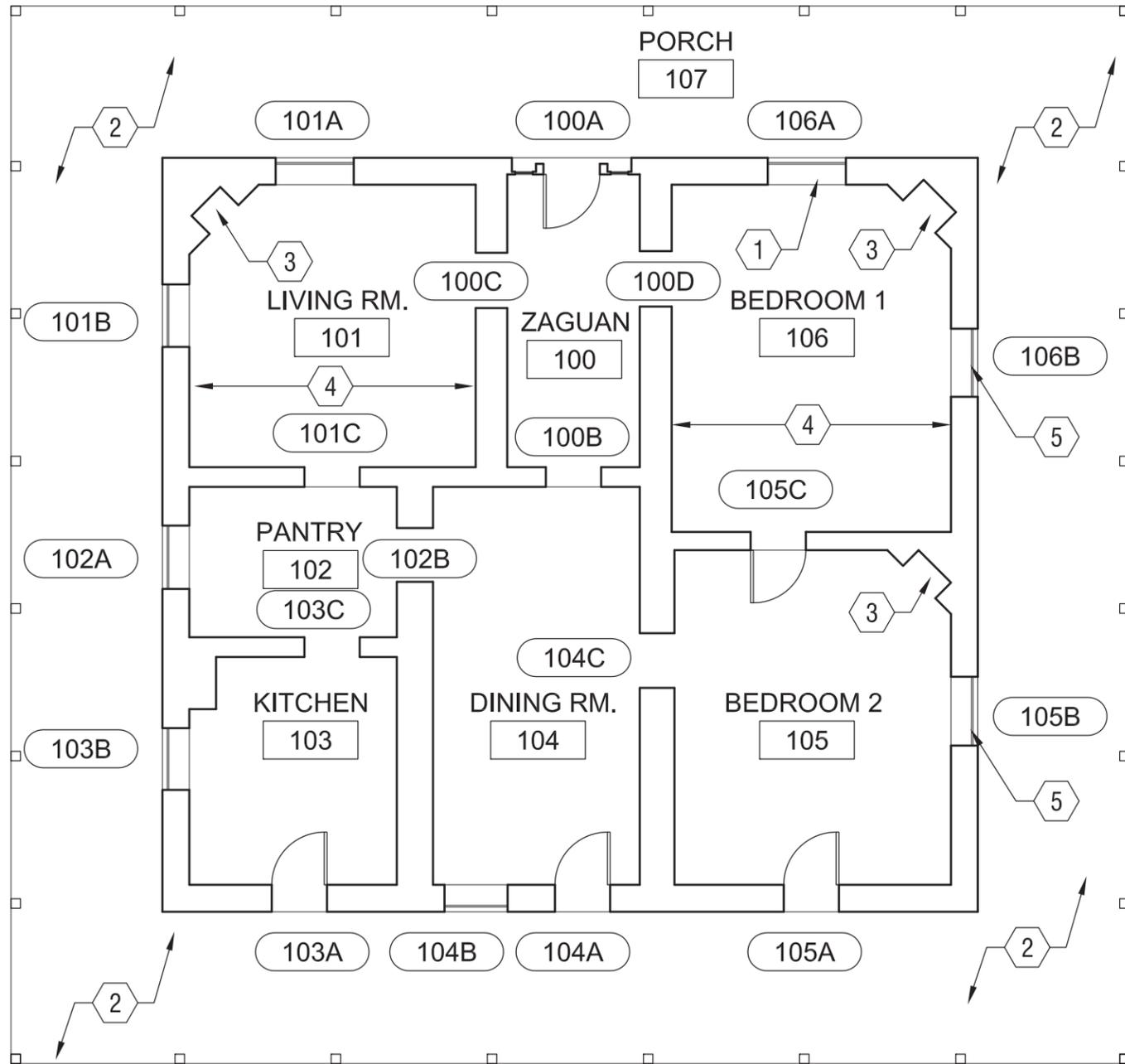
- ① REPAIR ADOBE WALL AS REQUIRED. CONSIDER OVEREXCAVATING AND UNDERPINNING WITH NEW ADOBE BLOCKS OR STABILIZE THE WALLS USING "ADOBE CAGES" DEVELOPED BY ED CROCKER.
- ② FOUNDATION DRAIN AT THE INSIDE EDGE OF NEW PORCH.
- ③ NEW FOOTING AT RECONSTRUCTED PORCH COLUMN.

NOTE:

According to the Alfred E. Johnson Report, based on subsurface investigation at Officer's Quarters No. 5, "Foundations were not present, and the walls were placed on what was apparently the surface of the ground at the time of construction." At Officer's Quarters No. 4 (the Commanding Officer's Quarters that was demolished with construction of Craycroft Road) "The walls of Officer's Quarters No. 4 were underlaid by foundations of four to five courses of adobe bricks. The foundations were placed in trenches dug through a layer of fine, brown sand, the top of which was probably the surface of the ground at the time of construction, to the top of the underlying caliche layer. The foundations were the same thickness as the wall." Source- Building Condition Assessment, 2008.

① Foundation Plan
SCALE 1/8"=1'-0"





KEYNOTES

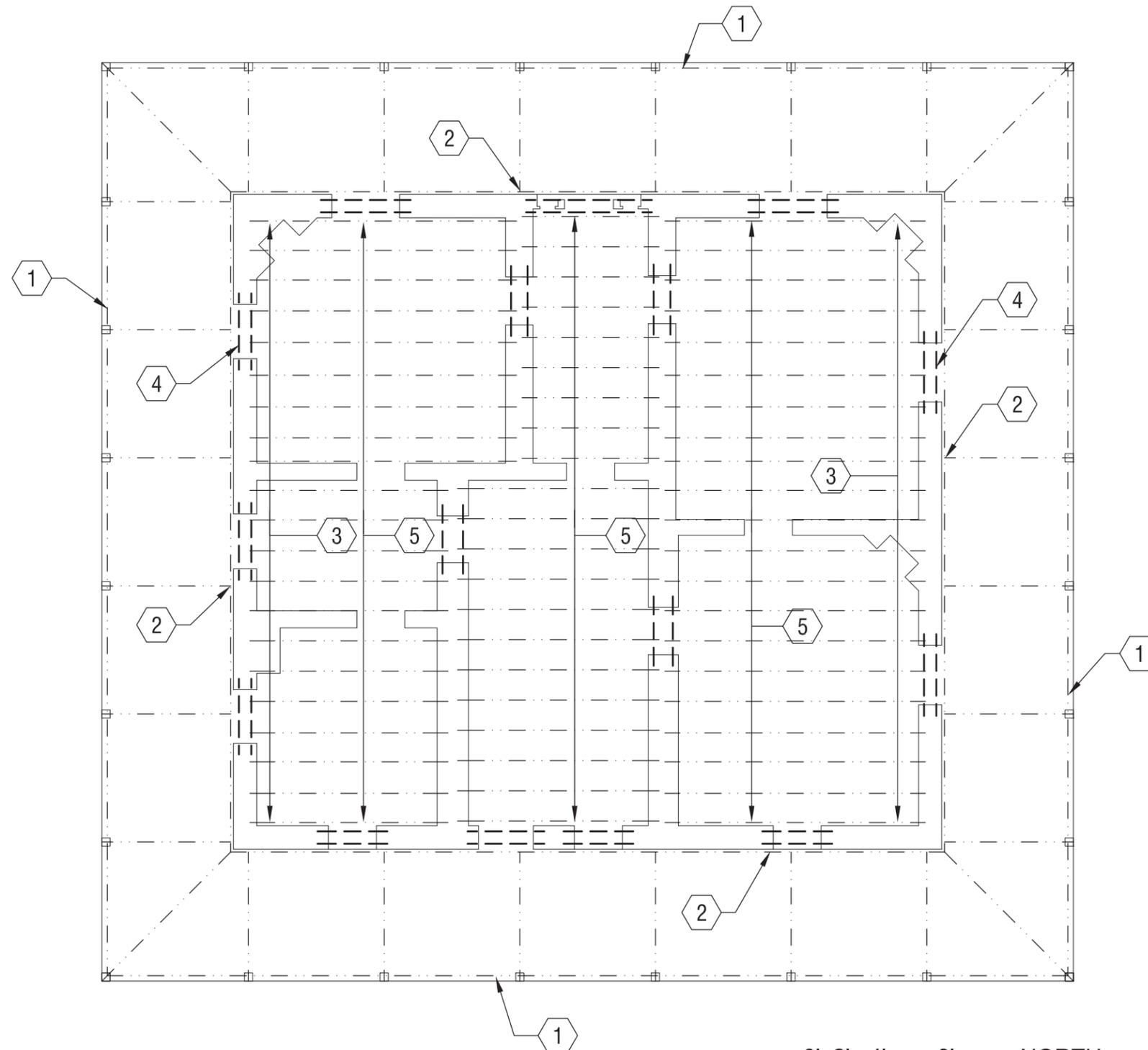
- 1 NEW WOOD WINDOW AT EXISTING DOOR. NEW WINDOW AND FRAME TO MATCH HISTORIC PROFILES.
- 2 RECONSTRUCTED WOOD PORCH WITH STANDING-SEAM METAL ROOF. FLOOR TO BE REDWOOD ON SLEEPERS.
- 3 RESTORE EXISTING FIREPLACE.
- 4 NEW WOOD FLOOR ON NEW WOOD SLEEPERS.
- 5 NEW WINDOW FRAME AND SASH TO REPLACE EXISTING WINDOW. NEW WINDOW AND FRAME TO MATCH HISTORIC PROFILES.

1 Floor Plan
SCALE 1/8"=1'-0"



KEYNOTES

- ① NEW ROUGH-SAWN WOOD FRAME PORCH BASED ON ORIGINAL DESIGN AND CONSTRUCTION. TYPICAL AT ALL FOUR ELEVATIONS.
- ② NEW LEDGER AT EXISTING ADOBE WALL TO SUPPORT PORCH BEAMS? OR, POCKET BEAMS IN ADOBE WALL. DETERMINATION BASED ON FIELD EVIDENCE AFTER EXISTING PLASTER IS REMOVED FROM THE EXTERIOR OF THE BUILDING.
- ③ REPAIR EXISTING BEAM ENDS BY EPOXY DOWELING NEW BEAM ENDS. ACTUAL NUMBER OF BEAM ENDS NEEDING REPAIR TO BE DETERMINED IN THE FIELD AFTER THE EXISTING ROOF IS REMOVED FROM THE BUILDING. PROVIDE UNIT COST.
- ④ NEW WOOD LINTEL AT ADOBE WALL REPAIR.
- ⑤ EXISTING ORIGINAL WOOD BEAMS TO REMAIN. ACTUAL SPACING AND CONDITION TO BE DETERMINED AFTER THE EXISTING ROOF AND DECKING IS REMOVED FROM THE BUILDING. CONSTRUCT NEW ROOF, INCLUDING INSULATION AND FRAMING, ABOVE EXISTING BEAMS.

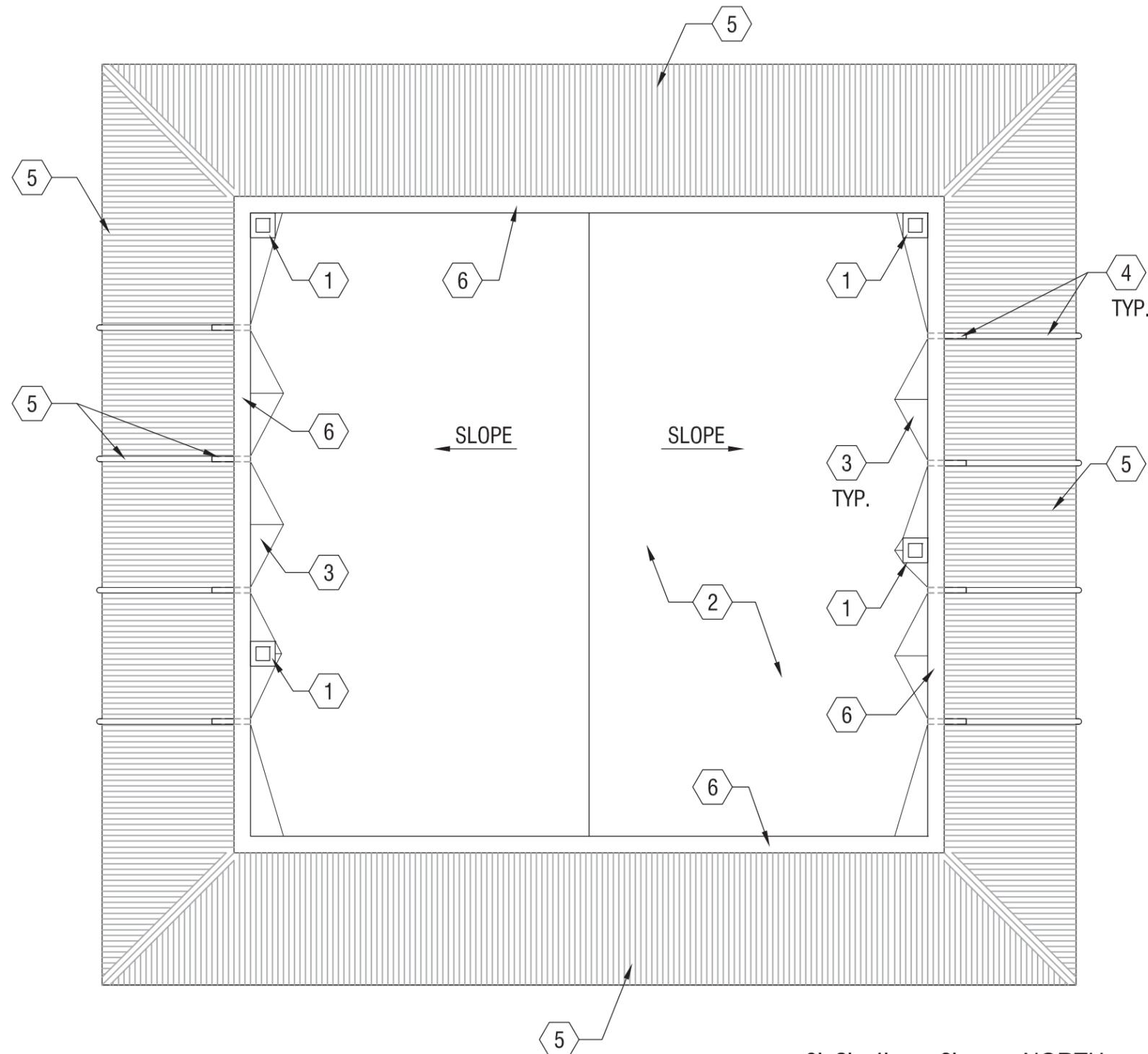


① Framing Plan
SCALE 1/8"=1'-0"



KEYNOTES

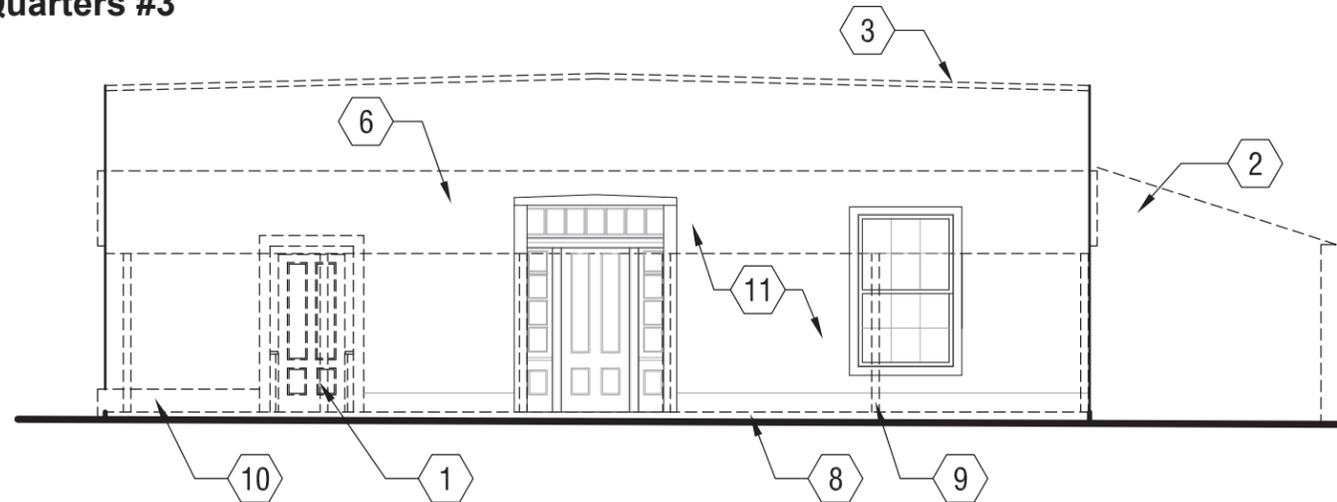
- ① RECONSTRUCT CHIMNEY BASED ON DRAWINGS AND DOCUMENTATION. BRICK SALVAGED FROM ORIGINAL CHIMNEYS IN 2007 IS TO BE USED IN THE NEW CHIMNEYS. ANY ADDITIONAL BRICKS REQUIRED TO COMPLETE THE RESTORATION SHOULD MATCH THE HISTORIC BRICKS.
- ② NEW FLAT ROOF (WITH NEW FRAMING?) OVER ORIGINAL FORT-ERA ROOF CAVITY. NEW ROOF CAVITY TO BE INSULATED WITH A WOOD DECK.
- ③ NEW ROOF CRICKETS.
- ④ CUSTOM FABRICATE HISTORICAL CANALES AND LEADERS BASED ON DOCUMENTATION.
- ⑤ RECONSTRUCT FORT-ERA WOOD PORCH BASED ON DOCUMENTATION. PORCH TO BE ROUGH-SAWN BEAMS WITH WOOD DECKING AND STANDING-SEAM METAL ROOF.
- ⑥ NEW PARAPET CAP. MATERIAL TO BE METAL OR TILE.



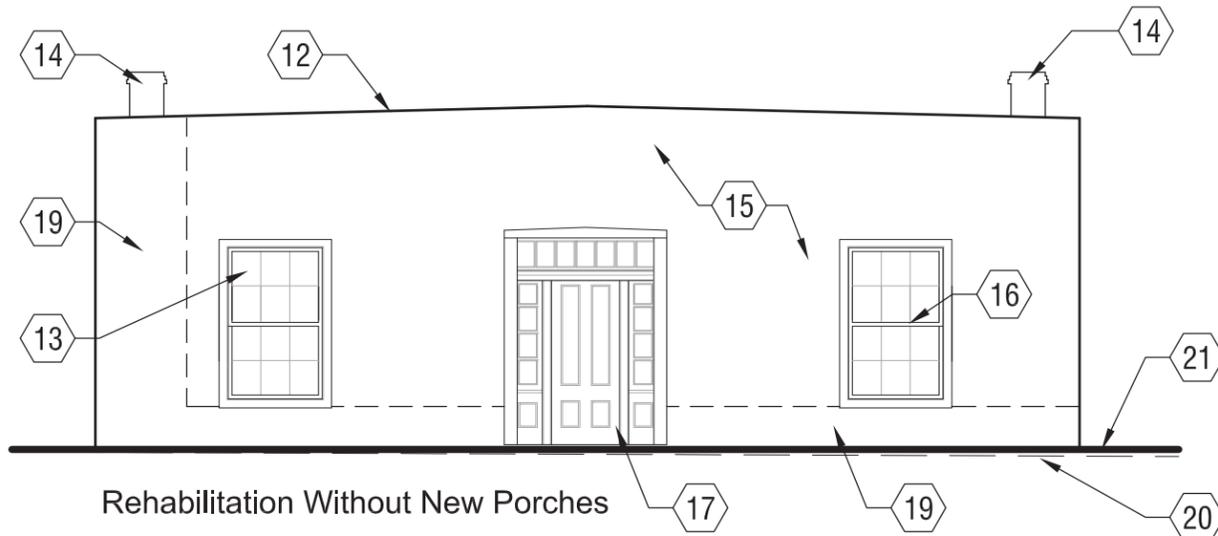
① Roof Plan
SCALE 1/8"=1'-0"



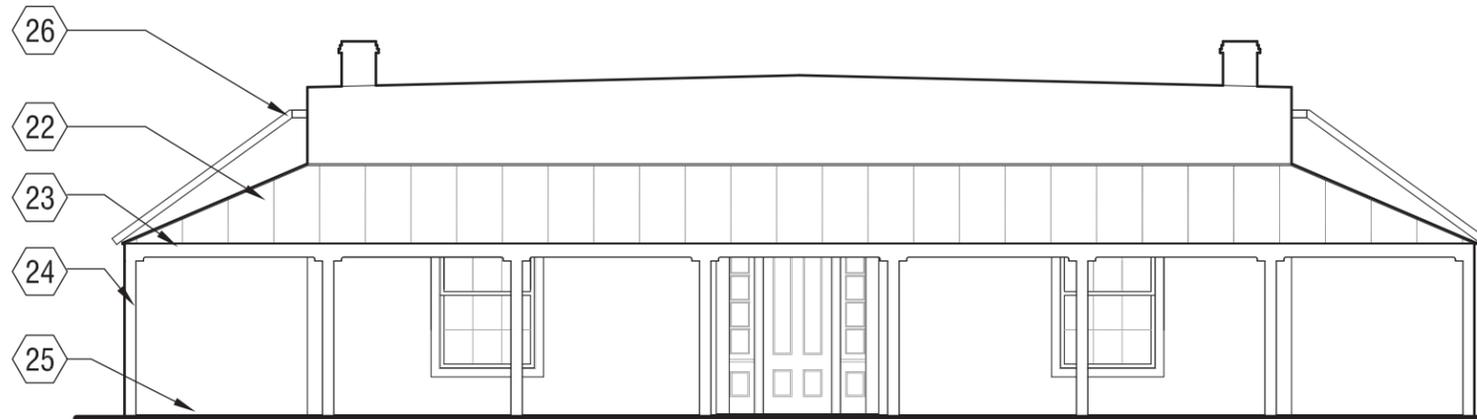
Officer's Quarters #3



Existing Showing De-Construction



Rehabilitation Without New Porches



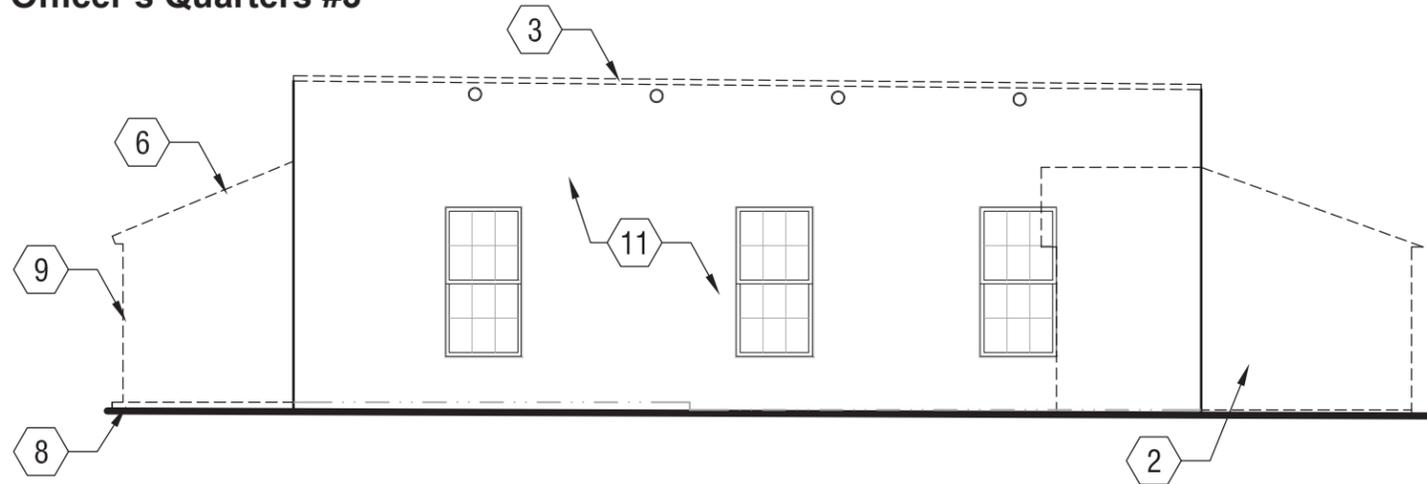
Rehabilitation With New Porches

- 1 REMOVE POST FORT-ERA DOOR AND BEADBOARD WAINSCOT.
- 2 REMOVE ADOBE BATHROOM ADDITION.
- 3 REMOVE CONCRETE CAP FROM TOP OF ADOBE PARAPET WALL.
- 4 NOT USED.
- 5 NOT USED.
- 6 REMOVE WOOD SHINGLE ROOF AND ALL FRAMING.
- 7 NOT USED.
- 8 REMOVE WOOD FLOOR, INCLUDING SLEEPERS.
- 9 REMOVE WOOD FRAMING AND POSTS AT PORCHES.
- 10 REMOVE CONCRETE *CONTRAPARED*.
- 11 REMOVE EXTERIOR PLASTER AT ALL EXTERIOR WALLS TO REVEAL ORIGINAL ADOBE CONSTRUCTION. EXISTING SURFACE LAYER IS CEMENT PLASTER. EARLIER LAYERS MAY BE MUD/ LIME PLASTER.
- 12 NEW TILE OR CONCEALED METAL PARAPET CAP.
- 13 RECONSTRUCT WINDOW WHERE POST FORT-ERA DOOR IS BEING REMOVED.
- 14 RECONSTRUCT CHIMNEY BASED ON DRAWINGS AND DOCUMENTATION. BRICK SALVAGED FROM ORIGINAL CHIMNEYS IN 2007 IS TO BE USED IN THE NEW CHIMNEYS. ANY ADDITIONAL BRICKS REQUIRED TO COMPLETE THE RESTORATION SHOULD MATCH THE HISTORIC BRICKS.
- 15 NEW MUD / LIME PLASTER FINISH.
- 16 RESTORE EXISTING WOOD WINDOW.
- 17 RESTORE EXISTING WOOD DOOR, SIDELIGHTS AND TRANSOM WINDOWS.
- 18 NOT USED.
- 19 ADOBE REPAIR. FURTHER INVESTIGATION REQUIRED TO DETERMINE EXTENT.
- 20 EXISTING GRADE (APPROXIMATE).
- 21 NEW GRADE. SLOPE TO ACCOMMODATE NEW PORCH AND TO DRAIN AWAY FROM THE BUILDING.
- 22 NEW STANDING-SEAM METAL ROOF.
- 23 NEW WOOD BEAM.
- 24 NEW WOOD POST.
- 25 NEW WOOD FLOOR AT NEW PORCH.
- 26 NEW CANALE AND RAIN WATER LEADER.

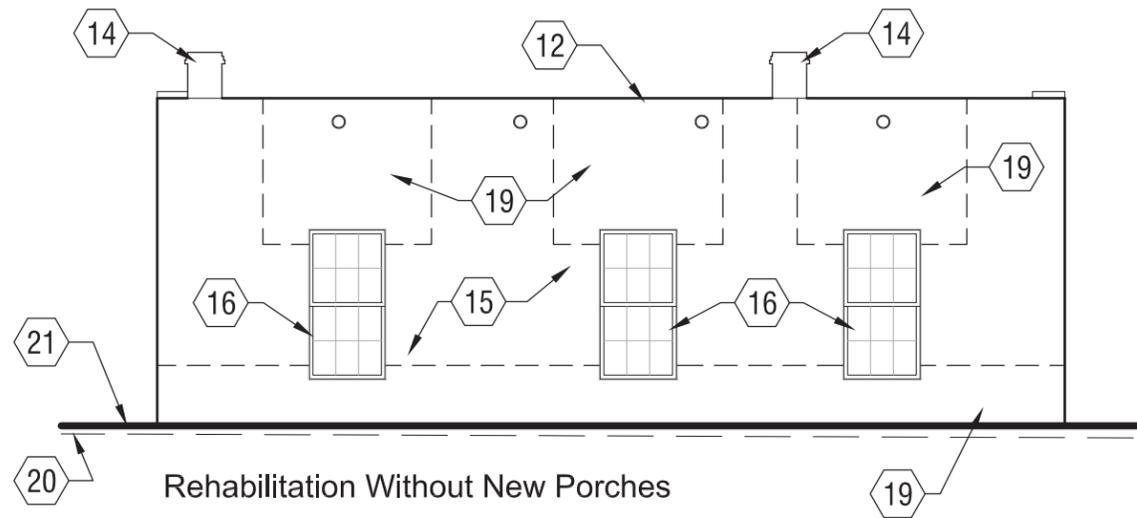
1 North Elevation
SCALE 1/8"=1'-0"



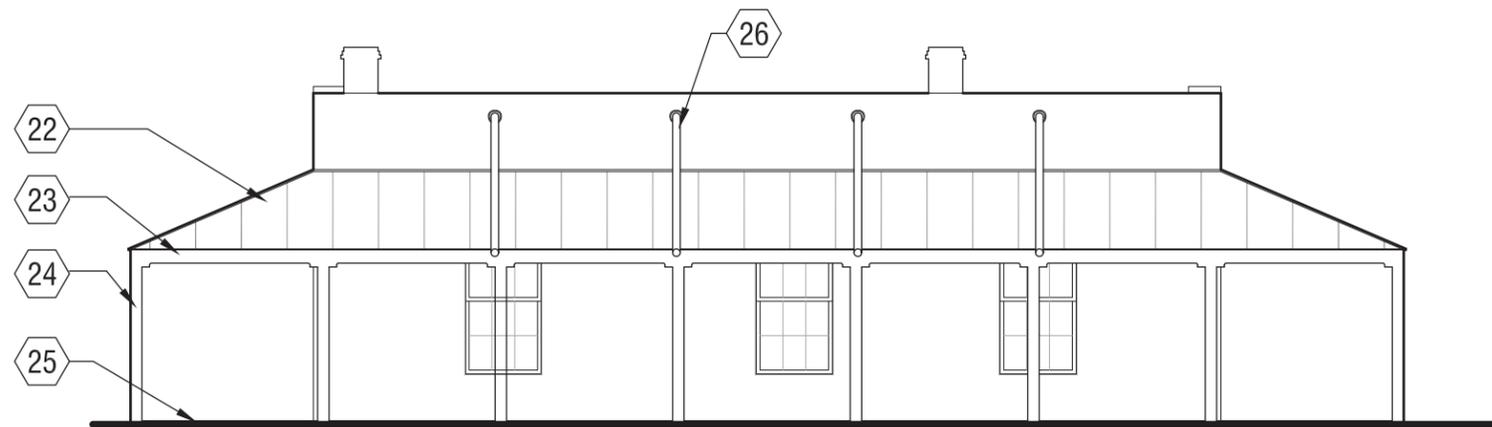
Officer's Quarters #3



Existing Showing De-Construction



Rehabilitation Without New Porches



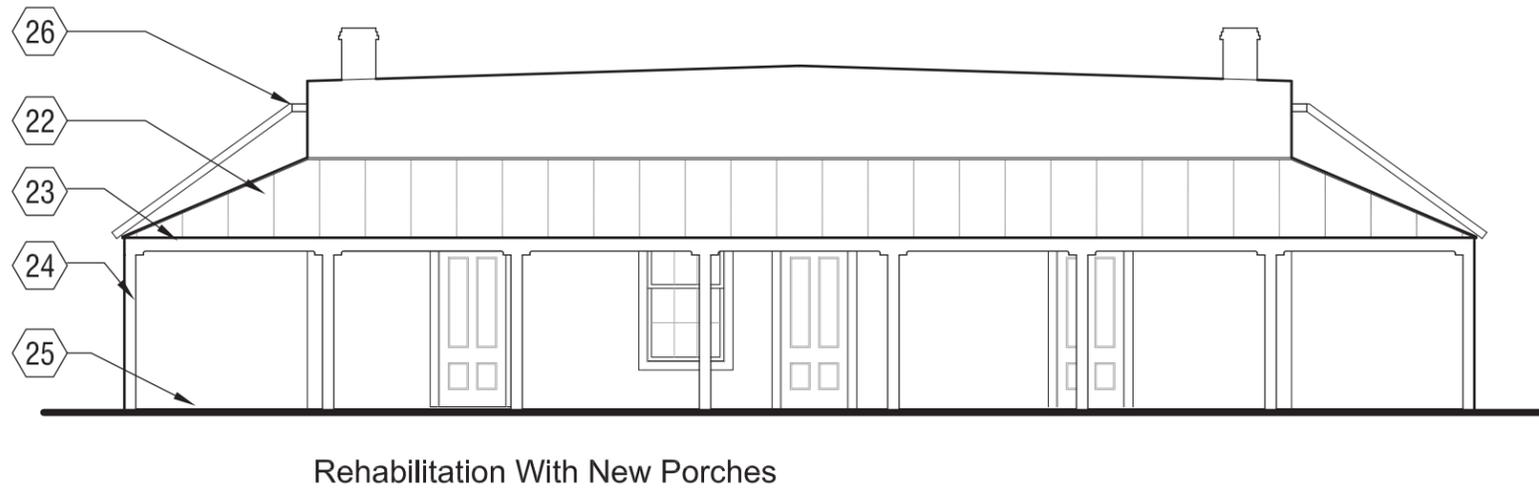
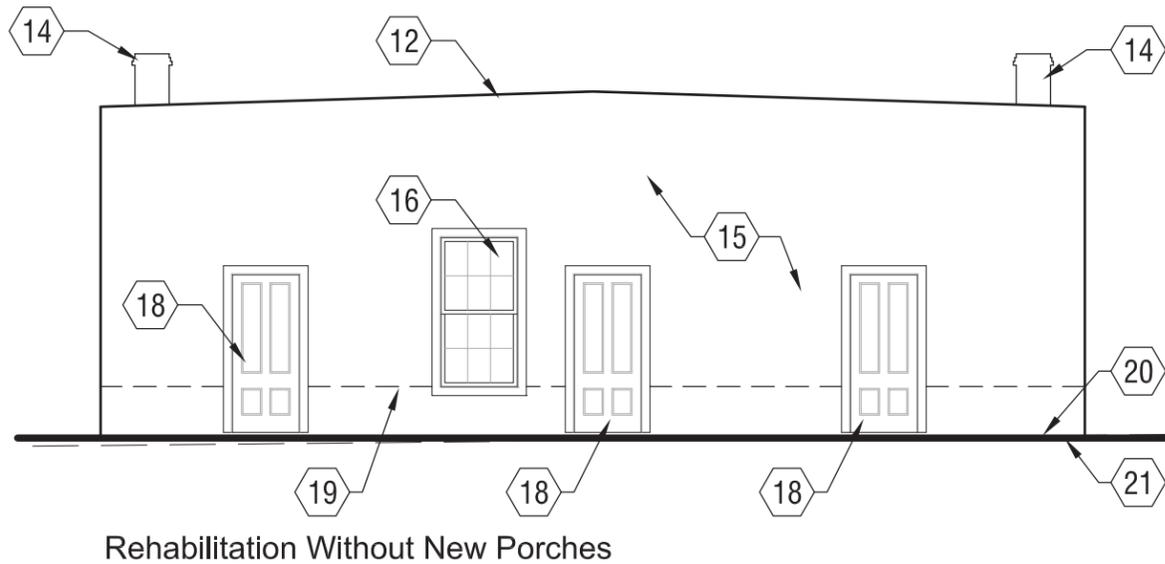
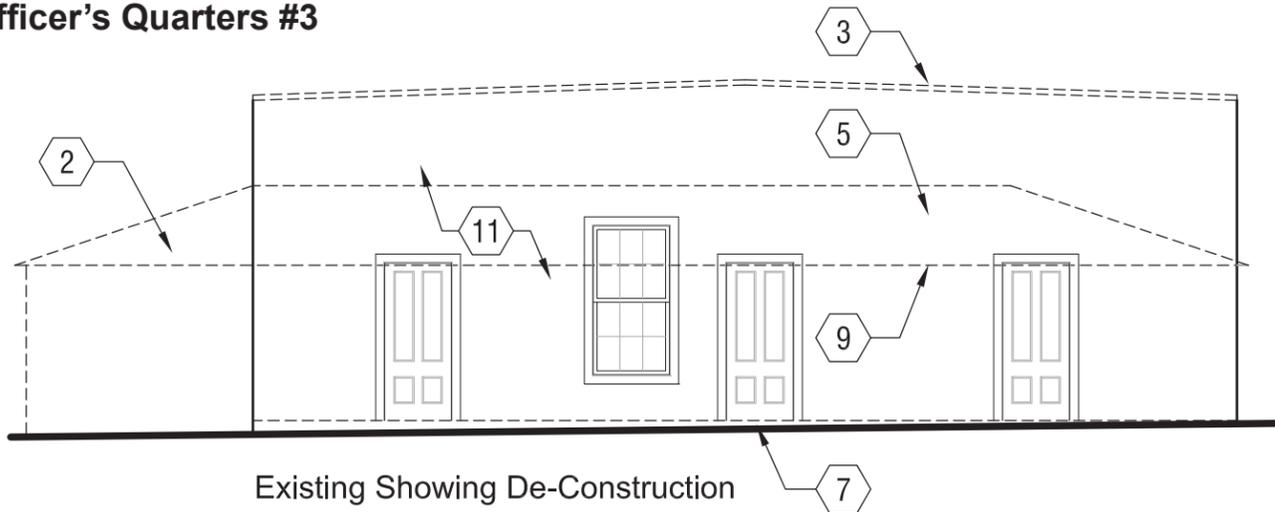
Rehabilitation With New Porches

- 1 NOT USED.
- 2 REMOVE ADOBE BATHROOM ADDITION.
- 3 REMOVE CONCRETE CAP FROM TOP OF ADOBE PARAPET WALL.
- 4 NOT USED.
- 5 NOT USED.
- 6 REMOVE WOOD SHINGLE ROOF AND ALL FRAMING.
- 7 NOT USED.
- 8 REMOVE WOOD FLOOR, INCLUDING SLEEPERS.
- 9 REMOVE WOOD FRAMING AND POSTS AT PORCHES.
- 10 NOT USED.
- 11 REMOVE EXTERIOR PLASTER AT ALL EXTERIOR WALLS TO REVEAL ORIGINAL ADOBE CONSTRUCTION. EXISTING SURFACE LAYER IS CEMENT PLASTER. EARLIER LAYERS MAY BE MUD/ LIME PLASTER.
- 12 NEW TILE OR CONCEALED METAL PARAPET CAP.
- 13 NOT USED.
- 14 RECONSTRUCT CHIMNEY BASED ON DRAWINGS AND DOCUMENTATION. BRICK SALVAGED FROM ORIGINAL CHIMNEYS IN 2007 IS TO BE USED IN THE NEW CHIMNEYS. ANY ADDITIONAL BRICKS REQUIRED TO COMPLETE THE RESTORATION SHOULD MATCH THE HISTORIC BRICKS.
- 15 NEW MUD / LIME PLASTER FINISH.
- 16 RESTORE EXISTING WOOD WINDOW.
- 17 NOT USED.
- 18 NOTUSED.
- 19 ADOBE REPAIR. FURTHER INVESTIGATION REQUIRED TO DETERMINE EXTENT.
- 20 EXISTING GRADE (APPROXIMATE).
- 21 NEW GRADE. SLOPE TO ACCOMMODATE NEW PORCH AND TO DRAIN AWAY FROM THE BUILDING.
- 22 NEW STANDING-SEAM METAL ROOF.
- 23 NEW WOOD BEAM.
- 24 NEW WOOD POST.
- 25 NEW WOOD FLOOR AT NEW PORCH.
- 26 NEW CANALE AND RAIN WATER LEADER.

1 West Elevation
SCALE 1/8"=1'-0"



Officer's Quarters #3

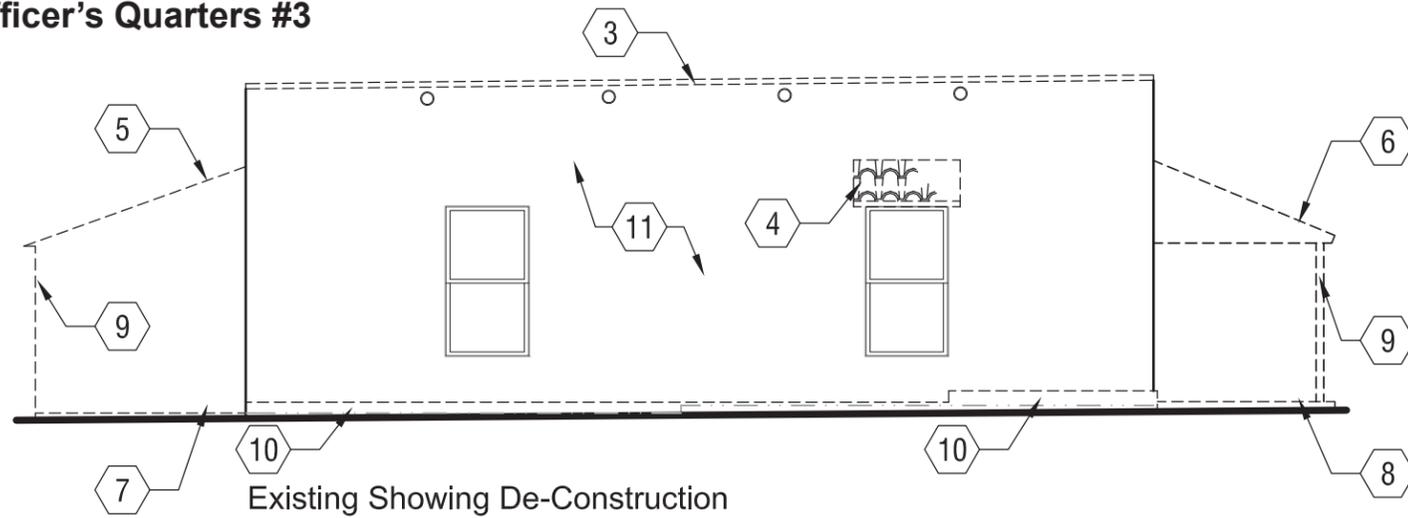


- 1 NOT USED.
- 2 REMOVE ADOBE BATHROOM ADDITION.
- 3 REMOVE CONCRETE CAP FROM TOP OF ADOBE PARAPET WALL.
- 4 NOT USED.
- 5 REMOVE FIBER CEMENT SHINGLE ROOF AND ALL FRAMING.
- 6 NOT USED.
- 7 REMOVE CONCRETE SLAB AT PORCH.
- 8 NOT USED.
- 9 REMOVE WOOD FRAMING AND POSTS AT PORCHES.
- 10 NOT USED.
- 11 REMOVE EXTERIOR PLASTER AT ALL EXTERIOR WALLS TO REVEAL ORIGINAL ADOBE CONSTRUCTION. EXISTING SURFACE LAYER IS CEMENT PLASTER. EARLIER LAYERS MAY BE MUD/ LIME PLASTER.
- 12 NEW TILE OR CONCEALED METAL PARAPET CAP.
- 13 NOT USED.
- 14 RECONSTRUCT CHIMNEY BASED ON DRAWINGS AND DOCUMENTATION. BRICK SALVAGED FROM ORIGINAL CHIMNEYS IN 2007 IS TO BE USED IN THE NEW CHIMNEYS. ANY ADDITIONAL BRICKS REQUIRED TO COMPLETE THE RESTORATION SHOULD MATCH THE HISTORIC BRICKS.
- 15 NEW MUD / LIME PLASTER FINISH.
- 16 RESTORE EXISTING WOOD WINDOW.
- 17 RESTORE EXISTING WOOD DOOR, SIDELIGHTS AND TRANSOM WINDOWS.
- 18 REPAIR / REUSE EXISTING DOORS AS FEASIBLE.
- 19 ADOBE REPAIR. FURTHER INVESTIGATION REQUIRED TO DETERMINE EXTENT.
- 20 EXISTING GRADE (APPROXIMATE).
- 21 NEW GRADE. SLOPE TO ACCOMMODATE NEW PORCH AND TO DRAIN AWAY FROM THE BUILDING.
- 22 NEW STANDING-SEAM METAL ROOF.
- 23 NEW WOOD BEAM.
- 24 NEW WOOD POST.
- 25 NEW WOOD FLOOR AT NEW PORCH.
- 26 NEW CANALE AND RAIN WATER LEADER.

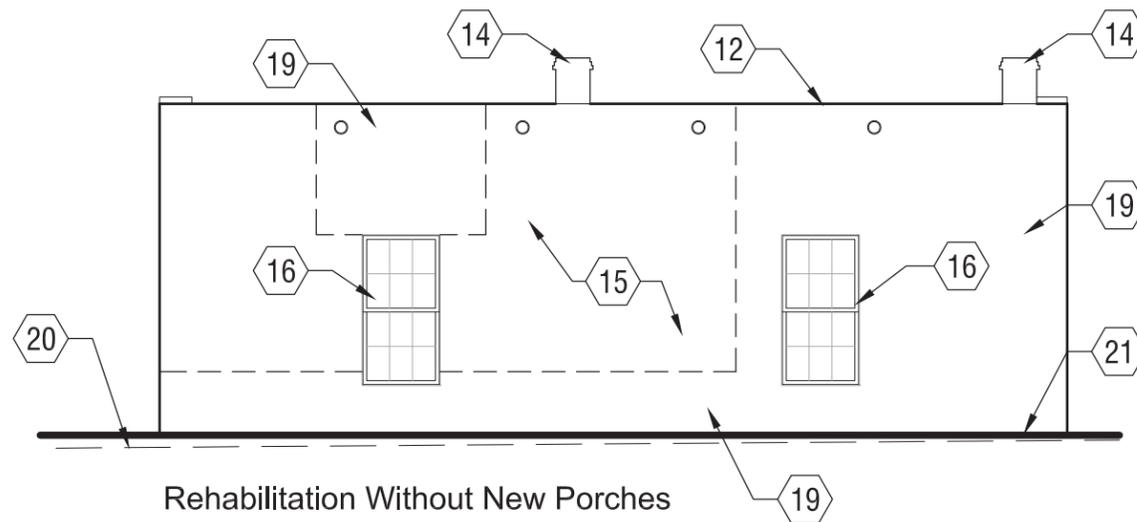
1 South Elevation
SCALE 1/8"=1'-0"



Officer's Quarters #3



Existing Showing De-Construction



Rehabilitation Without New Porches



Rehabilitation With New Porches

- 1 NOT USED.
- 2 NOT USED.
- 3 REMOVE CONCRETE CAP FROM TOP OF ADOBE PARAPET WALL.
- 4 REMOVAL CLAY TILE WINDOW AWNING AND ALL ASSOCIATED FRAMING.
- 5 REMOVE FIBER CEMENT SHINGLE ROOF AND ALL FRAMING.
- 6 REMOVE WOOD SHINGLE ROOF AND ALL FRAMING.
- 7 REMOVE CONCRETE SLAB AT PORCH.
- 8 REMOVE WOOD FLOOR, INCLUDING SLEEPERS.
- 9 REMOVE WOOD FRAMING AND POSTS AT PORCHES.
- 10 REMOVE CONCRETE *CONTRAPARED*.
- 11 REMOVE EXTERIOR PLASTER AT ALL EXTERIOR WALLS TO REVEAL ORIGINAL ADOBE CONSTRUCTION. EXISTING SURFACE LAYER IS CEMENT PLASTER. EARLIER LAYERS MAY BE MUD/ LIME PLASTER.
- 12 NEW TILE OR CONCEALED METAL PARAPET CAP.
- 13 NOT USED.
- 14 RECONSTRUCT CHIMNEY BASED ON DRAWINGS AND DOCUMENTATION. BRICK SALVAGED FROM ORIGINAL CHIMNEYS IN 2007 IS TO BE USED IN THE NEW CHIMNEYS. ANY ADDITIONAL BRICKS REQUIRED TO COMPLETE THE RESTORATION SHOULD MATCH THE HISTORIC BRICKS.
- 15 NEW MUD / LIME PLASTER FINISH.
- 16 NEW WOOD WINDOW AND FRAME TO MATCH HISTORIC PROFILE.
- 17 NOT USED.
- 18 NOT USED.
- 19 ADOBE REPAIR. FURTHER INVESTIGATION REQUIRED TO DETERMINE EXTENT.
- 20 EXISTING GRADE (APPROXIMATE).
- 21 NEW GRADE. SLOPE TO ACCOMMODATE NEW PORCH AND TO DRAIN AWAY FROM THE BUILDING.
- 22 NEW STANDING-SEAM METAL ROOF.
- 23 NEW WOOD BEAM.
- 24 NEW WOOD POST.
- 25 NEW WOOD FLOOR AT NEW PORCH.
- 26 NEW CANALE AND RAIN WATER LEADER.

1 East Elevation
SCALE 1/8"=1'-0"



Adkins-Era Resources

In 1926, the Adkins Family moved to Tucson from Illinois to bring their daughter, Dicey, to a local tuberculosis sanatorium. While living at Cate's Rest Ranch, Dicey died from tuberculosis. Harvey and Fronia Adkins purchased the Cate's property in February 1928. The Adkins operated the "Adkins Rest Home" on the property through the 1930s and 40s. The family also operated other businesses on the site including the Adkins Trucking and Steel Manufacturing business, began in 1934. In the 1940s and 50s, the company was building steel buildings and tanks. From the 1950s until 2006, Adkins Steel Manufacturing concentrated on the fabrication of steel water tanks. During their presence on the site, the Adkins constructed their residence, the fabrication shed, a water tower and windmill and several outbuildings and a variety of cast-in-place concrete elements.

The Master Planning process carefully considered the contribution of the Adkins Family to the site and neighborhood during their 78 years of occupation. While the Adkins story is an important local story, the Fort Lowell Period was selected as the primary interpretive theme due to its national significance.

The desire to represent the Fort-era site layout in an unambiguous and clear manner requires the removal of Adkins-era resources, especially where they are in conflict with the interpretation of Fort-era resources. The Steel Fabrication Shed, for example, is located at the edge of the Parade Ground and possibly above the location of the Fort Lowell Bake House. The location and scale of the shed would cause some difficulty in properly understanding the relationship of the Parade Ground to its surrounding buildings. The Steel Fabrication Shed was determined to need costly structural repairs to make it safe for public use. If possible, elements of the Steel Fabrication Shed should be salvaged for possible reuse on site or in the construction of interpretive exhibits.

The Adkins Residence is located in Parade Ground. It was determined that the Adkins Residence should be stabilized and preserved in place until more of the interpretive elements used to recreate the spatial order of the Parade Ground are constructed. Once the interpretive ghosting and cottonwood trees are in position along the western edge of the Parade Ground, a determination can be made on

how intrusive the Adkins Residence will be to the experience. The Adkins Water Tower will also be stabilized and preserved until a future date to allow for reassessment. The Windmill Base will need to be removed to allow for remediation of an existing well. The steel structure is thoroughly rusted and should be carefully documented prior to removal.

Other Adkins-era site features, including a number of poured-in-place concrete features, should be documented prior to removal.



Figure 69: Adkins-era resources looking northeast.



Figure 70: 1940s aerial photo of Adkins Buildings from the Magee Collection held at the Arizona Historic Society. RC Magor residence is located at lower left portion of image. Adkins Residence, prior to circa 1950 addition, is visible in the center of the photograph. Officer's Quarters #1 visible at lower right. The reconstructed commissary buildings are located in the upper left portion of the image.

Adkins-Era Resources

Adkins Residence



Figure 71: Adkins Residence looking northeast.



Figure 72: Water damage at roof eave.

The Adkins Residence will be stabilized to allow for a future decision concerning its long term viability. Several critical deficiencies exist that need to be addressed to prevent additional damage. At the eaves, metal flashing should be installed under the existing roofing tile to prevent water from entering the walls. Moisture entering the wall is responsible for much of the coving that has occurred at the base of walls.

The severe deterioration at the west wall should be repaired to prevent the wall from collapsing. All openings in the building should be sealed to prevent vermin and wildlife from entering the building. Site stewardship should include periodic assessment of the Adkins Residence to ensure that the condition of the building does not decline any further.

Adkins Water Tower

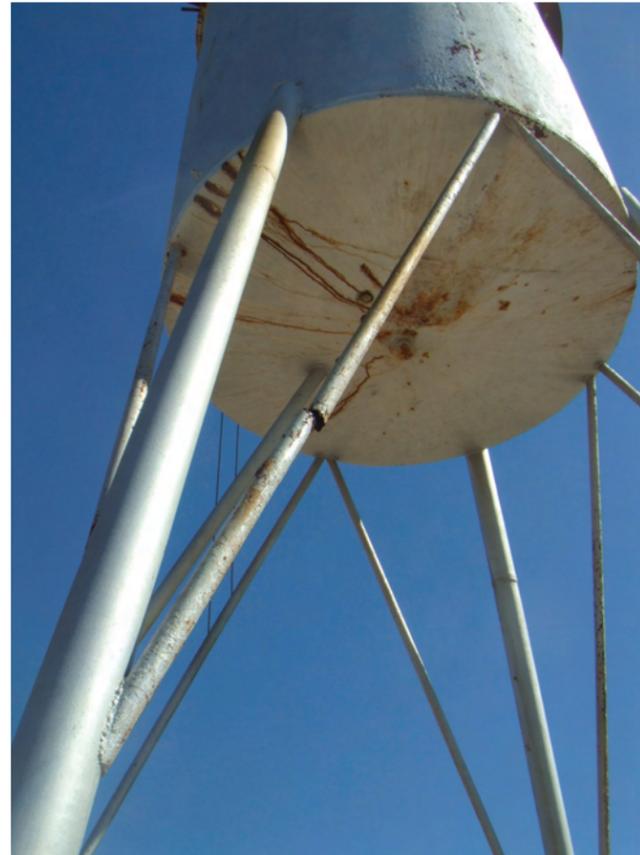


Figure 73: Water Tower with damaged steel brace.

The Adkins Water Tower will be stabilized, in-place, to allow for a future decision following partial implementation of the Master Plan. While no structural analysis has been performed on the Water Tower, it appears to be in good condition. The major deficiencies are a broken support strut at the southwest corner of the base and the peeling away of the roof allowing birds to access the interior. The broken support strut should be braced by attaching a temporary “splint” the full length of the broken strut. Openings at the top of the Water Tower should be sealed to prevent birds from inhabiting the interior of the Water Tower.

Adkins Windmill Base



Figure 74: Windmill Base showing rusted structure.

The Adkins Windmill Base will be documented and removed during environmental remediation of the site. Closure of the well beneath the Windmill Base requires removal of the structure. Furthermore, the Windmill Base is in poor condition with many of the steel pipes rusted through. The Windmill Base should be completely documented, including measured drawings, to allow for accurate interpretation. If the Adkins Residence is re-used and interpreted, the reconstruction of the Windmill Base should be considered.

Adkins Steel Fabrication Shed



Figure 75: Fabrication Shed looking northwest.



Figure 76: Interior bracing at Steel Fabrication Shed.

The Adkins Steel Fabrication Shed will be documented and removed as part of the implementation of the Master Plan. The shed is in fair condition. The decision to remove the shed was based on the cost to make the building safe for re-use. The building’s structural elements are undersized and inadequately connected to meet current building codes. The location of the Steel Fabrication Shed is in conflict with the Fort-era buildings and landscape that will be interpreted and re-created at the western edge of the Parade Ground.

Elements of the Steel Fabrication Shed should be salvaged and considered for re-use in interpretive or other site features. Among the items that would be desirable to salvage are the concrete filled steel columns, lightweight concrete wall panels, and steel roof trusses.

Landscape and Site Features

The landscape on the Adkins Parcel has gone through a number of changes throughout its history of use. The area was once dominated by creosote and other native shrubs that are typical to largely undisturbed areas of the lower Sonoran Desert region such as prickly pear, catclaw, saguaro, palo verde and mesquite. Once the military moved onto the site in the late 19th century, the landscape transitioned to one that was more open and functional. The parade ground was the site of regular military routines and drills that required the elimination of large trees and shrubs to support the active uses. Historical photos from the Fort era document that the Adkins Parcel site was mostly bare ground with scattered native grasses, shrubs and trees towards the perimeter of the parade ground. Photos also indicate a picket fence (Figure 78) that lined the southern edge of the parade ground and the area to the west of the hospital.

The fence was located in direct association with the dominant landscape element of the Fort which was the introduced double row of cottonwood trees (Figure 79) that lined the Officer's Quarters and provided cooling shade for the soldiers stationed there. The Officer's Quarters were also home to a number of small kitchen gardens that supported vegetables and herbs used for cooking. Once the military abandoned the site at the turn of the century, the cottonwoods were cut down for use as firewood and the surrounding native vegetation slowly re-established itself on the former parade ground area.

The landscape of the Adkins parcel continued to develop over time as the site changed from having a dominant military presence to the residential character of the Adkins-era. The Adkins-era brought with it a number of introduced shade and fruit tree plantings to the landscape. Some of the plants introduced during the Adkins era are still present today and include a small lemon tree that is planted near Officer's Quarters #3 and several pomegranate trees located near the Adkins residence. A pecan tree is also located near the Adkins residence towards the Fort Lowell and Craycroft Road intersection. Research of similar residential areas from the same era indicates that other plantings were likely introduced throughout the site's years as a sanatorium, residence, and steel fabrication center although no Adkins-era plants other than the lemon tree, pomegranates and



Figure 77: *Ferocactus wislizeni* near Officer's Quarters.

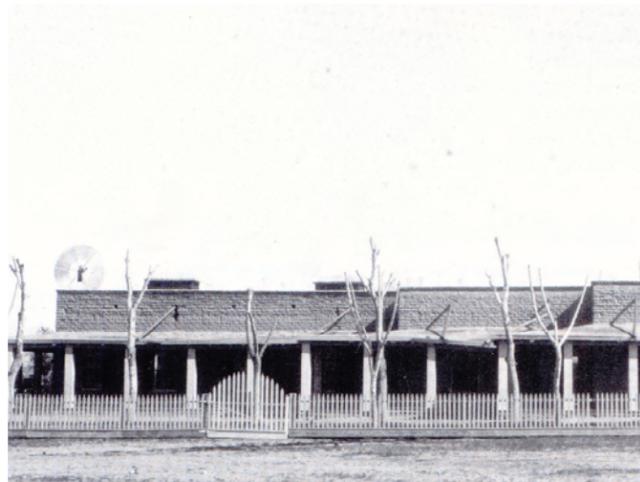


Figure 78: Fort Lowell Hospital, looking east, circa 1889.

pecan tree remain on-site. The existing Adkins-era plants are currently suffering from drought and are in a state of decline but are significant in the fact that they are the original specimens that once supported the use of the property.

Since the remaining Adkins-era specimens are significant to the historic landscape and are in rapid decline, immediate intervention is recommended. Irrigation must be provided to these remnant plant materials in order for them to survive. It should be noted that these plants are located in the area that was historically the site of the Fort Lowell parade ground which was largely void of vegetation except for plantings along its perimeter and Cottonwood Lane. Depending on the interpretive strategies that take place on-site, it may ultimately become necessary to remove the lemon tree, pomegranates and pecan tree in order to accurately interpret the Fort era landscape. A decision on the long-term viability of keeping the Adkins-era planting will be made at a future date.

Cottonwood Lane and the associated fencing are recommended to be re-introduced to the site as they were dominant features of the Fort period landscape. The existing native desert vegetation that is on-site should largely remain in place except for within the footprint of the parade ground and immediately surrounding the officer's quarters. This will create a central activity area surrounded by a mix of creosote, cholla, barrel cactus, prickly pear, acacia and mesquite which is reminiscent of how the area looked during the Fort era. The kitchen gardens should also be re-established to give an accurate representation of how the landscape supported the uses of the site.

The proposed pedestrian "HAWK" crossing at Craycroft Road is an important item to be included with the Preservation Plan. The HAWK provides a safe place to cross Craycroft Road within the boundaries of Fort Lowell Park. The funding for the HAWK crossing is not included in the 2004 Pima County Bond Funding.



Figure 79: Cottonwood Lane, looking west, circa 1889.



Figure 80: Proposed HAWK signal at Craycroft Rd.

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- Thiel, J. Homer. *Cultural Resources Assessment for the Fort Lowell Park, the Donaldson/Hardy Property, and the Quartermaster and Commissary Storehouse Property within Historic Fort Lowell*. Tucson, Pima County, Arizona. Technical Report No. 2009-02. Desert Archaeology, Inc., Tucson, 2009.
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- Weeks, Kay D. and Anne E. Grimmer. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*. Washington D.C.: U.S. Department of the Interior, National Park Service, 1995.

Assessment from Crocker Ltd.

Ft. Lowell Restoration Plan
Edward Crocker, May 2009

Goals

1. Provide a plan for stabilization and restoration with a 50 year life
2. Restore to the period of significance as outlined by Poster Frost
3. Provide "truth" windows into other periods

Officer's Quarters No. 3

Demo Annex

Removal of the roof and walls should occur with hand labor and hand tools only. Whole adobes to be set aside and protected. Slab is to be saw cut into three or four pieces and removed. Hydraulic and pneumatic hammers are not to be used. Estimated cost of removal: \$1,600.

Stabilize Fireplaces in East Wall

The fireplaces in Bedrooms 1 and 2 are to be underpinned according to the following scope of work:

Excavate to the bottom of the wall or footing on the north and east sides; supply and install four A.B. Chance® SS5x8 helical piers to a depth and torque necessary to support the anticipated loads with a safety factor of 2:1; supply and install four low profile A.B. Chance® load transfer brackets; supply and install four, 6x8x½-inch galvanized angle iron supports, five feet long with the pier located at the centerline and the eight-inch wide flange under the wall/footing; transfer load from the collapsed soils to the piers; backfill, compact and grade. Unit cost is \$1,980, for a subtotal of \$3,960 per fireplace and an estimated total this item of \$7,920. Underpinning the fireplace in BR 2 will require removal/replacement of the floor along the south wall of BR 1, incurring an estimated additional expense of \$1,440. An illustrated overview of the "Adobe Cage" method developed by Crocker Ltd. for stabilizing earthen walls is included at the end of this Appendix.

Alternate for fireplace in BR 1: Shore roof; demo existing fireplace; over-excavate to a depth of four feet and replace with engineered fill, compacted to 95% in six-inch lifts; rebuild fireplace using salvaged adobe and firebrick. Estimated cost this alternate: \$9,300.

Stabilize East Wall

Remove built-up soil on east side to floor level; remove wood floors adjacent to the walls; fabricate "adobe cages" to accommodate the wall length and openings with no cage being longer than four feet; infill voids with lime-rich mud; fill cages with lime-rich mud; tilt into place and through-bolt, capturing the wall on both sides as illustrated in the accompanying photo narrative. Cages are to turn the corner at the SE for a minimum of three feet and are to be welded or bolted together at both the inside and outside corners. Length of wall to be caged is approximately 42 feet. Estimated cost per linear foot: \$250 for a total this item of \$10,500.

Alternate: Remove adobes in three- to four-foot sections; over-excavate to 16 inches below grade; install and hand compact engineered fill to 90% in six-inch lifts; rebuild adobe walls and dry pack joint between the old and the new. Estimated cost this item: \$16,500.

CAUTIONARY NOTE: The alternate presents much higher risk of partial or total collapse of the wall, and will require approximately four times the man hours that caging will.

Demo Cabinetry in Kitchen and Pantry, Stabilize Walls

Remove all cabinetry in kitchen and return to owner. Stabilize and rebuild adobe wall where cabinetry is presently supporting; remove vestiges of plumbing and electrical systems; patch and repair holes; apply leveling coat of mud plaster as required and leave all walls finish ready. Estimated cost this item: \$4,200.

Grading and Drainage, Including a Basal Wall Geodrain

Excavate to the bottom of the footing, or to a minimum of eight inches below the bottom of the lowest course of adobes, along the full length of the four walls, estimated at 166 feet; strike a line at final grade and cut and remove the plaster down to the substrate; supply and install MiraDrain 6000®, attached to the wall at the top with a 5/8-inch plaster stop; terminate at the bottom by inserting the membrane into a continuously-slotted pipe with a cleanout at each corner; grade to drain to a drywell to the north; embed

the bottom eight to 12 inches in ¾-inch river rock, capped with a non-woven polypropylene geotextile; backfill and compact using engineered fill; grade to drain at the surface. Estimated cost per linear foot: \$175 for a total this item of \$29,050.

Alternate: Install a continuous strip of MiraDrain 6000® four inches inside of the leading edge of the veranda deck. MiraDrain® to extend from one inch below the surface to 16 inches below grade. Approximate length is 205 feet. Estimated cost per linear foot: \$25 for a total this item of \$5,125.

CAUTIONARY NOTE: This alternate assumes that the building will not be exposed to surface runoff in the form of floodwater or from broken utilities. The alternate will provide only a minor line of defense.

Parapet Cap – Copper

Assuming removal of the existing concrete cap and re-establishment of an adobe parapet, supply and install a continuous copper cap with a ¾-inch drip lip over the finished vertical plane of the walls and a three-inch drip lip over the roof. Approximate length of all parapets is 166 feet. Each section to be no longer than four feet and to overlap four inches at each joint to accommodate expansion and contraction. Joints are not to be soldered. At each overlap, apply a two-inch-wide strip of butyl tape before screwing the joints together. Cap to be attached to adobe using three-inch brass deck screws. Estimated cost per foot: \$200 for a total this item of \$33,200.

Alternate: Replace copper with galvanized steel. Estimated cost per foot, installed: \$65 for a total this item of \$10,790.

Strip Existing Plaster

Saw cut existing plaster at four feet O.C.; strip from top down and dispose. Area to be stripped is approximately 255 square yards. Estimated cost per yard including hauling and disposal fees: \$15 for a total this item of \$3,825.

Wall Repairs

Adobe in the vertical plane of the wall that is damaged or destroyed to a depth of no more than three inches can be repaired with mud leveling coats and, if needed, unfired tile rajuela. Estimated cost per face foot: \$11. Allowance: 400 square feet for a total

this item of \$4,400.

Damaged and destroyed adobe at a depth from three to six inches will require replacement with adobe batts. Estimated cost per face foot: \$19. Allowance: 200 square feet for a total this item of \$3,800.

Damaged and destroyed adobe deeper than six inches from the vertical plane will require replacement with full or partial adobes. Estimated cost per face foot: \$29. Allowance: 100 square feet for a total this item of \$2,900.

Demo / Replace Veranda

Demo existing verandas on north and south salvaging materials as possible. Estimated cost this item: \$2,640.

Replicate veranda on all four sides: provide a leveling coat of mud at site of ledger on all four sides; attach treated 2x6-inch ledger by through-bolting to the inside with 5/8-inch galvanized all-thread with washers 16 inches O.C.; inside to be washered at each location using a six-inch square of .244 HC wire, #3 gauge, ¾-inch opening (materials screening mesh) with 1½-inch galvanized washer and low profile nut to be plastered over; spot footings at column locations to be A. B. Chance® SS5x12 helical piers set to seven feet (assuming minimum of 500 ft/lbs torque or refusal) and fitted with adjustable hardware for connection to the columns; joist framing to be pressure treated; deck and purlins to be untreated rough sawn lumber; roof to be 22 gauge, 7/8-inch corrugated cold rolled steel. Approximate square footage is 1,537 at \$76/square foot, for an estimated total this item of \$116,812.

Alternate: Helical piers are preferable because of reversibility and because they obviate the need for archeology. The 28 piers needed total \$21,000. Cast spot footings 12 inches in diameter and 24 inches deep with attachment hardware can be substituted for an estimated \$10,080, bringing the total this item to \$105,892.

Exterior Mud Leveling Coat

Mask all woodwork with 6-mil plastic; using a pump in a barrel of lime water (½ shovel Type S hydrated lime in 50 gallons clean water), completely douse the walls repeatedly to remove all loose material; apply a mud leveling coat to achieve military appearance,

Crocker Ltd., Continued

straight and plumb. Leveling coat mix to be maximum 18% clay by volume, 1% silt, balance aggregate. Aggregate is to be crushed, not rounded, and roughly equally distributed in a range of sizes from No. 8 masonry sand to 3/8-inch gravel. Add 1/8 cup (dry volume) Type S hydrated lime to five gallons of water for mixing. Chopped straw will enhance the durability but may not be appropriate historically. 255 square yards at \$42/yard for an estimated cost this item of \$10,710.

NOTE: It is essential that test panels be applied beforehand to verify that the mix has the proper characteristics of adhesion and resistance to cracking.

Mud Plaster Finish Coat

Mud to be new local material; do not recycle from the base of walls. Mix to be maximum 18% clay by volume, 1% silt, balance aggregate. Aggregate is to be crushed, not rounded, and roughly equally distributed in a range of sizes from No. 8 masonry sand to 1/4-inch gravel. Add 1/8 cup (dry volume) Type S hydrated lime to five gallons of water for mixing. Chopped straw will enhance the durability but may not be appropriate historically. 255 square yards at \$15/yard for an estimated cost this item of \$3,825.

Removal of Slab Floors

Do not use vibratory (hydraulic or pneumatic) demolition equipment. Saw cut the floors in the living room and BR 1 on a 30-inch grid; remove and dispose of debris. 494 square feet at \$12/foot for an estimated cost this item of \$5,928.

Replace Floors

Excavate trenches at eight inches wide and four inches deep, 24 inches O.C.; fill trenches with 3/8-inch rounded river rock; lay 4x4-inch pressure treated sleepers on the gravel, holding back from the vertical plane of the walls by three inches to permit air circulation; deck with 5/8-inch plywood. Finish floor to be soft pine nailed to the sub-floor with cut nails. Install two vents per room. Estimated cost per square foot: \$25. Quantity to be determined.

Restore Fireboxes

Use historic bricks. Estimated cost: \$1,500 each, for a total of \$4,500. Cap chimneys Use rigid insulation cut to fit flue and seal with galvanized metal caps. Estimated cost: \$500 each, for a total of \$1,500.

Restore Windows / Doors

Allow \$2,280 each for seven windows: \$15,960. Allow \$1,440 each for six doors: \$8,640. Front door and operating glazing: \$3,000. Replicate window at northeast Estimated cost \$3,000. Move door to south-center Estimated cost \$1,680.

Roof and Beams

Strip existing roof. Estimated cost including disposal fees: \$2,000. Splice beams as needed (see specifications, attached). Estimated cost: \$850/each. Allowance: 12 units, for a total this item of \$10,200. Tie the beams to the bearing walls by running a two-inch, 12,000 lb. test polyester webbing over the beam inside the vertical plane, then down six courses of adobe, through the wall and back up the exterior, through the wall and over the top of the beam. Pull the strap tight and screw to the beam using three-inch brass deck screws and fender washers. Grommet holes to be melted into the strapping at the screw points. Estimated cost per unit: \$240 in 80 locations for a total this item of \$19,200.

Epoxy (Abatron®) Repairs

Wooden elements that show structurally non-threatening levels of deterioration due to rot, fungi or wood eating insects should be scraped or chiseled to solid wood and repaired using Abatron WoodEpoxy® or equivalent. Estimated cost per board foot: \$36. Allowance: 100 board feet for a total this item of \$3,600. Borate treatment for all embedded wood: Estimated cost per board foot: \$15. Allowance: 500 board feet for a total this item of \$7,500. Replace saguaro latillas; cover with petate mat or other appropriate material to hide insulation from beneath. Estimated cost: \$30/square foot. Quantity to be determined. Insulation and re-roof estimate by others.

Ceiling

Strip existing ceiling. Estimated cost: \$6/square foot, including disposal. At 1,326 square feet, total this item is \$7,956.

Patch / Repair Interior Walls

Approximately 430 square yards, with mud and lime wash. Estimated cost: \$36/square yard for a total this item of \$15,480.

Officer's Quarters No. 2

We propose that the ghosting scheme offers several advantages for the material conservation of the structure, as well as being a sound interpretive tool. The proposed roof will offer the best protection possible for the adobe walls and the steel columns can be placed in such a way as to serve as bracing for a strapping system.

Demo Concrete Annex on West

Do not use vibratory equipment. Saw cut the walls into manageable sections, remove and dispose of debris. Estimated cost: \$2,500.

Demo Contrapared on East and North

Do not use vibratory equipment. Saw cut the grade beam into manageable sections, remove and dispose of debris. Estimated cost: \$3,400.

Repair Base of Wall

(see below)

Install Columns

Pricing by others.

Infill East Wall

As part of the plan to stabilize the wall, remove the scabbed-in lintel and replace with appropriate rough beams to match existing; infill with adobe. Beam replacement estimated cost: \$750. Adobe infill estimated at \$22/face foot for approximately 60 face feet: \$1,320.

Infill West Wall

Replace lintel over window. Estimated cost: \$600. Adobe infill estimated at \$22/face foot for approximately 32 face feet: \$704.

Capture Walls

Strap walls per attached diagram with two-inch, 12,000 lb. test polyester webbing. Strapping to begin at steel column and be attached via buckling or clamping devices; strapping to be run at lintel and sill heights to provide attachment (particularly at lintel height) to embedded wood; pull the strap tight using a come-along or freight tie-down device; attach strapping by melting a grommet hole using a hot nail or wire; screw to embedded wood using three-inch brass deck screws and fender washers at six inches O.C., and to the adobe walls at 16 inches O.C.; holes to be alternating in upper and lower thirds of strap. Approximately 440 linear feet of strapping at \$27/foot for an estimated total this item of \$11,880. Where required, on the east portion of the south wall for example, add 2x6x10-foot vertical stiles to capture unstable areas (see diagram). Apply a mud leveling coat prior to installation to avoid point loads on high spots. Estimated cost per unit: \$250. Allowance: 2 stiles for a total this item of \$500.

Level Out Walls at Parapet

Eliminate the crenellated appearance by infilling with adobes and adobe batts. Estimated cost per linear foot, \$66 for an estimated 20 linear feet: \$1,320.

Wall Repairs

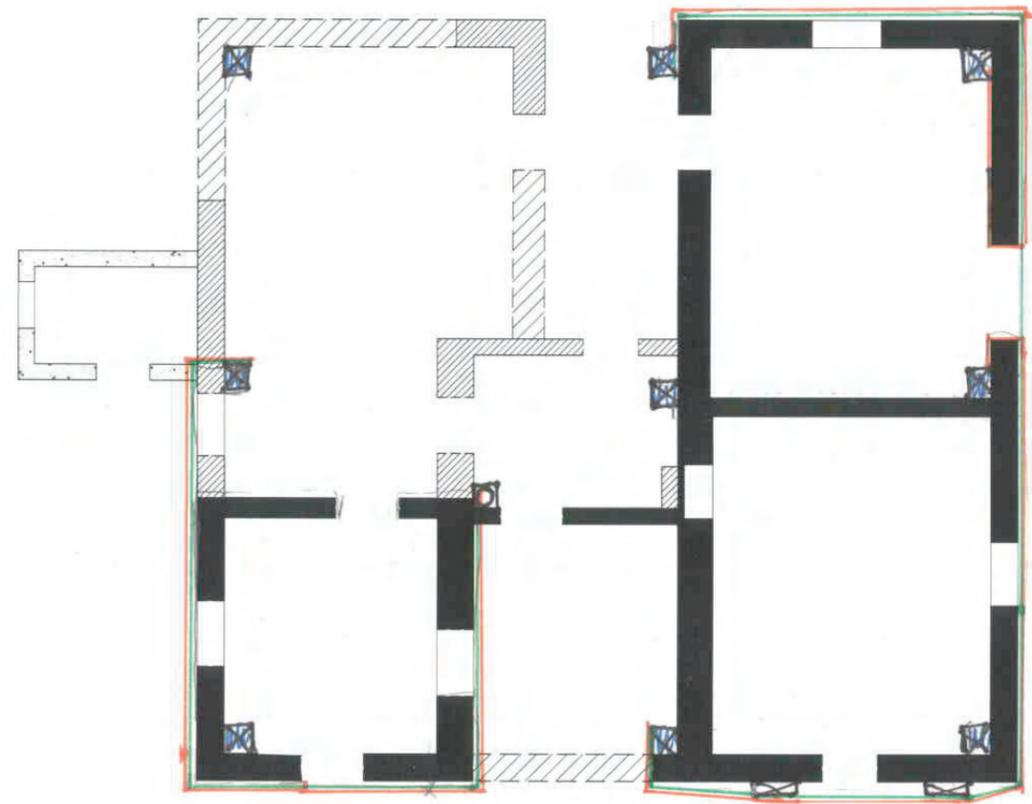
There are a number of areas in the walls that should be stabilized. Adobe in the vertical plane of the wall that is damaged or destroyed to a depth of no more than three inches can be repaired with mud leveling coats and, if needed, unfired tile rajuela. Estimated cost per face foot: \$11. Allowance: 200 square feet for a total this item of \$2,200. Damaged and destroyed adobe at a depth from three to six inches will require replacement with adobe batts. Estimated cost per face foot: \$19. Allowance: 100 square feet for a total this item of \$1,900. Damaged and destroyed adobe deeper than six inches from the vertical plane will require replacement with full or partial adobes. Estimated cost per face foot: \$29. Allowance: 50 square feet for a total this item of \$1,450.

Grading and Drainage

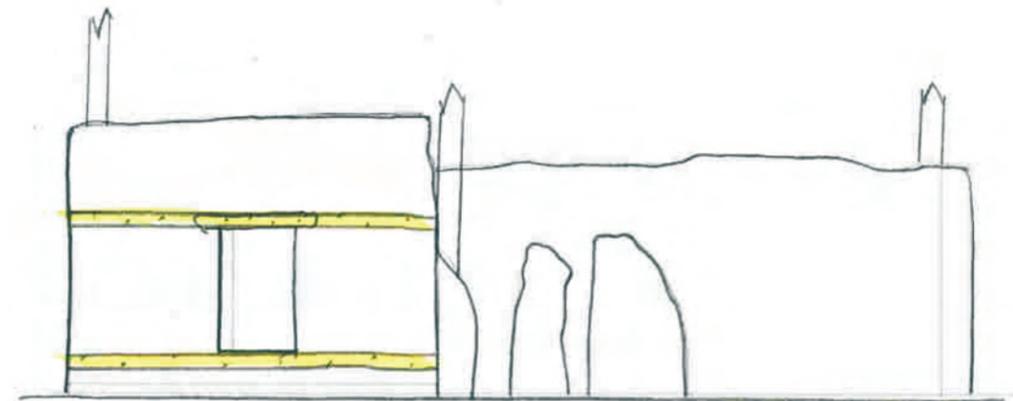
Excavate to the bottom of the footing, or at a

Crocker Ltd., Continued

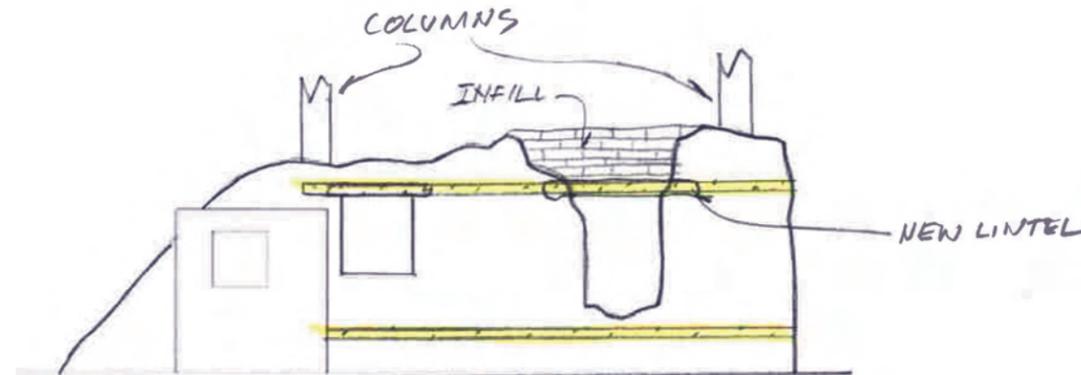
Proposal to “capture the walls” on Officer’s Quarters #2 using polyester webbing. This strategy is one option being considered to stabilize the walls. This design was completed before the lower porch ghosting was added. Since the lower porch ghosting will help to stabilize the walls, the polyester webbing may not be needed or may be reduced in scope.



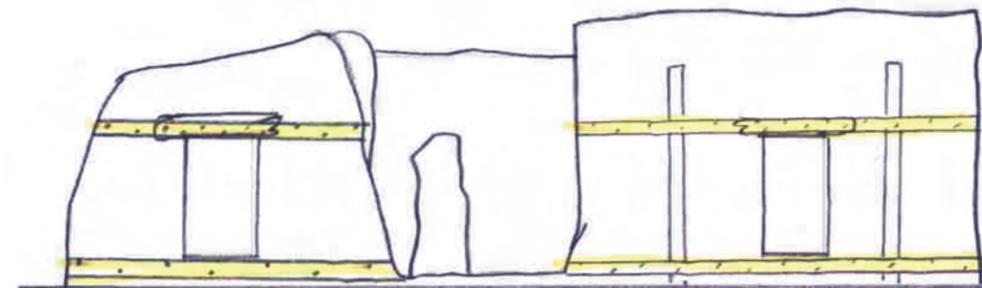
- Columns
- Upper Strap
- Lower Strap
- 2 x 6 Stiles
- Bollard



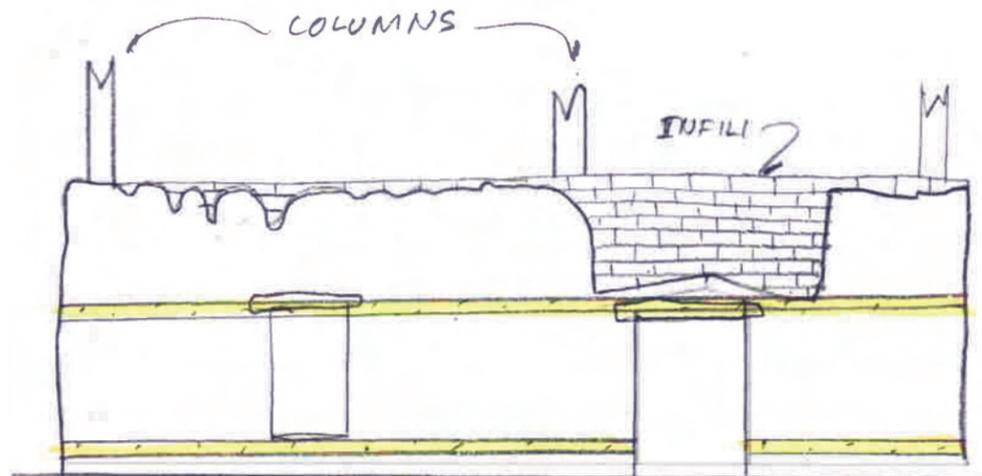
North



West



South



East

Crocker Ltd., Continued

minimum to eight inches below the bottom of the lowest course of adobes, along the full length of the four exterior walls (estimated at 166 linear feet); strike a line at final grade and cut and remove the plaster down to the substrate; supply and install MiraDrain 6000®, attached to the wall at the top with a 5/8-inch plaster stop; embed the bottom four inches in 3/4-inch river rock, capped with a non-woven polypropylene geotextile; backfill and compact using engineered fill; grade to drain at the surface. Estimated cost per linear foot: \$55 for a total this item of \$9,130.

Protective Coating

We propose that the majority of this structure be left as-is to illustrate the “skeleton” of the building next door, Officer’s Quarters No. 3. However, in order to lengthen the maintenance cycle we recommend that the south and west exterior walls be rendered with a mud leveling coat. Using a pump in a barrel of lime water (½ shovel Type S hydrated lime in 50 gallons clean water), completely douse the walls repeatedly to remove all loose material; apply mud leveling coat to achieve military appearance, straight and plumb. Leveling coat mix to be maximum 18% clay by volume, 1% silt, balance aggregate. Aggregate is to be crushed, not rounded, and roughly equally distributed in a range of sizes from No. 8 masonry sand to 3/8-inch gravel. Add 1/8 cup (dry volume) Type S hydrated lime to five gallons of water for mixing. Chopped straw will enhance the durability but may not be appropriate historically. Approximately 80 square yards at \$42/yard for an estimated total this item of \$3,360.

NOTE: It is essential that test panels be applied beforehand to verify that the mix has the proper characteristics of adhesion and resistance to cracking.

Kitchen at Officer’s Quarters No. 2

The ghosting plan with a protective roof leaves only the wall bases and outside vertical planes to be conserved.

Grading and Drainage

Excavate to the bottom of the footing, or at a minimum to eight inches below the bottom of the lowest course of adobes, along the full length of the

four exterior walls (estimated at 101 linear feet); strike a line at final grade and cut and remove the plaster down to the substrate; supply and install MiraDrain 6000®, attached to the wall at the top with a 5/8-inch plaster stop; embed the bottom four inches in 3/4-inch river rock, capped with a non-woven polypropylene geotextile; backfill and compact using engineered fill; grade to drain at the surface. Estimated cost per linear foot: \$55 for a total this item of \$5,555.

Protective Coating

An exterior mud render will offer a great deal of protection, particularly on the windward exposures. We propose that all four exterior walls be treated and that the interior walls remain as they are. Using a pump in a barrel of lime water (½ shovel Type S hydrated lime in 50 gallons clean water), completely douse the walls repeatedly to remove all loose material; apply mud leveling coat to achieve military appearance, straight and plumb. Leveling coat mix to be maximum 18% clay by volume, 1% silt, balance aggregate. Aggregate is to be crushed, not rounded and roughly equally distributed in a range of sizes from No. 8 masonry sand to 3/8-inch gravel. Add 1/8 cup (dry volume) Type S hydrated lime to five gallons of water for mixing. Chopped straw will enhance the durability but may not be appropriate historically. Approximately 202 square yards at \$42/yard for an estimated total this item of \$8,484.

NOTE: It is essential that test panels be applied beforehand to verify that the mix has the proper characteristics of adhesion and resistance to cracking.



The “Adobe Cage” method, developed by Crocker, Ltd., for stabilizing earthen walls for a failing building in Arroyo Seco, New Mexico.

The hard plaster is cut and removed, revealing the damaged wall beneath.



A lime-rich mud is cast onto the damaged wall without removal and replacement of adobe.



Mud is cast onto the steel “cage,” a frame that is one inch thick and fabricated on site to fit the building’s pathologies.



Once in place, holes are drilled through the wall to match up with the cage on the opposite side. All-thread through-bolts are used to draw the two cages together and sandwich the damaged wall.



The cages are left essentially flush with the vertical plane of the walls and can be plastered over without the use of lath.

Detailed Cost Estimate

Demolition Prior to Phase 1

<u>Item</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Mark-up</u>	<u>Total</u>
Remove Adkins Steel Fabrication Shed	2,350 Sqft	\$ 5.50	\$6,721	\$19,646
Remove Adkins-era Roller Trench Slab	1,100 Sqft	\$ 1.15	\$ 658	\$ 1,923
Remove Adkins-era Roller Trench	265 Cuft	\$23.50	\$3,238	\$ 9,466
Remove 4" Slab-on-grade	1,669 Sqft	\$ 1.15	\$ 998	\$ 2,917
Remove RC Magor House	1,600 Sqft	\$ 6.00	\$4,992	\$14,592
Remove Windmill Tower Base	1 Each	\$2,200	\$1,144	\$ 3,344
Remove Concrete Silo	1 Each	\$2,500	\$1,300	\$ 3,800
				\$55,688

Phase 1 - Officer's Quarters #3

<u>Item</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Mark-up</u>	<u>Total</u>
Rehabilitate Building (Est. by Crocker Ltd.)	1 Each	\$308,655	\$160,500	\$469,155
Security System & Electrical Service	1,750 Sqft	\$ 6.50	\$5,915	\$17,290
Interior Finishes	1,750 Sqft	\$ 10.00	\$9,100	\$26,600
Tapered Roof Insulation	1,550 Sqft	\$ 2.30	\$ 1,854	\$ 5,419
Re-roof	1,550 Sqft	\$ 2.55	\$ 2,055	\$ 6,008
Custom Canale & Leader	8 Each	\$ 225	\$ 936	\$ 2,736
Plaster Ceiling	800 Sqft	\$ 8.25	\$3,432	\$10,032
				\$537,240

Phase 1 - Officer's Quarters #2 and Kitchen Ruins

<u>Item</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Mark-up</u>	<u>Total</u>
Steel Roof Structure	1,710 Sqft	\$25.00	\$22,230	\$64,980
Steel Roof Deck	1,710 Sqft	\$ 5.00	\$ 4,446	\$12,996
Linear Skylight	2 Each	\$850	\$ 884	\$2,584
Stabilize Adobe Walls (Est. by Crocker Ltd.)	1 Each	\$55,053	\$28,628	\$83,681
Porch Roof	1,710 Sqft	\$20.00	\$17,784	\$51,984
Kitchen Roof Structure	590 Sqft	\$25.00	\$ 7,670	\$22,420
Kitchen Roof Deck	590 Sqft	\$ 5.00	\$ 1,534	\$ 4,484
				\$243,128

Phase 1 - Officer's Quarters #1 Ruins

<u>Item</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Mark-up</u>	<u>Total</u>
Mud Cap	200 Lnft	\$25.00	\$2,600	\$7,600
Adobe Repair	1 Each	\$3,000	\$1,560	\$4,560
Grade Away from Building	1,000 Sqft	\$ 0.50	\$ 260	\$ 760
Steel Ghosting	1,710 Sqft	\$25.00	\$22,230	\$64,980
Porch Roof	1,580 Sqft	\$20.00	\$16,432	\$48,032
				\$125,932

Phase 1 - Stabilize Adkins Residence & Water Tower

<u>Item</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Mark-up</u>	<u>Total</u>
Patch Roof, Flashing & Shoring	1 Each	\$30,450	\$15,834	\$46,284
Stabilize Water Tower	1 Each	\$ 1,000	\$ 520	\$ 1,520
				\$47,804

Phase 1 - Adkins Site Work

<u>Item</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Mark-up</u>	<u>Total</u>
Adkins 6' CL Site Fencing	1,200 Lnft	\$10.00	\$6,240	\$18,240
Adkins 4' Picket Fencing	250 Lnft	\$20.00	\$2,600	\$ 7,600
New Cottonwood Trees	30 Each	\$600	\$9,360	\$27,360
Site Grading	1 Each	\$2,500	\$1,300	\$ 3,800
Irrigate Adkins-era Trees	3 Each	450	\$ 702	\$ 2,052
				\$59,052

Phase 1 - Adkins Parcel Parking Lot

<u>Item</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Mark-up</u>	<u>Total</u>
Adkins Stabilized Parking	26,000 Sqft	\$0.65	\$8,788	\$25,688
Adkins Parking Lot Landscaping	1 Each	\$7,000	\$3,640	\$10,640
Adkins Parking Lighting	1 Each	\$3,300	\$1,716	\$ 5,016
Adkins Striping	1 Each	\$750	\$ 390	\$ 1,140
Adkins Curb	850 Lnft	\$12.00	\$ 5,304	\$15,504
				\$57,988