Shoenberg Farm

Historic Structures Assessment Project #2007-M2-011 March 14, 2008



Andrews & Anderson Architects, PC 715 Fourteenth Street Golden, CO 80401 303.278.4378

SHOENBERG FARM Table of Contents

Note: I	Numbering follows CHS/SHF Historic Structures Assessment Outline	_
0.1 0.2 1.0	Table of Contents Project Directory / Participants Introduction Research Background/Participants	<u>Page</u> 2 3 4
	Vicinity Map/Location Map Legal Description	5 6
2.0	History and Use Architectural Significance and Construction History Historic and Existing Site Plan Proposed Use	7 9 11
3.0	Condition Assessment Good/Fair/Poor Rating System Site 1911 Brick Bungalow 1911 Two-Story Garage 1911 Milk and Ice House 1911 Pump House 1911 Pump House 1911 Wood Stave Silo 1940s circa Concrete Silo 1940s circa Quonset Structure	12 13 17 71 105 152 182 201 220
4.0	Analysis and Compliance Hazardous Materials Information Materials Analysis Zoning Code Compliance Building Code Compliance Accessibility Compliance	246 247 247 247 247
5.0	Preservation Plan Prioritized Work Phasing Plan Opinion of Probable Cost	248 249 250 251
6.0	Historic Photos	266
7.0	Bibliography	274
8.0	Appendix Code, Loading and Materials Information Preservation briefs Glossary of Terms	275

This project is being funded, in part, by a grant from the Colorado Historical Society/State Historical Fund #2007-M2-011

Note: Product names contained herein do not indicate endorsement by the Colorado Historical Society.

Project Directory / Participants

- OWNER: City of Westminster Vicky Bunsen, Programs Coordinator City of Westminster, Department of Community Development 4800 West 92nd Avenue Westminster, Colorado 80031 Voice: 303 430 2400 x2111 Fax: 303.426.5857 Cell: 303.501.0924 vbunsen@ci.westminster.co.us
- ARCHITECT: Andrews & Anderson Architects, PC Nanon Adair Anderson, AIA, Principal Christy Fockler, Historic Preservation Specialist 715 Fourteenth Street Golden, CO 80401 Phone: 303.278.4378 Fax: 303.278.0521 Email: nananderson@andarch.com
- STRUCTURAL JVA, Inc. ENGINEER: Bob Hunnes, President P.E. LEED A.P. Ian Glaser, Design Engineer 1319 Spruce Street Boulder, CO 80302 Phone: 303.444.1951 Fax: 303.444.1957 Email: <u>bhunnes@jvajva.com</u>
- COLORADO State Historical Fund HISTORICAL 225 E. 16th Ave #950 SOCIETY: Denver, CO 80203 Email: <u>gheda.gayou@chs.state.co.us</u> Gheda Gayou, Historic Preservation Specialist Phone: 303.866.2835 Fax: 303.866.2041

1.1 Research Background / Participants

The purpose of this assessment was to evaluate the existing conditions of seven of the eleven extant buildings remaining at the Shoenberg Farm complex. The City of Westminister hired the design team of Andrews & Anderson Architects, PC of Golden in the spring of 2007 to perform a Historic Structures Assessment on seven structures: the 1911 Brick Bungalow, the 1911 Two-Story Garage, the 1911 Brick Milk and Ice House, the 1911 Brick Pump House, the 1911 Wooden Stave Silo, the 1950s Concrete Silo and the 1940s Quonset structure. All are located on the remaining 3.5 acres of the Shoenberg Farm complex at West 73rd Avenue and Sheridan Boulevard in Westminster, Colorado.

The complex has been largely neglected in recent years, since operations ceased in 2000. The original 800-acre site has been sub-divided for current and future development enterprises, surrounding the remaining farm structures. As a result, neither the current property owner nor the developer wishes to rehabilitate or maintain the farm structures. In the fall of 2006, the City of Westminster, the property owner, and the developer entered into a two-year option agreement that allows City staff the opportunity to develop plausible preservation, rehabilitation and adaptive re-use solutions and initiatives for the Farm while retaining the historical integrity of Shoenberg Farm. The City of Westminster has been working on finding potential adaptive re-use ideas for the structures. Some of these include a small office or art studio for the Bungalow and Garage; year-round farmer's market and performance venue for the Quonset; and arts-related business or a small museum space showcasing the history of Shoenberg Farms in the remaining structures.

Project participants

Approximately six site visits were completed by Andrews & Anderson Architects, PC in the spring and summer of 2007. The existing conditions of seven structures were documented and photographed. One subsequent visit to the Penrose Library at the University of Denver resulted in historical research information and historic photographs of the farm operations.

Structural engineers, Bob Hunnes and Ian Glaser of JVA, Inc., visited the site in the spring and summer of 2007 to assess the structural conditions of the seven structures.

Evaluation of mechanical and electrical systems was performed by Nan Anderson of Andrews & Anderson Architects, PC with input from Dave Olson of Integrated Mechanical Systems and Jeff Nielsen of JCN Engineering (electrical).

1.2 Vicinity Map

The Shoenberg Farm Complex is located at 7255 N. Sheridan in Westminster, Colorado. Access to the site is on the west side of Sheridan. The vicinity and location maps are shown below:



Vicinity Map



Location Map

.

1.2 Legal Description

Historic Shoenberg Farm Legal Description August 9, 2007

Historic Shoenberg Farm is not subdivided from the larger parcel. It may be informally described as approximately 3.5 acres at the southwest corner of Sheridan Boulevard and the western extension of the West 73rd Avenue alignment, Jefferson County, City of Westminster, which is a portion of the attached legal description, which consists in total of 26.888 acres.

OFFICIAL DEVELOPME SHOENBERG FARM COMMEI CITY OF WESTMINSTER, COUNTY OF JEFFE SHEET 1 OF 2 THENCE NORTHERLY DEPARTING SAID NORTHERLY RIGHT-OF-WAY LINE ALONG SAID EASTERLY PARCEL LINE AND NON-TANGENT TO SAID CURVE , NORTH 00°10'38" WEST, 1350.26 FEET, TO THE NORTHERLY LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 36; THENCE EASTERLY ALONG SAID NORTHERLY LINE, NORTH 89"41'00" EAST, 905.01 FEET, TO THE WESTERLY RIGHT-OF-WAY LINE OF STATE HIGHWAY 95, AKA SHERIDAN BOULEVARD, RECORDED IN RECEPTION NUMBER 264099 IN THE OFFICE OF THE CLERK AND RECORDER FOR JEFFERSON COUNTY: THENCE SOUTHERLY ALONG SAID WESTERLY RIGHT-OF-WAY LINE, SOUTH 00°10'03" EAST 1222.91 FEET, TO THE NORTHEASTERLY CORNER OF A PARCEL RECORDED IN RECEPTION NUMBER 88062066 IN THE OFFICE OF THE CLERK AND RECORDER FOR JEFFERSON COUNTY; THENCE WESTERLY AND SOUTHWESTERLY ALONG THE NORTHWESTERLY BOUNDARY LINE OF SAID PARCEL THE FOLLOWING FOUR (4) COURSES: 1. NORTH 89°50'25" WEST 4.00 FEET; 2.SOUTH 10°45'50" WEST 30.38 FEET; 3.SOUTH 41°18'11" WEST 32.67 FEET; 4.SOUTH 70°55'53" WEST 41.70 FEET, TO SAID NORTHERLY RIGHT-OF-WAY LINE OF WEST 72ND AVENUE AND ALSO BEING THE POINT OF BEGINNING. CONTAINING 26.888 ACRES (1,171,230 SQ. FT.), MORE OR LESS. LEGAL DESCRIPTION: A PARCEL OF LAND WITHIN THE SOUTHEAST QUARTER OF SECTION 36, TOWNSHIP 2 SOUTH, RANGE 69 WEST AND THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 3 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF JEFFERSON, STATE OF COLORADO, SAID PARCEL BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 36, WHENCE THE EAST QUARTER CORNER OF SAID SECTION 36 BEARS NORTH 00°10'37" WEST AND ALL BEARINGS ARE MADE AS A REFERENCE HEREON: THENCE WESTERLY ALONG THE SOUTHERLY SECTION LINE OF SAID SECTION 36, SOUTH 89°36'05" WEST, 115.95 FEET; THENCE NORTHERLY DEPARTING SAID SOUTHERLY SECTION LINE, NORTH 00°23'55" WEST, 28.00 FEET TO THE NORTHERLY RIGHT-OF-WAY LINE OF WEST 72ND AVENUE AS RECORDED IN RECEPTION NUMBER 591387 IN THE OFFICE OF THE CLERK AND RECORDER FOR JEFFERSON COUNTY, AND ALSO BEING THE POINT OF BEGINNING; THENCE WESTERLY ALONG SAID NORTHERLY RIGHT-OF-WAY LINE THE FOLLOWING TWO (2) COURSES 1. SOUTH 89"36'05" WEST 605.73 FEET, TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 475.00 FEET;

2.SOU THWESTERLY 238.32 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 28'44'47", TO THE EASTERLY LINE OF A PARCEL RECORDED IN RECEPTION NUMBER F2075103 IN THE OFFICE OF THE CLERK AND RECORDER FOR JEFFERSON COUNTY;

2.1 Architectural Significance and Construction History

The Shoenberg Farm complex is located at West 73rd Avenue and Sheridan Boulevard in Westminster, Colorado. The establishment of Shoenberg Farm played an important role in the growth of the National Jewish Hospital in Colorado. The farm complex is illustrative of early 20th century poultry and dairy farms constructed in northern Jefferson County.

In the early 20th century, Colorado was becoming known for the state's fresh air and sunshine qualities; attributes associated with the recovery from tuberculosis in the late 1800s. Sanatoriums were established in Colorado and tuberculosis patients traveled across the nation in the hopes that the state's amenities would cure them. One of the first sanatoriums established in Colorado for the treatment of tuberculosis was the National Jewish Hospital for Consumptives, opened in 1900. The center promoted a routine of healthy living which included fresh eggs, milk and dairy products.²

Louis D. Shoenberg, a native New Yorker, moved to Colorado in the 1870s and ran a clothing business in Leadville, Colorado.³ After the death of his son Dudley from tuberculosis, Louis, an active philanthropist, purchased 70 acres of land in Jefferson County, Colorado in 1911 for the sole purpose of the establishment of a local farm for use by National Jewish Hospital.

Soon after the purchase of land, Shoenberg hired local construction architect George L. Bettcher to design the complex which consisted of a brick bungalow for the Superintendent's house, a twostory garage, brick milk and ice house, a brick power and pump house, a wood silo and a large barn. The farm complex, originally known as the Dudley C. Shoenberg Memorial Farm was successful in making the hospital self-sustaining. Dairy products and poultry produced on the farm totaled over 65 gallons of milk and cream and 30 dozen eggs a day.

In 1912, Louis Shoenberg donated all of the structures to Denver's National Jewish Hospital for Consumptives (NJH). National Jewish ran the farm until the early 1920s when it became too expensive to maintain. In 1921, NJH sold the property to Jacob Tepper, the son of Polish immigrants, who studied agriculture at Cornell University before moving to Denver in 1905. Tepper, his wife and four children owned and operated a small farm near the campus of the Jewish Consumptives Relief Society near West Colfax and Pierce Streets in current day City of Lakewood. After he and his wife divorced in 1920, and Tepper purchased the acreage and buildings at Shoenberg, he and his four children moved into the Superintendent's house (1911 Brick Bungalow) and began raising chickens and expanding the farm complex.⁴

Tepper expanded the complex to an 800-acre egg and dairy farm which continued to provide products to NJH as well as surplus to local grocers, restaurants and institutions in the area. Several buildings were added to the site, including poultry houses, cow sheds, and additional support buildings.⁴

In the 1940s, Jacob's son Edward began to manage the operation of the farm. The complex had grown from its original 70 acres to the approximately 747-acre wholesale dairy farm and was reportedly the "largest dairy and poultry operation west of the Mississippi River." ⁴ At that time, the complex included nine heated hen houses, one brooder house, two workers' houses, a 90 ft. high mill elevator, a Quonset-style hut, five silos, cattle barns, milk house and auxiliary out buildings. In 1941 Edward began a new venture: ice cream. The milk processing plant was enlarged and The Dolly Madison Ice Cream business was started which operated throughout the Denver Metro area. This function of the farm operated from 1941 – 2000.¹ Several buildings on the complex were destroyed by fire in the mid-1990s and when the farm operation ceased in 2000, the remainder of the auxiliary buildings were demolished. Currently eleven buildings remain on the site.

It is determined that the Period of Significance for the site is 1911-1921, the years which Shoenberg and National Jewish Hospital operated the facility, and 1921-2000, in which the Tepper Family owned and operated the complex. All of the extant structures that remain at the complex are considered to be contributing elements to the site as a whole, and fall within the Period of Significance. This assessment examines seven of the extant structures related to the farm complex. The remaining structures, which include the 1911 Brick Dairy Barn and the circa 1940s-1950s structures associated with the Processing Plant and Truck Stop, are not part of this assessment. These structures are currently being considered for adaptive re-use opportunities, and therefore specifically excluded from this historic structures assessment.

Building and Site Construction Sequence

- 1911 70 acres purchased by Louis D. Shoenberg. Architect George L. Bettcher hired to design farm complex.
- 1911 Brick Bungalow (Superintendent's House)
 - Date unknown: removal of wood stairs and door at west elevation. Installation of window and brick infill at original door location.
 - Circa 1990 original porch at west elevation re-constructed with modern materials after collapse. Eight foot opening at north elevation of rear porch enclosed with board infill.
- 1911 Two-story garage
- 1911 Brick Milk and Ice House. Additions to the north and west elevations mid-1940s by Jacob Tepper, second owner.
- 1911 Brick Pump House (wellhouse)
- 1911 Wooden Stave Silo
- 1912 Louis D. Shoenberg donates land and farm buildings to National Jewish Hospital for Consumptives
- 1921 Farm sold by National Jewish to Jacob Tepper. Additional farm structures added to the site (chicken houses, cow sheds, mill elevator, feed silos, storage silos)
- 1941-1943 Quonset-style structure
- 1940s circa Concrete Silo

¹ www.ci.westminster.co.us. <u>Shoenberg Farm: Construction History</u>

- ² www.ci.westminser.co.us. <u>History of Shoenberg Farm and National Jewish Hospital</u>
- ³ www.ci.westminster.co.us. <u>Commodore Louis D. Shoenberg (Beaumont)</u>
- ⁴ www.ci.westminster.co.us. Shoenberg Farm: Tepper History

2.2 Site Plan



Site Plan of Shoenberg Farm Complex advertisement circa 1950



Developer Proposed Redevelopment Site Plan of Shoenberg Farm Complex 2007

←

SHOENBERG FARM 2.3 Proposed Use

It is the City's intent to rehabilitate and adaptively re-use the remaining structures at the Shoenberg Farm complex. Although there is currently no tenant identified, the City of Westminster, the Owner, and the developer are working with professional consultants to assess the structures for possible future adaptive re-use ventures. An agreement was reached in January of 2007 in which the Owner and the developer agreed not to demolish the Shoenberg Farm complex buildings for two years, until January 2009.

In entering into this agreement, the City has shown an interest in maintaining the historic integrity of the site. This assessment is the first step in developing a detailed analysis of the site and the structures by identifying the needs and potential budgets for rehabilitation. Once complete, the City will use the report and budget items to further coordinate potential buyers and options for rehabilitation. By preserving the farm complex and rehabilitating the structures, the City will retain the history, significance and heritage of Shoenberg Farm.

The Shoenberg Farm is historically significant not only to the City of Westminster, but to the Denver community as a whole. Its direct association with the National Jewish Hospital in the early 20th Century played an important role in the treatment of tubercular patients as part of the 20th century sanatorium movement. The farm was a direct supplier of fresh milk, eggs and meat to National Jewish Hospital as part of the regimen of nutritious foods believed to be essential in the cure of tuberculosis. What remains of Shoenberg Farm is believed to be the last intact farm in the Denver area that is directly associated with the 20th Century sanatorium movement and National Jewish Hospital.

3.0 Condition Assessments

Existing Condition Rating System

The following rating system is used throughout this report to evaluate various elements of each building:

An element is evaluated as **<u>Good</u>** when:

- The element is intact, structurally sound, and performing its intended purpose.
- There are few or no cosmetic imperfections.
- The element needs no repair and only minor or routine maintenance.

An element is evaluated as **Fair** when:

- There are early signs of wear, failure, or deterioration, though the element is structurally sound and performing its intended purpose.
- There is failure of a sub-component of the element.
- Replacement of up to 25% of the element or replacement of a defective sub-component is required.

An element is evaluated as **Poor** when:

- The element is no longer performing its intended purpose.
- The element is missing.
- Deterioration or damage affects more than 25% of the element and cannot be adjusted or repaired.
- The element shows signs of imminent failure or breakdown.
- The element required major repair or replacement.

No known archaeological resources were observed on the site, however if any ground excavations occur, an archaeologist should be contacted.

DESCRIPTION:	The Shoenberg Farm complex is located at West 73 nd Avenue and Sheridan Boulevard in Westminster, Colorado. The site is the original location for the Dudley C. Shoenberg Memorial Farm, donated to National Jewish Hospital by Louis D. Shoenberg in 1912. The original site was 70 acres and was expanded to approximately 767 acres after Jacob Tepper purchased the property in 1921. The site operated continuously as a dairy and egg-producing farm until 2000 when operations ceased.
	The current site is approximately 3.5 acres at the southwest corner of Sheridan Boulevard and West 73 rd Avenue (if extended to the west). The original entrance to the farm was off Sheridan Boulevard on the eastern edge of the site. The current entrance is now off West 72 nd Avenue due to City of Westminster road improvements.
	The existing site configuration has been altered due to recent development, demolition of structures associated with the farm operations, as well as neglect. The site is divided into three areas defined by the location of the remaining structures; the area defined by the structures built in 1911 which includes the Brick Bungalow, Two-Story Garage, Brick Milk and Ice House, and Brick Pump House; the Silo area, which includes the Concrete Stave Silo and the Wooden Stave Silo; and the area surrounding the Quonset structure. Several modern buildings associated with the Dolly Madison Ice Cream Company are located south of the historic structures. The overall site is generally flat with moderate rises to the north and west edges of the site.
	The site area containing the 1911 structures is generally flat with slight rises to the north and west of the structures. Recent activity by the current leaseholder has disturbed the site vegetation. Remaining vegetation is sparse and haphazard with shrubbery and volunteer grasses surrounding all of the structures, mainly at the northern boundary. Grasses are interspersed with gravel from the current tenant's landscape operations with a large gravel mound at the northwest area of the Brick Pump House, obstructing access. Small trees are visible in multiple locations between the structures, disturbing foundations and masonry elements of the structures, specifically the Milk and Ice House and the Brick Pump House. Sidewalk access is limited to the Brick Bungalow and the Brick Milk and Ice House areas. In general, the sidewalks are cracked, spalling and deteriorating.
	The areas containing the two silos and the Quonset structure

both consist of low, dense and random vegetation, mostly to the north of the structures, with substantial growth of grasses at the southwest edge of the Quonset structure. There is a large concrete area between the silos and the Quonset, used by the current tenant for equipment storage.

	Parking and access roads at the site are not defined. The original entrance to the farm was off of Sheridan Boulevard. Four decorative masonry piers defined the main entrance and roadway. This entrance has since been demolished due to recent street improvements along Sheridan. An original dirt roadway is still evident to the south of the Bungalow, which allows access to the 'interior' sections of the farm. A graded dirt parking area is located at the south edge of the 1911 brick structures, but parking is random as space allows. The graded area follows the original road to the interior sections of the farm complex and connects the Bungalow, Garage and Milk and Ice House with the barn and silo structures to the west. Several site areas appear to have negative slope where ground water and water from the downspouts are collecting against the structures.
EVALUATION:	In general, the site at the Shoenberg Farm complex is in poor condition. The unkempt vegetation has been allowed to overgrow throughout the site and is encroaching on the structures and foundations with volunteer grasses and shrubbery, specifically on the northern edges of the site.
RECOMMENDATED TREATMENT:	Trim the overgrown grasses and shrubbery surrounding all the existing structures at the site. Remove the volunteer groves of trees adjacent to the structures so as to provide clear access paths and diminish damage to the foundations.
	Repair the concrete sidewalks and driveway as necessary for possible future tenant use. Slope the sidewalks away from the

structures to allow for proper water drainage.



Overgrown grasses at northern boundary of 1911 Brick Bungalow



Parking area south of the 1911 Brick Bungalow



Volunteer tree between 1911 Brick Milk and Ice House and 1911 Brick Pump House



View of graded dirt parking area



Site looking east at gravel parking and roadway



Site north of Pump House and Brick Milk and Ice House showing overgrown grasses and volunteer trees



Site looking northwest. Concrete parking area is visible



Site looking north toward Silos

1911 Brick Bungalow



Overgrown volunteer grasses and trees at east entrance of 1911 Brick Bungalow

CATEGORY:

DESCRIPTION:

3.1 Site

The site at the 1911 Brick Bungalow is flat with a moderate rise to the west. The vegetation is haphazard with only one tree, possibly original, at the southwest corner of the structure. Grasses and shrubbery are all volunteer with the possible exception of the climbing roses at the southeast corner of the main porch.

A three-foot-wide concrete sidewalk wraps the south, east and west sides of the Brick Bungalow. From the south elevation, the sidewalk turns north to the main entry access of the porch and continues 15 feet to the north of the structure to its termination point. On the west side, the sidewalk turns north to a concrete patio area which terminates at the rear porch addition.

A graded dirt parking area is located within 12 feet of the structure with a gravel yard to the west, which connects the Two-Story Garage and the Brick Milk and Ice House.

At the northeast corner of the Bungalow an area of negative slope has been created by water run-off from the existing downspout.

EVALUATION: In general, the site at the 1911 Brick Bungalow is in poor condition. The grasses and shrubbery have been allowed to overgrow, specifically at the northern edge of the structure. The large tree has a significant number of

1911 Brick Bungalow

dead branches and limbs, inhibiting proper roof drainage at the south elevation of the structure. The concrete sidewalk is spalling and cracked in multiple locations. The west concrete porch has significant cracking and spalling. Vegetation has been allowed to grow in the existing cracks, further expanding the deterioration of the sidewalk.

There is inadequate slope away from the structure to allow proper water drainage, specifically at the northeast corner downspout.

RECOMMENDED TREATMENT:

Trim the overgrown grasses and shrubbery at the north and east elevations of the Bungalow. Remove the dead branches from the large tree at southwest corner.

Replace the concrete sidewalk. Slope the sidewalks away from the structures to allow for proper water drainage.

Re-slope the dirt graded area at the northeast corner of the porch and Bungalow, just below the existing downspout to allow water to drain away from the porch and foundation



Three-foot-wide concrete sidewalk and overgrown grasses at south elevation of 1911 Brick Bungalow.



Old growth tree with dead branches and concrete sidewalk at south elevation of 1911 Brick Bungalow



Climbing roses at southeast porch corner of 1911 Brick Bungalow



Negative slope at downspouts on northeast corner of 1911 Brick Bungalow



Large tree at southwest corner of 1911 Brick Bungalow.



Termination of concrete sidewalk at west elevation of 1911 Brick Bungalow



Southeast corner of Bungalow basement

CATEGORY:	3.2 Foundation
DESCRIPTION:	The Brick Bungalow's three wythe brick walls extend below grade to enclose the basement space. Approximately 75 percent of the 7' high basement wall height is below grade and retains earth. On the exterior just above grade, concrete parging is visible. The foundation elements beneath the brick retaining walls are not visible, but it is assumed that concrete strip footings exist.
	The basement floor is a slab-on-grade.
	The east side of the porch framing is supported by 4 brick pilasters which are assumed to be founded on spread footings.
EVALUATION:	The brick retaining walls are in fair condition. Efflorescence is abundant on the interior of the walls from the slab to the grade elevation. In most cases, the brick and mortar do not appear to have been compromised by the efflorescence, but its occurrence indicates the exterior of the wall is being exposed to moisture and thus the lack of an adequate waterproofing system. In some locations efflorescence has caused spalling and deterioration of the clay bricks on the interior faces.

1911 Brick Bungalow

Mortar is in good condition except in the northeast corner of the basement in the lower brick courses where the mortar is degraded badly. It is assumed that this worsened state of deterioration is the result of the boiler located in this area, its historic use and the associated high levels of moisture. As both the current use and proposed adaptive reuse of the building do not include operation of the boiler, the damage is no longer ongoing.

The south, east, and west walls are all visibly bowed inward approximately 1/2" to 1". The maximum deflection occurs at mid-height and mid-length of the walls, clearly the result of retaining soil. Since no distress appears to be associated with the inward deflection of the basement walls, it is assumed that the strength of the walls has been only slightly compromised. Limited accessibility prevented assessment of the north wall deflection.

Stair step cracking is visible in the brick walls above grade. These cracks are likely a result of foundation movement.

Overall, the slab-on-grade is in fair condition. Much of the slab-on-grade is covered in dirt, but in cleaner areas large cracks were visible. There is also a 3 foot diameter hole near the partition wall doors. The three wood partition wall doors at the bottom of the stairs are all stuck partially open: the bottom of the doors in contact with the slab. Also, a gap is visible between the top of the wood partition wall south of the stair and the ceiling. Finally the stairs are noticeably out of level. It is clear that the slab is moving relative to the building's walls, particularly on the western portion of the building. Consequently, the interior walls founded on the slab-ongrade are moving along with the slab.

The four brick pilasters supporting the porch are in poor condition. The pilasters have twisted and are out of plumb due to movement of the underlying foundation elements. The pilasters' mortar and brick deterioration can be characterized as severe.

RECOMMENDED TREATMENT: The foundation should be underpinned to prevent further movement.

Interior bearing walls should be isolated from the slabon-grade by saw-cutting the existing slab parallel and bordering the bearing walls. Portions of the existing slab directly beneath these walls will need to be removed and infilled after the installation of new footings or an underpinning system.

1911 Brick Bungalow

After the perimeter foundation system is stabilized, portions of the slab that have settled relative to the perimeter walls should be leveled via pressure grouting and slab cracks should be filled with a suitable cementitious grout.

Some mortar re-pointing and brick replacement is recommended in localized areas where deterioration is severe.

No treatment is recommended for the deflected shape of the basement walls since their capacity is not severely diminished.

A perimeter drain should be installed to prevent hydrostatic pressure build-up on the basement walls. The walls should be waterproofed with an appropriate membrane waterproofing system over the exterior face to prevent water infiltration and degradation of the walls. Some mortar and brick replacement may be necessary if deterioration of the exterior wythe is discovered during excavation.

The four brick porch pilasters should be removed and rebuilt on new concrete caissons or on stabilized (underpinned) existing footings.



Concrete parging along south elevation of Bungalow.



Stair step cracking along north elevation of Bungalow.



Crack in wall on south side of basement stairs



Twisted and deteriorated porch pilasters

1911 Brick Bungalow



Bungalow first floor framing from below

CATEGORY:

DESCRIPTION:

3.3 Building Structural Systems

The Brick Bungalow's above-grade construction consists of two-wythe, brick bearing walls, wood framed interior walls, and wood floor and roof framing.

The first floor framing on the east half of the Bungalow is visible and is typically 2x10s at 16" spanning in the north-south direction from the exterior brick wall to an interior bearing line. The floor framing on the west half of the building is not visible. The interior line of support is a wood stud wall at the west, a two-wythe brick wall in the middle, and wood post-and-beam construction at the east. The beam is a dropped 6x8 supported on two ends by the walls and in two intermediate locations by 6x6 posts.

The sloped roof members intersect with the exterior bearing wall just above the second floor elevation. Portions of the second floor and roof framing are partially visible in the attic space along the north and south sides of the second floor.

The second floor joists are 2x8s at 16" pocketed into the exterior brick walls on one end. The other ends of the joists are not visible but are assumed to bear on a first floor wood-framed wall. In addition to floor loading, the floor joists support cripple walls that divide the attic from

Shoenberg Farm	
1911 Brick Bungalow	
	the second floor habitable space. The cripple walls extend from the second floor to the roof rafters and are constructed of 2x4 studs at 16" on center.
	The roof rafters are 2x4s at 16" spanning in the north- south direction. The low end of the sloped roof rafters are supported by a double wood plate atop the exterior brick wall. The rafters are provided with an intermediate support by the east-west cripple walls. The high ends of the rafters are not visible but a ridge board along with collar ties is assumed to exist.
	The porch floor framing is north-south continuous 2x8s at 24" supported in four locations by east-west 4x8 dropped beams. The beams are supported in pockets along the Bungalow's east wall and by 4 brick pilasters along the east side of the porch.
	The porch roof framing members are 2x6s at approximately 24" supported by a ledger on the Bungalow's east wall and by a 6x10 header beam spanning between two brick columns along the east side of the porch roof.
EVALUATION:	The first floor framing is in fair condition. Distress is evident in the first floor framing. In some locations the first floor deflects noticeably under a person's weight and is out of level.
	On the western portion of the building an approximately 1/2" high north-south running step is visible in the first floor finish, possibly indicating a compromised support condition for the floor joists below. As mentioned in the 'Foundation' section, the interior wood walls on the western third of the building have displaced along with the basement slab. The movement of the support walls is translating to the first floor joists.
	The east-west running brick bearing wall located in the middle section of the building appears to be in good condition.
	The 6x8 supporting the first floor joists on the eastern third of the building is visibly distressed. One of the 6x6 posts has lost engagement with both the beam above and the foundation below and is thus ineffective. The bottom of the post has rotted where in contact with the slab. As a result the 6x8 beam has deflected and developed horizontal cracks near the original location of the post.

The visible first floor joists on the east half of the building have a calculated live load capacity of 50 psf exceeding

1911 Brick Bungalow	
	the Code-required loading for a residential occupancy of 40 psf.
	The second floor framing is in fair condition. No distress is visible in the framing members. However, because the second floor joists also support roof loads via the cripple walls, the calculated floor live load capacity is well below Code-required loading for residential occupancy.
	The roof framing is in fair condition. No distress is visible in the framing members. Because much of the framing is not visible only preliminary calculations were performed. Preliminary calculations indicate that the roof framing snow load capacity is 25 psf, which is less than the design snow load of 30 psf required by Code.
	The porch floor framing is in fair condition. The 2x8 joist are adequate to support Code-required design live loads but the dropped 4x8 beams are not. Distress and displacement is evident in the framing and is a result of the pilaster movement. Some of the joists are no longer in direct contact with the beams. The beams have displaced relative to their original position as their east ends have moved along with the brick pilasters.
	The porch roof framing is in fair condition. The 2x6 roof rafters are adequate to support Code-required design snow loads. The 6x10 header beam is visibly deflected downward several inches and is undersized to support design snow loads.
RECOMMENDED TREATMENT:	The 6x8 floor beam should have its support reestablished by installing a new 6x6 post in place of the deteriorated existing post. Because of the horizontal cracks in the 6x8 beam, and consequent loss of strength, the beam will require a reinforcing element such as a wood sister. A small portion of the slab will likely need to be removed to allow installation of a new footing under the post. The adjacent post should be carefully inspected at its base to see if rotting has occurred and to see if a foundation element exists other than the slab. A new footing will likely be required under this post.

The floor joists and the wood bearing wall on the west half of the building will need to be exposed so that their condition can be assessed and their capacities calculated. Given the current condition and performance of the first floor, some reinforcing, repair, or replacement of these elements should be expected.

1911 Brick Bungalow

The second floor joists will require reinforcing in order to bring the second floor into conformance with Codeprescribed loads for occupied space.

The roof framing will need to be investigated further to determine its condition and capacity. Based on preliminary calculations some selective reinforcing should be expected.

After the porch's brick pilasters have been stabilized and rebuilt, as mentioned in the 'Foundation' section, the 4x8 dropped beams should be reinforced (sistered) to bring them into conformance with Code-prescribed design loads. The beams should also be repositioned to fully bear on the pilasters. The 2x8 joists will need to be repositioned or shimmed where not in direct contact with the dropped support beams.

The porch's roof header beam should be shored to a level and un-deflected orientation and then sistered.



Post-and-beam construction on east side of Bungalow. Note: near post is not flush with bottom of wood beam



Bungalow north attic. Note: exterior brick bearing wall, sloped roof rafters, second floor joists, and cripple wall.



Roof rafter connection to wood plate atop exterior wall

1911 Brick Bungalow



1911 Brick Bungalow. Exterior masonry wall system.

CATEGORY:

DESCRIPTION:

3.4 Envelope - Exterior Walls

The one-and-a-half story Brick Bungalow structure is approximately 1,092 square feet. The structure is constructed of red brick masonry generally in a running bond pattern with an occasional header located in every course every eighth course. It is square in plan with two porch appendages; one on the east, one on the west elevation. The residence is characteristic of the bungalow style with its masonry construction, lowpitched gabled roofline with overhanging eaves and exposed rafter tails; a wide porch, supported by masonry columns and simple lines including decorative beams or braces at the gabled roofline.

Historic photographs indicate that decorative braces or ornamented "stickwork" were at one time visible at the gabled roof ends. This detail imitated structural elements and gives the impression of exposed wood framing elements. Originally, the decorative wood members were visible, between stucco infill sections of the gable. Two decorative vents and two windows are located at each ridge line of the gabled ends.

Windows are located on all elevations of the bungalow. The window pattern varies throughout the structure. According to historic photographs, the typical window was a 4-over-1 double hung window, specifically on the

1911 Brick Bungalow

north and south elevations at the first floor, originally with cast stone sills. Windows on the second floor level were 6-over-1 double hung windows. Windows on the north elevation has been infilled with glass block and the cast stone sills have been removed (see Section 3.6).

On the north elevation, an eight-foot opening is now enclosed with vertical wood siding at the northwest corner. A brick header course remains, and indicates this opening was a possible entrance location of the original porch located at the west elevation.

Historic photographs indicate that there was an elevated entrance door accessed via wooden stairs on the west elevation. Currently a window resides in this location with a brick masonry sill, unlike the historic cast stone window sills. There is evidence of patching and repair to the brick masonry, signifying the removal of the stairs and doorway (see Section 6.0 Historic Photos).

The main entry porch, located on the east elevation of the residence, is supported by four brick masonry piers. Two piers support the porch roof and two support the porch floor. The front porch has a shed roof overhanging the wood porch, railing and stairs (see Section 3.4d).

The rear (west) porch originally was open, similar to the main east entrance porch. Wood posts supported a hipped roofline with lattice fencing at the lower elevations. It was replaced circa 1990 when the original collapsed. The current porch at the west elevation is constructed of modern materials, while retaining the initial configuration of the original porch (see Section 3.4d). A 1-over-1 double hung window is located inside the porch remodel on the west elevation of the structure, suggesting the original exterior porch was a possible addition at some time.

The Brick Bungalow is in fair condition with minor stairstep cracking on the north and south exterior walls. Eroded mortar joints are located on all elevations particularly at downspout locations.

> Evidence of brick infill is apparent on the west elevation below the aluminum window where originally a door and wood stair were located. A serious stair stepping crack exists on the north above the vertical wood siding infill. A previous attempt at brick repair with cementitious mortar is evident.

> Non-historic mortar is evident on the north elevation at the glass block window locations where the original cast stone sills have been removed.

EVALUATION:

1911 Brick Bungalow The gable ends are infilled by original painted stucco but the decorative "stickwork" elements are painted making them indistinguishable from the stucco, consequently hiding the "stickwork". It is unknown if the "stickwork" was painted or stained. **RECOMMENDED TREATMENT:** Remove non-historic cementitious mortar at patched locations and restore with a historic mortar to match original. Repair stair-step cracking throughout the structure, specifically at the north and south elevations and repoint eroded mortar at all noticeable locations with historic mortar to match original. It is recommended a paint analysis be completed to determine the original finish of the decorative "stickwork" at the gable ends. Once determined, the non-historic paint should be removed at the "stickwork" trim areas on the gabled ends. Refinish to match per historic

No historic photo documentation exists to determine the original construction at the northwest corner of the Bungalow where the vertical wood infill is currently. It is recommended that further research be done to determine the original construction and configuration.

photographs. Patch and repair stucco sections between

the decorative trim, paint to match original.



1911 Brick Bungalow. North elevation showing wood infill at northwest corner and west porch reconstruction. Non-historic glass block window infill.



1911 Brick Bungalow. South elevation.



East elevation of 1911 Brick Bungalow



West elevation of 1911 Brick Bungalow



1911 Brick Bungalow. North elevation showing wood infill



1911 Brick Bungalow. Note large stair-stepping crack above wood infill at north elevation.



1911 Brick Bungalow. Brick infill at original door location on west elevation. Note brick sill element.



1911 Brick Bungalow. Running bond masonry construction.



1911 Brick Bungalow. Mortar patch with non-historic cementitious mortar

1911 Brick Bungalow



East elevation porch appendage at 1911 Brick Bungalow

CATEGORY:

DESCRIPTION:

3.4d Exterior Appendages – Porch, Stoop, Etc.

There are two porch appendages attached to the bungalow structure, one located on the east and one on the west elevation.

Original to the house, the east porch has two brick piers that frame the porch supporting a framed shed roof. The brick piers measure $2^{2}-2^{2} \times 1^{2}-2^{2}$. Two shorter brick piers support the wood framing of the porch floor at the step location.

The shed roof is comprised of asphalt shingles over painted bead board sheathing, supported by 2"x6" rafters at two feet on center. A built-up 8"x10" beam supports the rafters on the leading edge of the porch. The eave ends of rafters are shaped to support a halfround metal gutter. All framing is exposed.

The porch is surrounded on all three sides with a 2'-8" high painted wood railing with 1"x4" painted wood baluster pickets. According to historic photographs, the railing and baluster configuration is original to the structure. The stair railing and post are not original, according to historic photographs. It is unknown when they were added.

Shoenberg Farm	
1911 Brick Bungalow	
	The floor decking is 1x2-1/4" tongue-and-groove wood decking overlaid with carpet. Access to the porch is via three 2x6 wood stairs with a 2x4 wood railing on two sides of the stairs. Painted wood lattice 'skirt' surrounds the porch on three sides, and encloses the open space underneath porch. Based on historic photographs, it is believed to be original to the porch construction.
EVALUATION:	The east porch is in fair to poor condition. Shingles on the shed roof are in fair condition, but beginning to deteriorate. The gutter at the shed roof is rusted and loose. Paint on the wood porch railing is deteriorating and the wood railing pickets are loose and rotting in some locations. The underside of the porch roof is in fair condition. The wood built-up beam supports, rafters, bead board sheathing and eave ends are in fair condition with areas of paint deterioration.
	Trapped moisture under the carpet layer at the wood deck is hastening the deterioration of the floor deck. The wood stairs leading to the deck are loose and rotting.
	The two main brick piers are in fair condition, with minor deterioration of mortar joints. Several bricks are missing, with some locations in need of tuckpointing. The two smaller support piers are rotating, dislodging the brick directly supporting the wood floor deck of the porch.
	The wood lattice skirt is in fair to poor condition. It remains intact, although areas of paint deterioration and flaking are evident. Saplings have grown through portions of the porch skirt.
RECOMMENDED TREATMENT:	Scrape, sand and remove flaking paint at east porch railing, then repaint. Epoxy-stabilize all salvageable wood pickets at the east porch and replicate missing and rotted pickets to match original. Remove non-historic carpet at the east porch and repair or replace the original wood deck below. Evaluate wood deck and re-attach any loose floor boards. The wood steps should be removed and re-built with an in-kind material in shape, size and configuration to match original.
	At the time the roof is replaced, the wood elements of the roof: beam supports, rafters, bead board sheathing and eave ends, should be removed, scraped, sanded, painted, and reinstalled in their original locations.
	Re-point the brick masonry piers supporting the shed roof with a mortar matching the original. Rebuild the two smaller brick masonry piers that support the porch floor and provide two new concrete pad footings at grade.
The lattice skirt should be removed and restored since it is original to the porch construction. Once removed, it should be scraped, lightly sanded and repainted to match original.



1911 Brick Bungalow. East porch masonry pier with deteriorating mortar joints



1911 Brick Bungalow. Brick piers supporting porch floor deck



1911 Brick Bungalow. East porch masonry piers supporting the shed roof. Note: mortar deterioration at floor level.



1911 Brick Bungalow. Wood stairs and tongue and groove flooring at east porch appendage



1911 Brick Bungalow. Original wood pickets at porch railing



1911 Brick Bungalow. Stair railing and post at porch.



1911 Brick Bungalow. Underside of porch shed roof

1911 Brick Bungalow



1911 Brick Bungalow. West porch addition.

CATEGORY: DESCRIPTION: 3.4d Exterior Appendages – Porch, Stoop, Etc.

The rear, west porch was added circa 1990 as a replacement to the original porch which collapsed. Reconstruction followed the original footprint and location. Historic photographs indicate the original porch was open, similar to the east porch. The original porch was possibly an addition to the main structure of the residence, as suggested by the exterior window and cast stone that remain intact on the interior of the porch.

The current replacement porch is enclosed, constructed of dimensional lumber with vertical wood siding and 1x trim. Lattice-work encloses the porch from the floor level to grade.

Modern aluminum windows are located on the south and west elevations.

The hipped roof is comprised of asphalt shingles and drains to aluminum gutters that wrap all three sides draining to a downspout on the northwest corner.

The west porch addition is in good condition. All materials are of recent vintage.

EVALUATION:

RECOMMENDED TREATMENT:

It is recommended that the non-original replication of the west porch be removed and reconstructed with a porch more in keeping with the historic fabric of the structure. Historic photographs are available of the west elevation and could be utilized to historically re-create the porch.

Although the new porch is in good condition, the removal of the modern porch and the reconstruction of a porch constructed of in-kind materials and spatial configuration will be more in keeping with the historic fabric and will reestablish the historic character and integrity of the Bungalow structure as a whole.



Aluminum sliding windows at south and west elevations of west porch addition.



Vertical wood siding at west porch addition



Reconstructed west porch at 1911 Brick Bungalow



Asphalt shingle roof showing exposed rafter tails at south elevation of 1911 Brick Bungalow.

CATEGORY:	3.5 Envelope - Roofing & Waterproofing
DESCRIPTION:	The roof plan is a simple gabled roof with modern asphalt shingles installed over bead board with 2x6 rafters at 24 inches on center.
	Rafter tails are exposed on the north and south elevations, originally painted. Eave extensions on the east and west elevations are supported by 4x4 wood brackets at the ridgeline and outside walls. Water drainage is contained by continuous half-round metal gutters on the north and south elevations.
EVALUATION:	The roof of the bungalow residence is in fair to poor condition. Several shingles are missing and beginning to delaminate, specifically on the south elevation of the gabled roof where UV degradation is evident.
	The exposed rafter tails are beginning to show early signs of deterioration and paint is flaking and peeling. One 4x4 support bracket is missing at the northwest side of the roofline. Paint is peeling at the support brackets, rafter tails and bargeboards. Gutters are loose and failing. The downspouts often empty into depressions adjacent to the foundation.

1911 Brick Bungalow

RECOMMENDED TREATMENT:

All existing roofing materials should be removed to solid sheathing. Replace any rotted sheathing. Install new No. 1 cedar shingles directly over spaced, wood sheathing, and match exposure of original wood shingles. Remove existing gutters and downspouts at north and south elevations, install new and paint. Scrape, sand and repaint rafter tails and bargeboards. Replace missing 4x4 support bracket at northwest corner to match original brackets that remain.

If tempering of this building is required once a future adaptive re-use is determined, installing insulation could be investigated in concealed spaces of the roof structure. Applying insulation to the interior on the exterior walls would impact the historic character of the structure.



Deteriorating asphalt shingles with UV degradation at southern exposure on 1911 Brick Bungalow



Existing 4x4 wood brackets at gabled ends of 1911 Brick Bungalow



Stucco infill and painted decorative trim at gabled end. Two decorative vents are located at the ridge.



Northwest corner of roof with missing 4x4 support bracket



Masonry chimney at the south elevation of Brick Bungalow

CATEGORY:	3.5a Roofing & Waterproofing - Chimneys
DESCRIPTION:	Two brick masonry chimneys rise approximately eight feet above the north and south roof lines. Both chimneys are structurally tied back to the roof with metal tie rods. A metal flue is evident approximately eight inches above the top of the south chimney.
EVALUATION:	In general, the south chimney is in good condition and appears plumb and level.
	The north chimney is in fair condition. Several areas require re-pointing and the chimney is leaning towards the north. Historic photos, dated circa 1920 indicate the south chimney was originally tied back to the roof with a structural tie rod.
RECOMMENDED TREATMENT:	Inspect the leaning chimneys for structural integrity and any visible cracking or distress. Remove roofing but retain stepped flashing at chimney base. Add additional steel rods for support at the north chimney. Re-point both chimneys.



1911 Brick Bungalow. South masonry chimney.



North masonry chimney at 1911 Brick Bungalow.

1911 Brick Bungalow



Main entrance door at 1911 Brick Bungalow

CATEGORY:

3.6a Doors

DESCRIPTION:

The front entry door is a modern aluminum, full-light door.

The rear (west) entrance door has a wood screen door, possibly original, with a spring closer. The door is a halflight door with three horizontal wood panels below the middle rail. A four-paneled wood door with bead board screen surround, possibly original, exists between the main section of the structure and the west porch addition.

Historic interior doors are five-paneled stile and rail wood doors. The historic doors have been covered, specifically on the first floor, with non-historic imitation wood grain paneling on the exposed side of the door. The non-exposed, 'interior' planes of the doors remain in their original finish condition. Original paint is visible where the faux paneling has delaminated from the door. Hardware is original, with modern hinges.

Modern interior doors are solid core wood with a vertical panel design or half-light over three horizontal panels, located in rooms 104 and 105 (See first floor plan of Brick Bungalow, page 68).

SHOENBERG FARM	
1911 Brick Bungalow	
	On the second floor, the interior doors are stile and rail, paneled doors, painted with multiple layers of paint. Original hardware remains intact.
	Three four-paneled stile and rail wood doors are located in the basement. The doors are stained and all appear to be original to the Bungalow.
EVALUATION:	The front entrance door is in good condition, although it is not original to the structure.
	The rear screen door is in poor condition. The screen is detached; wood screen stop is broken and missing; hinges are broken, the door is warped and the paint is flaking. The west entrance door is boarded up and all glass is missing. The bottom rail is loose and the door is warped, and will not close properly
	Interior doors are in good condition, although the five- panel doors have been altered. Second floor doors are in good condition.
	Basement doors are in fair condition. Moisture at the base is evident, with areas of water staining, typically at the bottom rail. Some hardware (knobs) are missing.
RECOMMENDED TREATMENT:	Replicate and replace the screen door at the rear entrance. Replace the missing screen and door hardware. Remove the plywood and restore the wood paneled door at rear entrance.
	Remove the non-historic faux wood paneling on the first floor interior doors. Remove layers of paint and stain to match the original as evident on the back sides of the doors.
	Further investigation is needed to determine the cause for the moisture and water staining at the basement doors. The basement doors should be removed, sanded, and stained to match the original. Install hardware, to match original, at the basement level doors so as to make useable.



Original screen door hardware at rear of 1911 Brick Bungalow



Four-paneled screen door at rear of 1911 Brick Bungalow



1911 Brick Bungalow. Modern aluminum storefront door at main entrance of bungalow.



Original door at rear of 1911 Brick Bungalow



First floor interior doors with faux wood grain paneling over the historic solid core door.



Modern wood door at Room 104 of Bungalow



First floor interior door with faux wood grain paneling



Historic door hardware at first floor of 1911 Brick Bungalow



Modern half-light over three panel door in Room 105



Original stile and rail, paneled wood doors at second floor of 1911 Brick Bungalow showing original hardware



Original stile and rail, paneled wood doors, painted at second floor of 1911 Brick Bungalow



Two original stile and rail, paneled wood doors at Basement level of 1911 Brick Bungalow.

1911 Brick Bungalow



Windows at south elevation of the 1911 Brick Bungalow

CATEGORY:

DESCRIPTION:

3.6b Windows

The south elevation has four large and two small windows, all with original cast stone sills. None have the original sash or glass intact. Replacement frames are aluminum with new wood sills and heads installed to accommodate the smaller window size. The windows are double-hung with screens on the four larger windows.

At the main entrance (east elevation) two large double hung windows flank the entrance door location. Both windows retain their original cast stone sill, but the original wood frame and glass have been removed, replaced with aluminum frames and wood sills.

The southern most window, on the front elevation is missing the lower pane of glass and is currently covered by wood particle board.

Four windows are located on the north elevation. All have been altered with the removal of the original wood frame and glass. All of the windows have been infilled with non-historic glass block. An air-conditioning unit has been installed at the upper level of one of the windows. Only one window retains the original cast stone sill. There is evidence the other three sills were

SHOENBERG FARM	
1911 Brick Bungalow	possibly removed as non-original mortar patching is evident at the sill location.
	The windows in the east and west gable ends are wood frame, double-hung six-over-one (typical) with extant weights and sash cords. A four-light casement window is located on the west gable end.
	Modern aluminum slider windows are found on the west and south elevations of the west porch addition. An aluminum window is located on the west elevation of the main section of the structure, where a door and stairway once accessed the first floor (based on historic photographs). The sill is constructed of brick.
	On the west exterior wall, now enclosed by the rear porch addition, is a one-over-one double-hung window with the original wood frame intact. The wood trim is painted, and the original cast stone sill remains intact.
EVALUATION:	In general, the aluminum frame windows are in fair condition, although not original to the structure. At the south elevation, non-historic wood paint at the trim is flaking and peeling at the wood frames. The modern aluminum frames are square and true, but are poorly fitted to their masonry openings.
	Glass is missing from one front window at the east porch. Screens, where present, are in good condition and intact. New wood infill above the windows on the south and east elevations has minor paint flaking.
	The original wood framed windows at the gable ends are in poor condition. Screens are torn and rusted, frames are warped and deteriorating. Trim pieces are loose and the window glazing is dry, cracked and gapped.
	The glass block infill on the north elevation is in good condition, although not original. Non-historic cementitious mortar has been used to infill areas of toothed-in brick adjacent to the windows where cast stone sills were originally located. Cementitious mortar is detaching at the brick and glass block juncture in several locations, allowing water infiltration between the glass block and the masonry.
	The aluminum windows at the west porch addition are in good condition and are of recent vintage.
RECOMMENDED TREATMENT:	All the windows on the west, east and south elevations should be replaced with frames and glass that match the original in function and size. All remaining wood trim should be scraped and repainted.

The non-historic glass block infill at the windows on the north elevation should be removed and replaced with double-hung wood frame windows and glazing to match the original in function and size. The cast stone sills that are salvageable should be restored and reinstalled. Any damaged sills should be replicated to match the original and installed.

Remove the air conditioning unit located on the north elevation of the building.

At the gabled ends, the original sash should be removed, restored and re-installed. The rusted screens should be removed and replaced with new. The glass should be re-glazed and new caulking applied.



Aluminum windows at south elevation of 1911 Brick Bungalow



South elevation windows with wood infill at header location.



Original cast stone sill at 1911 Brick Bungalow



Missing glass at east window location of 1911 Brick Bungalow



Missing cast stone sill and glass block infill of 1911 Brick Bungalow



Air conditioning unit at north elevation window of 1911 Brick Bungalow



Removed cast stone sills at north elevation



New aluminum windows at rear porch addition of 1911 Brick Bungalow



Original 6-over-1 windows at second floor of 1911 Brick Bungalow.



Window with brick sill at west elevation of Bungalow where original door was located per historic photographs



Original window located on west exterior wall inside enclosed porch addition at 1911 Brick Bungalow



Interior finishes of 1911 Brick Bungalow first floor

CATEGORY:	3.7 Interior Finishes
DESCRIPTION:	The interior finishes on the first level consist of non- historic carpeting, suspended lay-in ceiling and imitation woodgrain paneling on all walls. The wood base trim on the first level is not original. Above the dropped ceiling, the original plaster ceiling detailing remains largely intact.
	In Room 108 original base cabinets, wood trim and an original mirror cabinet remain intact (See first floor plan of Brick Bungalow, page 68). All are painted with several layers of paint. The plaster walls are painted.
	A wood stair leads to the second floor level. Steps are covered in non-historic carpet surrounded by a painted wood railing with 1x4 balustrade elements. The second floor level has painted two-inch wide wood flooring. The plaster walls and baseboards are painted.
EVALUATION:	The interior is in fair condition although much of the interior finishes have been altered. Original plaster ceilings (above the lay-in ceiling) appear to have been compromised in a number of areas by HVAC and electrical component penetrations.

1911 Brick Bungalow

The original base and mirror cabinets in Room 108 are in fair condition with areas of flaking and peeling paint. The interior wall paint is in poor condition. Moisture and humidity has delaminated the paint, causing large areas of peeling and flaking paint. The City of Westminster has conducted a hazardous materials test on the paint in the Brick Bungalow. Tests indicated high levels of lead content, specifically on the second floor and in Room 108 where the paint is damaged and peeling.

RECOMMENDED TREATMENT: Remove non-historic carpet, lighting fixtures and faux wood paneling on the first floor level. Assess finishes at that time to determine what original materials remain.

Note: the removal of the faux wood paneling on the original plaster walls has the potential to further damage the underlying plaster finishes or to leave adhesive remnants on the walls that are removal resistant. Extensive repair and repainting of the underlying historic finishes should be anticipated.

Clean and re-paint all finishes at the 2nd floor walls, including the baseboards and the stair elements.

The base and mirror cabinets in Room 108 should be scraped and re-painted to match the original finishes. Scrape, clean and re-paint the plaster walls to match original.



Original plaster ceiling above dropped ceiling at first floor of Bungalow.



Fluorescent lighting in first floor interior ceiling



Original wood railing at second floor staircase



Carpeted staircase to second floor level



Original painted baseboard at second floor of Bungalow



Painted wood floor and original floor grate at second floor level of 1911 Brick Bungalow



Original mirror cabinet in Room 108 of 1911 Brick Bungalow.



Moisture and humidity damage on the interior walls of Room 108

1911 Brick Bungalow



Fan box and ductwork in basement of 1911 Brick Bungalow

CATEGORY:

DESCRIPTION:

EVALUATION:

3.8 Mechanical Systems

Several generations of mechanical systems reside in the basement and first floor of the Bungalow. It seems most recently, the Bungalow was heated by a steam radiator system. The boiler, the heating element for this system, appears to have been removed but its condensate tank and condensate receiver pump are still in situ, at the base of the basement stairs. Cast iron radiators are located on the main and second floors.

Also located in the basement, is a gravity-fed, forced air furnace, now disconnected to floor grates at the first floor level but still connected to a blower fan box in the central portion of the basement. The furnace appears to be wrapped in asbestos.

In Room 105, there is a thru-window, air conditioning unit.

All of the piping to the steam radiator system is badly rusted as are the condensate components. The ductwork of the former furnace distribution system is in poor condition and the furnace is far beyond its

1911 Brick Bungalow

serviceable life. Likewise, the window air conditioner is in poor condition and appears to have been vandalized. Of all the components, the steam radiators may be the only salvageable elements. However, to test this, they would need to be removed, cleaned and pressure tested.

RECOMMENDED TREATMENT:

All mechanical systems, piping, ductwork, and component parts should be removed and a new codecompliant system should be installed. Radiators could be abandoned in situ for historic context. Install new central air conditioning unit.



Fan Box located in basement of Bungalow



Original steam radiator located in Room 105 of Brick Bungalow.



Ductwork associated with gravity furnace.



Gravity fed furnace



Steam line trap and line drip



Original steam radiator in Room 202 on the second floor



Historic condensate tank and pump in basement.



Window mounted air conditioner



Wall lavatory in Room 108 at 1911 Brick Bungalow

CATEGORY:	3.8c Water Service, Plumbing, and Sewer
DESCRIPTION:	There are three extant plumbing fixtures – two lavatories and a water closet in the building. One lavatory and the water closet are located in Room 108 on the first floor. They appear to date to the 1950s. A single lavatory is on the north wall of the second floor in Room 202 appears older and maybe original ((See floor plans of Brick Bungalow, page 68-69).
EVALUATION:	All three fixtures are in poor condition with missing components, dry seals, mineral build-up on the handles and corroded piping. Waste piping is also corroded.
RECOMMENDED TREATMENT:	All water supply and waste piping in the Bungalow should be removed and replaced with code-compliant piping. The water closet will need to be replaced with a new, low-water-use fixture but it may be possible to retrofit both of the historic lavatories with new piping and fittings.



Water closet in Room 108 at 1911 Brick Bungalow



Historic lavatory at 2nd floor of 1911 Brick Bungalow



Main waste line



CATEGORY:	3.9 Electrical Systems
DESCRIPTION:	The electrical service throughout the Bungalow is composed of un-grounded wiring distributed through fuse panels, with the exception of the main panel which has conventional breakers. Lighting is predominately lens-wrapped linear fluorescent.
EVALUATION:	With the exception of the main panel, none of the electrical system complies with code. The fluorescent lighting detracts from the historic nature of the building.
RECOMMENDED TREATMENT:	Remove all wiring and devices, back to the main panel and rewire the building. Install glass-shrouded, ceiling- mounted fixtures (with fluorescent lamps, if the lamps can be concealed) to be more in character with the building.
	Once an adaptive re-use is determined for the Bungalow, an underground power feed could be installed to the building. This would require subsequent design phases and is not included in this scope of work.



Main electrical service



Branch distribution panel



Fluorescent lighting













SHOENBERG FARM 1911 Two-Story Garage



Gravel driveway and concrete pad at south elevation of Two-Story Garage

CATEGORY:	3.1 Site
DESCRIPTION:	The site at the Two-Story Garage is flat with a moderate rise to the north and west. Shrubbery and grasses surround three sides of the structure, all unkempt. Several volunteer trees are beginning to grow close to the foundation and masonry elements of the structure.
	A gravel parking area is located within four feet of the structure at the south elevation; joined with a four-foot wide concrete threshold at the garage door entrance. This area is currently used by the site's tenant for parking.
EVALUATION:	In general, the site surrounding the garage is in fair to poor condition. The vegetation, shrubbery and trees have been allowed to overgrow, specifically at the north elevation of the site.
	The concrete pad at the garage entrance is spalling, cracked and deteriorating. Inadequate slope is allowing water to pool at the garage door.

SHOENBERG FARM 1911 Two-Story Garage

RECOMMENDED TREATMENT:

Remove the grove of trees located on the north side of the structure. All volunteer grass areas should be cut and maintained so as not to allow overgrowth.

Remove the deteriorated concrete pad at the garage door location and replace with a new pad. Proper slope should be provided for water drainage away from the structure.



Overgrown grasses and trees at north elevation of Two-Story Garage



Site west of Two-Story Garage



Overgrowth of grasses and trees on the northwest corner of Two-Story Garage



Grove of trees on the north side elevation of Two-Story Garage
SHOENBERG FARM

1911 Two-Story Garage



Stair step cracking along north elevation

CATEGORY:

DESCRIPTION:

EVALUATION:

3.2 Foundation

The Two-Story Garage is a rectangular structure consisting of four exterior brick walls. The brick walls are founded on concrete stem walls, the tops of which are visible from the exterior. Anchorage of the brick walls to the concrete stem walls is not visible, nor is the stem wall reinforcing. Foundation elements beneath the stem walls are not visible but are assumed to be concrete strip footings.

The garage floor is a slab-on-grade.

The concrete stem wall is in poor condition. In several locations along each side of the garage, full-width, vertical cracks are visible. The cracks are the result of foundation elements that are undergoing differential movement. Specifically, the north and south ends appear to be settling relative to the longer side walls. It is also possible that the longer side walls are heaving relative to shorter side walls. In either case, poor drainage around the perimeter is likely the root cause, wetting the native expansive soils.

The interior slab-on-grade is in fair condition because of spider web cracking.

73 of 280

SHOENBERG FARM

1911 Two-Story Garage

RECOMMENDED TREATMENT: The foundation movement is leading to severe cracking in both the stem walls and the brick walls above. The foundation should be underpinned in order to arrest this movement and the cracks in the stem walls should be repaired. With appropriate underpinning it should be possible to lift the foundation back to near its original elevation. This will help close the cracks in the walls although some damage will remain and additional damage may occur during the foundation stabilization process.

Alternatively, the above-grade portion of the building can be moved to a new foundation system. (This alternative, moving the building to a new foundation system, is expected to occur as part of the site redevelopment). This new foundation system would consist of drilled or helical piers and grade beams, with a floor slab on overexcavated and reconditioned (or replaced) native soil. The existing walls will require careful shoring and tying to remain intact during such a move. The logistics of the shoring and the move would be determined by a moving contractor.

After the move, the walls would then require further repair. Portions of the perimeter walls with severe cracking will need to be taken down and rebuilt. Less severely damaged wall sections can be restored with selective brick rebuilding and re-pointing of the mortar joints.



Stair step cracking along east elevation

CATEGORY:

DESCRIPTION:

3.3 Building Structural Systems

The Two-Story Garage is a rectangular structure consisting of four exterior, two wythe brick bearing walls terminating just above the second floor elevation. The apartment floor joists were not visible at the time of these observations but are now known to span in the east-west direction and pocket into the east and west brick walls. The garage plaster and lath ceiling is attached to the apartment floor joists. The apartment upper-wall wood stud framing is not visible. The roof framing is not visible except at the eave where 2x4 rafter tails spaced at 261/2" and tongue-and-groove sheathing are visible. The sloped roof rafters span in the east-west direction. The rafters are assumed to be supported by a ridge board at the high ends and a wood plate atop the exterior wall at the low ends. The ceiling joists are assumed to also serve as collar ties, lessening the trust imparted by the rafters to the top of the east and west walls.

EVALUATION: The brick walls are in poor condition. Stair-step cracking propagating from the window heads or from the foundation stem wall cracks is visible. The crack at the south end of the east wall is particularly severe and measures over 1" wide. This crack is unusually severe in that it passes directly through bricks in some locations rather than following the mortar joints. In conjunction

Shoenberg Farm	
1911 Two-Story Garage	with this crack, the top of the south wall on the east end has deflected outward. The north wall is also visibly deflected out of plane. The top of the wall is bowing outward approximately 1".
	At the time of these site observations, the garage space was not accessible so only the exterior faces of the brick walls were visible. Mortar is deteriorated in several locations, especially along the lower courses of the west wall and beneath the window sills. The chimney is in poor condition and at roughly mid-height has lost connectivity to the main structure. No significant efflorescence is visible on the exterior wythes of brick.
	Although not directly visible, based on the displacement of the brick walls and the damage to the interior finishes, it is assumed that the second floor diaphragm connection to both the south and north walls has been compromised or has completely failed in some locations. Both the south wall and the north wall are pulling away from the east and west side walls.
	The garage door head is supported by a steel lintel. The condition on the interior side of the head is not visible. The garage door head is visibly deflected downward and thus the brick and steel lintel assembly is undersized.
	The apartment floor framing is not visible, but there are no obvious signs of distress.
	The roof appears to be in serviceable condition and no significant deterioration or deflections were observed.
RECOMMENDED TREATMENT:	In order to repair the perimeter brick walls the foundation system must first be stabilized (or the building moved to a new foundation system). After which the portions of the walls and chimney with severe cracking will need to be taken down and rebuilt. Less severely damaged wall sections can be restored with selective brick rebuilding and re-pointing of the mortar joints.
	The second floor diaphragm connection to the brick perimeter walls will need to be investigated. Any compromised sections of the diaphragm connection will need to be reestablished in order to restore the building's capacity to resist lateral loads.
	The garage door head will need to be shored level and the steel lintel reinforced.
	The apartment floor and roof framing should be surveyed to determine member sizes, configuration, and condition; and then analyzed for their load-carrying capacity. It may be necessary to reinforce some framing

elements if the proposed use includes occupying the space for residential or office purposes. Destructive investigation will be required to acquire the necessary information for analysis of the existing framing.



Deflected garage door head along south elevation

SHOENBERG FARM

1911 Two-Story Garage



1911 Two-Story Garage

CATEGORY:

DESCRIPTION:

3.4 Envelope - Exterior Walls

The Two-Story Garage is approximately 513 square feet of red brick masonry construction on the first level in a running bond pattern with a header course every eighth course. The upper level is vertical board and batten construction infilled with painted stucco between wood vertical decorative "stickwork" with a simple gabled roof line. Historic photographs indicate the decorative trim pieces were either stained or painted. This detail imitated structural elements and gives the impression of exposed wood framing elements. Originally, the decorative wood members were visible between the stucco infill sections of the gable (see 6.0 Historic Photos page 266-273).

The garage entrance is through a garage door located at the south elevation. Metal stairs on the west elevation allow access to the upper level residential apartment. A masonry chimney is located on the west elevation of the structure.

Windows are located on all four elevations of the structure and vary in size and style (see Section 3.6).

EVALUATION:

The garage is in poor condition. At the south elevation the structure is settling, possibly due to shifting soils.

SHOENBERG FARM	
1911 Two-Story Garage	The garage door has shifted and dislodged from the masonry structure and no longer functions.
	Eroded mortar joints are located on most elevations most significantly at the south and east elevations. Previous attempts at brick repair with cementitious mortar and slurry are evident throughout the structure.
	The cast stone window sill at the north elevation is in pieces and lies on the ground. The mortar joints are failing at the remaining sill location. The metal stair access to the upper level is in fair condition.
	The gable ends infilled with stucco are in poor condition with peeling paint and stucco. The non-historic paint on the decorative trim pieces is peeling and flaking.
	The gable ends are infilled by original painted stucco but the decorative "stickwork" elements are painted making them indistinguishable from the stucco, consequently hiding the "stickwork".
RECOMMENDED TREATMENT:	The structure is unstable and continues to show signs of additional settlement and deterioration. Temporary stabilization should be performed to arrest additional cracking and damage to the masonry structure until a permanent solution can be found. Removal of the cementitious mortar at the areas of previous patching should be considered, although it may be difficult, and the bricks may need to be replaced.
	Remove the damaged and loose areas of stucco infill at the gable ends and replace with new stucco, paint to match original. It is recommended a paint analysis be completed to determine the original finish of the decorative "stickwork" at the gable ends. Once determined, the non-historic paint should be removed at the "stickwork" trim areas on the gabled ends. Refinish to match per historic photographs.
	Currently, plans for the garage include moving the building slightly to avoid new traffic site patterns on the site. Design implications of the move are beyond the scope of this assessment.



West Elevation of 1911 Two-Story Garage



South Elevation of 1911 Two-Story Garage



North Elevation of 1911 Two-Story Garage



East Elevation of 1911 Two-Story Garage



Critical crack at the southeast corner perimeter wall of the Two-Story Garage



Masonry flanking garage on the southeast corner of Two-Story Garage. Patching of critical crack with non-historic mortar application



Large stair-step crack at the southeast corner of Two-Story Garage.



Eroded mortar joints on the brick at the southwest corner or the Two-Story Garage





Dislodged garage door on the south perimeter wall





View of metal staircase to upper apartment level at the Two-Story Garage



East wall of the Two-Story Garage. Multiple stair-step cracks are visible as well as previous patching attempts with cementitious slurry



Critical crack above fixed window on the east elevation of the Two-Story Garage



Gabled roof with gabled dormer on the east elevation of Two-Story Garage

CATEGORY:	3.5. Envelope - Roofing & Waterproofing
DESCRIPTION:	The roof of the Two-Story Garage is a simple front gabled roof plan with asphalt shingles over bead board over 2 x 6 rafters at 24 inches on center. Asphalt shingles appear to be installed over original wood shingles. Two dormers exist: a gabled dormer on the east side and a shed dormer on the west side.
	Eave extensions on the north and south elevations are supported by 4 x 4 wood brackets at the ridgeline and outside walls. Exposed rafter tails are visible on the north and south elevations.
	Water drainage is by interrupted half-round metal gutters on the east and west elevations. Downspouts are missing.
EVALUATION:	The roof is in fair condition. Several shingles are beginning to show signs of deterioration, specifically at the gable ends. The original wood shingles, where visible, show signs of weathering, typically at the ends.
	The paint is peeling at the support brackets as well as the rafter tails and bargeboards.
	The downspouts are in poor condition; disconnected or missing from the gutter system, which is loose and failing with rusted sections and visible holes.

RECOMMENDED TREATMENT:

Remove existing shingles and original wood shingles down to wood decking. Install new No. 1 cedar shingles to match exposure of original. The existing gutters and downspouts should be removed at the east and west elevations and new installed and painted to match original. The rafter tails, support brackets and bargeboards should be scraped, sanded and re-painted.

If tempering of this building is required once a future adaptive re-use is determined, installing insulation could be investigated in concealed spaces of the roof structure. Applying insulation to the interior on the exterior walls would impact the historic character of the structure.



Shed dormer, chimney and apartment entrance at the west elevation



Asphalt shingles on the Two-Story Garage



Gabled dormer and painted decorative trim pieces at the east elevation of Two-Story Garage



Original wood shingle roof under asphalt shingle roofing system



Bead board and exposed rafters



4x4 support brackets at the ridgeline of Two-Story Garage



Disconnected downspout location



Rusted gutters and missing downspouts



Damage to stucco infill areas



2x6 rafters and bead board at overhang of roof



Chimney at the Two-Story Garage

CATEGORY:	3.5a Roofing & Waterproofing – Chimneys
DESCRIPTION:	One chimney is located on the west elevation of the Garage structure. It is constructed of red brick and runs the entire vertical height of the structure, extending approximately three feet above the roofline.
EVALUATION:	The chimney is in poor condition. It is detaching from the main masonry structure, possibly due to the settling of the south end of the structure. Stair-step cracks are visible in several locations of the chimney wall. Multiple repairs with cementitious mortar have been done to the mortar joints and cracked locations. Eroding mortar joints are evident throughout, resulting in loose and detached brick elements.
RECOMMENDED TREATMENT:	The chimney needs to be inspected for structural integrity due to the settlement of the entire structure. The chimney may need to be re-built once the building is stabilized.



Eroded mortar joints and brick at upper level of chimney



Areas of detachment at the lower level of chimney



Stair-step crack and mortar patch at chimney



Dislodged bricks and eroded mortar joints at the chimney of the Two-Story Garage.



CATEGORY:	3.6a Doors
DESCRIPTION:	Two doors exist at the Two-Story Garage; the garage door, located on the south elevation of the structure, and a screen and wood door at the second floor apartment entrance.
	According to the owner, the garage door is not original to the building. Per the owner, the original garage door was a top-hung double door with lateral sliding doors.
	The current door is a multi-paneled wood door in four segmented painted sections. The apartment level entrance door is a modern solid core wood door with an exterior screen.
EVALUATION:	The garage door is in poor condition and is collapsing due to settlement of the structure. It is no longer operable and has dislodged at the upper frame and operational sections of the door. The paint is peeling and flaking on the door and the surrounding trim. It is logical to assume that the door track is warped beyond serviceability.
	The apartment level entrance door and screen are in poor condition. The veneer on the wood door is peeling due to UV exposure and weathering. The screen door is missing all glass components and screening material.

RECOMMENDED TREATMENT:

The garage door and frame should be removed. Prior to wall and foundation stabilization, a new door and track, matching the original, should be installed.

The apartment door and screen should be removed and replaced with new wood doors that are appropriate to the building's age.



Modern screen door at apartment level. Glass and screening are missing



Modern solid core wood door at apartment level. Weathering and UV damage

SHOENBERG FARM

1911 Two-Story Garage



12-light fixed window on the east elevation of the Two-Story Garage

CATEGORY: 3.6b Windows DESCRIPTION: The windows on the Two-Story Garage consist of two different design styles. On the north and south elevations, there is one three-light aluminum casement window with two operable panes, and one fixed pane. Both windows are located at the upper apartment level. Three non-operable transom lights are above the south casement windows. On the east elevation, at the upper apartment level there is a two-light casement window. The screens are intact and windows operable. At the lower masonry garage level, there are two windows located on the east and north elevations. The east elevation window has a pair of 12-light wood frame windows with a painted cast stone sill. Wood muntins are painted. The window location at the north elevation is covered by wood boards. The window is missing. **EVALUATION:** The casement windows at the apartment level are in fair to poor condition. The upper level casement windows are operable, but in need of restoration. Panes of glass are cracked and broken in several locations. The east elevation apartment window is in fair condition. The wood panel directly below all upper level casement windows is in poor condition, with warping wood and failing paint.

SHOENBERG FARM	
1911 Two-Story Garage	
	The wood frame surrounding the 12-light window is in fair condition with cracking paint. A minor crack exists on the south end of the cast stone sill.
	The window at the north elevation is missing, as well as the cast stone sill, exposing the brick wall below.
RECOMMENDED TREATMENT:	The aluminum casement windows should be removed and replaced with historically compatible wood frame windows. Replace the broken panes of glass.
	The wood board at the north window should be removed. It is assumed this window is a replica of the 12-light window on the east. The window, frame and cast stone sill should be replaced with an in-kind replication to retain the character of the structure.
	The wood frame, trim and muntins of the original 12-light window should be scraped, sanded and repainted. The glass should be cleaned. Paint on the cast stone sill should be removed and the stone cleaned.



Aluminum frame casement window at apartment level on the south elevation of Garage.



Window at the north wall of the Two-Story Garage



Location of original cast stone sill at north window location



Boarded window at north wall



Painted cast stone sill at 12-light window location with painted wood frame and muntins



Two-lite casement window



Damaged wood section under window at apartment level



South-facing casement window from interior bedroom

SHOENBERG FARM

1911 Two-Story Garage



Interior of apartment at the Two-Story Garage

CATEGORY: DESCRIPTION: 3.7 Interior Finishes

Interior finishes in the upper apartment have been altered and are of modern vintage; including the carpet, wallpaper, and cabinets.

The apartment space is basically open in plan with a small bedroom off the southern end of the main room, bathroom to the east and small kitchen area in the main living room. The flooring throughout is carpet. Most doors to the auxiliary spaces such as the bathroom and bedroom have been removed and replaced with accordion type doors. The wood door and window trim surrounds and the base trim are possibly original and are currently painted. Built-in wood kitchen cabinets are not original.

The walls are painted plaster throughout with wallpaper in the bathroom area.

EVALUATION: The apartment interior is in fair condition. The finishes have been altered and are not original. The plaster walls are in fair condition with damage attributed to previous tenants. There is a visible crack at the southeast corner of the interior space at the soffit between the bathroom, bedroom and main space. The wood trim is detaching from the plaster walls at the closet in the bedroom

SHOENBERG FARM

1911 Two-Story Garage

located just above the garage door on the southeast wall. The wood door and window surrounds are painted with many layers of paint.

The wallpaper in the bathroom is in fair condition with minor peeling and water staining.

RECOMMENDED TREATMENT:

The interior finishes do not need immediate treatment. Once it is determined if this space will be used as a residence or possible office space, the finishes can be updated.



Cabinetry in kitchen area of apartment



Kitchen area of apartment



Crack in plaster wall at the southeast corner of main room



Wood trim detaching from plaster walls in bedroom



Painted original baseboards and door surround trim. Accordion style doors are visible.



Painted plaster walls and ceiling





Wallpaper on bathroom walls and built-in cabinetry.



Unit heater in Two-Story Garage apartment

CATEGORY:	3.8 Mechanical and Plumbing Systems
DESCRIPTION:	The apartment and garage were heated by unit heaters, located in the main room and garage space respectively. Plumbing fixtures include a tub, lavatory, water closet and kitchen sink. All fixtures appear to date from around the 1960s.
EVALUATION:	The unit heater is past its serviceable life. Plumbing fittings are in poor condition, piping is corroded and of mixed types. The fixtures are not energy code-compliant.
RECOMMENDED TREATMENT:	Once an adaptive re-use for the structure is determined, a code analysis will be required to determine the type and number of fixtures and HVAC units required.



Tub in bathroom of Two-Story Garage apartment



Unit heater and hot water heater located in the Garage below apartment



Sink in kitchen of Two-Story Garage apartment level.



CATEGORY:	3.9 Electrical Systems
DESCRIPTION:	Electrical distribution panels have been removed from the building. Extant wiring is run partially in conduit, partially exposed. Lighting the apartment is a combination of early-vintage, exposed fluorescent lamp and simple, ceiling-mounted incandescent fixtures.
EVALUATION:	In general, the electrical system is not grounded and not code-compliant. The lighting fixtures are in fair condition.
RECOMMENDED TREATMENT:	Complete replacement of the electrical system is recommended and will be reliant on the requirements of the building's future use. Fluorescent and incandescent fixtures, with the exception of the linear fixture, could be rehabilitated, to illustrate the spaces simple, utilitarian history.
	Once an adaptive re-use is determined for the Garage, an underground power feed could be installed to the building. This would require subsequent design phases and is not included in this scope of work.





Fluorescent lighting - early vintage

Fluorescent lighting



Electrical service masthead











Gravel driveway at east elevation of 1911 Brick Milk and Ice House

CATEGORY:

DESCRIPTION:

3.1 Site

The site at the 1911 Brick Milk and Ice House is relatively flat, rising to the north and west. Staff from the City of Westminster have noticed water infiltration at the southwest corner of the building, due to the elevation difference on the west side of the site, which is allowing water to drain into the building as the site slopes to the east. Volunteer grasses and trees at the northern side of the structure are overgrown and random.

A 6 foot by 37 foot long concrete sidewalk and curb, possibly original, extends along the east side of the Brick Milk and Ice House, providing access to the main entrance. The sidewalk terminates approximately three feet before the end of the building. At this point, a smaller, three foot wide concrete sidewalk begins, which extends to the edge of the building, then wraps around the north side elevation to the door location on the north side.

A graded dirt parking area is located within a foot of the structure on the south side, continuing to a gravel roadway on the west, currently used by the site's tenant.

EVALUATION: The site adjacent to the Milk and Ice House is in poor condition. The small amount of vegetation surrounding the structure has been allowed to overgrow, especially

on the north side. Volunteer trees and vegetation are crowding the foundation and perimeter sidewalks.

The concrete sidewalk is spalling and has a significant number of cracks and missing areas along the curb, most likely due to the current tenant's vehicle traffic. At the northeast corner of the structure, the three-foot wide sidewalk has a severe crack due to the settlement of the sidewalk at the corner location. Vegetation is continuing to grow in between existing cracks, further damaging the sidewalk. Due to recent tenant activity, the grasses to the west have been damaged with patches of dirt remaining.

RECOMMENDED TREATMENT: Trim the overgrown grasses surrounding the structure. Remove the grove of trees located on the north side of the structure to protect the foundation. All grass areas should be cut and maintained so as not to allow overgrowth.

Replace the six-foot and three-foot wide concrete sidewalk at the east and north elevations. Retain the existing curb. Slope the sidewalks to drain away from the structure. Restore grass area on the west side of structure.



Six foot wide concrete sidewalk at 1911 Brick Milk and Ice House. Note damaged curb and spalling concrete locations



Cracked sidewalk at eastern edge of 1911 Brick Milk and Ice House



Tree at north elevation of Milk and Ice House



Sidewalk at the north elevation



Stair step cracking and slab cracking in northeast corner

CATEGORY:	3.2 Foundation
DESCRIPTION:	The south half of the Milk and Ice House is original. The north half appears to be a later addition. Both the original and newer construction consists of exterior and interior two wythe brick bearing walls. The foundation elements are not visible but it is assumed that the brick walls bear on below-grade stem walls and continuous strip footings.
	The main level floor is a slab-on-grade. In the original portion of the building the slab terminates at the base of the brick walls. In the newer north half of the building the slab is turned up on the interior to cover the bottom three courses of brick. Likewise on the exterior, a parge coat covers the three courses of brick above grade.
EVALUATION:	While the foundation is not visible, the cracking and displacements of the exterior walls indicate that the foundation elements are undergoing differential movement. Specifically, the north and south end walls appear to be settling relative to the longer side walls.
	Overall, the slab-on-grade is in poor condition. Significant floor slab cracks up to 1/4" wide are apparent throughout the structure. A slab crack in the northeast room of the building appears to be propagating from the base of a stair step crack in the east wall.
Evidence of water infiltrating the interior floor space is apparent in the southwest room of the building. Soil is deposited in a pathway between the west door and the floor drain. The water infiltration is not directly distressing the floor slab but it is indicative of an exterior drainage problem. Also, soil and debris carried by the rainwater can interfere with proper functioning of the interior floor drain.

RECOMMENDED TREATMENT:

The foundation should be underpinned to prevent further differential settlement. With appropriate underpinning it should be possible to lift the foundation back to near its original elevation. This will help close the cracks in the walls although some damage will remain and additional damage may occur during the lifting process.

After the perimeter foundation system is stabilized, slab cracks should be filled with a suitable cementitious grout.

Soil excavation on the west side of the building is recommended to bring the exterior grade down to the level of the interior slab. The perimeter grade around the entire building should be re-graded to provide a slope away from the building.

A perimeter drain should be installed around the perimeter of the building to prevent water infiltration under the foundation.



Slab cracking and brick deterioration in southeast corner



Parge coat and sidewalk cracking and displacement along east elevation



Slab cracking and water infiltration in southwest corner



Fire damaged roof framing

CATEGORY:

DESCRIPTION:

3.3 Building Structural Systems

The south half of the Milk and Ice House is original. The north half appears to be a later addition. Both the original and newer construction consists of exterior and interior two wythe brick bearing walls and wood-framed gable roofs. A portion of the original south-side roof framing is fire damaged.

The gable roof on the south half of the building is framed with 2x6 rafters at 24" on center running in the northsouth direction. The rafters run from a wood plate atop the exterior walls to a 1x6 board at the ridge. At the addition interface, (the south side of the barrel vault ceiling), the low ends of the rafters are supported by a 4x6 beam running in the east-west direction, spanning to the north exterior wall and an interior brick wall corner to the south. The ceiling is framed with 2x4 joists at 16" running parallel to the roof rafters and supported by the same elements. The roof is sheathed with plywood over 1x6 gapped decking. The ceiling is plaster and lath.

The gable roof of the addition is oriented perpendicular to the original gable and is over-framed onto the original roof at their intersections. A limited area of the addition roof framing is visible at this intersection. The roof of the addition is framed with 2x6 rafters at 24" running east-

SHOENBERG FARM	
1911 Brick Milk and Ice House	
	west. The rafters run from a wood plate atop the exterior walls to a 2x6 ridge board at the ridge.
EVALUATION:	The exterior brick walls are in poor condition. Efflorescence, brick deterioration, and mortar deterioration are visible along the walls of the original portion of the building. Stair-step cracking and out-of- plane wall displacement are also frequent. The top of the south wall at the east corner has displaced outward approximately 3". The north side of the east wall has stair-step cracks approximately 1" wide. In both cases the tops of the end walls are leaning outward. In the worst condition, the outermost wythe is entirely outside of the rowlock course at the top of the wall. There is little contact left between this top course and the rest of the wall below severely compromising the wall's ability to support the roof. As the top rowlock course appears to be in its original position it is assumed that the diaphragm connection remains intact. However, since the joint below this course has failed, the wall has severely diminished capacity to collect and then resist lateral forces both in-plane and out-of-plane.
	The brick and mortar deterioration is confined to the south side of the building, with the most severe case occurring in the southeast corner room. It is assumed that the particularly severe state of deterioration is the result of the building's historic use as an ice house and the associated high levels of moisture. As both the current use and proposed adaptive reuse of the building do not include adverse ambient conditions, the damage is no longer ongoing.
	The roof framing system is in fair condition. The roof rafters have insufficient calculated capacity to carry the Code-required snow loading. The ceiling joists are adequate to support the ceiling self-weight. The 4x6 support beam has insufficient calculated capacity to carry the Code-required loading. Although the roof appears to be performing adequately, it has insufficient calculated capacity and requires strengthening to meet current Code requirements.
	The connections of the propped roof rafters and the ceiling joists (which also act as tension ties) to the top of the exterior brick walls appear to be in good condition on the south side but were only visible from several feet away. On the north side these connections are not visible. But, given the displaced position of the north wall it is assumed that some of these connections are in poor condition.

Some of the fire damaged roof rafters have been sistered. The fire-damaged ridge board does not appear

Shoenberg Farm	Aluews & Alueison Alumeus, Fo
1911 Brick Milk and Ice House	to have been repaired or replaced. Some of the damaged 1x6 decking has been replaced.
RECOMMENDED TREATMENT:	In order to repair the perimeter brick walls the foundation system must first be stabilized. After which, the walls can be restored by rebuilding the compromised sections and re-pointing the joints. The severely displaced south wall however will likely require a more elaborate restoration. A new foundation element under the wall as well as entirely rebuilding the wall should be expected. In terms of structural stability, repairs to the south wall are paramount.
	Brick replacement and joint re-pointing should be performed in locations of severe damage. The most severe deterioration is localized to the lower wall courses in the southeast portion of the building.
	Wall cracks throughout the building should be re-pointed after the foundation is stabilized.
	On the north side of the building, the second floor diaphragm connection to the top of the brick walls will need to be evaluated and if failed, reestablished in order to restore the building's capacity to resist lateral loads. Destructive investigation will be required to acquire the necessary information for analysis of the existing connection.
	On the south side of the building, the roof rafters, ceiling joists and top plates should be anchored to the top of the wall using new epoxy anchors once all wall repairs are complete.
	Typical roof rafters should be reinforced with 2x6 sisters so that the roof is capable of supporting the design snow load. In doing so in the few locations where severely fire damaged rafters have not yet been replaced or reinforced, the new sisters will adequately address both the snow load and fire damage problems. The 4x6 support beam will also require reinforcing. The fire damaged ridge board should be replaced.



Typical roof framing, south facing aspect on west side



North facing aspect of roof framing on west side, 4x6 support beam



Displaced south wall at southeast corner



Displaced wall along east elevation



Fire damaged roof member and new sister



Stair step cracking on north side of east wall



East elevation of 1911 Brick Milk and Ice House

CATEGORY:

DESCRIPTION:

3.4 Envelope - Exterior Walls

The Brick Milk and Ice House is approximately 1,170 square feet. The one-story structure is constructed of red brick masonry in a running bond pattern with a header every eighth course. The structure is rectangular in plan, running north to south on the site. An addition to the north of the structure was constructed by Mr. Tepper in the 1940s in order to expand the milk pasteurization process of the farm.

Five doors exist on the east elevation to provide access to the various sections of the structure required for the milk and ice processes utilized by the farm. These include access to the coal-fired boiler room, refrigeration cooler room, refrigeration compressor room and the main entrance to the bottle washing room and pasteurization vats. Two additional doors are located on the north and west elevations.

Windows are located on all elevations of the structure. The window pattern varies with two different styles. All of the exterior window sills are sloped brick. The window sills located on the original building have a concrete parge coat at the sill location (see Sec 3.6b).

The gable ends are infilled by original painted stucco and wood decorative trim. Historic photographs indicate

Shoenberg Farm	
1911 Brick Milk and Ice House	that decorative braces or ornamented "stickwork" were at one time visible at the gabled roof ends. This detail imitated structural elements and gives the impression of exposed wood framing elements.
	An insulated pipe is located at the north exterior wall. The original use of the pipe is unknown.
EVALUATION:	The exterior walls of the Milk and Ice House are in fair to poor condition. There is evidence of deterioration in several locations from severe to moderate. The most serious area is located on the south and east elevations where the masonry is buckling towards the south causing a large displacement crack at the wall and roof intersection.
	A moderate size, approximately three-feet high by four- feet wide area, on the east elevation is deformed and bowing out. The mortar joints are failing and deteriorating and several bricks are loose, detaching from the wall.
	The parge coats on the exterior window sills are in poor condition. Several cracks and missing sections are evident.
	Several areas on the exterior walls are exhibiting failure and deterioration in the masonry elements. The exterior walls, predominately on the southwest corner have stair step cracking and mortar loss. This is occurring typically at the base of the masonry wall at the ground level throughout the base of the structure. This is possibly due to ground level moisture infiltration. Areas of damp brick show evidence of moisture wicking at this location, specifically on the south elevation. Recent patching and repair to the mortar joints has been completed in several locations.
	The decorative "stickwork" at the gabled ends are painted making them indistinguishable from the stucco, consequently hiding the "stickwork". Originally, the decorative wood members were visible, between stucco infill sections of the gable.
RECOMMENDED TREATMENT:	Once the foundation has been stabilized, remove the cementitious mortar joints and re-point the mortar at the deteriorated and cracked areas with a historically compatible mortar. Anticipate replacing approximately 500 square feet of damaged brick. Replacement brick should match the compressive strength of the historic brick.

Remove damaged parge coat on exterior masonry window sills. Test the composition of the parging. Restore to match original.

It is recommended a paint analysis be completed to determine the original finish of the decorative "stickwork" at the gable ends. Once determined, the non-historic paint should be removed at the "stickwork" trim areas. Refinish to match per historic photographs. Patch and repair stucco sections between the decorative trim, paint to match original.



North elevation of Milk and Ice House



South elevation of Milk and Ice House



East elevation of Milk and Ice House



West elevation of Milk and Ice House



Deformed area on the east elevation



Insulated pipe on the north elevation of Milk and Ice House



Missing mortar at ground level due to water infiltration



Loose bricks and stair-step crack at wall and roof intersection on the southeast corner of structure.



Gable ends infilled with stucco and painted decorative "stickwork" trim on the east and north elevations.



Areas of minor stair-step cracking above and below original windows



View of roof at Milk and Ice House

CATEGORY:	3.5 Envelope - Roofing & Waterproofing
DESCRIPTION:	The roof is a simple gabled plan of two intersecting gables. It is rectangular in shape with modern asphalt shingles with 2x6 rafters at 24 inches on center. The gabled ends have moderate overhangs with a painted, plain verge board. The eave extensions are supported by 4x4 wood brackets at the ridgeline and outside walls.
	Water drainage is by continuous half-round metal gutters and downspouts on the east and west elevations.
	A louvered cupola-ridge ventilator with a hip roof is located at the center of the original structure. The vertical surfaces of the cupola are shingled to the bottom of the louvers.
EVALUATION:	The roof is in fair to poor condition. Several shingles are showing signs of UV degradation, specifically on the west elevation.
	Paint is peeling at the support brackets, rafter tails and verge boards. One 4x4 support bracket is missing at the southwest side of the roofline of the original 1911 structure. Gutters are loose and missing in some locations.

RECOMMENDED TREATMENT:

All existing roofing materials should be removed to solid sheathing. Replace any deteriorated sheathing with an in-kind material and install new No. 1 cedar wood shingles to match exposure of original shingles. Remove existing gutters and downspouts at east and west elevations. Install new gutters, downspouts and concrete splash blocks; paint to match original. Scrape sand and repaint rafter tails and bargeboards. Replace damaged bargeboards with like kind. Replace missing 4x4 support bracket to match original brackets that remain. Paint to match original.

If tempering of this building is required once a future adaptive re-use is determined, installing insulation could be investigated in concealed spaces of the roof structure. Applying insulation to the interior on the exterior walls would impact the historic character of the structure.



Gable end and cupola



Roof, gutter and downspout on east elevation



Louvered cupola at intersection of gabled roofs



Missing gutter section at west elevation.



Missing 4x4 bracket



Damage at eave trim



4x4 support bracket at corner roofline



Half round metal gutter



Doors at the Milk and Ice House

CATEGORY:

DESCRIPTION:

3.6a Doors

Doors at the Milk and Ice House vary in style, construction and design based on their specific function related to the processes of the Milk and Ice House. Five doors exist on the east elevation which provided access to the various sections of the structure required for the milk and ice processes. These include access to the coal-fired boiler room, refrigeration room, refrigeration compressor room and the main entrance to the bottle washing room and pasteurization vats. Two additional doors are located on the north and west elevations supplying access to supplementary rooms.

The interior doors allow further access to the various spaces within the structure (see floor plan for room numbers).

The original structure built in 1911 includes Rooms 100, 101, 101A, and Room 105. An addition was completed in the 1940s by Mr. Tepper when the farm began processing more pasteurized milk. These rooms include Rooms 102, 103, and 104.

Doors on the east elevation vary significantly. All are painted wood with painted wood frames, but illustrate different design and construction. The door associated with Room 100 is a four paneled painted wood door with

SHOENBERG FARM	
1911 Brick Milk and Ice House	a horizontal two-light transom window above. The hardware is original.
	The two doors associated with Rooms 101 and 101A, most likely the Refrigeration and Compressor room are several inches thick, most likely indicating insulation such as sawdust. The southern most door is a painted wood five-paneled door with wide wood trim boards surrounding the door. Large, original hinges and door hardware remain intact. The second door at Room 101A is a tall wood door with diagonally-laid beadboard panels. Wide trim boards surround the door on all sides. The door is positioned approximately 12 inches above grade. The original door hardware and hinges are intact.
	A pair of double doors provides access to the main section of the structure and leads into Room 102. The doors are painted wood half-light doors with three horizontal wood panels below the middle rail. The glazing is wire glass. A four-paneled half-light screen door with a spring closer remains on the southern most of the pair of doors. Hardware is original and intact.
	The two additional doors, one on the north elevation and one on the west allow access to Rooms 103 and 105 respectively. Both the doors are painted wood half-light doors with three horizontal wood panels below the middle rail. The northern door has a three-light transom window and the west a two-light transom. All hardware is original.
	The interior doors are painted five-paneled wood doors typically. A set of double doors is located between Rooms 102 and 104. One door is intact with its original hardware. A door at Room 103 provides access to a storage area and the exterior door on the north elevation. One of the double doors from Room 102 is currently stored here. Two additional doors are located betweens Rooms 104 and 105 and Rooms105 to 100. All have their original hardware intact and are operable.
	One additional door is located in Room 101 (See Photo on page 133. It is painted horizontal wood plank and does not appear operational as there is no hardware such as hinges or knobs on the door.
EVALUATION:	The doors range from poor condition at the exterior doors to fair to good condition at the interior. All of the exterior doors are missing elements, such as glazing, paint and wood paneling. Some are not functional.
	The exterior door to Room 100 is inoperable. Multiple layers of paint on the interior of the door have painted the hinges shut. The transom light above is lodged in a

partially open position, possibly due to the slight settlement of the structure at this southeast corner. The paint both on the interior and exterior of the door is peeling and flaking.

The five-paneled exterior refrigeration door to Room 101 is in poor condition and is inoperable. Since access to the interior space at this location was impossible, it cannot be determined the condition of the door at the interior of the space. On the exterior, the paint is peeling and flaking. The door to Room 101A is also in poor condition as it cannot be opened. The diagonal wood beadboard and wide trim surround has peeling and flaking paint.

The double doors to Room 102 are in poor condition. Screens are missing and torn at the screen door and the horizontal wood panels on the two doors are warped and weathered. The paint is peeling and flaking.

The north and west three paneled wood doors are in poor condition. The half-light window originally above the middle rail is missing in both doors and currently covered with painted plywood. The transom lights are not functional and the north transom is painted. The north door is not operable. The paint is peeling and flaking at both locations.

The interior doors are in good to fair condition with a few minor exceptions. All are operable and retain their original hardware. One of the double doors between Rooms 102 and 104 is not installed. It is currently being stored in Room 103 and is in good condition. The two interior doors in poor condition are the doors from Rooms 104 to 105 and 105 to 100. Both have significant areas of flaking and peeling paint and some minor damage. The horizontal plank door in Room 100 is in poor condition. Several of the horizontal wood planks are missing and broken.

RECOMMENDED TREATMENT: Since the majority of the doors at the Milk and Ice House appear to be original and intact it is recommended that they be restored and retained. Code and ADA requirements should be addressed in the context of the proposed adaptive re-use, when that is determined.

> All the areas of peeling paint should be sanded and painted to match the original color. Wood members such as panels, rails, stiles, trim, and frames that cannot be stabilized with epoxy should be replaced in kind. Glazing at the wood paneled doors should be replaced and the wood paneled boards replaced and painted to match the original. Original hardware should be

removed, reconditioned and reinstalled. All screening should be replaced. The two doors to the refrigeration room should be made operable.



Doors on the east elevation of Milk and Ice House



Two-light transom over door to Room 100



Interior view of the exterior door of Room 100



Original hardware and five-paneled wood door to Room 101



Diagonal beadboard refrigeration door on the east elevation of Milk and Ice House



Five-paneled wood door at Room 101



View of above grade door



Wire glass glazing a the double exterior doors to Room 102



Interior view of exterior doors at Room 102



Torn and missing screens at wood screen door



Warped and weathered horizontal panels at exterior doors to Room 102 $\,$



Wood double doors and screen doors to Room 102



Peeling paint at wood doors of Milk and Ice House



Door at north elevation



Painted three-light transom above door on the north wall



Wood board covering missing window glazing on the north door



Wood paneled door and two-light transom at west wall



Wood board covering missing window glazing on the west door



Interior view of west exterior door to Room 105



Interior door from Room 100 to Room 105



Five-paneled double door at Room 102



Interior door to Room 103. The missing double door from Room 102 is visible in the storage area



Typical painted five-paneled wood interior door





Interior door at Room 105

Horizontal wood plank doorway in Room 101



Windows on the west wall of Milk and Ice House

CATEGORY:

DESCRIPTION:

3.6b Windows

Several styles of windows exist at the Milk and Ice House. All appear to be original to their eras of construction. All the windows have brick masonry sills, sloped approximately 15 degrees. Sills on the original 1911 section of the structure have a thick concrete parge coating at the sloped section of brick.

Styles vary from a 12-light fixed window located in the 1940s era section of the structure, to two-over-two double-hung windows at the 1911 section to small two-over-two fixed windows at both sections.

The north, south and west elevations of the 1911 structure have two-over-two double hung windows with painted wood frames. A four-light casement window is located on the northwest corner of the north elevation. At the north wall, the window screens are intact on both the upper and lower window lights. They are missing at the other locations. A smaller, two-over-two fixed window is located at the southeast corner of the south wall. The lower lights are missing and have been replaced with a substitute material. Wire grating is attached to the painted wood frame surround. The brick masonry sills have a concrete parge coat at the slope.

SHOENBERG FARM	
1911 Brick Milk and Ice House	The north, south and east elevation walls have 12-lights fixed metal window assemblies at the 1940s era addition to the structure. The sills are sloped brick. A small two-over-two fixed window is on the north elevation, just to the west of the north entrance door.
EVALUATION:	The windows are in fair to poor condition. The wood double-hung windows are still operable. The paint on the frames is peeling and weathered. Several of the windows are missing panes of glass or have broken panes. The casement window on the north façade is not operable. The lower pane is broken and the hinges have rusted. Sash members are in fair condition, with signs of weathering and paint cracking. The 12-lights fixed windows are in fair condition. Several panes of glass are still intact, but cracked and broken in place. The metal sash members are in fair condition. Some are showing signs of rust where the paint has deteriorated.
	The sloped brick masonry sills are in fair condition. Some locations have damaged areas of brick and are showing signs of deterioration. The parge coats on the sills of the 1911 construction are in poor condition, either missing sections or areas of deterioration are evident.
RECOMMENDED TREATMENT:	Remove all broken glazing and replace with new glass at all necessary locations. Epoxy stabilize or replace the deteriorated wood members. Replace glazing compound throughout. Sand and repaint the wood frames of the double-hung windows and the small fixed windows.
	Replace broken or missing brick elements at the sloped window sills. Remove damaged parge coat at the 1911 structure and reapply to those original areas.
	Replace all screens at the two-over-two double hung windows. Replace the rusted hinges at the casement window to make operable. Replace the broken and missing glazing.
	Clean the rusted sash and frame members of the 12- light fixed windows. Replace the cracked and missing glass elements and deteriorated glazing compound throughout. Caulk at the masonry junction and paint the metal frames and sash to match original.



South elevation wall of Milk and Ice House. Two two-overtwo double-hung windows and one smaller two-over-two window are shown.



Two-over-two window with substitute glass replacement at lower sash



Separated wood window frame at the frame and masonry junction.



Concrete parge coat at sloped masonry window sill



Four-light casement window at north exterior wall



Two-over-two wood double-hung window on west elevation





Sloped brick masonry window sills below 12-light window system



Painted window muntins and broken glazing at 12-light window system



12-light fixed window



Interior of Milk and Ice House looking north

3.7 Interior Finishes

The interior of the Milk and Ice House is designed for its specific use as an ice house and milk pasteurization plant for the farm complex.

The flooring is concrete throughout with floor drains in Rooms 104 and 105. The walls differ between the original 1911 structure and the 1940 addition. In the 1911 section, walls are painted brick in Room 100 and painted plaster over brick in Rooms 105 and 101. In the bottle washing and pasteurization rooms added in the 1940s the interior walls are glazed brick. In Rooms 102, 103 and 104 the glazed bricks measure 8" x 2 $\frac{1}{2}$ " and are a light tan-orange in color. On the north wall of Room 104, the glazed brick measures 12" x 5" and are a yellow color brick. A coved concrete parge coat runs along the walls as a 'baseboard' element, approximately six inches high in both rooms.

The ceiling finishes vary, most likely based on the function of each individual space. Lath and plaster

CATEGORY:

DESCRIPTION:

Shoenberg Farm	
1911 Brick Milk and Ice House	ceilings are located in the 1940s addition Rooms 102- 104. A painted wood bead board ceiling soffit is at the southern end of Room 104 as well as Room 105. Painted corrugated metal is the ceiling finish in Room 100.
	Interior window sills are covered with a concrete parge coat in Rooms 102-104.
EVALUATION:	Interior finishes at the Milk and Ice House are in good to fair condition with some exceptions, which are in poor condition. The glazed brick walls are in good condition except for a few locations which are exhibiting stair-step cracking. A serious stair-step crack is evident on the eastern interior wall above and below the 12-light window. A minor stair-step crack is located in Room 104 at the south bump-out wall of the refrigeration cooler (Room 101A).
	The 'baseboard' concrete parge coat is in fair to poor condition. Some locations are intact and show no signs of deterioration, while others are missing and failing, exposing the brick wall beneath.
	Painted plaster walls are in fair condition with minor damage most likely due to its original use. Painted brick in Room 100 is in poor condition. Several layers of paint are painted over the brick, and are peeling and cracking in multiple locations.
	The ceiling finishes are in good to poor condition. Locations of the lath and plaster ceilings show no signs of damage or deterioration, while other areas show significantly more deterioration. Areas of peeling paint and exposed areas are evident.
	Rising damp is apparent at the base of several exterior walls, up to 30 inches in some areas. The condition has caused some of the bricks to spall and efflorescence. Given the groundwater conditions of the site, it may be difficult to completely mitigate this condition without completely rebuilding the foundation in concrete and installing a perimeter drain and sump pump. Due to the expense of this measure, we recommend monitoring the situation after perimeter drainage is improved.
RECOMMENDED TREATMENT:	Overall the interior of the Milk and Ice House is in good condition and needs little rehabilitation. Depending on the proposed adaptive re-use planned for the structure, the interior could be modified for that specific use. Some minor recommendations are recommended to restore the interior and make it viable for future ventures.

The concrete 'baseboard' parge coat in Rooms 102 and 104 should be removed and restored where damage has occurred, specifically on the southeast corner of Room 104. All of the ceiling areas should be scraped of the peeling paint and re-painted. The plaster walls should be patched and painted to match original.

Remove the damaged areas of coved 'baseboard' parging and replace with new to match original.

The stair-step cracks should be re-pointed once the foundation has been stabilized. Damaged bricks should be replaced and re-pointed and the efflorescence should be removed with a stiff, natural bristle brush.



Concrete floor and tan-orange brick walls.



Glazed tan-orange colored brick measuring 8" x 2.5" in Room 102, 103 and 104 $\,$



Floor drain in concrete floor in Room 104



Glazed blonde brick measuring 12" x 5" in Room 104 north wall



Damaged area of concrete baseboard parging on the east wall of Room 104



Damaged area of concrete baseboard parging on the north wall of Room 104



Damaged area of concrete baseboard parging on bump out wall of Room 104



Vaulted lath and plaster ceiling at Room 104



Junction of tan-orange and yellow glazed brick



Painted brick and efflorescence in Room 100



Painted plaster walls in Room 105



Painted lath and plaster in Room 101



Peeling paint at beadboard soffit



Intact lath and plaster ceiling in Room 104



Peeling paint at vaulted lath and plaster ceiling



Painted corrugated metal ceiling in Room 100


Beadboard ceiling in Room 105



Damaged lath and plaster ceiling in Room 104



Stair-step crack at the northeast corner of interior Room 102



Stair-step crack at northeast corner of Room 102



Stair-step crack at bump out wall in Room 104



Concrete parge coat on interior window sills



Crack below east window Room 102



Painted brick in Room 100

SHOENBERG FARM1911 Brick Milk and Ice HouseCATEGORY:3.8 Mechanical SystemsDESCRIPTION:There are no extant mechanical systems in the building.EVALUATION:NARECOMMENDED TREATMENT:Mechanical systems will need to be addressed in the context of the building's masonry construction and single-glazed windows, energy efficiency concerns will need to be balanced with preservation needs.



CATEGORY:	3.8c Water Service, Plumbing, and Sewer
DESCRIPTION:	The only extant plumbing elements are the interior floor drains. Most likely, these are connected to an underground dry well or leachfield.
EVALUATION:	Assume that the floor drains and associated piping are not piped per code.
RECOMMENDED TREATMENT:	Cap the floor drain piping and abandon them in place.



CATEGORY:	3.9 Electrical Systems
DESCRIPTION:	The electrical distribution within this building is run in conduit from fuse panels. Lighting is predominantly strip fluorescent.
EVALUATION:	The electrical system is not code-compliant. Lighting ballasts are corroded.
RECOMMENDED TREATMENT:	Replace the building's entire electrical system with a new code-compliant system. It may be possible to reuse conduit (surface-mounted is most feasible and in keeping with the building's historic character.) New fluorescent lighting should resemble existing and would be in keeping with the building's utilitarian nature.



Corroded junction box



Junction boxes in Room 104



Distribution panels in Brick Milk and Ice House









Site looking north of Brick Pump House

CATEGORY:	3.1 Site
DESCRIPTION:	The site at the Brick Pump House is flat with a moderate rise to the north. Recent activity by the current tenant has disturbed the site and obstructed access to the northwest corner.
	Vegetation is sparse around the building with only one volunteer tree at the south elevation. It is located between the Pump House and the Brick Milk and Ice House. Shrubbery around the structure is all volunteer grasses and plants.
	The site appears to have negative slope toward the building where water and soil pressure from the south is causing damage to the south perimeter wall of the structure.
EVALUATION:	The site is in poor condition. Vegetation has been allowed to overgrow and is damaging the structure. Volunteer grasses on all sides are unkempt and overgrown. There is inadequate slope away from the structure to allow for proper water drainage.
RECOMMENDED TREATMENT:	Remove the tree between the Pump House and the Brick Milk and Ice House. All volunteer grasses and shrubbery should be cut and maintained so as not to

allow overgrowth. Re-grade the site to provide a minimum slope of one quarter inch per foot to six feet out from the building perimeter.



Volunteer tree between Brick Milk and Ice House and Brick Pump House



Overgrown shrubbery at north elevation of Pump House



Volunteer grasses against Pump House structure

SHOENBERG FARM

1911 Brick Pump House



Distressed and deflected north wall from exterior

CATEGORY:

DESCRIPTION:

3.2 Foundation

The Brick Pump House is a rectangular structure consisting of four exterior brick walls approximately 8 feet tall. The lower halves of the walls are below grade and retain earth. The walls are three wythes below grade and two wythes above grade. No footing was visible but it is assumed that concrete strip footings exist.

On the east side of the building, stairs (concrete treads with brick risers), descend to the interior between twowythe brick return walls.

The original south wall has largely been removed and replaced with pressure-treated 2x6 studs at 16" and plywood sheathing. The north wall has been shored with a continuous 2x12 plate approximately 3' above the slab and five equally spaced 4x6 kickers.

Shoenberg Farm	
1911 Brick Pump House	Efflorescence is evident along the middle-third portions of the walls. Both the bricks and the mortar are
	step cracking near the two windows and the door opening.
	The floor is a slab-on-grade with hairline spider web cracking. Various concrete equipment pedestals rest on the slab.
EVALUATION:	The exterior walls are in poor condition. Exterior soil pressures exerted on these walls have caused significant distress and deflection. At the worst condition, the north wall has deflected inward by approximately 1 foot. This wall's capacity to resist loads is effectively gone. The shoring is the only thing preventing complete collapse of the wall. Furthermore, the shoring assembly does not have the calculated capacity to resist the lateral earth pressure. The remaining brick walls are not as severely deflected but have also lost much of their capacity.
	The wood-framed south wall is currently plumb, but not a good long-term solution to resist soil pressures because of the loss of historic fabric. Also, even pressure-treated wood can deteriorate when in direct contact with moisture without a protective membrane.
RECOMMENDED TREATMENT:	In the current condition the Pump House is not safe for occupancy. It is recommended that the soil around the perimeter be removed immediately to prevent collapse. A pump or drain system will need to be provided to prevent the excavated area from filling with water.
	If the Pump House is to become occupied in the future, it is recommended that concrete retaining walls and footings be introduced up to the grade elevation and that all of the brick walls be removed and rebuilt. The brick walls can be rebuilt utilizing the salvaged bricks, and be built off the top of or just inside the new concrete retaining walls. But, severely deteriorated bricks are not considered salvageable so some new bricks will need to be introduced. A perimeter drain is also recommended in conjunction with this repair.
	The slab-on-grade is in serviceable condition, but will likely need to be removed in order to rebuild the walls and install competent foundation elements.



Distressed and deflected north wall from interior



Pump House roof framing

CATEGORY:

DESCRIPTION:

3.3 Building Structural Systems

The Brick Pump House is a rectangular structure consisting of four exterior brick walls with a gable woodframed roof. The walls are described in the 'Foundations' section.

The roof system consists of 2x4 rafters at approximately 18" spacing tied to 2x10 top plates atop the north and south exterior walls. The roof is sheathed with 1x6 boards. The rafters are nailed to a 1x6 ridge board. Every fourth rafter has a 2x4 collar tie at mid-height. 2x4 outriggers are sistered to the rafters to form the eaves. The plaster and lath ceiling framing is 2x4s spaced at approximately 18". Every fourth ceiling joist is tied to a roof rafter via a 1x6 hanger.

Water damage to the roof and ceiling framing is evident on the northern half of the Pump House. Some of the framing members are merely water-stained while other members have deteriorated.

A line of shoring beams and posts have been introduced adjacent to and offset from the north and south exterior walls to support the ceiling joists. The beams and posts are 6x6s, and the assembly is built tight to the underside of the ceiling joists.

SHOENBERG FARM	
1911 Brick Pump House	The east and west gable end-walls above the brick are constructed of vertical 2x4s at 24".
EVALUATION:	The roof framing is in poor condition. The roof rafters are inadequately sized and spaced to support the current design snow load. The ceiling joists are inadequate to support any additional dead load besides the self-weight of the plaster and lath ceiling. Also, the ceiling joists are distressed due to the compression induced by the tops of the brick retaining walls pushing inward, hence the line of shoring.
RECOMMENDED TREATMENT:	The roof framing requires further investigation to survey the extent of the water-damaged members. Severely damaged members will require replacement. Moderately damaged members will need to be replaced or reinforced. Stained members can be retained.
	The overstressed members require reinforcing to bring the roof and ceiling framing assemblies into compliance with current Code-prescribed loads. The roof rafters can be either sistered or collar ties can be introduced to each rafter pair. The ceiling joists can be sistered to resist both gravity loads and to provide restraint for the tops of the retaining walls.
	The wood member connections will need to be analyzed

The wood member connections will need to be analyzed and will likely require strengthening. Anchorage of the sill plate to the brick wall requires bolstering to transfer lateral earth pressures from the brick wall to the ceiling diaphragm.



Collar tied roof rafter framing system



Ceiling joist shoring along north wall

SHOENBERG FARM

1911 Brick Pump House



West elevation of subterranean Brick Pump House

CATEGORY

DESCRIPTION:

3.4 Envelope - Exterior Walls

The single-story, subterranean Brick Pump House is approximately 416 square feet constructed of red brick masonry in a running bond pattern. It is rectangular in plan with two-wythe thick walls. Approximately four feet of masonry is visible above ground.

The gable ends of the masonry walls on the east and west elevations have painted wood shingles with simple verge board overhangs.

A wood-panel cellar door provides access to masonry steps that lead to a wood-panel entry door.

There are five masonry steps leading down to the interior of the Pump House. Evidence suggests that the top two steps have possibly been reconstructed at some unknown date. The top two steps are constructed of concrete risers with a 2" red sandstone tread. The lower three steps are constructed of two rows of brick risers with a 2" top tread of red sandstone, suggesting the entire stair was originally brick risers.

SHOENBERG FARM **1911 Brick Pump House EVALUATION:** The Brick Pump House is in poor condition. The southern most wall is failing and deteriorating. Recent stabilization efforts have temporarily arrested further damage by stabilizing the wall with plywood sheathing on the exterior and wood studs on the interior (see 3.2 Foundations). Due to the shifting of the structure as a whole, the north elevation is showing signs of buckling. Several areas show critical stair-step cracks in the masonry walls, leaving large gaps and holes. Previous stabilization and repair attempts are evident in multiple locations, specifically on the north elevation. Past repairs include multiple locations of mortar patching and repairs with non-historic cementitious mortar throughout the structure. Brick elements have begun to dislodge on the north elevation, exposing the interior of the pump house to the elements. The masonry steps are in fair condition. Two of the steps appear to have been reconstructed with concrete risers. Some cracking is evident at the juncture of the brick and sandstone. **RECOMMENDED TREATMENT:** The north and south walls should be re-built and the structure stabilized (see 3.2 Foundations). The east and west wing walls should be assessed as the north and south walls are re-built. The wing walls have suffered from previous patching attempts and may need to be reconstructed if the existing brick cannot be salvaged due to the cementitious mortar used to patch the mortar ioints.

The cementitious mortar used previously may be difficult to remove in the rehabilitation process and therefore a higher percentage or replacement brick should be anticipated. It is assumed approximately 75% of the existing brick needs to be replaced. New replacement brick and mortar should match original, including compressive strength.



North elevation of Brick Pump House



South elevation of Brick Pump House



East elevation of Brick Pump House



West elevation of Brick Pump House



Brick repair at the north perimeter wall, using cementitious mortar



Distortion of the north wall from soil movement



Southeast corner of south wall with wood bracing



Missing south wall at the southwest corner of wall





Temporarily stabilized south wall of Pump House



Brick and concrete steps with red sandstone treads



Detail of brick step and sandstone tread



Asphalt shingle roof at the Brick Pump House

CATEGORY:	3.5 Envelope – Roofing & Waterproofing
DESCRIPTION:	The roof plan is a simple front gabled roof construction. The roofing consists of asphalt shingles applied over original wood shingles. Narrow eave overhangs are present on the north and south elevations. A metal gutter is located on the south side of the roof. No gutter exists on the north side of the roof.
EVALUATION:	The roofing is in poor condition with several areas of deteriorating asphalt shingles, exposing the wood shingles below. Missing or damaged asphalt shingles along the eave and rake edges are allowing water infiltration and exposure to the interior, further damaging the perimeter walls.
	are bent and detached from the structure.
RECOMMENDED TREATMENT:	Remove the existing shingles and original wood shingles down to the wood deck. Replace deteriorated wood plank sheathing with new to match original. Install new, No. 1 cedar shingles to match exposure of original. Replace damaged fascia members. Scrape and repaint all eave members.
	Remove existing metal gutters and install new gutters and downspouts to match original.



Asphalt shingles with original wood shingles below





Bent gutter at south elevation of Pump House



Damaged asphalt shingles, fascia and missing gutter at the north elevation



Roof of Pump House



Four-paneled wood door at main entrance to Pump House

CATEGORY:	3.6a Doors
DESCRIPTION:	Two doors exist, both on the east elevation. The exterior door consists of two plywood panels that provide access to the entrance stairs of the pump house. At the base is a large four-paneled wood entry door with bead board decorative elements in each panel.
EVALUATION:	The exterior cellar door is in poor condition. The wood is buckling and warped due to weather exposure and moisture damage. Once painted, the doors retain only small remnants of paint. The interior wood paneled door is in good to fair condition. Some evidence of water staining exists on the exterior side of the door. Original hardware is intact.
RECOMMENDATION:	Remove the exterior cellar door and replace with a new metal panel door, backed by marine-grade plywood. Install a lock to provide security.
	Sand and refinish the original interior wood paneled door.



Wood cellar door entrance



Four-paneled wood entry door with bead board



Original door knob and escutcheon plate at four-paneled wood door



Six-light window at the north elevation of Brick Pump House

CATEGORY: 3.6b Windows DESCRIPTION: The windows on the Pump House are six-lite, fixed-pane windows with a painted wood surround. Windows exist on the north and west elevations. The windows consist of an interior window and an exterior storm window with approximately six to eight inches of air space between the glass panes. The exterior storm windows originally were operable as a top-hinged awning window. **EVALUATION:** The north window is in poor condition. The exterior awning window is not operable and is lodged in an open position, allowing water and birds to gain access to the structure. Several panes are broken; the painted wood surround is deteriorating and flaking. The west window interior glass panes and frame are intact, and in fair condition. Glazing on the storm panel is missing. A chain link fence has been installed at the window. Wood 2x boards have been installed over the original painted wood surround to hold the fencing in

place.

RECOMMENDED TREATMENT:

Replace broken glass at both windows, both interior and exterior panes. Sand and paint the wood sash and muntins. Remove the chain link fence and 2x boards on the west window. Reconstruct the wood frame and trim when the exterior walls are rebuilt.



West window with chain link fence and $\ensuremath{\text{2x}}$ wood framing surround.



Broken and missing glass lites at north awning window



Interior view of north window



Broken glass in north window



Interior of Brick Pump House

CATEGORY:	3.7 Interior Finishes
DESCRIPTION:	The interior of the Pump House is utilitarian and retains some original equipment to the operation of the Pump House. A large storage tank and electrical pumps still remain in situ, although not currently functional.
	The interior ceiling is constructed of wood lath and plaster, the floor is a concrete slab.
	The south wall is currently supported by wood studs and in-filled with insulation. This is the temporary stabilization effort completed on the south elevation when the perimeter masonry wall was removed.
	The north wall retains some of the electrical panels associated with the pump system.
EVALUATION:	The interior of the Pump House is in fair to poor condition. The exterior masonry walls are buckling due to the structure's inability to resist lateral forces, allowing water and animals to enter the interior of the structure. The damaged brick and mortar is crumbling from the gradual breakdown of the north wall and is collecting in areas on the concrete floor.

SHOENBERG FARM

1911 Brick Pump House	
	The plaster ceiling is in poor condition with several areas missing plaster entirely. The concrete floor is in fair condition.
RECOMMENDED TREATMENT:	Once the future use of the Pump House is determined, the interior should be cleaned and restored for future ventures. As mentioned in previous sections, the exterior masonry walls need to be stabilized and reconstructed, thus stabilizing the interior space of the Pump House.
	The plaster ceiling treatment should be removed to better assess the existing rafter system and roof damage. This will allow further assessment of the undersized roofing members and to evaluate and stabilize the structural members. Once the structural members of the roof are evaluated and stabilized, the interior ceiling should be replaced with gypsum board, finished to match the historic plaster ceiling.

If possible, the original machinery should remain intact and protected.



Concrete floor of Pump House



North interior wall of Pump House.



Wood lath and plaster ceiling damage



Damage at Pump House ceiling



Original equipment remaining in the Pump House



Stabilized south wall with wood studs and insulation



North interior wall of Pump House



Crumbling bricks and mortar residue on floor of Pump House



Unit heater

CATEGORY: 3.8 Mechanical Systems DESCRIPTION: The extant mechanical systems in the Pump House include the radiator on the north wall, the pump reservoir (a large storage tank) and an electric unit heater. **EVALUATION:** None of the systems are currently operational. The unit heater is probably not adequate to heat the space. **RECOMMENDED TREATMENT:** The pump function is no longer required to sustain site operations. Therefore, its value is interpretive in nature. Equipment should be cleaned, not repaired, and left in situ. (Hazardous material testing should be performed in this area as PCB's and other hazardous chemicals have been known to be associated with similar motorized activities.) Any adaptive reuse should consider an appropriate means to heat the space.



Storage tank



Storage tank with adjacent unit heater (on the floor)



Radiator piping



Equipment panel switches

CATEGORY:	3.9 Electrical Systems
DESCRIPTION:	Electrical systems consist of equipment panels and switches with distribution in conduit. Lighting is ceramic lamp holder for incandescent. A motorized pump, that formerly filled the adjacent tank, is located at the west end of the space.
EVALUATION:	None of the systems are code-compliant. Most of the panels are fuse-type.
RECOMMENDED TREATMENT:	The value of the panels and motorized pump are interpretive in nature. They should be abandoned in place, removing all conduit to within 6" of the panel box (so that functionality is not in question.)
	A new service for lighting and outlets should be installed in the building with surface-mounted conduit.



Electrical panel with hornets' nest



Ceramic lamp holder



Motorized pump



Equipment panel switches



Equipment panel switches






Wood Silo located at the north end of Milk Barn and Concrete Silo

CATEGORY: 3.1 Site DESCRIPTION: The site surrounding the Wood Stave Silo consists of areas of dense and random vegetation to the north and east. Volunteer vegetation is overgrown making access to the northern elevation of the silos unfeasible. A large, approximately 72 foot wide concrete driveway runs south to north of the two silos and extends approximately 150 feet to the west to connect with the Quonset Structure. The site is flat with a slight rise to the north and a slight decline to the east. Historic photographs indicate that originally two wood stave silos were located adjacent to each other (see 6.0 Historic Photos). One of the remaining foundations from the demolished wood silo structure is collecting water within the foundation boundaries, possibly from leaching ground water. The depression has filled with stagnant water, dirt and miscellaneous debris. **EVALUATION:** The site adjacent to the Wood Stave Silo is in poor condition. The vegetation, specifically to the north elevation has been allowed to overgrow and is encroaching on the structure. Trees and volunteer grasses are unkempt and overgrown. The concrete driveway is spalling in multiple locations with several areas of cracking concrete. There is inadequate slope in several locations throughout the driveway area, allowing

water, dirt and debris to collect. The exposed

foundations of the demolished hay feeder's silos currently pose a hazard as metal elements; loose rocks and concrete are visible.

RECOMMENDED TREATMENT: Trir

Trim the overgrown grasses and shrubbery surrounding the silo. Remove the volunteer groves of trees at the north corner so as to provide clear access and to diminish further damage to the foundations.

Re-grade the planted area around the north and east of the silo to establish positive drainage away from the structure.

Replace the concrete driveway. Evaluation of the leaching ground water needs to be addressed. If the silo is to be adaptively re-used by a future tenant, the foundation of the demolished silo needs to be secured or removed so as not to infringe on access to the site.



Concrete driveway looking east towards Wood Stave Silo location



Foundation remains southwest of 1911 Wood Stave Silo filled with standing water and debris.



North elevation of wood silo with overgrown trees. Concrete silo is directly adjacent.



Trash and debris blocking entrance to Wood Stave Silo. Note foundation remains filled with standing water and debris at right.



Overgrown trees at north corner of wood silo foundation



Base of Wood Silo along east side

CATEGORY:	3.2 Foundation
DESCRIPTION:	The circular wood walls of the Silo bear on a concrete foundation element just above grade. Only a portion of the foundation is visible from the exterior. The Silo contains debris and silage several feet deep so the floor and foundation are not visible from the interior. The foundation system may be a monolithic circular-shaped flat slab and footing; or the system may be a circular stem wall atop a spread or strip footing and a slab-on- grade or dirt floor.
EVALUATION:	The foundation system in general appears to be in good condition. The Silo structure and walls are vertically plumb. Little differential movement of the foundation system is apparent.
	Superficial deterioration and spalling of the concrete surfaces has occurred. One large vertical crack is visible on the east side of the foundation.
	It has been reported that groundwater has been present at the base of the Silo in the preceding year.
RECOMMENDED TREATMENT:	The interior of the silo should be cleared so that the foundation can be further observed. The foundation system appears to be functioning properly. If the Silo is

to remain unoccupied no repairs are anticipated other than repairing the cracks and the surfaces.

If public occupancy of the Silo is anticipated in the future, further investigation and analysis of the foundation system is warranted to ensure Code-compliance for both gravity and lateral loads. A more robust foundation may be necessary.

A perimeter drain should be installed to limit water infiltration around the foundation. This will help prevent future foundation movement.



Crack in foundation along east side

Wood Stave Silo



Upper portion of Wood Silo along east side

CATEGORY:

DESCRIPTION:

3.3 Building Structural Systems

The Wooden Stave Silo is a cylindrical structure consisting of an exterior circular wood stud wall and a wood-framed roof.

The walls are constructed of 2x6s at 16" with horizontal blocking at 30". The inside of the walls have diagonal sheathing which changes directions twice up the height of the structure. The outside sheathing is comprised of vertical 1x4 tongue-and-groove boards.

Anchorage of the stud walls to the foundation is not currently visible.

Horizontal cable ties wrap around the exterior sheathing at approximately 2 foot spacing. The lowest two ties are 5/8" diameter rods, the remaining ties are 1/2" diameter cable. The uppermost tie is roughly 3 feet below the top of the circular wall.

	The roof is a segmented octagonal roof form with hip members that intersect near the ridge at a rusted metal ventilation cap. Wood shingles are visible on several facets of the roof. The shingles are missing from the north facing facet, so the 1x6 horizontal sheathing is visible. The horizontal sheathing has approximately 2.5" gaps between the boards. Those boards are supported on 2x6 rafters. The rafters have a birds-mouth cut where they bear on the 2x6 horizontal wood plate. That plate in turn is supported by the circular wood walls of the silo.
EVALUATION:	Overall, the wood stud wall assembly is in fair condition. Where observed, the studs appeared competent. The interior and exterior sheathing has undergone some deterioration due to age, exposure to weather and silage, and woodpeckers. Tar paper attached to the interior sheathing appears to have slowed the deterioration process. But, the condition of the wall studs and interior sheathing may be in poor condition below the silage elevation. Many of the interior sheathing boards are missing.
	The hoop ties are in good condition, but some of the ties are not snug to the exterior sheathing.
	The general condition of the roof structure is poor. In some locations the roof rafters have thrust outward as much as 2 to 3 inches. Also, many of the roof framing elements are either severely deteriorated or missing.
RECOMMENDED TREATMENT:	After the silage is removed, the wall assemblies should be thoroughly inspected for deterioration as only a limited area was observable for preparation of this report. Sheathing or studs that are deteriorated should be removed and replaced. In-place strengthening may also be possible depending on the extent of deterioration. The hoop ties can be temporarily loosened or removed selectively (a few at a time) so that the exterior wood sheathing can be repaired or replaced.
	The Silo's anchorage should be uncovered so that the existing system can be observed and analyzed. Supplemental anchorage of the stud walls to the foundation may be required to resist the overturning induced by Code-prescribed lateral loads.
	The hoop ties should be straightened where sagging and tightened where not in direct contact with the exterior sheathing. One additional tie should be introduced to the top of the wall to counteract the thrust induced by the roof rafters to the top plate. It is assumed that the structure originally had a cable tie in this location.

It would be advisable to either remove the roof structure and replace it with new material of a similar kind replicating the original system or to sister the existing inplace framing and replace the missing elements.



Horizontal cable tie and coupler



Silo roof framing from below



North-facing facet of Silo roof framing



Wood Silo cable ties



View looking north at 1911 Wood Stave Silo with 1950s Concrete Stave Silo adjacent.

CATEGORY:	3.4 Envelope – Exterior Walls
DESCRIPTION:	The Wood Stave Silo measures 16 feet in diameter and is constructed of painted wood boards measuring 3 ¼" inches wide installed at varying lengths. Vertical tongue- and-groove boards clad the exterior wall of the silo with diagonal cross-bracing located on the interior face of the silo. The silo rests on a concrete foundation. Steel cables and turnbuckles act as a compression ring system on the exterior of the structure, securing the vertical wood boards.
	Three access windows are located on the southeast corner of the silo. The lower window is accessible from grade level, providing a view inside the structure.
	A wood framed entrance shed is located on the west side of the silo, connecting the wood silo, the concrete silo and the adjacent barn. The shed has a flat roof constructed of nominal 1x sheathing with a corrugated sheet metal roof.
EVALUATION:	The Wood Stave Silo is in poor condition. The exterior wood tongue-and-groove boards are in fair condition, but the interior skin of the silo is in various states of deterioration. At the interior, the building paper that once covered the wood cross-bracing has deteriorated.

Wood Stave Silo

The shed attachment is in poor condition. A door and possible window in 'skeleton form' are all that remain intact on the south side of the shed. The flat sheet metal roof above the wood entrance structure is in poor condition with areas that are bent and dented.

RECOMMENDED TREATMENT:

Replace all damaged and deteriorated exterior wood sheathing boards with an in-kind material. Existing wood tongue-and-groove boards in good condition should be scraped, sanded, and repainted to match the original finish. It is unknown when the building paper was installed, or if it is original to the silo construction. It was most likely installed for agricultural purposes. Since the wood silo will not be re-used for agricultural purposes in the future, it is not recommended to re-install the building paper.

The interior sheathing should be removed and replaced with an in-kind material to match the original diagonal cross-bracing. The interior building paper should be removed so the new cross sheathing is visible.

The wood framed shed is a safety hazard in its current deteriorated state. It is recommended the shed be documented, dismantled and any material salvaged for future reconstruction purposes, based on historic photographs and documentation.



Concrete foundation of Wood Stave Silo



Vertical tongue-and-groove boards at exterior face of Wood Silo



Wood structure at the entrance between the Wood and Concrete Silos



View looking north of wood structure. Wood silo is to the right and the Concrete Silo is to the left $% \left({{\rm{Concrete}}} \right) = {{\rm{Concrete}}} \right)$



Underside of wood structure at entrance



North side of Wood Stave Silo



Steel bands at the northeast side of the Wood Stave Silo.



Interior view of Wood Silo showing cross-bracing and deteriorated building paper.





Foundation and support column of wood entrance structure

Wood Stave Silo



Segmented wood shingle roof of the Wood Stave Silo

CATEGORY:	3.5 Envelope – Roofing & Waterproofing
DESCRIPTION:	The roof shape is segmented with eight pie-shaped segments, covered with wood shingles. Eight primary framing members make up the roof structure with spaced sheathing. A round ventilator is located at the peak of the roof.
EVALUATION:	The roof is in poor condition. Wood shingles are missing and the spaced sheathing has deteriorated.
RECOMMENDED TREATMENT:	Once the roof structure has been repaired of replaced, install new, spaced 1x sheathing members to match the original. Install No. 1 cedar shingles over the new sheathing and replace the ventilator with a new galvanized vent of the same design (coordinate venting requirements with the current building code).



Segmented roof of Wood Silo with missing sheathing and shingles.



Underside of wood roof



Lower window at Wood Silo

CATEGORY:	3.6 Windows and Doors
DESCRIPTION:	Access to the wood silo from the ground level is through one opening at the southwest side of the structure. Additional openings are present in the upper levels of the silo. The openings are framed with 2x members. It is unknown if the openings once had a protective covering.
EVALUATION:	Openings at the Wood Silo are in fair to poor condition. Since the upper openings are inaccessible, they were not evaluated, but look to be in poor condition. The lower opening is in fair to poor condition. There is deterioration at the sill location from weathering and bird habitat.
RECOMMENDED TREATMENT:	Replace the wood framing members and, until an adaptive re-use can be determined, close up the openings with protective plywood or sheet metal panels.



Upper opening at Wood Stave Silo



2x framing at opening of Wood Silo

SHOENBERG FARM Wood Stave Silo CATEGORY: 3.8 Mechanical Systems DESCRIPTON: There are currently no mechanical systems associated with this structure. EVALUATION: NA RECOMMENDED TREATMENT: Future adaptive re-use of this structure will need to take mechanical systems needs into account and will need to address code requirements.

SHOENBERG FARM Wood Stave Silo CATEGORY: 3.9 Electrical Systems DESCRIPTON: There are currently no electrical systems associated with this structure. EVALUATION: NA RECOMMENDED TREATMENT: Future adaptive re-use of this structure will need to take electrical systems needs into account and will need to address code requirements.



Site south of Concrete silo

CATEGORY:	3.1 Site
DESCRIPTION:	The site surrounding the Concrete Silo includes areas of dense and random vegetation to the north and east. The volunteer vegetation is overgrown, making access to the northern elevations of the silo unfeasible. A large, approximately 72-foot-wide concrete driveway runs south to north of the silo and extends approximately 150 feet to the west to connect with the Quonset structure. The site is flat with a slight rise to the north and a slight decline to the east. A fenced area containing equipment associated with cell phone machinery, which is attached to the north side of the silo is located adjacent to the concrete silo at the north side.
	Two original foundations from the demolished hay feeders (see 6.0 Historic Photos) are located south and west of the silo. Rebar and metal debris are currently exposed within the foundation remains. The current tenant uses this open area for equipment storage.
EVALUATION:	The site adjacent to the Concrete Silo is in poor condition. The vegetation, specifically to the north, has been allowed to overgrow and is encroaching on the structure. Trees and volunteer grasses are unkempt and overgrown. The concrete driveway is spalling in multiple locations with several areas of cracking concrete. There is inadequate slope in several locations throughout the driveway area, allowing water, dirt and debris to collect.

```
Concrete Silo
```

The exposed foundations of the demolished hay feeder's silos currently pose a hazard as metal elements; loose rocks and concrete still protrude.

RECOMMENDED TREATMENT: Trim the overgrown grasses and shrubbery to the north of the silo. Replace the concrete driveway and slope it away from the structures to allow for proper water drainage. If the Concrete Silo is to be adaptively re-used by a future tenant, the two foundations of the demolished hay feeders need to be enclosed or removed so as not to infringe on access to the site.



Site looking north at Concrete silo with equipment storage by current tenant.



1950s Concrete Silo west elevation. Trash and debris blocking entrance path.



Foundation remains of hay feeders west of Concrete silo



Foundation remains of hay feeders west of existing silo



Base of Silo along west side

CATEGORY:	3.2 Foundation
DESCRIPTION:	Exterior grade is above the foundation level and the interior of the Silo contains debris and silage several inches deep thus neither the foundation nor floor elements are visible.
	It is likely that a monolithic circular-shaped flat slab and footing element exists beneath the Concrete Silo.
EVALUATION:	The Concrete Silo structure is vertically plumb, thus the foundation does not appear to be undergoing differential settlement as seen in some of the other structures on site. No other assessment of the existing system can be made without further invasive investigation.
	Code-prescribed design wind and earthquake loads applied to the structure indicate that the Silo is prone to overturning. The capacity of the foundation and foundation anchorage to the silo walls to resist these forces is unknown.
	It has been reported that groundwater has been present at the base of the Silo in the preceding year. This is important to note because groundwater can be detrimental to the expansive native soils and in turn destabilize the foundation.

Concrete Silo RECOMMENDED TREATMENT:	If the Silo is to become an occupied space in the future, further investigation of the foundation system is warranted to ensure Code compliance. Debris in the interior of the silo should be removed and portions of the
	exterior grade should be excavated to expose the foundation elements for observation. The existing foundation system will need to be analyzed for both gravity and lateral loads and any problems or insufficiencies discovered will need to be repaired.
	A perimeter drain and pump is recommended to expel any moisture accumulation in the vicinity of the foundation elements and to mitigate the risk of foundation movement.

Concrete Silo



Concrete Silo west elevation

CATEGORY:

DESCRIPTION:

3.3 Building Structural Systems

The Concrete Silo is a cylindrical structure constructed of pre-cast wall panels tied together with steel hoop ties around the perimeter, and a domed sheet metal roof.

The individual wall panels are un-reinforced pre-cast concrete measuring 10" wide by 30" tall by 2" thick. Alternating edges of the panels are convex and concave in shape such that the panels fit together much like a tongue-and-groove assembly. The top of the circular wall is approximately 45 feet tall.

On the south side of the Silo a unique row of panels exists which accommodate openings and the ladder. These panels are thicker and have a channel coupling so that every other rod can terminate at the edge of the opening.

No vertical tension elements are visible along the height of the structure or in the foundation anchorage zone.

Horizontal steel hoop rods wrap around the exterior of the Silo. The rods are 1/2" diameter and are spaced at regular intervals. At the bottom of the Silo the rods are spaced at 7.5" up to an elevation of 7'-4". The remaining hoops are spaced at 15". The uppermost hoop is roughly 2" below the top of the concrete wall. Rod couplers are

Concrete Silo	
	staggered approximately 5 feet apart in alternate rows. These rods compress the silo circumferentially, holding the precast panels together and resisting pressures from the silage historically stored in the silo.
	The sheet metal roof consists of pie-shaped segments fastened along their sides and formed into a dome configuration. The low ends of the roof are attached to the uppermost steel hoop and overlap the top of the concrete wall approximately 2". No other roof framing elements exist.
EVALUATION:	Overall, the Concrete Silo is in poor condition.
	The lower 25 percent of the pre-cast panels is in poor condition. The panels have experienced severe section loss as a result of concrete spalling. It is likely that moisture from wet silage has permeated the panels. The moisture then froze in the concrete causing the spalling observed. Although the Silo is stable in the current static position, in a severe seismic or wind event collapse is a possibility.
	The middle 50 percent of the pre-cast panels is in good condition. Cracking of the panels is minimal and little deterioration is visible. This portion of the silo has apparently remained relatively dry over the life of the structure.
	The upper 25 percent of the pre-cast panels is in poor condition. Spider web cracking and discoloration of the panels is pronounced. Some of the panels have bowed outward midway between the hoops. It is assumed that the cracking is the result of surface moisture, from roof runoff, undergoing freeze-thaw cycles over the course of the winter months.
	As there are no vertical tension elements the Silo has little resistance to overturning or bending forces from wind loading.
	The hoop ties are in good condition. Where checked the ties were in contact with the concrete panels and the coupler nuts were tight. Intermittent rusting of the rods and couplers is evident and the amount of rusting increases towards the bottom of the structure. The rusting can be characterized as superficial discoloration; no deterioration of the metal is visible.
	The general condition of the roof structure is good. No signs of distress or deterioration are visible to the sheet metal or to the roof's connection with the wall and hoop assembly.

Concrete Silo	
RECOMMENDED TREATMENT:	In its current condition, because of the bottom wall portion's severe concrete loss, the Silo could collapse in a severe seismic or wind event. Therefore, repairing the concrete walls is essential.
	It is doubtful that replacement panels are procurable. Because of the panel's complex geometry at their edges it is also doubtful that the panels can be custom-made economically. The simplest and most economical way to restore the wall's integrity may be to add a layer of concrete to the interior of the damaged walls. This can be achieved by spraying a 3" to 4" thick coat of 'shotcrete' on the wall reinforced with a mat of welded wire mesh reinforcing placed at mid-depth. Limiting the reinforcing to the interior will leave the exterior look largely unchanged. These repairs should be performed in conjunction with the probable foundation repairs (pending further investigation and analysis) so that the Silo walls can be properly anchored to the foundation.
	Where observed, the panels at mid-height were in good condition, but each panel should be inspected for cracks or deterioration. Cracks should be patched with a compatible concrete/epoxy filler to prevent further moisture intrusion.
	The panels at the upper portion also require repair. At a minimum, cracks should be patched with a compatible concrete/epoxy filler to prevent further water infiltration and deterioration. Also, a gutter or similar system should

concrete/epoxy filler to prevent further water infiltration and deterioration. Also, a gutter or similar system should be installed around the roof edge to stop the cyclical wetting, freezing, and thawing of the pre-cast panels.

New vertical steel tension elements will need to be added to the Silo. These elements can be installed on the interior face of the walls. The 'shotcrete' layer mentioned above would extend the full height of the Silo in order to encapsulate these tension elements.

Since it was not possible to inspect every hoop tie in this limited investigation, all hoop ties should be inspected for damage and tight contact with the concrete panels should be confirmed.



Hoop rod coupler



Roof structure from below



Base of Silo from interior



Middle portion of Silo along west elevation



Upper portion of Silo along southwest elevation



Unique panels along south elevation

Concrete Silo



Concrete Silo

3.4 Envelope - Exterior Walls

The Concrete Stave Silo measures 16 feet in diameter and is approximately 45 feet in height. This vertical structure is constructed of a series of poured formed "tongue-and-groove" concrete sections, or staves, measuring two feet six inches in height by ten inches wide. Current wall thickness at the base varies from one to three inches depending on the level and location of deterioration. Sections of scrap staves were found on site measuring three inches thick and are believed to be the original thickness. The sections were most likely poured off site, and then vertically stacked on end.

See Section 3.2 Building Structural Systems for further description.

The silo is in stable, but poor condition.

See Section 3.2 Building Structural Systems for further evaluation.

CATEGORY:

DESCRIPTION:

EVALUATION:

SHOENBERG FARM Concrete Silo

RECOMMENDED TREATMENT:

At such time as it is determined the future function of how the concrete silo will be adaptively re-used, issues such as ADA access will need to be addressed.

See Section 3.2 Building Structural Systems for further recommendations.



Steel connector at hoop ring at exterior face of Concrete Silo.



Remnant of "tongue-and-groove" concrete section



Close-up view of thinning concrete sections at western side of Concrete Silo



Steel tension rings at 8" spacing at Concrete Silo



Interior view of damaged concrete panels at west side of Concrete Silo



Area of removed concrete at west side of silo



Damage to interior of Concrete Silo



Interior wall construction of Concrete Silo



Exterior view at southwest side location with semi-circular corrugated metal enclosure for access ladder.



Interior view of damaged concrete panels at northeast corner



View of steel ladder at northwest side of silo



View of rounded metal roof. Cell phone equipment is visible on the right.

CATEGORY:	3.5 Roofing & Waterproofing
DESCRIPTION:	The roof of the silo is a dome-shaped metal roof constructed of heavy-gauge galvanized sheet metal. It is comprised of 50 individual panels joined together with a flat interlocking seam. There is a center hole, approximately five feet in diameter at the top of the metal roof. The metal panels are self supporting from the base to the peak. Individual panels taper from approximately one inch at the peak to approximately 18" at the base of dome. The base of the metal panels is attached to the top tension ring at every other panel joint.
	The owner currently has a lease with a cell phone company. There is equipment installed on the ground level and attached to the silo just below the roofline.
EVALUATION:	The metal roof appears to be in good condition. Minor dents are visible from the ground at the base of the metal panels. A pie shaped section is missing at the northern corner of the roof.
RECOMMENDED TREATMENT:	Install missing metal pie shaped section in roof to match original. Install a translucent plexi-glass

skylight at the center circle of the roof to allow light infiltration and deter moisture inside the silo.

Although the cell phone lease provides an estimated \$1,500 a month in income to the owner, the ground level equipment and all equipment installed on the silo should be removed in order to restore the historical integrity of the Concrete Silo.



View of ribbed metal roof from interior of Concrete Silo



Visible dents at roof base.



1950s Concrete Silo. Interior view of access openings at southwest side

CATEGORY:	3.6b Windows (Openings)
DESCRIPTION:	Access to the concrete silo from the ground level is through a series of openings located at the southwest corner of the structure. The openings are protected by a corrugated metal chute on the exterior and by removable plank panels on the interior.
EVALUATION:	The access openings are intact and in fair condition. Two wood panels are missing at the lower level.
RECOMMENDED TREATMENT:	Replace missing wood panels at opening locations to match original.


Close-up of access openings at southwest side



View looking up corrugated panel chute at exterior of Concrete Silo

SHOENBERG FARM Concrete Silo

CATEGORY:	3.8 Mechanical Systems
DESCRIPTON:	There are currently no mechanical systems associated with this structure.
EVALUATION:	NA
RECOMMENDED TREATMENT:	Future adaptive re-use of this structure will need to take mechanical systems needs into account and will need to address code requirements.

SHOENBERG FARM Concrete Silo

CATEGORY:	3.9 Electrical Systems
DESCRIPTON:	There are currently no electrical systems associated with this structure.
EVALUATION:	NA
RECOMMENDED TREATMENT:	Future adaptive re-use of this structure will need to take electrical systems needs into account and will need to address code requirements.



Site looking west of the Quonset

CATEGORY:	3.1 Site	
DESCRIPTION:	The site at the Quonset is similar to the two Silos with areas of dense and random vegetation. Volunteer grasses are predominant on three sides of the structure north, south and west. A large, approximately 72-foot- wide concrete driveway runs south to north of the Quonset and extends approximately 150 feet to the easi to connect with the two Silo structures. A six-foot-wide concrete sidewalk wraps three sides of the Quonset and is currently used for storage of wood pallets. The site is flat with a slight rise to the north and west. The volunteer vegetation is overgrown, making access to the west elevation of the Quonset difficult.	
	A grove of trees is located on the southwest corner of the structure. Many dead and loose branches are resting on the roof of the Quonset. The trunk of one mature tree has grown into and broken the concrete foundation.	
EVALUATION:	The site is in poor condition. The vegetation, specifically to the north and the west sides has been allowed to overgrow and is encroaching on the structure. Trees and volunteer grasses are unkempt and overgrown. The concrete driveway and wrap around sidewalk are spalling in multiple locations with several areas of cracking concrete. There is inadequate slope in several	

Quonset Structure

locations throughout the driveway area, allowing water to collect on the driveway.

RECOMMENDED TREATMENT: Trim the overgrown grasses and shrubbery surrounding the Quonset. Trim the dead branches on the trees at the southwest corner.

Replace the concrete sidewalks and driveway as necessary for future tenant use. Slope the sidewalks away from the structures to allow for proper water drainage.



Sidewalk running northeast of the Quonset with pallet storage



Deteriorated section of sidewalk on the south side of Quonset



Grove of trees at southwest corner of Quonset



Overgrown grasses surrounding Quonset



Grove of trees at the southwest corner of Quonset



Sidewalk at east entrance door of Quonset



Southeast corner of foundation wall from interior

CATEGORY:

DESCRIPTION:

EVALUATION:

3.2 Foundation

The foundation consists of an 8" concrete cast-in-place stem wall around the entire perimeter of the building. A single reinforcing bar was visible in one location, but the extent and size of reinforcing is unknown. The stem wall is assumed to rest on a footing below grade, but the footing was not visible for observation. A concrete drain pan occurs on the north and portions of the east and west sides of the building and appears to have been poured monolithically with the stem wall. The drain pan may be the only footing under the stem wall in these areas.

Perimeter foundation drainage is accommodated through the concrete drain pan on two sides of the building and sloping grade on the remainder.

The foundation system is in fair condition. Where visible, the foundation appears to be performing adequately except for the following:

1. There are numerous small cracks in the foundation walls around the perimeter. These do not appear to have compromised the structural integrity of the foundation.

Quonset Structure 2. There are two large cracks in the south wall near the east end. The sections of stem wall on either side of one crack have displaced approximately 2" from each other. One of the cracks appears to be a result of root invasion by a previously removed tree. 3. Footings were not visible for evaluation. 4. The concrete drain pan is cracked and displaced from the stem wall providing a path for water entry. **RECOMMENDED TREATMENT:** The following treatments correspond to the evaluation items listed above: 1. Seal the smaller cracks in the foundation walls with a suitable flexible caulk to prevent water infiltration and further deterioration. 2. Tie the stem wall together across the crack in the south wall using a new steel tie plate to prevent further differential movement.

- 3. Representative areas of the footings should be excavated and evaluated. Some foundation underpinning should be anticipated.
- 4. Seal the cracks between the drain pan and stem wall with a suitable flexible caulk to prevent water infiltration and further deterioration.



Typical minor cracks in foundation wall



Crack in southeast foundation wall



South elevation of Quonset Structure

CATEGORY:

DESCRIPTION:

3.3 Building Structural Systems

The interior floor is primarily packed dirt with a few areas of concrete slab-on-grade.

The building roof/wall structure consists of wood arches spanning north to south overlain with 2x4 horizontals running east-west and surfaced with corrugated steel deck.

The arches clear span from the north to the south foundation walls and occur at approximately 3' oncenter. They are constructed of five plies of 1x4 stitched together with ¼" diameter bolts at about 16" on-center resulting in a composite member measuring about 3-1/2" square.

A $\frac{1}{2}$ " thick by 2" wide steel plate projects vertically 11-1/4" out of the stem wall at each arch. This plate runs up the exterior face of the arch with the 2" plate dimension parallel to the exterior face. Two bolts run through the arch and plate thus tying the arch to the foundation. The lower bolt occurs 1-3/4" from the top of the stem wall. The upper bolt is 8-1/2" further up the plate. The anchorage of the plate into the stem wall is not visible.

2x4 purlins, spaced at 24", span from arch to arch and are tied to each arch with two 1/4" diameter bolts. Corrugated sheathing is nailed to these purlins on the entire exterior of the building. A double 2x4 runs along the outside face of the arches on top of the stem wall. This makes up the difference in thickness between the arches and the stem wall, allowing the corrugated siding to run past the face of the stem wall.

Shoenberg Farm	
Quonset Structure	A loft occurs in the northwest corner of the building. The floor consists of 1x sheathing over 2x8 wood joists spaced at approximately 24" spanning 10 feet. The joists are supported by a 6x6 beam at the north and a 2x4 stud wall at the south. The 6x6 beam is supported by 6x6 posts and spans a maximum of 10 feet.
	Each end of the building is enclosed by a stud wall sheathed with corrugated siding. Typical framing consists of 2x6 studs at 24" spanning from a double 2x8 untreated sill plate to a typical arch at the top. 2x4 horizontals spaced at 24" span across the studs to support the corrugated sheathing.
	An interior partition wall of similar construction occurs at about mid-length of the building.
	The end walls and interior wall act as the lateral force resisting system for the building.
EVALUATION:	The structural systems are in poor condition due to overload, deterioration and improper modification. This building is not, in our opinion, safe for occupancy in its current condition.
	The building was surveyed by Flatirons Surveying using a state-of-the-art laser system. This allowed us to accurately determine the deformations in the building structure. The survey data indicate that many of the arches are substantially deformed relative to those at the end walls which are presumably under formed. Deformations at the apex of the arch exceed 12" in many locations. The deformations at the apex can be clearly seen from outside on each side of the interior partition wall. The arches have also bowed outward near the base by upwards of 12". The outward bowing is particularly pronounced on the south side of the building. In effect, the arches have been compressed at the top and have consequently bowed outward near the base to compensate.
	We analyzed a representative selection of the arches considering the least deformed and most deformed conditions. The analysis indicates that the arches are nearly at overstress when carrying the self-weight of the building and that the arches with the greatest deformations have the lowest capacities. There is no reserve capacity to carry snow or wind loads prescribed by Code.

About 5% of the arches are also deteriorated at their bases. In some cases, there is little sound material left. Considering that the arches transfer their entire load to

Quonset Structure

the foundation through the base connection, this leaves these arches with little usable capacity.

The garage door opening on the south side of the building has interrupted several of the arches. A header was installed above the opening to carry the arches but it is inadequate to meet Code prescribed loading. The header carries the load from these arches into the two un-reinforced arches on either side of the opening. These arches are severely overloaded. Not surprisingly, this area of the roof has experienced the greatest deformation. The interior partition wall just to the east of the opening is now holding up most of the roof in this area.

The poor performance of the building was evidently noted in the past as horizontal cables were installed across some of the arches, at about every fifth arch. These cables increase the capacity of the arches, but make relatively little difference in the building's overall capacity due to the few that were installed and the inadequate connections used at each end.

The end walls and interior partition wall were intended to serve primarily as enclosure walls and thus to resist wind forces only. Due to the large deformations of the arches, and the high resistance of the walls to deformation, much of the roof load adjacent to these walls is now being supported by them. This has overloaded and buckled some of the studs. Even without this, the very tall studs around the large wall openings and near the apex of the roof are undersized for wind loads perpendicular to the walls.

The end walls and interior partition wall also resist wind forces in the north-south direction and restrain sway in the arches. The existing corrugated sheathing and let-in braces are inadequate to resist current Code prescribed loading.

The corrugated sheathing on the outside of the building serves as an integral part of the arch structure. It carries snow and wind loads to the purlins and also helps carry some of the load for the wood arches. The sheathing is generally in good condition, but there are numerous locations along the apex of the roof where the sheathing connections have failed due to the large deformations.

The loft framing is generally in good condition although the south stud wall appears to have been overloaded in the past leading to observed buckling in some of the supporting studs.

	Historic Structures Assessment Andrews & Anderson Architects, PC
SHOENBERG FARM	
Quonset Structure RECOMMENDED TREATMENT:	Strengthening the arch system is urgent to prevent further damage and possible collapse of this structure. If the building is to be used for public occupancy in the future, the necessity for a strengthening system that is Code-compliant will be particularly important.
	We investigated a number of methods for reinforcing the arches. Although economical, there is no simple method for achieving the increase in capacity necessary via sistering or adding cables to the arches. Thus a more involved solution is required.
	We feel that a new system of structural steel arches installed inside of the building is the best solution. These arches could be pre-bent at the fabricator's shop and installed relatively quickly in the space between the existing wood arches. The use of steel would allow the new arches to be spaced reasonably far apart, say 9 feet. Horizontal steel tubes could then be installed between the steel arches on the inside of the building mirroring the purlin system on the outside of the existing arches. These steel purlins would support the existing wood arches and would also allow the contractor to carefully push the wood arches back into their original un-deformed shape.
	The new arches and purlins would be visible, but they would also leave the unique structural system intact and in full view. There would also be no loss of historic fabric with this approach.
	New concrete pilasters and footings would be required to support the ends of the new steel arches.
	The header over the garage door will require strengthening. The addition of a horizontal steel tube adjacent to the header and spanning to the new steel arches will likely be the best solution.
	The interior and end walls should be strengthened. End wall studs should be sistered with new 2x8 material. Headers over the doors will require sistering. The interior of the walls should be sheathed with plywood to resist lateral forces. Additional anchors will be required to tie the wall to the foundation.
	Deteriorated wood arches will require partial replacement where the damage is significant. It is anticipated that deteriorated plies can be unbolted and replaced.

The corrugated sheathing should be reattached where loose and replaced where deteriorated or missing after the arches have been strengthened.



Severely deteriorated arch

The loft should be strengthened if it is to be used in the future. New studs should be installed adjacent to the deformed studs in the supporting wall. Deteriorated sheathing and joists will require replacement or sistering.



South elevation: note deformation at east side of door around interior partition wall



Typical interior structure



Base of arch in good condition



Typical wall framing



Deformed arches west of garage door



Arch connection to foundation from side



Loft framing at south wall



Arch connection to foundation from above



South elevation of Quonset Structure

CATEGORY:	3.4 Envelope – Exterior Walls		
DESCRIPTION:	The Quonset structure measures approximately 50' x 144' and is roughly 7,311 square feet. It is constructed of lightweight corrugated steel in an arched configuration. The long walls, on the north and south sides of the Quonset are constructed of vertical continuous corrugated sheet metal, resting on bent arched wooden "ribs". See Section 3.3 Building Structural Systems.		
	According to the property owner, the Quonset was used to house farm machinery, specifically on the west end of the structure, and hay for livestock on the east end.		
EVALUATION:	The exterior walls of the Quonset Structure are in poor condition. Several areas of corrugated sheet metal are compromised due to wind deflection and age. Areas of water infiltration are evident on the interior structural members. See Section 3.3 Building Structural Systems		
RECOMMENDED TREATMENT:	See Section 3.3 Building Structural Systems for recommended treatments.		



Quonset structure looking west



East end of Quonset



Interior "ribs" and purlins at the curved roofline of Quonset



West end roof of Quonset

CATEGORY:	3.5 Envelope – Roofing & Waterproofing
DESCRIPTION:	The roofing elements are continuous sheets of lightweight corrugated steel that connect to the vertical corrugated steel walls below. The arc of the structure is formed by the continuous corrugated walls, which rest on bent arched wooden "ribs" running parallel to each other throughout the structure. Wood longitudinal purlins support the curved roofline.
EVALUATION:	The roof at the Quonset structure is in fair to poor condition. The corrugated metal roof is in poor condition with areas of damage throughout. One area of the roofline is visibly bowing above the vertical door entrance.
RECOMMENDED TREATMENT:	Further investigation needs to be done to determine if the west end of the structure is settling and causing the bowing at the roofline. See Section 3.2 Building Structural Systems for additional recommended treatments.



Area of bowing at roofline



Corrugated sheet metal panel at curved roofline

Quonset Structure



CATEGORY:3.6a DoorsDESCRIPTION:There are the
east and we
and west do
horizontally
The doors a
the interior
metal at theA large over
The door op
the structureOne interior
The door has
track systemEVALUATION:The two ho
ends are in

There are three entrances to the Quonset; one at the east and west elevations and one at the south. The east and west doors are large vertical sliding doors that open horizontally by a track system at the top of the doors. The doors are constructed of vertical wood members at the interior section and covered with corrugated sheet metal at the exterior.

A large overhead door is located on the south elevation. The door opens vertically and is possibly an addition to the structure. It is currently inoperable.

One interior door divides the interior spaces equally. The door has two panels that open horizontally by a track system.

The two horizontal sliding doors at the east and west ends are in fair condition. They are operable, but require effort to move along the track and do not close completely, leaving a gap of several inches.

The vertical overhead door at the south elevation is in poor condition. The door itself has buckled and does not open or close without considerable effort. It is evident the bent wood structure at the door location on the

Quonset Structure

interior of the Quonset is failing and bowing, affecting the door operations.

At the time of assessment, the interior dividing doors were blocked by farm equipment, dirt and debris. It is not known if the doors are operable. It is assumed the track system is either not functional or is damaged.

RECOMMENDED TREATMENT:

Recondition or replace the track hardware on the two horizontal entrance doors. Replace the track for the south overhead door. Restore and repaint the door itself. Recondition or replace the track hardware on the interior dividing door.

None of these doors meet code as egress doors. Egress requirements will need to be addressed with new man doors, when an adaptive re-use is determined.



Vertical wood construction at the interior of the horizontal sliding doors on the east and west entrances to Quonset



Horizontal sliding doors at east entrance to Quonset



Interior view of vertical wood paneling of horizontal door



Interior view of vertical overhead door



Interior door separating the east and west ends of the Quonset



Vertical door at south elevation of Quonset. Note the upper segment of the door is dislodged from the vertical plane



CATEGORY:	3.6b Windows
DESCRIPTION:	Twenty windows exist on the four elevations of the Quonset. They are nine-lite steel windows and are located approximately halfway up the curved side arches and the flat ends of the structure. It is unknown if they are operable.
EVALUATION:	Observations of the windows were limited to those from the building exterior and interior spaces. In general, the windows look to be in fair to poor condition. Several are missing panes of glass and are covered with translucent corrugated plastic.
RECOMMENDED TREATMENT:	All windows need to be restored or replaced in kind with a nine-lite design to match the original size. Further investigation should be conducted to determine the levels of deterioration and rehabilitation of the original design.



View of nine-lite windows from the interior of Quonset



Translucent corrugated plastic cover at window



Original nine-lite window



Interior view of Quonset Structure

CATEGORY:	3.7 Interior Finishes
DESCRIPTION:	The interior of the Quonset is utilitarian in function and reflects its original use as a storage area for farm equipment and hay. Spatially, the interior is divided into three sections; two equal main sections and a smaller section at the northwest corner. The floor material is a mixture of dirt and concrete slabs.
	Walls are industrial and exposed with the bent wood structural elements and corrugated metal the only interior wall finishes. See Section 3.3 Building Structural Systems
EVALUATION:	The interior of the Quonset is in fair to poor condition based on its original intended use. See Section 3.3 Building Structural Systems
RECOMMENDED TREATMENT:	If the Quonset Structure is to be adaptively re-used, a flooring system would need to be installed once the end use is determined. Unless the space is to be used in its unconditioned state, interior finishes and insulation may need to be considered.



Interior wall finishes of structural bent wood system and corrugated sheet metal.



Rusted corrugated metal panels at interior of Quonset



Concrete slab and dirt flooring at the east end interior of Quonset



Dividing wall at northwest corner of interior



Wood structural elements and corrugated metal interior



Interior of divided section at northwest corner

SHOENBERG FARM Quonset Structure	
CATEGORY:	3.8 Mechanical Systems
DESCRIPTON:	There are currently no mechanical systems associated with this structure.
EVALUATION:	NA
RECOMMENDED TREATMENT:	Future adaptive re-use of this structure will need to take mechanical systems needs into account and will need to address code requirements.

Quonset Structure



Distribution panel in the Quonset Structure

CATEGORY:

DESCRIPTON:

EVALUATION:

RECOMMENDED TREATMENT:

3.9 Electrical Systems

Electrical systems in the Quonset consist of minimal outlets and ceramic lamp holder lighting fixtures.

The electrical distribution system does not meet code.

Future adaptive re-use of this structure will need to take electrical systems needs into account and will need to address code requirements. Adaptive re-use of this building should factor in a code-compliant electrical and lighting system.



Ceramic lamp holder in the Quonset





SHOENBERG FARM 4.0 Analysis and Compliance

4.1 Hazardous Material Testing and Information

Hazardous material testing was not performed on any of these buildings, except for a lead paint analysis in the Brick Bungalow by the City of Westminster. It was determined as a result of the hazardous materials test, that high levels of lead based paint was evident on the second floor and in Room 108 (restroom) of the Bungalow. For the purposes of the assessment, it is assumed that all historic paint is lead-containing and therefore any paint surfaces affected by recommended rehabilitation work have been cost-estimated as a hazardous material, thus envisioning a "worst case" scenario. If hazardous materials have been identified or are uncovered on a project, then General Contractors are required to mitigate or abate these materials using authorized and trained personnel and, thus driving up the costs for building component demolition and historic rehabilitation.

For further information about the state regulations in regard to hazardous materials go to: www.cdphe.state.co.us/op/regs/airregs.asp

Lead Containing Paint

If paint tests positive for 1% or greater amount of lead: mitigation (removal or encapsulation), construction worker personal protection, air monitoring, and proper disposal of construction waste as hazardous materials will be required.

Historically, lead was used in paint to improve its durability and colorfast qualities. Lead was incorporated into a broad range of building coatings and paints from the 1800s to the 1970s. The buildings at Shoenberg Farm were constructed within these date ranges, and therefore assume a worst case, and recommend further testing.

Asbestos Containing Material

Any materials that contain greater than 1% asbestos are regulated by EPA and OSHA.

The EPA National Emissions Standard for Hazardous Air Pollutants (NESHAP) regulation requires that Asbestos Containing Materials be identified prior to demolition and renovation activities. From the 1920s to the 1980s, there were many materials that incorporated asbestos, for its fire and chemical resistive, thermal and high tensile strength properties., Among the most common applications for asbestos were: fireproofing, roofing/flashing materials, exterior coating systems (a paint-like coating that usually has a textured surface), asbestos/cement shingles and exterior wall panels (Transite), roofing shingles and shingle siding, glazing putty at windows, pipe and pipe fitting insulation, vinyl sheet and tile flooring, plaster, construction adhesives, and building insulation.

"Friable" and "non-friable" are the two terms applied to asbestos with "friable" evoking the most concern and the greatest level of care in removal and disposal. "Friable" means that when the material is disturbed in any way, (sawn, moved, removed, cut, etc.) it will introduce asbestos fibers into the air that could be inhaled by unprotected workers and building users. Pipe and building insulation typically fall into this category and therefore require the highest degree of worker protection and controlled handling during the abatement process. It is important to identify all asbestos-containing materials as even non-friable materials may become friable under certain conditions (i.e. if asbestos-containing floor adhesive is sanded). In the 1911 Brick Bungalow, asbestos was clearly evident in the pipe wrap, floor tile and furnace wrap. But again, we urge thorough testing.

Summary

Given the nature of farm operations, there may be other hazardous materials in the buildings or on the site: PCB's, insecticides, disinfectants, etc. are a few that come to mind. Lead containing paint and asbestos can present health risks to building users and construction workers; can trigger both state and federal hazardous material regulations for control and abatement and can add significant cost to a rehabilitation project. Thorough hazardous materials' testing has not been performed on any of the structures at Shoenberg Farm. Testing is recommended prior to any fully developed rehabilitation costs.

Once under construction, the General Contractor should be alert to encountering and disturbing any suspicious materials and should stop work immediately if any are encountered.

A word of caution: hazardous material abatement crews are not always sensitive to the issue of preserving historic materials (e.g. scraping lead-based paint may damage the underlying surfaces). Ideally, abatement of historic, character-defining elements can be performed by the General Contractor responsible for the rehabilitation work.

4.2 Materials Analysis

It is recommended that further testing for the creation of specifications, (i.e., paint colors, mortar composition, parging composition and possible finishes) be completed prior to rehabilitation and restoration.

4.3 Zoning Code Compliance

The site is currently zoned to accommodate a Commercial Planned Unit Development (PUD). The City of Westminster must review the proposed uses, once determined through an Official Plan Development Review (ODP) prior to obtaining the official PUD. Future, proposed uses will need to be evaluated in the context of the PUD's restrictions.

4.4 Building Code Compliance

Adaptive re-uses for these structures have not been determined. Since it is unlikely that any of the buildings will continue in their farm use, each building, with its change of use, will need to meet the applicable code requirements of the new use.

4.5 Accessibility Compliance

If the buildings are adaptively re-used for public purposes, ADA requirements will need to be met. Although ADA guidelines allow for certain variance requests for registered historic buildings, the building owner must apply to the State Historic Preservation Officer (SHPO) to grant those requests. That said it is rare in Colorado for the SHPO to grant variance requests. We therefore recommend that the intent of the guidelines be met as closely as possible. Where there are issues, the owner should work out reasonable accommodation with local group(s) who represent disabled citizen interests.

5.0 Preservation Plan

Rating System:

A Critical Deficiency of a feature or element exists where:

- There is advanced deterioration that has resulted in failure of the building feature or element or will result in its failure if not corrected within two years, and or
- There is accelerated deterioration of adjacent or related building materials as a result of the feature or element's deficiency, and or
- There is a threat to the health and or safety of the user, and or
- There is a failure to meet a legislative requirement.

A Serious Deficiency of a feature or element exists where:

- There is deterioration that if not corrected within 2 to 5 years, will result in the failure of the building feature or element, and or
- a threat to the health and or safety of the user may occur within 2 to 5 years if the deterioration is not corrected, and or
- There is deterioration of adjacent or related building materials and or systems as a result of the deficiency of the feature or element.

A **Minor Deficiency** of a feature or element exists where:

- Standard preventive maintenance practices and building conservation methods have not been followed, and or
- There is a reduced life expectancy of affected or related building materials and or systems, and or
- There is a condition with long-term impact beyond 5 years.

5.1 Prioritized Work

The recommended work for the Shoenberg Farm Complex is prioritized by determining the most immediate preservation needs and necessary maintenance needs along with life safety issues that should be addressed. The following Opinion of Probable Cost of Construction prioritizes the recommended work as follows:

Critical Deficiency (1 Priority)

1 = Critical: Work that should be performed immediately to mitigate existing life Safety issues (including foundation stabilization, masonry repair) and work associated with critical work (e.g. roof replacement.)

Serious Deficiency (2 Priority)

2 = Serious:

Work that should be performed within the next 3-5 years in order to address existing deferred maintenance.

Minor Deficiency (Minor Priority)

3 = Minor:

Work that is of a cosmetic nature.

5.2 Phasing Plan

See below: Phase I =

In general, Phase I includes critical issues such as site drainage, structural and architectural matters. The installation of perimeter drains in several of the structures (i.e. Brick Bungalow, Milk and Ice House and the Pump House) requires immediate mitigation. Structural stabilization and roof replacement for all seven buildings is also critical. Foundation and reinforcing of structural elements such as roofs, floor joists and masonry walls should be completed in Phase I.

Phase II = Phase II

Re-pointing and patching of masonry walls, including the removal of nonhistoric cementitious mortar should be completed once the buildings are stabilized. Restoration of windows and doors should be done at this time.

Phase III= Phase III

Site issues such as trimming overgrown grasses and trees are recommended for Phase III. Mechanical, electrical, plumbing and interior finishes should be completed once adaptive re-use is determined for each building.

SHOENBERG FARM 5.3 Opinion of Probable Cost

Cost Estimating

This assessment document is a first step in determining the means and methods for the successful rehabilitation of these buildings. In no way is this report a substitute for a complete design and engineering process wherein rehabilitation needs are more rigorously examined, design and engineering is engaged, construction issues are coordinated and a set of construction documents (plans and specifications) is developed. Construction documents have not been generated and this report is not intended to be the document from which repairs are actually estimated or effected. Any costs included in this report are intended to be used as a preliminary budget outline and should not be used for final rehabilitation costs in a future grant application or for other purposes. The Owner is urged to take this further (design and engineering) step, prior to applying for actual "bricks and mortar" funding.

Since the Architect has no control over the cost of labor, materials, equipment, the contractor's method of determining prices, or market conditions, opinions of probable costs, as provided herein, are made on the basis of our experience and qualifications and represent our best judgment as design professionals familiar with the construction industry. The Architect cannot and does not guarantee that proposals, bids or the construction costs will not vary from opinions of probable costs prepared for the Owner.

This pricing represents aggregate work performed in 2008. A 4% minimum annual inflation factor for each year should be added to work performed in subsequent years. Please note that breaking the cost estimate into smaller component parts will result in a loss of any economy of scale and will increase both design and construction cost percentages. The Opinion of Probable Cost was compiled from general field approximations of both quantities and quality.

General Contractor Fees for General Conditions, Overhead and Profit

The allowance for general conditions provide for the General Contractor's overhead, profit, and contingencies. General Contractor overhead includes indirect costs such as permits, Workers' Compensation, insurances, supervision, and bonding fees. General Contractor contingencies provide for unforeseen construction difficulties which include material shortages, normal inflation, and weather.

Project Contingency

A project contingency is added to the overall costs to cover unforeseen building problems that could arise or if repair work is more extensive that can be observed for a Historic Structure Assessment. In general we recommend a 25% project contingency. This project contingency may be lower based on the type of work that needs to be done and how accessible the work is during the assessment.

TYPICAL ABBREVIATIONS	
Description	Abbreviation
square feet	sf
cubic yard	су
linear foot	lf
each	ea
hour	hr
cubic foot	cf
bank cubic yards	bcy

:	Shoenl	berę	j Fa	ırm
Historic S	Structu	res	Re	port

Andrews & Anderson Architects, PC Shoenberg Farm Complex Cost Estimate					
Description	Quantity	Unit	Cost	Total	Priority
1911 Brick Bungalow					
3.1 Site		_			
Demolish existing concrete sidewalk	35	sy	\$5	\$175	3
Reslope & repair concrete sidewalk; 3 sides of structure	312	sf	\$3	\$780 \$500	3
nim overgrown grasses, snrubbery, trees	Allow			\$500	3
Excavation at perimeter of Bungalow @ 10' deep	140	lf	\$16	\$2,289	•
Perimeter drain installation	140	lf	\$14	\$1,960	
Backfill after drain install @ 10' deep	140	lf	\$18	\$2,520	
3.2 Foundation					
Underpin foundation					1
Helical piers with underpinning brackets	25	ea	\$1,500	\$37,500	
Repair slab-on-grade					1
Pressure grouting	\$50	cf	\$45	\$2,250	
Grout cracks	\$855	sf	\$2	\$1,283	
Rebuild porch pilasters	\$64	st	\$33	\$2,112	
3.3 Building Structural Systems	A 10		A 4 9 9	.	
Detailed survey and traming analysis	\$40	nr	\$100	\$4,000	1
Peinforce floor framing					1
New 6x6 posts	16	If	\$4	\$64	
Sister 6x8 beam	18	lf	\$4	\$72	
Sister west side floor joists	168	lf	\$4	\$672	
Repair wood bearing & partition walls	36	lf	\$16	\$576	
Reinforce second floor framing	702	lf	\$4	\$2,808	1
Reinforce ceiling framing, 50%	351	lf	\$4	\$1,404	1
Reinforce roof framing, 50%	370	lf	\$4	\$1,480	1
Reinforce porch beams and reestablish anchorage	36	lf	\$6	\$216	1
Shore and reinforce porch header beam	18	lf	\$6	\$108	1
3.4 Envelope - Exterior Walls	4.40		<u>^</u>	.	
Rebuild & re-point masonry walls 40%	440	st	\$3	\$1,320	2
of exterior walls	800	sf	\$3	\$2.400	2
Remove non-historic mortar at patch locations; restore with mortar to	000	01	ψU	ψ2,400	2
match original	400	sf	\$3	\$1,160	3
Restore decorative stickwork trim on gabled ends per historic					
photographs	Allow			\$2,000	3
3.4d Exterior Appendages - Porch, Stoop Etc.					
Restore wood railing, lattice work and floor at east entrance porch	38	lf	\$7	\$276	2
Remove west porch; reconstruct per historic photographs	Allow	_		\$5,000	3
3.5 Envelope - Rooting & waterproofing					
Remove 2-3 layers of existing asphalt shingles & 1 layer of original	1002	ef	¢11	\$12,012	1
Replace gutters and downspouts paint	60	lf	\$6	\$384	1
Paint all eaves and rafter tails	60	lf	\$20	\$2,500	2
3.5a Envelope - Roofing & Waterproofing - Chimneys					
Masonry chimney stabilization 2 chimneys	Allow			\$500	1
3.6a Doors					
Replace screen door at front and rear entries	2	ea	\$550	\$1,100	1
Replace wood entrance doors at west and east sides	2	ea	\$1,500	\$3,000	1
Restore original wood interior doors	17	ea	\$500	\$8,500	2
Restore original wood basement doors	3	ea	\$500	\$1,500	2
3.6b Windows					
Windows: remove modern vinyl windows. Replace with new wood					
frame double-hung operable windows	14	ea	\$1,400	\$19,600	3
3.7 Interior Finishes					
Interior finishes: remove faux wood paneling at first floor	1092	sf	\$7	\$7,644	3
Repair plaster wall finishes at first floor once paneling is removed*	1092	st	\$15	\$16,380	3
Remove carpet; restore original flooring at first floor	1092	si	\$5 \$2	\$0,400 \$2,276	3
Restore original base cabinet and mirror cabinet Rm 108	Allow	51	ψυ	\$1,500	3
3.8 Mechanical Systems	7 41011			\$1,000	
Replace all mechanical systems, piping, ductwork & parts for code					
compliance	Allow			\$40,000	1
3.8c Water Service, Plumbing & Sewer					
Replace all water supply & vent piping for code compliance	Allow			\$30,000	1
3.9 Electrical Systems					
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	2
Subtotal				\$232,280	
Subtotal/Construction				9	232,280.00
General Contractor's General Conditions @ 25%					\$58,070.00
General Contractor's Fee @ 15%					\$34,842.00
Total/Construction				\$	325,192.00
A/E Fees @ 14%					\$45,526.88
Subtotal/Construction				9	370,718.88
Contingency @ 30%				9	6111,215.66
TOTAL				9	6481,93 <u>4.54</u>
		Shoenberg Farm			
--	--------------------------------	-----------------------------------			
		Historic Structures Report			
Sheenh	ara Farm Complex Cost Fatimate	Andrews & Anderson Architects, PC			
1011 Brick Pungelow	erg Farm Complex Cost Estimate				
1 Oritical					
1 - Critical		¢c 7co oo			
3.1 Site		ቅር,/ ርዓ./ ሀሀ ይላጋ 144 50			
3.2 Foundation		₽43,144.30 \$11,400.00			
3.3 Building Structural Systems		φιι,400.00 \$12.206.00			
3.5 Envelope - Rooting & Waterproofing - Chimpeys		ቁ i 2,390.00 \$500.00			
2.5 Envelope - Rooming & Waterprooning - Chinineys		\$300.00 \$4.100.00			
3.00 DOOIS 3.8 Machanical		ቁት, 100.00 \$40 000 00			
3.8 Water Service Plumbing & Sewer		\$30,000.00 \$30,000.00			
S.oc Water Service, Flumbing & Sewer	uhtotal	\$148 309 50			
Coneral Conditions @ 25%	ubiotai.	\$37 077 38			
Contractor Fee OH/P @ 15%		\$22 246 43			
A/F Fees @ 14%		\$20 763 33			
Contingency @ 30%		\$44 492 85			
Contingency @ 3378	Total	\$272 889 48			
	Total.	Ψ212,000.70			
2 - Serious					
3 4 Envelope - Exterior Walls		\$3,720,00			
3.4d Exterior Appendages - Porch. Stoop Etc.		\$275.50			
3.5 Envelope - Roofing & Waterproofing		\$2,500,00			
3.6a Doors		\$10.000.00			
3.9 Electrical Systems		\$4.000.00			
s	ubtotal:	\$20,495.50			
General Conditions @ 25%		\$5,123.88			
Contractor Fee OH/P @ 15%		\$3,074.33			
A/E Fees @ 14%		\$2,869.37			
Contingency @ 30%		\$6,148.65			
	Total:	\$37.711.72			
3 - Minor					
3.1 Site		\$1,455.00			
3.4 Envelope - Exterior Walls		\$3,160.00			
3.4d Exterior Appendages - Porch, Stoop Etc.		\$5,000.00			
3.6b Windows		\$19,600.00			
3.7 Interior Finishes		\$34,260.00			
S	ubtotal:	\$63,475.00			
General Conditions @ 25%		\$15,868.75			
Contractor Fee OH/P @ 15%		\$9,521.25			
A/E Fees @ 14%		\$8,886.50			
Contingency @ 30%		\$19,042.50			
	Total:	\$116,794.00			

Historic Structures Report Andrews & Anderson Architects, PC Shoenberg Farm Complex Cost Estimate				PC	
Description	Quantity	Unit	Cost	Total	Priority
1911 Two-Story Garage		Unit			
3.1 Site					
Demolish existing concrete pad at garage entrance	12	sy	\$5	\$60	1
Install new concrete pad at garage entrance.	12	sf	\$3	\$30 \$500	1
2 2 Foundation	Allow			\$500	
					1
Helical piers with underpinning brackets	9	ea	\$1,500	\$13,500	
OR			. ,	. ,	1
Move building	1	ea	\$11,000	\$11,000	1
New foundation	0		#4 500	\$10,000	1
Helical piers with rabbit ears brackets	8 11 2	ea	\$1,500 \$1,050	\$12,000	
5" slab-on-grade with reinforcing	352	sf	\$4	\$1.408	
3.3 Building Structural Systems			•		
Rebuild walls & re-point joints					1
20% full rebuild	172	sf	\$33	\$5,676	
20% partial rebuild	172	sf	\$18	\$3,096	
60% re-point	516	st	\$6	\$3,096	1
Sill plate and apphors	40	lf	\$12	\$480	1
2 workers. 2 days	32	hr	\$60	\$1.920	
Shore and reinforce garage door head				•••••	1
Steel plate or angle	16	lf	\$32	\$512	
2 workers, 1 day	16	hr	\$60	\$960	
Detailed survey and framing analysis; recommend specific repairs via	25	hr	\$100	\$2,500	1
2 4 Envelope Exterior Wells	800	IT IT	<u></u> ه4	\$3,200	1
Remove non-historic mortar at patch locations: restore with mortar to match					
original	600	sf	\$3	\$1,800	2
Restore decorative stickwork trim on gabled ends per historic photographs					
Panair stuges infill at gabled and	Allow	SV	¢00	\$2,000	3
3 5 Envelope - Reefing & Waterproofing	30	Sy	\$23	\$690	
Bemove 2-3 layers of existing asphalt shingles & 1 layer of original wood					
shingles. Install #1 wood cedar shingles.	513	sf	\$11	\$5,643	1
Replace gutters and downspouts, paint	54	lf	\$6	\$346	1
Paint all eaves and rafter tails	100	lf	\$20	\$2,500	2
3.5a Envelope - Roofing & Waterproofing - Chimney					
Masonry chimney stabilization 1 chimney	Allow			\$550	1
3.6a Doors	4		£400	£400	1
Remove existing garage door and track system	1	ea	\$400 \$200	\$400 \$200	1
Replace screen door at apartment level	1	ea	\$550	\$550	1
3.6b Windows					
Windows: restore 12-lite fixed window at east elevation and wood trim casing					
-	1	ea	\$2,000	\$2,000	3
			A / A A		
Replicate 12-lite fixed window including wood trim & install at north elevation	1	ea	\$4,000	\$4,000	1
Restore three-lite aluminum casement windows: replace glazing and paint	3	ea	\$200	\$600	3
3.7 Interior Finishes	<u> </u>		\$ 200		
Interior finishes: repair plaster walls as necessary; paint	513	sf	\$7	\$3,591	3
Remove carpet; restore original flooring at first floor	513	sf	\$5	\$2,565	3
Repaint second floor plaster walls to match original	513	sf	\$3	\$1,539	3
3.8 Mechanical Systems					
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	3
3.8c Water Service, Plumbing & Sewer			* 100	<u> </u>	
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	3
0.9 Electrical Systems	40		¢100	¢4.000	
Code analysis needed once adaptive re-use is determined	40	nr	\$100	\$4,000 \$112 672	3
Subtotal/Construction		1	I	JL	¢112 67
General Contractor's General Conditions @ 25%					¢۱۱ ۷,0/ \$28 16%
General Contractor's Fee @ 15%					\$16,90
Total/Construction					\$157,74
A/E Fees @ 14%					\$22,08
Subtotal/Construction					\$179,82
Conungency @ 30%					\$33,80 \$312 6 2
IUIAL					-ş∠13,62

Г

\$213,625

Shoenberg Farm

	Shoonborg Form
	Uistoria Structuras Papart
Shoenberg Farm	Andrews & Anderson Architects, PC
1911 Two-Story Garage	
1 - Critical	
3.1 Site	\$590.00
3.2 Foundation	\$49.668.00
3.3 Building Structural System	\$21,440.00
3.5 Envelope - Roofing & Waterproofing	\$5,988,60
3.5 Envelope - Roofing & Waterproofing - Chimney	\$550.00
3.6a Doors	\$1.150.00
3.6b Windows	\$4,000,00
Subtotal:	\$83.386.60
General Conditions @ 25%	\$20,846,65
Contractor Fee OH/P @ 15%	\$12,507,99
A/F Fees @ 14%	\$11 674 12
Contingency @ 30%	\$25,015,98
Total:	\$153 431 34
	\$100,101
2 - Serious	
3.4 Enveloope - Exterior Walls	\$2,490.00
3.5 Envelope - Roofing & Waterproofing	\$2.500.00
Subtotal:	\$4.990.00
General Conditions @ 25%	\$1,247.50
Contractor Fee OH/P @ 15%	\$748.50
A/E Fees @ 14%	\$698.60
Contingency @ 30%	\$1.497.00
Total:	\$9.181.60
	vvvvv
3 - Minor	
3.4 Enveloope - Exterior Walls	\$2,000.00
3.6b Windows	\$2,600.00
3.7 Interior Finishes	\$7,695.00
3.8 Mechanical Systems	\$4,000.00
3.8c Water Service, Plumbing & Sewer	\$4,000.00
3.9 Electrical Systems	\$4,000.00
Subtotal:	\$24,295.00
General Conditions @ 25%	\$6,073.75
Contractor Fee OH/P @ 15%	\$3,644.25
A/E Fees @ 14%	\$3,401.30
Contingency @ 30%	\$7,288.50
Total:	\$44,702.80

Shoenberg Farm Historic Structures Report Andrews & Anderson Architects, PC

S	hoenberg	Farm	Complex	Cost	Estimate
	-				

		-	_		
Description	Quantity	Unit	Cost	Total	Priority
1911 Brick Milk and Ice House					
3.1 Site			^ -		
Demolish existing concrete sidewalk	45	sy	\$5	\$225	2
Reslope & repair concrete sidewalk; 3 sides of structure	320	st	\$3	\$800	3
Trim overgrown grasses, snrubbery, trees	Allow			\$500	3
Perimeter drain	4.40	14	¢40	¢0.000	1
Excavation at perimeter of Bungalow @ 10 deep	140	IT If	\$16 ¢14	\$2,289 \$1,060	
Perimeter drain installation Reakfill ofter drain install @ 10' doop	140	IT If	\$14 ¢10	\$1,960	
2.2 Foundation	140		φ10	\$2,520	
3.2 Foundation					
Underpin toundation	40		¢4 500	¢40,500	1
Helical piers with underpinning brackets	13	ea	\$1,500	\$19,500	1
New touridation elements along south side	2	00	¢1 500	¢4 500	
12"x26" grade beem	ა 2	ea	\$1,500 \$1,050	\$4,500 \$2,150	
Popair slab-on-grado	3	Cy	φ1,030	\$3,150	1
Grout cracks	022	ef	\$1.5	\$1 383	
2.3 Building Structural Systems	JLL	31	ψ1.0	ψ1,505	
Deteiled our out of framing analysis	40	hr	¢100	¢4.000	1
Detailed survey and framing analysis,	40	n	\$100	\$4,000	
Pehuild wells & re-point jointe					1
25% full robuild (south side)	720	of	¢24	\$17.406	
20% partial rebuild (stair step cracking)	/17	of	\$24 \$1/	\$5,838	
45% re-point (else)	417	of	414 88	\$5,636 \$5,616	
Reestablish diaphragm connection	300	31	ΨΟ	\$5,010	1
Sill plate and anchors	50	lf	\$12	\$600	
2 workers 3 days	48	hr	\$60	\$2,880	
Reinforce roof framing			\$ 00	<i><i><i></i></i></i>	1
Sister 100% of roof rafters	543	lf	\$4	\$2.172	
Sister 4x6 beam	15	lf	\$4	\$60	
New ridge board	25	lf	\$4	\$100	
3.4 Envelope - Exterior Walls					
Remove non-historic mortar at patch locations; restore with mortar to					
match original	400	sf	\$3	\$1,160	3
Restore decorative stickwork trim on gabled ends per historic					
photographs	Allow			\$2,000	3
3.5 Envelope - Roofing & Waterproofing					
Replace gutters and downspouts, paint	70	lf	\$6	\$448	1
Paint all eaves and rafter tails	70	lf	\$20	\$2,500	2
3.6a Doors					
Replace screen door at front and rear entries	3	ea	\$550	\$1,650	1
Restore & retain original doors					2
Restore original wood interior doors	6	ea	\$600	\$3,600	
Restore original wood exterior doors at all entries	7	ea	\$600	\$4,200	
3.6b Windows					
Windows:					2
Remove broken glazing; replace with new	Allow			\$2,000	
Restore wood frames all windows	8		\$1,000	\$8,000	
Restore damaged masonry sills 40%	Allow			\$5,000	
Replace missing/damaged screens at double hung				#0.000	
windows	Allow			\$3,000	
3.8 Mechanical Systems				.	
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	3
3.8c Water Service, Plumbing & Sewer					
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	2
3.9 Electrical Systems					
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	2
Subtotal/Construction General Contractor's General Conditions @ 25% General Contractor's Fee @ 15%		I <u> </u>	<u>. </u>	μ <u>ψιζι,14</u> 1	\$121,147.00 \$30,286.75 \$18,172.05
Total/Construction					\$169 605 20
					\$23 711 01
ALLIGS W 14/0					φ20,744.01
Contingency @ 200/					\$133,350.61
Conungency w 30%					φοσ,005.18
IOIAL					⇒∠⊃1.355.80

		Shoenberg Farm
		Historic Structures Report
	- ·	Andrews & Anderson Architects, PC
Shoe	nberg Farm Complex Cost Estimate	
1911 Brick Milk & Ice House		
1 - Critical		
3.1 Site		\$6,769.00
3.2 Foundation		\$28,533.00
3.3 Building Structural Systems		\$38,762.00
3.5 Envelope - Roofing & Waterproofing		\$448.00
3.6a Doors		\$1,650.00
	Subtotal:	\$76,162.00
General Conditions @ 25%		\$19,040.50
Contractor Fee OH/P @ 15%		\$11,424.30
A/E Fees @ 14%		\$10,662.68
Contingency @ 30%		\$22.848.60
	Total:	\$140.138.08
		· · · · · · · ·
2 - Serious		
3 1 Sito		\$225.00
3.5 Envelope - Roofing & Waterproofing		\$2 500 00
2 62 Doore		Ψ <u>2</u> ,000.00 \$7,800.00
3.08 DOOIS 2.66 Windows		φι,000.00 \$18.000.00
3.00 Willdows 2.95 Water Service, Plumbing & Sewer		\$10,000.00 \$4 000.00
3.80 Water Service, Flumbing & Sewer		94,000.00 ¢4,000.00
3.9 Electrical Systems	0	
	Subtotal:	₹30,323.UL
General Conditions @ 25%		\$9,131.25 \$5,430.37
Contractor Fee OH/P @ 15%		\$5,478.75
A/E Fees @ 14%		\$5,113.50
Contingency @ 30%		\$10,957.50
	Total:	\$67,206.00
3 - Minor		
3.1 Site		\$1,300.00
3.4 Envelope - Exterior Walls		\$3,160.00
3.8 Mechanical Systems		\$4,000.00
	Subtotal:	\$8,460.00
General Conditions @ 25%		\$2,115.00
Contractor Fee OH/P @ 15%		\$1,269.00
A/E Fees @ 14%		\$1,184.40
Contingency @ 30%		\$2,538.00
5 7	Total:	\$15.566.40

Shoenberg Farm Historic Structures Report

Shoenbe	erg Farm Complex	Cost Estimate			
Description	Quantity	Unit	Cost	Total	Priority
1911 Brick Pump House					
3.1 Site					
Re-grade site surrounding Pump House for proper drainage	Allow	sf	\$3	\$3,000	1
Trim overgrown grasses, shrubbery, trees	Allow			\$500	1
Perimeter drain					1
Excavation at perimeter of Bungalow @ 10' deep	43	lf	\$16	\$703	
Perimeter drain installation	43	lf	\$14	\$602	
Backfill after drain install @ 10' deep	43	lf	\$18	\$774	
3.2 Foundation				-	
Concrete retaining wall	86	lf	\$236	\$20,296	1
Rebuild walls, 100%	430	sf	\$33	\$14,190	1
5" slab-on-grade with reinforcing	350	sf	\$4	\$1,400	
3.3 Building Structural Systems					
Detailed survey and framing analysis; recommend specific repairs via	25	hr	\$100	\$2,500	1
Reinforce roof framing	350	lf	\$4	\$1,400	1
Reinforce ceiling framing	333	lf	\$4	\$1,332	1
Reestablish diaphragm connection					1
Sill plate and anchors	54	lf	\$12	\$648	
2 workers, 2 days	32	hr	\$60	\$1,920	
3.4 Envelope - Exterior Walls					
Re-build the north and south masonry walls with existing brick	416	sf	\$6	\$2,496	1
Remove non-historic mortar at patch locations; restore with mortar to				,	
match original	300	sf	\$3	\$870	1
3.5 Envelope - Roofing & Waterproofing					
Remove 2-3 layers of existing asphalt shingles & 1 layer of original					
wood shingles. Install #1 wood cedar shingles.	416	sf	\$11	\$4,576	1
Replace gutters and downspouts, paint	53	lf	\$6	\$339	1
Paint all eaves and rafter tails	53	lt	\$20	\$2,500	2
3.6a Doors			• • • •		
Replace exterior cellar door with new metal panel door	2	ea	\$400	\$800	1
Restore originel wood paneled door	1	ea	\$1,500	\$1,500	1
3.6b Windows					
Windows: Remove existing 6-light windows on north and west	0		* =00	#1 000	
elevation. Remove intenor window and exterior storm window.	2	ea	2000	\$1,000	
windows. Install new 6-light windows at the north and west elevation.	2	00	¢1.000	¢2.000	1
3 7 Interior Einishes	۷	Cu	\$1,000	\$2,000	
Interior finishes: restore lath and plaster ceiling to match original	/16	sf	¢7	\$2.012	1
3.8 Mechanical Systems	410		ψı	φ2,312	
Retain all original equipment	Allow	-	\$1,000	\$1,000	3
3.9 Electrical Systems			+.,	,,,,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
code compliance	8	hr	\$100	\$800	1
Subtotal				\$70,058	
Subtotal/Construction					\$70,058
General Contractor's General Conditions @ 25%					\$17,515
General Contractor's Fee @ 15%					\$10,509
Total/Construction					\$98.082
A/E Fees @ 14%					\$13.73
Subtotal/Construction					\$111.81
Contingency @ 30%					\$33.544
TOTAL					\$145.25

		Shoenberg Farm
		Historic Structures Report
		Andrews & Anderson Architects, PC
	Shoenberg Farm Complex Cost I	zstimate
1911 Brick Pump House		
1 - Critical		
3.1 Site		\$5,579.05
3.2 Foundation		\$35,886.00
3.3 Building Structural Systems		\$7,800.00
3.4 Exterior Walls		\$3,366.00 \$4,015,20
2.62 Doors		\$4,915.20 \$2,200.00
3.66 Windows		\$2,300.00 \$3,000.00
3.7 Interior Finishes		\$2,000.00
3.9 Electrical Systems		\$800.00
	Subtotal:	\$66.558.25
General Conditions @ 25%		\$16,639,56
Contractor Fee OH/P @ 15%		\$9,983.74
A/E Fees @ 14%		\$9,318.16
Contingency @ 30%		\$19,967.48
	Total:	\$122,467.18
2 - Serious		
3.5 Envelope - Roofing & Waterproofing		\$2,500.00
	Subtotal:	\$2,500.00
General Conditions @ 25%		\$625.00
Contractor Fee OH/P @ 15%		\$375.00
A/E Fees @ 14%		\$350.00
Contingency @ 30%		\$750.00
	Total:	\$4,600.00
3 - Minor		
3.8 Mechanical Systems		\$1,000.00
Concerct Conditions @ 25%	Subtotal:	\$1,000.00
Contractor Foo OH/P @ 15%		\$250.00 \$150.00
		\$150.00 \$140.00
AVE FEES W 14% Contingency @ 30%		\$140.00 ¢200.00
	Total	\$300.00 ¢1 940 00
	i otal:	\$1,640.00

Shoenberg Farm Historic Structures Report Andrews & Anderson Architects, PC Shoenberg Farm Complex Cost Estimate Description Quantity Unit Cost Total Priority Wo 3.1 Site \$5 1000 \$5,200.00 3 Re-grade site at north and east elevations for proper drainage су \$700.00 Allow 3 Remove volunteer trees trim overgrown grasses & shrubbery 3.2 Foundation Excavate and evaluate foundation elements, repair if required 1 Excavate, 20% of perimeter 5 \$24 \$120 bcy Excavate, 100% of interior \$70 \$1,960 28 bcy Survey & analysis of foundation elements; recommend specific repairs via construction documents 20 \$100 \$2,000 hr \$1,500 \$6,000 Helical piers with underpinning brackets, if required 4 ea 3.3 Building Structural Systems \$100 Detailed survey and framing analysis; recommend specific repairs via construction documents 20 hr \$2,000 1 Wall assembly 1 Re-sheath interior, 80% 1100 \$4 \$3,850.0 sf Re-sheath exterior, 20% 275 sf \$4 \$962.50 Sister or replace wall studs, 50% 528 \$4 \$2,112 lf New anchors/holdowns \$81 6 ea \$486 Cable ties New cable tie 57 lf \$3 \$142.50 2 workers, 2 days 32 \$60 \$1,920 hr Roof assembly 1 \$1,076 269 New or sistered framing sf \$4 \$1,076 New sheathing 269 sf \$4 3.4 Envelope - Exterior Walls Replace damaged and deteriorated exterior wood sheathing boards with in-kind material 175 sf \$5 \$805.00 1 Scrap, sand, re-paint remaining wood sheathing boards \$5 \$125.00 25 sf 1 Document and salvage shed attachment Allow \$2,000.00 3.5 Envelope - Roofing & Waterproofing Remove remaining wood shingles at roof 200 \$15 \$3,000.00 s Install new spaced 1x sheathing to match original 200 sf \$15 \$3,000.00 1 Install #1 cedar shingles. Replace ventilator with new galvanized vent \$3,000.00 200 sf \$15 3.6b Windows Windows: replace wood framing members at window openings \$50 \$50.00 1 ea 3 \$50.00 Install protective sheet metal panels at window openings until re-use is determined ea \$50 3 1 3.8 Mechanical Systems \$2,000.00 lo mechanical; further study needed for code requirement issues 20 \$100 hr 3.8c Water Service, Plumbing & Sewer 20 \$100 \$2,000.00 No plumbing; further study needed for code requirement issues hr 3 3.9 Electrical Systems 20 \$100 No electrical; further study needed for code requirement issues hr \$2,000,00 3 Subtotal \$47,635.00 Subtotal/Construction \$47,635 General Contractor's General Conditions @ 25% \$11,909 General Contractor's Fee @ 15% \$7,145 Total/Construction \$66,689 A/E Fees @ 14% \$9,336 Subtotal/Construction \$76,025 Contingency @ 30% \$22,808 TOTAL \$98,833

		Shoenberg Farm
		Historic Structures Report
		Andrews & Anderson Architects, PC
	Shoenberg Farm Complex Cost Estimate	
1911 Wood Stave Silo		
1 - Critical		
3.2 Foundation		\$10,080.00
3.3 Building Structural Systems		\$13,625.00
3.4 Exterior Walls		\$2,930.00
3.5 Envelope - Roofing & Waterproofing		\$9,000.00
	Subtotal:	\$35,635.00
General Conditions @ 25%		\$8,908.75
Contractor Fee OH/P @ 15%		\$5,345.25
A/E Fees @ 14%		\$4,988.90
Contingency @ 30%		\$10,690.50
	Total:	\$65,568.40
2 Minor		

3.1 Site	\$5,900.00
3.6b Windows	\$100.00
3.8 Mechanical Systmes	\$2,000.00
3.9c Water Service, Plumbing & Sewer	\$2,000.00
3.9 Electrical Systems	\$2,000.00
	Subtotal: \$12,000.00
General Conditions @ 25%	\$3,000.00
Contractor Fee OH/P @ 15%	\$1,800.00
A/E Fees @ 14%	\$1,680.00
Contingency @ 30%	\$3,600.00
	Total: \$22,080.00

Shoenberg Farm

Historic Structures Report Andrews & Anderson Architects, PC

Description	Quantity	Unit	Cost	Total	Priority
Circa 1940 Concrete Silo	Quantity	Onit	0031	rotar	Thomy
3.1 Site					
Demolish existing concrete driveway	1200	sy	\$5	\$6,000	3
Install new concrete driveway to match original in size and configuration	1200	sv	\$8	\$9.600	3
Trim overgrown grasses, shrubbery, trees	Allow		• •	\$500	3
Perimeter drain				• • • • •	1
Excavation at perimeter of Concrete Silo @ 3' deep	55	lf	\$16	\$880	
Perimeter drain installation	55	lf	\$14	\$770	
Backfill after drain install @ 3' deep	55	lf	\$18	\$990	
3.2 Foundation					
Excavate and evaluate foundation elements, repair if required					1
Excavate, 20% of perimeter	5	bcy	\$24	\$120	
Excavate, 100% of interior	15	bcy	\$94	\$1,410	
Survey & analysis of foundation elements;	20	hr	\$100	\$2,000	
recommend specific repairs via construction documents					
Helical piers with underpinning brackets, if required	6	ea	\$1,500	\$9,000	
3.3 Building Structural Systems					
Detailed survey and framing analysis;	30	hr	\$100	\$3,000	1
recommend specific repairs via construction documents					
Wall repairs					1
4" thick 'Shotcrete' with WWF, assume full height	2262	sf	\$12	\$27,144	
Tension elements	6	ea	\$324	\$1,944	
Fill cracks	754	sf	\$2	\$1,508	
New anchors/holdowns	6	ea	\$162	\$972	
Inspect hoop ties					1
2 workers, 1 day	16	hr	\$60	\$960	
3.5 Envelope - Roofing & Waterproofing					
Install translucent plexi-glass skylight at center of roof	Allow		\$1,500	\$1,500	1
Replace missing section of domed roof with heavy guage galvanized sheet metal	50	sf	\$10	\$500	1
Replace missing wood panels at window openings	14	ea	\$100	\$1,400	2
3.8 Mechanical Systems					
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	3
3.8c Water Service, Plumbing & Sewer					
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	2
3.9 Electrical Systems					
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	2
Subtotal				\$82,198	
Subtotal/Construction					\$82,198
General Contractor's General Conditions @ 25%					\$20,550
General Contractor's Fee @ 15%					\$12,330
Total/Construction					\$115,077
A/E Fees @ 14%					\$16,111
Subtotal/Construction					\$131,188
Contingency @ 30%					\$39,356
τοτλι					\$170 544

		Shoenberg Farm
		Historic Structures Report
	Shoanbarg Farm Complex Cost Estimat	Andrews & Anderson Architects, PC
Circa 1940 Concrete Silo	Shoenberg Farm Complex Cost Estimat	
1 - Critical		
3 1 Site		\$2.640.00
3.2 Foundation		\$2,040.00
3.3 Building Structural Systems		\$35,528,00
3.5 Envelope - Roofing & Waterproofing		\$2,000.00
··· -······	Subtotal:	\$52.698.00
General Conditions @ 25%		\$13.174.50
Contractor Fee OH/P @ 15%		\$7,904.70
A/E Fees @ 14%		\$7,377.72
Contingency @ 30%		\$15,809.40
	Total:	\$96,964.32
2 - Serious		
3.5 Envelope - Roofing & Waterproofing		\$1,400.00
3.8c Water, Plumbing & Sewer		\$4,000.00
3.9 Electrical Systems		\$4,000.00
	Subtotal:	\$9,400.00
General Conditions @ 25%		\$2,350.00
Contractor Fee OH/P @ 15%		\$1,410.00
A/E Fees @ 14%		\$1,316.00
Contingency @ 30%		\$2,820.00
	Total:	\$17,296.00
0 Minute		
3 - MINOF		
3.1 Site		\$16,100.00
3.8 Mechanical Systems	Cubtotal	\$4,000.00
Constal Conditions @ 25%	Subtotal:	\$20,100.00 \$5,025,00
Contractor Equ OH/P @ 15%		\$3,025.00 \$3,045.00
		\$3,015.00 \$2,814.00
Contingency @ 30%		φ2,014.00 ¢ε α3α αα
	Total:	\$36,030.00
	i otal.	430,304.00

She	penberg Farm Com	olex Cost Est	imate	Shoenberg Farm Historic Structures Report rews & Anderson Architect	t S,
Description	Quantity	Unit	Cost	Total	Priority
Circa 1940 Quonset Structure	-				
3.1 Site					
Trim tree branches at southwest corner of structure	Allow			\$2,000	3
Demolish existing concrete sidewalk	900	sy	\$5	\$4,500	1
Reslope & repair concrete sidewalk; 3 sides of structure	900	sy	\$3	\$2,250	1
3.2 Foundation					
Seal small foundation wall cracks	1104	sf	\$2	\$1,656	1
Repair two large stem wall cracks					1
Materials	2	ea	\$250	\$500	
2 workers, 2 days	32	hr	\$60	\$1,920	-
Excavate and evaluate foundation elements, repair if required					1
Excavate, 10% of perimeter	20	bcy	\$24	\$480	
Survey and analysis of foundation elements;	00	h.,	¢400	¢0.000	
recommend specific repairs via const. doc.	20	nr	\$100	\$2,000	
Helical piers with underpinning brackets, it required	22	ea If	\$1,500	\$33,000	1
2.2 Puilding Structural Systems	232		φο		1
5.5 Building Structural Systems	40	h r	¢100	£4.000	1
via construction documents	40	nr	\$100	\$4,000	
New steel arches	4000	14	¢00	¢00.400	1
Materials, (steel tubes)	1200	IT	\$32	\$38,400	
Installation A workers 7 days	224	hr	¢60	¢12.440	
4 WOIKEIS, 7 Udys	224	111 OV	\$00 \$1,500	\$13,440	1
Sister sheath and anchor cross walls	3.0 2714	cy	\$1,500	\$5,400 \$14,027	1
Strengthen garage door header	1	31	Ψ0 \$1,500	\$1,500	1
Renair damaged wood arches 5%	184	lf	\$16	\$2 944	1
Re-sheath loft framing	104	ef	\$10 \$4	\$3,808	1
Sister loft supporting wall stude	884	sf	\$2	\$1,768	1
3.4 Envelope - Exterior Walls / Roof	001		ψ2	ψ1,100	
Remove corrugated steel at damaged areas at wall & roof	3500	sf	\$5	\$17,500	1
	0000	51	ψυ	φ17,000	•
install new corrugated steel to match original at wall & root	3500	sf	\$5	\$17,500	1
3.6a Doors					
Doors: Replace existing track hardware for horizontal doors.					
Recondition original doors	3	ea	\$4,000	\$12,000	2
Doors: Replace overhead door & track system at south elevation					
with in-kind door	1	ea	\$2,000	\$2,000	2
3.6b Windows					
Windows: restore nine-lite steel windows to match original	20	ea	\$40	\$800	2
3.8 Mechanical Systems					
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	3
3.8c Water Service, Plumbing & Sewer					-
Code analysis needed once adaptive re-use is determined	40	hr	\$100	\$4,000	3
3.9 Electrical Systems	40		A 400	A 4 000	
Code analysis needed once adaptive re-use is determined Subtotal	40	nr	\$100	\$4,000 \$196,989	3
Subtotal/Construction					\$196,989
General Contractor's General Conditions @ 25%					\$49,247
General Contractor's Fee @ 15%					\$29,548
Total/Construction					\$275,785
A/E Fees @ 14%					\$38,610
Subtotal/Construction					\$314,394
Contingency @ 30%					\$94,318
TOTAL					\$408,713

		Shoenberg Farm
		HISTORIC STRUCTURES REPORT
	Shoenberg Farm Complex Cost Estimate	
Circa 1940 Quonset Structur	re <u> </u>	
1 - Critical		
3.1 Site		\$6,750.00
3.2 Foundation		\$40,252.00
3.3 Building Structural Systems		\$86,187.00
3.4 Envelope - Exterior Walls / Roof	- · · · · ·	\$35,000.00
	Subtotal:	\$168,189.00
General Conditions @ 25%		\$42,047.25 \$55,000.05
		\$∠5,∠∠8.35 \$22,546,46
A/E Fees @ 14% Contingency @ 30%		φ23,340.40 \$50.456.70
Contingency @ 50 %	Total:	\$309.467.76
	Total.	\$505,407.70
2 - Serious		
3.6a Doors		\$14,000.00
3.6b Windows		\$800.00
	Subtotal:	\$14,800.00
General Conditions @ 25%		\$3,700.00
Contractor Fee OH/P @ 15%		\$2,220.00
A/E Fees @ 14%		\$2,072.00
Contingency @ 30%		\$4,440.00
	Total:	\$27,232.00
3 - Minor		
3.1 Site		\$2,000.00
3.8 Mechanical Systems		\$4,000.00
3.8c Water Service, Plumbing & Sewer		\$4,000.00
3.9 Electrical Systems		\$4,000.00
	Subtotal:	\$14,000.00
General Conditions @ 25%		\$3,500.00
Contractor Fee OH/P @ 15%		\$2,100.00
A/E Fees @ 14%		\$1,960.00
Contingency @ 30%		\$4,200.00
	lotal:	\$25,760.00



Circa 1920s. Shoenberg Farm aerial view looking south. See Farm Aerial View for complete photo view. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Circa 1920s. Shoenberg Farm aerial view looking southwest. See Farm Aerial View for complete photo view. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Circa 1920s. Shoenberg Farm aerial view looking west. See Farm Aerial View for complete photo view. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Circa 1920s. Shoenberg Farm aerial view looking east. Bungalow Residence and Garage are visible in the right foreground. The rear access door, steps and open porch are visible. See Farm Aerial View for complete photo view. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Circa 1920s. Shoenberg Farm aerial view looking southeast. Bungalow Residence and Garage are to the left of photo. The original barn roof and cupola is visible in the foreground. See Farm Aerial View for complete photo view. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Circa 1920s. Shoenberg Farm. Structures along tree lined road at southern edge of property. These buildings have been demolished. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Circa 1920s. Shoenberg Farm. Bungalow residence is in the foreground. The milk and ice house and the barn are in the rear of photo. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Calves at Shoenberg Farm. Date unknown. Note the two wood stave silos at the rear of photo. The rear silo currently remains. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Children on a horse-drawn hay ride during a National Council of Jewish Women's Picnic for children of Preventorium July 6, 1936 at Shoenberg Farm. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Children at picnic during a National Council of Jewish Women's Picnic for children of Preventorium July 6, 1936 at Shoenberg Farm. The Bungalow Residence is to the right of the photo. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Group at front porch of Bungalow Residence during a National Council of Jewish Women's Picnic for children of Preventorium July 6, 1936 at Shoenberg Farm. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



General View of Buildings, Shoenberg Farm

Date unknown. View of Shoenberg Farm looking north east. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Date unknown. Main entrance of Shoenberg Farm looking west from Sheridan Boulevard. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



Circa 1920s. View of Shoenberg Farm looking west. The Milk and Ice House and the Large Barn are visible at the center of photo. Photo courtesy of Ira M. and Peryle H. Beck Archives, Penrose Library and CJS, University of Denver



1958 Colorado Farmer. Photo shows the two hay feeder silos now demolished.

SHOENBERG FARM 7.0 Bibliography

Harris, C. <u>Dictionary of Architecture and Construction</u>. New York City: McGraw-Hill Book Company, 1975.

Weaver, Martin E. <u>Conserving Buildings: A Guide to Techniques and Materials.</u> John Wiley & Sons, Inc., 1993.

McAlester, Lee and Virginia McAlester. <u>A Field Guide to American Houses.</u> New York: Alfred A. Knopf, Inc., 1984.

www.ci.westminster.co.us. Shoenberg Farm: Construction History

www.ci.westminser.co.us. History of Shoenberg Farm and National Jewish Hospital

www.ci.westminster.co.us. Commodore Louis D. Shoenberg (Beaumont)

www.ci.westminster.co.us. Shoenberg Farm: Tepper History

Penrose Library and CJS, University of Denver; Ira M. and Paryle H. Beck Archives

8.0 Appendices

Code, Loading and Materials Information

1.0 Referenced Documents

- Background geometrical information was obtained from the Schematic Floor Plan documents provided by Andrews & Anderson Architects, P.C., received August 16, 2007.
- Field investigations were performed by JVA, Inc. to ascertain the historic buildings' conditions on August 14, 2007; August 21, 2007; and September 5, 2007.
- A three-dimensional high-definition laser scan (LIDAR) of the interior Quonset Structure was performed by Flatirons, Inc. Two-dimensional line drawings of the major interior structural elements were received August 31, 2007.

2.0 Design Data

2.1.A Governing Jurisdiction

City of Westminster
 Department of Community Development
 Building Division
 4800 West 92nd Avenue
 Westminster, Colorado 80031

2.1.B Design Codes

- International Building Code (IBC) 2006 Edition
- International Existing Building Code (IEBC)- 2006 Edition

2.1.C Code Design Requirements

Per IBC Chapter 34, Section 3403.1, additions or alterations to any building or structure shall conform to the requirements of the code for new construction. Portions of the structure not altered and not affected by the alteration are not required to comply with the code requirements for a new structure.

Per IBC Chapter 34, Section 3403.2, additions or alterations to an existing structure shall not increase the force in any structural element by more than 5 percent, unless the increased forces on the element are still in compliance with the code for new structures, nor shall the strength of any structural element be decreased to less than that required by this code for new structures. Where repairs are made to structural elements of an existing building, and uncovered structural elements are found to be unsound or otherwise structurally deficient, such elements shall be made to conform to the requirements of new structures.

Where an existing structure heretofore is altered or repaired, the minimum design loads for the structure shall be the loads applicable at the time of erection, provided that public safety is not endangered thereby.

= 1.0

SHOENBERG FARM

8.0 Appendices

Per IBC Chapter 34, Section 3406 for Change of Occupancy; no change shall be made in the use or occupancy of a building...unless such building is made to comply with the requirements of this code for such division or group of occupancy. Subject to the approval of the building official, the use or occupancy...is permitted to be changed...provided the new or proposed use is less hazardous, based on life and fire risk, than the existing one.

Per IBC Chapter 34, Section 3407.1 for Historic Buildings; the provisions of this code relating to the construction, repair, alteration, addition, restoration and movement of structures, and change of occupancy shall not be mandatory for historic buildings where such buildings are judged by the building official to not constitute a distinct life safety hazard.

2.1.C.i Gravity Loads

Floor Live Load

Live loads at the time of erection are unknown, therefore IBC Chapter 16, Table 1607.1 loads were used in the analysis:

•	Residential	= 40	psf
•	Offices	= 50	psf
•	Lobbies and First Floor Corridors	= 100	psf
•	Corridors above First Floor	= 80	psf
•	Stairs and Exits	= 100	psf
•	Attics without Storage	= 10	psf
•	Attics with Light Storage	= 20	psf
Sr	now Load		
•	Ground Snow Load	= 30	psf
•	Flat Roof Snow Load	= 30	psf
	_ · · · · _ ·		-

2.1.C.ii Lateral Loads

Snow Load Importance Factor, I_S

vv			
•	Wind Speed, 3-second Gust	= 100	mph
•	Exposure	= B	
•	Wind Load Importance Factor, I_W	= 1.0	
Seismic Load			

Seismic Design Category = B
 Seismic Load Importance Factor, I_E = 1.0

2.1.D Existing Materials

No material testing has been performed therefore all materials properties were assumed:

Wood

•	Douglas-Fir No.1	
•	Allowable Bending Strength, F _b	= 1000 psi
Br	ick	
	lok	
•	Fired Brick, Type N Mortar: Compressive Strength	= 1,500 psi
•	From MSJC: Allowable Compressive Strength	= 100 psi

SHOENBERG FARM 8.0 Appendices

Co •	oncrete Compressive Strength, f' _c	= 1,500 psi		
Ste	Steel			
•	ASTM A9			
•	Yield Strength, F _v	= 30 ksi		
•	Allowable Bending Strength, Fb	= 16 ksi		

SHOENBERG FARM

8.0 Appendices

Preservation Briefs

http://www.nps.gov/history/hps/tps/briefs

Preservation Brief 01: <u>Assessing Cleaning and Water-Repellent Treatments for Historic Masonry</u> <u>Buildings</u>

Preservation Brief 02: <u>Repointing Mortar Joints in Historic Masonry Buildings</u>

Preservation Brief 04: Roofing for Historic Buildings

Preservation Brief 09: The Repair of Historic Wooden Windows

Preservation Brief 19: The Repair and Replacement of Historic Wooden Shingle Roofs

Preservation Brief 37: Appropriate Methods of Reducing Lead-Paint Hazards in Historic Housing

SHOENBERG FARM

8.0 Appendices

Glossary

- Collar Tie A horizontal structural member connecting a mirrored pair of sloped rafters, stiffening the rafters and roof framing assembly. A collar tie runs parallel to the ceiling joists, but higher. Each tie connects a matching pair of rafters at mid-span, stiffening rafters and strengthening the overall structure. Above rooms with vaulted or raised ceilings, collar ties sometimes double as the ceiling joists, providing the essential lower chord of the triangle, and may provide a backing for attaching a flat portion of the ceiling.²
- Parging In masonry construction, a coat of cement mortar (generally containing damp proofing ingredients) on the face of rough masonry, the earth side of foundation and basement walls or the like; a parge coat¹
- Purlin A horizontal structural member spanning perpendicular to the roof rafters or trusses to support the roof deck.
- Sistering Augmentation. The addition of new material to an existing element with the purpose of increasing its strength. Commonly where wood "sisters" are utilized they are connected to existing wood elements so that the two elements work compositely to increase load-carrying capacity.
- Stile One of the upright structural members of a frame, as at the outer edge or a door or a window sash¹
- Wythe Each continuous vertical section of wall, one masonry unit in thickness ¹

¹. *Dictionary of Architecture and Construction* Third Edition. Edited by Cyril M. Harris (2000) ² <u>http://www.hometips.com/articles/homenclature/collar_tie.html</u>

SHOENBERG FARM 8.0 Appendices Quonset Hut 3-D Laser Scan

Flatirons, Inc. used ground-based LIDAR to model the Shoenberg Farms Quonset hut for analysis by JVA, Inc. This three dimensional scanning allows Flatirons to map millions on laser ranged points, each with individual X,Y, and Z coordinates. The completed and registered 3-D picture created by these points enables precise modeling of the structure, including specific areas or elements requested by the client.

The map of these points was tied to local and project control, allowing us to hold elevations and horizontal position established previously. Additional areas and structures were captured in the scan, and the data will be retained if needed in the future. At the request of JVA, Inc., individual support beams were modeled with 3-D polylines, and referenced to a plane to check for deformation. Flatirons did notice deformation of most of the support beams, and sagging in the middle of both sections of the roof.

The data captured represent the conditions of the Quonset hut at the time of the 3-d scan, and will be stored as a historical reference.

For additional information on ground based LIDAR/3-D Scanning, see:

http://www.leica-geosystems.com/corporate/en/ndef/lgs_5570.htm



Reference Structural Sections of the Quonset report for additional information.