APPENDIX A

FIGURES

Figure 1.1. The Architectural Conservation Laboratory, "Panoramic view showing the east cabin and the fort (background)" (April 12, 2010).

Figure 1.2. The Architectural Conservation Laboratory, "The fort and ponds from the southeast" (April 12, 2010)

2.0 Figures: Description of Structures

Figure 2.1. The Architectural Conservation Laboratory, "Low altitude aerial documentation of the fort exterior from the northwest" (April 12, 2010).

Figure 2.2. The Architectural Conservation Laboratory, "Low altitude aerial documentation of the fort complex" (April 12, 2010).

2.0 Figures: Description of Structures

Figure 2.3. The Architectural Conservation Laboratory, “Winsor Castle, looking west” (July 23, 2010).

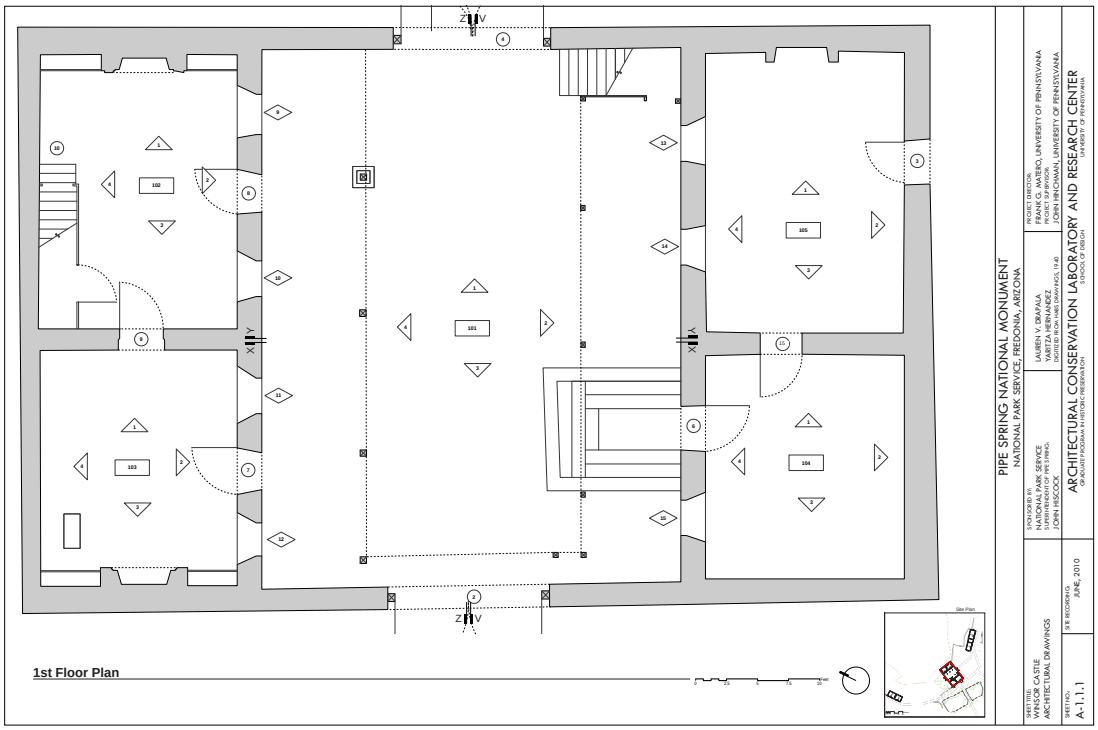

Figure 2.4. The Architectural Conservation Laboratory, “First floor plan, Winsor Castle” (June 2010).

2.0 Figures: Description of Structures

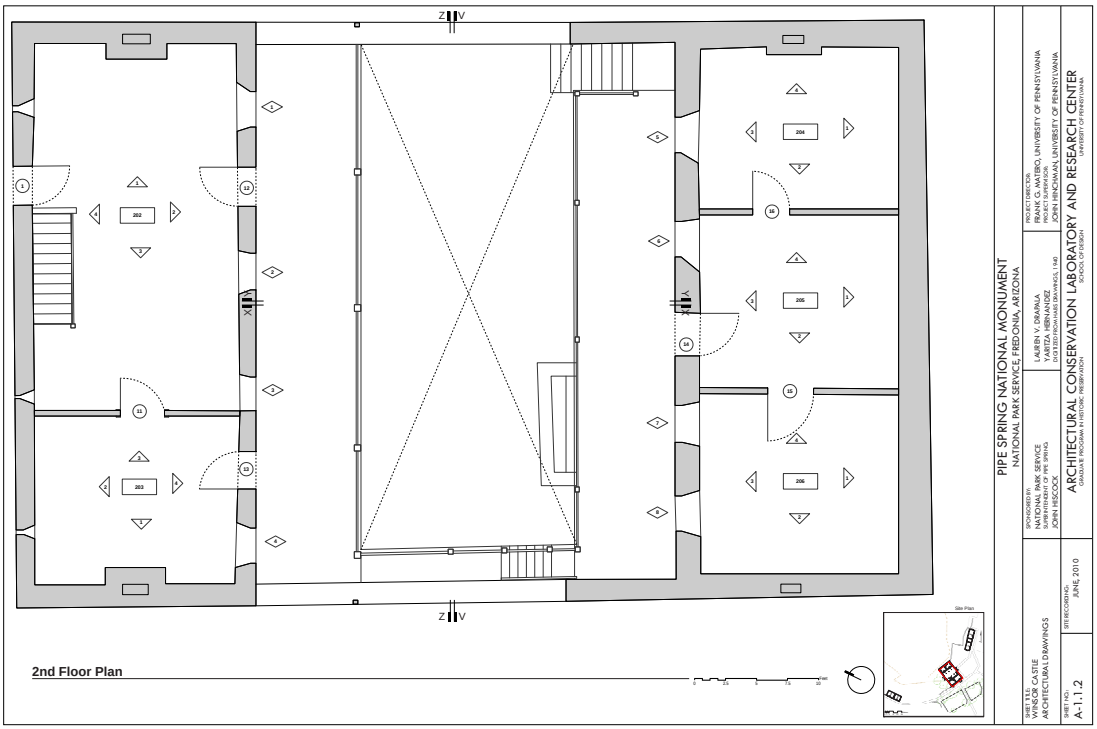

Figure 2.5. The Architectural Conservation Laboratory, "Second floor plan, Winsor Castle" (June 2010).

Figure 2.6. The Architectural Conservation Laboratory, "Low altitude aerial documentation photograph of the fort's south facade" (April 12, 2010).

2.0 Figures: Description of Structures

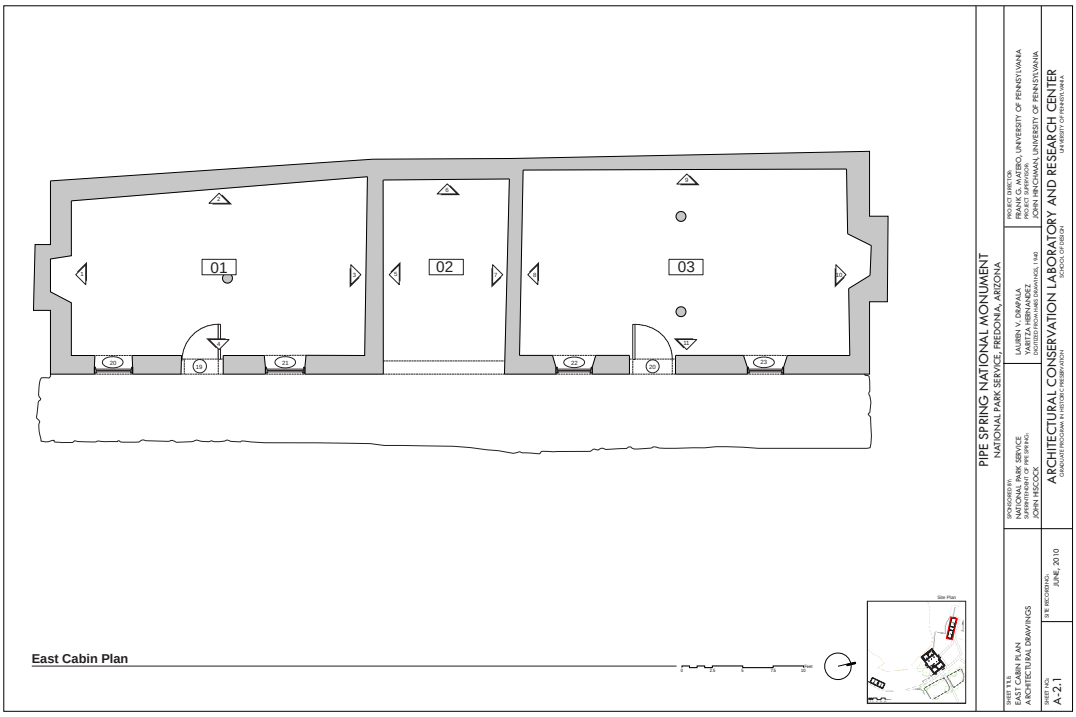

Figure 2.7. The Architectural Conservation Laboratory, "East cabin plan drawing" (June 2010).

Figure 2.8. The Architectural Conservation Laboratory, "Low altitude aerial photograph of the east cabin" (April 12, 2010).

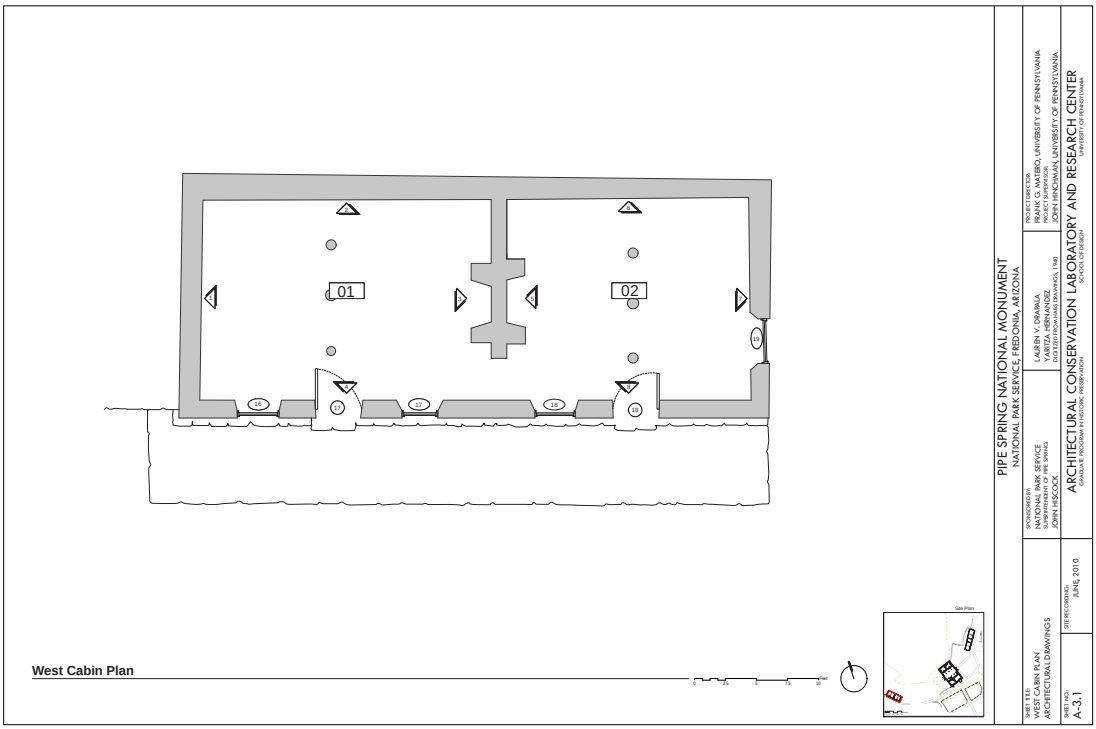

Figure 2.9. The Architectural Conservation Laboratory, "West cabin plan drawing" (June 2010).

Figure 2.10. The Architectural Conservation Laboratory, "Low altitude aerial photograph of the west cabin" (April 12, 2010).

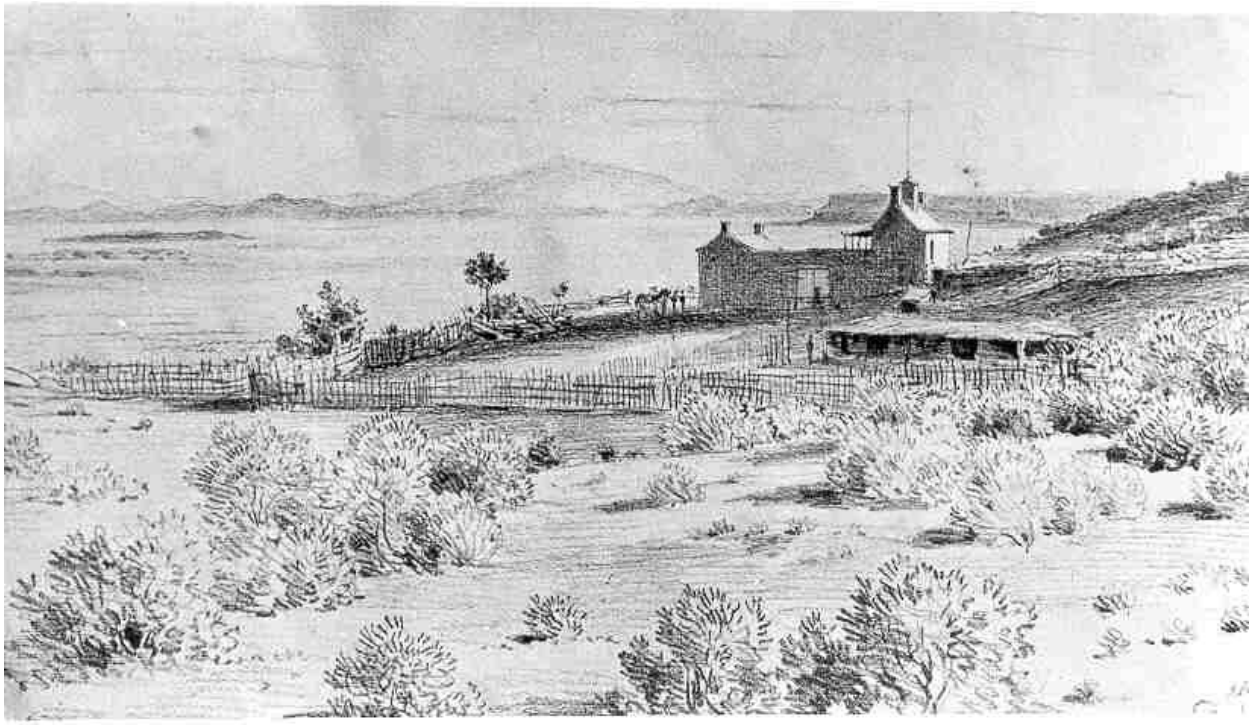

Figure 5.1. Albert Tissandier, "Hand drawing" (c. 1885–86).

Figure 5.2. The Architectural Conservation Laboratory, "Doors and hardware" (October 22, 2010).

Figure 5.3. "Fort exterior—Pipe Spring files" (c. 1925).

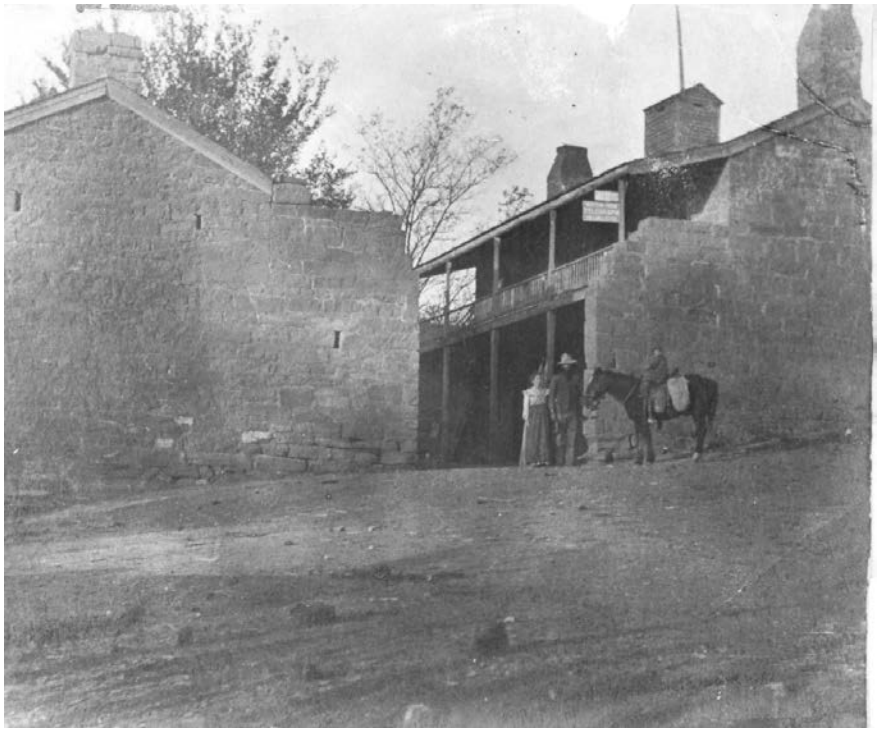

Figure 5.4. "Silers in front of fort" (1902).

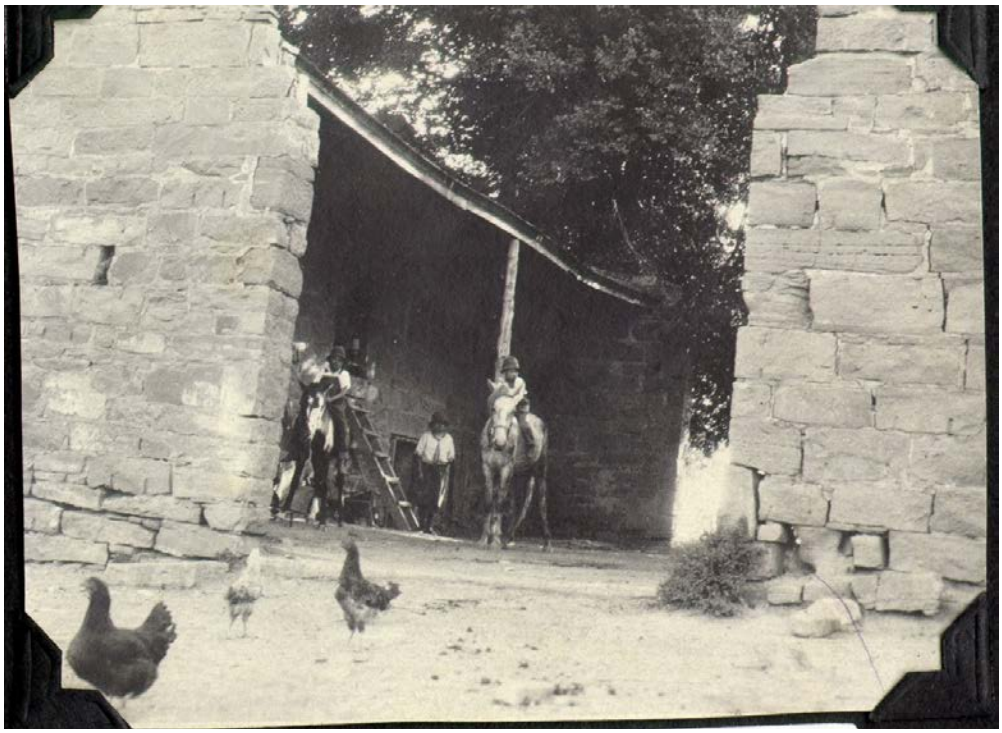

Figure 5.5. White family photographs (August 1924).

Figure 5.6. Leonard Heaton, "Showing work being done to remove windows put in the fort by Edwin Woolley in 1886 or 1887. Workmen: Clair Ford, Sherwin Heaton, Ray Mose" (January 19, 1959).

Figure 5.7. Leonard Heaton, "Showing completed job of removal of windows on south wall of fort" (February 5, 1959).

Figure 5.8. "Showing fort rehabilitation / stabilization work" (May–August 1980).

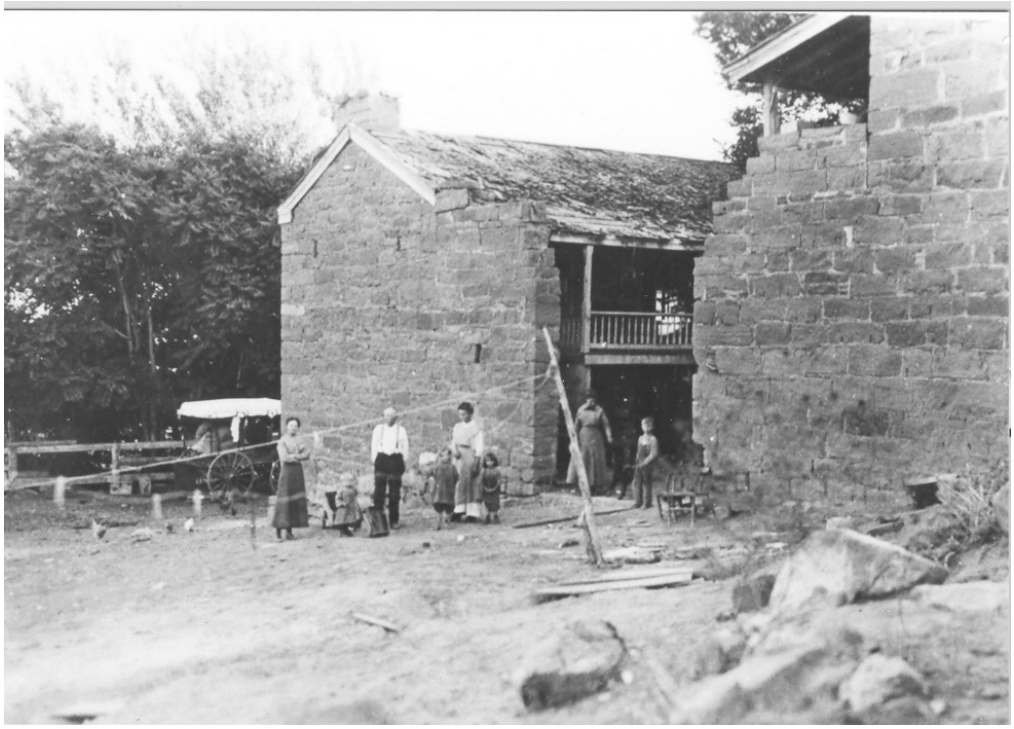

Figure 5.9. "Colvin family outside fort" (August 1913).

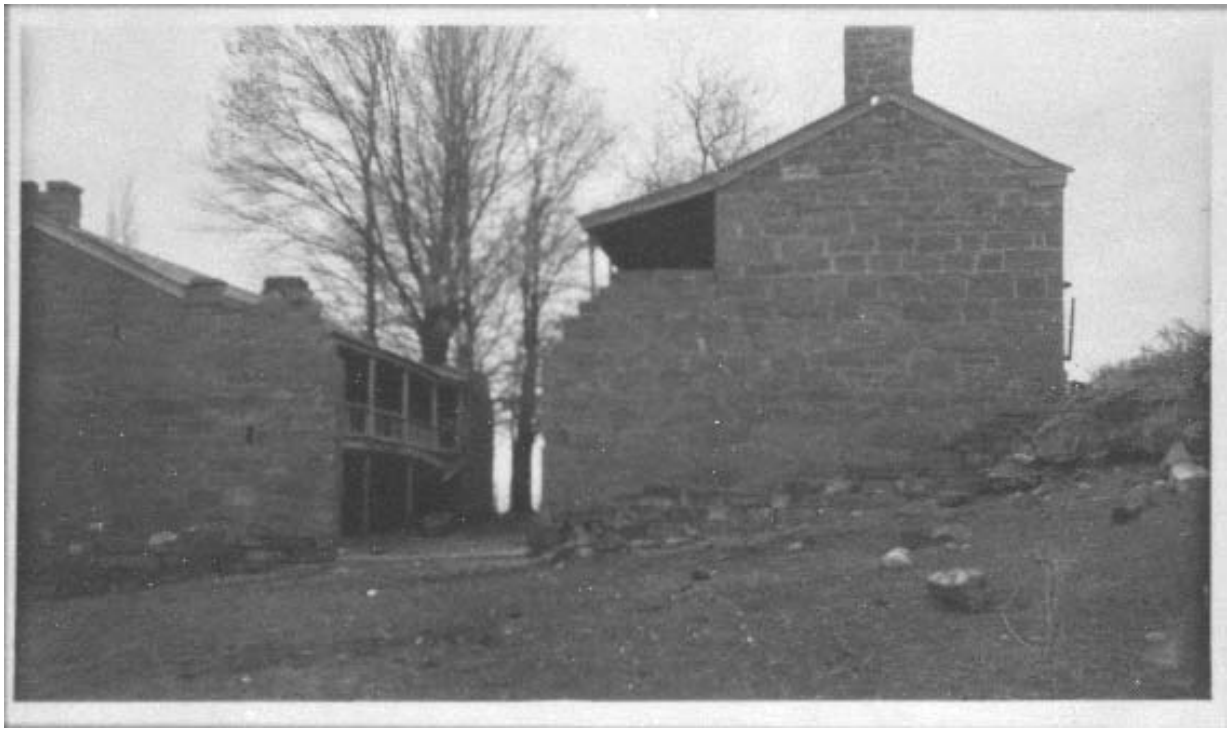

Figure 5.10. "Fort exterior, looking west" (c. 1922).

Figure 5.11. "White family photographs—Pipe Spring fort" (1924).

Figure 5.12. Donald W. Dickensheets, "South wing (north elevation)" (May 18, 1940). Library of Congress Pipe Spring Fort, Moccasin, Mohave County, AZ (HABS ARIZ, 8-MOC.V,1—6).

Figure 5.13. The Architectural Conservation Laboratory, "HABS comparison photograph of south balcony, looking south" (July 12, 2012).

Figure 5.14. Donald W. Dickensheets, "North wing (south elevation)" (May 18, 1940). Library of Congress Pipe Spring Fort, Moccasin, Mohave County, AZ (HABS ARIZ, 8-MOC.V,1—7).

Figure 5.15. The Architectural Conservation Laboratory, "HABS comparison photograph of north balcony, looking north" (July 12, 2012).

Figure 5.16. "Making a Dutchman repair to base of balcony post" (1995).

Figure 5.17. Fred Banks, "Rebuilding fort railing" (September 1982). Pipe Spring slide archive, fig. SL1327.

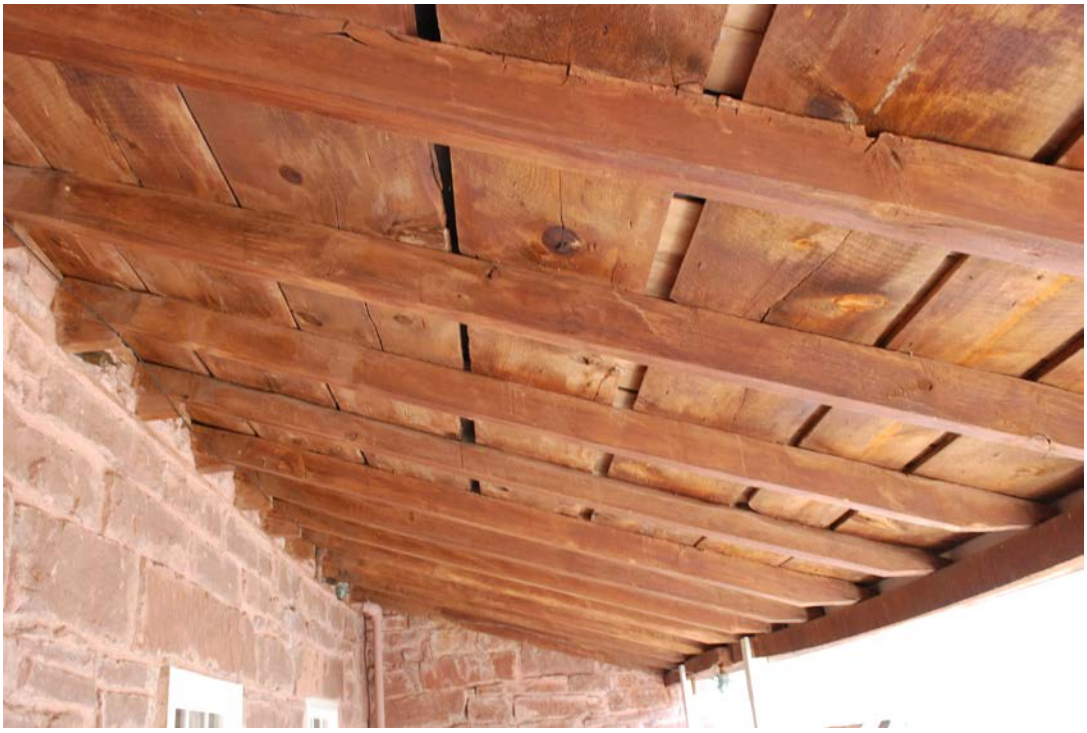

Figure 5.18. The Architectural Conservation Laboratory, "Rafters of lower (south) balcony, detail of the wood sheathing supporting the roof shakes" (July 12, 2012).

Figure 5.19. The Architectural Conservation Laboratory, "Rafters of lower (south) balcony; detail of wood coursing supporting the rafters in the masonry" (July 12, 2012).

Figure 5.20. Donald W. Dickensheets, "East wall of patio (west elevation)" (May 18, 1940). Library of Congress Pipe Spring Fort, Moccasin, Mohave County, AZ (HABS ARIZ, 8-MOC.V,1—4).

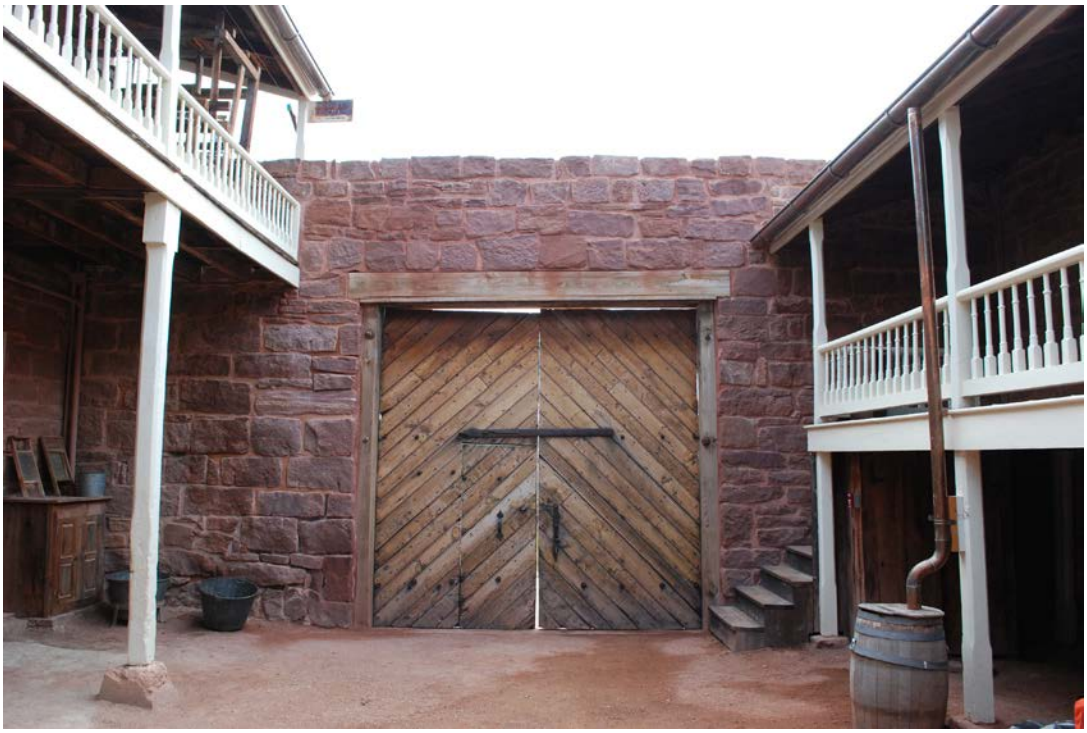

Figure 5.21. The Architectural Conservation Laboratory, "HABS comparison photograph of interior courtyard of Winsor Castle, looking east" (July 12, 2012).

Figure 5.22. Donald W. Dickensheets, "West wall of patio (east elevation)" (May 18, 1940). Library of Congress Pipe Spring Fort, Moccasin, Mohave County, AZ (HABS ARIZ, 8-MOC.V,1—5).

Figure 5.23. The Architectural Conservation Laboratory, "HABS comparison photograph of interior courtyard of Winsor Castle, looking west" (July 12, 2012).

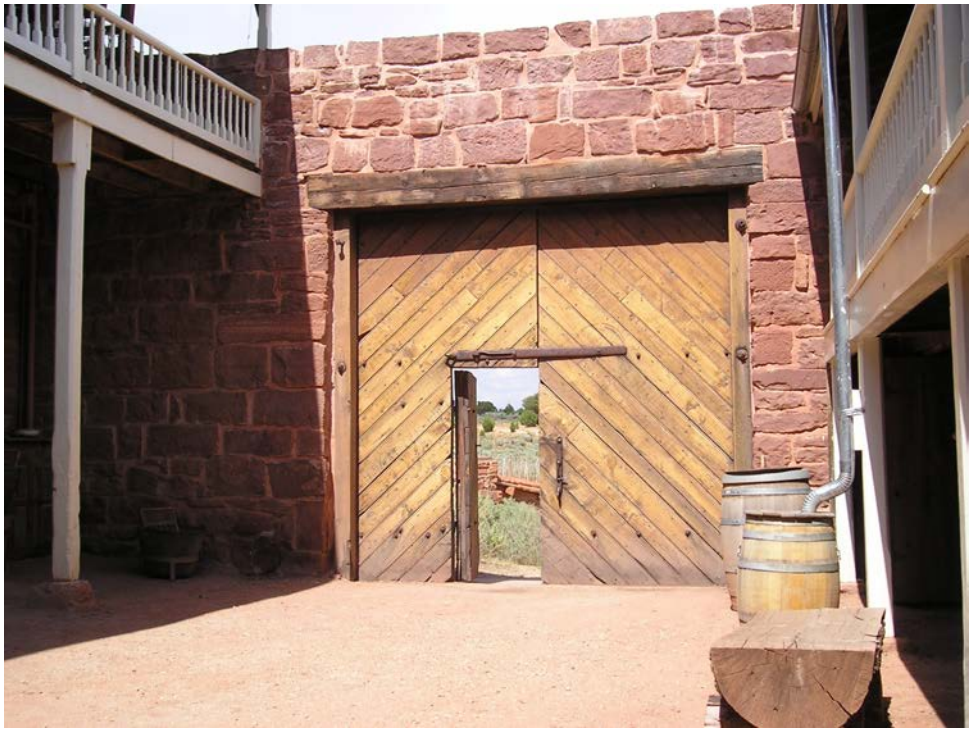

Figure 5.24. "Shot of interior courtyard of Winsor Castle, looking east" (August 12, 2006).

Figure 5.25. "Interior courtyard of Winsor Castle, looking east" (May 08, 2008).

Figure 6.1. The Architectural Conservation Laboratory, "Detail of backboards showing center nailer, saw marks and wider width boards" (July 12, 2012).

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Figure 6.3. Donald W. Dickensheets, "Fireplace west wall, north wing, east elevation" (May 18, 1940). Library of Congress Pipe Spring Fort, Moccasin, Mohave County, AZ (HABS ARIZ, 8-MOC.V,1—8).

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Figure 6.6. The Architectural Conservation Laboratory, "Added center stringer on the stairs, from closet below staircase" (July 12, 2012).

Figure 6.7. The Architectural Conservation Laboratory, "Detail of underside of staircase" (July 12, 2012).

Figure 6.8. Dale Scheier, "Reconstruction of parlor" (June 10, 1980), Pipe Spring slide archive, fig. SL0881.

Figure 6.9. Dale Scheier, "Parlor prior to reconstruction" (January 10, 1979), Pipe Spring slide archive, fig. SL0880.

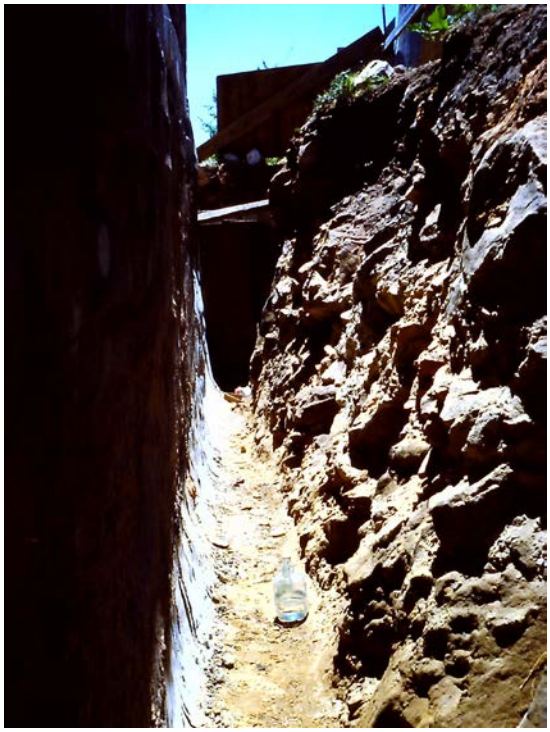


Figure 6.10. "Excavation of drainage trench" (June 1980), Pipe Spring slide archive, fig. SL0669.

Figure 6.11. Dale Scheier, "Excavation of drainage trench" (June 29, 1980), Pipe Spring slide archive, fig. SL0642.

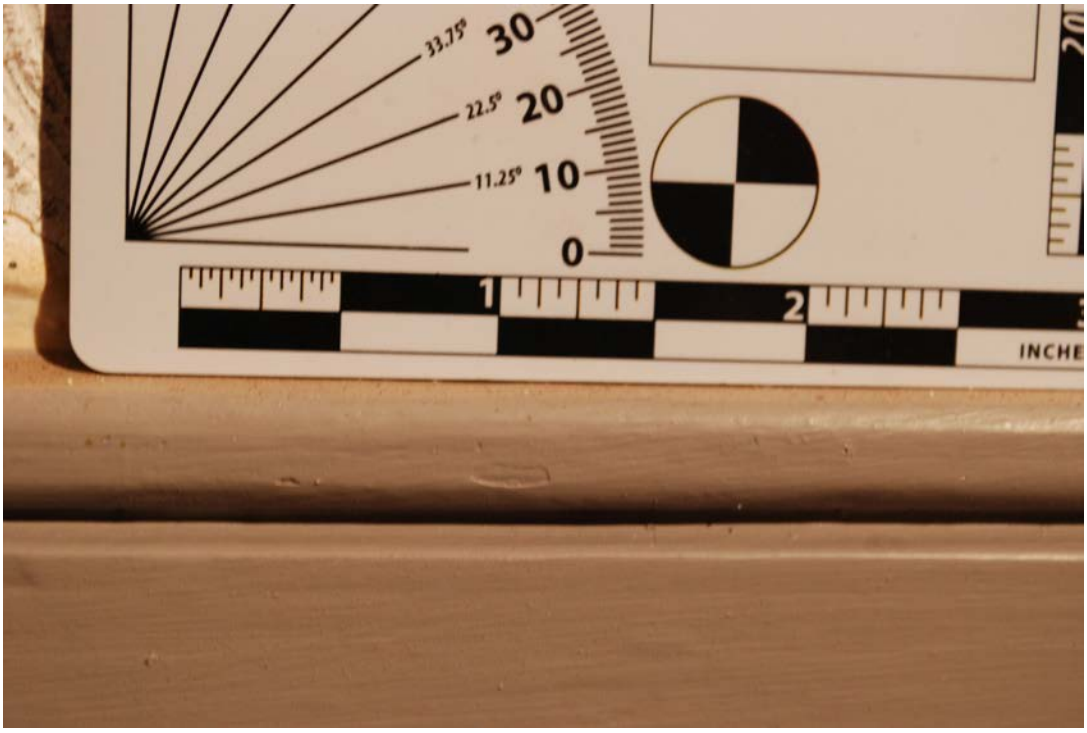


Figure 6.12. The Architectural Conservation Laboratory, "Detail of beading on the baseboard at the entry wall from the courtyard (left of the door)" (July 12, 2012).

Figure 6.13. "Parlor Table" (1981), Pipe Spring slide archive, fig. SL0876.

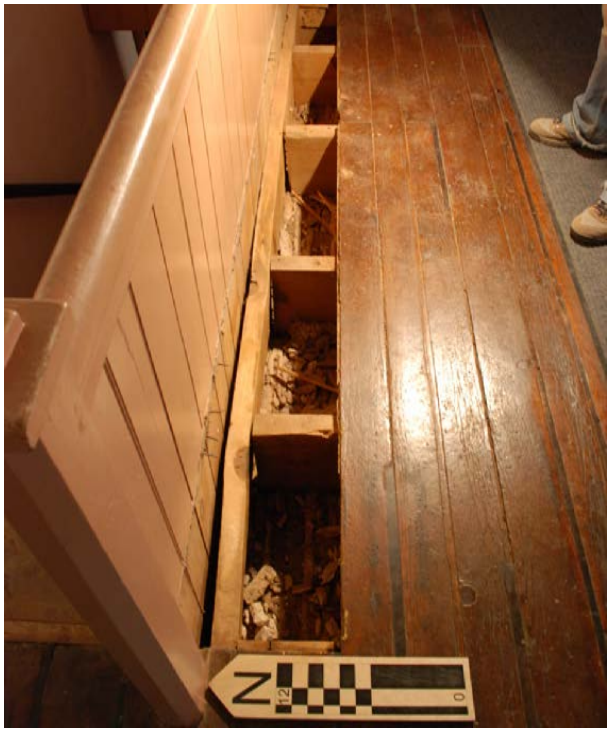


Figure 6.14. The Architectural Conservation Laboratory, "Lifted floorboard adjacent to staircase in the meeting room" (July 10, 2012).

Figure 6.15. The Architectural Conservation Laboratory, "After removal of floorboard adjacent to meeting room staircase" (July 10, 2012).

Figure 6.16. The Architectural Conservation Laboratory, "Doodle drawing on west floorboard nailer adjacent to meeting room staircase; doodle depicts man's head on fish body" (July 10, 2012).

Figure 6.17. The Architectural Conservation Laboratory, "Beaded nailer supporting removed floorboard on east end of meeting room staircase" (July 10, 2012).

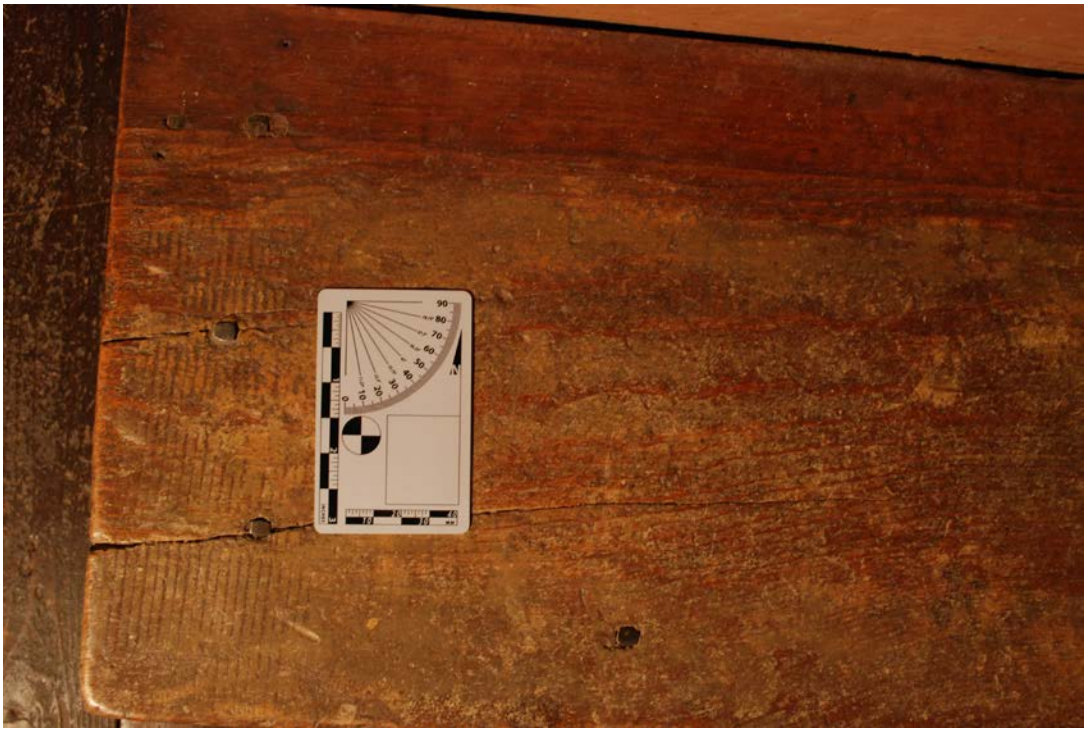


Figure 6.18. The Architectural Conservation Laboratory, "Stair tread in kitchen; evidence of tarring and glue, and square cut nails" (July 12, 2012).

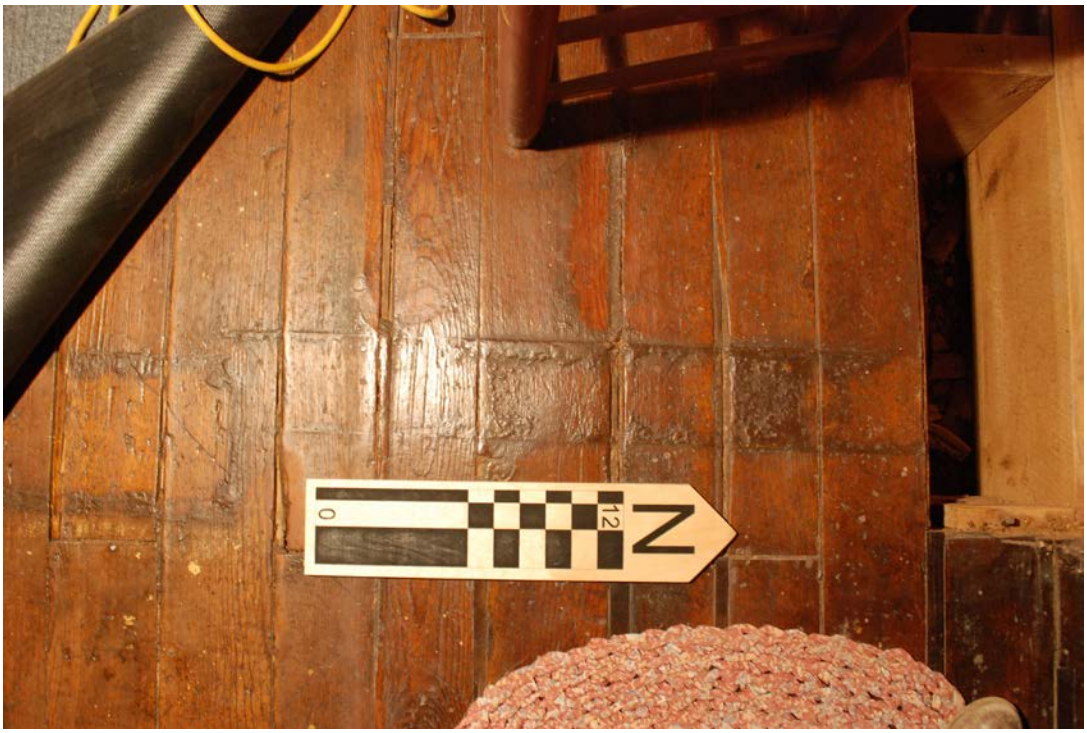


Figure 6.19. The Architectural Conservation Laboratory, "Residue on floorboards showing threshold of removed partition wall in meeting room" (July 10, 2012).

Figure 6.20. The Architectural Conservation Laboratory, "Detail of baseboard and fasteners adjacent to meeting room staircase" (July 12, 2012).

Figure 6.21. The Architectural Conservation Laboratory, "Detail of bead in baseboard under west window in meeting room" (July 12, 2012).

Figure 6.22. The meeting room following the removal of the partition wall prior to replastering of the ceiling and walls. (post-1959)

Figure 6.23. Dale Scheier, "Reconstruction of kitchen wall" (June 10, 1980), Pipe Spring slide archive, fig. SL0865.

Figure 6.24. The meeting room following the removal of the partition wall with the wall's positioning visible in both the floor and ceiling. (post-1959)

Figure 6.25. "Making repairs to floor" (March 04, 2009).

Figure 6.26. "Removing wax with paint thinner" (March 03, 2009).

Figure 6.27. “Deteriorating floor” (July 05, 2007).

Figure 6.28. “Making repairs to floor” (March 06, 2009).

Figure 6.29. The Architectural Conservation Laboratory, "Hand planed sill, far west window in meeting room" (July 12, 2012).

Figure 6.30. The Architectural Conservation Laboratory, "Hand planed soffit, second window from right (west); meeting room" (July 12, 2012).

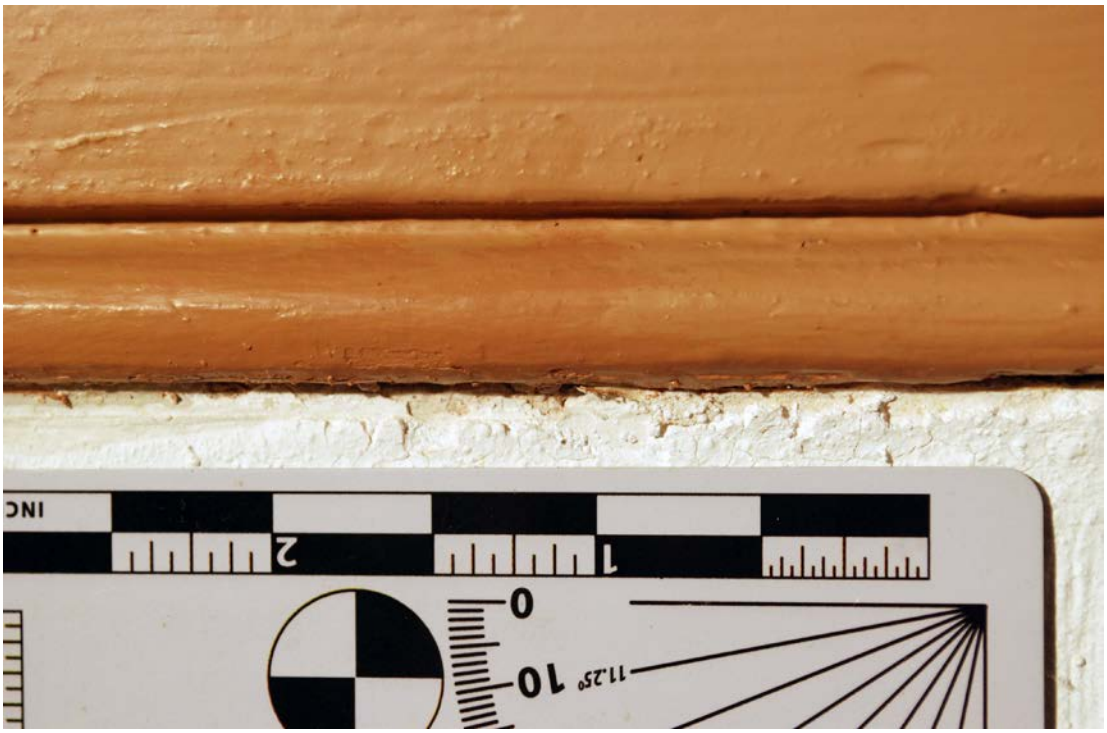


Figure 6.31. The Architectural Conservation Laboratory, "Detail of bead in frame under the sill of west window in meeting room" (July 12, 2012).

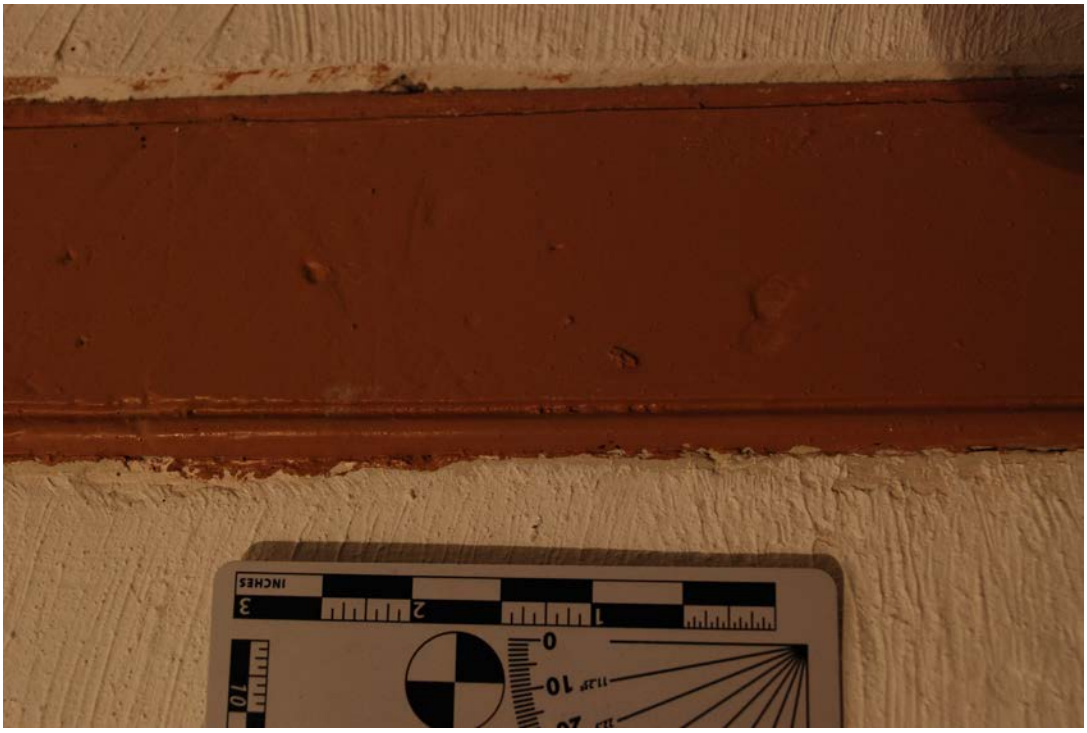


Figure 6.32. The Architectural Conservation Laboratory, "Picture molding to the far east in the meeting room" (July 12, 2012).

Figure 6.33. The Architectural Conservation Laboratory, "Baseboard on the courtyard wall (south) of northwest bedroom" (July 12, 2012).

Figure 6.34. The Architectural Conservation Laboratory, "Picture molding to the north of the interior door in the northwest bedroom" (July 12, 2012).

7.0 Figures: Description and Investigations of the Lower Building

Figure 7.1. The Architectural Conservation Laboratory, "Interior passage between the spring and cheese rooms, looking east from spring room" (July 10, 2012).

Figure 7.2. Pipe Spring National Monument, Southwest corner of spring room with trough removed (February 23, 2006).

Figure 7.3. The Architectural Conservation Laboratory, "Hatch door in cheese room ceiling" (July 12, 2012).

Figure 7.4. The Architectural Conservation Laboratory, "Detail of base of door frame; interior doorway of spring and cheese rooms" (July 10, 2012).

Figure 7.5. The Architectural Conservation Laboratory, "Back of the door frame, showing both circular saw marks and nails; interior doorway of spring and cheese rooms" (July 10, 2012).

Figure 7.6. The Architectural Conservation Laboratory, "Picture molding to south of door in southeast bedroom" (July 12, 2012).

Figure 7.7. The Architectural Conservation Laboratory, "Detail of the west window casing in the telegraph room" (July 12, 2012).

Figure 7.8. The Architectural Conservation Laboratory, "Detail of bead and quirk of baseboard with nails holes resulting from cut and wire nails; east wall of southeast bedroom" (July 10, 2012).

Figure 7.9. The Architectural Conservation Laboratory, "Detail of baseboard against partition wall (north of doorway) in southeast bedroom" (July 10, 2012).

APPENDIX B

SITE CHRONOLOGY

FORT | CABINS | PONDS

The events and residents of Pipe Spring have contributed significantly to the site's evolution since the late-nineteenth century. A database of those events—including building construction, alterations, changes in use, changes in ownership, and repair campaigns—have been compiled into a database. These entries incorporate the many journals, correspondence, and reports generated at the site to provide a detailed history of the its structures.

1931

On July 20, 1931, the west cabin roof beam broke and part of the roof caved in, requiring repairs.[13]

1937

1938

Existing clay and cedar bark was removed from the roof by the CCC and replaced with asphalt, covered with clay.[14]

1942

Concrete footings were installed in the west wall.

1942

South wall was repointed with concrete, surfaced with a clay mixture.

1950

A trench was dug to expose internal and exterior foundation surrounding the sinking SW corner. The trench was filled with concrete, and posts were embedded below interior floor level to impede outward bowing of walls).

c. 1920 | 1923 | 1924 | 1929 | 1940

PISP Site History

START	LOCATION	END	EVENT	SOURCE
	Dugout		Not long after the construction of Pipe Spring fort, the dugout collapsed, reportedly under the weight of a cow. The dugout was used thereafter as a trash pit by residents of Pipe Spring	Memorandum to Rod Wheaton from Doug Dewitz, January 21, 1985.
1858	Park Politics		naming of Pipe Springs by Jack Hamblin and party	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1863	Corral	1863	James Montgomery Whitmore, assisted by Robert McIntyre, obtained a land certificate for a 160-acre tract (April 13, 1863).	Administrative History p17-18
1865	Landscape		Whitmore and McIntyre fence approximately 11 acres for cultivation, build some corrals, and raise cattle at Pipe Spring. Whitmore is cultivating grape vines, peach, apple, and other fruit trees.	PISP CLI_97.doc (Park Service Digital Records), p6.
1866	Dugout		In 1866 Capt. James Andrus was given command of a cavalry company consisting of 62 officers and men and was instructed to examine the country along the Colorado River from the Buckskin Mountain (on the Kaibab Plateau) to the north of the Green River. The expedition left St. George on August 16, 1866, and traveled by way of Gould's Ranch, Pipe Spring, the abandoned settlement of Kanab, Skutumpah, to the Paria River, which they reached in the vicinity of the later site of Cannonville. It may have been at this time (or shortly after) that a stone cabin was constructed at Pipe Spring to be used for periodic encampment by the militia (the north part of what is now known as the east cabin).	McKoy, Cultures at a Crossroads, p. 29.

START	LOCATION	END	EVENT	SOURCE
1867	Fort		Stone house constructed for periodic encampment (1868: Col. John Pearce arrives with 36 men)	
1868	East Cabin		Built one-half of the two-room East Cabin is constructed for use by the Utah Territorial Militia. In November, the cabin is used as part of an encampment of 36 volunteers.	Pipe Spring Historic District: Pipe Spring National Monument. National Park Service Cultural Landscape Inventory, 2006.
1869	Dugout		Pipe Spring becomes a permanent supply base for the militia. Stone house was repaired by Charles L. Walker, stone cutter and mason, to provide a more suitable guard quarters. Shed constructed to hold sixteen horses.	Administrative History p19
1870	East Cabin	1870	Joseph Young was commissioned to oversee fortified quarters	Administrative History, 27
1871	Fort	1871	The Deseret Telegraph Line is installed and connects Pipe Spring with the Utah territory.	PISP CLI_97.doc (Park Service Digital Records), p7.
1872	Fort	1872	The 40' x 60' stone fort is completed and dubbed "Winsor Castle." The Winsor family continue to develop and improve the site. The two ponds south of the fort may have been built at this time. The family plant apple and plum trees, locate their garden just west of the orchard and surround it with currant bushes. They also plant a field of alfalfa west of the vegetable garden.	PISP CLI_97.doc (Park Service Digital Records), p7.

START	LOCATION	END	EVENT	SOURCE
1873	Ranch		The Winsor Castle Stock Growing Company is organized as a livestock cooperative and Anson Winsor is the superintendent of the operation.	PISP CLI_97.doc (Park Service Digital Records), p7.
1874	Fort	1874	A partition was added between the center and east rooms of the second floor of the upper building of Winsor Castle.	McKoy, Cultures at a Crossroads, p. 162.
1876	Fort	1885	The cattle herd at Pipe Spring totals 1,983. Beef, butter, and cheese are routinely transported from Pipe Spring to St. George, Utah to supply the crews working on the temple. In the fall, Anson Winsor and his family move to St. George.	PISP CLI_97.doc (Park Service Digital Records), p7.
1877	Ranch		Jan. Charles Pulsipher moves to Pipe Spring to take over the ranching operation. The ranch begins concentrating on beef cattle as the demands for butter and cheese decline. Pulsipher leaves in March 1879.	PISP CLI_97.doc (Park Service Digital Records), p7.
1879	Ranch		The Canaan Stock Growing Company acquires the Pipe Spring cattle herd and assumes management of the ranch through a lease agreement with the Mormon Church. The site is occupied by cowboys and a caretaker.	PISP CLI_97.doc (Park Service Digital Records), p7.
1880	Fort	1880	Flora Wooley, had her husband divert the spring outside the fort.	Parkinson, 1967 in Laird P. Naylor II, Archeological Testing of Spring Developments and Soil Moisture Sources in Association with Deteriorating Masonry of the Pipe Spring Fort (20 April 1995), 3.

START	LOCATION	END	EVENT	SOURCE
1881	Ranch		The Canaan Stock Growing Company cancel their lease and the Pipe Spring ranch operation is discontinued and the site sits vacant.	PISP CLI_97.doc (Park Service Digital Records), p7.
1882	Ranch		Late in the year, Joseph Gurnsey Brown obtains a lease with the Church and operates the ranch at Pipe Spring until late 1885.	PISP CLI_97.doc (Park Service Digital Records), p7.
1885	East Cabin		Frenchman, Albert Tissander, visits Pipe Spring and sketches the site and its buildings. His sketch includes the fort, east cabin, and corrals.	PISP CLI_97.doc (Park Service Digital Records), p7.
1886	East Cabin	1886	Probably a residence for ranch personnel.	Florence Snow Woolley, In Two Worlds: The Recollections of Florence Snow Woolley, a Pioneer Daughter of Utah's Dixie, 56.
1888	Fort	1888	A telephone is installed in the fort. Numerous trees are planted around the site.	Administrative History, 41.
1890	Fort		May- Sept. Fort restoration project - 2 rooms, north side	Administrative History p27

START	LOCATION	END	EVENT	SOURCE
1895	East Cabin	1890	Neglected-East Cabin is allowed to deteriorate and is reportedly used as a cow and pigpen by those occupying the Fort.	Landscape Inventory, 2006.
1902	Ranch		Nov. The Pipe Spring Cattle Co. is sold to A.D. Findlay.	PISP CLI_97.doc (Park Service Digital Records), p8.
1907	Ranch		Oct. The Department of Interior creates the Kaibab Reservation and reduces Findlay's land holding to 40 acres surrounding Pipe Spring.	PISP CLI_97.doc (Park Service Digital Records), p8.
1909	Park Politics		A.D. Findlay sells the Pipe Spring property to Jonathan Heaton and his sons. The Heaton family live in Moccasin and keep a caretaker at the ranch.	PISP CLI_97.doc (Park Service Digital Records), p8.
1910	Fort	1910	Charles C. Heaton removed the kitchen and parlor floors from the upper building most likely due to moisture problems	Leonard Heaton, Ruins Stabilization Record Sheet, 1947
1913	Fort	1915	101; South balcony gradually loses its wooden elements, destabilizes, and is later missing entirely. Upper balcony shows similar, but less extensive loss with missing balusters representing most of the damage on the north side.	Photographs: c. 1913-1915; c. 1915 (from PISP505_06Build_FortExterior.pdf) ; Photograph: White Family photos – Pipe Spring Fort 1922; ANDREA BORNEMEIER

START	LOCATION	END	EVENT	SOURCE
1914	Fort	1914	Heatons remove the Crows Nest from the roof of the upper building.	PISP Significant Improvements and Modifications – Historic Structures(Including ownership periods and some historic personages)
1917	Paiute Indians		125,000 acres of land are withdrawn by executive order for the Kaibab Reservation revoking the 1907 order. The entire Township excepting Heaton's 40 acres is placed in the reservation.	PISP CLI_97.doc (Park Service Digital Records), p8.
1920	Park Politics		A ten-year drought beginning in 1922 puts many cattlemen out of business; the Heatons of Moccasin survive the crisis (the "Dust Bowl Era"). Farm and cattle prices plummet after the end of World War I. "During Utah's agricultural depression of the 1920s, a great deal of attention was paid by both politicians and businessmen in campaigns to establish new parks and monuments encompassing the outstanding scenic features of its southern regions. This depression coincided with the birth of auto touring as a national pastime. In the 1920s and 1930s, tourism offered the best hope of reviving depressed agricultural economies. What ensued was a period of extraordinary collaboration between the private, public, and even ecclesiastical spheres, leading to the creation of a number of park units, including Pipe Spring National Monument." [above quote is taken from my draft admin. history]	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1922	East Cabin	1925	Numerous changes are made to the landscape including the removal of fencing and corrals, the addition of a cattle grate, rebuilding rock walls, and grading sites for camping.	
1923	Fort	1923	5/31/23 Establishment of the Monument.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeaton's reports

START	LOCATION	END	EVENT	SOURCE
1924	East Cabin	1929	Reconstruction work begins on the East Cabin.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1925	East Cabin	1925	The East Cabin is partially reconstructed.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1926	East Cabin	1926	Reconstruction of the East Cabin is completed. Windows and door frames installed.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeaton's reports
1927	Fort	1927	Leonard Heaton began work to restore the fort by reconstructing the stonework over where the old gates used to be, rebuilding and reinstalling the big gates, and by rerouting the spring through the fort.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1928	Fort	1928	3/1/28 RE: Spring, Fort restoration -L. Heaton: "I have just completed the work of finding the [spring] water and getting it to run through the lower house. It is about three times more work than I thought it would be..."	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1929	Fort	1929	L. Heaton reconstructs the West Cabin, based mostly on Pinkley’s plans.	Berle Clemensen, Historic Structure Report: Historic Data Section, December 1980, 28, as found in Southwestern Monuments Monthly Reports (Pipe Spring), December 3, 1929

START	LOCATION	END	EVENT	SOURCE
1930	Fort	1930	After making repairs to the south wing of the upper floor, the Heatons moved into it, and open part of the north wing, upper floor to visitors."We have moved into the upstairs of the lower house this month and find it much more agreeable and pleasant. Also I am glad to say that the upper house will be opened for the people to go through and see this year, with the exception of the west upstairs room which I intend to use to keep some of my things in."	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeaton's reports
1931	Visitation		In 1931 visitation dropped by about 90%, to 2,300. [Travel statistics reported in 1954 Master Plan Development Outline; NARA-RM, 4/22/54 memo]	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1932	Landscape		August 1932 report - (LH) on 8/25, 16 cattlemen of the Strip met at PISP to discuss "their troubles and the range conditions." "The people of this section received 10,800 pounds of flour from the Red Cross which will be a great help to some, but if work is not furnished to some they will go hungry or will have to be kept by some charity organization this winter.""I have been wondering if it would be possible to get some of the money that was allowed the Park Service for relief to be used at this monument to improve roads and grounds."	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1933	Landscape		[Dec. '33 report] Civil Works [Administration] Program initiated at PISP; CWA work on monument road, meadow, and tunnel [spring]; discovery during road work of old watering troughs; original bottom of tunnel 2 1/2' lower at one time. Pinkely lauded Heaton's CWP papers as "the best papers that have come out of the field" due to his carefully reading the "pages and pages" of instructions sent out by SW Monuments while others, "so brilliant and so anxious to make dirt fly", didn't read and/or fill out paper work	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports

START	LOCATION	END	EVENT	SOURCE
1934	Landscape		“Mr. Langley was here… and changed things a bit from the plan I was working on but they will now be more in line with what he wants of the place. I sometimes wonder if Mr. Langley is not using the wrong yard-stick in planning the planting for Pipe Spring. I think we should not depart from the spirit of the Mormon Pioneers which they always made prominent about their settlements, that of removing all undesirable vegetation from around the home and planting it with more attractive trees and flowers. If I got Harry’s idea, he wants sage brush, thistles, unsightly weeds, etc. growing all about the Fort with only small foot paths leading to and from it. I am strongly opposed to such a condition here immediately around the Fort, though I would like to encourage native growth on the other parts of the monument	PISP CLI_97.doc (Park Service Digital Records), p9.
1935	Fort	1935	Heaton moves his family out of PISP to Moccasin so as not to expose his children to "the rough element that always goes with a camp of men." (Heaton, 10/29/37 letter) They remain there until Oct. 9, 1940 when they move into infirmary.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeaton's reports
1936	Dugout	1936	Feb. '36 Whitmore-McIntyre dugout discovered during CCC work.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1937	East Cabin	1937	East Cabin: cleaned out and displayed as historic building.	Heaton's Annotated Journal, p. 12.
1938	Fort	1938	SW corner of lower Fort building bulging	Clemensen, Historic Structure Report, p.30- 31.

START	LOCATION	END	EVENT	SOURCE
1939	Fort	1939	In October, the CCC camp is abandoned, not to be reoccupied.	(from Admin History, pg 291); Journal of Leonard Heaton
1940	East Cabin	1940	By fall, many of the camp buildings at Pipe Spring are removed. HABS drawings and plans are undertaken for the historic buildings.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1941	East Cabin	1941	East and West cabin roofs refurbished. Bark and dirt removed, replaced with asphalt and clay.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeaton's reports
1942	Ponds and Spring		South wall stabilized. Pointed south wall using cementitious mortar painted with clay mixture.	Intermountain Cultural Resource Center Conservation Program. Pipe Spring National Monument FY96 Stabilization Project Completion Report, Vol. 1. Santa Fe. March. 1997. 2.
1943	East Cabin		Foundation strengthened with concrete.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1944	Fort	1944	Spring Room: plaster repaired. Spring Room: replaced stone; set in concrete with mortar. S., E., and W. wall of lower Kitchen replastered	Journal of Leonard Heaton

START	LOCATION	END	EVENT	SOURCE
1945	Fort	1945	5/21 "Made a copy of names and initials left by Indian children on the fort." Names were: "W. Mayo, F. Jake, Bill Tom, Elouse Daye [Elva Drye?], E. Sampson, K. Mcartes, Charlie Chasses, Warren Mayo." [check spelling for all] South entrance had names and initials scratched in plaster and written in lead pencil on the east big gates. Names were scratched on with sticks or rock. Lower half of south gate and little door "pretty well covered." LH planned to remove the writings with sandpaper and water. [This may get a chuckle from any Kaibab Paiutes you have attending the affair, John!]	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeaton's reports
1946	Fort	1946	LH starts writing the history of the monument, based in large part on conversations he's had with old-timers visiting the fort.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1947	East Cabin	1948	(April) LH prepares an exhibit of the Bishop Hopkins blacksmith tools in the west cabin; also created exhibit in east cabin.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1948	Fort	1948	Parlor and Kitchen floors replaced.	Heaton's Annotated Journal, p. 53-54.
1949	Fort	1949	New gates and hinges installed in courtyard.	Kathleen L. McKoy, Cultures at a Crossroads: An Administrative History of Pipe Spring National Monument, U.S. Department of the Interior, National Park Service Intermountain Region, Denver,
1950	Fort	1950	Spring, L. Heaton worked on west cabin wall stabilization.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeaton's reports

START	LOCATION	END	EVENT	SOURCE
1951	Fort	1951	Walk and Trail Improvement Program - 629 ft. of walkways constructed; network of trails connected fort, ponds, east and west cabins, restrooms, parking area, & campground (2/14/51 report)	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1952	Fort	1952	Cement plaster applied to entire Spring Room	Heaton's Annotated Journal, p. 78-82.
1953	Fort	1953	Spring Room: hollow log trough installed; replaces stone trough.Spring Room: spring flow restored. Fort: 4 reproduction interior doors installed (based on original)	Leonard Heaton, Journal, June 1953.
1954	Ponds and Spring		9/13 LH helped to get the storm-damaged road open for travel, "using shovel & pick." He and Sherwin also "dug up the 2 springs by the fort. Roots plugged up the drain pipe at the northeast corner. I hope it will be OK now for another 4 years. The spring through the fort has stopped. Haven't been able to get it back. The opening outside must have enlarged so that it drains the water off, running in the fort."	Journal of Leonard Heaton

START	LOCATION	END	EVENT	SOURCE
1955	Fort	1955	3/29 3/29 "Felt the two atomic blasts set off in Nevada today at 6 a.m. and the other at 11 a.m. rattled windows & doors. 8/25 "The BelAir Movie Company came in about 6:30 a.m. today to start filming part of the western picture, "Frontier Scout". There was 2 large trucks of equipment, several smaller ones and under the direction of Howard W. Kock [sp?]. Started filming by 8:30 a.m.. There was a cast of about 24 whites and Indians. Filming [was] done in the courtyard & east side. There was also a number of visitors & local people coming to see the filming. Better than 125 people here."8/26 "More filming of horses & Indian fights around the outside of the fort. The filming completed and all property moved out by 3:30 p.m. Very little damage was sustained at the monument, just the trampling down of weeds & a few bushes & packed ground. No damage to building that I have been able to detect. The place was left pretty clean of litter. A lot better than I expected. I would not want to have any larger filming done here as it could do a lot of damage.... Filming these 2 days brought in more than 250 people."	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeaton's reports
1956	Fort	1956	Work begins on the comfort station east of the parking area. The original CCC campground tables and benches are still in use. Lloyd Sandburg begins work as Pipe Spring's first Ranger Historian. A house trailer serves as his residence and is located in the southeast corner of the meadow.	Heaton's Annotated Journal, 99.
1957	East Cabin	1957	East Cabin chimney rebuilt.	Intermountain Cultural Resource Center Conservation Program. Pipe Spring National Monument FY96 Stabilization Project Completion Report, Vol. 1. Santa Fe. March. 1997. 2.
1958	Non-Historic Built Fabric		2/10 PISP's first permanent ranger historian reports for duty, James C. McKown.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports

START	LOCATION	END	EVENT	SOURCE
1959	Dugout	1959	Stone walls of Fort, cabins, retaining walls, ponds were repointed. Walls pointed with cementitious mortar and stained with clay mix.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeaton's reports
1960	Fort	1969	March - McKown completes first draft of monument's "History Handbook."	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1961	Fort	1961	Aug. 28 Robert W. Olsen came on duty as park historian. Continued research on the monument's history. (Completes self-guided tour booklet May, 1962.)	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1962	Fort	1962	5/7 Olsen's day off and out hunting more Powell survey monuments in Cottonwood area.... The tunnel spring outlet pipe partly stopped and tunnel filling with water. Stopped water from division box to see if water will drain from tunnel so we can clean it out."	Heaton's Annotated Report, 157.
1963	Park Politics		Aug. 24 - retirement party held for L. Heaton.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1964	Interpretation		Jan. Park scopes out possible route for "Historic Foot Trail" along the stone boat trail.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports

START	LOCATION	END	EVENT	SOURCE
1965	Landscape		A grape arbor was constructed for the historic grape vine. Plum trees are planted to screen the residential and maintenance areas.	PISP CLI_97.doc (Park Service Digital Records), p10.
1966	Corral		July - historic fence [corral], purchased in Dec. '65 from one of the local ranchers, is erected at PISP.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1967	Interpretation		May 27 - Arizona Highway 389 open to public. Fredonia-Hurricane Highway (389) dedication in Fredonia held on 8/5/67. [PISP archives]	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1968	Interpretation		April - Temporary visitor contact station completed at PISP.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1969	East Cabin		A chicken coop is moved to the East Cabin area to be used in the "living ranch."	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1970	Interpretation		heavy emphasis on living history program; use of NYC and "Operation Mainstream" trainees (since summer of 1968)	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports

START	LOCATION	END	EVENT	SOURCE
1971	Park Politics		Jan-Feb. 1971 - 4 test wells (water) drilled near PISP, with no success.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1972	Interpretation	1974	"The area continues toward its goal of depicting and interpreting the early Mormon Pioneer and his western surroundings, cir. 1870-1890. . .90% of interpretation is dependent on NYC and VIP personnel. Ten NYC girls, dressed in period attire conduct the visitors on the tours [about 40,000 per year]. with NYC boys are used in the gardens, orchards, irrigation and care of live stock. [sic] more mature individuals are used in the VIP program and all wear clothing of the correct period. About 10 women are used in the quilting program, etc. and about 8 men in the cattle roundups consisting of branding. . . [and associated activities]. Four or five roundups are held each year." (PISP Annual Report)	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1973	Non-Historic Built Fabric		New joint-use water system completed	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1974	Fort	1974	PISP picnic area removed; parking area asphalt was removed and trees and other vegetation were planted to obliterate the site.	1996 Stabilization Report, 210.
1975	Interpretation		Glenn O. Clark fills historian position (Wilt transferred to BADL in Nov. 1974). Bicentennial program planned and initiated.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports

START	LOCATION	END	EVENT	SOURCE
1976	Fort	1976	CETA (Comprehensive Employment Training Act) program workers maintain PISP grounds and assist with interpretive programs; seasonal laborer needed to maintain the "historic" landscape, as obtaining/scheduling NYC labor was "unpredictable," stated Glenn Clark in PISP RMP.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1977	Interpretation		Clark transferred to Virgin Islands NP.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1978	Non-Historic Built Fabric		45-unit campground, completed by K. Paiute (with NPS/SWRO assistance) in 1977, opened approx. 1/4 mi. NE of PISP	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1979	Fort	1979	SW corner of Fort braced with steel columns. Drainage system installed north, west and east ext. Fort walls. Ext. south and east wall of Fort repointed. Two mortar mixes were used at this time - 1) 1.5 parts lime: 1 red clay: “/4 yellow clay: 2 red sand: 1 pea gravel, and 2) 2.5 parts lime: 1bentonite clay: 1 sand: 2 pea gravel	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1980	Fort	1980	15 residences constructed for Tribe on reservation.	Bernard G. Tracy, Memorandum to Richard A. Borjes, Rocky Mountain Region, “Pipe Spring Restoration Project Progress Report.” June 16, 1980. And William Slemmer: Notice to
1981	Landscape		18 fruit trees planted to replace dead or missing ones; 53 new shade trees planted to screen housing/maint. area from historic area & highway.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports

START	LOCATION	END	EVENT	SOURCE
1982	Fort	1982	114 new shade trees planted to screen residential/maint. area.	1996 Stabilization Report, 210.
1983	Fort	1983	North and west exterior wall, and courtyard repointed.	1996 Stabilization Report, 210.
1984	Fort	1984	Replaster walls and ceilings. Repaint main Kitchen. Repoint courtyard walls. Upper porch rails and support beams replaced. Courtyard repointed using mortar mix of 2 parts lime: 1 bentonite clay: 1 sand: 2 pea gravel: 6 tablespoons yellow dye: 6 teaspoons red dye.	1996 Stabilization Report, 210.Intermountain Cultural Resource Center Conservation Program. Pipe Spring National Monument FY96 Stabilization Project Completion Report. Vol. 1.
1985	Park Politics		Decreasing spring flow prompts water conservation.	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1986	East Cabin		E. cabin: external walls repointed. Exterior repointed using 2 parts lime: 1 bentonite clay: 1 sand: 2 pea gravel: 6 tablespoons yellow dye: 6 teaspoons red dye.	1986 Superintendent's Annual Report.
1987	Fort	1987	Rebuilt S.E. chimney	1996 Stabilization Report, 211.

START	LOCATION	END	EVENT	SOURCE
1989	Interpretation		Gary Hasty new Park Manager (5/7/89 - ca. 1993)	CHRONOLOGY OF IMPORTANT EVENTS, PIPE SPRING NATIONAL MONUMENT, Kathy McKoy , 4/21/98 , For Use in 75th Anniversary exhibit & presentationHeatons reports
1990	Fort	1990	Mortar Joints and rocks are cracking, walls are bulging, and there is evidence of moisture seeping through the walls. The loose rock should be remortared and repointed.	PISP Significant Improvements and Modifications – Historic Structures(Including ownership periods and some historic personages)
1991	East Cabin	1999	NPS undertakes several improvement projects including: repair of the West Cabin (back and west side wall fell in), replacement of East Cabin roof, archaeology project behind the East Cabin, installation of lightning rods on the Fort, re-roofing of the Fort and rebuilding of sandstone walks in front of the East and West Cabins (1997).	Landscape Inventory, 2006.
1993	Fort	1994	Windows stripped, glazed and painted	PISP Significant Improvements and Modifications – Historic Structures(Including ownership periods and some historic personages)
1994	Fort	1995	Install half-round gutters and drain system in courtyard	PISP Significant Improvements and Modifications – Historic Structures(Including ownership periods and some historic personages)
1995	Fort	1995	Repointed cracks in the interior back wall, interior fireplaces, and the southeast corner using a mortar mix of 2 parts sand: 8 dirt: 1 cement: 2 lime. Removed bentonite clay from roof and replaced it with local soil.	1995 photographs: PostRepair95.pdf. Pipe Spring archives. “Kirby Matthew repairing rotten wood in one of the Fort courtyard posts.”

START	LOCATION	END	EVENT	SOURCE
1996	Fort	1996	W. cabin repointed	"1996 Installation of Gutters and Downspouts on Winsor Castle." Historic Preservation Maintenance Completion Report
1997	East Cabin	1997	The East Cabin was reroofed and repointed. The new roof was designed to maintain the historic integrity of the cabin and yet provide a structurally safe setting for visitors fully entering at least the northern room.	1997 repair and replace the north and south porch decking at Winsor Castle." Historic Preservation Maintenance Completion Report. PMIS Number: PISP-97-002. March 1997
1998	East Cabin	1998	Flagstone walkways adjacent to the front side of West Cabin, which were previously inappropriately canted such that rainwater flowed toward the historic structures rather than away, were replaced with correctly built walkways	PISP Significant Improvements and Modifications – Historic Structures(Including ownership periods and some historic personages)
1999	Fort	1999	Spring and Cheese Rooms replastered	"1999 repair plaster surfaces of Winsor Castle's Cheese Room and Spring Room." PISP Preservation Maintenance Completion Report, Pipe Spring National Monument, 1999.
2000	Fort	2000	Repointing of masonry	"2000 replace and repair north porch decking on Winsor Castle," Historic Preservation Maintenance Completion Report.
2002	East Cabin	2002	Replaced corral fence (new posts), north corral beside E. Cabin.	"2002 Replace Deteriorated Section of Winsor Castle's Catwalk," Historic Preservation Maintenance Completion Report,

START	LOCATION	END	EVENT	SOURCE
2003	East Cabin	2003	Masonry walls repointed where needed at the East and West Cabins.	Cyclic Repointing of Masonry on Winsor Castle (HS-01) and East Cabin (HS-02) at PISP & Repair of
2004	Fort	2004	105; Wiring from electric box at fort into spring and cheese rooms placed in conduit.	PISP Significant Improvements and Modifications – Historic Structures(Including ownership periods and some historic personages)
2005	Fort	2005	repointed interior and exterior,	Historic Preservation Maintenance Completion Report Pipe Spring National Monument Project Title: cyclical repairs of the West Cabin's wood surfaces . 116844A (PISP-2006-01). 2006.
2006	East Cabin	2007	The wood surfaces of both the interior and exterior of the East Cabin were repainted, treated and repaired as needed.	Aug 5- Sept 16 FMSS WO#: 647945, PMIS project #: 96680A: Reline Pond Bottom
2007	Fort	2007	- Feb - The ponds have a major leakage problem which needs to be repaired. However, this will take a major project for which there are currently no funds. As a temporary fix, the ponds have to be drained, and more bentonite clay of a finer grade added to the pond floor to hopefully slow/halt the leak. -The bentonite was added, and didn't work. The ponds still leaked heavily. -May -New try. A trench will be dug outside of the pond walls, about 3 1/2 feet deep, 18-24 in wide, 65 ft long, at least 4 feet away from the walls. Leach rock will be dumped into the trench to act as a catch basin for the water leaking out of the ponds. -July - The trench only partially worked. The ground on the north side of the walk is no longer marshy, but the ground on the south side of the walk is still very marshy. The trench location was GPS'd by ZION.	"Emergency Stabilization of East Gateway of Winsor Castle (HS-01)," Historic Preservation Maintenance Completion Report, 2007.

START	LOCATION	END	EVENT	SOURCE
2008	Fort	2009	REPOINTING: The interior of the West Cabin primarily required spot touch ups since there was not too much damage to the existing joints. All of the interior walls had areas that required some repointing but the back wall required the most work. The wall is built into the hill and therefore has more moisture which accelerates the deterioration of the mortar.	Historic Preservation Maintenance Completion Report Pipe Spring National Monument Project Title: Cyclic repointing of the West Cabin (Work Order: 855956), 2008
2009	East Cabin	2009	Apply Boracare to unpainted wood surfaces (interior and exterior) of East Cabin, HS-02	“2009 Repair of Winsor Castle North and South Building Porch Floor Boards,” Historic Preservation Maintenance Completion Report. PISP-2009-002
2010	Trail		Interior Walls repointed	Rockfall on Ridge TraiL-03-10.docx (Park Service Digital Records)
2012	Fort	2012	101; Copper gutter and downspout system installed.	

APPENDIX C

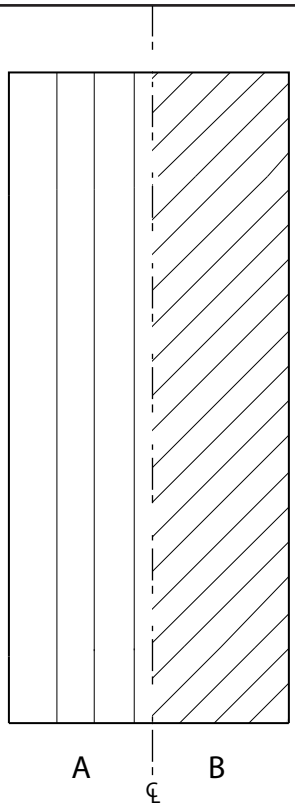
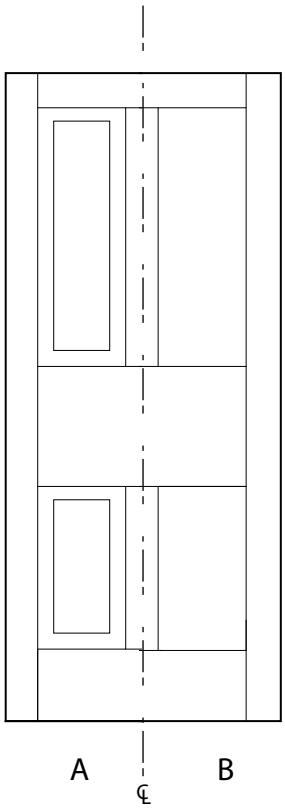
DOOR AND WINDOW SCHEDULE

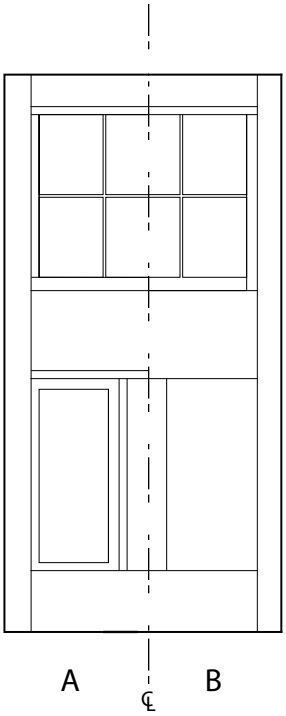
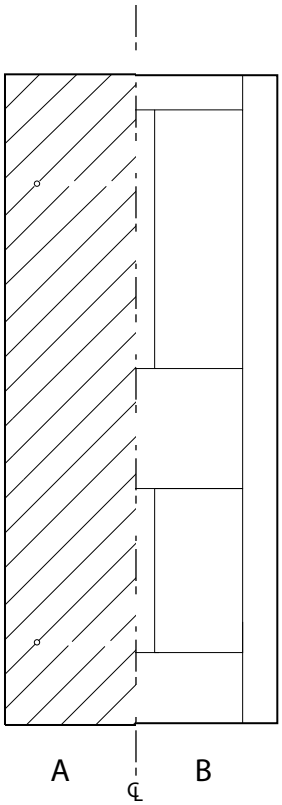
The doors and windows of the fort and cabins have been recorded and typed to establish commonalities between the openings of each building. Plan and reflected plan views, sections, and interior and exterior elevations of each door are included, in addition to frame type, reveal type, and hardware. Windows are similarly represented in elevation and plan and also include associated hardware.

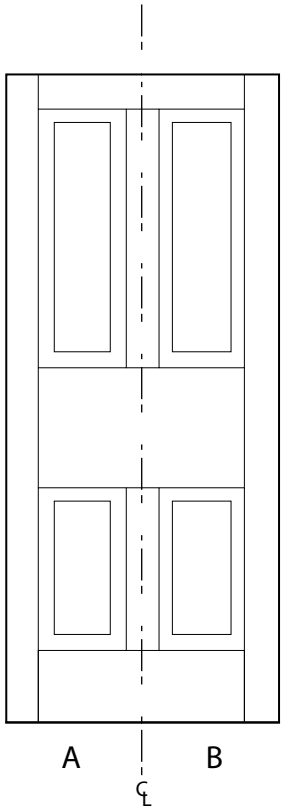
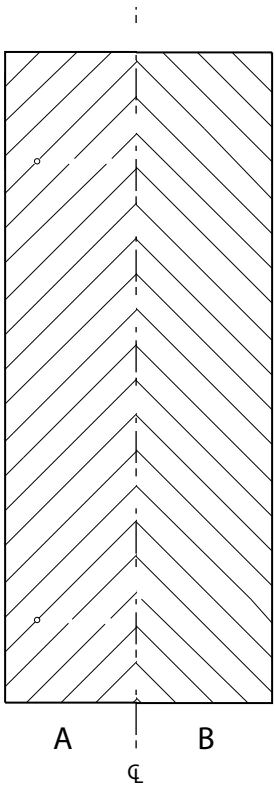
PIPE SPRING NATIONAL MONUMENT

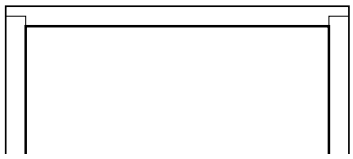
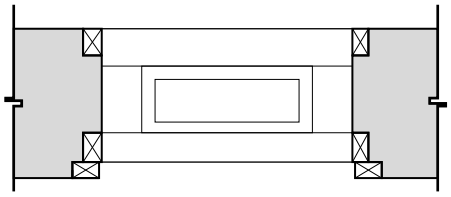
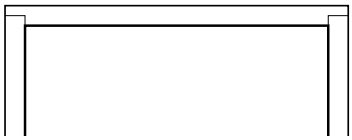
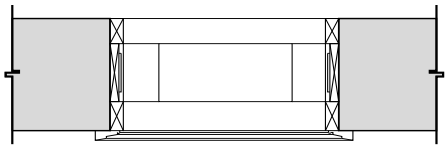
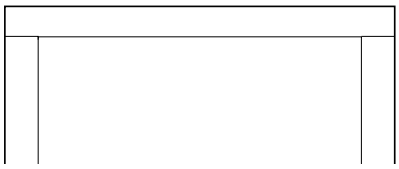
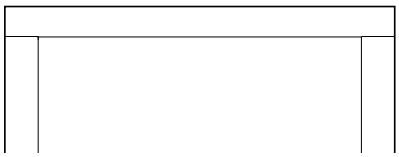
FREDONIA, ARIZONA

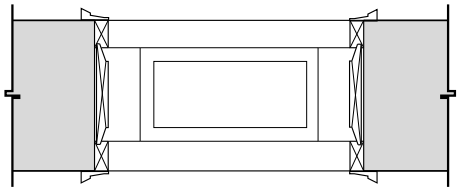
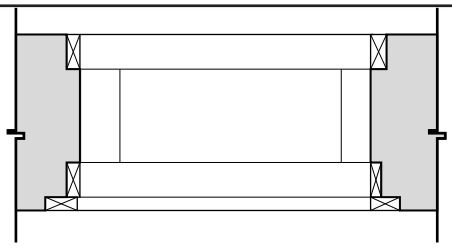
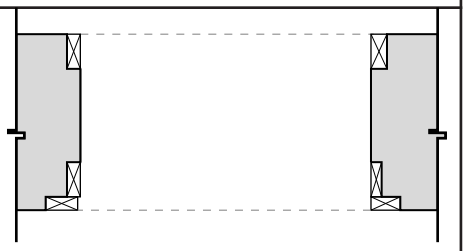
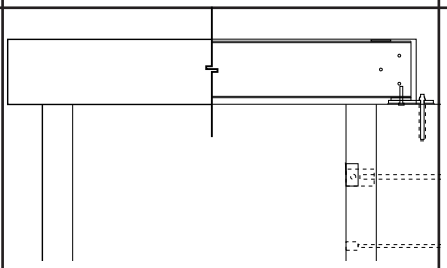
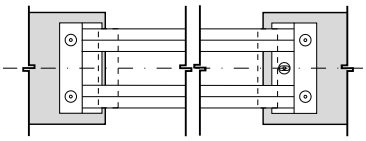
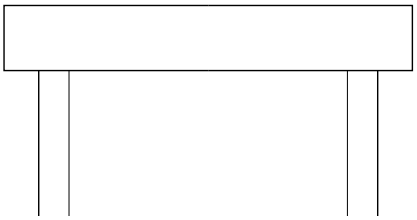
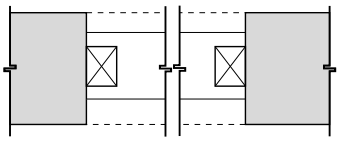
A PROJECT CARRIED OUT THROUGH THE COOOPERTATION OF
THE NATIONAL PARK SERVICE AND
THE UNIVERSITY OF PENNSYLVANIA CONSERVATION RESEARCH CENTER

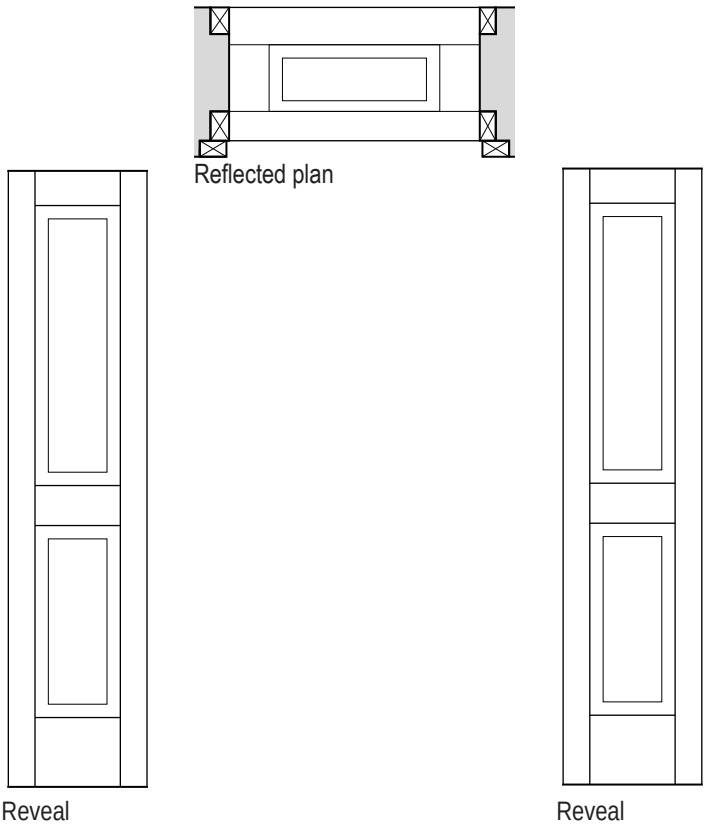
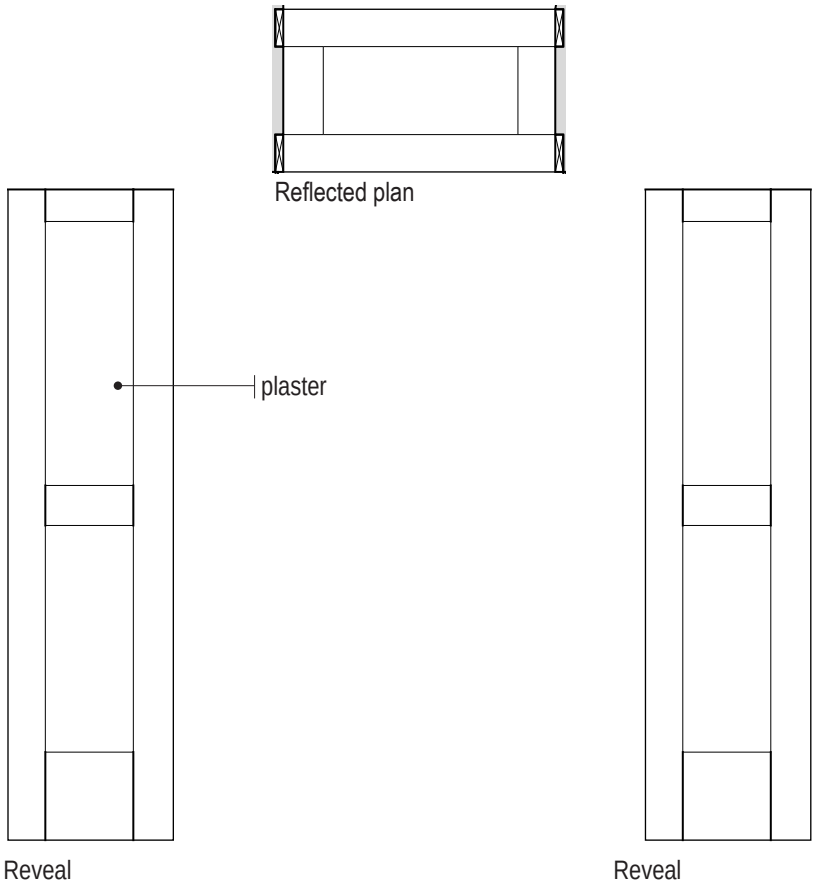
TYPE	CONFIGURATION	DESCRIPTION
I		The door is a typical batten door, where side *A* has vertical battens and side *B* has diagonal batten boards. This type of door is found in the fort and cabins.
II		A simple four-panel door with raised panels only on its *A* face or exterior side. It is found exclusively in the fort.

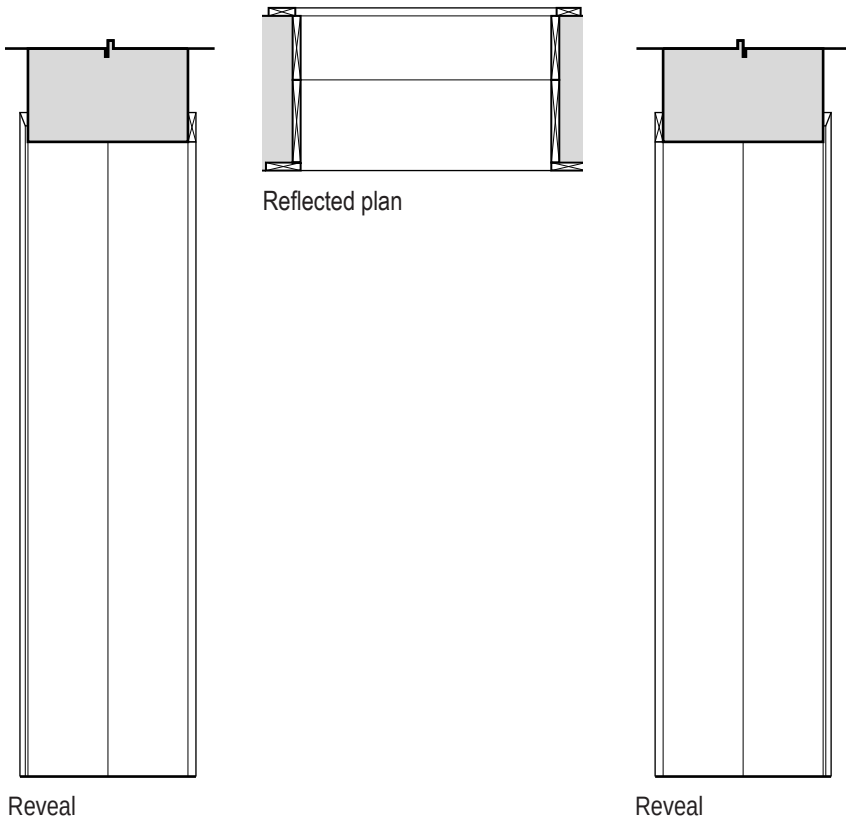
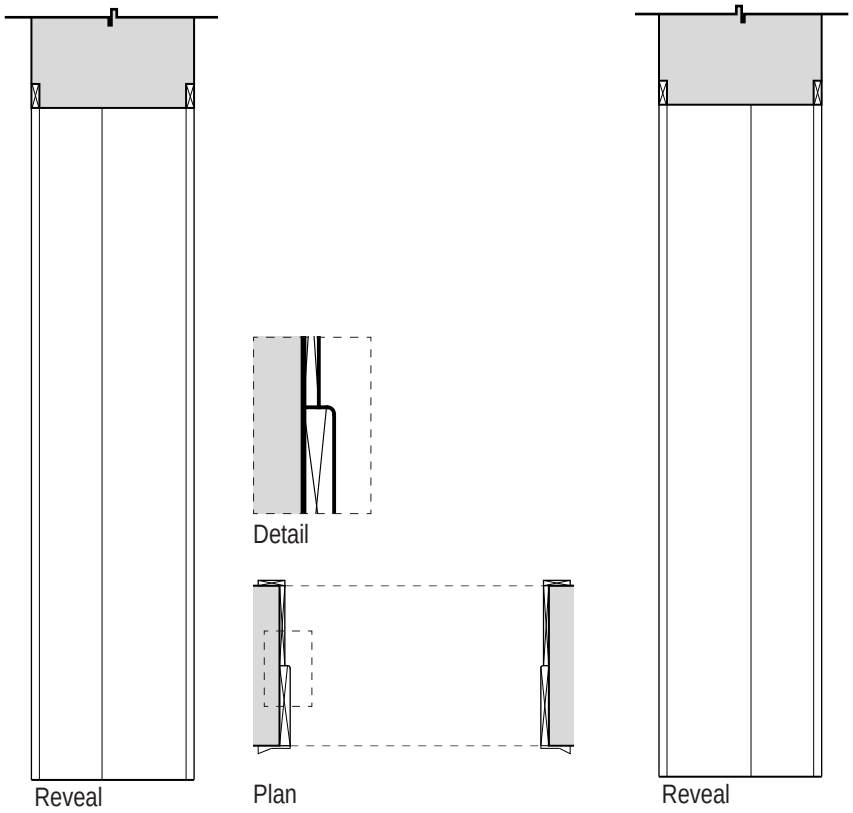
TYPE	CONFIGURATION	DESCRIPTION
III		A sash door with raised panels on its exterior face, the interior of the door has plain panels. This door type is unique and is only found in openig #6, allowing access to the spring room from the courtyard.
IV		This door type is specific to the fort and is a variation of Type I-B and Type II-B. The exterior face of the door is a typical diagonal batten door with grooved, tongued and beaded edges. The interior face of the door is a simple four-panel arrangement.

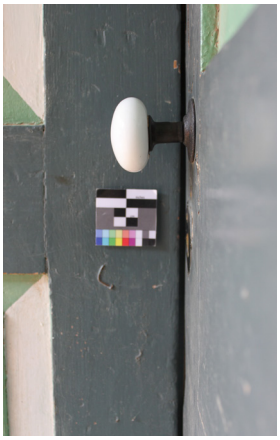
TYPE	CONFIGURATION	DESCRIPTION
V		This type of door is a simple four-panel door with raised panels on both sides.
VI		The exterior and interior face of the door have diagonal battens, giving the door additional support. This type of door is only used in the fort on its two main gates, reconstructed in 2007. Pipe Spring National Monument, Historic Maintenance Completion Report: Stabilize East Entry Gate of Winsor Castle (Fredonia, AZ.: PMIS:124174B [PISP-2007-01] , FMSS Parent Work Order: 884305) Winsor Castle HS-1. Pp.1-3.

FRAME TYPE	CONFIGURATION		DESCRIPTION
	ELEVATION	PLAN	
F4	 Exterior	 Reflected Plan of Head Panel	The frame exterior has rabbeted stiles and rails, while the interior has reciprocal saw marks on its sitles and rails.
	 Interior	 Plan	
F5	 Exterior	 Reflected Plan of Head Panel	The exterior frame has rabbeted stiles and rails, while the interior has a molded casing lining the door.
	 Interior	 Plan	
F6	 Exterior	Reflected Plan of Head Panel	In both exterior and interior frames the stiles and rails are reciprocal sawn.
	 Interior	 Plan	

FRAME TYPE	CONFIGURATION		DESCRIPTION
	ELEVATION	PLAN	
F1	 Exterior	 Reflected Plan of Head Panel	Both sides of the door frame have molded casing lining the door.
	 Interior	 Plan	
F2	 Exterior	 Reflected Plan of Head Panel	The exterior frame has rabbeted stiles and rails. The side interior has miter joints on its sitles and rails.
	 Interior	 Plan	
F3	 Exterior	 Reflected Plan of Head Panel	The top horizontal member of the frame is tenoned by the post of the frame in such a way that the horns of the head are built into the masonry wall. The east gate was stabilize with steel reinforcement in 2007.[1]
	 Interior	 Plan	[1] "Stabilize East Entry Gate of Winsor Castle" (Historic Preservation-Maintenance Completion Report, Pipe Spring National Monument).

TYPE	CONFIGURATION	DESCRIPTION
I		The wood interior reveal which surrounds the top and sides of the doorway has raised panels similar to the doors. The reveals in the fort and cabins do not match any of the panels doors.
II		The wood interior reveal which surrounds the top and sides of the doorway consists only of rails and sitles, and plaster is visible between these elements.

TYPE	CONFIGURATION	DESCRIPTION
III		The interior reveal that surrounds the top and sides is of plank construction with counter-rabbets.
IV		The interior reveal that surrounds the top and sides is of plank construction with counter-rabbets. The union between planks has additional detail. One of the planks is rounded where it meets the other plank and projects outward approximately 1¼".

TYPE	PHOTOS	DESCRIPTION
L1	  	**Lift latch** (Also known as Thumb latch and/or Norfolk latch)[1] A type of door latch which fastens a door by means of a pivoted bar that engages a hook in the doorjamb; a lever which lifts the pivoted bar is used to unfasten the door. [1] Harris, Dictionary of Architecture, p. 292.
L2	  	**Rim lock** A face-mounted door lock.[2] [2] Harris, Dictionary of Architecture, p. 292.

General Note: From the 2004 Maintenance Completion Report: *"All locks in Winsor Castle used to be old-fashioned skeleton key locks, which were harder to use and required many different keys. The new reproduction locks have a deadbolt system and require only one master key since they were all keyed alike. However, the locks appear historic."* [1]

[1] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2004).

TYPE	PHOTOS	DESCRIPTION
L3		**Mortise Lock**
L4		**Barrel Bolt Lock**

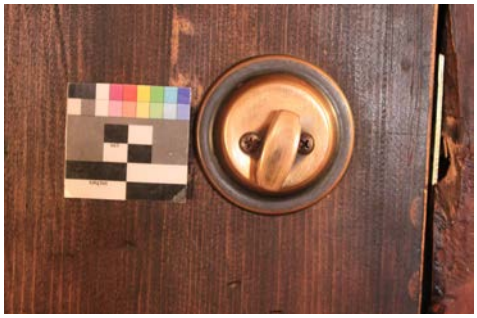
General Note: From the 2004 Maintenance Completion Report: *"All locks in Winsor Castle used to be old-fashioned skeleton key locks, which were harder to use and required many different keys. The new reproduction locks have a deadbolt system and require only one master key since they were all keyed alike. However, the locks appear historic."* [1]

[1] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2004).

TYPE	PHOTOS	DESCRIPTION
L5		**Escutcheon**
L6	 	**Crossbar Latch and Hook Lock**

General Note: From the 2004 Maintenance Completion Report: *"All locks in Winsor Castle used to be old-fashioned skeleton key locks, which were harder to use and required many different keys. The new reproduction locks have a deadbolt system and require only one master key since they were all keyed alike. However, the locks appear historic."* [1]

[1] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2004).

TYPE	PHOTOS	DESCRIPTION
L7		**Handle**
L8		**Single Cylinder / Dead Bolt**

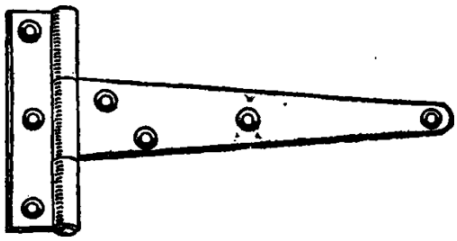
General Note: From the 2004 Maintenance Completion Report: *"All locks in Winsor Castle used to be old-fashioned skeleton key locks, which were harder to use and required many different keys. The new reproduction locks have a deadbolt system and require only one master key since they were all keyed alike. However, the locks appear historic."* [1]

[1] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2004).

TYPE	PHOTOS	DESCRIPTION
L9		**Padlock Latch**
L10		**Eye Screw**

General Note: From the 2004 Maintenance Completion Report: *"All locks in Winsor Castle used to be old-fashioned skeleton key locks, which were harder to use and required many different keys. The new reproduction locks have a deadbolt system and require only one master key since they were all keyed alike. However, the locks appear historic."* [1]

[1] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2004).

HINGE TYPE	PHOTO	DESCRIPTION
H1		**Strap Hinges**
H2		**Cross Garnet Hinges**
H3		**Dummy Hinges**
H4		**Bolt**
H5		**Victorian Knob-Pin Hinge** Victorian-era style hinges with decorative vines and steeple finials.[1] Bridgwater, Building Doors, pp. 57.
H6		**Spring Loaded Hinge** Modern spring loaded hinge installed in 2006 when door was fixed and replicated.[1] [2] "Replicate Historic Cheese Room Door" (Historic Preservation Maintenance Completion Report), 1-2.

HINGE TYPE	PHOTO	DESCRIPTION
H7		**Straight Butt Hinge**
H8		**Ball Tip Knob-Pin Hinge** Also know as pin hinge. Plain knob-pin hinge with ball tip finials at each end.[1] Bridgwater, Building Doors, pp. 67.
H9		**Steeple Tip Knob-pin hinge** Also know as pin hinge. Plain knob-pin hinge but with steeple finials at each end.[1] Bridgwater, Building Doors, pp. 67.

LEGEND:

FT = Fort/Winsor Castle EC = East Cabin WC = West Cabin

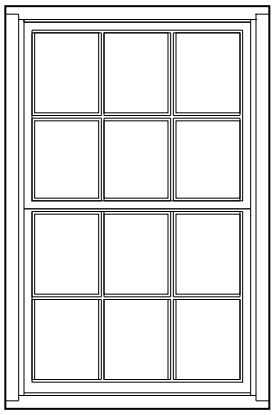
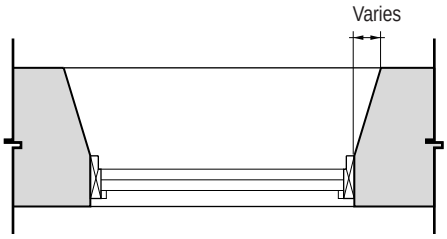
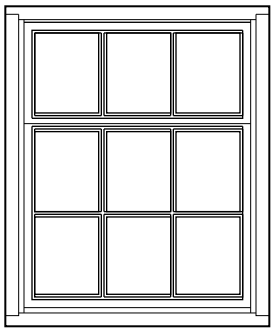
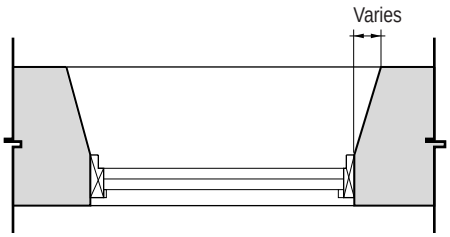
G = Good F = Fair P = Poor

WINSOR CASTLE

OPENING NUMBER	FEATURE LOCATION	DOOR TYPE	FRAME TYPE	EXISTING HARDWARE	
				LOCKS	HINGES
01	FT	IV	F1	L1, L8, L4	
02	FT	VI	F6	L6, L7	H1,H4
03	FT	I	F1	L1, L8	H2,H3
04	FT	VI	F6	L6, L7	H1,H4
05	FT	II	F3	L2, L5	
06	FT	III	F1	L1, L4	
07	FT	II	F2	L2, L5, L10	
08	FT	II	F2	L3, L5, L10 ?	
09	FT	II	F4	L1	
10	FT	II	F3	L5, L?	
11	FT	II	F3	L2, L5	
12	FT	II	F2	L2, L5, L10	
13	FT	II	F3	L2, L5, L10	
14	FT	V	F1	L2, L5	
15	FT	II	F3	L2, L10	
16	FT	II	FE	L2, L5, L10	

EAST &WEST CABINS

OPENING NUMBER	FEATURE LOCATION	TYPE	FRAME TYPE	EXISTING HARDWARE	
		EXTERIOR		LOCKS	LOCKS
17	WC	I	F5	L1, L9	H1
18	WC	I	F5	L1, L9	H1
19	EC	I	F5	L1, L9	H1
20	EC	I	F5	L1, L9	H1

WINDOW TYPE	CONFIGURATION	DESCRIPTION
A	 	**Single-Hung Sash Window: Type A** Type A has twelve panes as is typical for this model; the bottom sash is movable and the upper sash is fixed. This type of window can be found in openings at Winsor Castle and the West Cabin.
B	 	**Single-Hung Sash Window: Type B** Type B is a samller varition of the Type A window mentioned above. It has nine panes with fixed sashes. This type of window is found at Winsor Castle and the East Cabin.

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 2-1/4”

DESCRIPTION: The exterior face exhibits a typical cross batten assembly. The interior face is a simple four-panel construction.

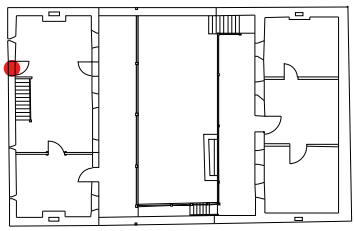
[1]Leonard Heaton Journal, August 8, 1940.

VARIATIONS: Located in Winsor Castle; no variations.

HARDWARE: The door has a nonfunctional Norfolk latch, a dead lock, and in the interior a barrel bolt. Hinges are type H5. In 1940, Leonard Heaton (LH) purchased old locks to replace the modern ones he had installed in 1927-28.[1]

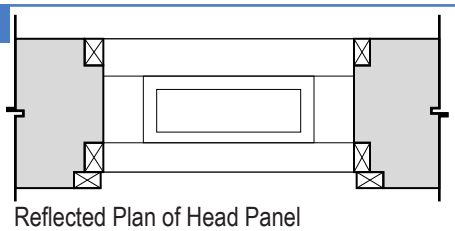
[1]Leonard Heaton, Journal, August 8, 1940.

FRAME: F1

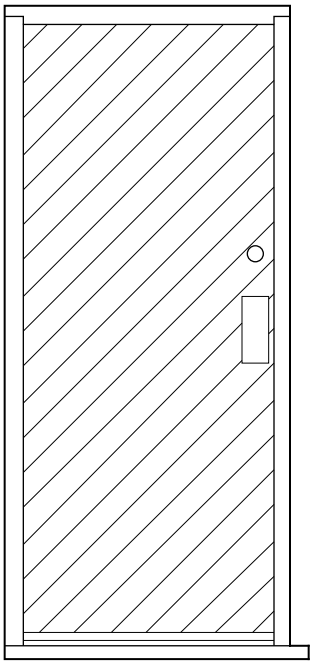


2nd Floor Plan

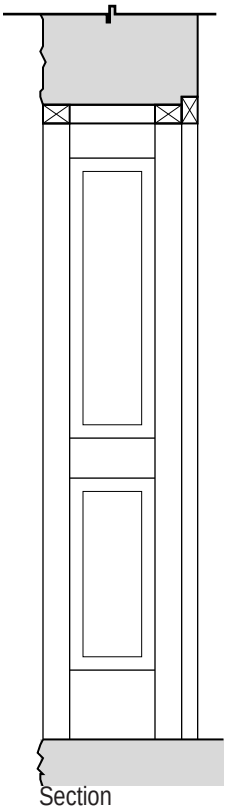
DRAWING



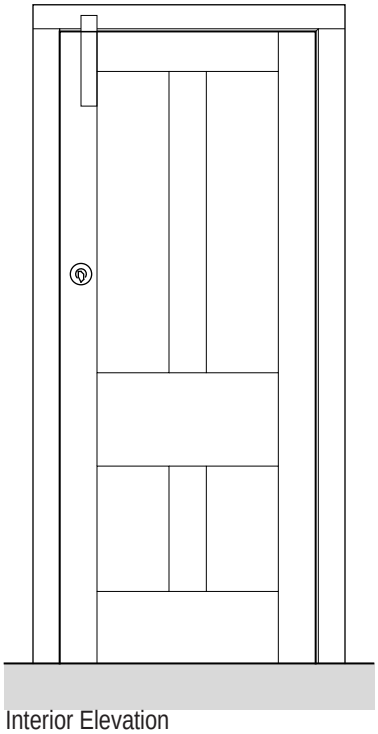
Reflected Plan of Head Panel



Exterior Elevation



Section



Interior Elevation

Plan

Scale: 1/2" =1'-0"

0 1 2 feet

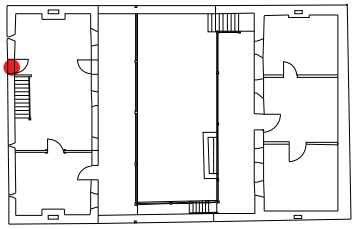
HARDWARE

Norfolk Latch

Nonfunctional Norfolk Latch and Dead Lock

Interior Barrel Bolt

Victorian Knob-Pin Hinge (H5)



2nd Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 2”

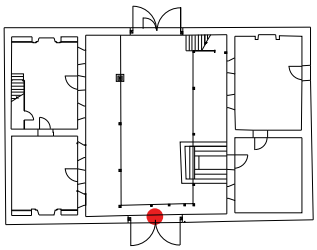
DESCRIPTION: The exterior and interior face of the door are cross batten, giving the door additional bracing support. The west gate was reconstructed from April to May of 1928 by Leonard and Charles Heaton.[1] The west gate was again replaced in 1949.[2]

[1] Southwestern Monuments Monthly Reports (Pipe Spring), January, March, May 1928. Also, Leonard Heaton, Journal, February 21, 23, 1920; March 11, 21, 27, 1920; April 23, 1920. Clemensen states the work was completed by March, but Heaton’s report for this period indicates otherwise. [2] Leonard Heaton, Journal, April through June 1949.

VARIATIONS: There are two doors of this type in Winsor Castle in opneings #2 and #4.

HARDWARE: The main gates have strap hinges. The door is securely locked using a crossbar latch with hook lock and handle. Hinges are type H1and H4. In 1947, L. Heaton had fabricated large locks for the fort gates in Kanab.[2]

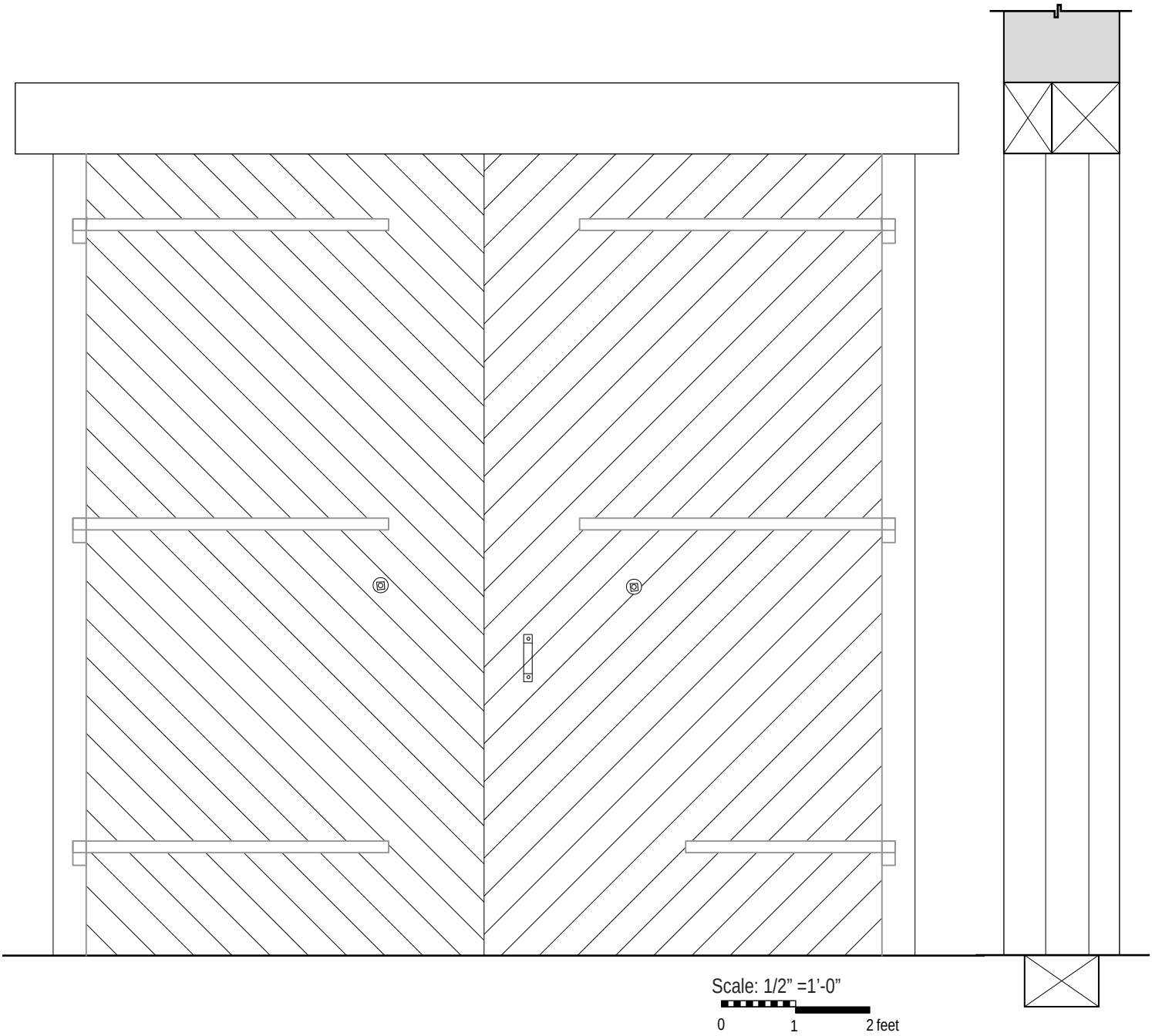
[2] Leonard Heaton, Journal, September 16, 1947.



1st Floor Plan

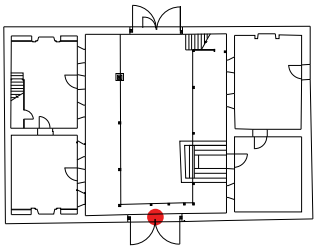
FRAME: F6

DRAWING



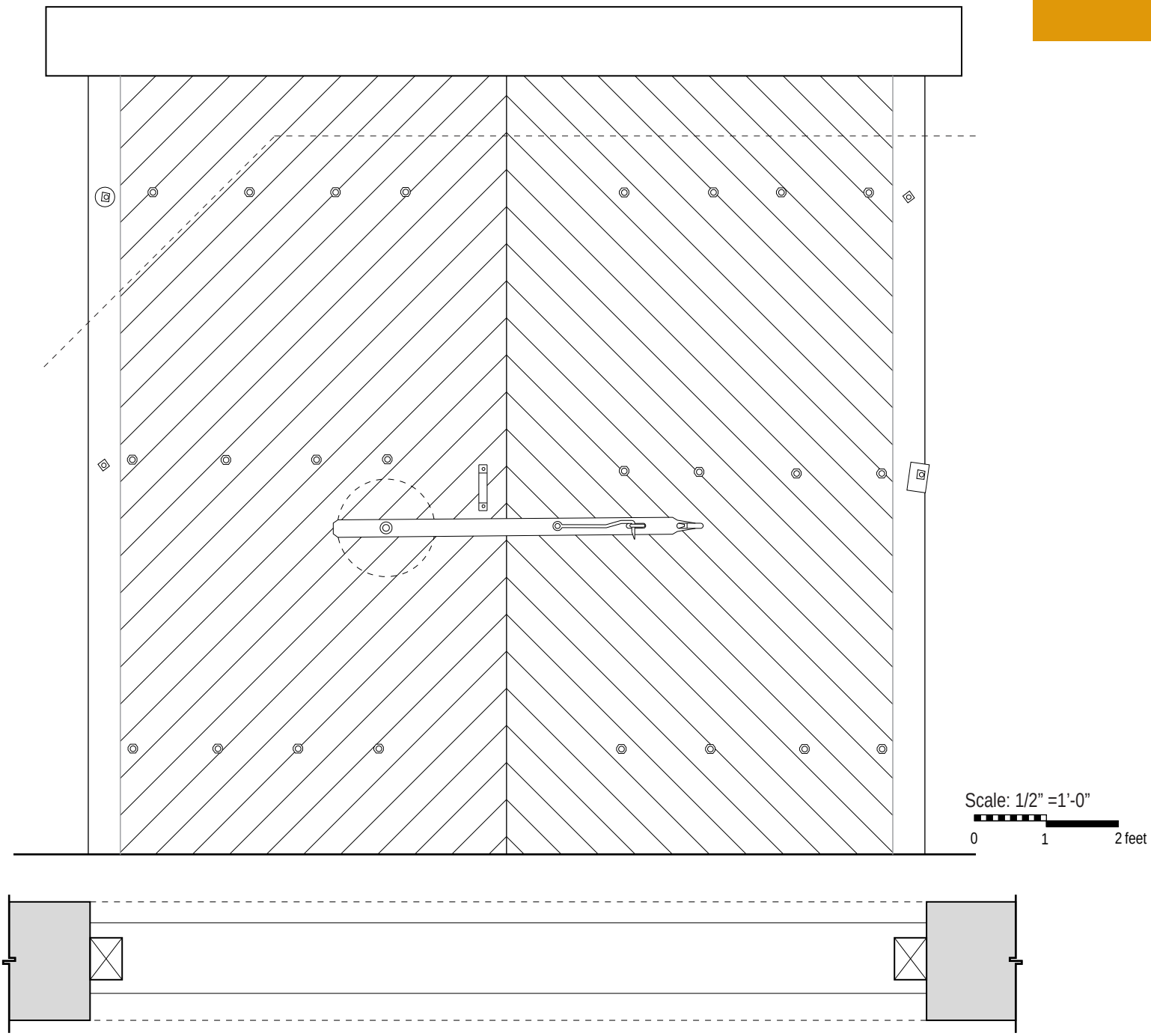
HARDWARE

Crossbar latch with hook lock and door handle



1st Floor Plan

DRAWING

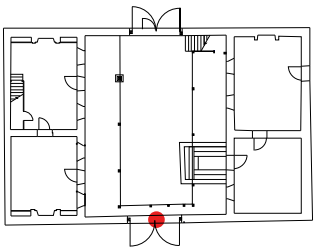


HARDWARE


Strap Hinges


Bolt


Door Handle


1st Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 2”

DESCRIPTION: The door exhibits a typical batten construction: the exterior battens span the door diagonally, while the interior battens are vertical. In 1940, Leonard Heaton purchased old locks to replace the modern ones he had installed in 1927-28.[1] The original door was deemed inoperable in 2006 and a reproduction door was fabricated in-house in knotty pine to match in kind the visual character of the original, which was placed into museum storage. A solid wood core comprises the center of the reproduction, with ¼ in thick pieces of wood used to replicate the battens of the original door. New strap hinges were created and bolted in place.[2]

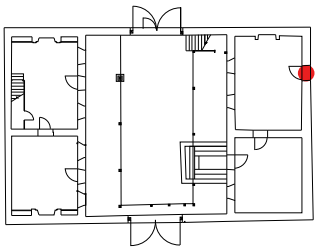
[1] Leonard Heaton, Journal, August 5, 1940.
[2] “Replicate Historic Cheese Room Door” (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2006) 1-2.

VARIATIONS: Located in Winsor Castle; no variations.

HARDWARE: The door has a Norfolk latch and also a single cylinder dead lock. Hinges are type H1and H3. The original hinges and nails were saved and reused in the replicated door.[3]

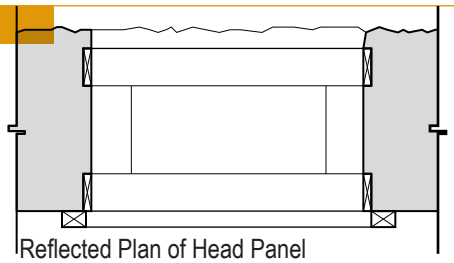
[3] “Replicate Historic Cheese Room Door” (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2006) 1-2.

FRAME: F1

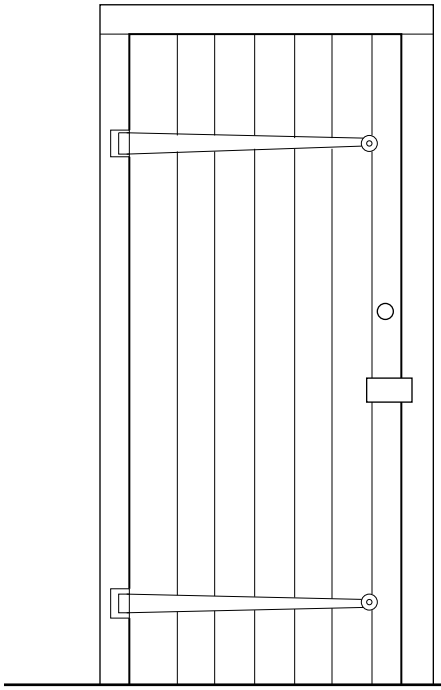


1st Floor Plan

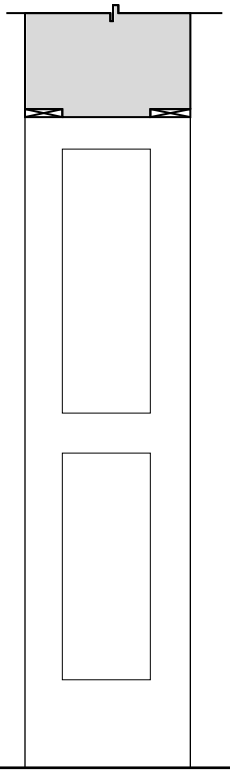
DRAWING



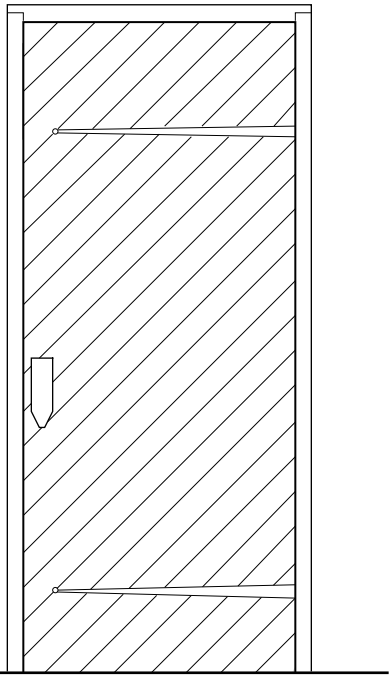
Reflected Plan of Head Panel



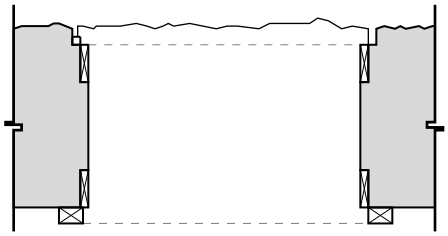
Exterior Elevation



Section



Interior Elevation



Plan

Scale: 1/2" =1'-0"

0 1 2 feet

HARDWARE

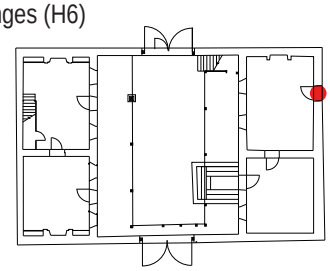
Norfolk Latch

Norfolk Latch

Norfolk Latch

Spring Hinges (H6)

Single Cylinder Dead Lock



1st Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 2”

DESCRIPTION: The exterior and interior faces of the gate doors are cross batten to provide additional bracing support. Reconstruction of the east gate occurred in February and March of 1928 and again in 1949 with the replacement of the doors and frame by Leonard Heaton.[1] During the most recent replacement in 2007, a steel lintel was installed and covered with veneer timber provided by the park.[2]

[1] Southwestern Monuments Monthly Reports (Pipe Spring), January, March, May 1928. Also, Leonard Heaton, Journal, February 21, 23, 1920; March 11, 21, 27, 1920; April 23, 1920; April 18,1949; May,12, 16, 26, 31, 1949; June, 2, 8, 13, 14, 15, 1949. [1] Clemensen states the work was completed by March, but Heaton’s report for this period indicates otherwise.[2] Leonard Heaton, Journal, April through June 1949.

[2] “Stabilize East Entry Gate of Winsor Castle” (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2007), 1-3.

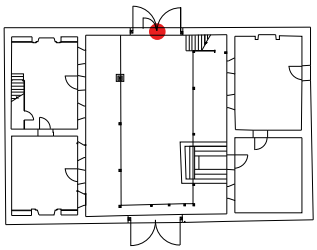
VARIATIONS: There are two doors of this type in Winsor Castle in opening #2 and #4. This main entrance gate also has a door within the gate for pedestrian use.

HARDWARE: The main gates have strap hinges, and the door lock is a crossbar latch with hook lock and handle. Hinges are type H1 and H4. In 1947, L. Heaton had fabricated large locks for the fort gates in Kanab.[3] Reinforcement was added to the hinges during the east gate stabilization for additional support.[4]

[3] Leonard Heaton, Journal, September 16, 1947.

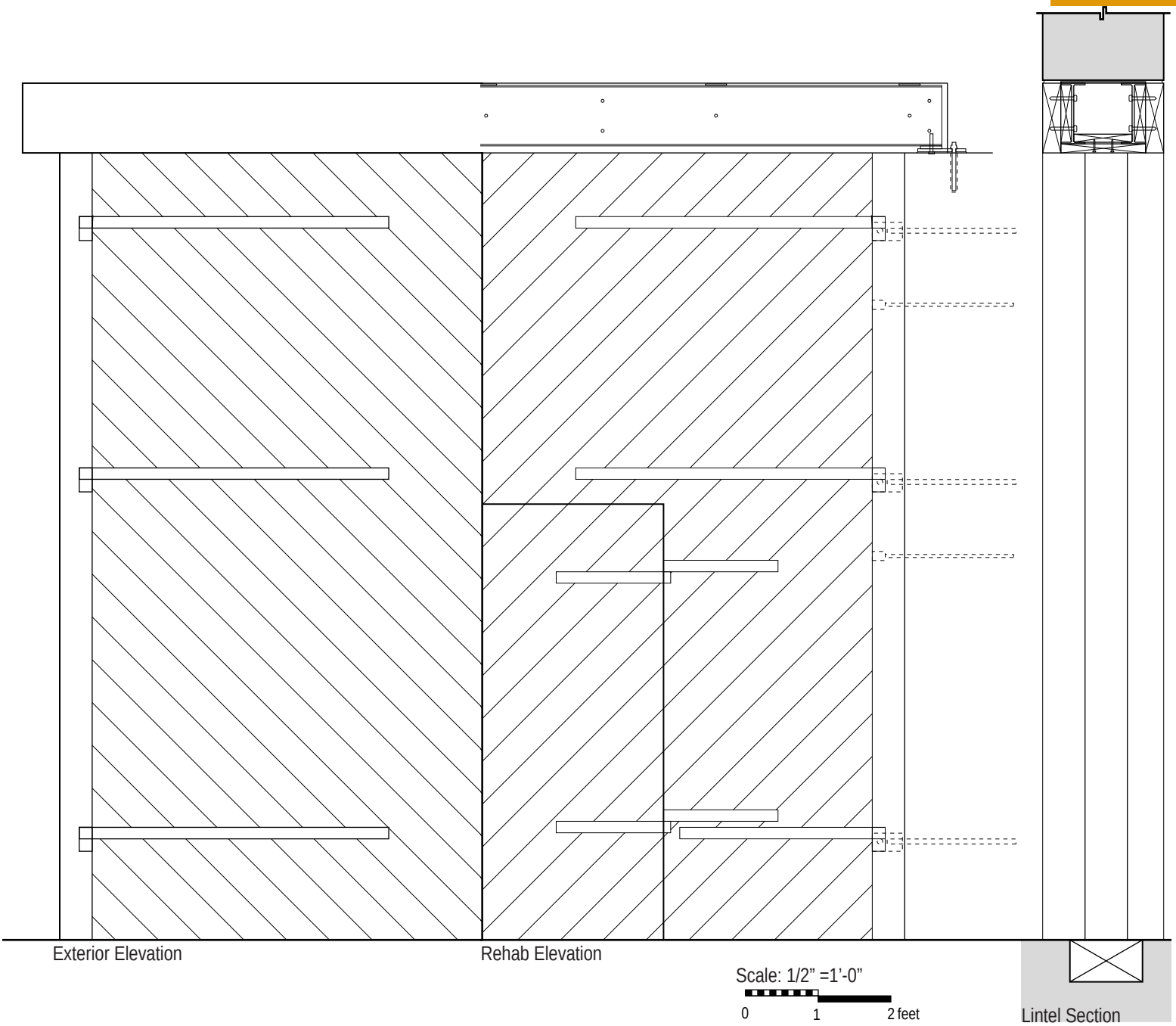
[4] “Stabilize East Entry Gate of Winsor Castle” (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2007), 1-3.

FRAME: F6



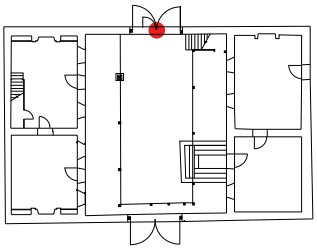
1st Floor Plan

DRAWING



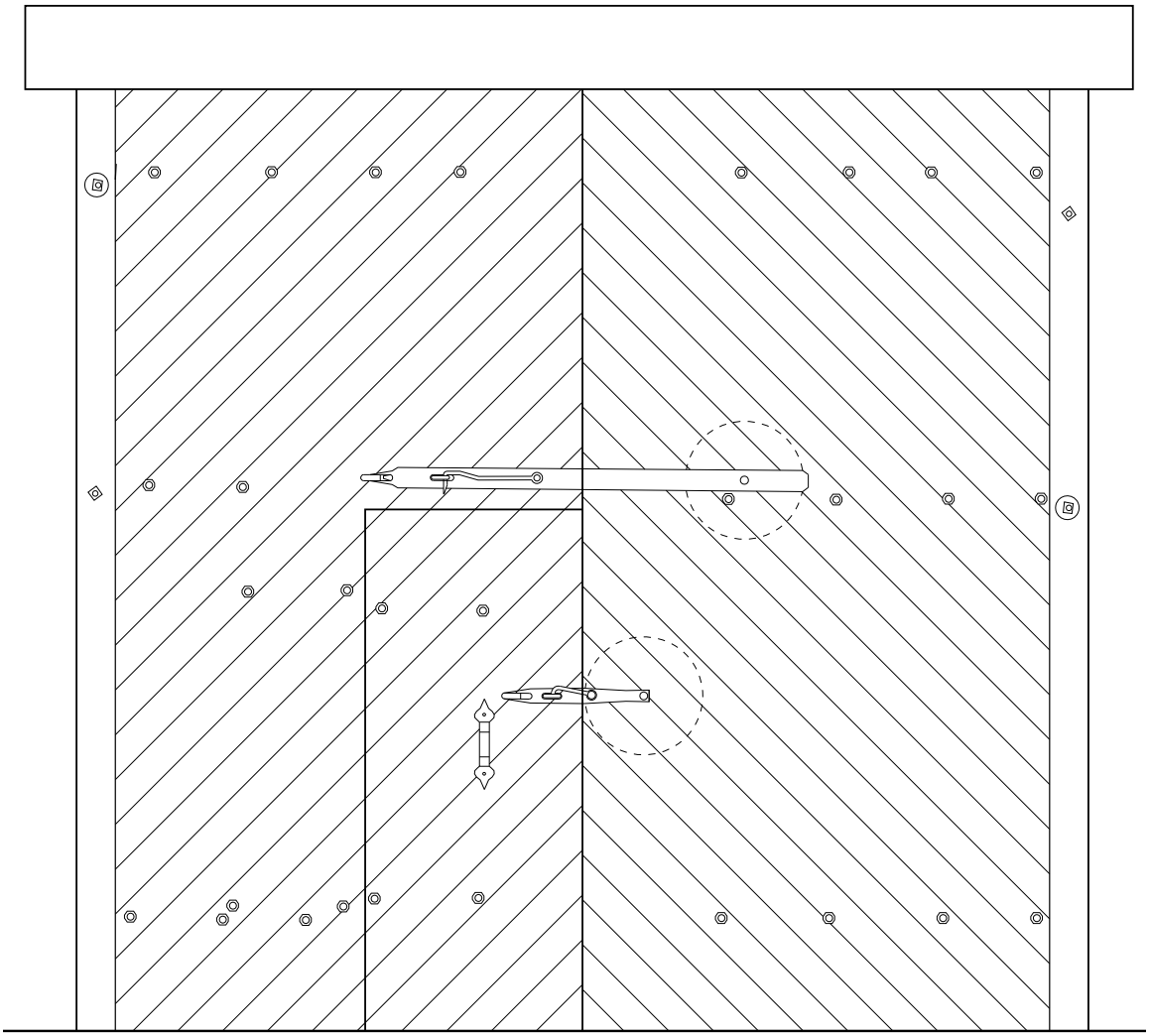
HARDWARE

Crossbar Latch and Hook Lock



1st Floor Plan

DRAWING



Interior Elevation

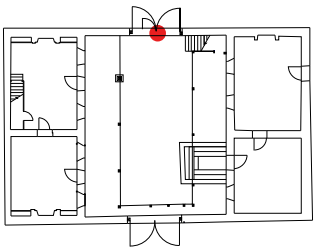
Scale: 1/2" =1'-0"

0 1 2 feet

HARDWARE

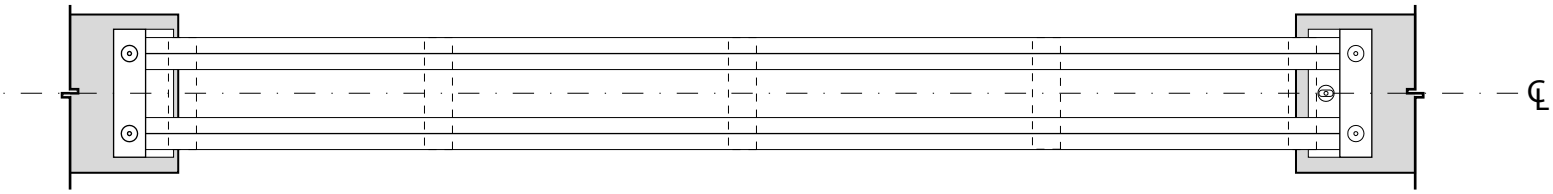
Strap Hinges

Strap Hinges

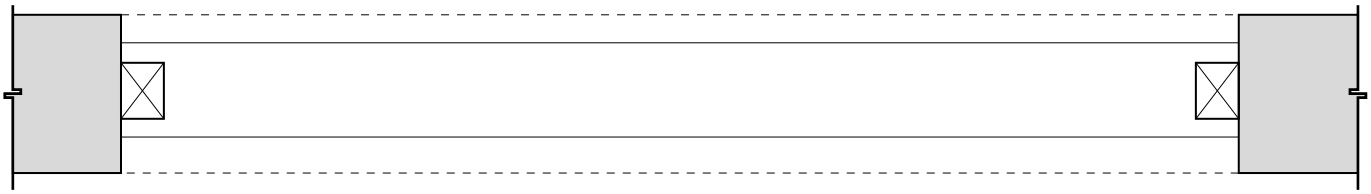


1st Floor Plan

DRAWING



Plan Detail of Reinforced Head Panel



Plan

Scale: 1/2" =1'-0"

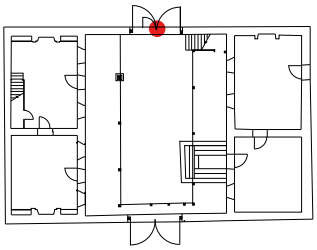
0 1 2 feet

HARDWARE

Crossbar Latch and Hook Lock

Strap Hinges

Door Handle



1st Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 1⅛”

DESCRIPTION: A simple four-panel door with raised panels on the exterior. In the fall of 1953, L. Heaton gave Mark Pope, a cabinetmaker from Kanab, an original door from the Fort and order four reproduction doors made of native pine for the Fort’s interior rooms.[1]

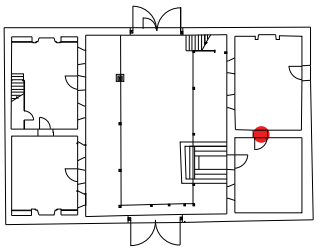
[1] Kathleen M. McKoy, *Cultures at a Crossroads: An Administrative History of Pipe Spring National Monument*, U.S. Department of the Interior, National Park Service Intermountain Region (Denver: Colorado, 2000), 406. Also, Leonard Heaton, Journal, 1940: October 15,1953; November 9,1953; December 7,1953.

VARIATIONS: Found in opening #5, #11, #15 and #16.

HARDWARE: The door has a nonfunctional Norfolk latch and a modern lock. Hinges are type H7. In 1940 Leonard Heaton purchased old locks to replace the modern ones he had installed between 1927 to 1928.[2]

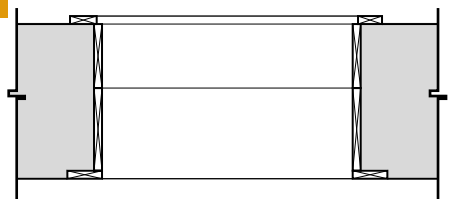
[2] Leonard Heaton, Journal, August 5,1940.

FRAME: F3

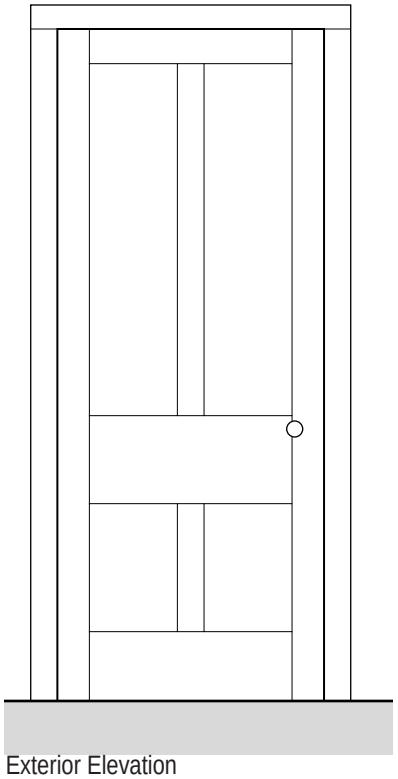


1st Floor Plan

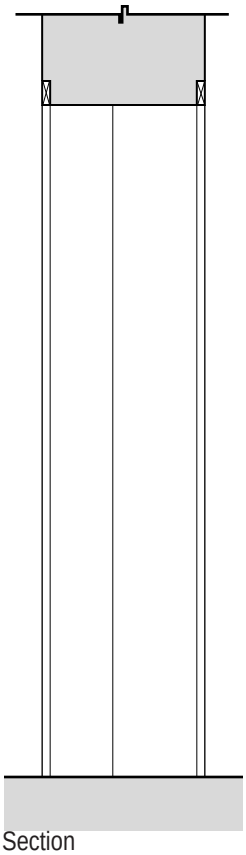
DRAWING



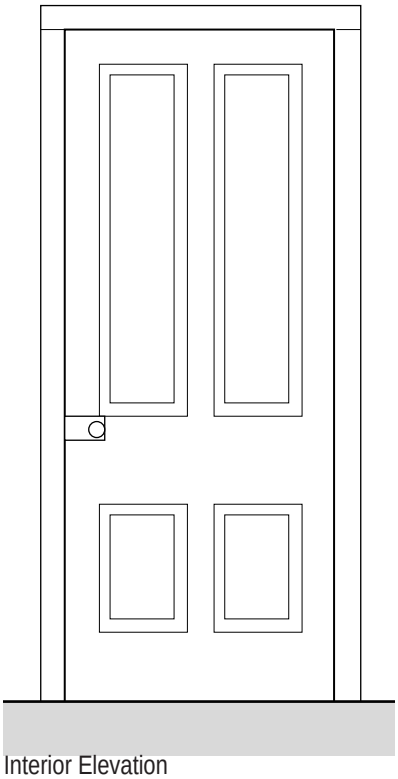
Reflected Plan of Head Panel



Exterior Elevation



Section



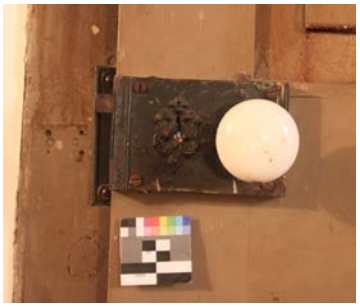
Interior Elevation

Plan

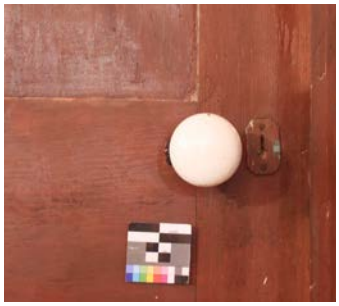
Scale: 1/2" =1'-0"

0 1 2 feet

HARDWARE

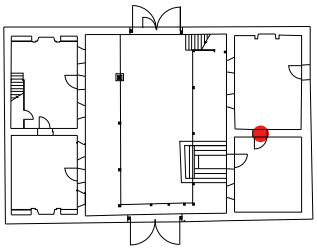


Rim Lock with Knob and Rose



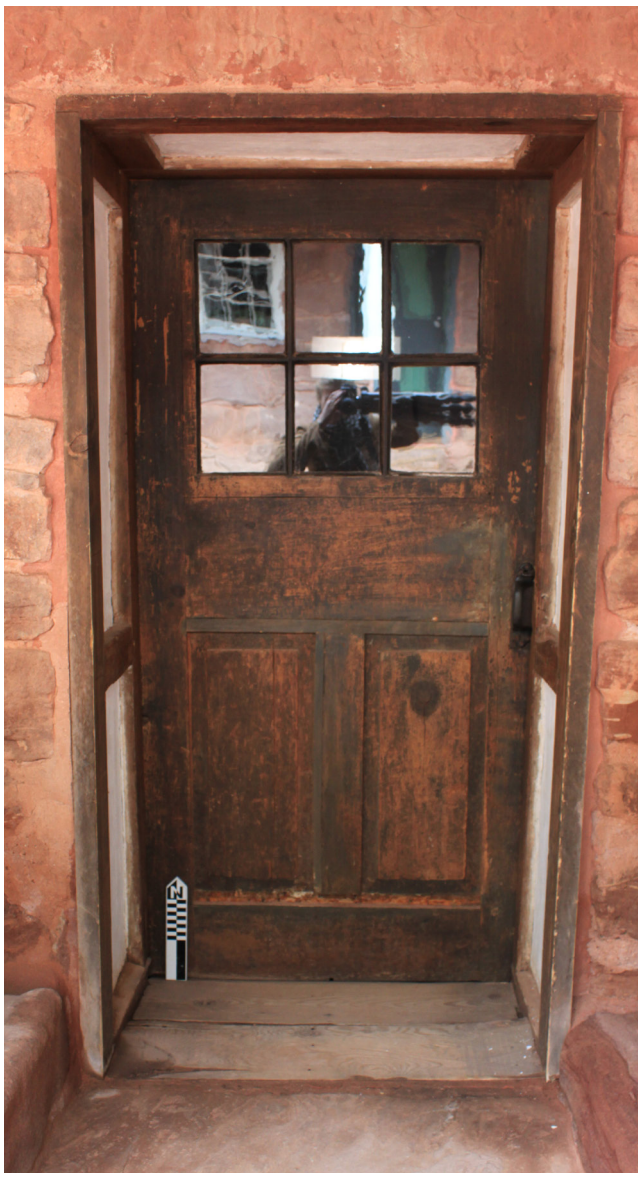
Knob and Oval Escutcheon

Straight Butt Hinge (H7)



1st Floor Plan

PHOTOS



Exterior

Interior

DETAILS

THICKNESS: 1½”

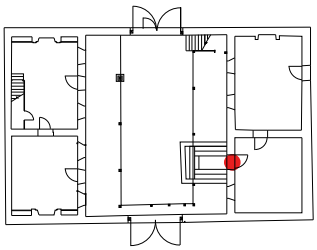
DESCRIPTION: Sash door with raised panels on the exterior face and flat panels on the interior face. In 1940, Leonard Heaton purchased old locks to replace the modern ones he had installed between 1927 and 1928.[1]

[1] Leonard Heaton, Journal, August 8,1940.

VARIATIONS: Found in Winsor Castle in opening #6; no variations.

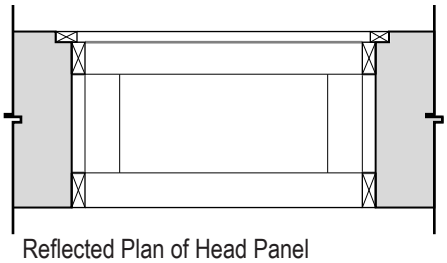
HARDWARE: The door has a Norfolk latch and a barrel bolt lock on the interior face. Hinges are type H7.

FRAME: F1

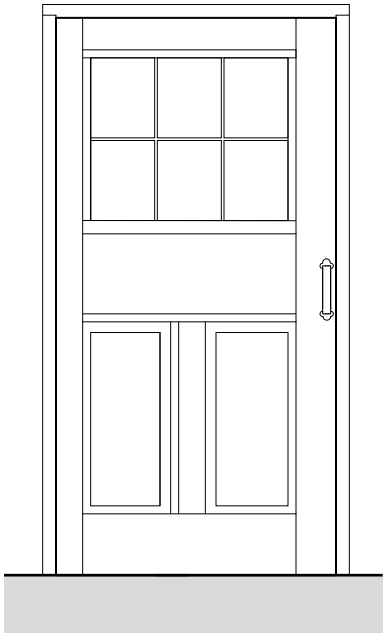


1st Floor Plan

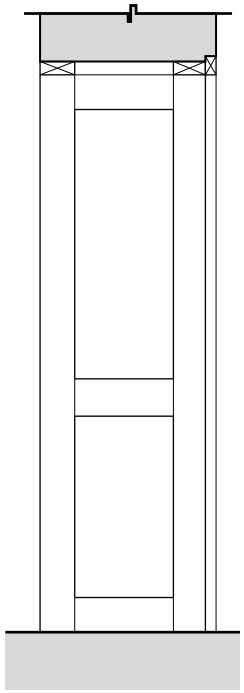
DRAWING



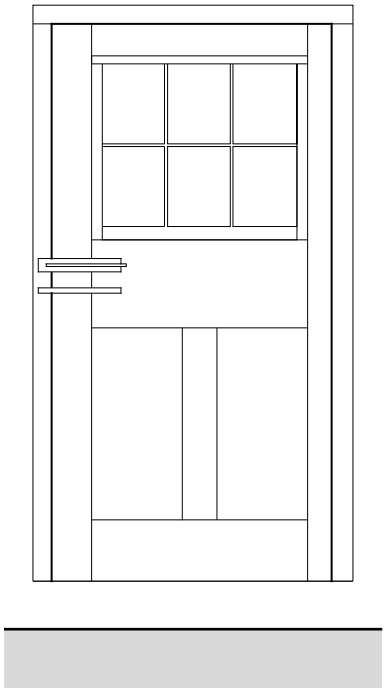
Reflected Plan of Head Panel



Exterior Elevation



Section



Interior Elevation

Plan

Scale: 1/2" =1'-0"

0 1 2 feet

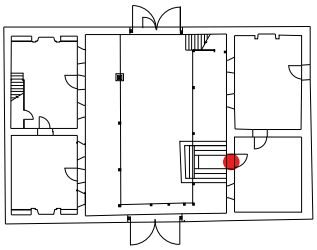
HARDWARE

Norfolk Latch

Norfolk Latch

Barrel Bolt and Norfolk Latch

Straight Butt Hinge (H7)



1st Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 1½”

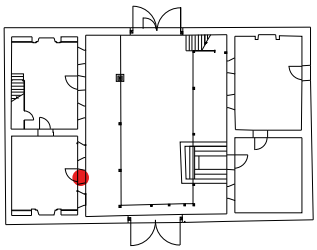
DESCRIPTION: A simple four-panel door with raised panels on its exterior face. The adjacent reveal does not match the four-panel design, and the exterior door finish is different from the interior. In 1940, Leonard Heaton purchased old locks to replace the modern ones he had installed beteween 1927 and 1928.[1] In 2004 this door was repaired (extra holes filled in), repainted, and rehung.The current paint scheme matches the recommended colors of a 1980 paint study.[2]

[1] Leonard Heaton, Journal, August 5,1940.
[2] “Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle” (Historic Maintenance Completion Report, Pipe Spring National Monument, 2004), 1-2.

VARIATIONS: Found in openings #7 and #8.

HARDWARE: The door has a rim lock complete with a doorknob and rose. The door locks were replaced with the same size lock (5x7) purchased from Ball & Ball in 2005.[3] Hinges are type H7.

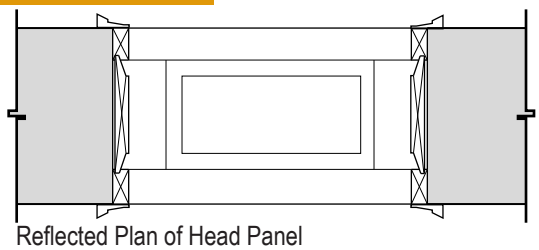
[3] “Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle” (Historic Maintenance Completion Report, Pipe Spring National Monument, 2004), 1-2.



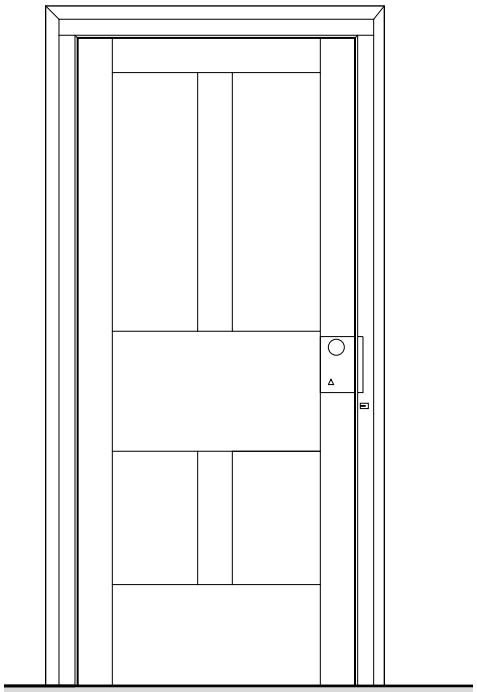
1st Floor Plan

FRAME: F2

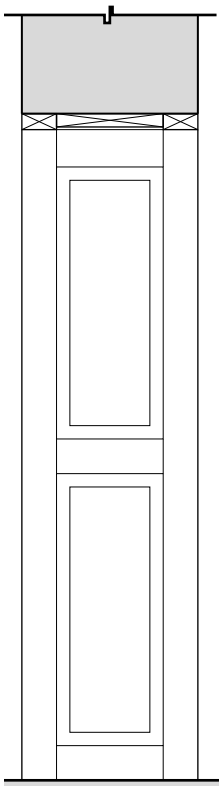
DRAWING



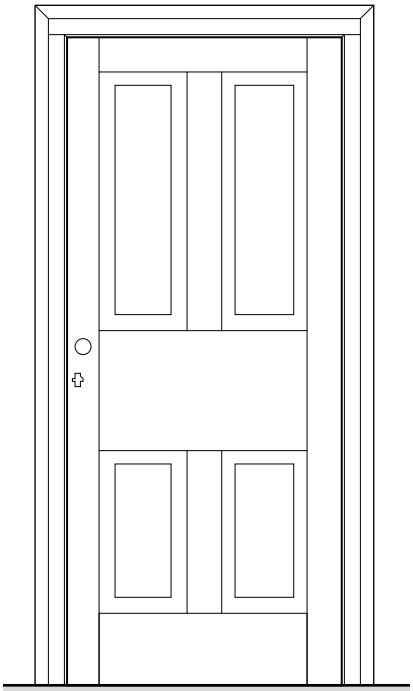
Reflected Plan of Head Panel



Exterior Elevation



Section



Interior Elevation

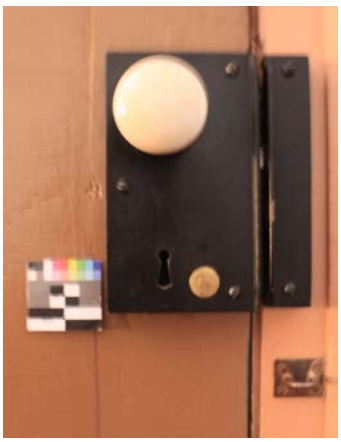
Plan

Scale: 1/2" =1'-0"

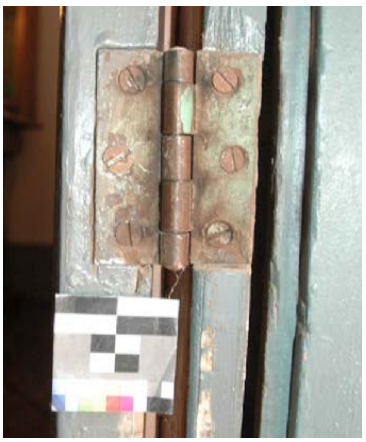
0 1 2 feet

HARDWARE

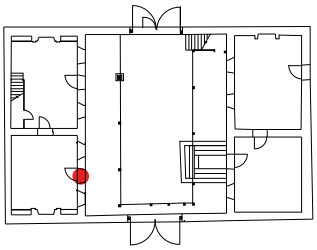
Knob and Oval Escutcheon



Rim Lock



Straight Butt Hinge (H7)



1st Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 1½"

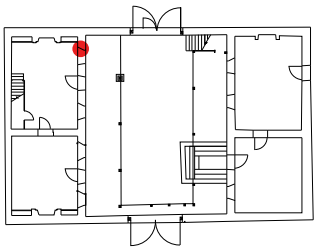
DESCRIPTION: A simple four-panel door with raised panels on its exterior face. The adjacent reveal does not match the four-panel design. The exterior finish is different from the interior. In 2004 this door was repaired (extra holes filled in), repainted and rehung. The current paint scheme matches the recommended colors of a 1980 paint study.[1]

[1] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Maintenance Completion Report, Pipe Spring National Monument, 2004), 2.

VARIATIONS: Found in openings #7 and #8.

HARDWARE: The door has a rim lock complete with a doorknob and rose. It is believed that the locks were first replaced in 1940 when Leonard Heaton purchased old locks to replace the modern ones he had installed between 1927 and 1928.[2] The existing locks were replaced with the same size lock (5x7) purchased from Ball & Ball in 2005.[3] Hinges are type H8.

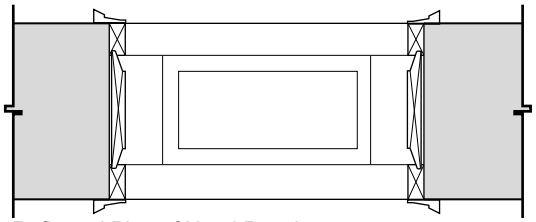
[2] Leonard Heaton, Journal, August 8,1940.
[3] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Maintenance Completion Report, Pipe Spring National Monument, 2004), 1-2.



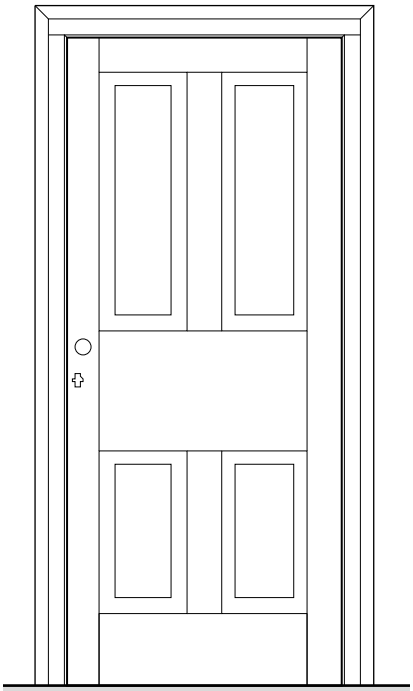
1st Floor Plan

FRAME: F2

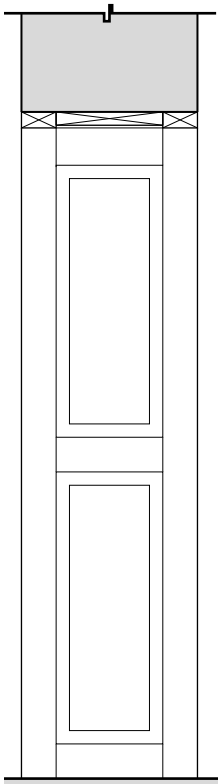
DRAWING



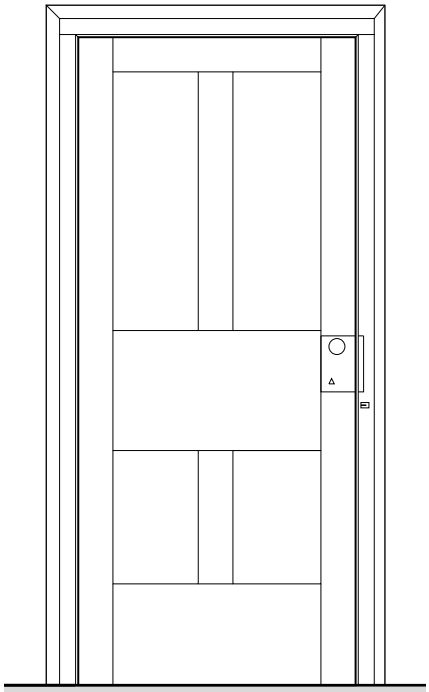
Reflected Plan of Head Panel



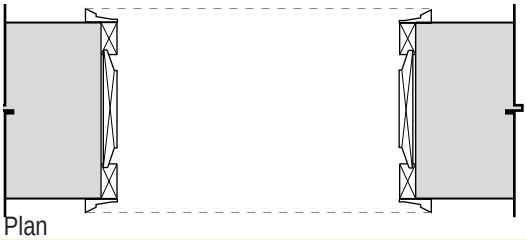
Exterior Elevation



Section



Interior Elevation



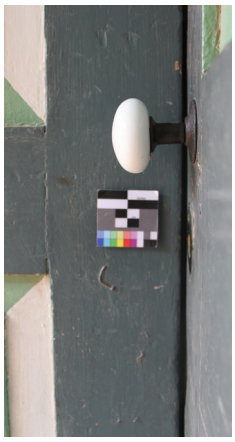
Plan

Scale: 1/2" =1'-0"

0 1 2 feet

HARDWARE

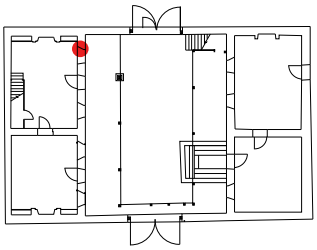
Knob and Oval Escutcheon



Side View of Knob

Rim Lock and Eye Screw

Ball Tip Knob-Pin Hinge (H8)



1st Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 1½”

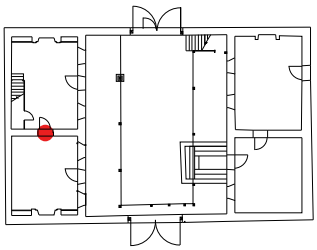
DESCRIPTION: A simple four-panel door with raised panels on its interior face. The door is set in an interior double rabbetted paneled reveal due to the thickness of the wall, which allows the door to be hung on either side. The door is currently hung from the kitchen.The interior reveal is hand planed but not paneled. Each side of the door is painted in different colors. In April 1948 L. Heaton fixed the casing and holes on this door.[1]

[1] Leonard Heaton, Journal, April 5-9,1940.

VARIATIONS: Found only in opening #9; no variations.

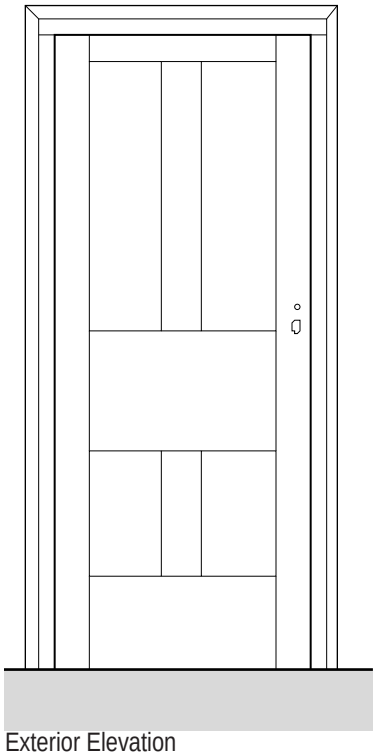
HARDWARE: The door has an escutcheon and eye screw. Holes in the door indicate hardware has previously been removed. Hinges are type H7.

FRAME: F4

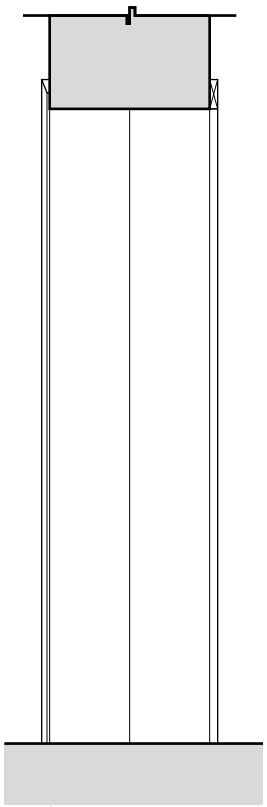


1st Floor Plan

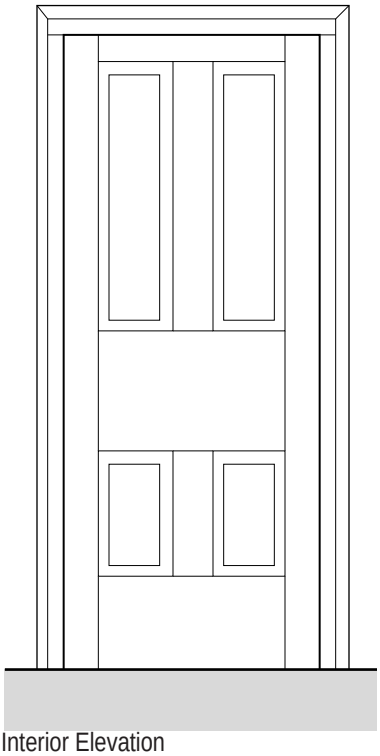
DRAWING



Exterior Elevation



Section



Interior Elevation

Plan

Scale: 1/2" =1'-0"

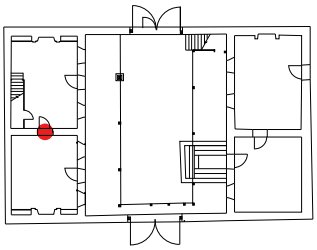
0 1 2 feet

HARDWARE

Missing Knob above Mortise Lock.

Eye Screw

Straight Butt Hinge (H7)



1st Floor Plan

PHOTOS

Exterior

Interior

DETAILS

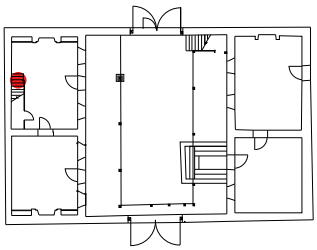
THICKNESS: 1”

DESCRIPTION: A simple four-panel door with raised panels on its exterior face. The door is set on frame over the interior staircase.

VARIATIONS: Found only in opening #10; no variations.

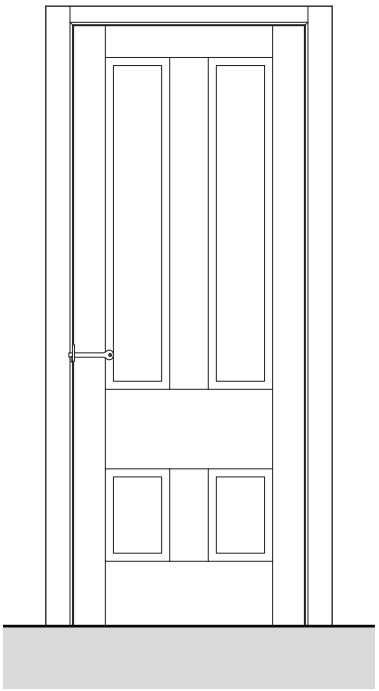
HARDWARE: The door used to have a Norfolk or thumb latch. Hinges are type H7.

FRAME: F3

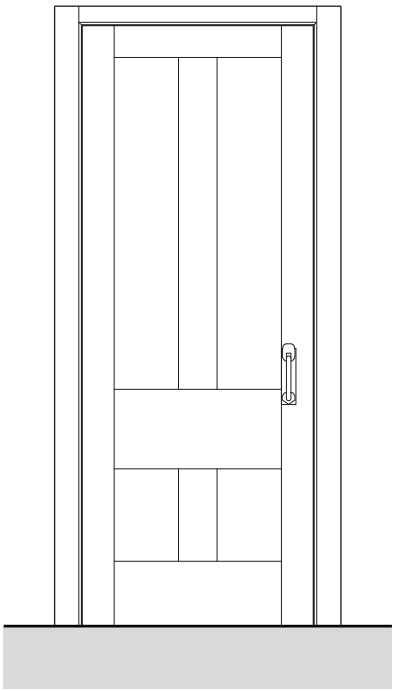


1st Floor Plan

DRAWING



Exterior Elevation



Interior Elevation

Scale: 1/2" =1'-0"

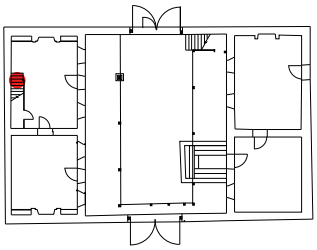
0 1 2 feet

HARDWARE

Norfolk Latch

Straight Butt Hinge (H7)

Norfolk Latch



1st Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 1¼”

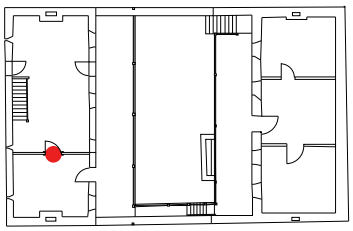
DESCRIPTION: A simple four-panel door with raised panels on one face. In the fall of 1953, L. Heaton gave Mark Pope, a cabinetmaker from Kanab, an original door from the fort and ordered four reproduction doors made of native pine for the Fort’s interior rooms.[1] The warping of the floor currently prevents the door from closing.

[1] Kathleen L. McKoy, *Cultures at a Crossroads: An Administrative History of Pipe Spring National Monument*, U.S. Department of the Interior, National Park Service Intermountain Region (Denver: Colorado, 2000): 406. Also Leonard Heaton, Journal, October 15,1953; November 9,1953; December 7,1953.

VARIATIONS: Found in opening #5, #11, #15, and #16.

HARDWARE: The door has a nonfunctional Norfolk latch and a modern lock. Hinges are type H7. In 1940 Leonard Heaton purchased old locks to replace the modern ones he had installed between 1927 to 1928.[2]

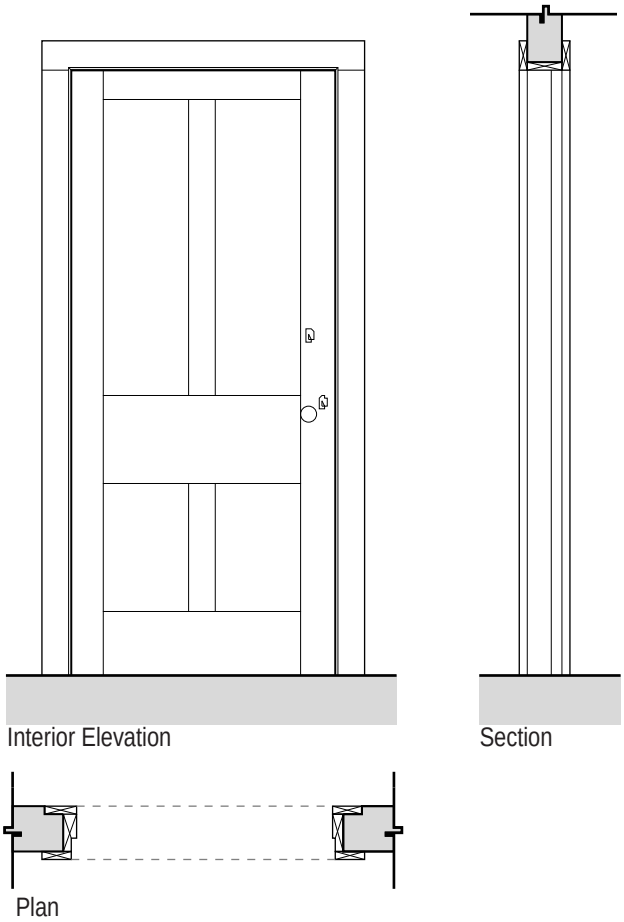
[2] Leonard Heaton, Journal, August 5,1940.



2nd Floor Plan

FRAME: F3

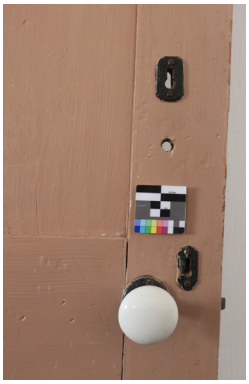
DRAWING



Scale: 1/2" =1'-0"

0 1 2 feet

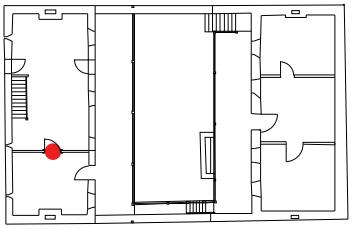
HARDWARE



Mortise Lock with Knob and Rose

Rim Lock and Knob

Straight Butt Hinge (H7)



2nd Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 1⅝"

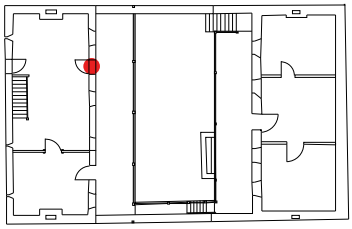
DESCRIPTION: A simple four-panel door with flat panels on the exterior face and raised panels on the interior. The door is set in an interior double rabbetted paneled reveal due to the thickness of the wall. The adjacent reveal does not match the four-panel design. In 2004 this door was repaired, repainted, and rehung. The current paint scheme matches the recommended colors of a 1980 paint study.[1]

[1] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Maintenance Completion Report, Pipe Spring National Monument, 2004), 1-2.

VARIATIONS: Found in opening #12 and #13.

HARDWARE: The door has a rim lock and escutcheon complete with a doorknob and rose. The existings locks were all replaced with the same size lock (5x7) purchased from Ball & Ball in 2005, mounted vertically.[2] Hinges are type H7.

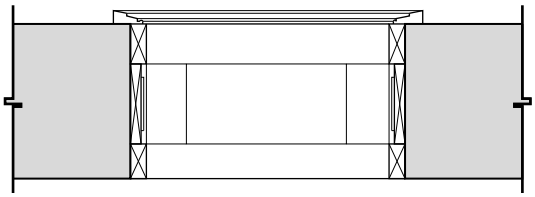
[2] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Maintenance Completion Report, Pipe Spring National Monument, 2004), 1-2.



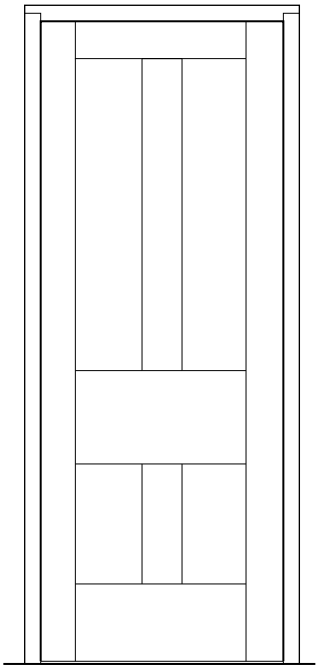
2nd Floor Plan

FRAME: F2

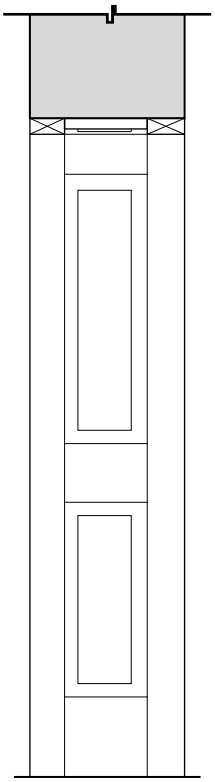
DRAWING



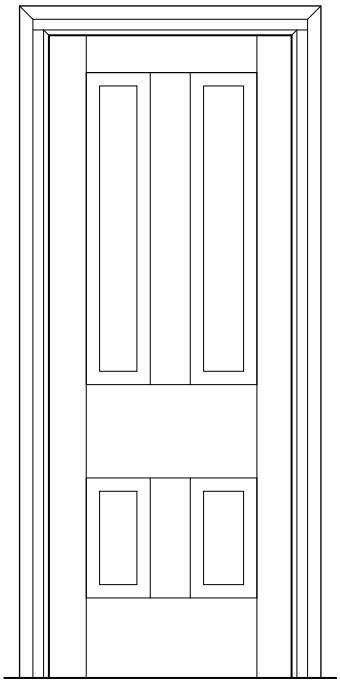
Reflected Plan of Head Panel



Exterior Elevation



Section



Interior Elevation

Plan

Scale: 1/2" =1'-0"

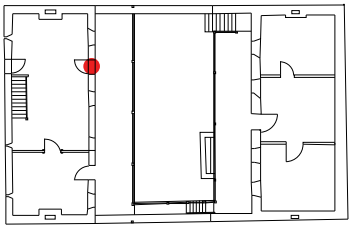
0 1 2 feet

HARDWARE

Knob and Oval Escutcheon

Rim Lock

Straight Butt Hinge (H7)



2nd Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 1½"

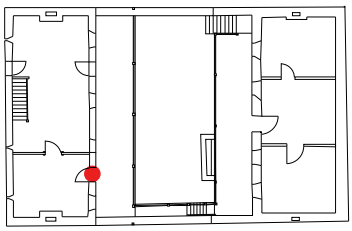
DESCRIPTION: A simple four-panel door with flat panels on the exterior face and raised panels on the interior. The door is set in an interior double rabbetted paneled reveal due to the thickness of the wall. The adjacent reveal does not match the four-panel design. In 2004 this door was repaired, repainted, and rehung. The current paint scheme matches the recommended colors of a 1980 paint study.[1]

[1] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Maintenance Completion Report, Pipe Spring National Monument, 2004), 2.

VARIATIONS: Found in opening #12 and #13.

HARDWARE: The door has a rim lock, escutcheon, eye screw remant of a hook lock, and doorknobs. The existing locks were replaced with the same size lock (5x7) purchased from Ball & Ball in 2005.[2] Hinges are type H9.

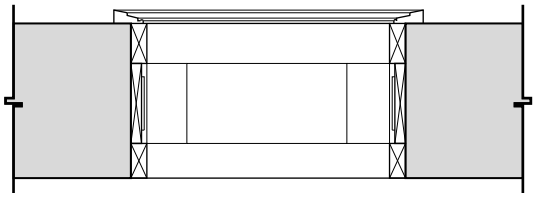
[2] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Maintenance Completion Report, Pipe Spring National Monument, 2004), 1-2.



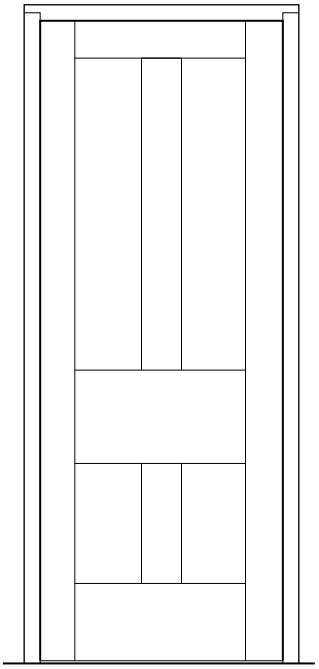
2nd Floor Plan

FRAME: F2

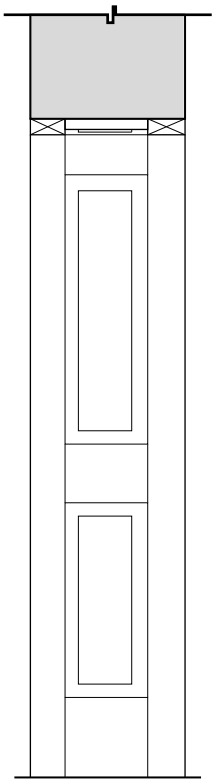
DRAWING



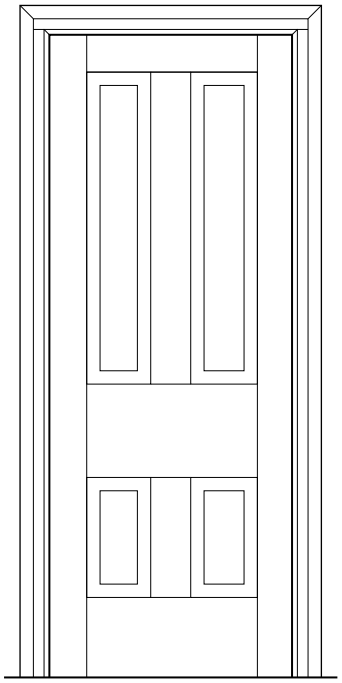
Reflected Plan of Head Panel



Exterior Elevation



Section



Interior Elevation

Plan

Scale: 1/2" =1'-0"

0 1 2 feet

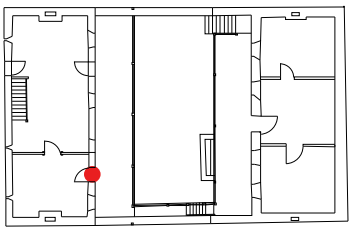
HARDWARE

Rim Lock

Oval Escutcheon

Eye Screw (Part of Hook Latch)

Steeple Knob-Pin Hinge (H9)



2nd Floor Plan

PHOTOS

Exterior

Interior

DETAILS

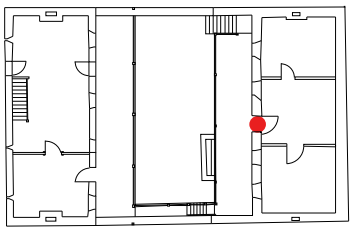
THICKNESS: 1½"

DESCRIPTION: This door is a simple four-panel door with raised panels on both faces. The adjacent rabbetted reveal does not match the four-panel door design. The door is hung flush to the floor porch on the exterior and has a step on the interior. The lock on this door was right handed and installed upside down to work on a left handed door.[1] In 2004 this door was repaired, repainted, and rehung. The current paint scheme matches the recommended colors of a 1980 paint study.[2] Upon removing the varnish, names carved into the door were revealed. They had been filled with a mixture of glue and sawdust.[3]

[1] Pipe Spring NM: Courtyard Doors and Locks, 4/27/2004
[2] "Repair Doors and Replace Locks of Courtyard Doors in Winsor Castle" (Historic Maintenance Completion Report, Pipe Spring National Monument, 2004), 1-2.
[3] Pipe Spring NM: Courtyard Doors and Locks, 1/19/2005

VARIATIONS: Found only in opening #11; no variations.

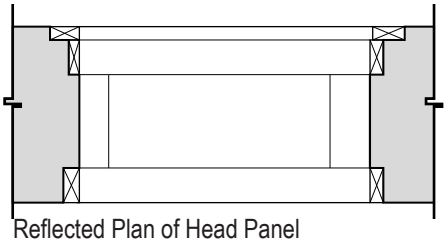
HARDWARE: The door has a rim lock, escutcheon, and knobs. The rim lock is a right handed lock that has been installed upside down to work on a left handed door. The door locks were replaced with the same size lock (5x7) purchased from Ball & Ball in 2005, mounted vertically.[4] Hinges are type H7.
[4] Pipe Spring NM: Courtyard Doors and Locks, 1/19/2005



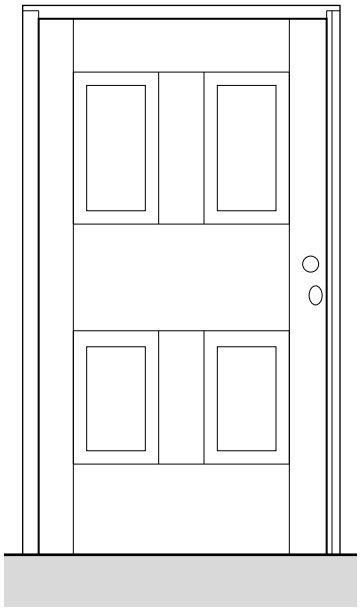
2nd Floor Plan

FRAME: F1

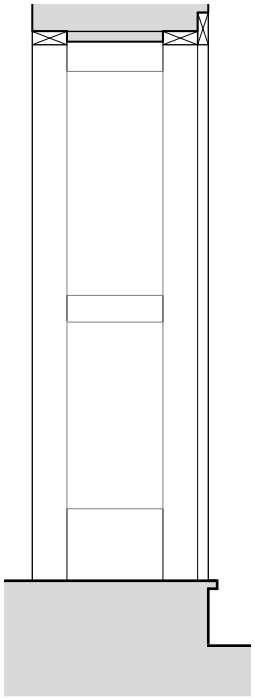
DRAWING



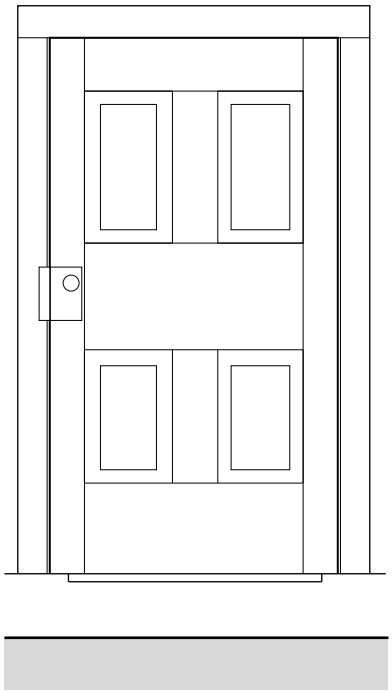
Reflected Plan of Head Panel



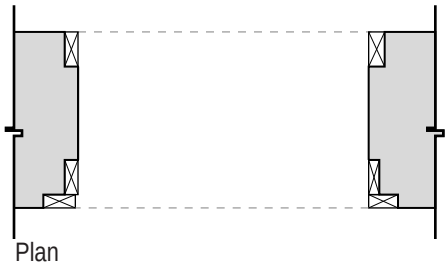
Exterior Elevation



Section



Interior Elevation



Plan

Scale: 1/2" =1'-0"

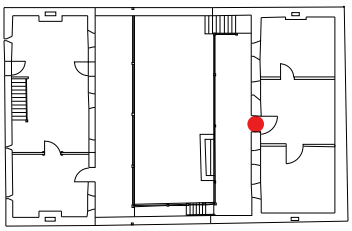
0 1 2 feet

HARDWARE

Rim Lock

Oval Escutcheon

Straight Butt Hinge (H7)



2nd Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 1⅛"

DESCRIPTION: A simple four-panel door with raised panels on one of its sides. In the fall of 1953, L. Heaton gave Mark Pope, a cabinetmaker from Kanab, an original door from the Fort and ordered four reproduction doors made of native pine for the Fort's interior rooms.[1] The door is painted the same on both sides. The hooks installed in the door casing are for barrier ropes used for Fort tours.

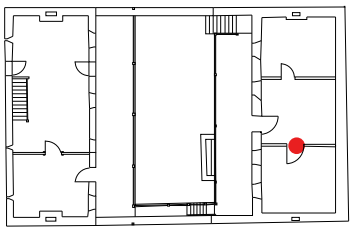
[1] Kathleen L. McKoy, *Cultures at a Crossroads: An Administrative History of Pipe Spring National Monument*, U.S. Department of the Interior, National Park Service Intermountain Region (Denver: Colorado, 2000), 406. Also, Leonard Heaton, Journal, October 15, 1953; November 9, 1953; December 7, 1953.

VARIATIONS: Other versions of this door can be found in opening #5, #11, #15, and #16.

HARDWARE: The door has nonfunctional Norfolk latch and a modern lock. Hinges are type H7. In 1940, Leonard Heaton purchased old locks to replace the modern ones he had installed between 1927 and 1928.[2]

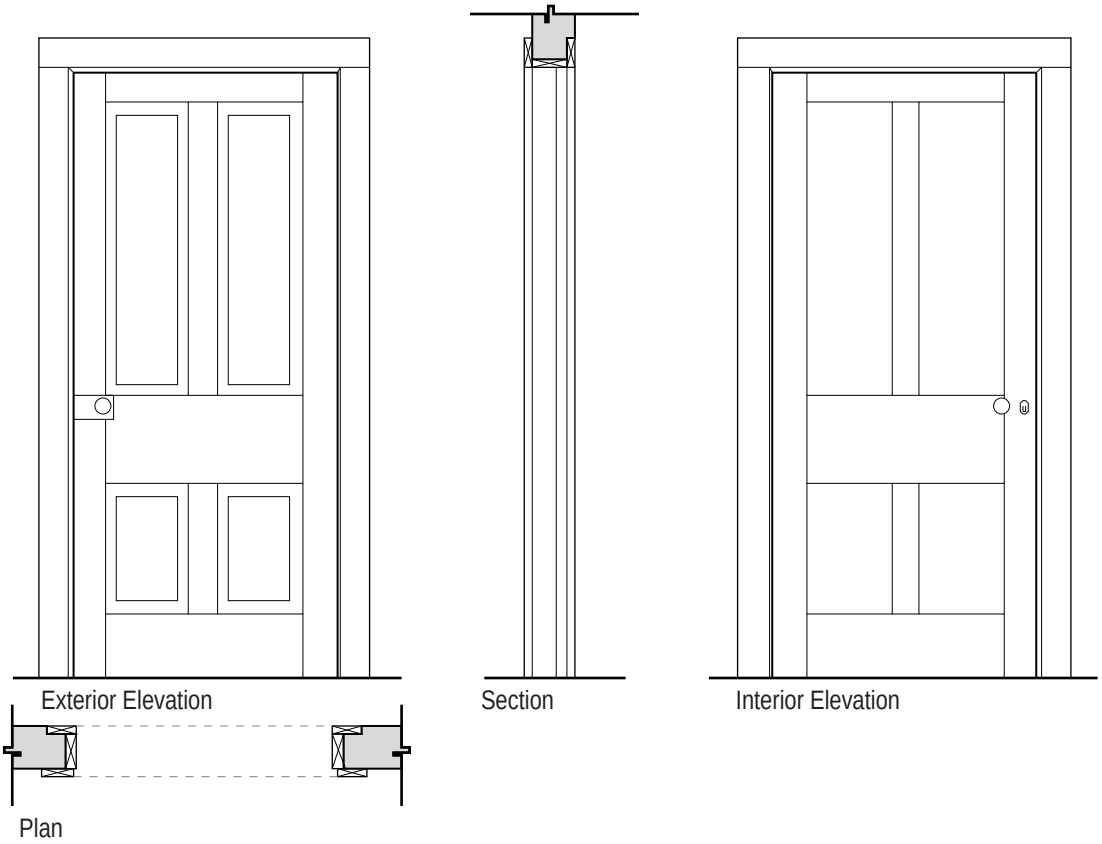
[2] Leonard Heaton, Journal, August 5,1940.

FRAME: F3



2nd Floor Plan

DRAWING

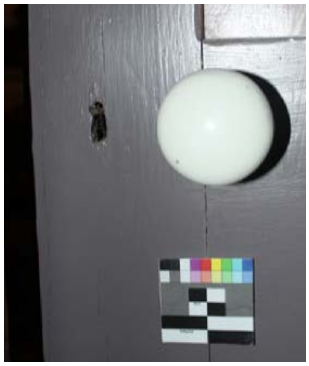


Scale: 1/2" =1'-0"

0 1 2 feet

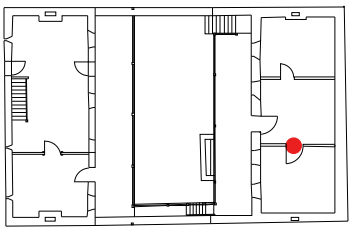
HARDWARE

Rim Lock and Hook Latch



Key Hole and Knob

Straight Butt Hinge (H7)



2nd Floor Plan

PHOTOS

Exterior

Interior

DETAILS

THICKNESS: 1⅛"

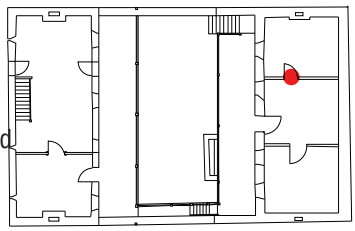
DESCRIPTION: A simple four-panel door with raised panels on one face. In the fall of 1953, L. Heaton gave Mark Pope, a cabinetmaker from Kanab, an original door from the Fort and order four reproduction doors made of native pine for the Fort's interior rooms.[1] The door is painted the same on both sides. The hooks installed in the door casing are for barrier ropes used for Fort tours.

Kathleen L. McKoy, *Cultures at a Crossroads: An Administrative History of Pipe Spring National Monument*, U.S. Department of the Interior, National Park Service Intermountain Region (Denver: Colorado, 2000), 406. Also, Leonard Heaton, Journal, October 15, 1953; November 9, 1953; December 7, 1953.

VARIATIONS: Other versions of this door can be found in opening #5, #11, #15, and #16.

HARDWARE: The door has a nonfunctional Norfolk latch and a modern lock. Hinges are type H7. In 1940, Leonard Heaton purchased old locks to replace the modern ones he had installed between 1927 and 1928.[2]

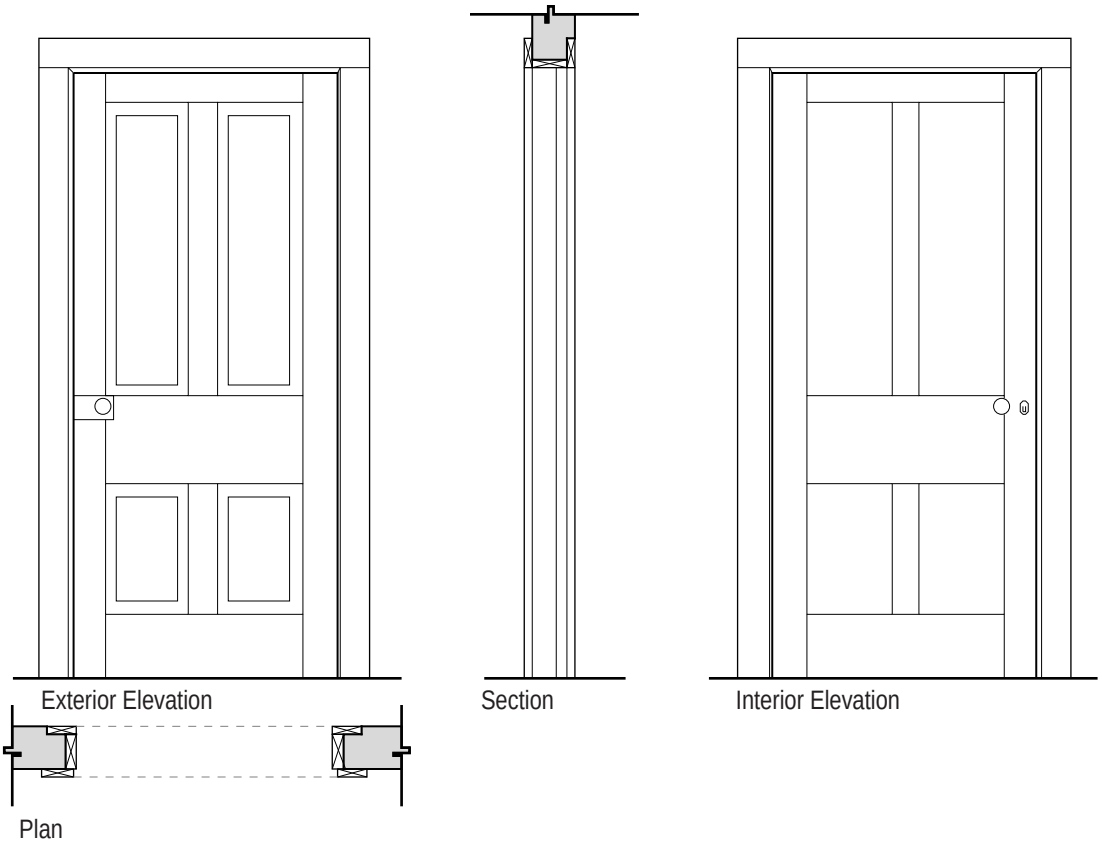
[2] Leonard Heaton, Journal, August 5,1940.



2nd Floor Plan

FRAME: F3

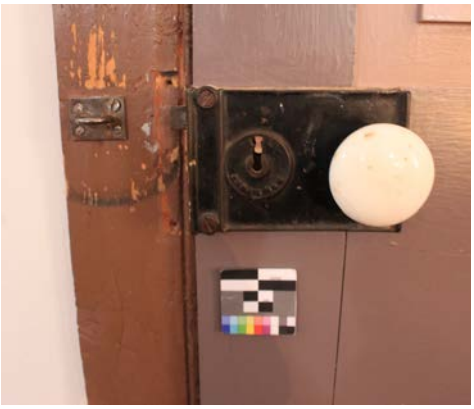
DRAWING



Scale: 1/2" =1'-0"

0 1 2 feet

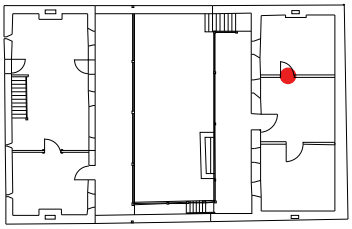
HARDWARE



Rim Lock with Knob and Rose.
Door mounted hook for barrier ropes.

Knob and Oval Escutcheon.

Straight Butt Hinge (H7)



2nd Floor Plan

PHOTO

Exterior

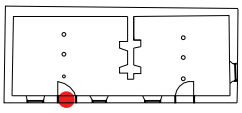
Interior

DETAILS

THICKNESS: 1½”

DESCRIPTION: The door is a typical batten door with vertical batten boards on the exterior and diagonal batten boards on the interior. The battens and boards found in the cabins are grooved, tongued, and beaded together on their edges. The diagonal battens on the interior face become additional bracing.

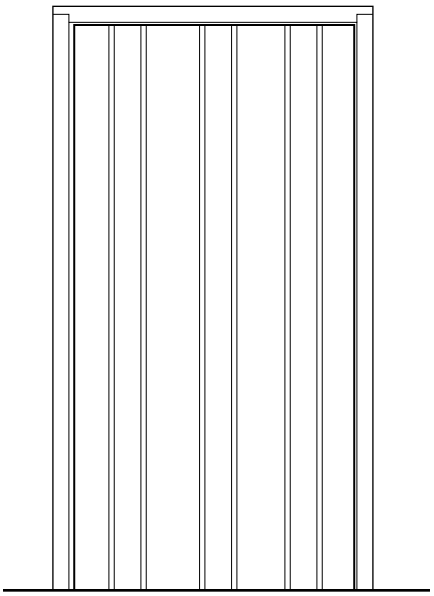
VARIATIONS: Found in opening #17, #18, #19, and #20.



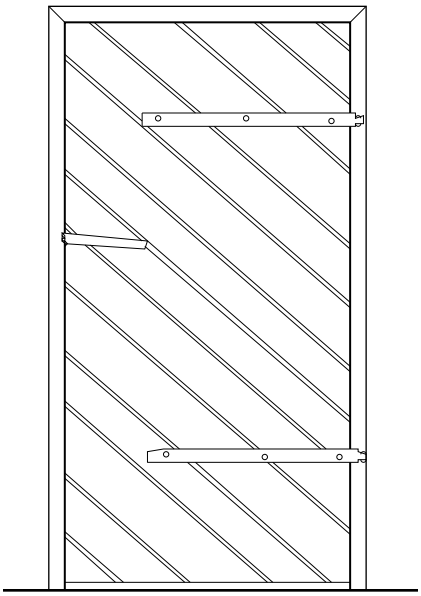
HARDWARE: The door has a Norfolk latch and a hook latch with pad lock. The door is hung with cross garnet hinges. Hinges are type H1.

FRAME: F5

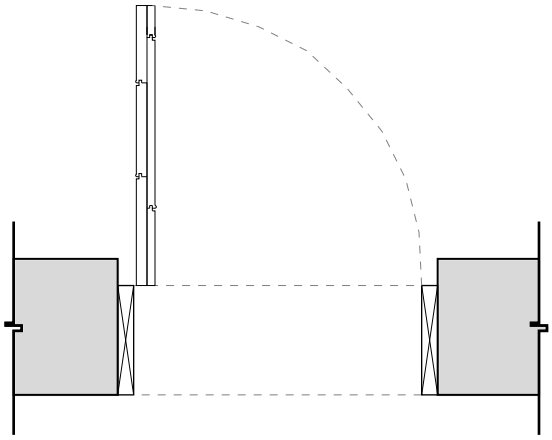
DRAWING



Exterior Elevation



Interior Elevation



Plan

Scale: 1/2" =1'-0"

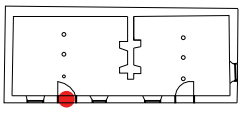
0 1 2 feet

HARDWARE

Padlock and Norfolk Latch

Norfolk Latch

Strap Hinges



PHOTO

Exterior

Interior

DETAILS

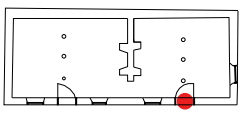
THICKNESS: 1½”

DESCRIPTION: The door is a typical batten door with vertical batten boards on the exterior and diagonal batten boards on the interior. The battens and boards found in the cabins are grooved, tongued, and beaded together on their edges. The diagonal battens on the interior face become additional bracing.

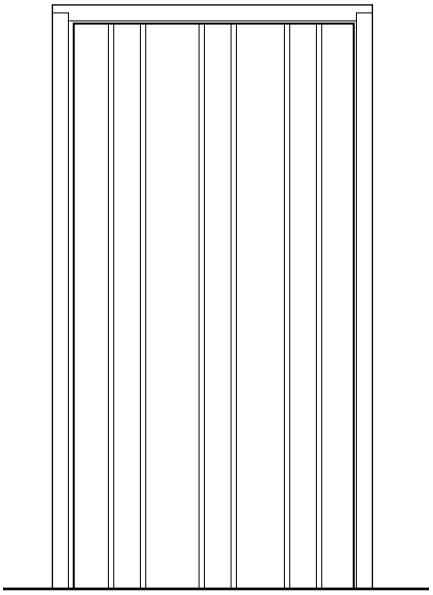
VARIATIONS: Found in opening #17, #18, #19, and #20.

HARDWARE: The door has a Norfolk latch and a hook latch with pad lock. The door is hung with cross garnet hinges. Hinges are type H1.

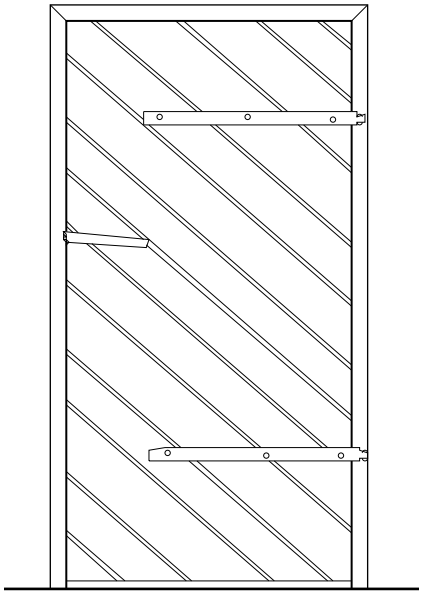
FRAME: F5



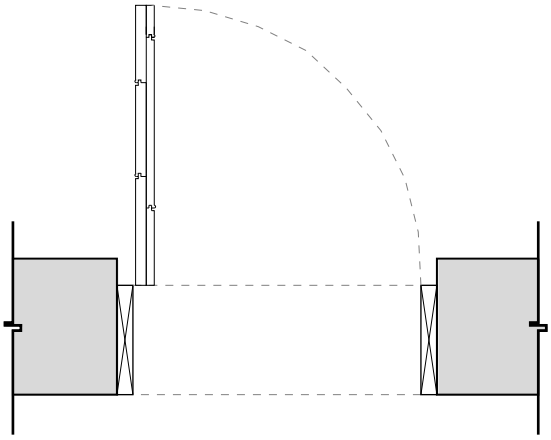
DRAWING



Exterior Elevation



Interior Elevation



Plan

Scale: 1/2" =1'-0"

0 1 2 feet

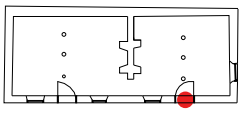
HARDWARE

Padlock and Norfolk Latch

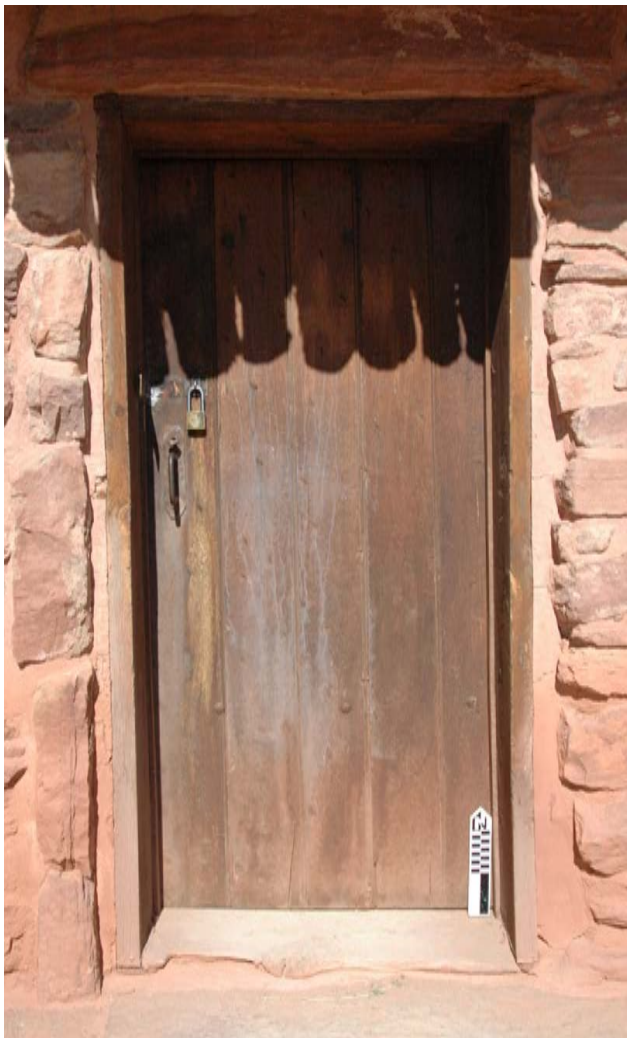
Norfolk Latch

Strap Hinges Detail

Strap Hinges



PHOTOS



Exterior

Interior

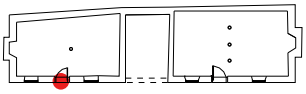
DETAILS

THICKNESS: 1½”

DESCRIPTION: The door is a typical batten door with vertical batten boards on the exterior and diagonal batten boards on the interior. The battens and boards found in the cabins are grooved, tongued, and beaded together on their edges. The diagonal battens on the interior face become additional bracing. The hand-hewn windows and door were installed in 1926.[1]

[1] “Questions on History of Pipe Spring Answered by Dilworth Woolley,” Clemenson, 61.

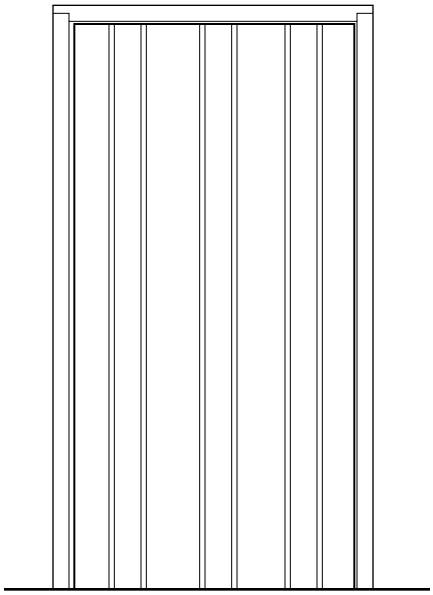
VARIATIONS: Found in opening #17, #18, #19, and #20.



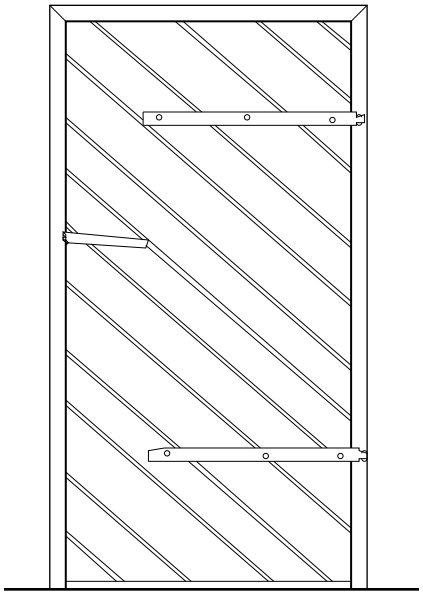
HARDWARE: The door has a Norfolk latch and a hook latch with pad lock. The door is hung with cross garnet hinges. Hinges are type H1.

FRAME: F5

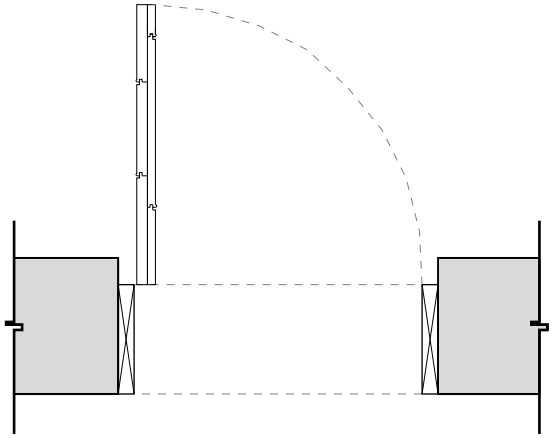
DRAWING



Exterior Elevation



Interior Elevation



Plan

Scale: 1/2" =1'-0"

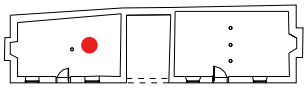
0 1 2 feet

HARDWARE

Norfolk Latch

Strap Hinges

Eye Screw



PHOTOS

Exterior

Interior

DETAILS

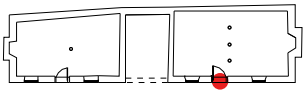
THICKNESS: 1-1/2”

DESCRIPTION: The door is a typical batten door with vertical batten boards on the exterior and diagonal batten boards on the interior. The battens and boards found in the cabins are grooved, tongued, and beaded together on their edges. The diagonal battens on the interior face become additional bracing. The hand-hewn windows and door were installed in 1926.[1]

[1] “Questions on History of Pipe Spring Answered by Dilworth Woolley,” Clemenson, 61.

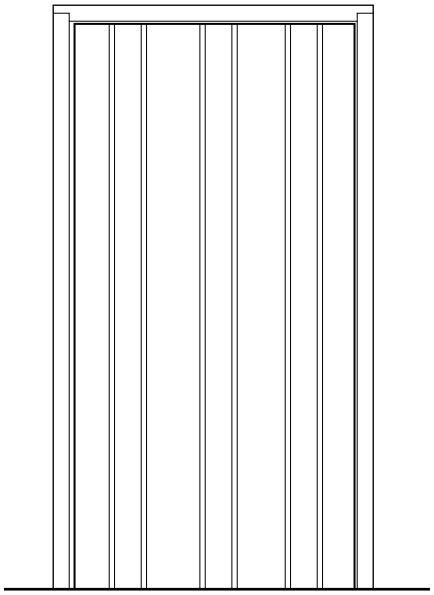
VARIATIONS: Found in opening #17, #18, #19, and #20.

HARDWARE: The door has a Norfolk latch and a hook latch with pad lock. The door is hung with cross garnet hinges. Hinges are type H1.

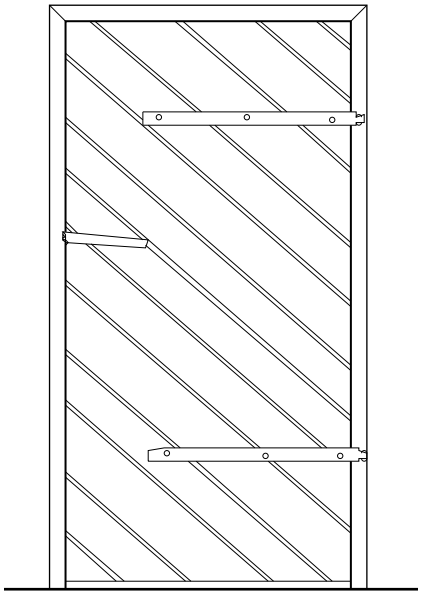


FRAME: F5

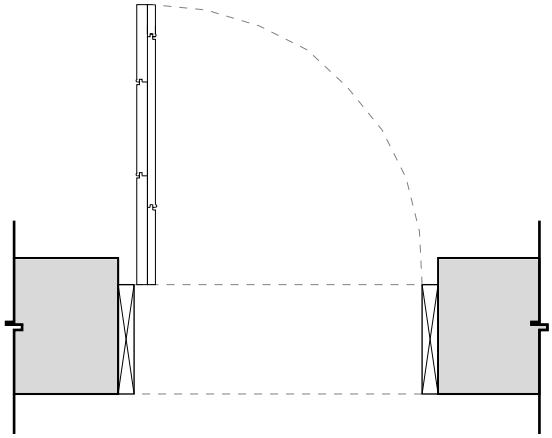
DRAWING



Exterior Elevation



Interior Elevation

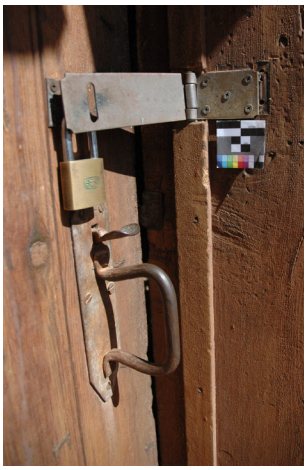


Plan

Scale: 1/2" =1'-0"

0 1 2 feet

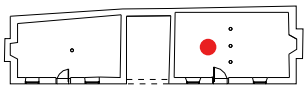
HARDWARE



Padlock and Norfolk Latch

Strap Hinges

Norfolk Latch

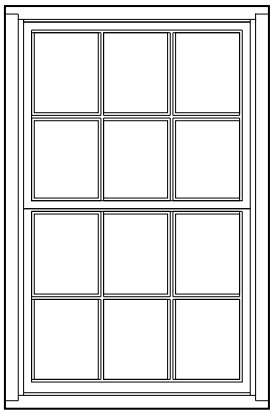


PHOTOS

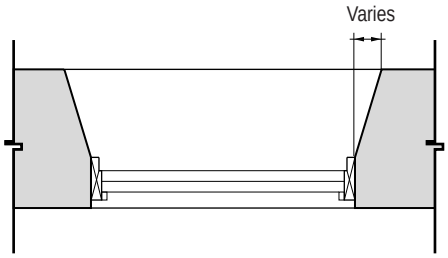
Exterior

Interior

DRAWING



Exterior Elevation



Plan

Scale: 1/2" =1'-0"

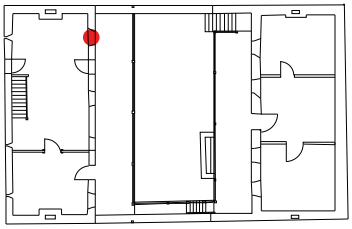
0 1 2 feet

DETAILS

DESCRIPTION: The window is a twelve-pane hand-hewn window made of wood. The window is painted white and is operable. All exterior facing windows were painted white during cyclic maintenance in 2009.[1]

[1] "Cyclic Repointing, Repainting, and Minor Repairs to Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2009), 1-2.

VARIATIONS: Found in opening #1 to #12 and #16 to #19.



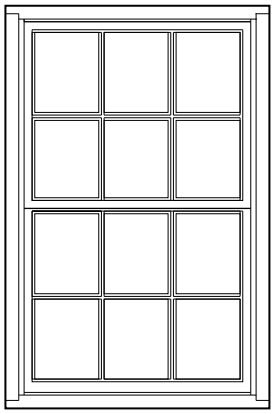
2nd Floor Plan

PHOTOS

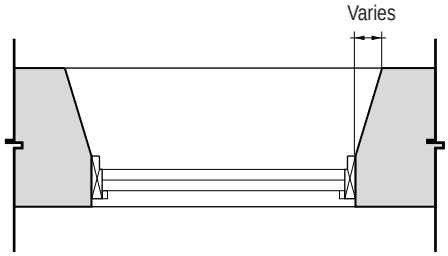
Exterior

Interior

DRAWING



Exterior Elevation



Plan

Scale: 1/2" =1'-0"

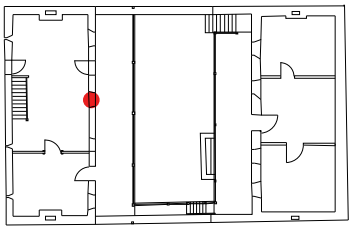
0 1 2 feet

DETAILS

DESCRIPTION: The window is a twelve-pane hand-hewn window made of wood. The window is painted white and is operable. All exterior facing windows were painted white during cyclic maintenance in 2009.[1]

[1] "Cyclic Repointing, Repainting, and Minor Repairs to Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2009), 1-2.

VARIATIONS: Found in opening #1 to #12 and #16 to #19.



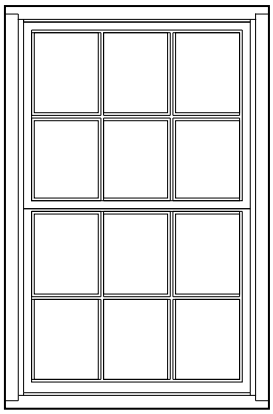
2nd Floor Plan

PHOTOS

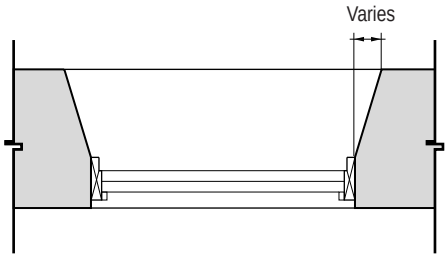
Exterior

Interior

DRAWING



Exterior Elevation



Plan

Scale: 1/2" =1'-0"

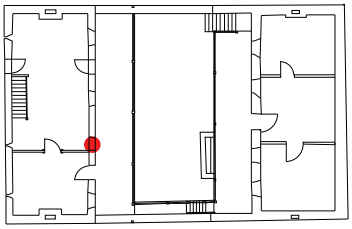
0 1 2 feet

DETAILS

DESCRIPTION: The window is a twelve-pane hand-hewn window made of wood. The window is painted white and is operable. All exterior facing windows were painted white during cyclic maintenance in 2009.[1]

[1] "Cyclic Repointing, Repainting, and Minor Repairs to Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2009), 1-2.

VARIATIONS: Found in opening #1 to #12 and #16 to #19.



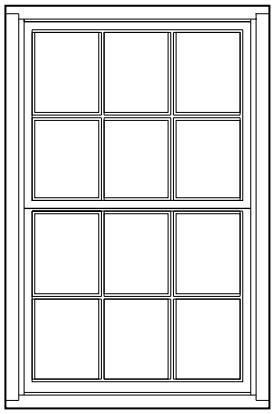
2nd Floor Plan

PHOTOS

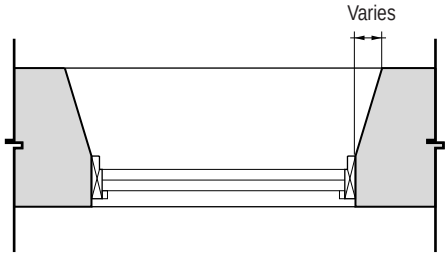
Exterior

Interior

DRAWING



Exterior Elevation



Plan

Scale: 1/2" =1'-0"

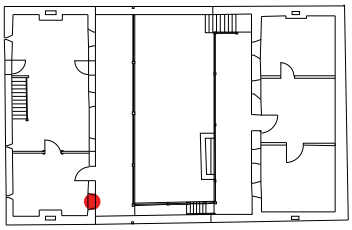
0 1 2 feet

DETAILS

DESCRIPTION: The window is a twelve-pane hand-hewn window made of wood. The window is painted white and is operable. All exterior facing windows were painted white during cyclic maintenance in 2009.[1]

[1] "Cyclic Repointing, Repainting, and Minor Repairs to Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2009), 1-2.

VARIATIONS: Found in opening #1 to #12 and #16 to #19.



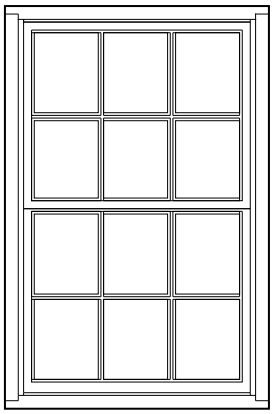
2nd Floor Plan

PHOTOS

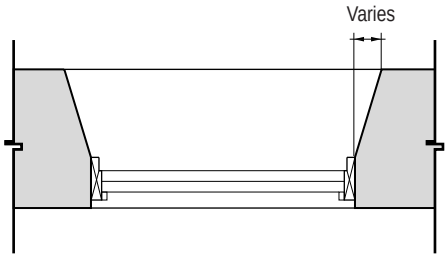
Exterior

Interior

DRAWING



Exterior Elevation



Plan

Scale: 1/2" =1'-0"

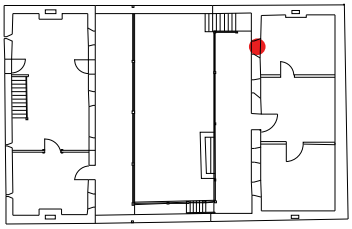
0 1 2 feet

DETAILS

DESCRIPTION: The window is a twelve-pane hand-hewn window made of wood. The window is painted white and is operable. All exterior facing windows were painted white during cyclic maintenance in 2009.[1]

[1] "Cyclic Repointing, Repainting, and Minor Repairs to Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2009), 1-2.

VARIATIONS: Found in opening #1 to #12 and #16 to #19.



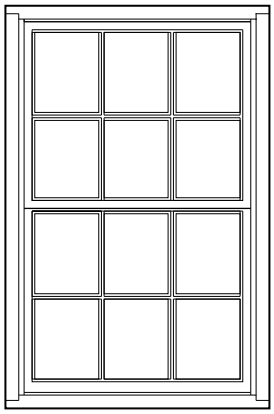
2nd Floor Plan

PHOTOS

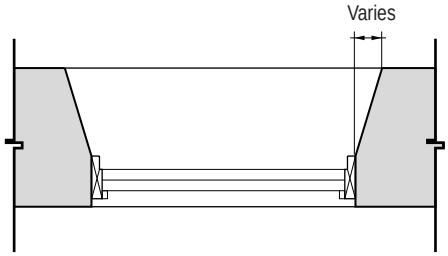
Exterior

Interior

DRAWING



Exterior Elevation



Plan

Scale: 1/2" =1'-0"

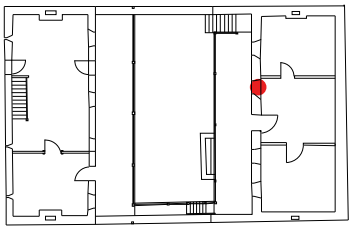
0 1 2 feet

DETAILS

DESCRIPTION: The window is a twelve-pane hand-hewn window made of wood. The window is painted white and is operable. All exterior facing windows were painted white during cyclic maintenance in 2009.[1]

[1] "Cyclic Repointing, Repainting, and Minor Repairs to Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2009), 1-2.

VARIATIONS: Found in opening #1 to #12 and #16 to #19.



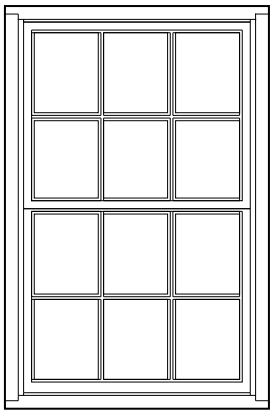
2nd Floor Plan

PHOTOS

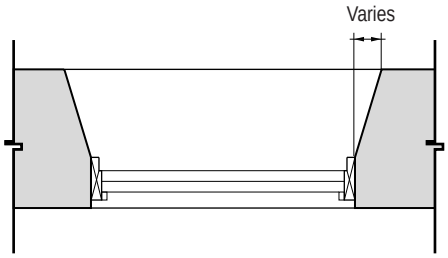
Exterior

Interior

DRAWING



Exterior Elevation



Plan

Scale: 1/2" =1'-0"

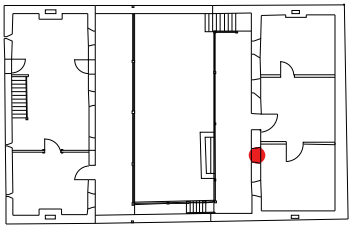
0 1 2 feet

DETAILS

DESCRIPTION: The window is a twelve-pane hand-hewn window made of wood. The window is painted white and is operable. All exterior facing windows were painted white during cyclic maintenance in 2009.[1]

[1] "Cyclic Repointing, Repainting, and Minor Repairs to Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2009), 1-2.

VARIATIONS: Found in opening #1 to #12 and #16 to #19.



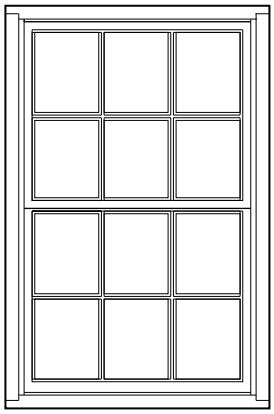
2nd Floor Plan

PHOTOS

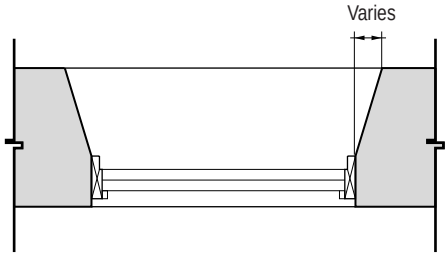
Exterior

Interior

DRAWING



Exterior Elevation



Plan

Scale: 1/2" =1'-0"

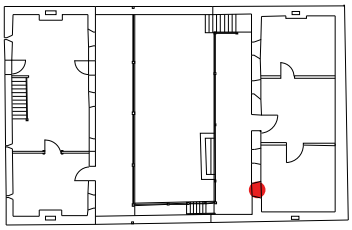
0 1 2 feet

DETAILS

DESCRIPTION: The window is a twelve-pane hand-hewn window made of wood. The window is painted white and is operable. All exterior facing windows were painted white during cyclic maintenance in 2009.[1]

[1] "Cyclic Repointing, Repainting, and Minor Repairs to Winsor Castle" (Historic Preservation Maintenance Completion Report, Pipe Spring National Monument, 2009), 1-2.

VARIATIONS: Found in opening #1 to #12 and #16 to #19.



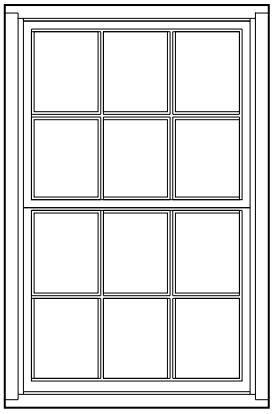
2nd Floor Plan

PHOTOS

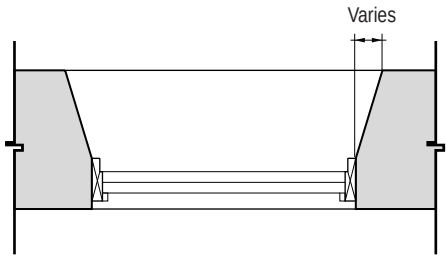
Exterior

Interior

DRAWING



Exterior Elevation



Plan

Scale: 1/2" =1'-0"

0 1 2 feet

DETAILS

DESCRIPTION: The window is a twelve-pane hand-hewn window made of wood. The window is painted white and is operable. All exterior facing windows were painted white during cyclic maintenance in 2009.[1]

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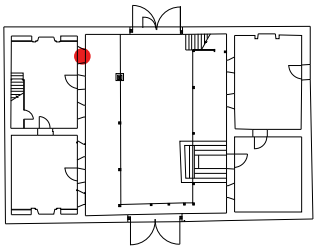
VARIATIONS: Found in opening #1 to #12 and #16 to #19.



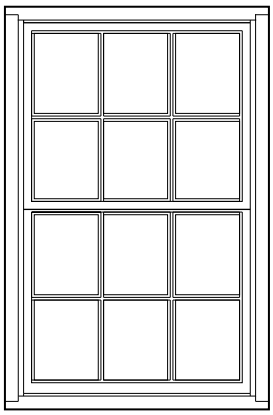
1st Floor Plan

PHOTOS

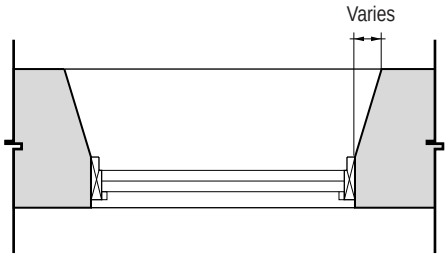
Exterior

Interior

DRAWING



Exterior Elevation



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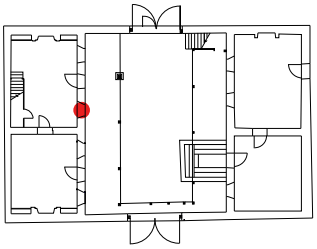


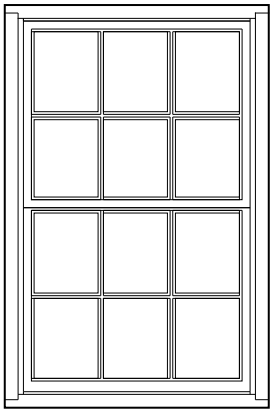
1st Floor Plan

PHOTOS

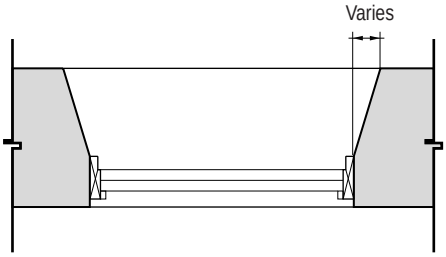
Exterior

Interior

DRAWING



Exterior Elevation



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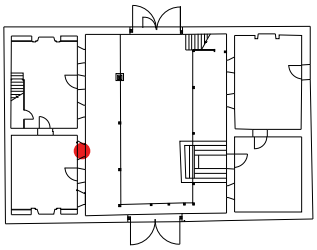


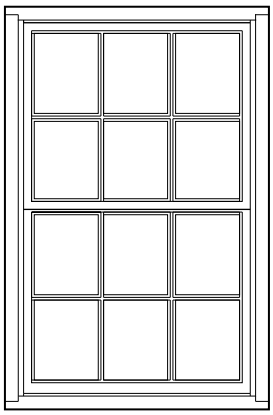
1st Floor Plan

PHOTOS

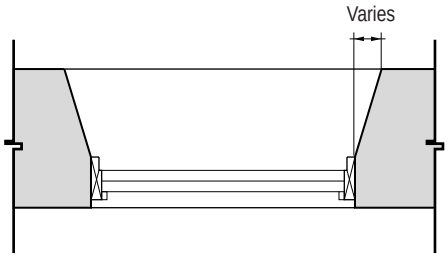
Exterior

Interior

DRAWING



Exterior Elevation



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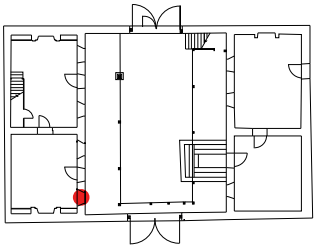


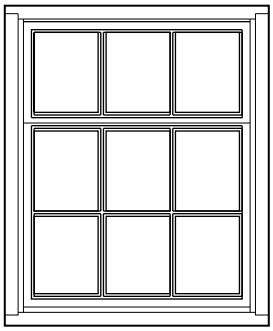
1st Floor Plan

PHOTOS

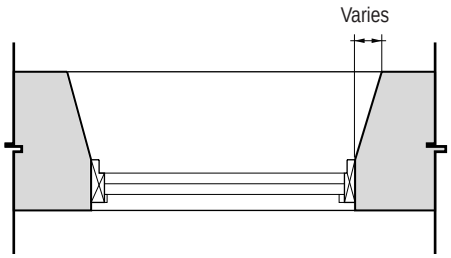
Exterior

Interior

DRAWING



Exterior Elevation



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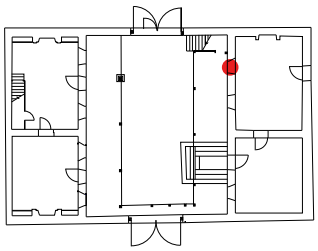
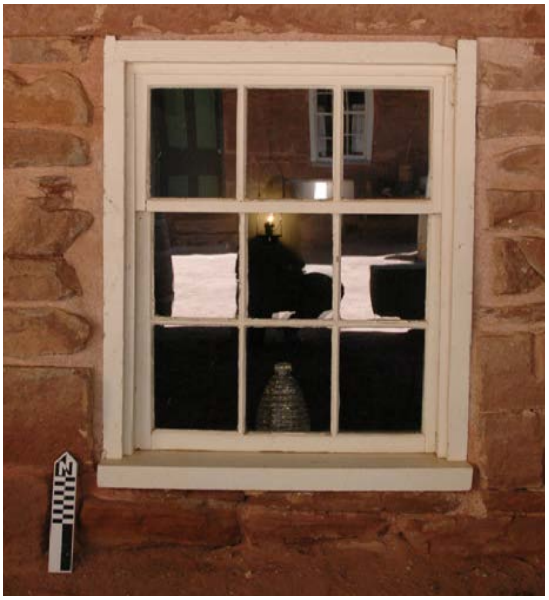


1st Floor Plan

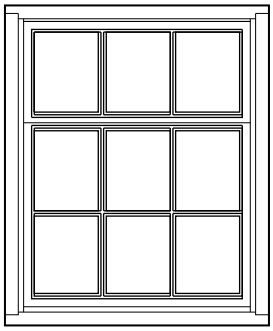
PHOTOS



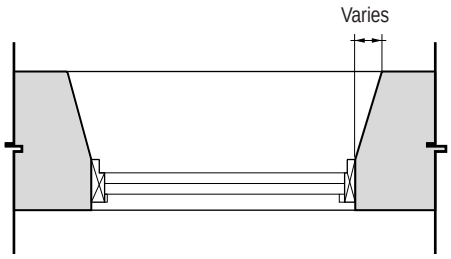
Exterior

Interior

DRAWING



Exterior Elevation



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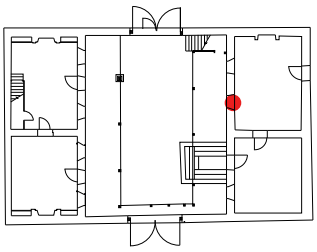


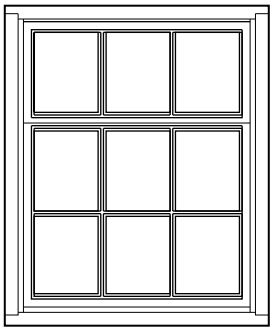
1st Floor Plan

PHOTOS

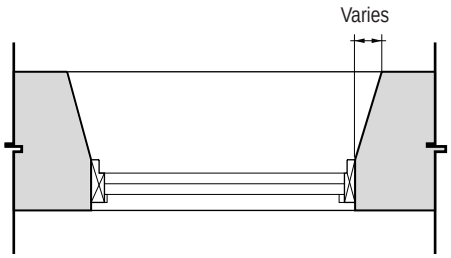
Exterior

Interior

DRAWING



Exterior Elevation



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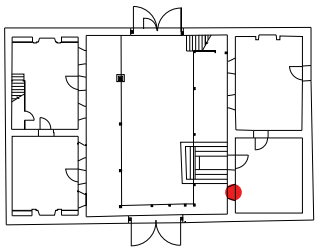
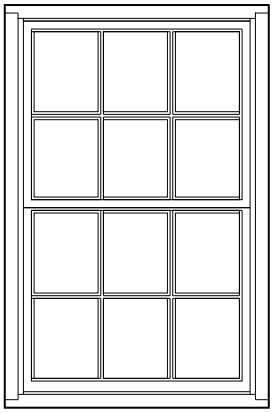


1st Floor Plan

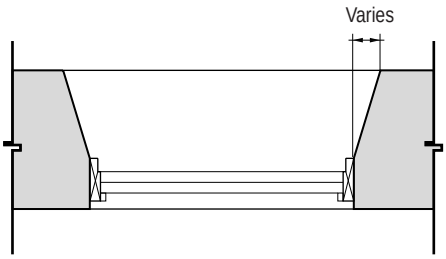
PHOTOS

Exterior

DRAWING



Exterior Elevation



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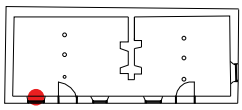
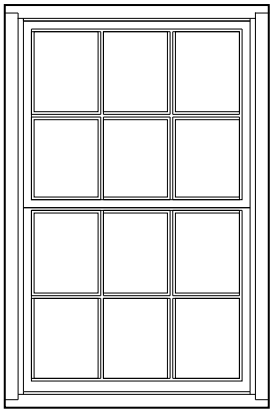


VARIATIONS: Found in opening #1 to #12 and #16 to #19.

PHOTOS

Exterior

DRAWING



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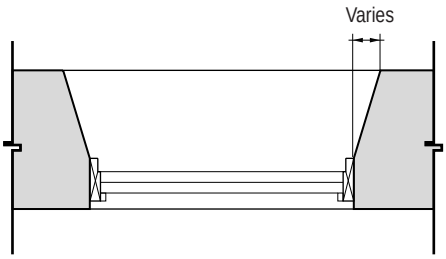

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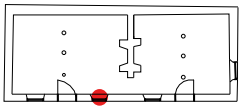

PHOTOS

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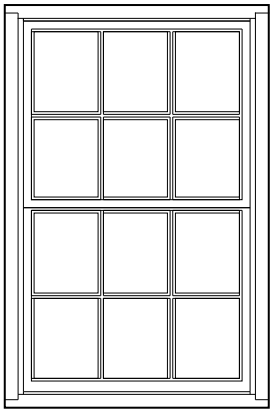
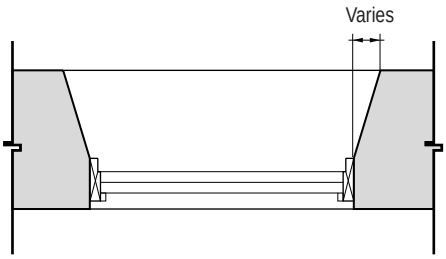


Exterior Elevation



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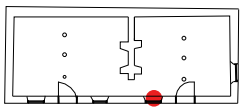
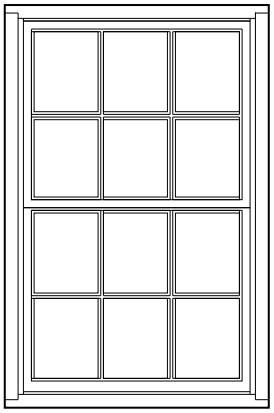


PHOTOS

Exterior

DRAWING



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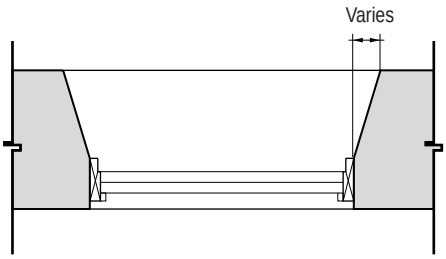

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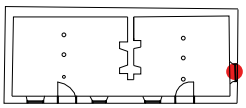
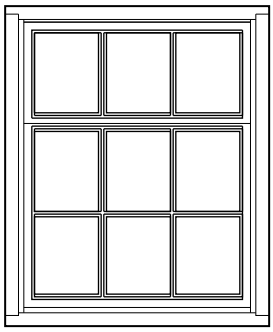


PHOTOS

Exterior

DRAWING



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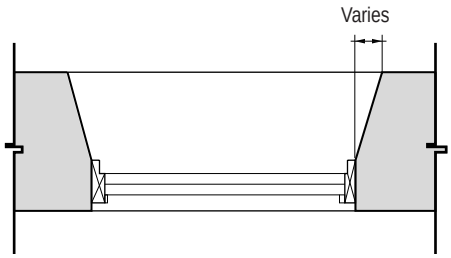

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DETAILS

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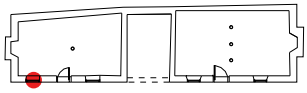

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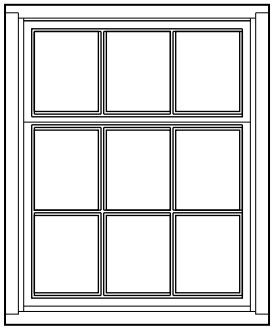
Exterior

DRAWING



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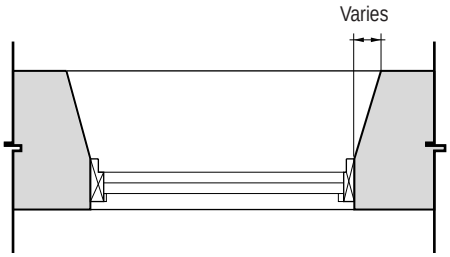

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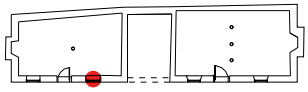

PHOTOS

Exterior

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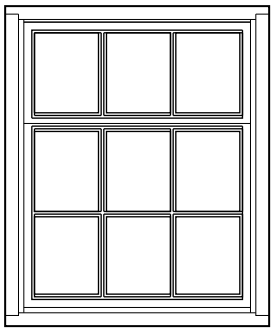

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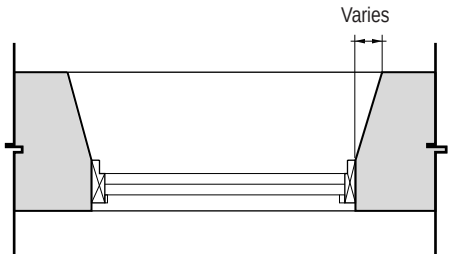

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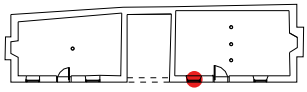
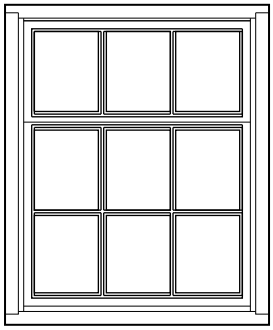


PHOTOS

Exterior

DRAWING



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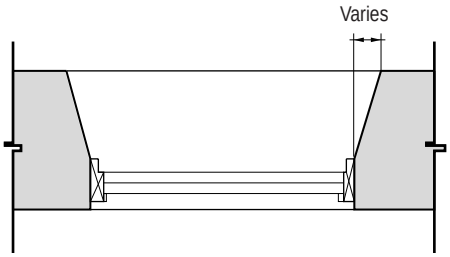

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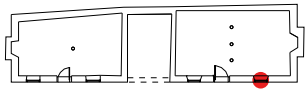


APPENDIX D

GLOSSARY OF CONDITIONS, CONSTRUCTION, AND MORTAR

FORT | CABINS

- Stone Type
- Mortar Type
- Attributes
- Deterioration
- Repair Conditions
- Interior Conditions (Fort)

PIPE SPRING NATIONAL MONUMENT

CONDITIONS GLOSSARY

STONE TYPE	**TYPE A:**	Kayenta: darker gray, red sandstone
	TYPE B:	Moenkopi: red-yellow sandstone
	TYPE C:	Navajo: white sandstone with blue inclusions
MORTAR TYPE	**TYPE A:**	Pink lime Spec Mix mortar. (2007-present)
	TYPE B:	Orange-tan, Kanab sand-based mortar. (c.1990-2007)
	TYPE C:	White-gray cement mortar. (c. 1959)
	TYPE D:	Deep red-brown, soil-based mortar. (Date unknown)
	TYPE E:	Dark gray cement mortar. (Date unknown)
	TYPE F:	Soil-based mortar with large pebble aggregate. (Date unknown)
	TYPE G:	A fine textured, red clay-based mortar, with minimal aggregate. (Date unknown)
	TYPE H:	Badly deteriorated forms of Mortar Types B and C.
	TYPE I:	Hard purple coarse textured mortar with large pebbles.(Date unknown)
ATTRIBUTES	**CALICHE:**	Hardened deposits of calcium carbonate.
	TOOL MARKS:	Both quarrying marks and stone surface finishes.
	GRAFFITI:	Engraving, scratching, cutting or application of paint, ink or similar matter on the stone surface.
	INSCRIPTIONS:	Writing, through engraving and carving, that most often displays a person's name and date.
DETERIORATION	**LOSS:**	Voids in the stone surface, as a result of erosion, alveolization or mechanical damage.
	CRACKING:	Individual fissures, over 1/4 inch, resulting in the fragmentation of the stone.
	DELAMINATION:	Planar detachment of the stone related to its bedding orientation.
	EFFLORESCENCE:	Generally whitish, powdery or whisker-like crystals of watersoluble salt.
	BIOGROWTH	Colonization of micro-organisms such as bacteria, cyanobacteria, algae, fungi and lichen (symbioses of the latter three), genrally visible as green, brown or black surface discoloration.
	DIFFERENTIAL EROSION:	Uneven surface loss of stone resulting from weathering.
	AVEOLAR EROSION:	Formation of cavities of variable shapes and sizes on the stone surface
	MOISTURE:	Areas of stone and mortar that were both visibly and physically wet.

REPAIR CONDITIONS

CRYSTALLIZATION: Surface of stone that has become hardened due to the precipitation of solid crystals.

DISPLACEMENT: Stone shifting from its original position, which may be coupled with cracking, where one side of the crack is extended a further distance than the other.

STAINING: Whitish staining from water flow.

OVER-SPILL: Whitish gray staining on stone edges from cementitious mortar repointing.

INTERIOR CONDITIONS

EFFLORESCENCE: Generally white, powdery or whisker-like crystals of water-soluble salts.

DELAMINATION: The physical separation of the stone or plaster surface into one or several layers.

SOILING/SOOTING: Deposit of a very thin layer of exogenous particles (eg. soot) giving a dirty appearance to the stone surface.

PITTING: The formation of small pits, generally not connected, on a stone surface.

SURFACE/FINISH LOSS: Localized loss of material resulting in exposed substrate.

DETACHMENT: Blistering and flaking of plaster and surface finishes potentially leading to loss.

STAINING: Discoloration of a surface, generally affecting plaster walls and ceilings.

INSECT DAMAGE AND ANIMAL DEPOSITS: Burrowing or tunneling in wood caused by termites and other insects. Guano or deposits due to bats and small animals.

GRAFFITI: Engraving, scratching, or cutting into a wood or stone feature.

CRACKING: Cracks caused by shrinking and swelling of wood due to changes in moisture content, and hairline and network cracking found within the plaster.

DISPLACEMENT: In- and/or out-of-plane movement of structural components, including interior and exterior walls and floors.

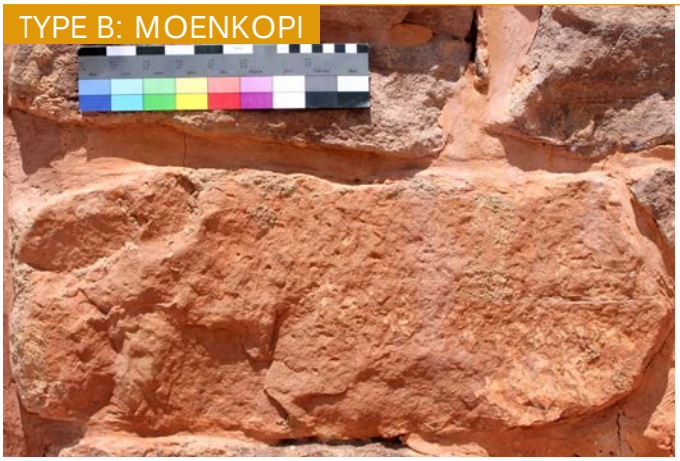
REPAIR: In-kind replacement or fill of wood features due to displacement, moisture damage, or mechanical damage.

Condition definitions based on ICOMOS-ISCS Illustrated Glossary on Stone Deterioration Patterns

TYPE A: KAYENTA

The Kayenta is a fine-grained sandstone of dark red, grayish purplish color, interbedded with layers of siltstone.

TYPE B: MOENKOPI



The Moenkopi stone is a fine grained sandstone of yellow color, and bright red-yellow. This stone is typically softer than the Kayenta or Navajo sandstone, with greater variation across its surface.

TYPE C: NAVAJO

The Navajo stone is white in color with blue-gray inclusions. It is a harder, more compact stone than the Kayenta and Navajo sandstone and appears to be more resistant to erosion.

1995 -2009

Fort and Cabins:

6 parts Kanab Sand
4 parts red clay from reservoir pit road
1 part lime
1 part white cement

Buildings & Ponds:

8 parts Kanab Sand
2 parts red clay
2 parts lime
1 part gray cement

Both mixes were in continued use from 1995 to 2009 according to the park's Historic Preservation Maintenace Completion Reports for the East Cabin, West Cabin, and Winsor Castle.[1,2,3]

[1]PISP, Cyclic Repointing of East Cabin , 2000, 2003, 2006, 2008, and 2009.
[2]PISP, Cyclic Repointing of West Cabin , 2005 and 2008.
[3]PISP, Cyclic Repointing of Winsor Castle , 2000, 2002, 2003, 2004 and 2009.

2007

Buildings and Ponds: Spec Mix Formula, Rider Stone

100 ml - Davis Color 5447 Yellow
100 ml - Davis Color 160 Red
16 oz Lime
1 1/2 gal - Water
80 lb bag - Spec Mix, PCL sand, N- series

East Gate: Spec Mix Formula*

100 ml - Davis Color 5447 Yellow
100 ml - Davis Color 160 Red
16 oz Lime
1 1/2 gal - Water
80 lb bag - Spec Mix, PCL sand, S- series

SPEC MIX© PCL Sand Mortar Type N, is a commercial pre-mix mortar which contains hydrated lime, portland cement, silica sand, calcium sulfate, and Rockwood pigments that include yellow iron oxide, chromium oxide, red iron oxide and black iron oxide. The mortar is very fine in texture and of a uniform pinkish color[3].
A stronger spec mixture was used to mortar the east gate after repairs.

[4] MSDS, SPEC MIX© PCL Sand Mortar Type M, S, N, O. Pp 1-6.
[5] PISP, Stabilize East Entry Gate of Winsor Castle, PMIS#: 124174B (PISP-2007-01), Winsor Castle HS-1, 2007. Pp. 1-24.

2009 - PRESENT

Buildings:*

100 ml - Davis Color 5447 Yellow
100 ml - Davis Color 160 Red
16 oz Lime
1 1/2 gal - Water
80 lb bag - Spec Mix, PCL sand, n- series

In consultation with Vicky Jacobson, Historical Architect for IMR, we will test the use of Type N SpecMix for repairs to the exterior retaining walls at various locations. This mix is softer than the Type S used on the Winsor Castle gate project in 2007. This will give us a good idea of how this material will work for projects in future years.[4]

[4]PISP, Mortar Mixtures , 2009. Pp.1

MORTAR TYPE >

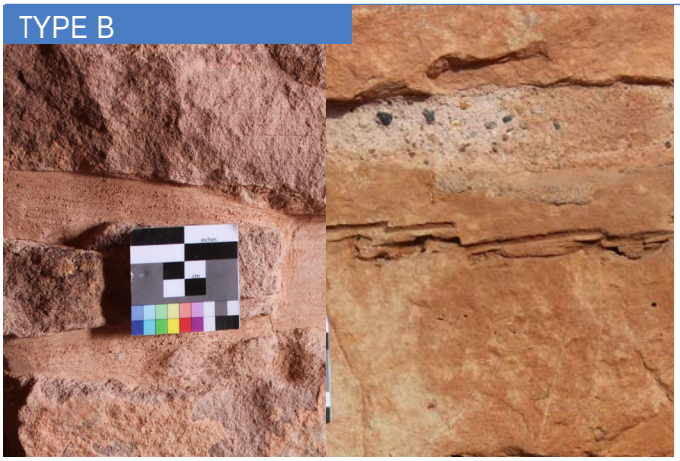
TYPE A

SPEC MIX© PCL Sand Mortar Type N, is a commercial pre-mix mortar which contains hydrated lime, portland cement, silica sand, calcium sulfate, and Rockwood pigments that include yellow iron oxide, chromium oxide, red iron oxide and black iron oxide. The mortar is very fine in texture and of a uniform pinkish color.

Dates of application: 2007 (first application shown on left image) and subsequent years (different Spec Mix formulation shown on the right).

GRAPHIC:

TYPE B



A fine to coarse textured mortar of orange-tan color composed of lime, kanab sand (consisting of poorly sorted aggregate of black, tan and white grains), and a cementitious binder, generally harder than the other mortar types found.

Dates of application: c. 1995

Munsell Color:

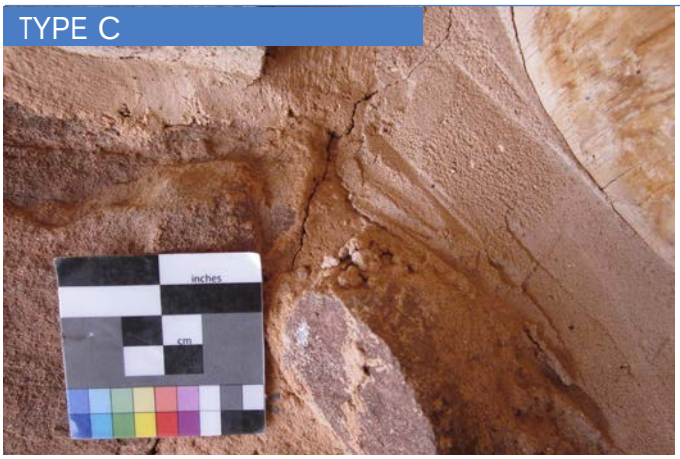
7.5YR 8/3 - Pink (matrix)
10YR 7/4 - Very Light Brown (aggregate)
10YR 7/1 - Light Gray (aggregate)
10YR 5/1 - Gray (aggregate)
2.5YR 7/4 - Light Reddish Brown (aggregate)

Texture: Coarse

Hardness: < 2.5

GRAPHIC:

TYPE C



Repair mortar around vigas. Fine pink mortar with predominant white aggregate.

Dates of application: Unknown

Munsell Color:

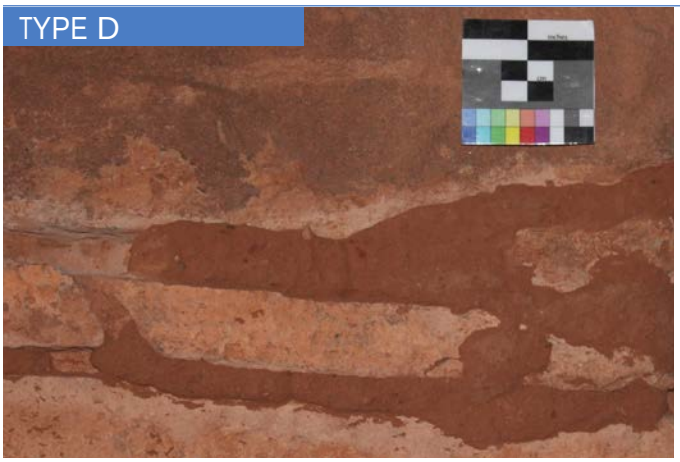
5YR 8/3 - Pink (matrix-base)
5YR 7/3 - Pink (matrix-finish)
7.5YR 8/2 - Pinkish White (aggregate)

Texture: Fine

Hardness: < 2.5

GRAPHIC:

TYPE D

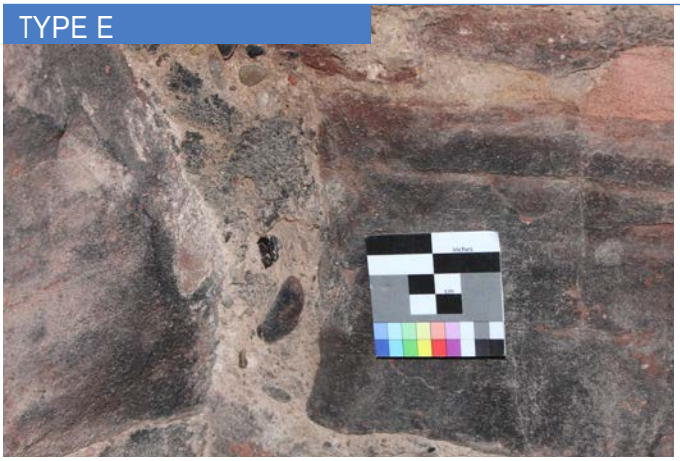


A fine textured, deep red clay-based mortar found only in the interior of the West Cabin.

Dates of Application: Unknown

GRAPHIC:

TYPE E



A hard gray coarse textured mortar containing a poorly sorted aggregate with large black grains, found only in the north fireplace of the East Cabin. Portland cement.

Dates of Application: c. 1923(?) Stabilization work

Munsell Color:

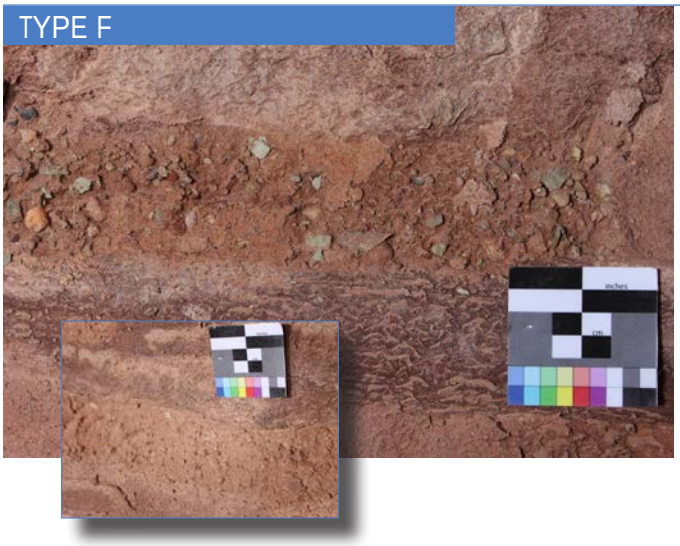
10YR 8/3 - Very Pale Brown (matrix)
10YR 8/6 - Yellow (aggregate)
10YR 6/1 - Gray (aggregate)
2.5YR 5/4 - Reddish Brown (aggregate)

Texture: Coarse

Hardness: 2.5> and harder than other mortars

GRAPHIC:

TYPE F



A fine textured, red clay based mortar with light green to white color aggregate that varied in size.

Dates of Application: Unknown

Munsell Color:

5YR 7/4 - Pink (matrix)
Gley1 8/5G - Light Greenish Gray (aggregate)

Texture: Medium

Hardness: < 2.5

GRAPHIC:

TYPE Z

A fine textured, red clay based mortar, with minimal aggregate. This mortar is located towards the lower portions of the east wall of Winsor Castle.

Dates of Application: Unknown

GRAPHIC:

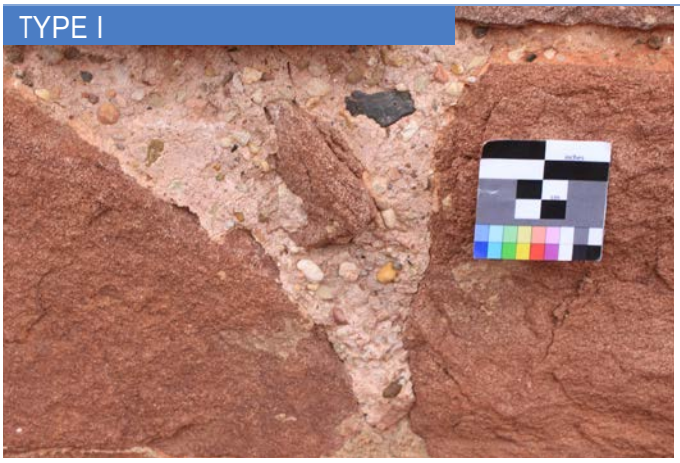
TYPE Y

NOTE: Onsite, it was believed that this mortar was a separate "type", but upon further investigation, it appears that this mortar is a badly deteriorated form of Mortar Type C (left) and Mortar Type B (right).

Dates of Application: Unknown

GRAPHIC:

TYPE I



A repair path with large aggregates.

Dates of Application: Unknown

Munsell Color:
5YR 6/4 - Pink (matrix)
5YR 4/2 - Dark Reddish Gray (aggregate)
10YR 8/2 - Very Pale Brown (aggregate)
10YR 6/1 - Gray (aggregate)

Texture: Coarse

Hardness: 2.5

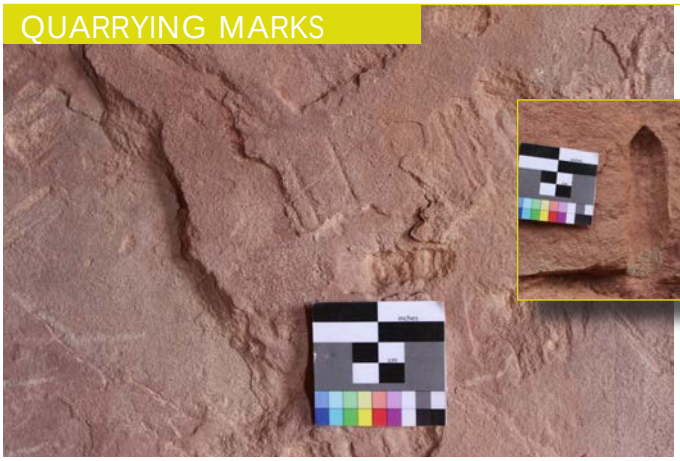
GRAPHIC:

CALICHE

Caliche is a naturally occuring hardened surface deposit of calcium carbonate. Generally light in color, it can range from white to light pink to reddish-brown, depending on the impurities present. It is generally found on near the surface, but it can occur in deeper subsoil deposits as well. The layers vary from a few inches to feet thick, and multiple layers can exist in a single location.

GRAPHIC:

QUARRYING MARKS



Stone extraction, shaping or dressing marks visible on the surface. These markings differ from stone surface finishing, because they relate to the stone's extraction from the quarry.

GRAPHIC:

GRAFFITI

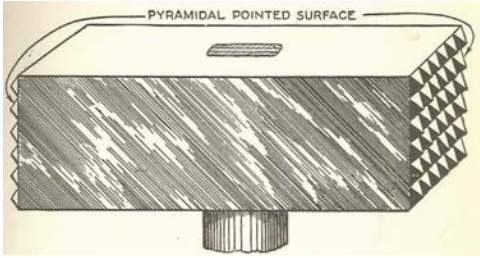
Graffiti appears as images or lettering scratched, painted or marked on the stone surfaces.

These markings appear on Winsor Castle as well as the East and West Cabins—most frequently on the stones surrounding the fireplaces, courtyard, and doors ranging from the early to mid-twentieth century. Some of the markings are historically significant while others are acts of vandalism.

GRAPHIC:

STIPPLING

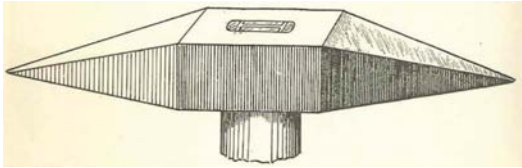
The surface of the stone contains a pecked, or “bush-hammered” finish.



GRAPHIC: 

VERTICAL TOOLING

This method employed the use of a fine-pointed tool to mark lines on the surface of the stone. This embellishment is exclusive to the exterior quoins of Winsor Castle, and portions of the interior courtyard.



GRAPHIC: 

ZIG ZAG TOOLING

The zig-zag tooling pattern is the most intricate of the stone finishes, displaying alternating diagonal lines throughout the surface. This was most likely created with a tooth axe.

GRAPHIC: 

INSCRIPTIONS

Writing, through engraving and carving, that most often displays a person's name and date. These inscriptions differ from what has been termed graffiti, because they date to the building's period of significance.

These inscriptions are limited to the stone exterior and courtyard of Winsor Castle.

LOSS

Voids in the stone surface, resulting from erosion, alveolization or mechanical damage.

GRAPHIC:

CRACKING

Individual fissures, over 1/4 inch in width parallel to or across the bedding, result in the fragmentation of the stone.

GRAPHIC:

DELAMINATION

Planar detachment of the stone related to its bedding orientation.

GRAPHIC:

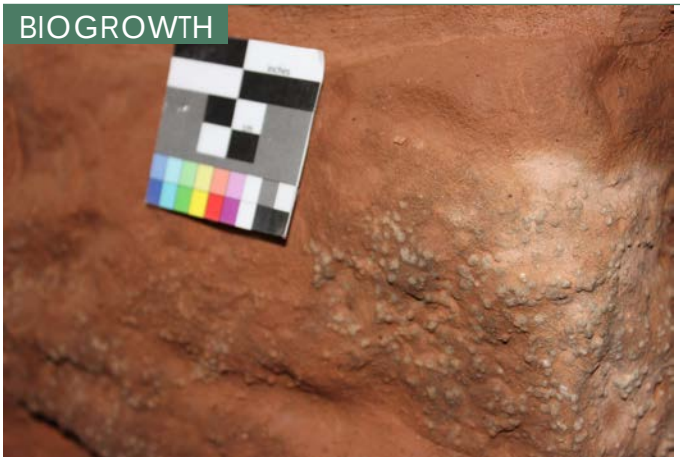
EFFLORESCENCE

Generally whitish, powdery or whisker-like crystals of water-soluble salts.

This is particularly prevalent on the exterior of the East Cabin, on areas that closely abut the animal stables, as well as interior regions in both cabins that are frequently dampened by ground moisture penetration and rising damp.

GRAPHIC:

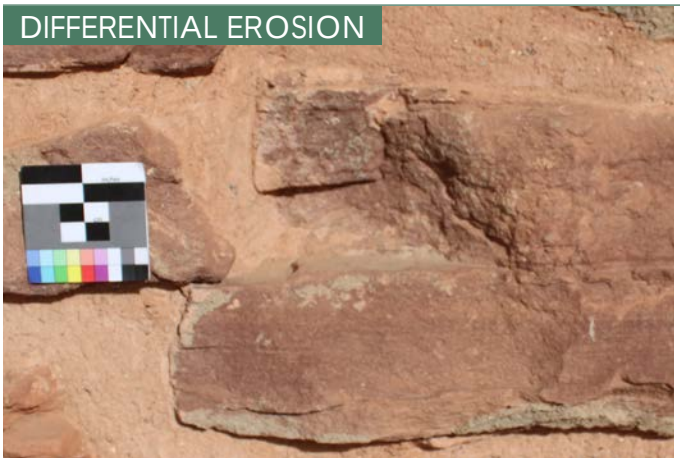
BIOGROWTH



Colonization of micro-organisms such as bacteria, cyanobacteria, algae, fungi and lichen (symbioses of the latter three), generally visible as green, brown or black surface discoloration.

GRAPHIC:

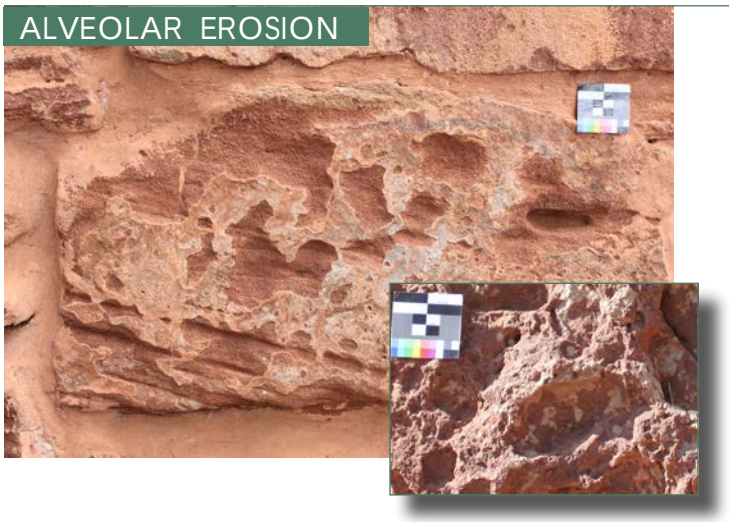
DIFFERENTIAL EROSION



Uneven surface loss of stone resulting from weathering.

GRAPHIC:

ALVEOLAR EROSION



Also known as honeycomb weathering, tafoni, stone lattice and cavernous weathering, this condition is the formation of cavities of variable shapes and sizes on the stone surface.

GRAPHIC: 

MOISTURE

Areas of stone and mortar that are both visibly and physically wet.

GRAPHIC: 

CRYSTALLIZATION

A surface of stone that has become hardened due to the precipitation of solid crystals. Stones containing this featured are rare, and are visible on the East and West Cabins.

GRAPHIC: 

DETERIORATION: STONE > DISPLACEMENT

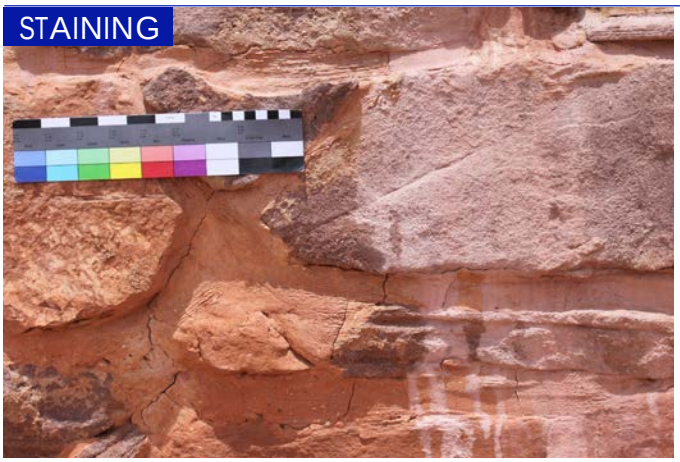
DISPLACEMENT

No photo available

At areas of displacement, the stone has shifted from its original position and may have caused cracking, where one side of the crack is extended a further distance than the other.

GRAPHIC:

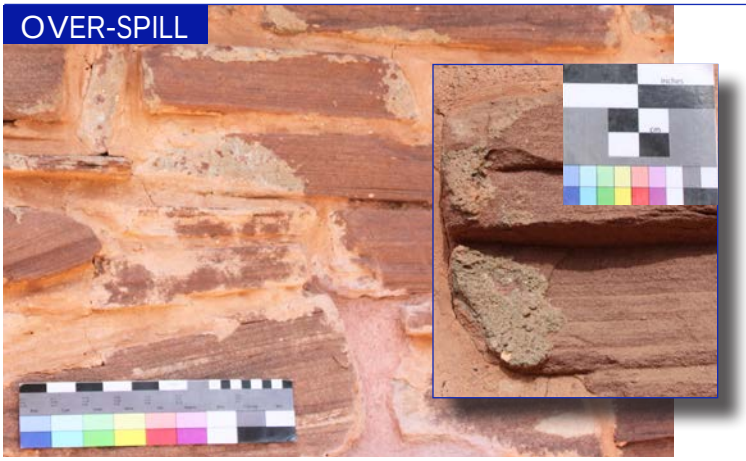
STAINING



Whitish staining from water flow. These areas are most prevalent in portions of walls that have been recently repointed.

GRAPHIC:

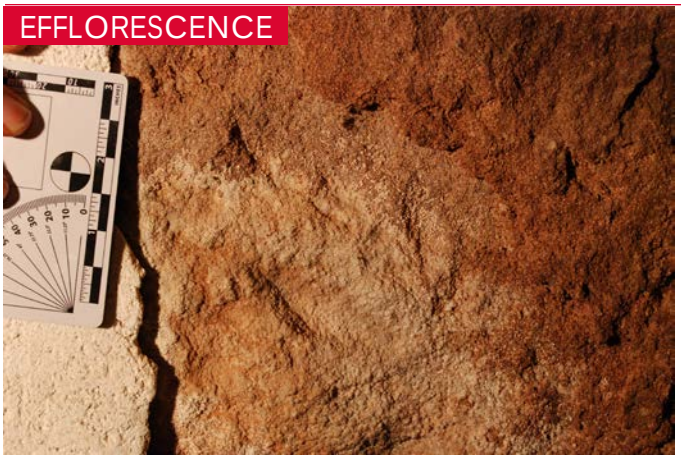
OVER-SPILL



Whitish gray staining on stone edges from cementitious mortar repointing. This condition is most often a result of careless repointing that has later been replaced, so the mortar is only visible on the stone.

GRAPHIC:

EFFLORESCENCE



Generally white, powdery or whisker-like crystals of water-soluble salts.

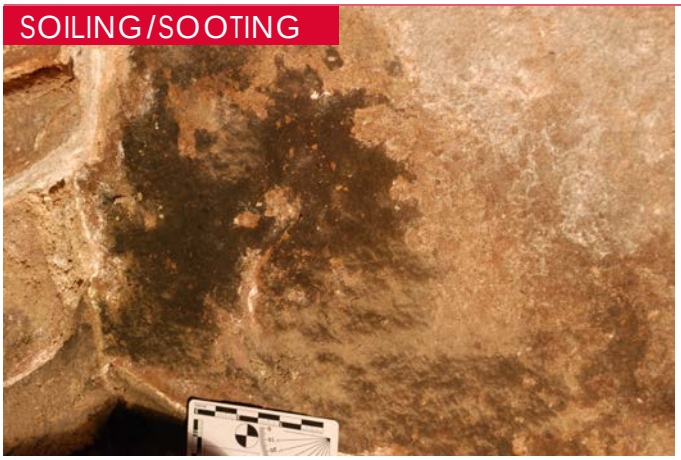
ANNOTATION: Ef

DELAMINATION

The physical separation of the stone or plaster surface into one or several layers.

ANNOTATION: Dn

SOILING/SOOTING



Deposit of a very thin layer of exogenous particles (eg. soot) giving a dirty appearance to the stone surface.

ANNOTATION: So

PITTING

The formation of small pits, generally not connected, on a stone surface.

ANNOTATION: Pi

SURFACE OR FINISH LOSS

Localized loss of material resulting in exposed substrate.

ANNOTATION: Lo

DETACHMENT

Blistering and flaking of plaster and surface finishes potentially leading to loss.

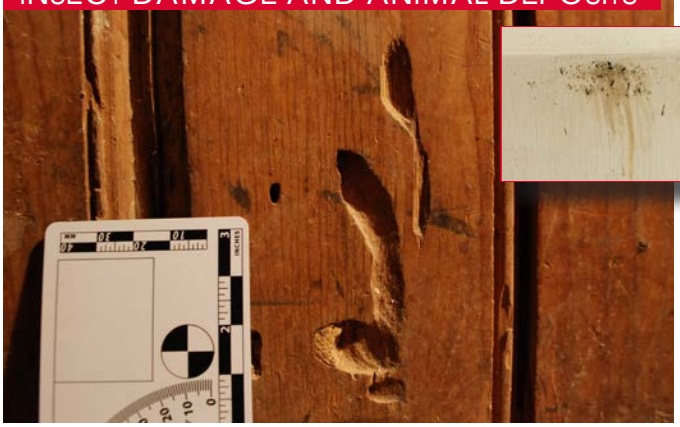
ANNOTATION: Dt

STAINING

Discoloration of a surface, generally affecting plaster walls and ceilings.

ANNOTATION: St

INSECT DAMAGE AND ANIMAL DEPOSITS



Burrowing or tunneling in wood caused by termites and other insects. Guano or deposits due to bats and small animals.

ANNOTATION: Ad

GRAFFITI

Engraving, scratching, or cutting into a wood or stone feature.

ANNOTATION: Gr

CRACKING

Cracks caused by shrinking and swelling of wood due to changes in moisture content, and hairline and network cracking found within the plaster.

ANNOTATION: Ck

DISPLACEMENT

In- and/or out-of-plane movement of structural components, including interior and exterior walls and floors.

ANNOTATION: Dp

REPAIR

In-kind replacement or fill of wood features due to displacement, moisture damage, or mechanical damage.

ANNOTATION: Rp