THE BARN
AT THE FARWELL JONES HOUSE

STRUCTURAL ASSESSMENT REPORT

Minute Man National Historical Park
Concord, Massachusetts

Prepared for
National Park Service
400 Foot of John Street
Lowell, Massachusetts

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September 2004

earthtech for the planet.
engineering and technology

roof eave. The ramp provided direct access for a wagon or tractor to enter the loft level. Generally, the north elevation siding has several holes where pigeons gain access to barn at the Northwest corner of the building and the large hole over the door.

The east wall is similar to the others with the white paint on the clapboards chipping and pealing. Clapboards are found above the second floor loft level while shingles can be found below that level. At the north end of the wall, the clapboards and shingles have been repaired with asphalt shingles the full height to the roof eave for a width of approximately 8 feet. There is a large dip in the roof eave at the north end possibly due to foundation settlements. Other evidence of settlement is the slope in the flooring at the main floor and loft floors in the same area.

Interior Main Floor Framing

The main floor framing is supported on the foundation walls and beam and posts above the basement level. The basement level floor is a concrete slab on grade. The foundation walls are stone along all sides. The above grade section of the walls have smaller stones and are mortared. The below grade section of the walls have large stones and are not mortared. There are two rows of columns along the north south direction which divides the floor into three distinctive bays. At the east bay, new concrete piers have been added along the east foundation wall. These repairs may have been done in the early 1970's when the concrete slab on the main level floor was added. The piers are part of a shoring system to strengthen the floor. The original framing in the east bay seems undersized when compared to the west bay members and is believed to be the reason for the shoring. The condition of the walls are generally sound except for the east wall where there are loose or missing stones with daylight coming through in several locations. There is water infiltration at the north and south ends of the east wall.

The east bay shoring consists of 7 ¼" square timber beams spanning (east to west) between the concrete piers at the east wall and new concrete columns adjacent to interior support columns. The timber beams at the column lines support cross members (north to south) which in turn support original floor stringers at their mid-span. The shoring in effect shortened the span lengths of the original stringers which span east to west. The original stringers are 2 ¼" wide x 7 ¾ deep timbers. The timber deck is 1 3/8" thick planking.

Framing in the west bay is similar to the original framing in the east bay except there is no shoring. The stringers span east to west and are deeper and wider than the stringers in the east bay. The stringers in the east bay are typically 2 ¼" x 7 ¾". The stringers in the west bay average 3" wide x 11" deep. The stringer spacing in the west bay averages 2'-2 1/2" while the stringer spacing in the east bay averages 1'-5 ½". The floorbeam timbers carrying the stringer loads to the columns are typically 9 ¾" wide x 11 ½" deep.

The middle bay framing is different than the east and west bays because the stringers span north to south onto floorbeams that span east to west to the columns. The stringers are semi circular members that are planed at the top for the deck bearing. Some rectangular members have been added in some of the bays. In a typical bay, the stringer spacing averages 2'-3 ½ " at a maximum. The timber floorbeams supporting the stringers are 7 ¾" wide x 10 ¼" deep. Typically the semi-circular timbers measure an 8" diameter and are 6" deep. The top 2" of the circular section has been planed level to support the decking. The decking in the middle bay is 2 ¾" thick.

The column spacing north to south direction is 13'-9" maximum. The column spacing east to west forming the three bays is 12'-9", 13'-0" and 11'-4", respectively. The typical column section is 6 ½" x 11". There is a location where circular untrimmed timbers are used as columns.

Interior Loft (2nd Floor) Framing

The second floor framing for the loft area level consists of two layers of timber planking spanning North-South between timber stringers spanning East-West. The planking boards vary in width from 4 to 12 inches. The top layer is 1 ¾ inch thick and the bottom layer is 1 inch thick. Both layers of planking span normal to the timber stringers.

The stringer's cross section is either 3" x 7 ¾" or 3 ¾" x 7 ¾" in an alternating pattern. The stringer spacing varies from 2'-0 ½" min. to 2'-4 ½" max. There are three bays of stringer spans supported on four column lines (including the exterior walls) of support beams spanning north south. The stringer spans are 13'-7", 12'-8" and 13'-9" from west to east bay formed by the stringer support beams. The east and west bay support a 4 inch thick concrete slab over a single layer of planking.

The stringer support beams span 13'-3" between five interior and two exterior column posts. There is an additional column introduced along the column line supporting the two westerly bays of stringers. It is located 7'-11" north of the second interior column from the north. The stringer support beams are 7" wide x 9 ¼ " deep timbers supporting the interior bay of stringers. The stringer support beams at the exterior walls are 4" x 7 ¾" deep. The support column posts are all 6 ½ " square timbers.

Upper Loft Levels

Within the 2nd floor loft area floor there are additional loft levels. The main upper loft level in the middle bay of columns consists of 2 layers of 7/8" plank supported by 1 3/4"' wide by 7 ¾" stringers spaced 2 feet on centers. The loft runs the full length of the building. This loft area is approximately 13 feet above the 2nd floor. The loft level above the stall area in the northeast corner of the building consists of 1 1/8"plank over 2 1/8" wide by 7 3/8" stringers spaced 2'-3" on centers. It is approximately 9'-2" above the 2nd floor. It occupies approximately a 13'x 13' square area. The similar adjacent loft area consists of 1" boards over 1 ½" wide by 7 ¼ " deep stringers spaced 2'-2 ½ " on centers. It is approximately 7'-2" above the 2nd floor.

In the south west corner of the 2nd floor loft area there is an enclosed room with a roof above it. The roof consists of ¾" plank supported on 2" wide by 7 3/8" deep stringers spaced 2'-2" on centers. A thin layer of plywood is placed over the plank but is not considered structural.

Summary of Existing Conditions

The siding on the building has lost most of its paint protective surface due to weathering. It is chipping and pealing over most all of its area. The clapboards and shingles have been repaired on the north face of the building. On the north face, there are large openings in the siding which allows the intrusion of rain. In the loft level, siding planks at the northeast corner of the building are saturated with moisture and their nails to the vertical studs are loose.

In general, the siding boards are not satisfactorily nailed to the building framework especially in the 2nd floor loft level.

The condition of the rectangular timber stringers supporting the first floor main level are in good condition for the east and west bays with no reduction for load capacity. The semi-circular stringers in the center bay were softer with a possible reduction in load capacity. The semi-circular stringers were penetrated ¾ " with a probe. Some of the semi-circular stringers were rotted and showed evidence of insect infestation especially at the north end of the building. The framing members at the northeast corner of the building were saturated with moisture.

The condition of the timber decking, stringers and beams supporting the 2nd floor loft level is good with no signs of distress since they are now only carrying their self weight. The entire exposed underside has been whitewashed with paint which is pealing. No reduction of load capacity should be taken for the structural members.

Structural Evaluation and Live Load Capacity

Design Assumptions

Since the species of the timber is not known, an average allowable stress was assumed. A value of 1200 pounds per square inch was assumed for bending stresses and 100 pounds per square inch for horizontal shear stresses. This is near the upper level of allowable stresses for the kinds of timber listed in the 1911 Manual of the American Railway Engineering Association. The assumed value for bending stress is equivalent to that for a Douglas Fir in the 1911 Manual. These are normal working stresses that a member would be designed for. The capacity of the structural members will be given in pounds per square foot assuming the floor is fully loaded. The live load capacity is the capacity the members can support in excess of the dead load and self- weight. No additional superimposed dead loads are included.

Main Floor Evaluation

For the 1st floor main level framing, the timber deck has a high live load capacity similar to the 2nd floor loft level because of the relatively thick planking of 1 3/8 in the outside bays and 2 ¾ in the middle bay. The semi-circular stringers in the middle bay were evaluated based on the least diameter of the cross section. This accounted for the softness of the material and the fact that the timber has been attacked by insects. A typical semi circular member measuring 8 inches wide and 6 inches deep was evaluated based on a 6 inch circular section. The live load capacity of the semi circular member is 29 psf. The floorbeams supporting the stringers and deck have a similar live load capacity of 25 psf. The floorbeam rating was based upon an 8 inch wide by 9 ¾" timber section.

Loft Level Evaluation

For the 2nd floor loft level, the double layer of timber decking was found to have a very high live load capacity of over 900 pounds per square foot (psf). This is an unusually high capacity and exceeds what a floor load would normally be designed for. This high capacity resulted from the deck having a relatively large thickness relative to its span length.

The timber stringers supporting the decking can support 37 psf. The timber floorbeams supporting the stringers and deck control the overall floor capacity. The live load capacity of the floorbeams supporting the deck and stringers is lower at 21 psf.

Upper Loft Levels

The design live load capacity for the upper loft level area floors are 35 psf over the south west corner room and 28 psf for the highest loft area floor. The floors over the stall areas have a live load capacity of 32 psf for the north most stall and 21 psf for the adjacent stall area floor.

The floor capacities for the main level and loft level seem low compared to the live load that the structures has sustained over the years. This in part is due to the relatively low allowable stress that was assumed for the structural elements since the actual species of the timber is not known. If the allowable stress is assumed 50% higher (1800 psi), the allowable floor live load at the loft would increase from 21 psf to 38 psf. The allowable live load for the 1st floor main level would likewise increase from 25 psf to 47 psf. The assumptions should be verified with material testing. These higher live load capacities may be closer to what the structure has experienced over the years.

The belief that the existing structure may have carried more load than the calculated safe load may be attributed to the ultimate capacity of the timber. As stated in the 1911 Manual, this ultimate stress level is approximately 5 times the design working stress level. The ultimate capacity is the level at which the member fails.

Phase One and Phase Two Conclusions and Recommendations

Phase One Repairs

Phase One repairs are those required to stabilize the building prior to making it weather tight. Since the end walls with there backing boards act as diaphragms to stabilize the building against sidesway, they should be in satisfactory condition prior to removing any of the shingles. The north wall is particularly bad with large holes in the wall and lose of shingles and backing boards. The shingle backing boards should be replaced to restore their diaphragm action. In addition, the backing boards on the east wall should be nailed tight through the shingles to form a good diaphragm. Some of the backing boards are not nailed tight to the building framework. The entire building backing boards should be nailed tight. Removal of the clapboards and shingles will be required to do the nailing.

The east foundation wall should be filled in with stones where they are missing. The intrusion of water should be addresses prior to these repairs to assure that the filling of the wall does not divert the flow and make the conditions worse. It does not effect the stability of the building at this time.

Phase Two Repair/Modifications

Intended Use/Load Capacity Requirements

The proposed intended usage (worse case) of conference center, hay storage, paper/file storage or vehicle storage will require live load capacities between 100 to 150 psf and in some applications even higher capacities. Generally speaking, the lighter loaded usages involving public access will require a minimum floor load capacities of 70 psf. This would include 50 psf live load (say office building) plus 20 psf for partitioning. Even at this level of usage, corridor areas and lobbies will require as much as 100 psf. Conference Center, Assembly areas requires a minimum 100 psf. Hay storage loading requirements could be significant depending on stacking methods or systems used. With hay bales density ranging between 10 to 20 lb/ft^3, 6 foot high stacks could result in loads between 60 to 120 psf and higher for higher stacks. Phase Two modifications will restore the building for the intended usages requiring 100 psf live load capacities.

Relative Strengthening Requirements

The 2nd floor loft floor can carry between 21 and 37 psf live load. The 1st floor main level can support between 25 to 29 psf live load. This is substantially less than the 100 to 150 psf required for public access rooms. Therefore significant strengthening of the stringers and floorbeams supporting them would be required.

Strengthening of the 1st floor support beams is not considered viable since the ceiling height above is restricted by the 2nd floor floorbeams along the column lines. This would preclude the use of the 1st floor from public access space.

The 2nd level loft floor can be strengthened to 100 psf live load capacity with extensive additional framing members. The floorbeam strengthening would take the form of steel side plates bolted to their faces. Alternative floorbeam strengthening, not considered here, would be strategic location of additional columns to reduce the beam spans. These columns would have to be carried down to the lower levels and foundations installed. The existing stringers would be strengthened by nailing new stringers to them as well as introducing additional stringers between existing ones.

These changes to the framing system would detract from the historical value of the existing framing. To size the additional framing, the existing members should be material tested by a timber scientist to verify the working stress assumed.

The roof framing was investigated for snow loads and found to be satisfactory for the current building code requirements. Likewise the columns were found to be satisfactory for the current usage (30 psf all floor levels) with excess capacity. They may be adequate for the intended usage without strengthening depending upon the species of the material determined by testing.

Cost Estimate of Recommended Repairs

Phase One Repairs

• Remove Siding and Renail Backng Boards (does not include replacement of siding)	$ 8,500
• Replace Siding Board North Wall	$ 2,000
	$ 10,500

Phase Two Repairs

• Provide and Install New Stringers	$ 48,300
• Reinforce Floorbeams with Steel Side Plates	$ 40,700
	$ 89,000
Total	$99,500

Historic Architecture Program
Northeast Region

The BARN at the FARWELL JONES HOUSE

Minute Man National Historical Park
Concord, Massachusetts

Draft Historic Structure Report

United States Department of the Interior
NATIONAL PARK SERVICE
HISTORIC ARCHITECTURE PROGRAM
NORTHEAST REGION
115 JOHN STREET
LOWELL, MA 01852-1195

June 9, 2004

Memorandum

To: Superintendent, Minute Man National Historical Park

From: Manager, Historic Architecture Program, NER

Subject: Transmittal of "The Barn at the Farwell Jones House: Draft Historic Structure Report"

Enclosed please find four copies of "The Barn at the Farwell Jones House: Draft Historic Structure Report. Research for this report has determined that the barn was constructed in 1903 for farmer James Carty.

If you have any questions, please contact Architectural Conservator Barbara [illegible] at (978)970-5138.

[SIGNED by PAA]

Margaret A. Albee

Enclosures

THE BARN

AT THE FARWELL JONES HOUSE

HISTORIC STRUCTURE REPORT

Minute Man National Historical Park
Concord, Massachusetts

by

Barbara A. Yocum, Architectural Conservator
Historic Architecture Program
Northeast Region, National Park Service
Lowell, Massachusetts

June 2003

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EXECUTIVE SUMMARY AND RECOMMENDATIONS

Summary

This historic structure report on the barn at the Farwell Jones House presents the findings of a research project described in a project agreement between Minute Man National Historical Park and the Building Conservation Branch of the Northeast Cultural Resources Center.[1] Previous studies had conjectured two possible dates of construction for the barn: circa 1870 and circa 1902-05. This study found that the barn was built for farmer James Carty in 1903 near an older barn of unknown date that was demolished by 1904. The new structure was a spacious, wood-framed dairy barn, with a main milking floor, manure cellar, hay loft accessed by a high-drive in the back, and ventilating rooftop cupola. The barn was joined to the house by a connecting structure that was demolished around 1946-47. Later improvements included an attached milk house circa 1951, a metal silo circa 1958, a bathroom with shower circa 1970, and a concrete-stave silo to replace the collapsed metal silo circa 1972-73. The dairy operation ceased in 1980-81, and the barn was used thereafter to store hay. The National Park Service took possession of the property in August 2001. The barn is used today for storage by the maintenance division of Minuteman National Historical Park. The bathroom remains operational and is used by the lessee of the adjacent farm stand.

A conditions assessment of the barn was undertaken by Historical Architect Millan Galland concurrently with this study, which includes schematic architectural drawings and photographs documenting the barn's existing appearance. The conditions assessment has been prepared as a separate report. A structural assessment of the barn will be contracted and the findings also presented in a separate report.

Recommendations

Although the barn post-dates 1775, it is nevertheless significant for its association with the agricultural use of the property, which began with the establishment of the farm by Farwell Jones's father, John Jones, in the early 18th century. The List of Classified Structures lists the management category of the barn as "shall be preserved and maintained." This will involve preserving and maintaining the historic character-defining features of the barn, which have been identified in this report. These are features that are significant for the time period 1903, when the barn was constructed, to 1959, the end date of the park's period of significance as defined in the park's National Register nomination. Those features that post-date 1959 may be removed without adversely affecting the historic character of the barn, such as the bathroom addition, aluminum storm windows, and concrete-stave silo. It is suggested, however, that some consideration be given to retaining the existing silo, which replicates the general form and function of an earlier (circa-1958) metal silo.

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[1] The Building Conservation Branch of the Northeast Cultural Resources Center was reorganized in April 2003 as the Historic Architecture Program and the Architectural Preservation Division of the Northeast Region, National Park Service.

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Environmental Historian and Director
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Dairy Barn Consultant

Dale Scott, Dairy Farmer
Maquoketa, Iowa

Nowalk Family Member

Chris Brooks
(Daughter of Edward Nowalk; Granddaughter of Aleck Nowalk)
Pepperell, MA

INTRODUCTION

Project Scope

The scope of this study on the barn at the Farwell Jones property is described in a project agreement dated November 23, 2002, and revised January 22, 2003, between the Building Conservation Branch of the Northeast Cultural Resources Center (BCB/NCRC) [2] and Minute Man National Historical Park (MIMA). An excerpt from this project agreement follows.

> Tasks to be Accomplished
>
> The following tasks will be carried out in the preparation of a historic structure report for the Farwell Jones Barn.
>
> Architectural Conservator. A thorough research and physical investigation will be undertaken of the Farwell Jones Barn. All available written sources on the barn will be reviewed, such as the house's 1973 "Historic Structure Report." Research files will be consulted at the Building Conservation Branch, Northeast Cultural Resources Center, and Minute Man National Historical Park. Tax records and historical files will also be reviewed at the Special Collections division of the Concord Free Public Library. The physical fabric of the barn itself will be examined and assessed in order to determine historic integrity. Features defining the historic character of the barn will be identified and described. Fabric analysis will be carried out on the exterior finishes and foundation mortar with the goal of determining the original paint color(s) and mortar mix.
>
> Historical Architect. A conditions assessment of the barn will be undertaken to document its physical condition. Assessment of the structural integrity of the barn will be undertaken by an architectural/engineering (A/E) firm (see "Structural Engineer"), the task order for which will be overseen by the historical architect. The barn will be measured and schematic drawings produced, which will be used for documentation and estimating purposes. The barn will also be photographically documented using a 35mm camera and color film.
>
> Structural Engineer. The services of a structural engineer will be contracted with a task order, to be executed and overseen by the historical architect. The structural engineer will assess the existing structural conditions and make recommendations for repairs, such as those necessary to upgrade load carrying capacity for the proposed use, hay storage and tractor accessibility, and to withstand wind and snow loads as required by the Mass Code. Any significant limitations will also be identified. The final product will be a narrative report.

[2] The Building Conservation Branch of the Northeast Cultural Resources Center was reorganized as two entities in April 2003. These are the Historic Preservation Program of the Resource, Stewardship and Science Directorate, and the Architectural Preservation Division of the Design, Construction and Facility Management Directorate.

Administrative Data

The Farwell Jones House and Barn are located at 955 Lexington Road, the historic Battle Road, in Concord, Massachusetts. The house is believed to have been witness to the historic events of April 19, 1775, and was later extensively remodeled in the 1870s. Two dates have been proposed for the construction of the existing barn: circa 1870 or 1902-05. The barn has been described as "massive," measuring over 80 feet long and 2 ½-stores high, with an attached concrete-stave silo on the east side, and a ventilation cupola atop the gable roof. A two-story connection between the house and barn was demolished around 1946-47.

Limited historical research has been carried out on this property. The barn is mentioned in a "Historic Structure Report: Part II Historical Data Section" for the Farwell Jones House dated September 1973. The property came into the possession of the National Park Service upon the expiration of a fee simple reservation in August 2001. Both the house and the barn have sat vacant since that time. Current plans are to repair and lease the barn to enable its continued use as an agricultural structure.

The barn at the Farwell Jones property is listed as a contributing structure in a district nomination to the National Register of Historic Places for Minute Man National Historical Park, dated August 2000. The period of significance for the park is defined in the nomination as spanning the years 1655 to 1959. The barn is also entered in the National Park Service's "List of Classified Structures" (LCS) as number 40241, and structure number 4-101-B. The LCS management category notes that the barn "should be preserved and maintained." No measured drawings of the barn are known to exist.

HISTORICAL BACKGROUND

Introduction

Only limited research has been conducted to date on the large wood-framed barn located behind the Farwell Jones House. Two dates of construction have been proposed for this structure. The National Register of Historic Places ascribes a date of "circa 1870" to the so-called "Dairy Barn and Silo." A later date of "about 1902 or 1905" was assigned by the "Historic Structure Report" on the Farwell Jones House, based on interviews undertaken in 1973 with family members and neighbors. A review of the Concord tax assessments for this report determined that the barn was in fact considered "new" and still "unfinished" on May 1, 1903. This new barn replaced an earlier barn, the location and date of which are unknown.

Early Barn(s)

John Jones Barn: Circa 1716

A farm complete with buildings appears to have been first developed on this property by John Jones, the father of Farwell Jones, in the early 18th century.[3] John Jones was born in 1690, married Anna Brooks in 1716, and fathered five children, including youngest son Farwell born in 1734.[4] The earliest reference to a building is found in a 1716 survey of the road known today as Lexington Road, which included a measurement "from the stoan [sic] wall att [sic] the west end of John Jones house on the north of the way."[5] Another survey undertaken in 1720 for a lane on the east side of the property began "at the southeast corner of John Jones house lot."[6] Although no similar descriptions of an early barn are known, one presumably existed to shelter livestock and to provide covered storage for feed and farm implements. Concord tax assessment records reviewed for the years 1728 to 1746 note John Jones as having one horse along with various small numbers of oxen, cows, sheep, and swine.[7]

Farwell Jones, Owner: Circa 1760

Farwell Jones appears to have taken on the responsibility of the family farm by 1760, two years before his father's death in 1762. Although no deeds officially transferring the

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[3] A previous study surmised that "there was a house on this land before 1686," as documented in the will of John Farwell, the maternal grandfather of John Jones. (Earl Harris, "The Farwell Jones House Historic Structure Report," Sept. 1973, pp. 10 & 18.) Additional unpublished research by Brian Donahue has determined, however, that the houselot and dwelling of John Farwell, which were later inherited by John Jones's parents, were located near the center of Concord. No deed has been found conveying the outlying parcel(s) of land to John Jones from his parents, on which he established his farm around 1716. (Brian Donahue to Barbara Yocum, email correspondence dated Feb. 24, 2003.)

[4] John Jones: www.ancestry.com.

[5] Note from Brian Donahue with the following citation: "Survey of the road to the Lexington line Nov. 13, 1716, Concord Town Records, Vol. 2, p. 94."

[6] Carolee Funk, Widow Olive Stow House: Historic Structures Report, Part II, Historical Data Section," 1973, p. 5; original quote is from the Concord Town Records, Vol. I, Part II, p. 362b.

[7] Town of Concord Assessor's Records, 1728-46. Microfilm Box 3, Roll 7, Special Collections, Concord Free Public Library.

property are known, Farwell began paying taxes on the property beginning in 1760.[8] By 1771, he was noted in the Massachusetts Tax Valuation List as having 1 house (barns were not recorded), 1 horse, 4 cattle, no goats or sheep, and 1 swine. His farm was also then producing 150 bushels of grain per year, 20 barrels of cider, 5 tons of English hay, and 10 tons of fresh meadow hay.

Farwell may have been the sole family resident of the farm on April 19, 1775, when British regulars and their American pursuers fled down the road and past his house, following a bloody encounter at Meriam's Corner to the west. Whether or not the troops paused to seek shelter behind Farwell's house, barn, walls, trees, and/or fences is not specifically mentioned in the historical record. Farwell was likely closely associated with his widowed sister Olive (Jones) Stow, who occupied the east adjacent farm with her two minor children. [9] Farwell later married Hannah Hosmer at the age of 42, on January 1, 1777. They had one child, Hannah, born in 1778. Daughter Hannah married Calvin Wright in 1797.[10]

Farwell Jones Heirs: 1802

Hannah Wright was the sole heir of her father's estate upon his death on December 20, 1802, having lost her mother Hannah in December of the previous year. Hannah's husband Calvin Wright, who had gained control of the estate, died without a will the following year, on July 27, 1803. It was not until fifteen years later, in 1818, that the probate court assigned a committee to divide the property of the estate among the three surviving heirs: widow Hannah and her two daughters. The real estate of the family farm was apportioned between Hannah and her daughter Katharine. It is in the document describing the division set off to Katharine that we find the earliest known description of the house and barn as follows:

> The committee then proceeded to set off to Katharine Wright daughter of the said Calvin Wright the remainder of said estate it being one fourth part thereof Viz; one half of the House consisting of one pot room in the East end of the House with the Chamber and garret over it and one undivided half of the front entry and stairs and kitchen, one half of the kitchen Chamber and the cellar under the east half of the house, **then beginning at the Centre of the back side of the House and running northerly till it comes to the centre of the Southerly side of the Barn thence northerly through said Barn dividing it into two equal parts,** thence northerly in a parallel line with the lane till it comes to a Stake, thence westerly by land set off to Hannah Wright aforesaid till it comes to land belonging to the heirs of Edward Flint, thence turning northerly by said land till it comes to land of Ebenr Hardy, then turning and running Easterly by said land till it comes to the lane, thence turning and running by said lane till it comes to the end of the wall at the gate near the Northeast corner of the House, thence

[8] Town of Concord Assessor's Records, 1760. Microfilm Box 3, Roll 8, Special Collections, Concord Free Public Library.

[9] Barbara Yocum, "Olive Stow House Historic Structure Report" Final Draft, Building Conservation Branch, Northeast Cultural Resources Center, Feb. 2002.

[10] Earl Harris, "The Farwell Jones House Historic Structure Report, Part II, Historical Data Section," Sept. 1973, p. 11.

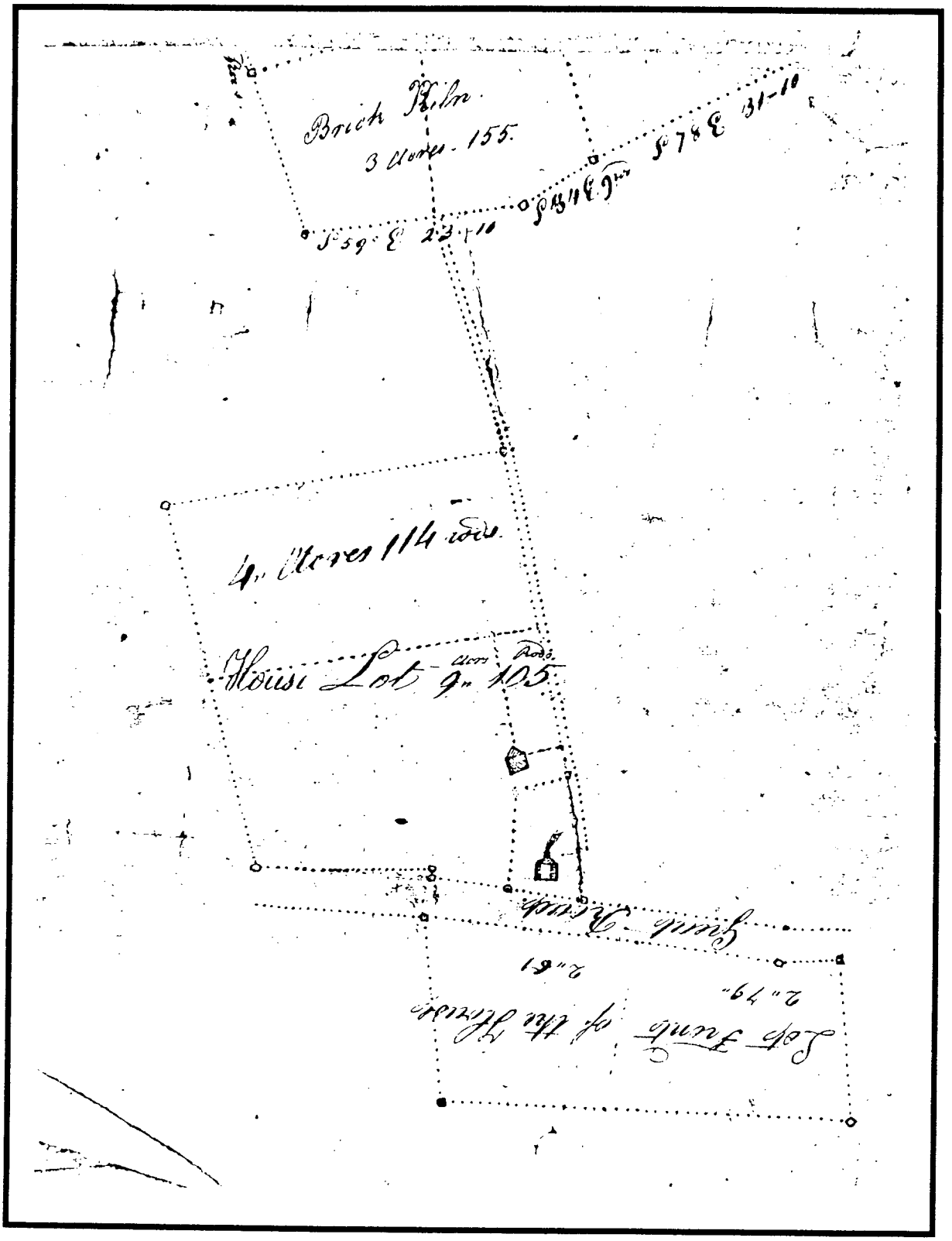

Figure 1. Site plan showing the locations of the Farwell Jones House and early barn, 1818.

> to a Stake on the great road, thence turning and running on said road till it comes to land set off to Hannah Wright aforesaid thence turning and running Northerly till it comes to the front door of the House aforesaid.[11]

The barn was therefore located an unspecified distance north of the house in the early 19th century. A survey of the property illustrating the relative locations of the house and barn was also prepared at this time and included in the official record (fig. 1). Both buildings were sited on the "house lot" measuring 9 acres 105 rods, or about 9 ½ acres. The house, fronting on the "Great Road," is simply drawn in elevation with smoke wafting out the chimney. The barn is shown situated a short distance north of the house and west of the lane leading to the Brick Kiln.[12]

Later Owners: 1838-98

No research has yet been undertaken on the barn that existed on the property during the years 1838-98, although tax-assessment records are a likely source of information. The farm passed though several hands during this period, being first sold in 1838 by the guardian of Hannah Wright to William Rice to cover Hannah's debts.[13] Concord historian Edward Jarvis wrote of the dwelling in 1882, but not the barn, recalling "the old Rice house of my younger days, in which the father William, was knocked in the head by a crazy son."[14] Rice must have survived this assault because he sold his farm to Cephas Houghton in 1842.[15] Houghton in turn sold the property only three years later, in 1845, to Maria Swan, who became Maria Hatch upon her marriage to Darius Hatch that same year.[16] The following was written about the Hatch home by Concord antiquarian John Shepherd Keyes in 1885:

> Next west [of Ebenezer Hardy's house] is an old house owned and occupied for the last fifty years till his death by Darius J. Hatch a Vermonter who married Maria Swan sister to Ephraim Meriam & inheriting his estate in part. Half a dozen years ago [circa 1879] Mr. Hatch remodeled & fitted up the old house quite extensively, and since his death [also in 1879] his son, Ephraim occupies it.[17]

Whether or not Mr. Hatch also "remodeled & fitted up" the barn at this time is not known. His son Ephraim became the next owner of the newly renovated house and farm following his father's death, acquiring his mother's 1/3 interest in 1881.[18] Ephraim Hatch remained in residence for ten years, selling the property in 1891 to James R. Carty.[19] Carty was listed as a "farmer" in the Concord directories for the years 1901 and 1905. His son

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[11] Harris, "Historic Structure Report," 1973, Appendix III.
[12] Harris, "Historic Structure Report," 1973, Appendix IV.
[13] Deed Book 371, p. 432, Middlesex County Registry of Deeds.
[14] Harris, "Historic Structure Report," 1973, p. 20. Original reference is to Edward Jarvis's unpublished 1882 manuscript, "Houses and People in Concord, 1810-20," with annotations by Adams Tolman, 1915.
[15] Deed Book 413, p. 181, Middlesex County Registry of Deeds.
[16] Deed Book 457, p. 409, Middlesex County Registry of Deeds.
[17] John Shepherd Keyes, "Houses in Concord in 1885," unpublished typescript, 1885, with annotations by Adams Tolman, 1915.
[18] Deed Book 1566, pp. 193-195, Middlesex County Registry of Deeds.
[19] Deed Book 2039, p. 161, Middlesex County Registry of Deeds.

Merton, also a farmer, purchased the east adjacent farm in 1899 that had been occupied by the widow Olive Stow and her two children in 1775.[20]

Old Barn: 1899-1903

Beginning in 1899 buildings were individually assessed for tax purposes, including a barn on the property then owned by James Carty valued at $500.00. From 1900 to 1903 the barn valuation dropped to $400.00, perhaps due to its age and/or poor repair. A replacement was under construction in 1903, described in the assessment for that year as the "new barn (unfinished)," valued at $1,100.00. The fact that both old and new barns were listed in 1903 indicates that the two stood in separate locations, and that the new barn was not built on the foundation of the old. This was confirmed in interviews with neighbors and a family member in 1973 who recalled "the present barn sits at a slightly different location than the original."[21] The new barn only was listed in next year's assessment of May 1, 1904, suggesting that the old barn had been demolished by this time. Whether or not this old barn was the original barn that had been constructed by John Jones in the 18th century, or a later structure, is not known.

New Barn

James Carty's New Barn, 1903

The existing barn is the "new barn" that was constructed for James Carty in 1903. Carty had purchased the farm for $5,000.00 on April 1, 1891, from Ephraim Hatch of Ontario, California. The property was then described as "a certain farm or tract of land with the buildings thereon," encompassing a 45-acre parcel, a 15-acre meadow, and a 15-acre lot.[22] Buildings on the property included a house, barn, and shed, collectively assessed for $2,000.00 on May 1, 1891. James Carty was listed as a "farmer" living on Lexington Road, in the Concord directories of 1901 and 1905. His son Merton, also a farmer, purchased the east adjacent farm (the Stow-Hardy House) in 1899.[23]

Little documentation has been found on James Carty's new barn, other than its date of construction in 1903. It is not known who designed and built the barn, nor have any photographs or sketches of it been found. It can be surmised from the existing structure that the new barn was a large, wood-framed structure, 2 ½ stories tall, with gable roof and ventilation cupola, measuring approximately 40 feet wide by 80 feet long. A covered connection with the house was provided by a long two-story wing, illustrated in a later photograph dated circa 1935 (fig. 2). The main story of the spacious barn was designed to accommodate livestock, manure was collected in the cellar story below, and hay was stored in the loft story above. Animals maintained on the farm by James Carty in 1902, the year before the new barn was erected, included 4 horses, 15 cows, and 4 one-year-old calves. This

[20] Barbara Yocum, "Olive Stow House Historic Structure Report," Final Draft, Building Conservation Branch, Northeast Cultural Resources Center, Northeast Region National Park Service, Feb. 2003, p. 28.
[21] Harris, "Historic Structure Report," 1973, p. 26.
[22] Deed Book 2039, p. 161, Middlesex County Registry of Deeds. The meadow was called the "Captain John Adams Meadow," and the 15-acre lot the "Taylor Lot."
[23] Yocum, "Olive Stow House Historic Structure Report" Final Draft, Feb. 2003, p. 28.

inventory was little changed the year the new barn was under construction, with 4 horses and 18 cows counted by the assessor. Carty more than doubled his herd by the spring of 1904, when he was assessed for 4 horses, 35 cows, and 3 yearlings. He had added a bull by 1905, and continued to maintain a herd of 35 to 36 cows throughout his occupancy of the property until 1907.[24]

Later Owners: 1907-46

No information is available on the evolution of the farm buildings, including the "new" barn, for the years 1907 to 1946. James Carty sold the property to farmers George and Mary Williams in November 1907. Frank and Sadie Draper next purchased the farm in May 1921. It was during their ownership that the earliest known photograph of the house and its barn connector was taken around 1935 (fig. 2). The barn was unfortunately not included in this view. The Drapers sold the property in April 1945 to William Huntoon and W. James Boudreau. The last owners of record, Aleck and Anna Nowalk, took up residence in October 1946.[25]

Maplewood Farm: 1946-2001

Aleck and Anna Nowalk named the new farm that they acquired in 1946 "Maplewood Farm." They made several improvements and alterations to the barn during their long ownership. The two-story wing connecting the barn with the house was removed almost immediately, around 1946-47.[26] A wood-framed milk house with connecting passageway was added to the southeast corner, and an interior wood silo was installed circa 1951. A metal silo on a concrete base, with connecting wood-framed passage, was constructed on the east side of the barn circa 1958.[27] The exterior was repainted, and a new asphalt shingle roof installed circa 1962.[28]

Detailed descriptions of the buildings on the Nowalk farm, including the barn, were provided by two real estate appraisals undertaken in 1963. Both appraisals were illustrated with photographs, and one a set of plans, which are included as figures 3-10 of this report. Both appraisals established the fair market value of the barn as $2,400.00. The report by Harry G. Berglund, Appraiser, identified eight buildings, including "a dwelling, barn with silos, garage, milkhouse, chicken house, wagon shed, old roadside stand, and new roadside stand, all situated on the southerly side of the subject land." The barn was further described by Berglund in March 1963 as follows:

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[24] The livestock of James Carty is documented in the Concord tax assessment records for the years 1902-1907.

[25] James R. Carty to George and Mary Williams, Deed Book 3338, p. 505; George and Mary Williams to Frank and Sadie Draper, Deed Book 4432, p. 119; Edward Caiger, Attorney for the Draper estate, to William Huntoon et. al, Deed Book 6848, p. 433; William Huntoon and W. James Bodreau to Aleck and Anna Nowalk, Deed Book 7052, p. 349. Middlesex County Registry of Deeds. Copies of the deeds are also in the library of Minute Man National Historical Park.

[26] Harris, "Historic Structure Report," 1973, p. 25.

[27] The approximate dates of the milk house, interior wood silo, and metal silo are found in the appraisal of the Nowalk property by Harry Berglund, March 1963, p. 9.

[28] Appraisal Report by David Cary, April 1963, p. 11.

Figure 2. West elevation of the Farwell Jones House and rear barn connector, circa 1937.

> Barn 40' 3" x 81' is of wood frame construction on fieldstone foundation. It includes three floors, cellar, main floor with stalls for cattle and a hay-loft and feed storage. The cellar with fieldstone walls, rough frame ceiling and concrete floor is used as manure storage, double swinging doors lead from cellar to outside. The outer upper two floor walls are covered with clapboard, and have two section sliding doors to front and rear of barn, one section for main floor and one section for feed storage floor.
>
> Pitch roof without gutters is covered with asphalt shingles. Inside walls of barn are rough frame, floors are one-inch boards topped by two-inch planking. Main floor is divided into 31 stalls for cattle, two pens for calves, and a tool store room. A wood silo is constructed in the northeast corner of barn extending to the second floor, height 20 feet, with 12 feet diameter. Cost of construction, $1,500.00. Water is piped from the town of Concord Water System into the barn, with additional facilities to each separate stall and to built-in sink for washing. The sink is supplied with hot water from an electric water heater located on the second floor, capacity of this heater 52 gallons, make Quaker.
>
> Wood stairway leads to second floor or feed storage floor. A ramp, part wood, part fieldstone and gravel, leads from this floor to outside rear of barn. A gasoline pump with storage tank is to the left of barn and slightly towards front, owned by Socony Oil Company. A small loading platform is in rear of said pump. The barn is wired for electric outlets. However, the release for cattle from the stalls is manual and individual. A second silo, metal, is connected to the barn by an enclosed passage 6' x 7' 9". The height of silo, erected on a concrete base, is 44 feet in height with 12' 4" diameter. Cost of installation $3,000.00. A milk house is also connected to barn by enclosed passage, size 4' x 5' 8". Milk house and passage wood frame construction, outer walls clapboard, roofs without gutters covered with asphalt shingles. Inner walls of milk house, lower part plaster, upper part and ceiling plasterboard, floor concrete, inside walls passage way rough frame, floor concrete. The age of milk house and passage way 12 years. Age of [exterior] metal silo 5 years. Age of [interior] wood silo 12 years. Age of barn estimated fifty years. [29]

A more succinct description of the barn was written in April 1963 by David L. Cary, Appraiser, of Ryan, Elliott and Company, Inc., as follows:

> Barn. Located to the rear of the house is a large cattle and hay barn having a mortared stone foundation, clapboard siding, and an asphalt shingle roof. The interior of the barn is unfinished except for large plank flooring with unfinished walls and ceiling. The barn has 41 [sic?] stanchions and two pens. Also located within the barn is a 50-ton silo. On the first floor there is a small tool room. There is a stairway to the second floor which has a storage capacity of 100 tons of baled hay. The basement of the barn is full and has a

[29] Appraisal Report by Harry Berglund, March 1963, pp. 8-9.

concrete floor with concrete piers. Attached to the barn on the easterly side is a small milk house having a mortared stone foundation with clapboard siding and a wood shingle roof. The interior has a concrete floor, pressed board walls and a pressed board ceiling. Also located on the easterly side of the barn is a large metal silo measuring 12 feet by 44 feet in height. It rests on a concrete platform. The barn is in excellent condition being recently painted and repaired. The owner reported that he had spent approximately $1,000 on a new asphalt shingle roof.[30]

Sometime between after April 1963 and before July 1972 the Nowalks added a bathroom to the barn on the north side of the milk-house passageway. The bathroom was described in 1972 as being fully equipped with a lavatory, toilet, and shower stall.[31]

A third appraisal was prepared on the Nowalk property by Fred R. O'Donnell Associates, Inc., in July 1972. Aleck Nowalk had died several years earlier, in May 1965, leaving Anna Nowalk the sole owner. Operation of the farm continued under the direction of son Edward, who also raised his family at the homestead.[32] The following updated description of the barn is provided by the 1972 appraisal:

Dairy Barn	80' x 40'
<u>Exterior</u>	
Foundation	Stone and concrete
Roof	Asphalt shingle
Walls	Wood shingle, wood clapboard and asphalt shingle
Windows	Wood frame
Doors	Frame – 2 large ground level, sliding; two large second floor sliding doors also.
<u>Interior</u>	
<u>Basement</u>	
Floor	Concrete
Walls	Stone and concrete
Ceiling	Open joist
Supporting members	Wood posts
Misc.	Drive-in door, frame, rear of barn
<u>First Floor</u>	
Floors	Wood planks central portion – concrete vicinity of stanchion area
Walls	Open joist
Ceiling	Wood plank and open joist
Lighting	Incandescent – 25 amp service

[30] Appraisal Report by David Cary, April 1963, pp. 10-11.
[31] A plan of the barn in the Appraisal Report by David Cary dated April 1963 shows no bathroom addition, while a later appraisal by Fred R. O'Donnell Associates shows it as extant.
[32] Telephone conversation June 18, 2003, with Chris (Nowalk) Brooks, daughter of Edward Brooks, who grew up on the farm.

Doors	Sliding – wood
Misc.	33 stanchions and two frame stalls
Work Room	A rough-framed 12' x 25' located in the front left of barn
Milk Room	
Floor	Concrete
Walls	Plywood with linoleum
Ceiling	Plywood
Lighting	Incandescent
Misc.	250 gallon stainless steel bulk milk tank
Bath	
Floor	Tile
Walls	Plywood
Ceiling	Plywood
Lighting	Incandescent
Fixtures	Sink, stall shower and toilet
Misc.	Located adjacent to milk room
Silo	
Foundation	Concrete
Walls	Steel
Diameter	12 feet
Height	45 feet
Capacity	105 tons silage
Misc.	No automatic loader

[Upper Floors]
The second [and] third floor of the dairy barn are reached by a frame stairway from the right front portion of the barn. Second floor flooring consists of rough wide board planking. Access to this second story portion, which is presently used for hay storage may also be gained by vehicles via a stone and earthen ramp at the rear of the barn. The second floor is strong enough to support vehicles. Construction of second and third floor areas consists of wood planking and supporting members 8" x 8" and 10" x 10". Presently utilized for hay storage with a capacity of approximately 100 tons of bailed hay. The barn and milk room are in good condition.[33]

The demise of the metal silo occurred one night in 1972, when it collapsed due to the apparent uneven filling of the interior. Chris Brooks recalls that the silo crushed not only the adjacent chicken coop, but also her new bicycle. It was replaced shortly thereafter by the existing concrete-stave silo.

[33] Appraisal Report by Fred R. O'Donnell Associates, Inc., July 1972, pp. 14-16.

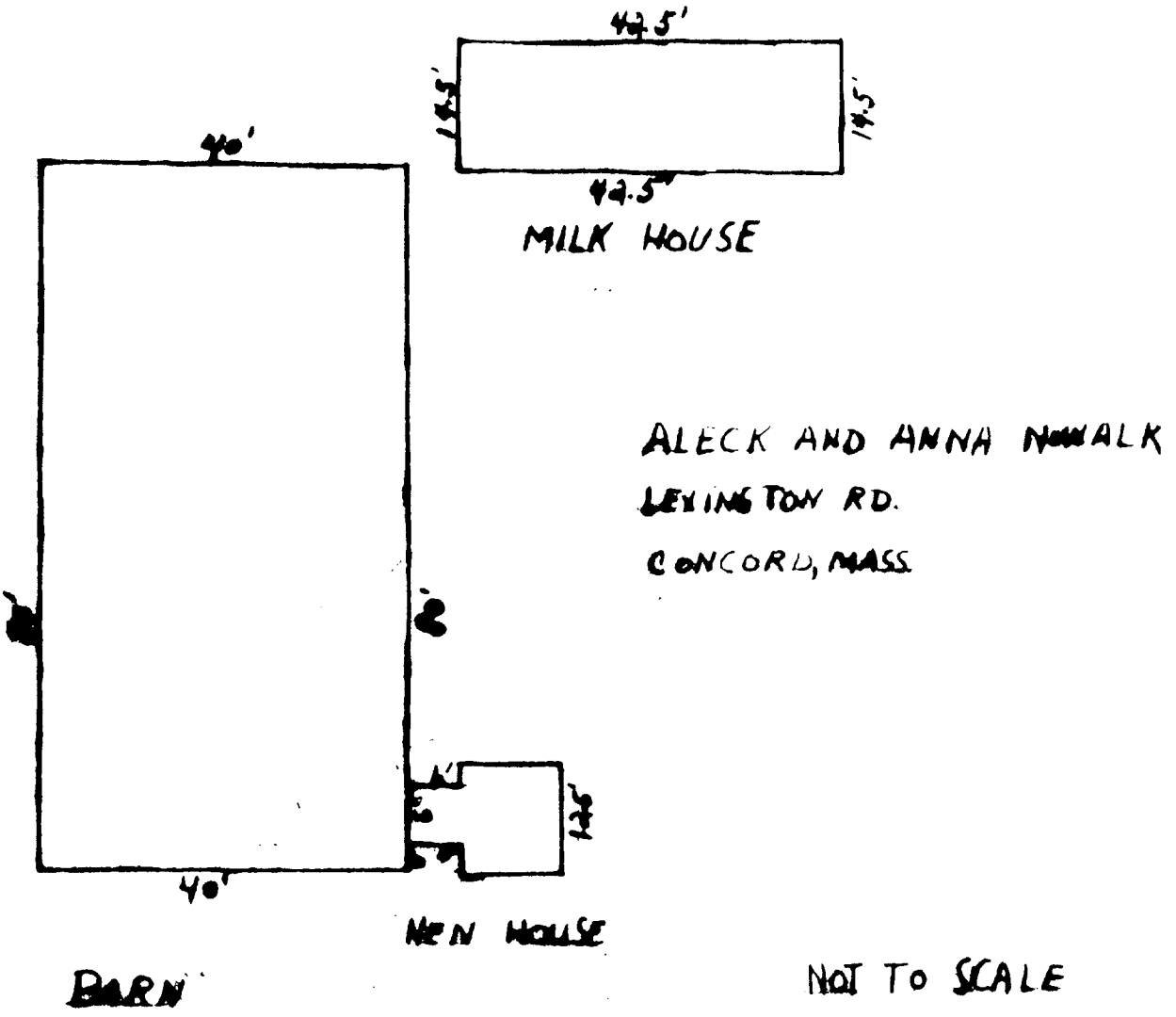

Figure 3. Plan of the Nowalk barn and hen house from an appraisal dated 1963. Note that the milk house is mistakenly labeled as the "Hen House," and the hen house as the "Milk House."

Figure 4 Front elevation of the Farwell Jones House, showing the the barn and metal silo in the background, April 1963.

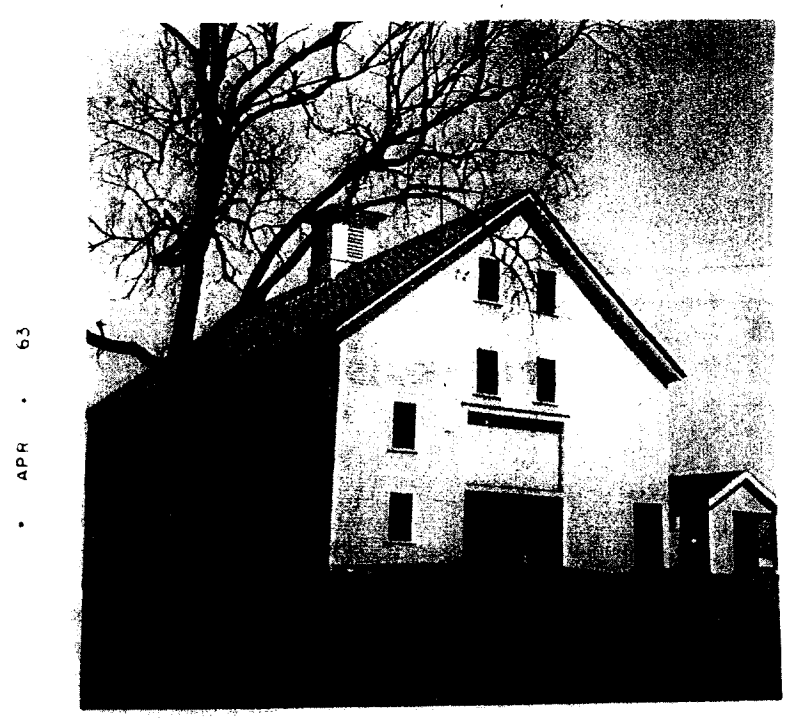

Figure 5. Front and west elevations of the barn, April 1963.

Figure 6. Front and west elevations of the barn, March 1963.

Figure 7. Front and east elevations of the barn and silo, March 1963.

Figure 8. East elevation of the barn and silo, April 1963.

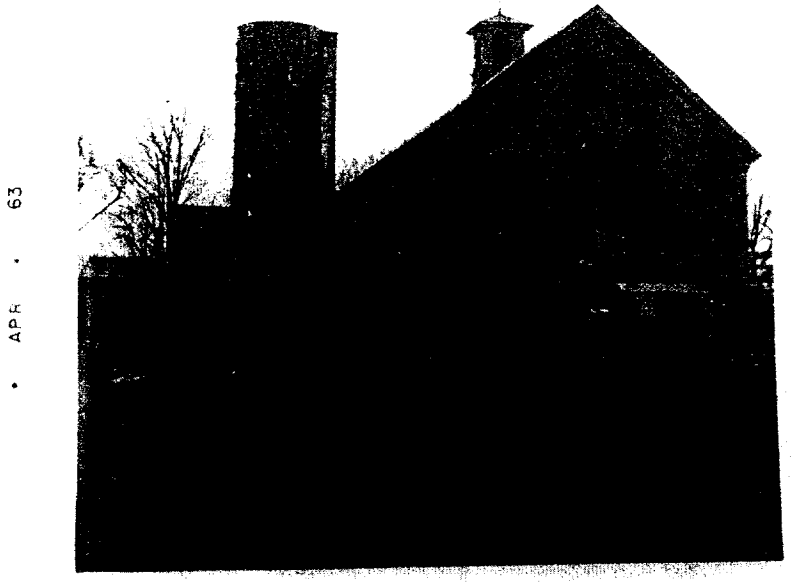

Figure 9. Rear elevation of the barn and silo, April 1963.

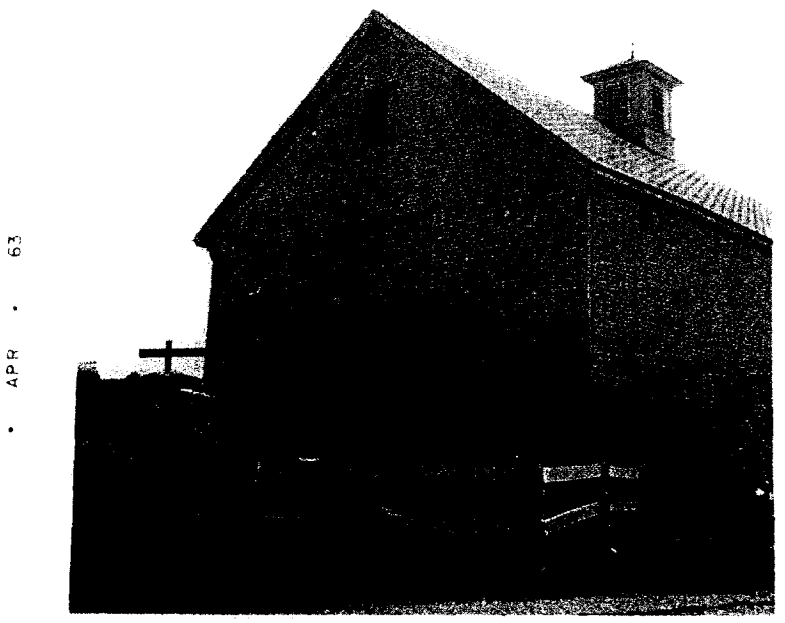

Figure 10. Rear and west elevations of the barn, April 1963.

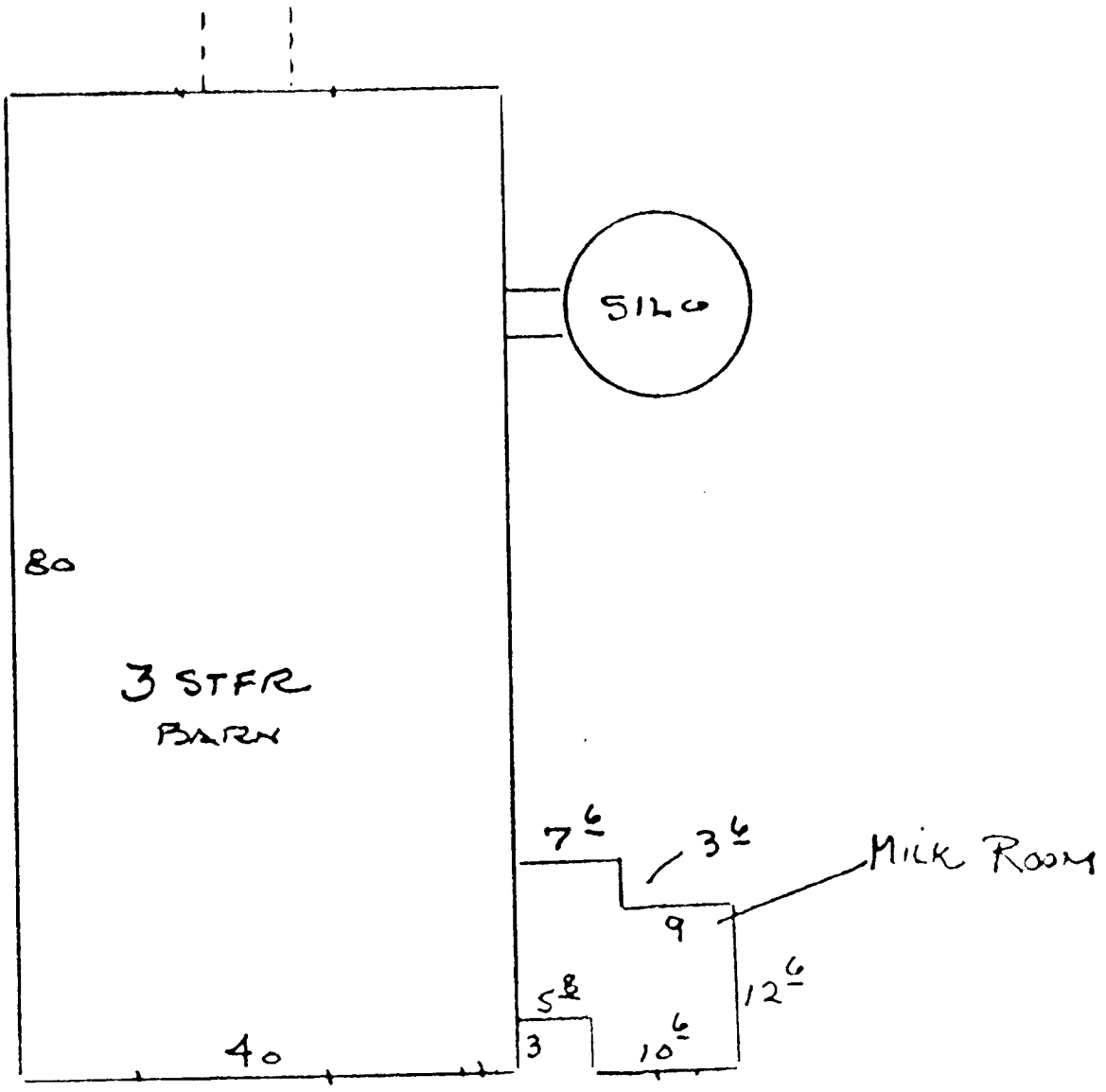

Figure 11. Plan of the Nowalk barn from an appraisal dated 1972.

Figure 12. Front and west elevations of the Nowalk barn, May 1972.

Figure 13. Rear and east elevations of the Nowalk barn and silo, May 1972.

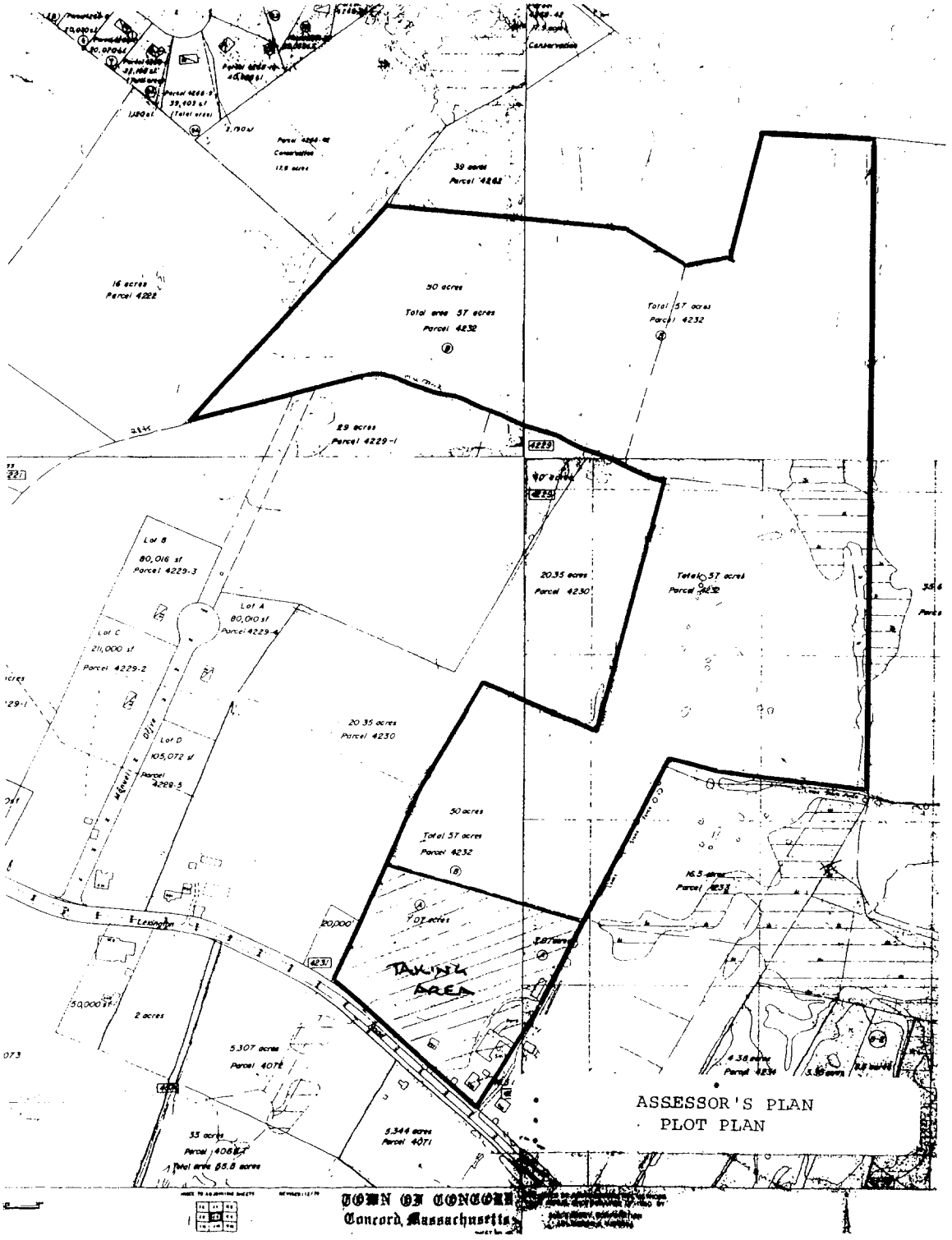

Figure 14. Detail of the "Town of Concord Assessor's Maps," revised December 1970, showing parcel 4232 (the Nowalk farm).

National Park Service: 1976-Present

Anna Nowalk conveyed 64.07 acres of her farm at 955 Lexington Road in Concord, with the buildings thereon, to the United States of America on June 3, 1976, for $400,000.00. The conveyance was subject to a 25-year reservation for the use and occupancy of 6.94 acres, which included the dwelling house, barn, farm stand, and other structures.[34] The dairy operation ceased in 1980-81, when the entire herd of Holstein cows was sold at auction. The barn was primarily used thereafter for storing hay that was available for sale.[35] Mrs. Nowalk continued to reside at the farm with her son Edward and his family until the deaths of Mrs. Nowalk and Edward in 1994.[36] The reservation was then assumed by Mrs. Nowalk's daughter, Helen Marchocki, who remained in residence until August 2001.

A final inspection of the barn on August 4, 2001, generated the following written notes:

- Hot water boiler is on.
- Left one grain cart for interpretive use.
- Heating system prevents pipes freezing.
- Drain pipes in winter.
- Water main from house feeds barn and farm stand.
- Electric panel from house (basement) serves barn, also old electric in attic.
- Septic under bushy area between house and farm stand.
- Bats are coming back.
- Barn is being left open for Girardi.[37]

The main floor of the barn had been recently used by the maintenance division of Minute Man National Historical Park to store miscellaneous large items such as bathtubs, cast-iron stoves, kitchen appliances, machinery, lawn equipment, etc. Most of these items were sold at auction in the spring of 2003.[38] The building is unheated in the winter, requiring the water to be turned off and the pipes drained to prevent freezing. Electrical service remains on year-round.

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[34] Deed Book 12987, p. 486, Middlesex County Registry of Deeds.

[35] Telephone conversation with Chris (Nowalk) Brooks, June 18, 2003. Chris recalls that new federal regulations had impacted the price at which dairy farmers could sell their milk.

[36] Edward Nowalk died April 15, 1994, at the age of 64. His mother, Anna, died August 6, 1994, at the age of 89. (Social Security Index, ancestry.com.)

[37] Note in the property files, "Nowalk, A.&E., Tract No. 04-101 (Parcel 8-0)," Minute Man National Historical Park. "Girardi" leases the farm stand, and the barn is left open to provide access to the bathroom.

[38] MIMA Facilities Manager Bruce Firth to Barbara Yocum, June 10, 2003.

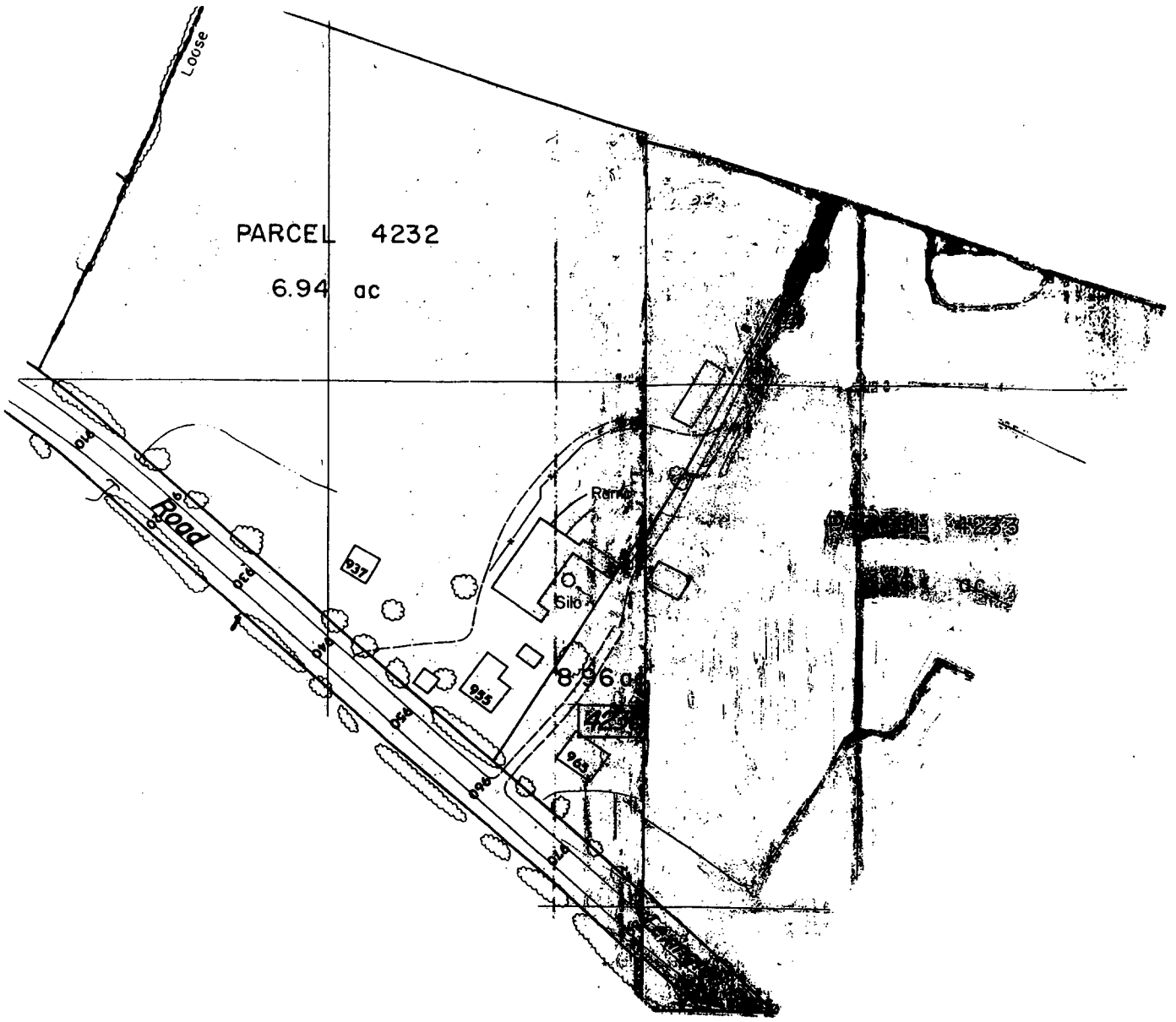

Figure 15. Detail of sheet J9 of the "Town of Concord Assessor's Maps," showing parcel 4232, a portion of the Nowalk farm, 1997.

ARCHITECTURAL DESCRIPTIONS

General Information

Significant Dates

1903	A new wood-frame barn is constructed for farmer James Carty.
Ca. 1946-47	A two-story wing connecting the barn with the house is removed.
Ca. 1951	A wood-framed milk house is constructed at the southeast corner; an interior wood silo is installed.
Ca. 1958	A metal silo and wood-framed connector are erected on the east side of the barn.
Ca. 1970[39]	A bathroom addition is constructed on the north side of the milk house.
Ca. 1972-73	A new concrete-stave silo and wood-framed connector are built in place of the collapsed metal silo and connector.

Dimensions

The barn measures approximately 80 feet long, by 40 feet wide, by 2 1/2 stories (approximately 45-feet) tall. The barn is oriented with the gable end facing front (south).

Use

The barn was built in 1903 for use as a diary barn. The cows were housed, fed, and milked in the first story; manure was collected in the cellar story; and feed (hay) was stored in the loft. A high drive on the back side of the barn allowed loads of hay to be directly driven and unloaded in the loft story.

Structural System

Foundation

Main Barn. The barn rests on a fieldstone foundation that is dry-laid in the cellar story, and mortared where exposed above grade. While there has been some speculation that this may have been the reused foundation of an earlier barn, the tax records clearly indicate that both old and new barns were standing in 1903. The stone foundation has therefore been dated 1903, the same year as the construction of the new barn.

Later Additions. Later additions to the barn rest on foundations of mortared stone and concrete. Mortared stone was used in the 1950s to support the milk house and silo connector, while concrete was used in the 1970s for the concrete silo and bathroom addition.

[39] The date "circa 1970" for the bathroom is derived from the date stamped on the underside of the toilet-tank cover, "Oct. 27 AM 70."

Frame

Main Barn. The barn frame is a square-rule, post-and-beam type, with stud walls. The gable roof is framed with rafters and purlins supported by queen-post struts. Framing elements consist of both circular-sawn and band-sawn members, typical of a structure of this vintage. Nail types are both machine-cut and wire.

Exterior Elements

Foundation

See "Structural System."

Siding

Main Barn. The exterior walls of the main barn are sided with original (1903) clapboards and wood shingles applied to wide wood sheathing boards. Clapboards cover the entire front façade and the upper stories of the two sides and the rear elevation. Wood shingles finish the lower stories of the two sides and the rear elevation, which are visually separated from the upper clapboards by a horizontal band of clapboards with narrow exposure resembling a stringcourse. This decorative siding treatment is presumably original, dating to 1903. It is typical of the Queen-Anne style of architecture, in vogue from circa 1870 to 1890.

Later Additions. Siding materials on the later additions include clapboards on the front façade of the circa-1951 milk-house addition, and wood shingles on the east and rear elevations. Wood shingles also cover the circa-1970 bathroom addition on the north side of the milk house. The walls of the circa 1972-73 silo consist of units of cast concrete with an exterior corrugated pattern held in place with steel hoops. The walls of the silo connector are covered with roll roofing on plywood sheathing.

Siding Repairs. Selected patching of the siding has occurred since 1972, using roll roofing and three-tab shingles. Roll roofing covers the front façade of the milk-house passage and a large portion of the barn's rear elevation (west side). Three-tab shingles are applied to portions of the east elevation of the milk house and the barn's rear elevation (east side).

Doorways

Doorway numbers are keyed to photographs which may be found in Appendix A of this report.

Main Barn. There are seven doorways in the main barn. Of these, six are top-sliding doors that appear to date to the original construction of the barn in 1903. Four of these are wide openings with large doors that enabled wagon and vehicular access to the cellar (D-001), the main story (D-101), and the loft story (D- 202), or transfer of hay from the loft (D-201). Two are smaller doorways in the main story: a pedestrian entrance in the front façade (D-102), and livestock entrance in the rear elevation (D-105). A later seventh doorway is

centered in the west elevation of the main barn (D-106). This opening appears to have been cut in the sidewall sometime after 1972, based on the photographic documentation.

Most of the doorways retain their original doors of simple board-and-batten construction, some glazed with single-light panels in aluminum frames. These aluminum frames replaced the original wood-framed, 6-light panels sometime after 1972. The two doorways in the rear elevation are missing their original doors. In the main story, a particleboard panel replaced an original plank door at the livestock entrance (D-105) sometime after 1972. The original door is stored in the loft today. In the loft story, a large corrugated metal door on a later exterior overhead track replaced a pair of glazed wooden doors at the high-drive entrance (D-202) sometime between 1963 and 1972. The missing original doors are documented by photographs dated 1963 (figs. 9 & 10).

High Drive. The rear loft entrance (D-202) is accessed by an original (1903) earthen ramp with stone retaining walls that leads to a steel-rail-supported, wood-plank bridge. This entrance enabled loads of hay to be directly driven into the loft, saving the labor of hoisting from below. The bridge also provided a lower pass-through, or could serve as an open shelter for farm vehicles and/or animals. A protective barrier of wooden fencing is missing today from either side of the ramp and bridge, as is a wooden gate at the end of the ramp. Both the fencing and gate are documented in photographs dated 1963 and 1972 (figs. 9, 10, & 13).

Later Additions. Later additions to the barn added two doorways: one in the front façade of the circa-1951 milk house (D-103), the other in the connector to the circa-1972-73 silo (D-104). The door of D-103 has four panels; the door of D-104 is a plywood panel covered on the exterior side with roll roofing.

Doorways Summary.

Doorway Number	Location	Door Type	Date
	Cellar Story:		
D-001	Main barn, west elevation	Two large, side-hinged, board-and-batten doors	Opening and south door leaf: 1903; north door leaf is a later replacement
	Main Story:		
D-101	Main barn, front façade	Large top-sliding door on upper track, with two aluminum-frame lights in place of the original 6-light panels	Opening and door: 1903; aluminum-frame panels installed after 1972
D-102	Main barn, front façade	Smaller top-sliding, board-	Opening and door: 1903;

Doorway Number	Location	Door Type	Date
		and-batten door, with an aluminum-frame light in place of the original 6-light panel	aluminum-frame panel installed after 1972
D-103	Milk house, front façade	4-panel, side-hinged door, with wood storm door	Opening and door: ca. 1951
D-104	Silo connector, north elevation	Plywood door covered with roll roofing (painted white)	Opening and door: ca. 1972-73
D-105	Main barn, north elevation	Smaller top-sliding particleboard door	Opening: 1903; the original board-and-batten door is stored in the loft
D-106	Main barn, west elevation	Opening enclosed with plywood panel with wooden handle	Opening and door installed sometime after 1972
	Loft Story:		
D-201	Main barn, front façade	Large top-sliding, board-and-batten door, with no lights	Opening and door: 1903
D-202	Main barn, north elevation	Large top-sliding door made of corrugated metal with two fiberglass-panel lights	Opening: 1903; metal door is a later (ca. 1963-72) replacement of an original pair of board-and-batten sliding doors, each with one 6-light panel

Windows

Window numbers are keyed to photographs which may be found in Appendix A of this report.

Main Barn. Windows were typical features of barns by the time James Carty constructed his new barn in 1903. Many original window openings, some sashes, and louvers survive in the barn today, providing both light and ventilation to the interior. The five smallest openings are in the stone foundation of the cellar story (W-001 through -005), with no surviving sashes. The six largest windows are in the main and loft stories of the front façade (W-101, -201, -301, -302, -401, and -402), and the rear elevation (W-403). These were originally fitted with 6-over-6 sashes, only three of which survive today: one each in the upper portions of W-301 and W-302, and one in the lower portion of W-403. Seventeen smaller windows are in the east, west, and rear elevations of the main story (W-105 through W-108, and W-110 through -122). Ten of the original 6-light sashes survive today, most in the windows of the west elevation. These single 6-light panels pivot open at the top and are supported on the interior side by a single metal bar. Passive ventilation is also provided in the loft by wood louvers installed in the upper portion of W-403, and in the four sidewall openings of the original rooftop cupola (W-501 through -504). A small opening in the upper west wall of the loft (W-303) is simply enclosed by a wide-mesh screen.

Later Additions. Three windows were incorporated into the milk-house addition of circa 1951, two of which remain exposed in the east and north elevations today (W-102 and -103). Each has a single sash, one with three lights, the other with six lights. A bathroom addition constructed on the north side of the milk house circa 1970 included a small window with single-light, double-hung sashes (W-104). A single window opening is also a feature of the circa-1972-73 silo connector.

Windows Summary.

Window	Location	Sash Type	Date
	Cellar Story:		
W-001	Main barn, east elevation	Sash is missing	Opening and wood frame: 1903
W-002	Main barn, east elevation	Sash is missing	Opening and wood frame: 1903
W-003	Main barn, west elevation	Sash is missing; replaced by modern fiberglass panel	Opening and wood frame: 1903
W-004	Main barn, west elevation	Sash is missing; replaced by modern fiberglass panel	Opening and wood frame: 1903
W-005	Main barn, west	Sash is missing;	Opening and

Window	Location	Sash Type	Date
	elevation	opening covered by wood board	wood frame: 1903
	Main Story:		
W-101	Main barn, front façade	Original 6-over-6 sashes missing; replaced by aluminum storm sashes	Opening and wood frame: 1903; storm sashes installed after 1972
W-102	Milk house, east elevation	Single 3-light sash	Opening and sash: ca. 1951
W-103	Milk house, north elevation	Single 6-light sash	Opening and sash: ca. 1951
W-104	Bathroom addition, east elevation	Double-hung sashes with one light each	Opening and sashes: ca. 1970
W-105	Main barn, east elevation	Original 6-light sash missing; replaced by a later 2-light sash	Opening and wood frame: 1903; existing sash is later
W-106	Main barn, east elevation	Original 6-light sash missing; replaced by a smaller, 6-light sash	Opening and wood frame: 1903; existing sash is later
W-107	Main barn, east elevation	Original 6-light sash missing; replaced by a single-light sash	Opening and wood frame: 1903; existing sash is later
W-108	Main barn, east elevation	Single 6-light sash	Opening, wood frame, and sash: 1903
W-109	Silo passageway, south elevation	Sash missing	Opening: ca. 1972-73
W-110	Main barn, east elevation	Original 6-light sash missing; replaced by a smaller 6-light sash	Opening and wood frame: 1903; existing sash is later
W-111	Main barn, east elevation	Original 6-light sash missing; replaced by a smaller 6-light sash	Opening and wood frame: 1903; sash is later

Window	Location	Sash Type	Date
W-112	Main barn, east elevation	Single 6-light sash in damaged condition	Opening, wood frame, and sash: 1903
W-113	Main barn, east elevation	Original 6-light sash missing; replaced by a later 2-light sash	Opening and wood frame: 1903; sash is later
W-114	Main barn, north elevation	Original 6-light sash is missing; replaced by a smaller 6-light sash	Opening and wood frame: 1903; sash is later
W-115	Main barn, north elevation	Single 6-light sash	Opening, wood frame, and sash: 1903
W-116	Main barn, west elevation	Single 6-light sash	Opening, wood frame, and sash: 1903
W-117	Main barn, west elevation	Single 6-light sash	Opening, wood frame, and sash: 1903
W-118	Main barn, west elevation	Single 6-light sash	Opening, wood frame, and sash: 1903
W-119	Main barn, west elevation	Single 6-light sash	Opening, wood frame, and sash: 1903
W-120	Main barn, west elevation	Single 6-light sash	Opening, wood frame, and sash: 1903
W-121	Main barn, west elevation	Single 6-light sash	Opening, wood frame, and sash: 1903
W-122	Main barn, west elevation	Single 6-light sash	Opening, wood frame, and sash: 1903

Window	Location	Sash Type	Date
	Loft Stories:		
W-201	Main barn, front façade	Original 6-over-6 sashes are missing; opening now covered by aluminum storm sashes	Opening, wood frame and sashes: 1903; storm sashes installed after 1972
W-301	Main barn, front façade	Upper sash is the original 6-light sash, lower sash is missing; opening now covered by aluminum storm sashes	Opening, wood frame, and upper sash: 1903; storm sashes installed after 1972
W-302	Main barn, front façade	Upper sash is the original 6-light sash, lower sash is missing; opening now covered by aluminum storm sashes	Opening, wood frame, and upper sash: 1903; storm sashes installed after 1972
W-303	Main barn, west elevation	No sash(es): opening is covered with wire mesh	Opening: 1903?
W-401	Main barn, front façade	Original 6-over-6 sashes are missing; opening now covered by aluminum storm sashes	Opening and wood frame: 1903; storm sashes installed after 1972
W-402	Main barn, front façade	Original 6-over-6 sashes are missing; opening now covered by aluminum storm sashes	Opening and wood frame: 1903; storm sashes installed after 1972
W-403	Main barn, north elevation	Wooden louvers above a single 6-light sash	Opening, wood frame, louvers and sash: 1903

Window	Location	Sash Type	Date
	Cupola:		
W-501 W-502 W-503 W-504	Front façade East elevation North elevation West elevation	Wooden louvers	Openings, wood frame, and louvers: 1903

Roof

Main Barn. The roof of the main barn is a gable type oriented with the gable end facing front. It is framed with rafters and purlins supported by queen-post struts and braces. The cupola has a pent roof. Wood shingles were the likely original roofing material in 1903, remnants of which may survive beneath the existing modern roofing materials. The roofs of the barn and cupola are currently covered with green/gray-color asphalt shingles. Asphalt shingles had been newly installed by 1963, according to an appraisal undertaken in that year. It is not known when the existing roofing was applied and how many roofing layers are beneath it.

Milk House and Bathroom Additions. The roofs of the circa-1951 milk house and circa-1963-72 bathroom addition include a combination of gable and shed types. Both are covered with green/gray asphalt shingles, similar to those on the barn roof.

Silo and Silo Connector. The circa-1972-73 silo is capped with a standing-seam metal dome, while the one-story passage that connects it with the barn has a gable roof covered with green/gray asphalt shingles. Physical evidence of a lower gable roof is preserved within the existing connector at the east wall of the barn. The outline of the former roof is clearly visible, along with extant metal flashing.

Cupola

Main Barn. A wood-framed, rooftop cupola is an original feature of the barn. The function of the cupola was to provide ventilation to the loft below. To this end, each of the four sidewalls of the cupola has a large opening with wood louvers (W-501-504). Wide-mesh screening on the interior side of the louvers may have been added at a later date to block the entry of bats and birds. The cupola is capped by a compass-directional weathervane that also serves as a lightning rod.

Lightning Rods

Main Barn. Lightning-protection equipment of unknown date is mounted to the ridge of the barn's main roof and cupola. This equipment includes no fewer than five lightning rods and a woven-copper grounding cable. A grounding wire connects the cupola weathervane and the earth along the east side of the main barn, terminating at the southeast corner of the barn and silo connector.

Silo. The concrete-stave silo of circa 1972-73 is also equipped with lightning protection. Two ground cables are located on the east and west sides of the silo.

Gutters

Main Barn. The barn has no gutters today, nor is there any physical evidence to suggest the presence of original gutters in 1903.

Later Additions. Similar to the main barn, there are no gutters on the later additions.

Chimney

The barn has no chimney.

Milk House & Bathroom Additions

Wood-framed additions for a milk house and bathroom are attached to the main barn at the front southeast corner. The milk house was either constructed, or moved to this location from elsewhere, around 1951. A bathroom was built on the back (north) side of the milk house sometime around 1970, judging by a date stamp "OCT 27 AM 70" on the underside of the toilet-tank cover . The primary function of the milk house was to provide storage for the milk that was typically kept in a chilled stainless-steel tank.

Silo

A concrete-stave silo bound with adjustable steel hoops and capped by a metal-dome roof is located on the east side of the barn. It is physically attached to the barn by a one-story, wood-framed connector, with gable roof. The concrete silo was constructed following the collapse of the metal silo in 1972.[40] Mechanical equipment within the silo is manufactured by the "Jamesway" company. The silo was used to store feed—typically corn silage or grains—for the cows.

The previous (now missing) metal silo and connector were installed circa 1958, according to the real estate appraisal of 1963. This silo was still standing in 1972, when it was described in another appraisal as having a concrete foundation, steel walls, a diameter of 12 feet, a height of 45 feet, a capacity of 105 tons of silage, with no automatic loader. Photographs accompanying the appraisals also document the appearance of the silo and connector. This earlier silo was also joined to the barn by a wood-framed connector.

An interior wooden silo, constructed circa 1951 and described by the two appraisals of 1963, had been removed by 1972. This missing silo had been located in the northeast corner of the barn. It was 20 feet tall (extending to the second story), 12 feet in diameter, with a capacity of 50 tons.

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[40] Telephone conversation with Chris Brooks, granddaughter of Aleck Nowalk and daughter of Edward Nowalk, June 18, 2002.

Painted Finishes

Most woodwork components of the main barn and its additions have a worn, white-painted finish. The only notable exceptions are selected doors and window sashes that are painted green. These include one door leaf in the cellar doorway (D-001), two doors in the front façade of the main barn (D-101 & D-102), and several window sashes in the main barn.

Interior Elements

The original (1903) barn has a cellar, main story, and two-tier loft story. A milk-house and bathroom additions are appended to the southeast corner, and an enclosed passageway connects with the silo on the east side.

Cellar

Use. The cellar of the main barn was used as an area to collect and store cow manure that was shoveled from the main story above, and as a space through which liquid waste drained. The manure was removed with a wagon that could be driven through the wide doorway in the west foundation (D-001).

Floor. The floor is finished with concrete installed sometime after 1946 by the Nowalk family.[41] The concrete was in place by 1963, according to the real estate appraisals for that year. An interesting feature of the concrete floor is a narrow east-west trough at the south end that contains a small flowing spring. A slightly inclined concrete ramp at the south end of the west wall leads up to the exterior doorway (D-001).

Walls. The walls of the cellar consist of unmortared fieldstone below grade, and mortared fieldstone above grade. While there has been some speculation that these walls predate the existing barn, the tax records indicate that the old barn was still standing when the existing barn was built in 1903. This suggests that the fieldstone walls are contemporary with the barn, despite their antique appearance. An unexcavated area of the cellar is located in the northwest corner, also retained with fieldstones.

Columns. The center of the cellar has two rows of structural wood columns set on rough-cast concrete piers. Columns are made of unmilled tree trunks and milled lumber; one is cast of modern concrete.

Ceiling. The cellar ceiling is unfinished, revealing the exposed floor framing and undersides of the floorboards in the main floor above. Twelve small hatches in the ceiling served as portals through which manure was shoveled into the cellar. When left open, the hatches also ventilated the cellar.[42] A larger ceiling hatch with wood ladder, in the southwest corner, provides interior access to the main story.

Doorways. There is one exterior doorway (D-001) at the south end of the west foundation wall. This wide doorway allowed wagon access for periodic removal of the manure. The doorway is an original feature of the cellar dating to 1903. The south leaf of

[41] Telephone conversation with Chris Brooks, June 18, 2003.
[42] *Ibid.*

the door appears to be original, while the north leaf is a later replacement.

Windows. There are five original windows in the upper stone walls of the cellar: two in the east wall (W-001 and -002), and three in the west wall (W-003, -004, and -005). The windows have wood frames and stone sills; the sashes are missing.

Painted Finishes. There are no painted finishes in the cellar.

Electrical Equipment. Two modern electric fixtures light the cellar. Each has a single exposed light bulb and white porcelain base.

Plumbing Equipment. The water main for the barn enters the building through the south stone wall.

Main Story

Use. The main story was used primarily to house, feed, and milk the diary herd, which entered and exited the barn through a doorway in the back wall. Stalls for 31 or 41 cattle, two pens for calves, and a room for storing tools were described in the real estate appraisals of 1963.[43] The later real estate appraisal of 1972 noted 33 stanchions, two frame stalls, and a rough-framed work room. The two calves' pens remain today, as does the separately partitioned tool/work room. While the stanchions themselves are missing today, physical evidence preserved on the floor indicates the barn could most recently accommodate 35 cows.

Floor. The original floor consists of two layers of plank floorboards. The floor framing is raised in two areas running the length of the barn, separated by a center aisle and two side aisles. It was here on the raised platforms that the cows were fed and milked. The platforms are now encased in concrete, which appears to have been installed sometime between 1963 and 1972, according to the real estate appraisals. Concave troughs fashioned on the interior sides of the platforms served as feed containers. Concrete flooring was also installed in areas that received hard wear, including at the entrance doorway for the cows (D-105), and in the northwest corner that they traversed to reach their milking stations. Depressed areas in the wood flooring served as gutters that channeled urine to the cellar below. These gutters are located along the exterior-wall side of each milking platform and measure approximately 14 inches wide. Small hatches or doors with leather hinges are also in the floor, adjacent to the gutters. These hatches, which are the same width as the floorboards, were used to dispose of manure in the cellar below.

Walls. The exterior walls of the main story are unfinished, leaving the posts, studs, and back sides of the wall sheathing boards exposed. This treatment dates to the original construction of the barn in 1903, except where recent repairs have been made to the back (north) wall. The interior walls of the work room and the two calve pens in the southwest corner consist of horizontal boards applied to wall studs. Low partition walls at either end of the milking platforms use the same construction as the interior walls.

[43] One of the 1963 appraisals counted 31 "stalls," while the other described 41 "stanchions."

Columns. Two rows of structural columns run the length of the barn, dividing the interior space into three aisles. These milled wood columns are original components of the structural frame dating to 1903.

Ceiling. The ceiling, like the walls, is unfinished, with the floor framing and undersides of the loft floorboards exposed. Three hatches are located in the ceiling above the center aisle: two large openings and one small. The large openings were used to transfer hay directly from the loft to the main story, where it was distributed to the feeding troughs. The open hatches also provided ventilation by allowing warm air to rise to the loft story above.

Doorways. There are three original exterior doorways in the main story that each served a separate and distinct function. The wide doorway at the south wall (D-101), with its large plank door supported on an overhead track, is large enough for a farm wagon, motorized vehicle, or machinery. Next to it in the same wall is a smaller pedestrian-size doorway (D-102), also on an overhead track, which was the primary entrance to the barn from the farmhouse. The third doorway (D-105), in the opposite rear wall, was used by the cows to enter and exit the barn. This too slides on an overhead track. See the section on "Exterior Doorways" for additional information.

There are three interior doorways in the main barn: one in the west wall, and two in the east wall. The first doorway, at the south end of the west wall, leads to the tool/work room and is equipped with a board-and-batten door. This is believed to be an original doorway dating to 1903. The second doorway, in the opposite east wall, connects with the circa-1951 milk house, and also has a board-and-batten door. The date of this doorway is unknown. The third doorway, centered in the east wall, leads to the silo connector. This wide opening has a pair of board-and-batten doors. The date of this doorway is also unknown.

Gates. Wooden gates of unknown date were used to corral and contain the cows and calves in the main story of the barn. One gate, in the northeast corner, channeled the cows to the milking stations on the east side of the barn when closed. The other gate, in the northwest corner, controlled access to the milking stations on the west side of the barn. The two pens in the southwest corner were gated to contain the calves.

Windows. Seventeen original window openings provide natural light to the first-story interior of the barn. The largest, W-101, is located in the south wall of the tool/work room in the southwest corner. The original 6-over-6 sashes of this opening, shown in photographs dated 1963 and 1972, are missing today, having been replaced by a modern aluminum storm sash.

The remaining sixteen windows are smaller original openings located in the east, north, and west walls (W-105 through-108, and W-110 through -122). Most of these windows retain their original single-panel, 6-light sashes that pivot open at the top for ventilation. A simple metal bar across each opening supports the open sash. Later frames, fashioned from galvanized sheet metal, also support the open sashes.

Stair. An original wood-framed stair is located at the south wall of the main barn. This stair, with 10 step and 11 risers, connects the main story with the loft story.

Tool /Work Room. A small wood-framed room is located in the southwest corner of the barn, next to the calve pens. The room also serves as the interior access to the cellar through a hatch in the floor. A large wood work table with three drawers occupies the north wall of the room. The exposed woodwork of the walls and ceiling has never been painted.

Calves Pens. Two wood-framed corrals for calves are located next to the tool/work room in the southwest corner of the barn. Each pen has wood floorboards, a wood gate, and whitewash finish.

Painted Finishes. Multiple layers of whitewash cover the interior walls, ceiling, and doorway and window elements of the barn's main story. The only exceptions are the walls and ceiling of the tool room that have never been painted, and the unpainted studs and sheathing boards of the recently repaired north wall.

Electrical Fixtures. Bare-bulb fixtures with white porcelain bases light the main story of the barn. Two rows of fixtures are mounted to the north-south beams to light the milking stations. Ceiling-mounted, single-bulb fixtures are also located above the sink at the south end of the barn, in the tool/work room, and in the calve pens.

There are two electrical panels in the main story. One is a main service panel with 200-amp service mounted to the east wall of the tool/work room. The other is a 50-amp panel mounted to the south wall opposite the sink.

Plumbing Equipment. The main story has a sink at the south end of the barn, opposite the stair. The sink, of unknown date, is made of cast iron with a white porcelain finish. A modern-looking stainless-steel counter is on the right side of the sink.

Loft

Use. The loft story of the main barn was used for storing hay. The capacity of this space is 100 tons of baled hay, according to the real estate appraisals of 1963 and 1972. Hay was transported by wagon up the high drive and through the wide doorway (D-202) in the rear of the barn. It was offloaded and stored on the main floor of the loft or in one of the upper tiers.

Floor. The main floor of the loft story consists of rough wide boards. The floor was designed to support horse-drawn hay wagons, and was later used by tractor-driven wagons. The real estate appraisal of 1972 noted "the floor is strong enough to support vehicles."

A hatch in the center of the loft floor enabled hay to be thrown directly down to the center aisle of the main story where it could be distributed to the feed troughs. The hatch is equipped with a functioning hinged door with a metal-ring handle. Framing evidence in the ceiling below suggests that two other hatches once opened to the main story. One, located north of the existing hatch, is large enough to have accommodated hay. The other, near the back (rear) wall, is considerably smaller and its function is unknown. Both hatches have been rendered inoperable by later repairs to the loft floorboards.

Cutouts in the floorboards are also located at the east and west exterior walls. These openings are situated directly above windows in the main story, thus enabling both light and air to rise to the loft story.

Elevated platforms sheathed with floorboards provided additional storage space for hay in the loft story. One is located above the room in the southwest corner, and two others are above storage bays in the northeast corner. A long platform also runs the center length of the barn, its joists supported by the roof beams. A large open hatch in this upper platform enabled hay to be dropped to the main loft floor below.

Walls. The exterior walls of the loft story are unfinished, with the posts, studs, and back sides of the wall sheathing boards exposed. This treatment dates to the original construction of the barn in 1903. Interior partitions made of exposed studs and horizontal boards also enclose the stairway at the south wall, a room in the southwest corner, two open-fronted storage bays in the northeast corner, and a third storage bay in the northwest corner.

Ceiling. The ceiling of the loft story consists of the exposed roof framing and the exposed undersides of the roof sheathing boards. In addition, storage platforms located above the enclosed room in the southeast corner, two storage bays in the northeast corner, and down the center length of the loft, create lower "ceilings." These platforms may be original to the construction of the barn in 1903.

Doorways. There are two large exterior doorways in the loft story: one in the front wall (D-201), the other in the back wall (D-202). Both are original openings dating to 1903. The front doorway, when open, allows natural light and air into the otherwise dark loft. It was likely also used for transferring stored hay to the ground story. This doorway retains its original board-and-batten door on overhead track. Mortises in the lower jambs were probably for boards that served as a safety barrier when the door was open. The back doorway is the opening through which the hay was delivered to the loft by way of the high drive. This doorway has a later corrugated-metal door that replaced a pair of original glazed, wood-panel doors sometime between 1963 and 1972.

One interior doorway is also located in the east partition of the southeast room. This doorway, which is presumably original, has a board-and-batten door.

Windows. Seven original window openings provide natural light to the loft interior. Five are in the front wall (W-201, -301, -302, -401, and -402), and one is in the back wall (W-403). The openings in the front (south) wall were originally outfitted with 6-over-6 sashes, only a few of which survive today. All of the south-wall windows are covered on the exterior side with aluminum storm sashes installed sometime after 1972, according to the photographic documentation. The back window has one 6-light sash below wood louvers. These louvers promote ventilation in the upper reaches of the loft, as do a small opening in the upper west wall (W-303), and four louvered openings in the original rooftop cupola (W-501, -502, -503, and -504).

Hay Fork. Hay was lifted from the floor of the loft to the upper storage platforms using a mechanical device known as a "hay fork." All components of the barn's hay fork survive today. These include a metal track that runs the length of the barn beneath the roof ridge, attached to the upper roof joists. The track supports a wheeled trolley with attached

ropes, pulleys, and large curved tines that enabled large loads of hay to be easily lifted from the hay wagons.

Electrical Fixtures. There are three electric lights in the loft: one in the lower loft, one in the upper loft, and one above the south doorway. The light switch is located in the main story. Each fixture holds a single bulb enclosed within a wire-cage protector.

Plumbing Equipment. An electric hot-water heater made by "Quaker" sits in the northeast corner of the stair enclosure on the south side of the loft. This heater supplies hot water to a sink in the main story, two spigots in the milk house, and a sink and baseboard heater in the bathroom. This may be the same 52-gallon Quaker heater that was described in the 1963 appraisal by Berglund.

Milk-House and Bathroom Additions

A wood-frame addition on the front right (southeast) side of the barn was constructed or moved to this location around 1951, according to a real estate appraisal dated 1963. Two appraisals of that date labeled this addition the "milk house," so-called because it was here that the milk was stored prior to being picked up by a milk wholesaler. The milk house consists of a main room and a wide passageway that connects with the barn. A milk-storage container, missing today, was described in the appraisal of 1972 as a "250 gallon stainless steel bulk milk tank." A bathroom was constructed on the north side of the milk house sometime after the real estate appraisals of 1963 and before a later appraisal undertaken in 1972. A more precise date of 1970 for the bathroom addition is suggested by a date of manufacture stamped on the underside of the toilet tank cover: "OCT 27 AM 70."

The interior of the milk house has a sloping concrete floor with two floor drains, and plywood walls and ceiling. Roll roofing covers the walls on the west side of the milk house. There are three doorways: one to the exterior in the south wall (D-102), a second leading to the barn in the east wall, and a third to the bathroom in the north wall. Two windows provide natural light to the interior: one in the east wall (W-102), the other in the north wall (W-103). Three electric lights with bare bulbs and white porcelain bases are mounted to the ceiling. Two pairs of water spigots for hot and cold water are mounted to the west wall of the main room and the passageway, undoubtedly used for cleaning the milking equipment and containers. White paint finishes the walls, ceiling, and doorway and window elements. Patterned vinyl flooring is applied to the plywood walls of the main room, similar to a wallpaper treatment.

The bathroom has a ceramic-tile floor and plywood walls and ceiling. A doorway with 6-panel door in the south wall connects with the milk-room passageway, and a single double-hung window in the east wall (W-104) provides natural light to the bathroom. The room is lit by a single ceiling-mounted light fixture with glass shade. Heat is provided by a hot-water baseboard unit at the north wall, regulated by a "Berko" thermostat. Plumbing fixtures include a white "American Standard" toilet manufactured Oct. 27, 1970, a blue lavatory, and a shower with painted plywood partitions. Blue paint finishes the upper walls, ceiling, and doorway and window elements. Patterned vinyl flooring is applied to the walls like a wallpaper.

Silo Connector

A concrete-stave silo and new connecting structure were built after the collapse of the metal silo in 1972.[44] The connector provides a physical, one-story, attachment to the barn, and houses the controls for the silo's "Jamesway" mechanical equipment. The connector interior is finished with a concrete floor, and exposed framework walls and ceiling at the north and south walls. The exterior shingle walls of the barn are exposed within the connector at the west wall, and the concrete walls of the silo are exposed at the east wall. There are two doorways: one with a pair of board-and-batten doors that joins with the barn in the west wall, the other with a single plywood door leading to the exterior in the north wall. A single window opening in the south wall, with no surviving sashes, provides natural light and ventilation.

Physical evidence of an earlier, smaller, connector is preserved within the existing connector at the barn wall. This missing connector was narrower than the existing connector and had a lower gable roof. The evidence includes a clear outline of the former roof and extant metal flashing. The earlier connector was associated with the circa-1958 metal silo, based on a photograph dated April 1963 (fig. 8).

Mechanical, Utility, and Detection Systems

Electrical System

It is not known when the barn was wired for electricity. This likely occurred sometime after its construction in 1903.

Electrical Service. Electrical service enters the barn on the south side. Wires are attached on the west side of an upper window (W-401), and travel to the main story through a pipe conduit.

Electrical Panels. There are five electrical panels in the barn, all located in the main story. The main service panel (200 amp) is located in the tool/work room, mounted to the east partition wall. A second panel (50 amp) is mounted to the south wall of the barn at the stair partition, opposite the sink. The third and fourth panels are in the circa-1951 milk room: one at the south wall (30 amp), the other at the north wall (unused). The fifth panel is also the newest, and is associated with the circa 1972-73 "Jamesway" silo machinery. It is located in the silo connector at the west wall.

Light Fixtures. Light fixtures are a single-bulb type, most exposed with white porcelain bases. Exceptions include three lights in the loft that are enclosed in wire cages, and the ceiling light in the circa-1970 bathroom with a glass shade.

Electrical Outlets. Electrical outlets are paired with the lights in the main story of the barn.

[44] Telephone conversation with Chris Brooks, June 18, 2003.

Water Heater. An electric water heater made by "Quaker" sits in the northeast corner of the stair enclosure in the loft story. This may be the same 52-gallon Quaker water heater that was described in the 1963 appraisal by Berglund.

Heating System

The circa-1970 bathroom addition is the only heated area of the barn today. Here heat is supplied by a hot-water baseboard unit located at one wall. It is controlled by a "Berko" thermostat.

Plumbing System

Water is supplied to the barn by the Town of Concord, fed by a water main in the nearby farmhouse. Wastewater and sewage drain to a septic tank between the barn and the farm stand to the southwest.

Main Barn. Water enters the barn through a pipe in south stone wall of the cellar. Plumbing fixtures include a sink at the south end of the barn, and an electric hot-water heater (made by Quaker) in the loft story. Spigots noted at the individual stalls (milking stations) by the 1963 appraisal by Berglund are missing today.

Milk Room. Two pairs of water spigots, for hot and cold water, are located in the circa-1951 milk room.

Bathroom Addition. The circa-1970 bathroom is equipped with a white "American Standard" toilet, a blue lavatory, and a shower with plywood partitions. A date of 1970 for the bathroom is derived from the date "OCT 27 AM 70" stamped on the underside of the toilet tank cover. Furthermore, it is known from the appraisals that the bathroom did not exist in 1963, but had been installed by 1972.

Fire and Intrusion Detection

The barn has no fire and/or intrusion detections systems.

CONCLUSIONS

General Summary and Conclusions

The existing barn behind the Farwell Jones House at 955 Lexington Road in Concord, Massachusetts, was built in 1903 for farmer-owner James Carty, according to the tax-assessment records. The wood-framed, post-and-beam structure was constructed as a high-drive dairy barn with a manure cellar, milking floor, and hay loft. The barn was built near to, but not on the site of, an old barn of unknown date that appears to have been demolished by 1904. Whether or not this now-missing barn had been standing on April 19, 1775, when Farwell Jones was in residence, is not known. Future archeological investigations may provide additional information.

The barn is well documented by both written descriptions and photographs included in real estate appraisals dated 1963 and 1972. The earliest known exterior photographs are dated April 1963; no interior photographs have been found. Family members and neighbors were asked about the barn in 1973, and their memories were written in a historic structure report on the Farwell Jones House, on file at the park. Chris Nowalk Brooks, who grew up on the farm, shared her recollections with this author in June 2003.

Although in poor repair today, the barn retains many original architectural elements dating to its construction in 1903. These include the stone foundation, post-and-beam frame, clapboard and shingle siding, large doorways with top-sliding doors, rear ramped entrance (or "high drive"), windows with single or double-hung 6-light sashes, and ventilating rooftop cupola with directional weathervane. Inside, the divisions of space into a manure cellar, main milking floor, and upper hay loft remain unchanged. The mechanical equipment used to lift hay to the upper loft, known as hay fork, survives in the upper reaches of the loft.

Several alterations and improvements have been made to the barn over the years, most by the Nowalk family, the last private owners of the property. A two-story wing connecting the barn with the house was demolished shortly after the Nowalks purchased the farm in 1946. A wood-framed milk house was appended to the front southeast corner of the barn circa 1951. A metal silo and connector were erected on the east side of the barn, and an interior wood silo inside the barn, around 1958. A bathroom addition was added behind the milk house circa 1970. Concrete flooring was poured about this time in the cellar, and over the wood floorboards of the milking stations in the main story. A concrete-stave silo replaced the metal silo following its collapse one evening in 1972. The barn was last used for dairy cows in 1980-81, and thereafter for hay storage. The federal government gained possession of the property in August 2001, upon the expiration of a 25-year reservation with the Nowalk family. The barn has sat vacant and unused, except for general storage, since that time.

Character-Defining Features

"Character-defining features" (CDFs), are defined in *Director's Order (NPS)-28* as follows:

> A prominent or distinctive aspect, quality, or characteristic of a historic property that contributes significantly to its physical character. Structures, objects, vegetation, spatial relationships, views, furnishings, decorative details, and materials may be such features.[45]

By this definition, a CDF can date from any period in the history of a property. In the case of a building, this could span the time period from its date of construction to the present day.

A more restrictive definition is cited in *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, in which CDFs are tied to the "historic character" of a building:

> Character-defining features . . . [are] those architectural materials and features that are important in defining the building's historic character . . . . The character of a historic building may be defined by the form and detailing of exterior materials, such as masonry, wood, and metal; exterior features, such as roofs, porches, and windows; interior materials, such as plaster and paint; and interior features, such as moldings and stairways, room configuration and spatial relationships, as well as structural and mechanical systems.[46]

"Historic character" is thereby tied to historical significance, which Director's Order (NPS)-28 defines as "the meaning or value ascribed to a structure, landscape, object, or site based on the National Register criteria for evaluation. It normally stems from a combination of association and integrity."[47]

The historical significance of the barn at the Farwell Jones House is its association with the agricultural use of the property, which began with the establishment of the farm by Farwell Jones's father, John Jones, in the early 18th century. Although the barn post-dates the American Revolution's battle of April 19, 1775, it is nevertheless a visual reminder of the land's agricultural tradition. The barn is also individually significant as an early 20th-century dairy barn that incorporates the design improvements and labor-saving devices of its day. These included numerous windows for natural light and fresh air, large top-sliding doors for easy access of wagons and livestock, a cellar for the collection of soil-enriching manure, raised platforms for milking the cows, a high-drive entrance for direct delivery of the hay to the loft, a mechanical hay fork to facilitate its unloading, and a rooftop cupola for ventilation.

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[45] Director's Order (NPS)-28, *Cultural Resources Management Guidelines, Release No. 4*, Appendix A., U.S. Dept of the Interior, NPS, History Division, 1994, p. 188.
[46] Kay E. Weeks and Anne E. Grimmer, *The Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*, U.S. Dept. of the Interior, NPS, Cultural Resource Stewardship and Partnerships, Historic Preservation Services, 1995, p. 63.
[47] Director's Order (NPS)-28, Appendix A, p. 193.

Later additions to the barn that were made within the park's defined period of significance (1655-1959) included a milk house and now-missing metal silo, both erected circa 1958.

The following features listed below are important to the historic character of the barn for the years 1903 through 1959:

Exterior CDFs

1903

- a large 2 ½-story structure, supported by a post-and-beam frame, with the gable end facing front, topped with a ventilation cupola (1903);
- dry-laid fieldstone foundation;
- use of clapboards on the front façade, and both clapboard and wood shingles on the other three elevations;
- wide doorways with sturdy board-and-batten doors that slide on an interior upper track;
- rear ramp and bridge providing a "high-drive" entrance to the loft;
- numerous window openings with single or double-hung 6-light sashes;
- no gutters; and,
- directional weathervane.

Circa 1958

- small, gable-roofed milk house attached to the barn at the front southeast corner;
- concrete foundation;
- use of clapboards on the front façade, and wood shingles on the east and north elevations;
- one exterior doorway, with 4-panel door, in the front facade;
- two small windows, each with a single multi-light sash, in the east and north elevations; and,
- a metal silo on the east side of the barn with a small, wood-framed structure connecting it to the main barn. *(Note that both the metal silo and its connector are missing today.)*

Interior CDFs

1903

- a large, dark cellar space interrupted only by structural support columns, with interior ladder access to the first story;
- a main story divided into a large area for housing, feeding, and milking the cows; a tool/work room in the northwest corner; two pens for calves; and an enclosed stair to the loft story;
- a large loft for storing hay, with a small partitioned room in the northeast corner, a partitioned stair in the northeast corner, and storage platforms of various heights;
- floors composed of dirt in the cellar story, and wide unfinished floorboards in the

upper stories;

- special features of the floor in the main story include12 hinged hatches for the disposal of manure, and raised milking platforms;
- special features of the floor in the loft story include cutouts for light and ventilation at the east and west walls, and hatches enabling the direct delivery of hay to the main floor below;
- dry-laid fieldstone walls in the cellar story;
- unfinished walls in the main and loft stories, featuring exposed studs and horizontal boards;
- unfinished ceilings, featuring exposed framing and the undersides of floorboards or roof sheathing;
- interior doorways with board-and-batten doors;
- windows with operable sashes;
- a mechanical device for lifting hay in the loft story called a "hay fork"; and,
- an unpainted interior, except for the milking area and calve pens in the main story that are whitewashed.

Circa 1958

- the interior of the circa-1958 milk room is an open, unpartitioned space, that accommodated a large, stainless-steel tank for storing milk (now gone);
- an interior doorway in the west wall provides direct access to the milking room of the main barn;
- a concrete floor, with two drains, promoted cleanliness and easy cleanup;
- hot-and-cold running water, supplied by two pairs of wall spigots was essential to the operation of the milk room; and ,
- simple electric light fixtures with white porcelain bases and exposed light bulbs were installed in the milk room, and in the main barn, by 1958.

Non-Historic Features

The following features and architectural elements were installed in the barn after 1959, the end date of the park's period of significance. They are therefore considered to be "non-historic."

- the circa-1970 bathroom addition on the north side of the milk house;
- the circa 1972-73 concrete-stave silo and its wood-frame connector on the east side of the barn *(note that these replaced an earlier metal silo and wood-framed connector)* ;
- roll roofing and asphalt shingles used for siding repairs;
- the particleboard door at the livestock entrance (D-105)—note that the original door is stored in the loft;
- the small door opening and door (D-106) on the west side of the barn;
- the large corrugated-metal door with exterior track at the high-drive doorway (D-201);
- glass panels with aluminum frames in the two original front doors (D-101 and D-102) that replaced the original wood-framed, 6-light panels;
- aluminum storm sashes in the windows of the front façade;

- inappropriate replacement window sashes in the following openings: W-105, -106, -107, -110, -111, -113, and -114;
- concrete flooring in the cellar and main story of the barn; and,
- vinyl flooring and roll roofing applied as a wall covering to the interior walls of the milk room.

RECOMMENDATIONS

Ultimate Treatment

The management category for the barn at the Farwell Jones House, as recorded in the List of Classified Structures, is that it "should be preserved and maintained. "Preservation" is defined by the Secretary of the Interior's "Standards for the Treatment of Historic Properties" as follows:

> *Preservation* is . . . the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Preservation is guided by the Secretary of the Interior's eight "Standards for Preservation," which are listed below in their entirety:

> 1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
>
> 2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
>
> 3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
>
> 4. Changes to the property that have acquired historic significance in their own right will be retained and preserved.
>
> 5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
>
> 6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed.[48] Where the severity of deterioration requires repair or limited replacement of a

[48] A conditions assessment of the barn by Historic Architect Millan Galland, along with specific recommendations for treatment, are being prepared as a separate report.

distinctive feature, the new material will match the old in composition, design, color, and texture.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

As explained in the previous section, the historic period of significance for the barn spans the years 1903 through 1959. Therefore, those features and architectural elements that have been identified as "character-defining" for this time period should receive the recommended treatment of preservation and maintenance as described above. Those features and architectural elements identified as "non-historic" can be removed without adversely affecting the historic charter of the barn. However, some consideration should be given to preserving the non-historic concrete-stave silo and its wood-frame connector that replaced a metal silo and a similar connector in 1972-73. While different in design and materials, the existing concrete silo nevertheless has the same the general form and function of the metal silo.

Proposed Use

The park currently plans to lease the barn for hay storage, for which it has been used historically. Livestock will not use the main story, nor will grain be stored in the silo.

Emergency Repairs

Of most urgent concern is the severely deteriorated condition of the barn's roof, particularly in the northeast corner where a large hole in the roofing is allowing water to enter. This repair needs to be undertaken as soon as possible.

Conditions Assessment

An assessment of the barn's state of repair was undertaken concurrently with this historic structure report by Historical Architect Millan Galland, which includes schematic architectural drawings and photographs documenting the barn's existing appearance. The conditions assessment has been prepared as a separate report. A structural assessment of the barn has been contracted and will also be presented as a separate report.

Name Change

The barn is currently named the "Farwell Jones Dairy Barn" and alternatively the "Nowalk Barn." It is suggested that this be changed, since the barn was not standing during the ownership of Farwell Jones. Names suggestions include the "Barn at the Farwell Jones House," which describes its location; the "Nowalk Barn," after the family who owned the property in 1959 (the end date of significance); or the "James Carty Barn," in recognition of the dairy farmer for whom it was constructed in 1903.

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Concord Tax Assessment Records

Tax records are on microfilm in Special Collections, Concord Free Public Library. Only those records that were examined for this report are listed below.

Roll 010	Assessor's Records	1870-77
Roll 011	" "	1878-86
Roll 012	" "	1887-94
Roll 013	" "	1895-1901
Roll 014	" "	1902-1907

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APPENDIX A:

DOORWAY AND WINDOW NUMBERS

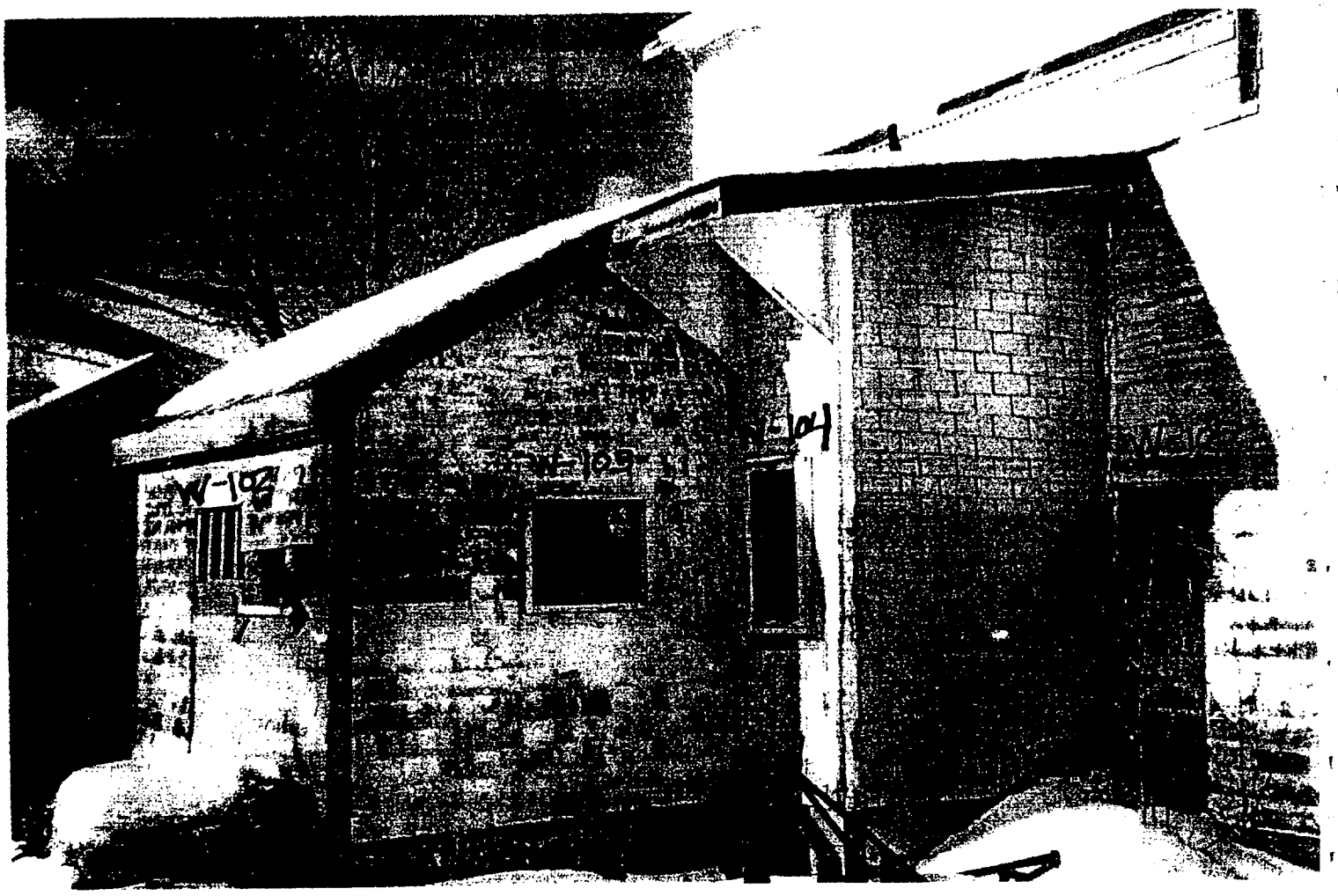
DOORWAY AND WINDOW NUMBERS

The following doorway and window numbers are keyed to exterior photographs taken in March 2003 by NPS Historical Architect Millan Galland.

Front Facade

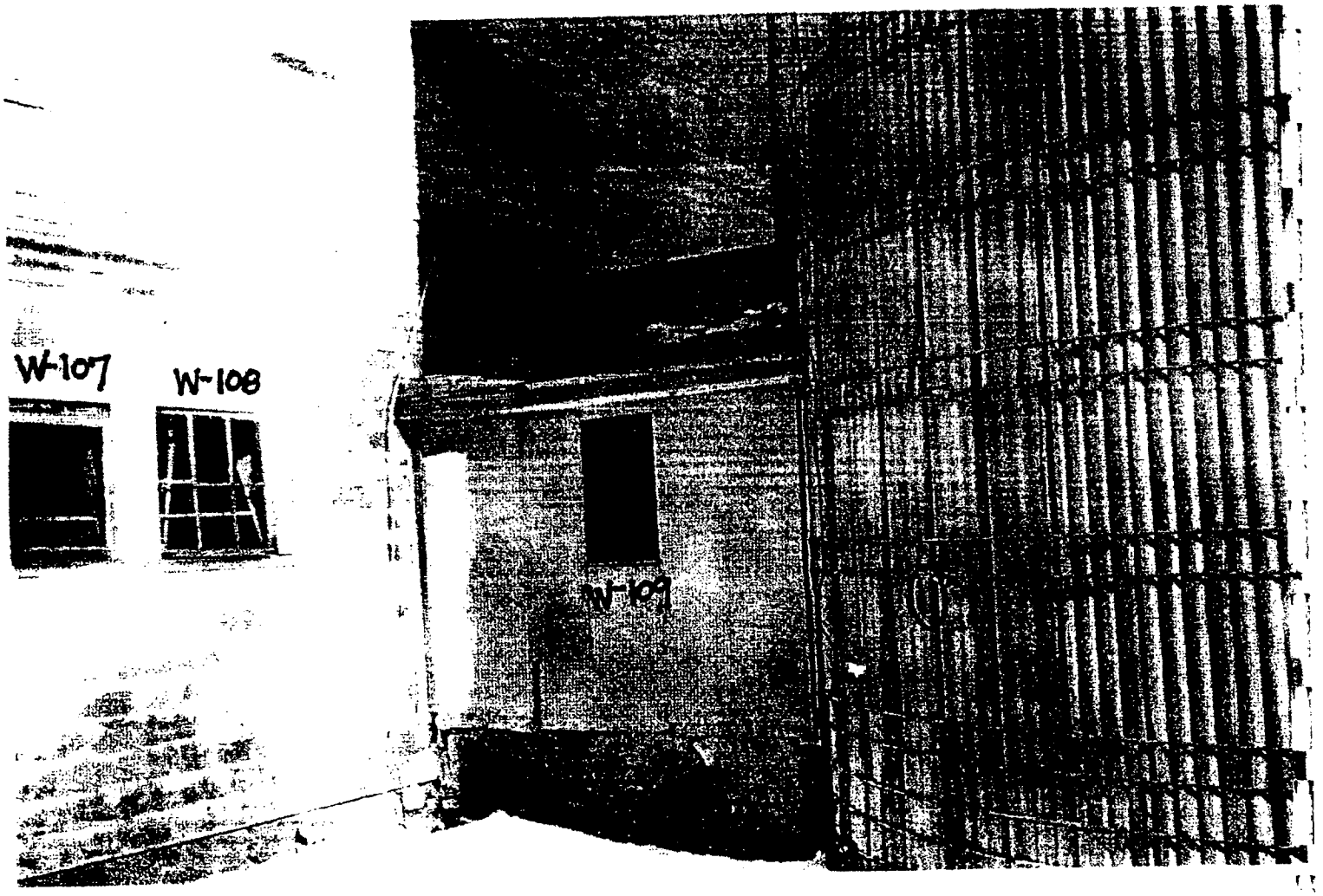
Front Façade Detail at Milk House

East Elevation



Milk House: North and East Elevations

East Elevation, Between Milk House and Silo Connector

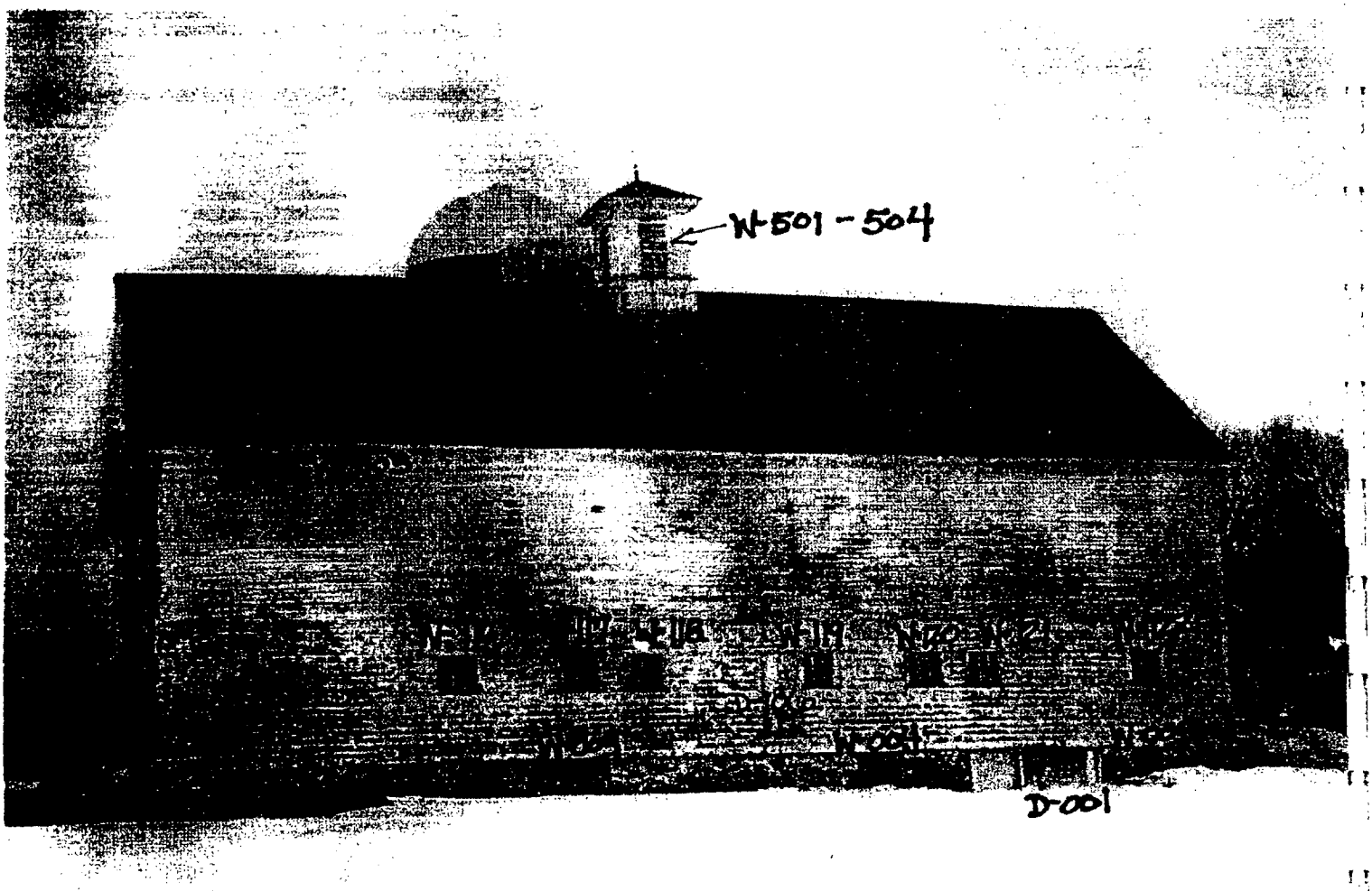


South Elevation of Silo Connector

North Elevation of Silo Connector

North Elevation

North Elevation Detail



West Elevation

Detail of Cellar Doorway in West Elevation

APPENDIX B:

MORTAR ANALYSIS

Objective

The project agreement states that analysis of the foundation mortar of the barn would be carried out "with the goal of determining the original [1903] mortar mix."

Description

The barn rests of a fieldstone foundation that is dry-laid in the cellar story, and mortared where exposed above grade. Historical research indicates that the foundation dates to the construction of the barn in 1903. Later applications of cement mortars now cover the exterior side of the above-grade foundation. Cement mortar was also used for the stone foundations of the circa-1951 milk house addition and the circa-1958 silo connector, while cast concrete foundations support the bathroom addition (circa 1970) and the concrete-stave silo (circa 1972-73).

Methodology

One sample of original mortar was removed from the barn foundation and placed in a plastic ziplock bag. This sample was assigned a three-part log number: MIMA 4-101-B M01. "MIMA" signifies Minute Man National Historical Park; "4-101-B" is the structure number for the barn; the letter "M" indicates that the sample is mortar; and the number "01" denotes the first sample.

Analysis of the mortar sample was undertaken at the laboratory of the Historic Architecture Program in the Boott Cotton Mills Museum Building, Lowell National Historical Park in Lowell, Massachusetts. Physical characteristics of the mortar were first recorded. The sample was then pulverized using a mortar and pestle. The pulverized sample was transferred to a glass beaker and swirled in a diluted solution of hydrochloric acid (HCl—one part 38% HCl to five parts water), in order to separate the sand component. The sand was thoroughly rinsed with water and dried under heat lamps. Finally, the sand and fine components were weighed.

Mortar Sample Location and Description

Obtaining a sample of original foundation mortar was problematic since the exterior surfaces of the foundation have been coated with modern cement mortars. A search of the interior identified what appears to be an undisturbed area of original mortared stone at the west end of the south wall, in the vicinity of the cellar hatch. The sample was removed from the upper portion of the stone wall; the lower portion is dry laid. The mortar crumbled easily and was classified as "soft." It is a beige color with white lime inclusions.

Analysis Results

The weight of the sample analyzed was 20.35 grams. It reacted vigorously in the hydrochloric acid solution, suggesting the presence of calcium carbonate (CaCO3). The separated sand weighed 14.09 grams, or roughly 70% of the total sample weight. The sand is poorly sorted, consisting of a mixture of medium-size grains and small pebbles. The grains are a variegated assortment of clear, white, yellow, gray, and black, with some thin shiny

flakes. The fines, which are the insoluble, clay-like component of the sample, weighed 0.48 grams, or roughly 2% of the total sample weight. The fines are a brown-beige color. The remaining 28% of the sample weight was presumably the soluble cementitous portion—such as calcium carbonate—that bound the mortar together.

Conclusions

The original mortar used in the upper stone foundation of the barn is a lime mortar, based on the findings of the mortar analysis. No cement, either natural or manufactured, appears to have been used in the mortar mix. Cement mortars were used in later years to repair and parget the exterior side of the foundation walls.

Recommendations

The historic period of significance for the barn spans the years 1903 to 1959. Cement mortars were being used at the barn by 1951, judging by the cement-mortared foundation of the milk house that was appended to the barn about that time. It would therefore be appropriate to use cement mortars for restoration and repair work. The recommended mortar mix is a medium strength ASTM type N, which is:

1 part Portland cement

1 ¼ parts lime

7 - 9 parts sand

APPENDIX C:

PAINT ANALYSIS

Objective

The project agreement states that analysis of the exterior painted finishes of the barn would be carried out "with the goal of determining the original [1903] paint color(s)."

Methodology

Six paint samples were removed from the exterior of the barn and its later additions. Samples were extracted using an X-Acto knife fitted with a No. 18 blade. Each sample was placed in a separate labeled envelope. A three-part log number was assigned to each paint sample. The first sample, for example, was designated "MIMA 4-101-B P01. "MIMA" signifies Minute Man National Historical Park; "4-101-B" is the structure number for the barn; the letter "P" indicates that the sample is paint; and the number "01" denotes the first sample.

The samples were microscopically examined at the paint laboratory of the Historic Architecture Program, Northeast Region, located in the Boott Cotton Mills Museum Building of Lowell National Historical Park in Lowell, Massachusetts. Each sample was viewed in cross section with a binocular microscope at 10 to 63 times magnifications. The microscope used is a Nikon, model SMZ-2T.

Certain characteristics of each paint layer were noted and recorded, such as the paint color and the presence/absence of lead. Lead paints were identified by a spot chemical test using a solution of sodium sulfide and water. Dirt layers and/or poor adhesion between paint layers were useful in distinguishing primer coats from finish paint layers.

An understanding of the barn's documented history was essential in the interpretation of the paint analysis findings. The information that is available on the barn's exterior painted finishes is briefly described in the following section.

Documentation

No documentation has been found, such as written descriptions or photographs, of the original exterior paint color(s) of the barn. The earliest known photograph, a black-and-white view dated circa 1937, shows the barn connector that joined the house and barn, but not the barn itself (fig. 2, page 13). Both the house and connector were then painted a light shade, with the door, window sashes, and shutters a dark shade. The barn may have been finished in a similar manner. The connector had been removed by 1963 when a number of exterior photographs were taken of the barn for two separate appraisals of the property. One noted that the barn was then "in excellent condition being recently painted and repaired." The black-and-white photographs show a paint scheme similar to that of circa 1937, with light siding and dark doors and window sashes (figs. 4-10, pages 18-21). This same paint scheme is also shown in another set of black-and-white photographs taken in 1972 for a third appraisal of the property (figs 12 & 13, page 23).

Existing Painted Finishes

Most woodwork components of the main barn and its additions have a worn, white-painted finish. The only notable exceptions are selected doors and window sashes that are painted green. These include one door leaf in the cellar doorway (D-001), two doors in the front elevation of the main barn (D-101 & D-102), and several window sashes in the main barn. The last exterior painting of the barn occurred sometime before acquisition of the property by the National Park Service in August 2001.

Paint Sample Locations and Chromochronologies

Paint samples were removed from both the original (1903) barn and from the later (circa-1951) milk house for comparison purposes. No paint samples were removed from the window sashes due to their severely weathered condition. The locations of the samples and their paint layers (chromochronologies) are described on the following page.

EXTERIOR PAINT SAMPLES

Paint Sample:	**MIMA 4-101-B P01**	**MIMA 4-101-B P02**	**MIMA 4-101-B P03**	**MIMA 4-101-B P04**	**MIMA 4-101-B P05**	**MIMA 4-101-B P06**
Location:	Barn: shingle siding, east elevation, now within the circa-1972-73 silo connector.	Barn: trim of former roof line, now within the circa-1972-73 silo connector.	Milk house: clapboard siding, south elevation.	Barn: door at doorway D-101, south elevation.	Barn: door at doorway D-102, south elevation.	Milk house: Door at doorway D-103, south elevation.
Substrate:	Wood	Wood	Wood *(resued 1951?)*	Wood	Wood	Wood
Circa Date:	1903	1903?	Pre-1951	1903	1903	Circa 1951
			*dark gray**			
1903	-dirt particles-	-dirt particles-	*gray*		-dirt particles-	
			white		cream*	
			gray		cream*	
	cream*	cream*	*light gray*		cream*	
	cream*	cream*	*white**	cream*	cream*	
		gray*	*light gray*	gray*		
1951		cream		dark green	green	dark green
1962	cream*	cream*	cream*	green	green	green
	cream	cream	cream	green	green	green
			cream	green	green	green
	white	white	white	green	light green	light blue
		white	white		green	white

Key:

*** Denotes lead paint.**

Conclusions

Identification of the original (1903) exterior finishes of the barn was hampered by the extremely deteriorated condition of the existing finishes and lack of early documentation. The earliest painted finishes observed in the paint samples from the siding in the east elevation and the doors in the south elevation are cream-color oil-based paints with lead. When the barn began to be painted cream is impossible to say with certainty, since dirt on the wood siding shingles suggests that either the barn was unpainted initially, or that a long lapse between paintings caused the early finishes to fail. That the siding was painted cream by 1937 seems likely based on a photograph taken about that time that shows the barn connector a light shade. The existing paint scheme of cream/white siding with green doors and windows appears to date to circa 1951, when the milk house was joined to the barn. The presence of several layers of pre-1951 gray and white paints on the siding of the milk house indicates that it is either an earlier structure that was moved to this location, or that the clapboards were reused from some other structure.

Recommendations

The historic period of significance for the barn spans the years 1903 to 1959. It is therefore recommended that the barn be painted with the paint colors that existed in 1959: cream for the siding and trim, and green for the doors and window sashes. Munsell matches for these colors are 5Y 9/1 (cream), and 5G 3/6 (green).

5Y 9/1

5G 3/6