

BUILDINGS AND STRUCTURES

Overview

Three buildings and three structures exist at the Truman Farm. The three buildings date to the historic period, and the three structures are recent additions and do not contribute to the significance of the property. This section includes a brief overview of all buildings and structures located on the Truman Farm and their relationship to the property, followed by analysis of the non-extant structures.

In addition to the extant buildings and structures, several important structures existed on the Truman Farm that are no longer extant. These structures include several barns and outbuildings.

This section concludes with a detailed evaluation and analysis of the contributing buildings—Truman Farm Home, Truman Farm Garage, and Truman Poultry House.

Truman Farm Home (1895) (TF01) is the most dominant building on the property. The Farm Home is a wooden clapboard building set on a brick and limestone foundation. It is a two-story, T-shaped building. The front of the house is oriented to the west towards Blue Ridge Boulevard and Grandview Road. The south facade has two entrances, one to the kitchen and one to dining room. The entrance to the kitchen is the route visitors take to access the building.

Truman Farm Garage (c.1914) (TF02) The Garage is a single-story wood frame structure with double swinging doors, a board door on the west, and a panel door on the east. The doors orient to the west as the Garage was connected to the dirt farm drive during the period of significance. The construction of the 1980s parking area and entrance drive



Figure 3-49: Three buildings remain from the period of significance—Truman Farm Home (top), Truman Farm Garage (middle), and Truman Farm Poultry House (bottom). SS 12/6/11



Figure 3-50: Three non-contributing structures exist on the Truman Farm. The maintenance shed was added by the NPS in 1995 (top). The smokehouse was moved to the Truman Farm by the Truman Farm Home Foundation in 1985 (middle), and the outhouse was placed on the property c.1985 (bottom). SS 12/6/11

1 did not connect the same way, resulting in
2 the Garage being disconnected from the
3 circulation system.

4 5 Truman Farm Poultry House (c.1900) 6 (TF03)

7 The Poultry House is a small 12' x
8 30' wood structure with a wood and
9 corrugated metal shed roof. The only
10 opening is on the west façade, which
11 features a wooden door, two small
12 windows and a larger opening covered
13 with chicken wire.

14
15 The Poultry House is in the same location
16 as it was in at the end of the period of
17 significance. It was moved around 1940,
18 and was originally orientated east-west
19 with doors to the south and was placed to
20 the north of the Farm Home. The Poultry
21 House is important for its role in defining
22 the historic spaces of the farm, especially
23 the Farm Home yard.

24 25 Maintenance Shed (1995)

26 The maintenance shed is a new NPS
27 structure, set immediately east of the
28 Garage and is of a similar size. It is
29 plywood with a gable roof, set on a brick
30 on concrete block and limestone block
31 foundation. A door is on the north façade
32 with metal vents located high on the
33 walls. The shed was built c.1995 for
34 equipment and material storage such as
35 mowing and maintenance. Construction
36 of the shed was considered an adverse
37 impact and required consultation with the
38 Advisory Council.

39
40 The shed is in good condition. It is not
41 a historic structure and its presence
42 detracts from the historic setting. The
43 shed is to be removed once storage for
44 maintenance equipment is provided at
45 Tract 3 or an alternate facility.

46 47 Smokehouse (TF07) (1985)

48 The smokehouse is a small wood frame
49 structure with a gable roof. The siding is

vertical boards with battens on the south and east walls. Wood posts on the corners are set in concrete foundations. A door is on the west side and a small window is on the north. The smokehouse was moved to the Truman Farm by the Truman Farm Home Foundation in 1985. It is not a historic structure. Its presence detracts from the historic setting.

Privy (TF08) (1985)

The privy, or outhouse, is a very small wooden structure with a gable roof, located adjacent to and west of the Poultry House. The walls are vertical board and batten siding with a door on the south side. The privy was placed at the farm circa 1985 by the Truman Farm Home Foundation. It is not a historic feature nor is its location historically accurate.

Adjacent Buildings

Tract 3 includes a single-story building, that formerly functioned as a paint store. This property was acquired by the NPS in 2011 as recommended by the GMPA and LRIP. The building has frontage along Blue Ridge Boulevard. A circular drive and parking area surround the building. Future uses may include visitor, administration, and storage/maintenance facilities.

Non-extant Structures

Several outbuildings and structures existed on the Truman Farm during the period of significance that area no longer extant. Most were built by the Truman family and several were likely removed or demolished by the family. Others were destroyed by fire or natural disasters.

Barns

As part of a working farm, barns were necessary components. At least five barns existed on the property at various points in time during the period of significance.

Harry S Truman is credited with building at least one (perhaps two) barn(s) during his time at the farm, but it is unknown where or which barn this was.²¹

Barns associated with the Truman Farm include the Solomon Young Barn, Granary, Hay Barn (on Vivian Truman's property), Milk Barn (Vivian's), and a Small Barn. These barns are all non-extant, but archeological investigations have revealed foundations, and historic and aerial photographs illustrate where these barns were located. The exact placement of these barns is unknown without further archeological investigations that could clarify location, materials, and use.

Solomon Young Barn

This barn was built in 1867 by Harry S Truman's maternal grandfather, Solomon Young. This large barn burned in 1966 and was removed from the property.

The Solomon Young Barn was modified several times during the period of significance. Around 1920, the barn's roofline was modified by the addition of dormers on either end to serve as hay hoods.²² The barn was modified again between 1944 and 1954, at which time the entire roof changed to a broken pitch gable. The ends were extended out to encompass the sections that were previously hipped.²³

Granary

This barn was located southeast of the Solomon Young Barn and framed the southern portion of the barnyard. Archeological evidence indicates that a barn stood in this location from the time

²¹ Truman, *Dear Bess*, Letter April 17, 1911. Harry tells Bess that the barn has a smooth floor of 50'x72' which roughly corresponds to the internal dimensions of the Solomon Young Barn, but it is unknown where his new barn was located.

²² HST Archives, photograph 80-8

²³ HST Archives, photograph 61-67-1

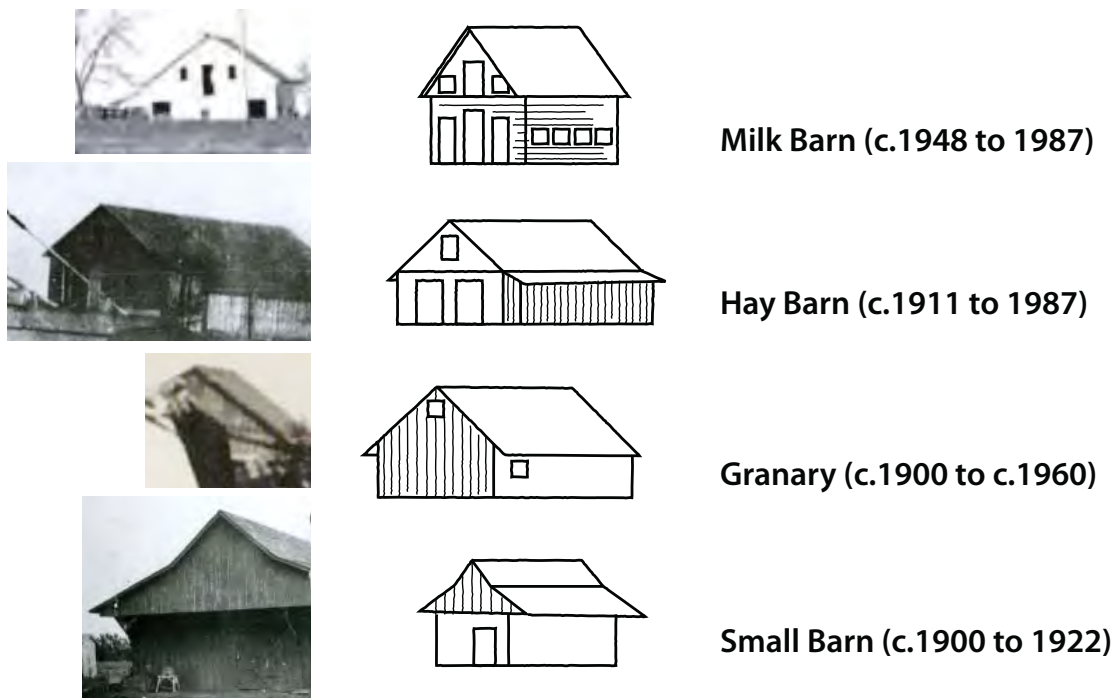
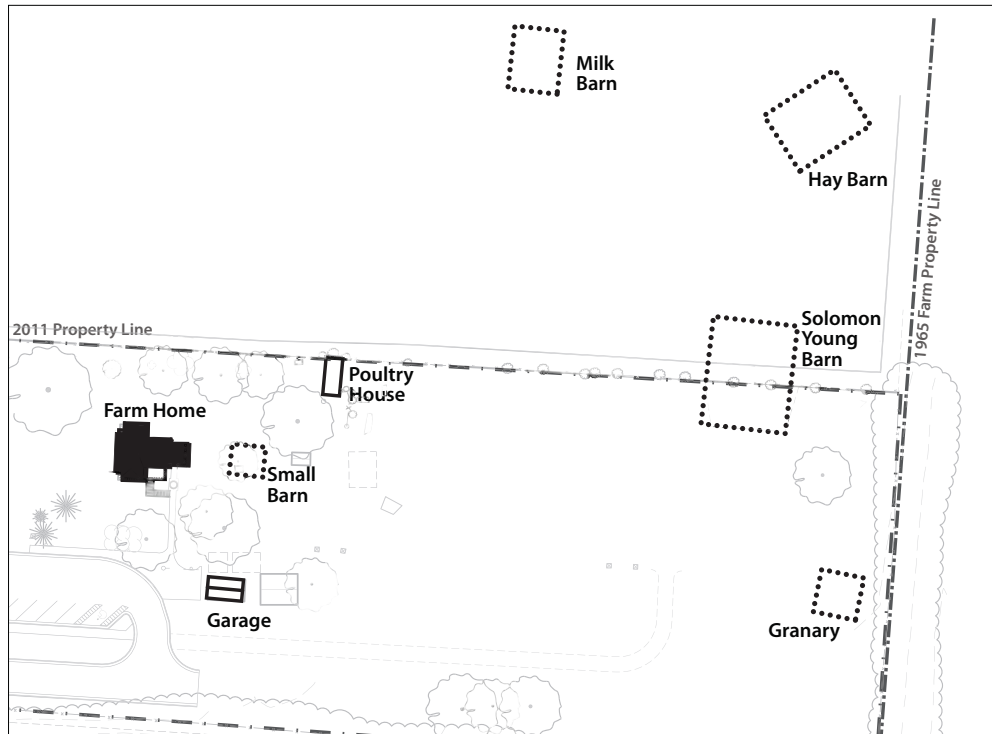


Figure 3-51: Several barns were built on the farm during the period of significance. Harry S Truman is credited with building at least one (perhaps two) of them although it is not known which one(s). Archeological evidence exists for the foundations of the barns listed above, although it is likely additional sheds, hog houses, and other outbuildings occurred across the farm landscape at various times.

1 the first house was built on the property
2 by Solomon Young, in 1867. However, this
3 could have been a different barn, as the
4 extant granary foundation doesn't exactly
5 match that of the granary documented in
6 aerial photographs from the 1940s and
7 1950s. The granary is visible in historical
8 photographs from the early 20th century,
9 and was removed between 1959 and 1965.

10 Hay Barn

11 The hay barn was built c.1900 to the
12 northeast of the Solomon Young Barn on
13 property associated with Vivian Truman.
14 It had a gable roof with an additional shed
15 on the south side. Later color photographs
16 indicate that this barn was painted red.
17 It was removed in 1987 when the Vivian
18 Truman farm was sold for the commercial
19 development.

20 Milk Barn

21 This barn was built in the late 1940s by
22 Vivian's sons, Harry A. and Gilbert, for
23 their dairy. The barn was equipped with
24 running water and electricity. It was
25 painted white and had a gable roof and
26 rows of windows. It was removed in 1987.

27 Small Barn

28 The small barn stood approximately 18 feet
29 east of the Farm Home. It measured 17-
30 feet square and had an east west roofline
31 with a broken roof and soffit that extended
32 approximately five feet from the lower
33 cribs of the barn. Archeological evidence
34 indicates that the extant foundation
35 materials match that of the first 1867
36 house, dating the small barn to that time
37 period. This evidence corresponds pre-1912
38 photographs of the farm that show a barn
39 directly behind the Farm Home. The small
40 barn was removed c.1922.²⁴

41 Outbuildings

42 Several outbuildings existed on the
43 Truman Farm during the period of
44 significance. These included a hog

1 shed, outhouses, icehouse/coal house,
2 smokehouse, and likely other small
3 buildings. The precise locations and dates
4 of these buildings are unknown.

5 Icehouse/Coalhouse and Smokehouse

6 Truman family documentation
7 indicated that an icehouse/coalhouse
8 and a smokehouse stood just north of
9 the Garage, within the Farm Home
10 yard.²⁵ It is unknown when these two
11 buildings were built, but they appear
in photographs from c.1914, and are no
longer evident in photographs c.1940.²⁶
Archeological investigations did not find
evidence of either structure.

25 HST Letter to E. Neild; Interview with Martha Ann
Swoyer, HSTR Interview #1991-5, 63.

26 HST Archives photograph 84-27

24 Interview with Martha Ann Swoyer, HSTR Interview
#1991-5, 63.



Figure 3-52: Mary Jane Truman with horse Bill (at far right). The granary is just behind the women in the carriage, and the Solomon Young Barn with modified dormers, is to the left. Another outbuilding is at the far left (perhaps the icehouse/coalhouse) HSTL 80-8, c.late 1910s



Figure 3-53: The barns were located east of the Farm Home; the Solomon Young Barn and the Granary framed the barnyard and were connected to the other barns by a network of dirt paths. Today, none of the barns are extant. HSTL Aerial pre-Truman Corners, c.1950



1867 to c.1920



c.1920 to 1944/1954



1944/1954 to 1966

Figure 3-54: The Solomon Young Barn was built by Solomon Young in 1867 and altered at least twice before burning in 1966 after which it was removed. HSTL 84-12-4, c.1900; HSTL 62-385, c.1940; Bill Curtis c.1960

BUILDINGS EXISTING CONDITIONS & CONDITION ASSESSMENTS

The following commences the HSR for the Harry S Truman Farm. The disciplines of Architecture, Structural, Mechanical (HVAC and plumbing), Electrical and Environmental Engineering are addressed individually. The property's contributing and extant buildings include:

- Farm Home
- Garage
- Poultry House

Original construction of each building is discussed, followed by its specific history/chronology of alterations as determined by studying historic photos, historic drawings, examining park records and archives and on site investigations and observations by the Study Team.

Existing Conditions

The Existing Conditions section describes the current conditions, by discipline and by component, as observed on site during the December 2011 site visit.

Condition Assessment

Following the Existing Conditions section, each feature/system was evaluated and an attendant condition rating determined. A general building condition assessment is presented first, followed by the condition assessment and ratings of each feature or component. The condition rating system is as follows. (Note: These terms are also applied to the overall structure/building.)

Good - The feature is intact, structurally sound and performing its intended purpose. The feature needs no repair or rehabilitation, but only routine or preventive maintenance.

Fair - The feature is in fair condition if either of the following conditions is

present:

- There are early signs of wear, failure or deterioration though the feature is generally structurally sound and performing its intended purpose – or –
- There is failure of a portion of the feature.

Poor - The feature is in poor condition if any of the following conditions is present:

- The feature is no longer performing its intended purpose – or –
- Significant elements of the feature are missing – or –
- Deterioration or damage affects more than 25% of the feature – or –
- The feature shows signs of imminent failure or breakdown.

Unknown - Not enough information is available to make an evaluation.

FARM HOME

Chronology of Alterations and Use

Original Construction

The Farm Home was originally built between the end of 1894 and mid-1895, after Solomon Young's original farm house was destroyed by fire in October of 1894. Harriet, Solomon's widow, and Harrison Young, their son, designed and built the Farm Home. The Farm Home appears to have been completed in three stages: the central section of the east wing portion was built first (constructed above a full basement of fieldstone set in primarily clay mortar – probably the root cellar of Solomon Young's original house) and then the front (west) two-story portion with the sitting room, parlor and two bedrooms (on brick foundation). The original one-story kitchen rested on brick piers and was most likely built last.²⁷

Significant Alterations/Current Condition

Significant alterations to the Farm Home involved a porch addition at the southeast corner of the house (post-1912), a two-story addition that was built onto the east wing of the house replacing the earlier one-story kitchen (c.1940) and the installation of a bathroom off of the downstairs hall (1949).²⁸

During the period between 1956 and 1982, the Williams family rented the Farm Home and made the following alterations:

- Replaced the old stone columns that supported the kitchen with a concrete foundation
- Screened in the southeast porch
- Installed a concrete patio in front of the south porches
- Installed a concrete floor for the west (front) porch

- Shingled the roof with composition shingles
- Added a sloped shed roof over the south porch, covering the lower half of the south facing second story windows (between 1972 and 1983)

In late 1983, after the property was sold to Jackson County, the Harry S Truman Farm Foundation began an extensive restoration project on the building to a c. 1912 appearance (see Appendix H). Work completed included:

- Removal of the major alterations on the east that occurred between 1912 and 1983
- Reconstruction of the one-story Kitchen and south porch
- Rehabilitation of the front porch floor framing
- Reconstruction of the south dining room porch
- Replacement of the exterior wood siding in-kind
- Replacement of the composite shingle roofing with new wood shingles
- Rebuilt chimneys by removing original bricks then reconstructing with the salvaged bricks
- Addition of gutters and downspouts at the front porch and east additions
- Rebuilt the integral gutter at the second-story hipped roof
- Rehabilitation of the interior including repair and replacement of damaged finishes
- Installation of new electrical and mechanical systems
- Removal of the bathroom in the Hallway
- Extensive replacement of the interior and exterior millwork
- New wallpaper

²⁷ Evans-Hatch, 2001, 17.

²⁸ A 1944 aerial photo shows additions to the east of the house.

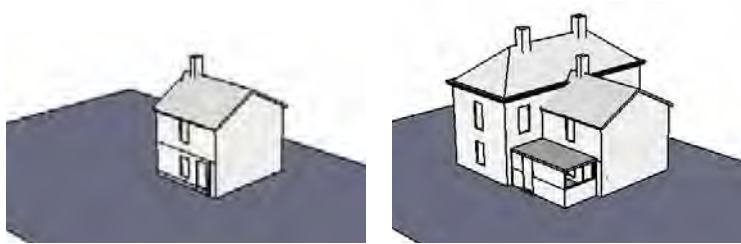
Summary of Documented Work on the Building

Date	Work Described (Source Reference)
1867-1894	Solomon Young wood frame farmhouse built on site (1867). Destroyed by fire in October 1894. (Evans-Hatch, 2001 and Piland, 1977)
1894-1895	Harriet (Solomon's widow) and Harrison Young, their son, build the current Farm Home. There are three phases to the construction: the central wing built over the remaining fieldstone basement from Solomon Young's farmhouse was built first, then the west wing portion (two-story) built on a brick foundation and then the one-story kitchen wing to the east on brick piers. (Evans-Hatch, 2001)
1906-1917	Harry S Truman (HST) lives and works on the farm. (Multiple sources)
1912, May	HST paints pump handle white. (Ferrell, 1983)
Post-1912	On or after 1912, an addition was added onto the porch at the southeast corner of the house. (HSTR photographs on record)
1916	HST states Farm Home in a state of structural decline – badly in need of repairs. (Ferrell, 1983)
c.1929	Electricity brought to Farm. (Harry S Truman Library and Museum, document granting right-of-way to Kansas City Power and Light Co., 1929)
1934-1953	The house is painted entirely white without the green trim seen in earlier images (HSTR photographs on record).
1930-1940	Two-story addition is built onto east wing of the house, replacing the earlier one-story kitchen. (Harry S Truman Library and Museum, photographs on record and statements from Harry and Gilbert Truman)
1940, July	Farm foreclosed upon; Martha and Mary Jane Truman forced to move. (Piland, 1977)
1945-1946	Portions of farm re-purchased by Vivian Truman, HST's brother. (Farm Home and 87 acres) (Piland, 1977) Feb. 24, 1945: Charles F. Curry, E. Kemper Carver and Tom Evans (friends of HST's from Kansas City) purchased the remaining 200 acres from Jackson County for \$43,500. They then sold the property back to Harry S Truman for \$23,000. (NPS NHL, 1985)

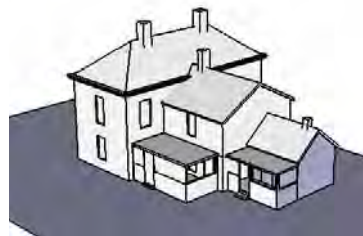
1949	City water brought to the Farm Home. Indoor bathroom installed off of the downstairs hall. (Evans-Hatch, 2001)
1956-1982	Williams family rents and occupies the Farm Home. They replaced the old stone columns that supported the kitchen with a concrete foundation, screened in the south (back) porch, installed a concrete patio off the kitchen door, installed a concrete floor for the west (front) porch and re-shingled the roof. (Evans-Hatch, 2001)
1957	Tornado hits farm – house suffers roof and exterior damaged that is repaired by the Williams. (HSTR records from Harry S Truman Farm Foundation)
1965	HST deeds the remaining Farm property to his nephews Gilbert and Harry. (Harry S Truman Library and Museum, legal record on file)
1974-1983	Slope of the shed roof over the south porch is increased, covering the lower half of the south facing second story windows in Harry's Room. (HSTR photographs on record)
1978	Harry S Truman Farm is listed in the National Register of Historic Places (Piland, 1977)
1983	The Truman family sells the remaining farm property to Jackson County, MO (Harry S Truman Library and Museum, legal record on file)
1983-1984	Restoration of the Farm Home by the Harry S Truman Farm Foundation, led by master carpenter George Fogelsong, is begun in late 1983. The work is completed by mid-1984. (See Significant Alterations above for list of work accomplished.) (Fogelsong, 1984 and Hoffman drawings, 1983)
1984	Original wood shingle roof and three layers of composition shingles removed. (Evans-Hatch, 2001)
1985	The Truman Farm became a National Historic Landmark. (NPS NHL, 1985)
1993, Dec	Public Law 103-184, Act of Congress, added Truman Farm to the Harry S Truman National Historic Site. (NPS GMP, 1999)
1994, April	Jackson County conveyed the Truman Farm deed to the federal government and the NPS assumed ownership of the property. (HSTR maintenance records)

1994-2009	The Farm Home was re-roofed with wood shingles and painted and gutters were added. Floor framing and decking was replaced on the west (front) porch and the south porches. Spindles and brackets were replaced at the west porch. (HSTR maintenance records)
1996	Construction of the wooden wheelchair entrance ramp connecting the walkway to the western entrance on the south side of the Farm Home. (HSTR maintenance records)
c. 2002	Replaced west porch columns with redwood in-kind replicas; kitchen porch 107 re-built. (HSTR maintenance records)
2005	Farm Home repairs include window restoration and in-kind window replacement, replacement of deteriorated siding, replacement of chimney caps, tuck-pointing the foundation, in-kind replacement of most porch decorative posts and installation of a fire and alarm system. (HSTR maintenance records)
2007	Farm Home was upgraded with a geothermal heating/cooling system. (HSTR maintenance records)
2010	The heat pump equipment destroyed by a backed-up floor drain; replaced. The exterior of the house is repainted and minor repairs made to wood surfaces. (HSTR maintenance records)

Farm Home Sequence of Alterations



c.1894-1895



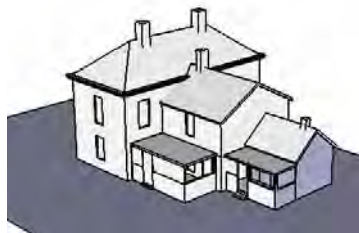
by 1912



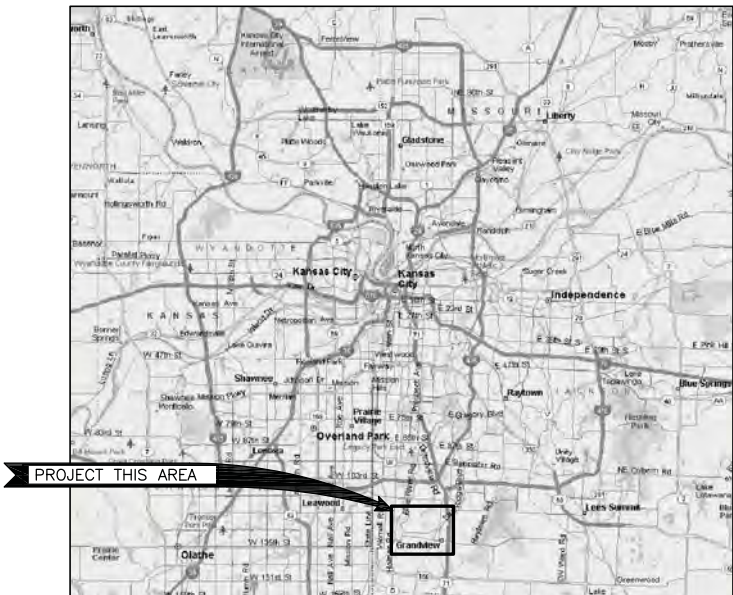
by 1935



c.1974-1983



c.1984 - Current



INDEX
SHEET

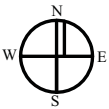
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ARCHITECTURAL		
	2	FARM HOME BASEMENT & 1ST FLOOR PLAN
	3	FARM HOME 2ND FLOOR & ROOF PLAN
	4	FARM HOME NORTH & EAST ELEVATIONS
	5	FARM HOME WEST & SOUTH ELEVATIONS
	6	FARM HOME BUILDING SECTIONS
	7	FARM HOME BUILDING SECTIONS
	8	GARAGE FLOOR PLAN
	9	GARAGE ELEVATIONS
	10	POULTRY HOUSE FLOOR PLAN
	11	POULTRY HOUSE ELEVATIONS

ABBREVIATIONS

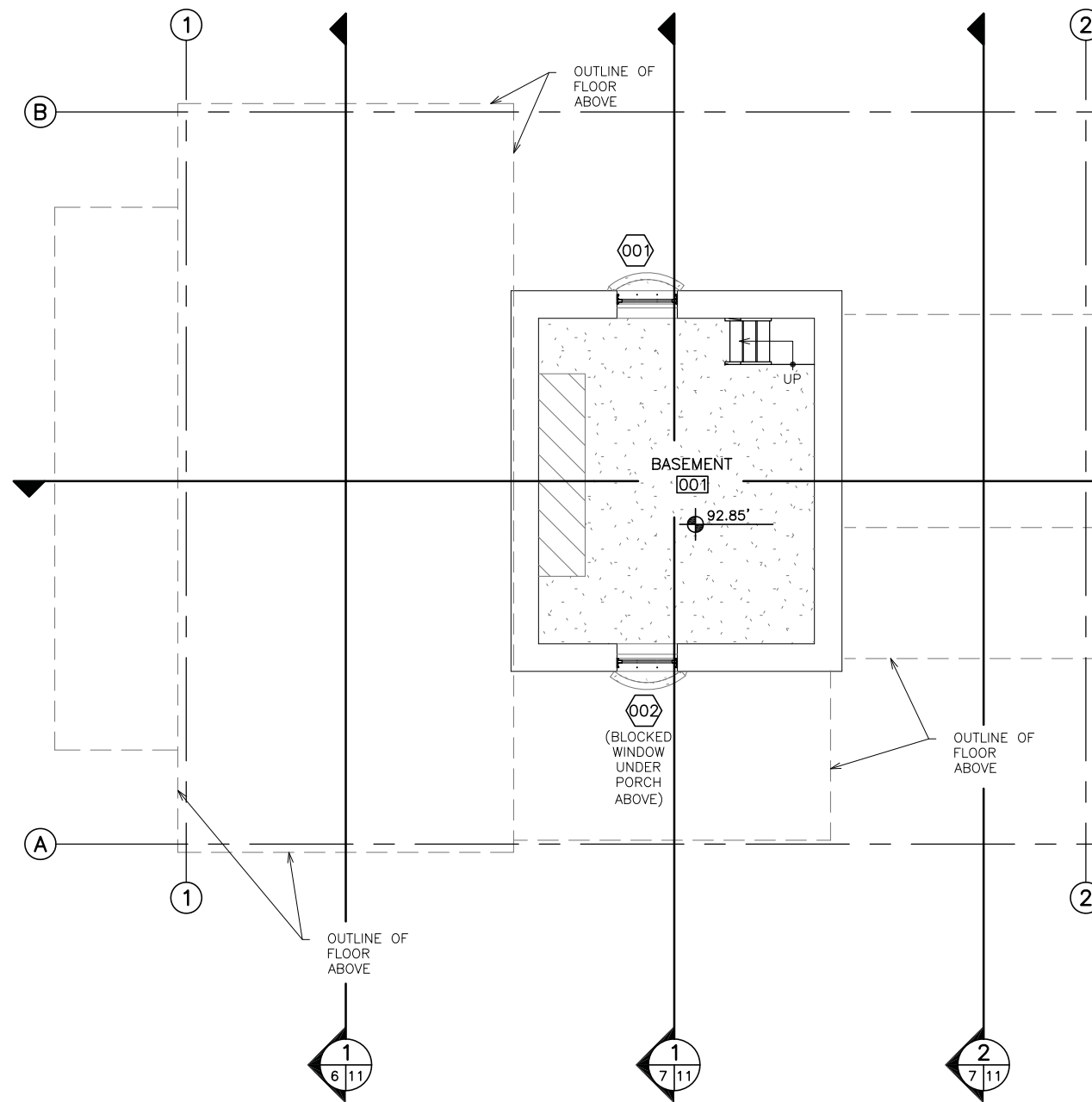
CLG	CEILING
DN	DOWN
ELEV	ELEVATION

HARRY S TRUMAN GRANDVIEW TRUMAN FARM

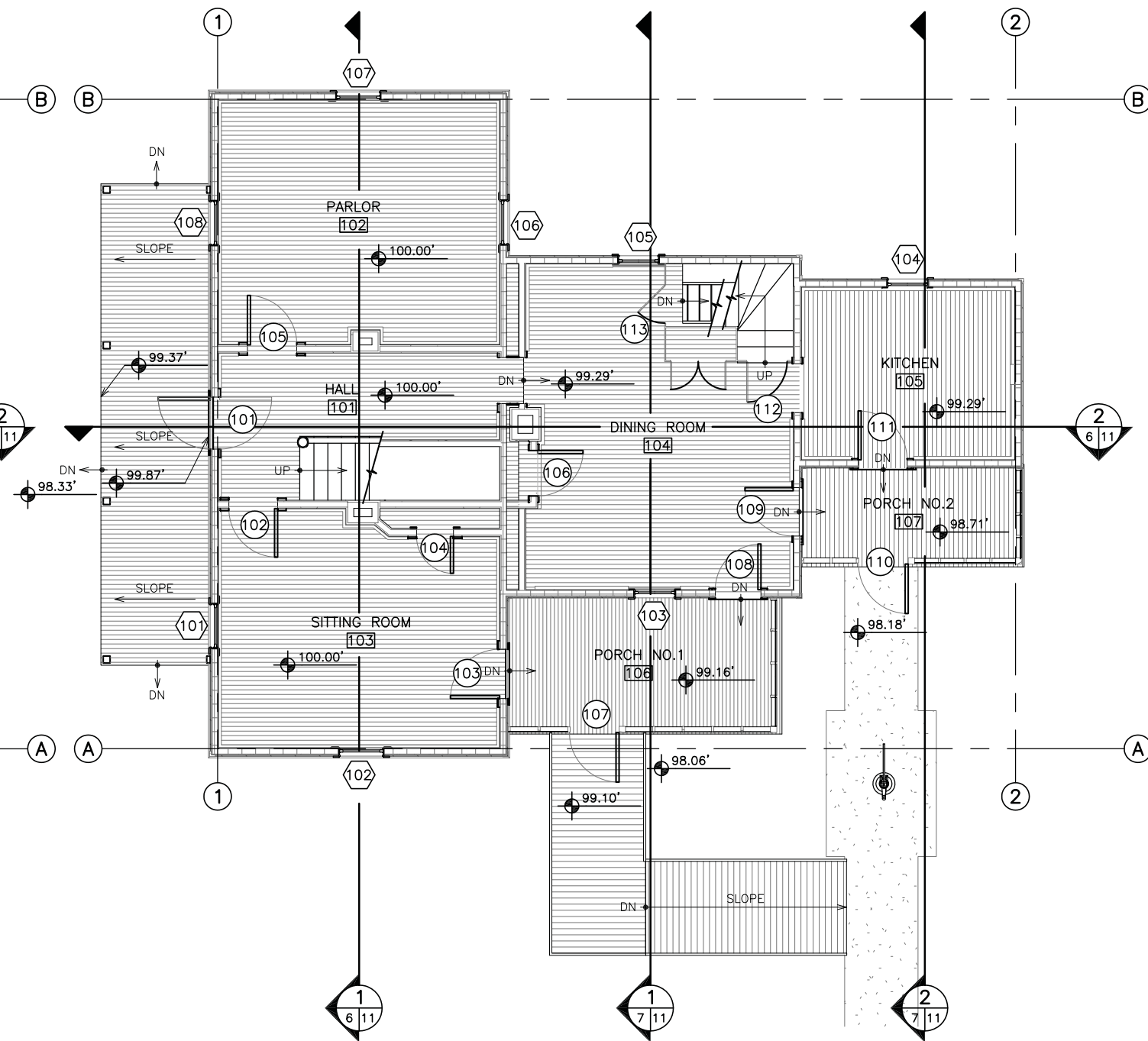


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	REGION MIDWEST	COUNTY JACKSON	STATE MISSOURI

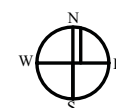
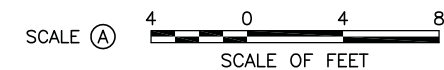
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1 FARM HOME - BASEMENT PLAN
2 11 SCALE (A)

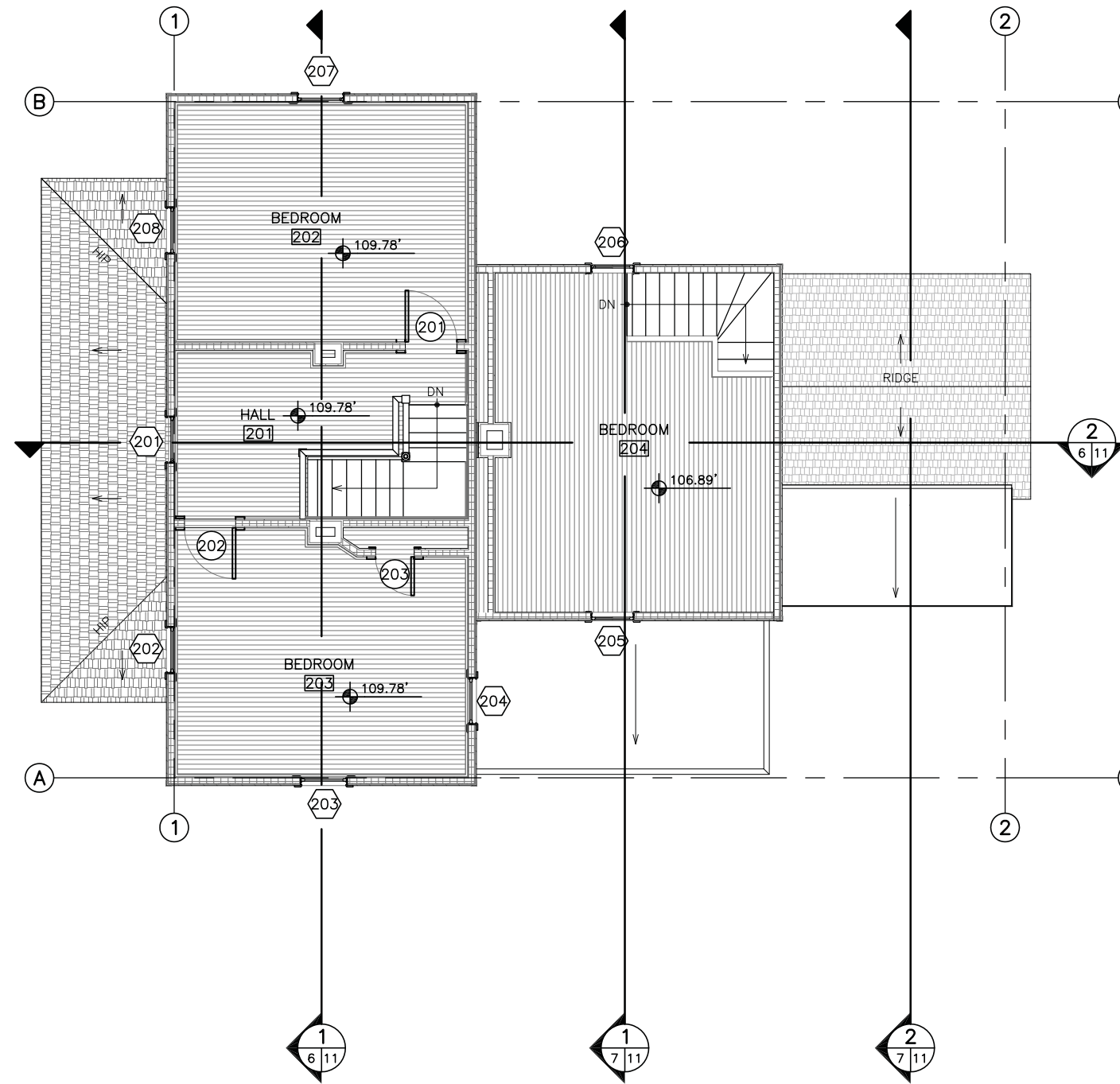


2 FARM HOME - 1ST FLOOR
2 11 SCALE (A)

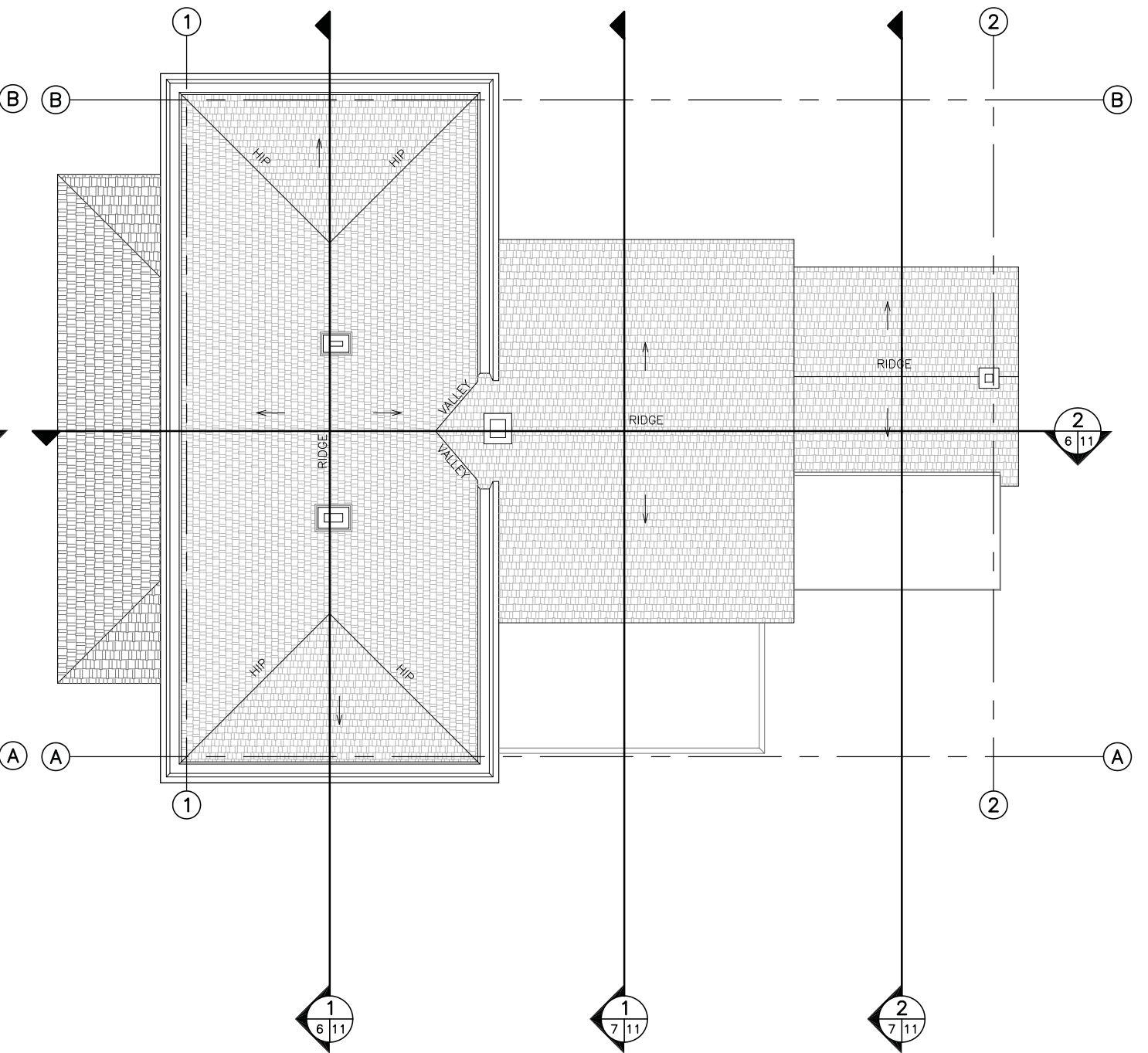


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		REGION MIDWEST	STATE MISSOURI

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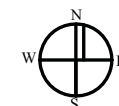


1 FARM HOME - 2nd FLOOR PLAN
3 11 SCALE (A)



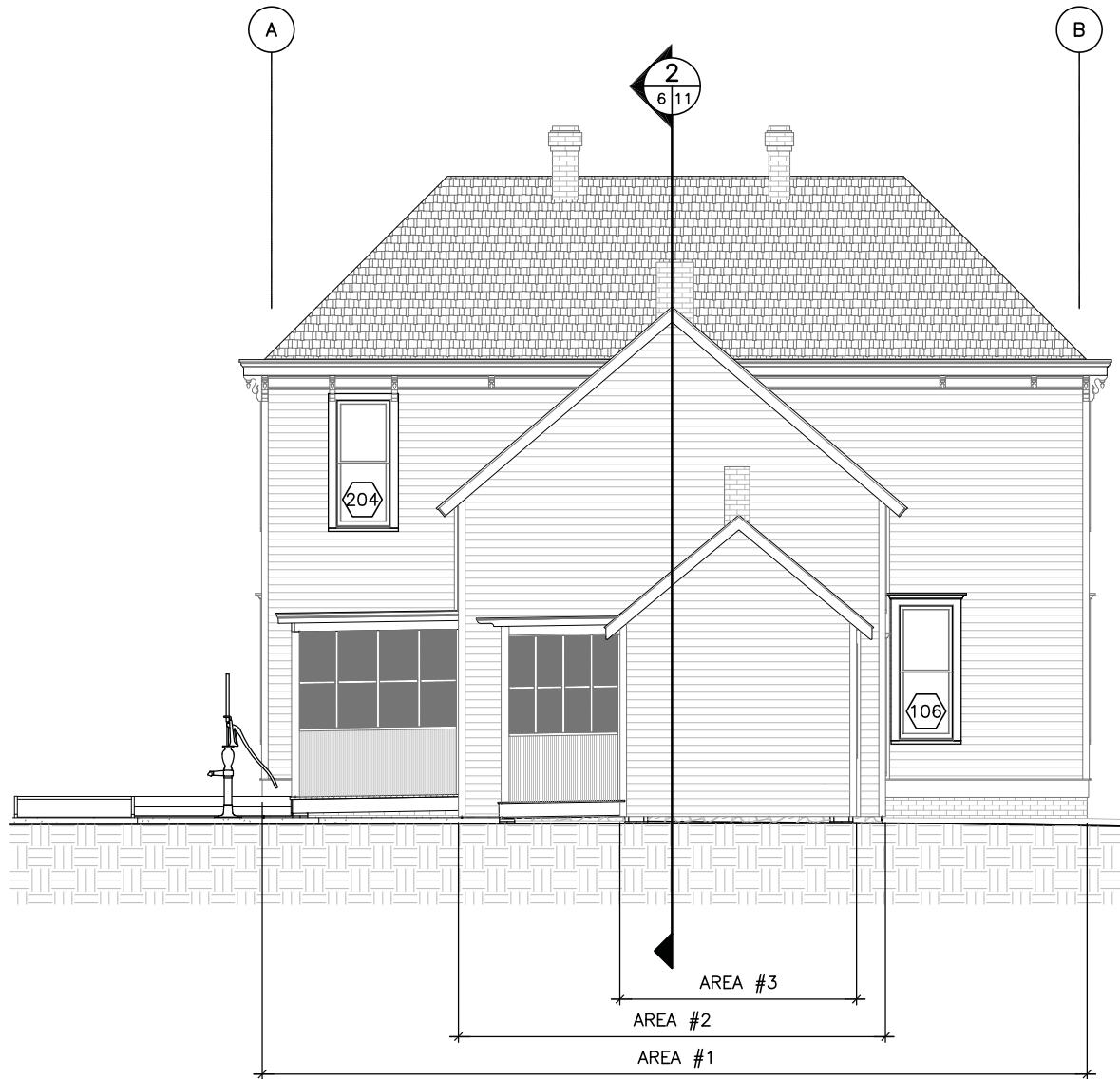
2 FARM HOME - ROOF PLAN
3 11 SCALE (A)

SCALE (A) 4 0 4 8
SCALE OF FEET



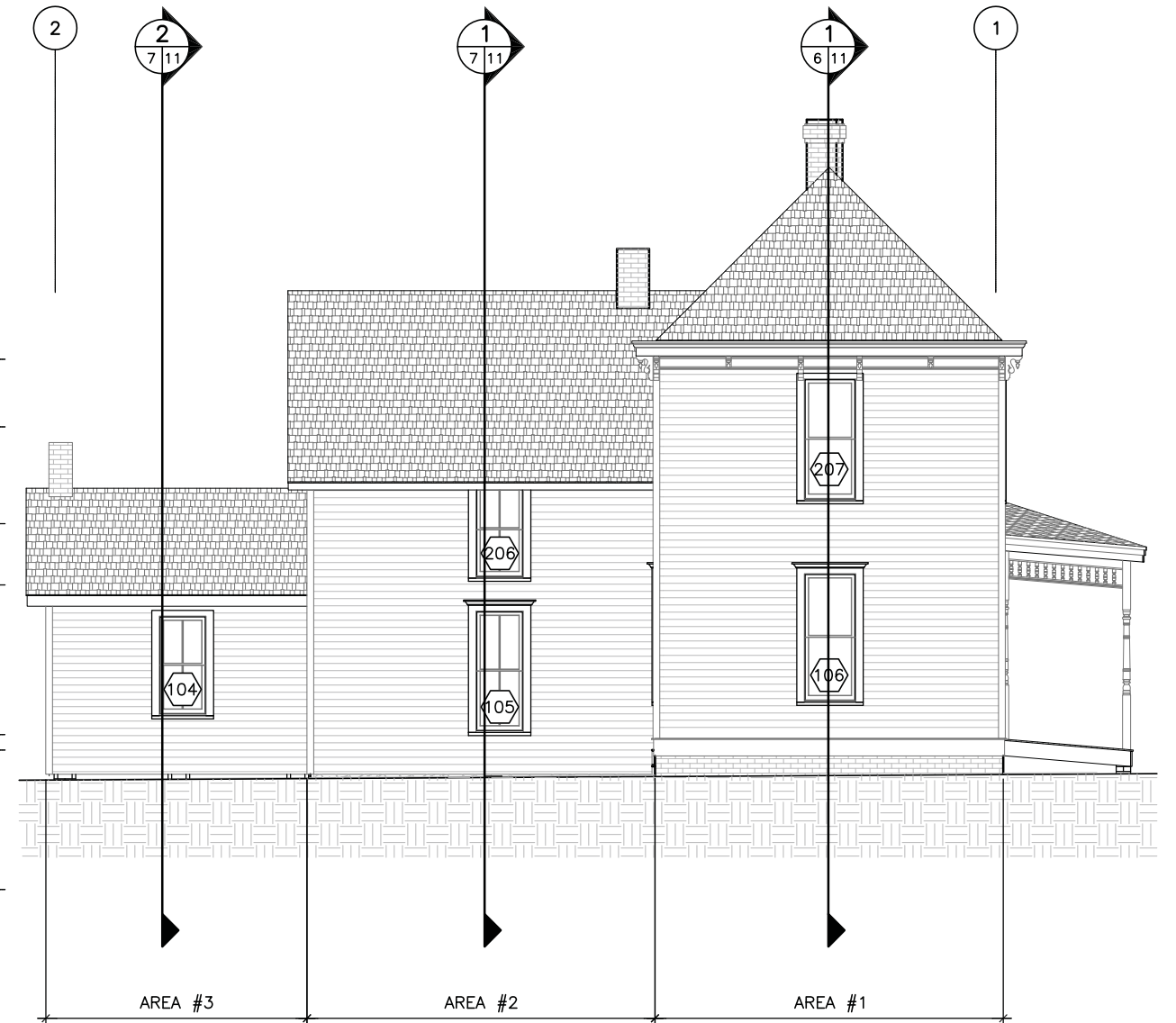
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1 FARM HOME — EAST ELEVATION
4 11 SCALE (A)

- 2nd Floor CLG
Area #1
Elev. 118'-0"
- 2nd Floor CLG
Area #2
Elev. 114'-11 3/8"
- 2nd Floor
Area #1
Elev. 110'-5 5/8"
- 2nd Floor
Area #2
Elev. 107'-7 5/8"
- 1st Floor
Area #1
Elev. 100'-8 1/2"
- 1st Floor
Area #2 & #3
Elev. 100'-0"
- Basement Floor
Area #2
Elev. 93'-6 1/2"

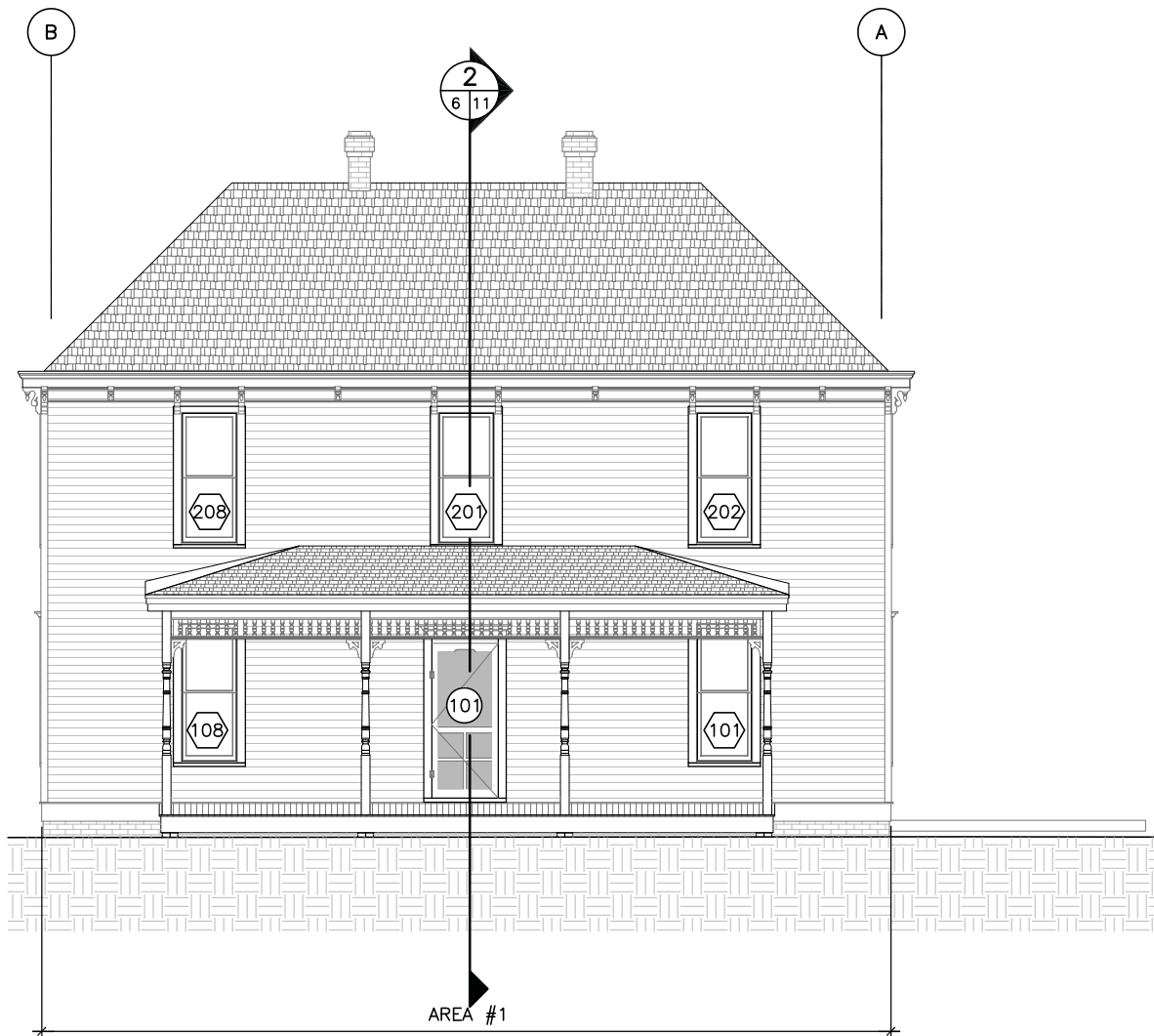


2 FARM HOME — NORTH ELEVATION
4 11 SCALE (A)

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SCALE OF FEET

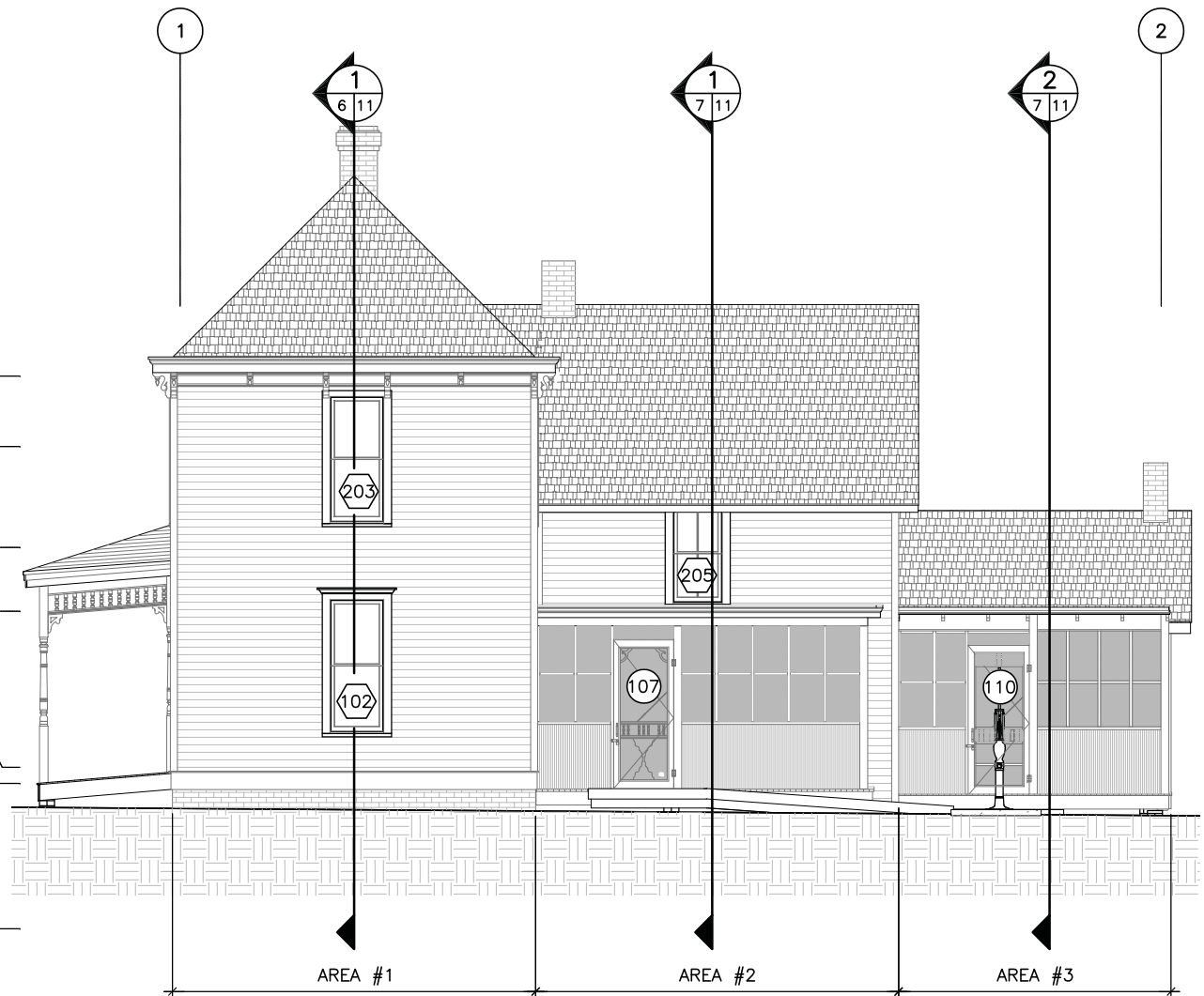
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	COUNTY JACKSON
	STATE MISSOURI

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1 FARM HOME -- WEST ELEVATION
5 11 SCALE (A)

- 2nd Floor CLG
Area #1
Elev. 118'-0"
- 2nd Floor CLG
Area #2
Elev. 114'-11 3/8"
- 2nd Floor
Area #1
Elev. 110'-5 5/8"
- 2nd Floor
Area #2
Elev. 107'-7 5/8"
- 1st Floor
Area #1
Elev. 100'-8 1/2"
- 1st Floor
Area #2 & #3
Elev. 100'-0"
- Basement Floor
Area #2
Elev. 93'-6 1/2"

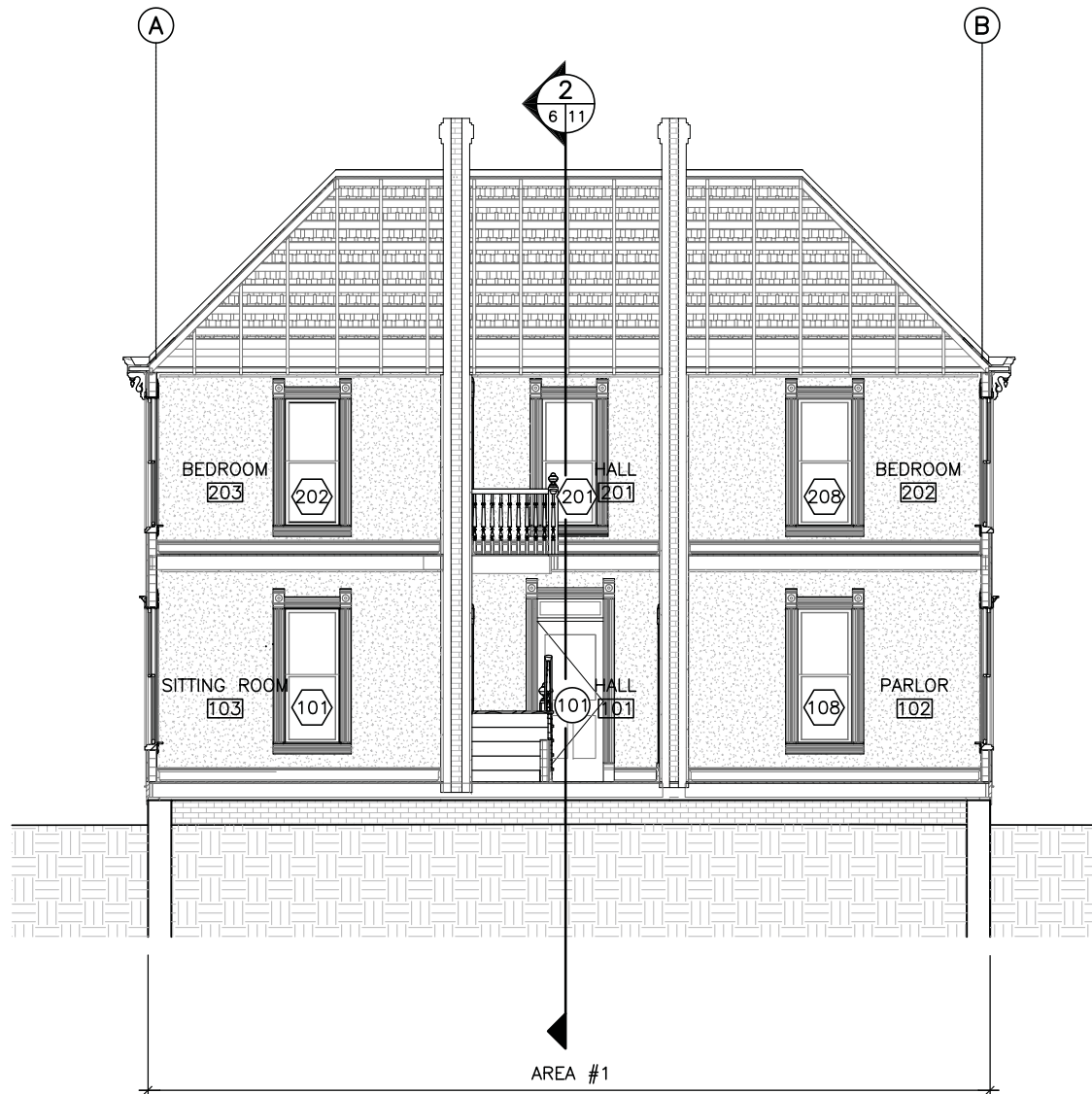


2 FARM HOME -- SOUTH ELEVATION
5 11 SCALE (A)

SCALE (A) 4 0 4 8
SCALE OF FEET

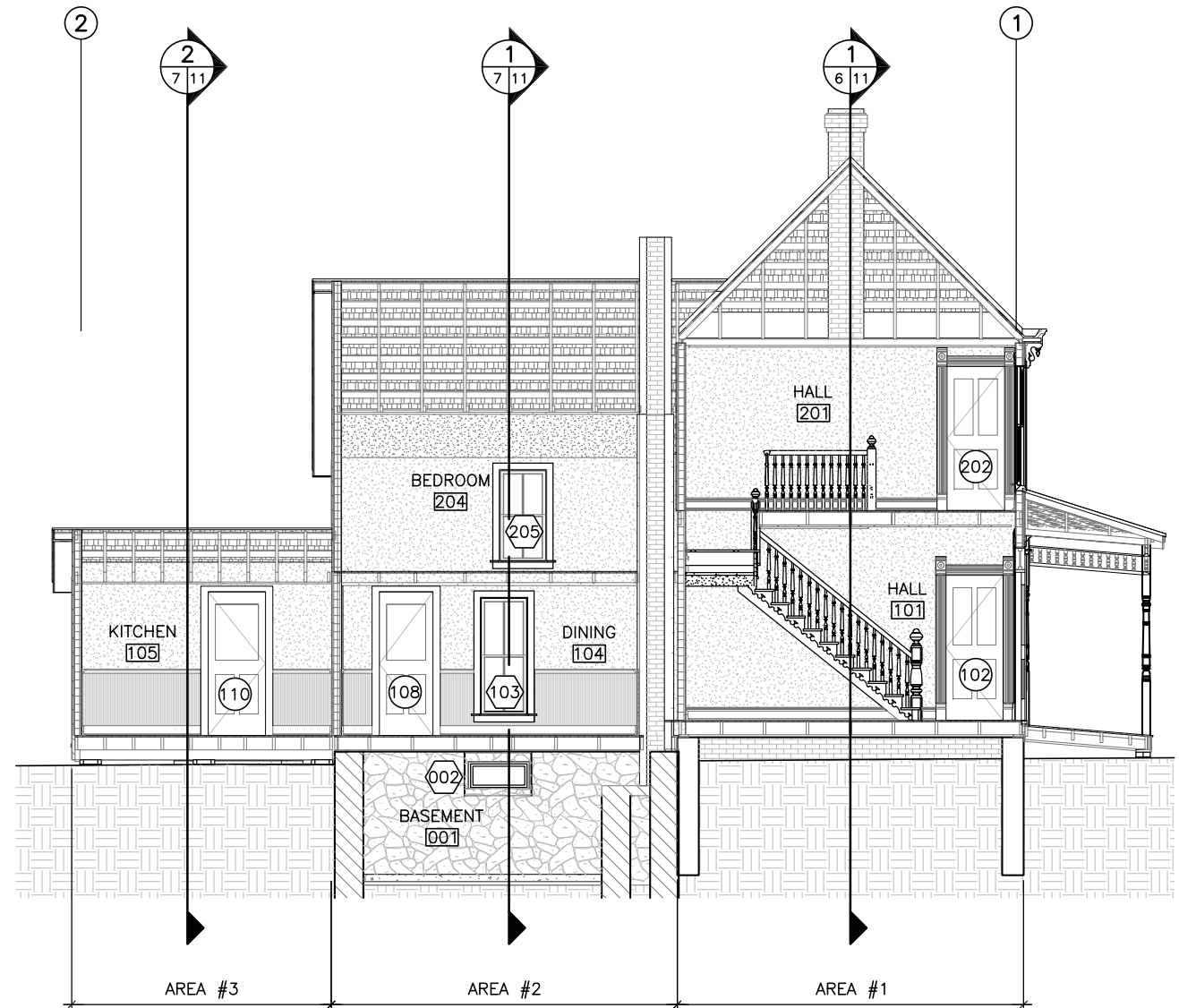
NOVEMBER 2012	TITLE OF PROJECT TRUMAN FARM HISTORIC STRUCTURES REPORT
UNITED STATES DEPARTMENT OF THE INTERIOR TRUMAN FARM NATIONAL HISTORIC SITE	TITLE OF DRAWING FARM HOME WEST & SOUTH ELEVATIONS
EXISTING CONDITION DRAWINGS SHEET 5 OF 11	NAME OF PARK TRUMAN FARM - HARRY S TRUMAN NATIONAL HISTORIC SITE
	REGION MIDWEST
	COUNTY JACKSON
	STATE MISSOURI

11/20/12 14:19 ADRIENANTONUCCI R18 N:\VA PROJECTS\2011\2011400 TRUMAN FARM HSR\BIM\ACAD\ARCH\06 OF 11_FARM SECTIONS 1_REV.DWG XREFS: ..\BASE\VA-GARAGES\KETCH.DWG; ..\BASE\VA-FARM - SECTIONS.DWG;



- 2nd Floor CLG
Area #1
Elev. 118'-0"
- 2nd Floor CLG
Area #2
Elev. 114'-11 3/8"
- 2nd Floor
Area #1
Elev. 110'-5 5/8"
- 2nd Floor
Area #2
Elev. 107'-7 5/8"
- 1st Floor
Area #1
Elev. 100'-8 1/2"
- 1st Floor
Area #2 & #3
Elev. 100'-0"
- Basement Floor
Area #2
Elev. 93'-6 1/2"

1 FARM HOME - BUILDING SECTION AREA #1
6 11 SCALE (A)

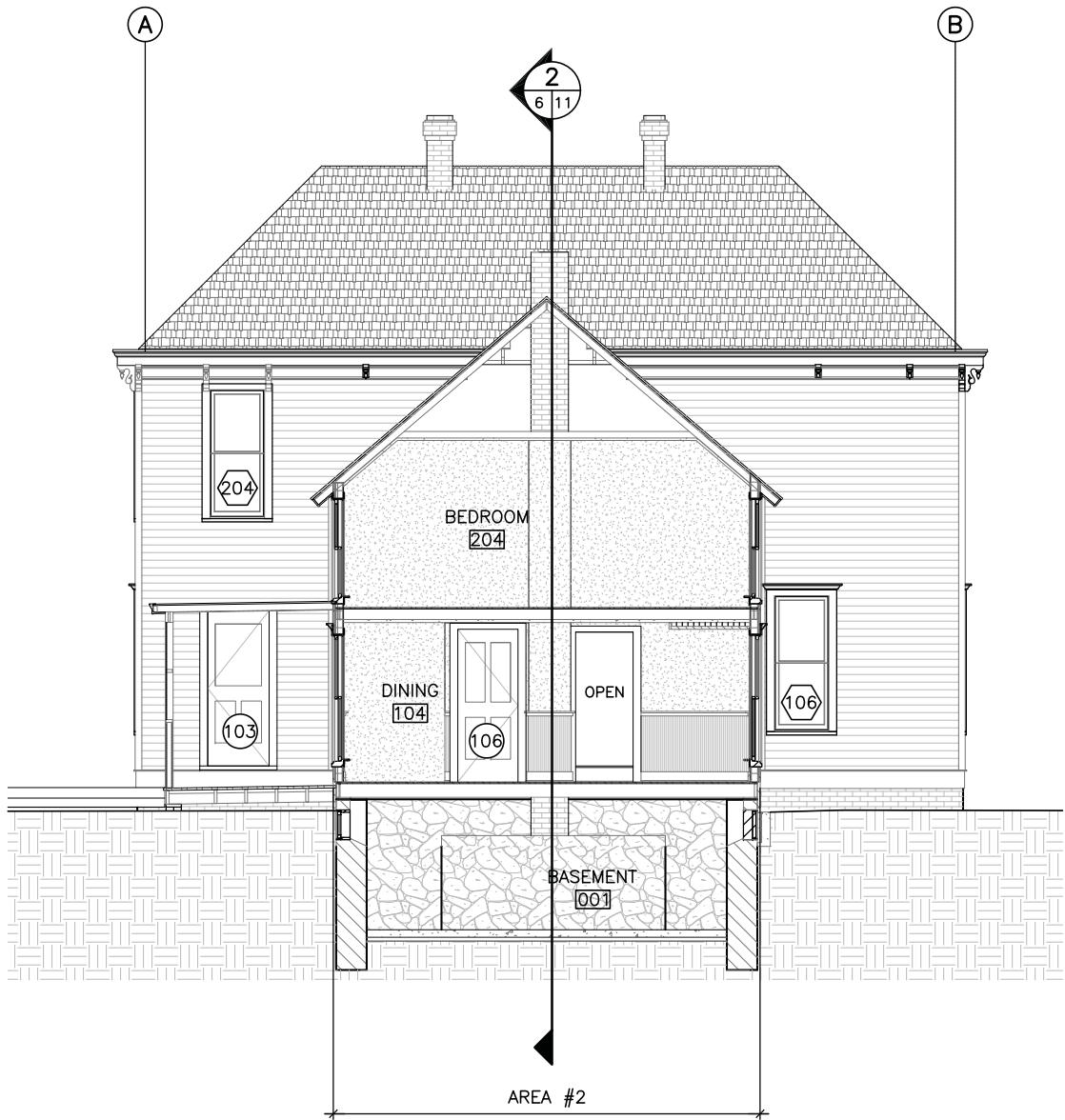


2 FARM HOME - BUILDING SECTION AREA #1, #2, AND #3
6 11 SCALE (A)

SCALE (A) 4 0 4 8
SCALE OF FEET

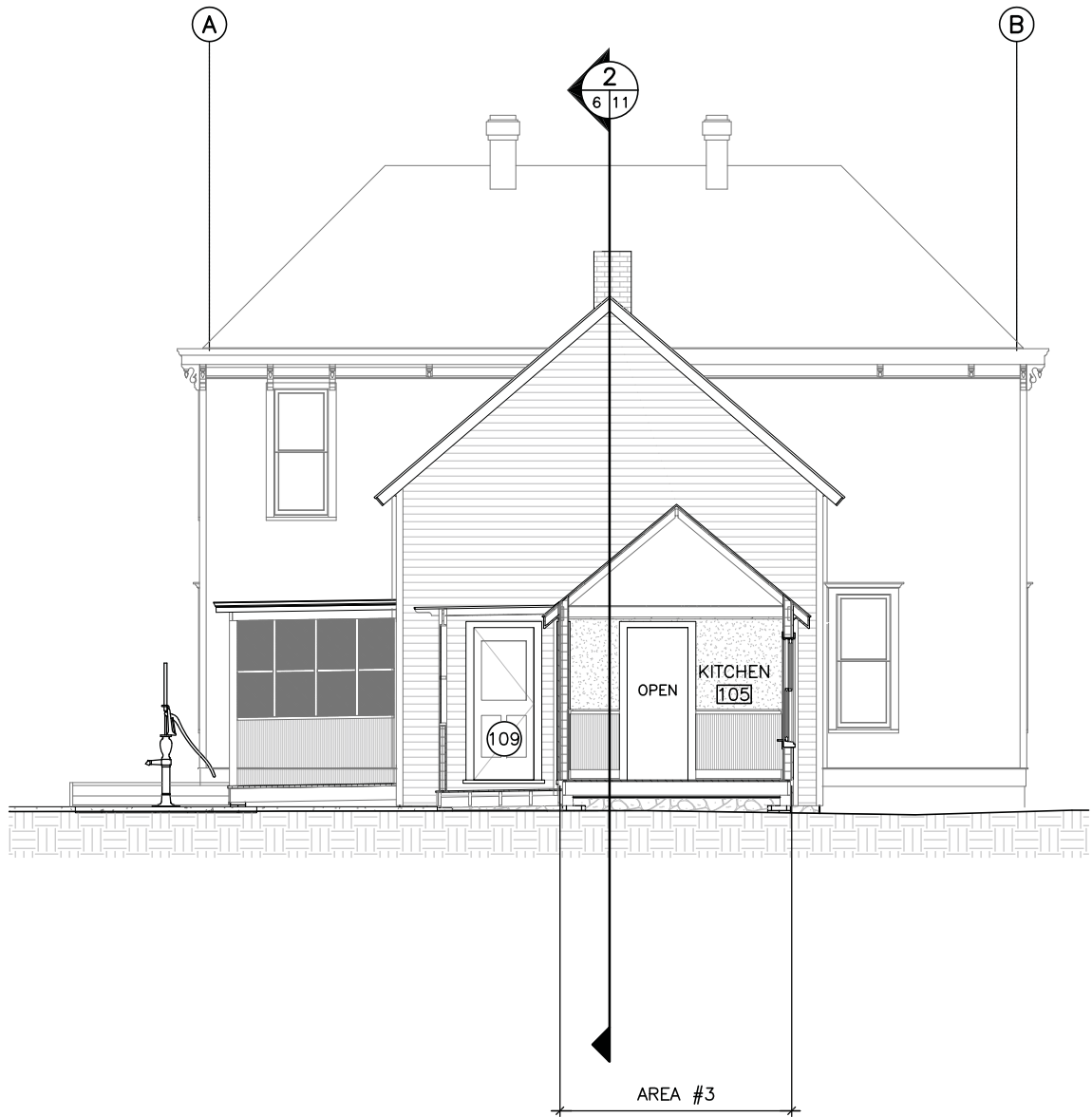
NOVEMBER 2012	TITLE OF PROJECT TRUMAN FARM HISTORIC STRUCTURES REPORT		
	TITLE OF DRAWING FARM HOME BUILDING SECTIONS		
	NAME OF PARK TRUMAN FARM - HARRY S TRUMAN NATIONAL HISTORIC SITE		
UNITED STATES DEPARTMENT OF THE INTERIOR TRUMAN FARM NATIONAL HISTORIC SITE	REGION MIDWEST	COUNTY JACKSON	STATE MISSOURI
EXISTING CONDITION DRAWINGS SHEET 6 OF 11			

11/30/12 14:20 ADRIENNEANTONUCI R18 N:\A PROJECTS\2011\2011400 TRUMAN FARM HSR\BIM\ACAD\ARCH\07 OF 11_FARM SECTIONS 2_REV.DWG XREFS: ...BASE\VA-FARM - SECTIONS.DWG; ...BASE\VA-GARAGESKETCH.DWG; ...BASE\VA-FARM - SECTIONS.DWG;



1 FARM HOME - BUILDING SECTION AREA #2
7/11 SCALE (A)

- 2nd Floor CLG
Area #1
Elev. 118'-0"
- 2nd Floor CLG
Area #2
Elev. 114'-11 3/8"
- 2nd Floor
Area #1
Elev. 110'-5 5/8"
- 2nd Floor
Area #2
Elev. 107'-7 5/8"
- 1st Floor
Area #1
Elev. 100'-8 1/2"
- 1st Floor
Area #2 & #3
Elev. 100'-0"
- Basement Floor
Area #2
Elev. 93'-6 1/2"



2 FARM HOME - BUILDING SECTION AREA #3
7/11 SCALE (A)

SCALE (A) 4 0 4 8
SCALE OF FEET

NOVEMBER 2012	TITLE OF PROJECT TRUMAN FARM HISTORIC STRUCTURES REPORT
UNITED STATES DEPARTMENT OF THE INTERIOR TRUMAN FARM NATIONAL HISTORIC SITE	TITLE OF DRAWING FARM HOME BUILDING SECTIONS
EXISTING CONDITION DRAWINGS SHEET 7 OF 11	NAME OF PARK TRUMAN FARM - HARRY S TRUMAN NATIONAL HISTORIC SITE
	REGION MIDWEST
	COUNTY JACKSON
	STATE MISSOURI

General Existing Conditions

The Farm Home consists of a wood frame, two-story hipped roof structure with two gable wings telescoping to the east. The layout of the west wing (main mass) has a room on either side of the central hall stair, similar at both levels. The hall connects to the central wing, which consists of the dining room, the basement and a separate stair that leads to the standalone second level bedroom (Harry's Room). The east wing is accessed through the dining room. This one story mass is comprised of the kitchen that was reconstructed in 1984. The east and central wings each have a semi-enclosed porch to the south.

Existing Conditions -- Architecture

Architecture – Roof

The main house roofing consists of cedar shingles with a 5" exposure. The ridge and hips are also wood shingles.

From the underside of the attic it was determined that the sheathing consists of 1 x 6 boards with approximately 3" spacing with the exception of +/- 2' from the eave which is newer solid sheathing. The spaced sheathing indicates that wood shingles were the original roofing and is consistent with historic photographs. Park records indicate that the original roof remained the base layer for succeeding roofs until 1984 when it was all removed along with three layers of subsequent composition shingle above it.



Figure 3-55: Underside of the roof, as viewed from the attic, EMH 12/6/11

The two east low slope porches roofs consist of a sheet membrane system with a white coating. Park staff indicated that the roofing was replaced c. 2002.

Architecture – Gutters & Downspouts

The gutter of the main roof consists of a newer stainless steel integral gutter c. 1984. This system drains to two 4" round downspouts on the east side – at the north and south ends, each with a 10' extension at grade. The north downspout is currently disconnected at the top.



Figure 3-56: Detached north downspout, EMH 12/6/11

The west (front) porch and east additions have 5" half round gutters, painted white. The front porch drains to two 3" round

downspouts on the north and south ends of the porch each having a 3' extension at grade. The east wing has a series of 3" round downspouts. The south east porch has no gutter but this low slope roof area drains to the southeast corner to a fourth 3" round downspout and 3' extension at grade.



Figure 3-57: Half round gutter and round downspout, EMH 12/6/11

The following historic photo shows a wood barrel which collected rainwater from the downspouts on the east end of the central wing. The historic photo also shows a possible ogee-shaped gutter and round downspout.



Figure 3-58: Pre-1912 dining room porch with rain barrel and gutter system (Source: Park Records)

Architecture – Chimneys

There are four red brick running bond chimneys on the house; two at the west wing of the house with corbelled detailing at the upper portion, one at the two-story central wing and one newer chimney at the east wing. All have newer prefinished red caps and all have prefinished brown stepped flashing at the roof intersections. The two chimneys at the west wing roof and the one chimney on the central wing are connected to the lightning protection system. There is minor face of brick spalls at the corbelled coursing of the two west wing chimneys.



Figure 3-59: Chimneys, as viewed looking northeast, EMH 12/6/11

The east wing chimney is currently in a different location (offset of the main east ridge) than can be seen in the historic photograph below, c. 1935, when the east chimney aligned with the ridge.

The 12"x 12" exterior dimensions also indicate it was rebuilt inaccurately because the interior allowable fire area would be virtually non-functional historically.



Figure 3-60: East chimney aligned with ridge, c.1935 (Source: Park Records)

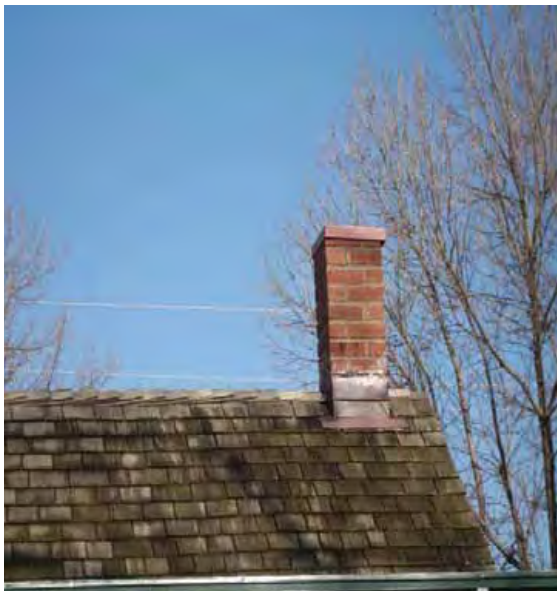


Figure 3-61: East chimney existing location, EMH 12/6/11

Architecture – Exterior Walls

The exterior walls consist of nominal 2 x 4 framing. The stud spacing and sheathing are unknown. 1984 work indicates that insulation, a vapor barrier and 15 lb felt paper were added. The wood siding was replaced in 1984, has a 4 ½" exposure and is painted white.

The wood framed walls are supported by either brick or stone as is discussed in the structural section.

There is a 1-1.5" separation visible between the west wing's east wall and the central wing as witnessed on the north side. Crack monitors were installed on the east facing wall: east wing in 2005. Refer to the structural section for foundation discussion.

Architecture – Exterior Trim

At the west wing of the house, the exterior trim, all painted, consists of 1 x 8 fascia with a 3 ½" ogee trim; 1x frieze board with ogee trim; decorative built up wood corbels with a tear drop shaped eave; 1x corner boards; window casing with a built up header detail at the lower level; and 1x watertable trim.

The exterior trim at the central and east wings is similar to the west wing but without the ogee frieze board and corbels at the eave.

The painting of the trim varied over the years between white/dark green versus all white. The two-tone scheme highlights the detailed trim members more successfully. Paint samples 6 and 7 reflect the prevalence of the dark green/green color with the white/gray colors (Appendix F).

Architecture – Porches

There are three porches on the house: the front (west) porch and two enclosed porches facing south – one each from the central wing (porch 106) and the east wing (porch 107).

The front porch has a hipped roof and is open. It is approximately 13” above grade with no steps. The existing porch framing and flooring was replaced between 1994 and 2009, per park records. The porch is supported by six wood turned posts, the western four of which have been replaced. The 1984 work indicated that the porch was shored up, so it is possible the roof framing is original. The smaller spindle and bracket work below the porch eave was also reported to have been replaced in 1984.



Figure 3-62: Front porch, ABA 12/6/11

Porch 106 is a semi-enclosed, screened-in porch with solid beadboard walls below a 2-over-2 “window” pattern at the screened portions above.



Figure 3-63: Interior of porch 106, view towards the west wing, ABA 12/6/11

Porch 107 is another semi-enclosed, screened-in porch (similar to porch 106) with varied detailing including corner brackets and exposed rafter tails.



Figure 3-64: Exterior of porch 2, EMH 12/6/11

Architecture – Windows

Note: Several of the windows (unidentified) underwent significant restoration and reconstruction, according to the 1983-1984 rehabilitation records. Since assuming ownership of the property, the NPS has also restored several windows.

West Wing: First floor the windows are 2'-4" x 5'-9" (windows 101, 102, 106-108); second floor windows are 2'-4" x 5'-4"

(201-204, 207, 208). The windows in this portion of the Farm Home are one-over-one double hung with 1 x 4 wood trim and sash painted on the exterior. Exterior header trim is 1 x 4 and varies in profile as either ogee (on the first floor) or plain (on the second floor). The wood sill is 1 3/4" with a stepped profile. Interior trim, sash and skirt are varnished (dark) while the sill is either painted or varnished. The interior trim has a decorative profile and bull's eye corner blocks. Hardware consists of decorative, cast thumb turn locks, sash pulleys and a one finger sash lift at the center of the lower sash.



Figure 3-65: First floor window 102, west wing, NAA 12/6/11



Figure 3-66: First floor interior window trim, west wing, NAA 12/6/11



Figure 3-67: Second floor window 204, west wing, EMH 12/6/11

Central Wing: First floor wood windows are 2'-0" x 5'-6", two-over-two double hung (windows 103, 105). 1x4 trim, ogee header trim, sash and 1 3/4" stepped profile sill are all painted. Interior trim, sill and skirt are also painted 1 x 4 material. Hardware consists of two galvanized spring pins at the stiles on the upper and lower sash to hold the windows open. There is one finger lift at the center of the sash.

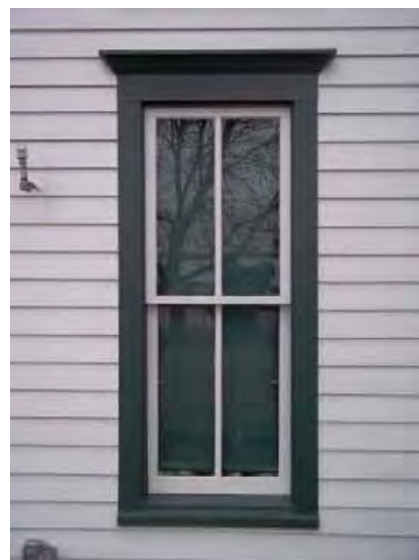


Figure 3-68: First floor window 105, central wing, NAA 12/6/11

The second floor windows are 2'-0" x 4'-4", two-over-two double hung (205, 206).

The trim and header trim is 1 x 4 and the sill is the same as the first floor windows' sills. Interior trim, sill and skirt are also 1 x 4 material. All, including the sash, are painted. The windows have no sash lifts or pulleys but do maintain the two galvanized spring pins at the stiles of the upper and lower sash.



Figure 3-69: Second floor window 206, central wing, NAA 12/6/11

In the basement of the central wing, there are three lite awnings in 2x painted wood frames (windows 001, 002). These windows have no hardware as they are toenailed into the frame. They were installed inside out (i.e. the glazing compound is on the interior).

East Wing: The window is 2'-0" x 4'-4", two-over-two double hung (window 104). The trim is 1 x 4 with a 1 3/4" sill with a stepped profile. Interior trim, sill and skirt are also 1 x 4 material. All, including the sash, are painted. There are two spring galvanized pins at the stiles located on the upper and lower sash.

Architecture – Doors

West Wing: The entry screen door is 2'-10" x 6'-11" (door 101A), half-lite screen over four equal screen panels. The wood frame and 1 x 4 trim are painted. Hardware consists of a spring closer and two surface mounted hinges. There is no handle on the exterior. The door does not match any of the historic photos and appears to be a recent construction. The screen door style varied as per historic documents and photographs.

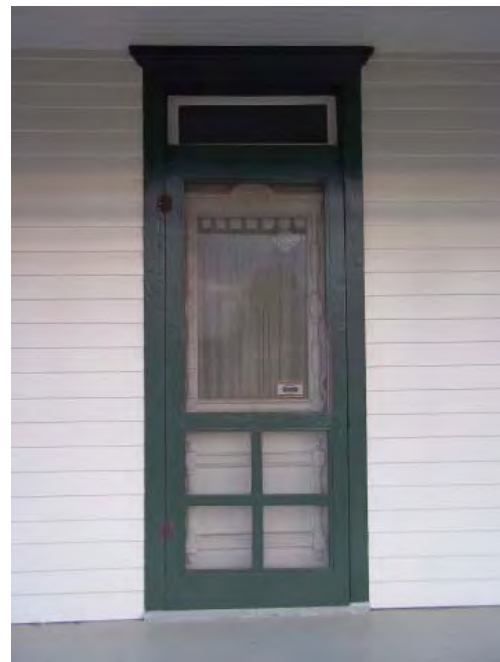


Figure 3-70: West entry screen door 101A, main door 101 and transom, NAA 12/6/11



Figure 3-71: West entry, c.1930s, screen door style (Source: Park Records)



Figure 3-72: West entry, 1983, screen door style (Source: Park Records)

The main entry door is 2'-10" x 6'-11" half-lite and wood with a decorative shell trim at the top of the lite over a carved floral design panel with a 1/2 spindle surround (door 101). The interior door frame has numerous layers of paint indicating that it may be original (See Appendix E). Exterior trim is similar to the window trim for the west wing. Both the door and trim are painted. Interior trim matches the window trim in this wing – it is varnished (dark), has a decorative profile and has bull's eye corner blocks.

Hardware consists of two ball hinges, a knob handle and deadbolt on the exterior and a decorative knob on the interior. There is a 2'-10" x 11" single-lite transom above the door that is operated from the interior.



Figure 3-73: West entry door 101 and screen 101A, ABA 12/6/11

Interior doors leading into rooms in the west wing of the house (both floors) are 2'-7 1/2" x 6'-8" x 1 3/8" (doors 102, 104, 105, 201-203). Closet doors are 2'-0" x 5'-10" x 3/4." The doors are two-over-two (vertical) raised panel wood doors with an applied dark varnish. 1 x 5 1/2 decorative trim with bull's eye termini is varnished. Typical door hardware consists of surface mounted mortise with white ceramic knob handles, two ball hinges and a skeleton key lock.



Figure 3-74: West wing door 202 and trim, ABA 12/6/11

Central Wing: There are three exterior doors to the south porches from the central wing and one from the east wing. The two doors at Porch 1 are 2'-7 1/2" x 6'-7" (doors 103, 108) and the Porch 2 doors are 2'-6" x 6'-5" (109, 111). All of these doors are two-over-two (vertical) lites with raised wood panels, painted. The hardware for each door consists of black enameled knob hardware, deadbolt, skeleton key locks (exposed mortise) and oak thresholds (new). The trim varies from 1 x 3 plain trim to 1 x 5 1/2 decorative trim with bull's eye corner blocks.



Figure 3-75: Central wing (dining room 104) closet door and hardware, ABA 12/6/11

Interior doors in this wing are typically 2'-5 1/2" x 6'-5" x 1 1/4" with 1 x 4 1/2 trim. The doors and trim are painted and have Eastlake hinges. Doors 106, 108 and 109 are two-over-two (vertical) lites with raised wood panels, painted. The hardware for each door consists of black enameled knob hardware, deadbolt, skeleton key locks (exposed mortise) and oak thresholds (new). Doors 112 and 113 are simple board and batten doors.

Architecture – Ceiling Finishes

West Wing: As seen in the west wing attic (looking down into the second floor ceiling), the ceiling finish in the second floor portion is composed of 18" wide plaster board with a thickness of approximately 3/4" over 1 x 4 spacers at 16" on center (run perpendicularly to the ceiling joists). It is assumed that the first floor ceilings in this wing are constructed similarly. All ceiling plaster board is painted. Kraft-backed, fiberglass batt insulation (R-11) lies over the top, between the joists. Note: the 1984 specifications call out for R-30 blown-in fiber glass-fiber insulation.



Figure 3-76: West wing ceiling finish structure, as seen from the attic access hatch in room 203, NAA 12/6/11

Central Wing: Ceiling finishes in the central wing were not observable from above, but the inner structure is assumed to be similar to the west wing (dating to 1983-1984). The finish throughout this wing is painted plaster. Porch 1 has a beadboard ceiling finish, painted white.

East Wing: Room 105, the kitchen, was reconstructed in 1983-1984; therefore, the ceilings date to this period and are assumed to be of drywall composition, painted. Porch 2 has a beadboard ceiling finish, painted white.

Architecture – Interior Wall Finishes

Most of the original lath and plaster interior walls can be assumed to have been replaced with $\frac{1}{4}$ " thick plaster lath (appears to be continuous sheets) under $\frac{3}{8}$ " thick plaster board to mimic the original lath and plaster thickness and texture. According to the work logs from George Fogelson and the specifications from 1984, the original lath and plaster was replaced with Rocklath Plaster Base and a coat of plaster where severely deteriorated or damaged. According to the logs, the original lath and plaster appear to have been patched, where possible. The environmental testing indicates

that walls were painted off-white or tan in color (Appendix E). All plaster walls are either painted or wall papered (non-historic c. 1984; the park has stored the historic wallpaper samples which were removed in 1983).

Comparing the data provided from sampling lead and asbestos, the following locations were determined to likely be old or original plaster:

- Interior of closet in dining room 104
- Portions of the south wall of dining room 104
- Interior of closet in bedroom 203
- East wall of bedroom 202
- East wall of bedroom 204

In contrast, the paint/plaster samples provide data that questions the dining room 104 closet (Sample 1) and bedroom 203 closet (Sample 4) as old or original due to only having four and two layers of paint, respectively (Appendix E). However, one could assume that, as closets, these were not painted as often.

Wood wainscot trims the walls in the central wing dining room 104 and east wing room 105 with 3" wide vertical planks that are painted and capped with a chair rail.

The wood wainscot at the stair area is likely original due to the presence of lead paint.

The south porches have beadboard, painted white, at the exterior walls below the screened-in window openings. Walls shared with rooms 104 and 105 have the exterior siding as their finish.

The basement walls in the central wing are the Farm Home's rubble foundation with no finish.



Figure 3-77: West wing room 103 interior finishes, ABA 12/6/11

Architecture – Interior Trim

West Wing: The base trim (on both floors) in this portion of the Farm Home are the most decorative. The wood base is 7 ½" tall, stained dark, with a matching 1 ¼" tall by 1" wide base shoe. Both have ornate ogee style profiles. In the corners, there are base corner moldings that are similarly ornate. These corner pieces are 12" tall, 1 ½" wide with a matching dark stain and profile. From George Fogelsong's work records, it is mentioned that the historic trim was replicated by a professional millworker and re-installed. All recreated pieces were numbered and dated, according to the 1983 specifications.



Figure 3-78: West wing trim profile, ABA 12/6/11



Figure 3-79: West wing room 103 base trim and floor, ABA 12/6/11

Central Wing: The dining room (104) and room 204 have rectangular 5 ½" x ¾" wood base trim with quarter-round, 1" base shoe. In room 204, the base shoe is missing except along the north guardrail half-wall. Room 104's base trim has a chamfered edge. Porch 106 has a painted quarter-round base shoe.



Figure 3-80: Porch 106 finishes, ABA 12/6/11

East Wing: The base trim in kitchen 105 is the same as room 104's trim – 5 ½" chamfered base with quarter-round shoe and wood wainscot along the walls to 37." Porch 107 reflects porch 106 with only a simple painted quarter-round base shoe.



Figure 3-81: Kitchen 105 interior finishes, ABA 12/6/11

Architecture – Floor

West Wing: The flooring in this portion of the Farm Home is 3-3 ¼" wide varnished wood tongue and groove, laid running north-south. The floor is continuous through the closets and to the main stair. Most of this portion of the Farm Home has a carpet runner protecting the wood floors. (See figure 3-79: West wing room 103 base trim and floor.)

Central Wing: Rooms 104 and 204 have wood tongue-and-groove flooring which is composed of +/-3" wide boards that are ¾" thick and vary in length between 6'-2" and 12'-3." The flooring runs north and south. In 204, approximately one-quarter of the floor is covered by a carpet runner (same type as in the west wing). Porch 106 has painted 3" wide wood board flooring that also runs north and south. A sample was taken of this flooring and it was analyzed by a wood technologist to be yellow pine (see Appendix F). The basement has a 3" thick concrete floor, placed up to the rubble foundation walls.



Figure 3-82: Central wing tongue and groove floor, as seen from the basement stair, ABA 12/6/11

East Wing: The floor in room 105 is +/-3" wide wood flooring that runs east and west. The wood is pine and lightly varnished. This flooring continues into the closet but is painted. Porch 107 flooring is the same as porch 106 flooring.

Architecture – Stairs

West Wing: The primary staircase leading up to the two bedrooms in the west wing has 16 risers at 7 ½" high and is 2'-11" wide. There is no handrail along the exterior side but an elaborate wood railing system exists on the interior side with a 4" wide handrail, newel posts and

spindles stained to match the other wood trim. A landing is located at the eleventh riser. The landing has wood flooring that matches the flooring in this wing. The base trim of the staircase also matches the decorative trim throughout the west wing of the Farm Home.



Figure 3-83: West wing primary stair case, ABA 12/6/11

Central Wing: The winder stair up to room 204 has 12 risers 7-7 ½" high and is 3'-1" wide. It has tread and riser rubber protectors installed over the painted wood stairs and no base trim. The stair has a contemporary handrail along the exterior walls which is 2" wide and 30" above finished floor. It is discontinuous and does not have any extensions.



Figure 3-84: Central wing stair and handrails to room 204, ABA 12/6/11

The basement stair has six open risers at 10" high and one open riser at 6" high. The width of the stair is 2'-3" and there are no handrails.



Figure 3-85: Central wing basement stair, ABA 12/6/11

Architecture – Code/Life Safety Issues

Although the Farm Home was originally a residence, its current use would be best categorized as an A-3 (museum) Occupancy and its wood frame construction is a Type V-B (non-rated) rating. Per the 2009 International Building Code (IBC), the allowable square footage is 6,000 sf per floor for one story. The existing house is 1,900 sf and has two stories.

Architecture – Accessibility

An unpainted 4'-0" wide x 10'-0" long wood ramp exists on the south side of the house leading to a 5'-0" wide x 10'-0" long landing at porch 106. There is no hand or guard rail and the change in elevation is +/- 11". This ramp was installed in 1996 per the park records. Screen door 107 at the porch is 2'-7 1/2" wide. None of the doors have accessible lever style hardware. There are two doors leading from this porch into the house. Door 108 is 2'-5" wide and has a 3" change in elevation at the threshold. Door 103 is 2'-7 1/4" wide and has two steps – one 6" and the other 5 1/2" – for a total change in elevation of 11 1/2". Once inside the house, there is an 8" step from dining room 104 up to hall 101.

There are two separate stairways leading to the upper levels of the Farm Home.

There is no restroom within the Farm Home.

The other routes into the building would also prove to be challenging for accessibility. Door 101 is 2'-9" clear with a 2 1/2" threshold accessed from the front porch. The front porch is 13" to 15" above grade. Porch 107 is 9" above grade and has two doors accessing the house; door 111 is 2'-6 1/2" wide with another 9" step and door 109 is 2'-6 1/4" wide with a 9" step.

Existing Conditions -- Structural

Structural – Foundation

The basement wall footings, if any, were not visible. The basement walls are approximately 18" thick and composed of mortared rubble stone masonry. There is a slab on grade in the basement. The slab is approximately 3" thick. The chimney in the central wing is supported by a large block of masonry foundation construction.

The west wing foundation system consists of perimeter foundations and a crawl space. The perimeter foundations are brick masonry grade beams that bear directly on soil. The depth of grade beam is approximately 46" and the grade beam width is 8 1/2". The bottom of grade beam is approximately 38" below finished exterior grade. Interior foundations do not exist except for the foundations under the two brick chimneys. The chimney foundations are buried beneath the soil in the crawl space and therefore the foundation materials, dimensions, and depth are unknown.

Foundations under the rebuilt kitchen 105 are concrete footings supporting brick piers. The 1983 drawings indicate the footings are 24"x 24"x 8" and the bottom of the footings are approximately 31" below finished grade. The 2005 Structural Assessment report notes the footings are 31"x 31"x 9" and the bottom of footing is 33" below finished grade. The brick piers are 12"x 12" on the 1983 drawings and measure 13"x 13" in the field. The top of brick piers is near or slightly below finished grade. A wood floor is constructed on the piers and is slightly above finished grade.

Foundations under the west porch are 8"x 8" brick piers at each wood column location. Footings, if any, under the brick piers are unknown. The 1983 drawings

1 indicate the porch 106 to be supported
2 on 8"x 8" reconstructed brick piers. The
3 foundations under the piers are unknown.
4 Foundations under the porch 107 are
5 8"x8" brick piers resting on 22"x 22"
6 concrete footings. Top of brick piers is
7 near finished grade.

9 ***Structural – Floor Framing***

10 The first floor framing over the basement
11 consists of 1 1/2" x 7 1/2" wood joists
12 spaced at about 24" on center (o.c.).
13 The joists span east-west a distance of
14 approximately 16' and are sheathed with
15 solid 3/4" thick tongue and groove wood
16 flooring. The joists are supported on the
17 perimeter foundation walls by bearing on
18 an embedded wood sill plate (following
19 figure). The basement floor framing at
20 the stair opening is supported by 2 x 4
21 propped posts which extend from the
22 underside of the floor framing and bear
23 on the slab on grade. Likewise the stair
24 to the basement has framing that bears
25 directly on the slab on grade and is
26 decaying.



40 Figure 3-86: Embedded wood sill plate on the
41 stone foundation wall, northeast corner of the
42 basement, PD 12/6/11

43
44 The first floor framing over the west wing
45 crawl space consists of 1 1/2"x 7 1/4" to 7
46 1/2" deep wood joists spaced at about 16"
47 o.c. The joists span east-west a distance
48 of approximately 15'-6" and are sheathed

1 with solid 3/4" thick tongue and groove
2 wood flooring. The joists are supported
3 by a nominal 2 x 8 wood rim joist that
4 appears to bear directly on the brick grade
5 beams. The finished grade in the crawl
6 space is about 16" below the bottom of
7 joists.

8
9 The first floor framing in kitchen 105 is
10 generally covered and not visible, but one
11 small area was observed and the framing
12 appears to match that shown on the 1983
13 drawings as nominal 2 x 8 joists spaced at
14 about 16" o.c. The joists span north-south
15 and are supported by 6 x 6 wood beams
16 that bear on the brick piers. The floor
17 sheathing is 3/4" tongue and groove wood
18 flooring.

19
20 Where accessible, the second floor framing
21 at bedroom 204 was measured to be 1 1/2"
22 x 7 1/2" wood joists. Spacing is unknown.
23 The joists span east-west approximately
24 15'-6" and are sheathed with solid 3/4"
25 thick tongue and groove wood flooring.
26 The joists are supported on 2 x 4 wood-
27 framed walls.

28
29 The framing supporting the second floor
30 of the west wing was not accessible. The
31 framing is expected to be same as the
32 first floor framing over the crawl space
33 described above, and the overall depth of
34 the floor system (flooring, framing, ceiling
35 sheathing) is consistent with 7 1/2" deep
36 joist framing. The wood railings around
37 the second floor stair opening appear
38 sound.

39
40 The floor framing for kitchen 105, dining
41 room 104, and porches 106 and 107 were
42 reconstructed in 1983. The floor framing
43 for porch 107 was again reconstructed in
44 approximately 2002 by Lewis McKarnin,
45 NPS Wood Crafter, because the 1983
46 framing had decayed due to termite
47 damage. The current floor framing for

the porch 107 is $\frac{3}{4}$ " tongue and groove decking on nominal 2 x 4 untreated joists at 16" o.c. The joists are supported by 6 x 6 cedar beams. Joist hangers are used to attach the joists to the beams

The floor framing for porch 106 appears to generally match the framing shown on the 1983 drawings, which is 2 x 6 joists at 16" o.c. supported by 6 x 6 timber beams. The joists and beams are notched at the connections and the framing is not pressure-preservative treated.

The floor framing for the front (west) porch appears to generally match the 1983 drawings, which is nominal 2 x 8 joists at 16" o.c. spanning about 8'-6" to nominal 6 x 6 beams at each column location. The 2 x 8s are notched at the bottom and the 6 x 6 beams are notched at the top at each connection. The front porch flooring is also $\frac{3}{4}$ " thick tongue and groove decking boards. The framing at the front porch is not pressure-preservative treated.

The front porch columns were replaced with redwood in about 2002 by Lewis McKarnin.

Structural – Roof Framing

The roof framing at the central wing is estimated to be 1 1/2" x 3 1/2" rafters spaced at about 24" o.c. The rafters span north-south approximately 8' - 6" (horizontal dimension) between the exterior 2 x 4 wall and the ridge. The rafters are sheathed with spaced 1 x 6 (nominal) solid wood underlayment spaced at 10" o.c.

The roof framing over the west wing consists of 1 1/2" x 3 1/2" rafters spaced at about 24". The rafters span east-west approximately 8' (horizontal dimension) between the exterior wall and the

nominal 1 x 4 ridge board. The rafters are sheathed with spaced 1 x 6 (nominal) solid wood underlayment spaced at 10" o.c. The hip roofs are framed in the same manner with nominal 2 x 4 rafters spanning from the exterior wall to the hip ridge. The hip ridge member is a single nominal 2 x 4. All the rafters are supported by a nominal 1 x 6 flat board at the exterior wall, and the rafters do not line up with the ceiling joists (figure 3-87). The 1 x 6 flat board supports the rafter and the 1x board spans to the ceiling joists. The hip roofs do not have ceiling joists or blocking to resist thrust from the rafters.



Figure 3-87: West wing attic, rafters do not align with ceiling joists, PD 12/6/11

A wood sample was taken from the rafters of the west wing. A wood scientist identified the wood species group as Yellow Pine and probably Southern Yellow Pine (Appendix F).

Localized wood rot was observed in the 1x sheathing boards around the north chimney where roof leaks occurred in the past.

The roof framing of kitchen 105 was not visible but is shown on the 1983 drawings. Namely nominal 2 x 4 rafters at 16" o.c. supporting nominal 1 x 6 sheathing spaced at 10" o.c. is shown. The same 1 x 6 flat board at the rafter bearing is also

1 shown on this drawing.

2 All the attics are unvented. The west wing
3 attic has numerous holes through which
4 day light is visible. These holes provide
5 some measure of attic venting. Measured
6 wood moisture content in December 2011
7 was about 8%, which is significantly less
8 than that necessary to initiate decay.

10 Roof framing for the porches at kitchen
11 105, dining room 104, and the front porch
12 was not accessible and was not observed.

14 ***Structural – Ceiling Framing***

15 The ceiling framing above bedroom 204
16 was not entirely visible, but is estimated
17 to be nominal 2x ceiling joists spaced at
18 24" o.c. and spanning north-south about
19 13' - 6" between the 2x rafters. The ceiling
20 joists connect to the rafters at a point
21 about 20" above the top of exterior wall.
22 There are also three nominal 1 x 6 vertical
23 hangers extending from the ridge down to
24 the ceiling joists. The hangers appear to
25 be spaced about 4' o.c.

27 The second floor ceiling framing in the
28 west wing consists of 1 1/2" x 5 1/2" ceiling
29 joists spaced at 24" o.c. and spanning
30 east-west about 16' between the west and
31 east 2 x 4 walls. The ceiling joists do not
32 align with the rafters.

33 The ceiling framing of kitchen 105 was
34 not visible but is shown to be constructed
35 in a similar manner on the 1983
36 drawings. Namely nominal 2 x 4 ceiling
37 joists spaced at 16" o.c. and spanning
38 approximately 10' north-south is shown.

40 ***Structural – Wall Framing***

41 The exterior walls of the entire structure
42 are framed with 1 1/2" x 3 1/2" studs.
43 Spacing is unknown. Exterior wall
44 sheathing is unknown. The interior
45 bearing wall on the east side of the west
46 wing is also framed with nominal 2 x 4
47 studs at unknown spacing. The rebuilt

1 east wing was specified on the 1983
2 drawings to have 2 x 4 at 16" o.c. typical
3 studs framing with 1 x 10 horizontal
4 sheathing. It is likely this was done to
5 match the original wall construction in
6 the rest of the structure.

8 The two brick chimneys in the west wing
9 do not appear to be load bearing. They
10 stack vertically through the roof, second
11 floor, and first floor framing and bear
12 on the ground below the crawl space.
13 Likewise the brick chimney on the east
14 wall of the west wing that extends from
15 the basement does not appear to be
16 load bearing. The chimney in kitchen
17 105 does not appear to be supported on
18 the foundation. Rather the chimney is
19 corbeled off the east wood wall framing.

21 The walls of the west and east wings are
22 separating from the central wing. The
23 2005 engineering study performed by
24 Quinn Evans Architects with Fitzpatrick
25 Structural Engineering, P.C. measured
26 separation and documented that the
27 amount of separation varies with soil
28 moisture. Gauges were mounted on the
29 north wall junctures to quantify the
30 movement.

32 ***Structural – Lateral System***

33 Lateral stability for the building is
34 provided by the exterior and interior walls
35 and wall sheathing/finish.

37 ***Structural – Load Requirements***

38 The required floor live load capacity per
39 the 2009 International Building Code
40 (IBC) and historic building codes for
41 residential use is 40 pounds per square
42 foot (psf). The live load required for public
43 assembly use is 100 psf. The live load
44 required for porches is to be the same as
45 the occupancy served inside.

47 The required ceiling live load capacity

in 2009 IBC is 10 psf for attics without storage and 20 psf for uninhabited attics with limited storage. The IBC 2009 (footnote i, table 1607.1) would require the attic of the west wing addition to be designed for the 20 psf live load because of the tall and open space in the attic and the possibility that items could be stored. Historic codes, e.g. the 1949 Uniform Building Code (UBC), would not require the inaccessible ceiling above bedroom 204 or the ceiling in the west wing to be designed for live load. Instead that code would only require a total load capacity of 10 psf.

The ground snow load required for the city of Grandview, Missouri is 20 psf. This results in a flat roof snow load of 20 psf per ASCE 7-05, Minimum Design Loads for Buildings and Other Structures. The sloped roof snow load is similar to the flat roof snow load due to the adhesion of snow on the wood shingles and the roof slope.

Drifting snow loads were not required by codes until the 1970s or 1980s. Drifting will cause increased snow loading in localized areas near roof steps such as exist between the three wings.

The city of Grandview municipal code ARTICLE VI. - SPECIAL STANDARDS FOR COMMERCIAL, OFFICE, INDUSTRIAL AND MULTI-FAMILY RESIDENTIAL BUILDINGS has a requirement in Section 6-26 Tornado and Severe Wind Protection that commercial buildings contain a "Place of Refuge." The basement appears to qualify, but requires members of the public to access the stairs to the basement. The live load for stairs in a residence is 40 psf, but increases to 100 psf in a commercial building in accordance with the 2009 IBC.

Existing Conditions -- Mechanical

Mechanical Physical Description

The original house was heated via individual room heating stoves that had vent connections to three existing chimneys. These chimneys were located near the center of the Farm Home. There are vent openings into the existing chimneys in all of the individual rooms on the first and second floors. There was a fourth chimney added in 1983/1984 for the kitchen 105 cooking stove on the east side of the house. Ventilation for the house occurred via operable windows in the rooms.

In 1984, a forced air mechanical system was installed to provide heating and cooling to the house. The mechanical drawings from 1984 show a new mechanical system complete with a forced air gas fired furnace in the basement and new duct routes to supply air diffusers on both the first and second floors. A new chase was created in the northeast corner of room 103 for the ductwork up to the second floor by taking over part of the closet space. The gas section of the furnace was vented through the center chimney in the house. The new mechanical system also was provided with a DX cooling coil in the furnace and a condensing unit located outside the building on the north side. Refrigerant lines from the condensing unit into the basement and to the new cooling coil in the furnace are shown on the 1984 design drawings. A humidifier section on the new air handling unit was also provided during this design phase for the house. In 2007, a geothermal system replaced the existing gas fired forced air system and DX condensing unit. The existing ductwork and supply diffusers were reused for the new geothermal system.



Figure 3-88: Air handling unit in basement, DMD 12/6/11



Figure 3-89: Condenser water line entry into basement, DMD 12/6/11

New condenser water lines and a new vertical bore field were installed for the geothermal system. The vertical borefield is located in the parking lot south of the building and consists of five bores approximately 300' in depth. The borefield piping is routed from top of each borefield well, ganged together and routed into the south side of the basement. Disturbed ground on the south edge of the house is evident as well as the asphalt repair in the parking lot and a replaced concrete curb section.



Figure 3-90: Disturbed ground on south side of building where geothermal lines enter building, DMD 12/6/11



Figure 3-91: Patched asphalt where geothermal wells installed in parking lot, DMD 12/6/11

The air handling unit provides both heating and cooling to the house via the geothermal system. In addition to the geothermal system for heating, there is a supplemental electric heater installed in the supply ductwork downstream of the air handling unit for the second and first floors. The heat for the basement is via a wall mounted electric heater located on the south wall of the basement.

The existing air handling unit provides conditioned air to the first and second floor. The air is distributed to the first

1 floor via floor registers and wall diffusers.
2 Kitchen 105 contains one supply diffuser
3 located on the wall approximately 5'-10"
4 above the finished floor on the west wall.



18 Figure 3-92: Typical floor diffuser, DMD 12/6/11



32 Figure 3-93: Wall diffuser in kitchen 105, DMD
33 12/6/11

34 The dining room 104 contains two floor
35 registers located below the windows on
36 the north and south sides of the room.
37 The hall 101 contains one floor diffuser
38 that is located on the north wall adjacent
39 to room 102. Room 102 contains two floor
40 diffusers with one located on the west
41 wall below the window and the second
42 one located on the south wall. Room
43 103 contains one wall mounted supply
44 diffuser located in the northeast corner
45 that connects into the duct riser from the
46 basement to second floor.
47

1 The second floor's air is distributed via
2 overhead supply diffusers and two wall
3 mounted diffusers. The supply ductwork
4 is routed up from the basement in
5 the northeast corner of room 103 and
6 continues up to the attic. There are
7 two wall diffusers that are connected
8 to this main duct rise and provide air
9 into room 204 and room 203. There are
10 two overhead supply diffusers that are
11 connected to the main supply duct in the
12 attic and routed to ceiling mounted supply
13 diffusers in room 202 and hall 201.



27 Figure 3-94: Ceiling diffuser on second floor,
28 DMD 12/6/11



42 Figure 3-95: Wall diffuser in room 203, DMD
43 12/6/11

44 The return air for the air handling unit
45 is via a large wall mounted return grille
46 mounted below the stairs on the first floor.
47 The return air is then ducted back to the
48 air handling unit in the basement.



Figure 3-96: Return air grille below stairs, DMD 12/6/11



Figure 3-97: Ductwork behind return air grille, DMD 12/6/11

There is no source of direct outside air into the air handling unit. The outside air for ventilation of the house is through the operable windows.

The control system for the air handling unit consists of a Climate Master programmable thermostat located on the north wall of room 103. The thermostat is currently programmed for occupied and unoccupied time with a setback temperature for the unoccupied hours. There is also a plug-in type CO sensor located in the kitchen 105 on the east wall.



Figure 3-98: Programmable thermostat in room 103, DMD 12/6/11



Figure 3-99: Plug-in type of CO detector/alarm, DMD 12/6/11

There are four brick chimneys for the house that are all capped making the connected stoves noted below inoperable and for tour interpretation purpose only. The chimney furthest east is associated with kitchen 105. There is currently a cooking stove vent connected into the chimney in the kitchen 105. The chimney in the middle of the house has vent openings into the first floor dining room 104 and room 204. These two vent openings are currently covered by decorative vent covers.



Figure 3-100: Cooking stove in kitchen 105, DMD 12/6/11



Figure 3-101: Decorative vent cover in dining room 104, DMD 12/6/11

The third chimney is located on the north side of hall 101 and provides vent openings into room 102 on the first floor and room 202 on the second floor. The first floor has a vent opening that is currently connected to a heating stove in room 102 and has a decorative cover on the second floor in room 202. The fourth chimney is located on the south side of hall 101 and provides vent openings into the room 103 on the first floor and room 203 on the second floor. The first floor vent opening is currently connected to a heating stove and the second floor vent

opening is covered with a decorative cover. The cooking stove in kitchen 105 and the two heating stoves in rooms 102 and 103 are connected to adjacent chimneys via single wall flue venting. Room 202 also has a hole in the ceiling that appears to have been for a heating stove at some point. This opening is not covered.



Figure 3-102: Heating Stove in room 103, DMD 12/6/11



Figure 3-103: Room 202 vent opening in ceiling, DMD 12/6/11

Throughout the Farm Home are signs of humidity control problems including the peeling of wallpaper. This is also evident by a stand alone portable dehumidification unit that is located in the basement. This unit sits at the

bottom of the basement stairs and can be transported and plugged in to help control the humidity level in the house. The park staff monitors the humidity level in the Farm Home and plug-in and unplug the dehumidifier as needed. This dehumidification control is not automated and requires manual interaction to start and stop the unit.



Figure 3-104: Portable dehumidifier in basement, DMD 12/6/11

Plumbing Physical Description

The plumbing system for the house consists of a water line into the basement and a floor drain in the basement. On the south wall of the basement is a $\frac{3}{4}$ " copper water line with a shut-off valve. This copper line immediately turns to the east and tees into a hose bibb located in the basement. The $\frac{3}{4}$ " line is then capped in the basement on the south wall. There is no insulation on the water line. There is a floor drain in the basement near the east wall. This is a 2" floor drain and receives the condensate from the cooling coil of the air handling unit located in the basement. The routing of this line out of the building is unknown. This is the extent of the water and sanitation lines in the house.



Figure 3-105: Water entry into building, DMD 12/6/11



Figure 3-106: Floor drain in basement, DMD 12/6/11

In 2007 when the geothermal system was installed, the natural gas line for the house was abandoned. Currently there is no gas piping in the house and the natural gas line is stubbed up outside on the north side of the house and contains a pressure regulator, but no meter.



Figure 3-107: Gas line stubbed up with pressure regulator and no meter, DMD 12/6/11

Fire Protection Physical Description

There is no active fire protection system within the house.

Existing Conditions -- Electrical

Electrical – Infrastructure

Electricity was originally brought to the site in 1925-1930. The entire electrical service to the house was replaced and upgraded in 1984. In 2007 there was a major mechanical system upgrade to install the existing heat pump system. Within this mechanical upgrade the electrical systems were adjusted to make connections to the new mechanical equipment, minor lighting upgrades for energy efficiency within the basement, and an upgrade to the existing grounding electrode system which included providing new electrodes connected to the main water line and to a new driven ground rod.

The electrical meter, kilowatt hour style meter #12278336, is at the base of the pole and the power feed is then routed underground into a panel located within the basement stair entry. The electric utility is Kansas City Power & Light (Contact: Gary Jones at 816-813-1998).

The service panel is a 100 amp, 240/120v, 1 phase service and the panel is a 24 circuit, Cutler Hammer load center with a 100 amp 2 pole main circuit breaker disconnect. The panel schedule indicates four spare breakers and four bussed space poles were observed at the bottom of the panel. Panel serves all equipment located within the structure as well as four grade mounted landscape lights aimed back at each of the four facades of the house, and one branch circuit feeding the newer tool shed structure.



Figure 3-108: Existing pole mounted transformer, Jon Brooks 12/6/11

Electrical – Branch Circuits

The majority of the existing branch circuit wiring is contained within steel conduit. Conduit varies from EMT, flexible metal conduit, to PVC conduit, however, the majority appears to be EMT (NPS standard is to utilize EMT). There are very limited amounts of exposed non-metallic cable utilized. All branch circuiting, other than some existing cabling within the attic space, appears to be installed during the 1984 remodel or at a date after that renovation. Within the attic space there are a number of abandoned knob and tube style conductors which were not completely removed during the 1984 electrical upgrades. All of these conductors have been disconnected and are no longer in use. Branch circuits

1 provide a separate ground conductor such
2 that the general outlets are the three
3 pronged type with a ground connection
4 available.



Figure 3-109: Conduits out of main electrical panel, Jon Brooks 12/6/11

Electrical – General Power Outlets and Equipment

15 amp duplex outlets are provided throughout the structure. Each bedroom on the second floor includes two outlets on opposite walls and hall 201 has an outlet as well. Rooms 102 and 103 include three brass floor outlets each and two floor outlets are provided in dining room 104. One outlet is provided at the entry of hall 101. Two general outlets are provided within the kitchen 105 and two general outlets are provided within the basement.

Power is provided to the heat pump mechanical system located within the basement.



Figure 3-110: Power to heat pump, Jon Brooks 12/6/11

Electrical – Lighting Systems

Puck style incandescent light fixtures have been recently added with surface mounted cabling routed from a light switch adjacent to the electrical panel out to one fixture located at floor level below the desk at door 113 and to two fixtures located above door 112.



Figure 3-111: Existing puck lights at stairwell, Jon Brooks 12/6/11

Each of the two stairs serving the first to second floors include two incandescent step lights to illuminate the stair treads. Refer to egress lighting comments below for additional information.



Figure 3-112: Existing steplights at stairwell,
Jon Brooks 12/6/11

Exterior fixtures are controlled by an analog 24 hour timeclock located adjacent to the electrical panel.

Battery backed up egress lighting is provided by a Chloride 250 watt battery backup inverter which is connected to four incandescent step lights, two located at the main stair and two located at the secondary stair. These fixtures are operated by a standard toggle light switch located near the electrical panel within the stair access down to the basement. The battery system was functional at the time of the site observation (however, it was not tested for a full 90 minutes of backup). These lights only provide egress illumination along the stair treads, supplemental egress lighting in other areas of the Farm Home may be needed for proper egress illumination in the event of a power failure. If it is agreed that the Farm Home is not to be utilized during hours of darkness and the existing light levels provided by daylighting are adequate for egress, supplemental battery powered egress illumination may not be required.



Figure 3-113: Existing battery backup system,
Jon Brooks 12/6/11

Electrical – Telecommunications

The building is served by an exterior building mounted telephone demark enclosure where two phone lines are routed into the basement. One phone line is connected to the fire alarm/security panel and the second is connected to a single phone jack located behind the desk on the first floor, just outside of door 113.

Electrical – Fire Alarm and Security System

The existing fire alarm and security system consists of a combination security/fire control panel, Vista-128FB, located within the basement. Panel includes a remote dialing system and is connected to one of two incoming phone lines from the phone utility company. This panel serves the following types of devices:

1. Smoke detectors
2. Heat detectors, 135 degree fixed temperature
3. Glass break ultrasonic devices
4. Motion detectors
5. Tamper switches
6. Alarm light/horn at northwest exterior soffit overhang
7. Security system key pad located at the top of the basement stair access
8. Tool shed building Garage door contacts and remote keypad



Figure 3-114: Existing security and fire alarm control panel, Jon Brooks 12/6/11

Smoke and heat detector devices are located within the basement, each bedroom, entry hall 101, dining room 104, kitchen 105, and stair landing. The majority of all security and fire alarm system wiring is concealed within the walls of the first and second floors; however, the cabling to the occupancy sensor within kitchen 105 is routed within surface mounted Wiremold.



Figure 3-115: Surface mounted conduit in kitchen 105, Jon Brooks 12/6/11

Electrical – Lightning Protection

Lightning protection consists of brass air terminals and brass or copper down-cables that appear to be terminated on buried ground rods. Air terminals are located at the peak of the roof, on the peak of each dormer, on three of the four chimneys.



Figure 3-116: Lightning protection system on roof, Jon Brooks 12/6/11

Hazardous Materials Physical Description

Lead Containing Paint

The December 2011 Lead-containing paint (LCP) inspection included a visual inspection and sampling of the residence structure and review of data compiled from previous LCP inspections and analysis. Prior LCP inspections included samples collected in 1996 that were analyzed utilizing sodium sulfide, a technique that is recognized as a screening non-quantitative method for identifying LCP. In 2010 an additional inspection and testing for LCP was conducted using an XRF detector coupled with bulk paint sampling and laboratory analysis. This limited XRF inspection was conducted by the Baker Environmental Consulting, Inc. in March 2010. This inspection confirmed that LCP is present on exterior soffits, cornice brackets front door components and the front porch ceiling.

On December 6, 2011 a total of 9 paint chip samples were collected by Landmark Environmental, Inc. and submitted for laboratory analysis, including nine samples at the residence. The samples were analyzed at an accredited independent laboratory, Reservoirs Environmental, Inc., which is an

analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental samples by the American Industrial Hygiene Association, Lab ID 101533 - Accreditation Certificate #480. Reservoirs analyzed the sample(s) using Atomic Absorption Spectroscopy (AAS)/Atomic Emission Spectroscopy - Inductively Coupled Plasma (AES-ICP) per using method USEPA SW846 3050B/AA (7420).

The findings of the December 2011 LCP inspection and other historical LCP studies are incorporated into this report by reference.

i. Detectable lead in paint was confirmed for the following testing combinations.

1. Interior plaster walls painted off-white or tan color.
2. Interior plaster walls in bedroom 204 painted green or grey.
3. Interior wood trim and door for stairwell at dining room, painted brown or gray.
4. Interior wood trim in bedroom 204 painted brown or green.
5. Exterior wood trim painted green in kitchen addition areas.

ii. Paints with greater than 0.5 percent by weight lead (lead based paint) are identified at the following building components.

1. Exterior soffits and fascia boards (wood substrate, white or green outer layer).
2. Exterior cornice brackets (wood substrate, green).
3. Exterior door casings (wood substrate, green).
4. Exterior door facing (wood

substrate, green).

5. Exterior door threshold (wood substrate, gray).

6. Interior window, north basement wall 001 (wood substrate, white).

The identified LCP and lead based paint (LBP) was observed to be in fair to good condition. Loose/flaking LCP is not identified on the exterior or interior of the structure.

a) *Lead Dust*

The interior of the residence was generally well maintained, loose and flaking paint or dusts with paint debris were not visually identified. Wipe sampling for lead dust analysis was not conducted in the residence because identified paints were in fair to good condition.

b) *Lead in Soils*

Areas of the surface soils adjacent to the structure were not observed to have LCP debris.

c) *Asbestos*

An asbestos-containing material (ACM) Survey was conducted by Landmark Environmental, Inc. on December 6, 2011. The sampling was conducted according to U.S. Environmental Protection Agency (EPA) Asbestos Hazard and Emergency Response Act (AHERA) and U.S. Occupational Safety and Health Administration (OSHA) Chapter 29 Code of Federal Regulations (CFR) 1926.1101 requirements, as well as generally accepted industry standards. A total of 13 bulk samples were collected throughout the residence. Samples were collected from a total of eight types of suspected ACMs, including electrical wire insulation, wall plaster, wall board underlying wall plaster, tar paper in the

attic, flue insulation, and woven-type wall
or ceiling paper.

The samples were analyzed at Reservoirs
Environmental, Inc., using Polarized
Light Microscopy (PLM). Of the suspect
ACMs that were sampled, no materials
were confirmed to be ACM by laboratory
analysis.

d) *Mold*

Inspections of the structure were
performed to identify the readily
ascertainable visual extent of mold
growth. Moisture testing in building
materials was not performed nor was
sampling of building materials performed
for microbial analysis. Mold was not
visually identified.

Summary of Hazardous Material Findings

Building Number	LCS ID 70144
Building Name	Truman Farm Residence
>1% Asbestos Confirmed	No
Detectable Lead in Paint Confirmed	Yes Interior & Exterior Painted Surfaces
Detectable Lead in Paint greater than 0.5% by weight (LBP)	Yes Interior & Exterior Painted Surfaces
Lead Dusts	None observed no samples collected
Lead Debris on Soils	None Observed no samples collected
Other Hazardous Materials Observed	No
Visual Mold Observed	No
Indication of Buried Tanks	No

General Condition Assessment

In general, the Farm Home is in good condition with the exception of the recurring damage caused by foundation movement and wood decay caused by insects and moisture.

Condition Assessment -- Architecture

Architecture – Roof

Condition: Good

The roofing is in good condition.

Architecture – Gutters & Downspouts

Condition: Good

All are in good condition. However, the fascia at each integral gutter corner of the west wing exhibits some minor damage at the vertical joint at each corner. It is unknown what is causing the damage but it could possibly be from differentiation of expansion between the wood and stainless steel gutter, causing a gap at the end grain of the fascia members.



Figure 3-117: c.1984 stainless steel integral gutter, minor damage at corner joint, EMH 12/6/11

The downspout on the north side of the west wing needs to be reattached to be effective. The current disconnected condition may be contributing to the foundation settlement issue in that area.

Architecture – Chimneys

Condition: Good

The chimneys are in good condition.

Architecture – Exterior Walls

Condition: Good

All appear to be in good condition, with the exception of the separation issue.



Figure 3-118: Separation of central and east wing, EMH 12/6/11

Architecture – Exterior Trim

Condition: Good

Overall, the exterior trim is in good condition with some minor joint damage at the corners.

Architecture – Porches

Condition: Good

All appear to be in good condition with the exception of the structural issues identified in the structural section.

Architecture – Windows

Condition: Good

In general, the windows lack appropriate weather-stripping and are therefore uniformly loose/leaky.

West Wing: These windows are in good condition with the exception of some wood

deterioration at two of the exterior header trims (windows 106 and 107).

Central Wing: The first and second floor wood windows are in good condition. The basement windows are in fair to poor condition. Debris has covered a portion of the exterior and has trapped moisture against the windows. The window wells themselves are small, with minimal air circulation or space for maintenance.



Figure 3-119: Basement window well condition, NAA 12/6/11

East Wing: These windows are in good condition.

Architecture – Doors

Condition: Good

West Wing: Screen door 101A is in good condition with the exception of missing approximately 18" of screen stop at the exterior face.

Door 101 is in good condition. However, the transom's interior glazing compound is starting to crumble.

The interior doors are in good condition.

Central Wing: The four exterior doors and the interior doors are in good condition.

Architecture – Ceiling Finishes

Condition: Good

The ceiling finishes are generally in good condition. Most of the ceilings have been assumed to have been replaced during the 1983-1984 restoration work per George Fogelson's work logs and as per data from the environmental testing.

Architecture – Interior Wall Finishes

Condition: Fair to Good

In general, the interior wall finishes are in good condition but there is peeling paint in dining room 104 and some instances of full height cracks, primarily around the chimneys on both the first and second floor. This condition is related to structural movement (see structural assessment).

Architecture – Interior Trim

Condition: Good

West Wing: The base trim (on both floors) in this portion of the Farm Home is generally in good condition with some separation and misalignment at joints and light wear and tear.

Central Wing: Dining room 104 has good base trim and wainscot with minor wear and tear. Bedroom 205's base trim is in good condition with the exception of the missing base shoe along three of the walls. Porch 106's base shoe is also in good condition.

East Wing: Kitchen 105 and porch 107 have base trim that is in good condition.

Architecture – Floor

Condition: Fair to Good

West Wing: The floors in this portion of the Farm Home are in fair to good condition. The first floor rooms show signs of moderate wear and tear beneath the carpet runners. On the second floor, bedroom 203 has a floor section along the

west wall that is heavily worn, has failing varnish and splitting floor boards.

Central Wing: Dining room 104 and porch 106 floors are in mostly good condition with some weathered paint on the porch 106 floor and minor board separation. At bedroom 204, the flooring is in fair condition with a sun-bleached area below the south window and sections of the base trim with sizeable gaps between the wall.

East Wing: Kitchen 105 floor is in good condition. Porch 107 floor, similar to porch 106's floor, has some weathered paint.

Architecture – Stairs

Condition: Good/Poor (Code)

West Wing: The primary staircase leading to the two bedrooms is in good condition. However, it does not have sufficient handrails and railing height at the second floor to meet current code requirements of 42".



Figure 3-120: Primary staircase railing in hall 201, ABA 12/6/11

Central Wing: The stair to bedroom 205 is in good condition. However, it does not meet current code of 42" and has insufficient handrails.

The basement stair is in poor condition.

The open risers do not meet code and a tread is missing. There are no handrails on this stair.

Architecture – Code/Life Safety

Condition: Poor

The Farm Home does not meet the code's requirements limiting it to a one story building. The addition of a fire suppression system would allow a two-story building. NPS Director's Order 28 requires that this building be fire sprinkled.

Architecture – Accessibility

Condition: Poor

The reference material for accessibility is the Architectural Barriers Act Accessibility Standard for Federal Facilities (ABAAS) and American National Standards Institute (ANSI) A117.1. The current configuration does not meet accessibility standards due to the lack of handrail at the ramp (where one is required with 6" change in height), the various narrow door widths (where 32" clear is required), knob style door hardware (where accessible lever style is required) and the various changes in elevation at doors and within the house (where 1/2" max is required). The existing ramp slope is 1:12, but does not have edge protection or handrails.

Condition Assessment -- Structural

Applicable Codes:

The code references used for the Condition Assessment include the 2009 IBC, 2009 IEBC and ASCE 7-05.

Structural – Foundation

Condition: Poor

The perimeter foundation walls in the basement are in good condition although

they are cracked and have cracked recently due to foundation movement. The wall cracks are about 1/8" wide (following figure). The slab on grade in the basement has also cracked recently and the crack is sizable, about 1/8" to 3/16" wide.



Figure 3-121: Basement wall crack, PD 12/6/11

The shallow foundations under the west wing and kitchen 105 move with moisture changes in the soil at the depth of the foundations as discussed in the 2005 report by Quinn Evans Architects and Fitzpatrick Structural Engineering P.C. This is causing distress in the foundations and cracking in the walls of the west wing, and separation of the west wing and kitchen 105 from the center portion of the house (figures 3-122 and 123).



Figure 3-122: West wing wall cracking, second floor hall 201 adjacent to north chimney, PD 12/6/11



Figure 3-123: Separation of west wing from center of house as measured by crack monitor installed in 2004, PD 12/6/11

The brick grade beams under the west wing are in poor condition. Bricks and mortar are cracking (figures 3-124 and 125). A large section of the north grade beam is unstable when the soil dries and the grade drops. Repairs have been made and need to be made again. A brick was easily removed to provide viewing of the crawl space.



Figure 3-124: Deteriorated bricks and mortar, brick grade beam, southeast corner of west wing, PD 12/6/11



Figure 3-125: Cracking and Rowlock brick easily removed from south grade beam of west wing, PD 12/6/11

Structural – Floor Framing

Condition: Good

The first floor framing in dining room 104 is in good condition. Floor framing around the stair to the basement is in fair condition - the support posts down to the basement floor are not secured and they just rest on the slab on grade without consideration for decay. The embedded sill plate at the top of the basement wall is in fair condition but has elevated moisture content. This wood absorbs moisture from the surrounding masonry and it is not preservative treated.

First floor framing for the west wing is generally in fair condition. The crawl space under this framing is not adequately vented, but the wood joist moisture content as measured in December near the southern edge was not excessive. It's possible the mechanical ductwork in the crawl space is providing some air movement and contributing to the favorable environment. It's also likely the moisture content increases during times of wet weather. The venting should be improved. The wood sill plate or beam that bear on the brick grade beams are decayed (figure 3-126). The wood rim joist bearing on masonry is also likely decayed.



Figure 3-126: Decayed wood sill plate (or beam?) on brick grade beam, south wall west wing, PD 12/6/11

Very little of the floor framing in kitchen 105 was observed because the underside is covered with wood sheathing. Although no decay was noted in the small area that was visible, there is inadequate separation from finished grade to the bottom of the framing. The adjacent porch framing was already replaced because of decay, and decay is expected at the kitchen floor.

The second floor framing in bedroom 204 is in good condition.

The second floor framing in the west wing

1 could not be observed, thus its condition
2 is unknown. No obvious signs of distress
3 or damage were observed.

4
5 Conversations and photos provided by
6 Lewis McKarnin indicate the joists and
7 beam replaced at porch 107 are in good
8 condition. The wood decking, however,
9 is not pressure-preservative treated and
10 decays requiring regular replacement.
11 The 1983 porch framing at porch 106
12 and the front porch was not preservative
13 treated and was not made with wood that
14 is naturally resistant to decay. Decay is
15 expected in this framing.

17 ***Structural – Roof Framing***

18 Condition: *Good*

19 The wood roof framing that was observed
20 is in good condition in that only minor
21 localized dry rot or decay was observed.

23 ***Structural – Ceiling Framing***

24 Condition: *Good*

25 The ceiling framing of the west wing,
26 above bedroom 204, and over kitchen 105
27 are all in good condition.

29 ***Structural – Wall Framing***

30 Condition: *Good*

31 The exterior wall framing is in good
32 condition. The finishes on interior
33 walls of the west wing are cracked and
34 therefore in poor condition. Most of the
35 cracking is in the upstairs hall 201, but
36 some cracking continues in the first floor
37 hall 101 especially above the corners
38 of the door opening into room 102. The
39 cracking appears to be due to foundation
40 movement.

43 ***Structural – Lateral System***

44 Condition: *Good*

45 Lateral stability of the building appears
46 to be good. No racking of walls was
47 observed. It's been reported the building

1 survived a tornado with only localized
2 damage to the roofing and siding.

4 ***Structural – Load Requirements***

5 Condition: *Fair*

6 As noted above, the minimum live load
7 required for residential use is 40 psf and
8 is 100 psf for public assembly use per the
9 2009 IBC.

10
11 The wood that was visible was visually
12 graded in general conformance with the
13 Southern Pine Inspection Bureau grading
14 rules. Since only a portion of the framing
15 was visible, a range of member capacities
16 are presented. The range extends from a
17 possible low grade for wood members not
18 visible up to the actual graded value for
19 the visible members.

20
21 Dining room 104 floor live load capacity
22 is estimated to be between 34 and 59 psf
23 depending on wood grade. The floor will
24 be quite flexible at these loads. Deflections
25 will be between 1" and 2", which far
26 exceed the 2009 IBC requirement of span
27 divided by 360, or 5/8".

28
29 West wing first floor live load capacity is
30 estimated to be greater than 40 psf based
31 on the strength of the floor joists. The joist
32 deflection under this live load is 7/8". The
33 floor joists are flexible and exceed the code
34 allowable deflection limit of span/360,
35 which is about 5/8" for this span. Floor
36 deflections this large will likely be
37 manifested by cracking in the plaster wall
38 finishes. However, the finishes on this
39 level are not cracked, so the joists have
40 likely not experienced this live load. The
41 live load capacity may be limited by the
42 floor joist to rim joist connection, which
43 is unknown because it is hidden, and by
44 decay of wood framing in contact with the
45 brick grade beams.

46
47 Kitchen 105 floor live load capacity is

1 between 35 & 60 psf based on wood
2 species and grade used in the 1983
3 construction.

4
5 The live load capacity in bedroom 205
6 is estimated to be between 30 and 57
7 psf depending on wood grade and joist
8 spacing. The floor will be quite flexible at
9 these loads. Deflections will be between
10 7/8" and 1.5", which far exceed the 2009
11 IBC requirement of 5/8". The live load
12 capacity of the stair to bedroom 205 is
13 estimated to be greater than 40 psf.

14
15 The porch floor live load capacity is
16 estimated to be greater than 40 psf
17 based on member strengths. Connections
18 between members will likely limit the
19 capacity. Connections are unknown. If the
20 joists are notched at the 6 x 6 beams as
21 shown on the 1983 drawings, the live load
22 capacity is approximately 28 psf, provided
23 the wood is not weakened by decay.

24
25 In summary, the floor live load capacity
26 is generally adequate for residential use,
27 but not adequate for public assembly. The
28 existing floor live load capacity is likely
29 adequate if access is limited to small
30 groups, such as groups of ten or fewer
31 people. Dining room 104 and porches 106
32 and 107 likely do not have adequate live
33 load capacity due to expected decay and
34 connections. These should be rebuilt/
35 strengthened.

36
37 The ceiling live load capacity in the
38 west wing is estimated to be 12 psf. The
39 deflection under this load is about 7/8"
40 which exceeds the code limit of 1/2", so if
41 the ceiling joists were loaded to this level
42 the resulting deflection would likely crack
43 the ceiling finish.

44
45 The ceiling live load capacity above
46 bedroom 204 is controlled by the rafters
47 as discussed above.

1
2 The ceiling live load capacity above
3 kitchen 105 is estimated to be 60 psf.

4
5 The roof snow load capacity of the west
6 wing is approximately 12 psf based on
7 simplifying calculations. The snow load
8 capacity is likely to be lower because the
9 rafters do not align with the ceiling joists.
10 The rafter reaction is carried by a 1 x 6
11 that spans to the ceiling joists. The roof
12 framing has performed for over 100 years,
13 so there are other load paths or the roof is
14 able to shed snow.

15
16 The roof snow load capacity at the central
17 wing is estimated to be between 0 and 10
18 psf. This load is limited by rafter bending
19 caused by the ceiling joists being located
20 above the rafter bearing elevation on the
21 2 x 4 wall. The capacity of the connections
22 may even be less.

23
24 The roof snow load capacity of kitchen
25 105 is estimated to be 43 psf based on
26 member strength. The capacity could be
27 reduced based on the rafter-to-ceiling joist
28 connections, which are unknown.

29
30 Roof snow load capacity of the porch
31 roofs is unknown because the framing is
32 unknown.

33 **Condition Assessment -- Mechanical**

34 *Applicable Codes:*

35
36 The code references used for the Condition
37 Assessment include the 2009 IMC, 2009
38 IPC, NFPA and AHSRAE.

39 ***Mechanical – Condition Assessment:***

40 Condition: *Good*

41 The existing main mechanical
42 infrastructure system is in good condition
43 overall. The existing mechanical
44 geothermal borefield wells and piping are
45 less than five years old. The existing heat
46 pump in the basement is less than two
47

years old. There is approximately 13 years of useful life remaining on the heat pump.

The supply and return ductwork is approximately 28 years old and has a useful life of approximately ten more years.

The supply diffusers in the second floor ceiling are showing signs of rusting. There are also other indications of challenges with humidity control in the building. The wallpaper applications in the rooms are showing signs of separation from the walls. The presence of a mobile dehumidification unit indicates that the staff is being proactive at trying to maintain a consistent humidity level in the house.

The existing insulation on the ductwork in the attic has fallen off in a couple locations and is in fair to poor condition.

Plumbing – Condition Assessment:

Condition: Good

The existing water line into the building is in good condition and has an expected remaining useful life of 20+ years. There is no backflow preventer on the entry line which is required by the International Plumbing Code.

The existing sanitary line condition and routing is unknown below the basement floor level.

Fire Protection– Condition Assessment:

Condition: N/A

There is no fire protection system located in the house.

Condition Assessment -- Electrical

Applicable Codes:

- National Electrical Code 2011 (NEC 2011)

- National Electric Safety Code (NESC)
- NFPA Codes and Standards (Not including NFPA 5000)

Electrical – Infrastructure

Condition: Fair

Existing infrastructure appears to be sized appropriately for the loads served, equipment is in fair condition with 10-15 years of remaining useful life.



Figure 3-127: Existing main electrical panel, Jon Brooks 12/6/11

Electrical – Branch Circuits

Condition: Fair

Existing branch circuits are contained within conduit. Ground wires have been provided to outlets for safety. Quantity of branch circuits indicates that circuits are not likely overloaded with general purpose loads.

Electrical – General Power Outlets and Equipment

Condition: Fair

Outlet provisions throughout the Farm Home appear to be adequate for the purposes served.

Electrical – Lighting Systems

Condition: Poor

Existing interior lighting consists of step lighting at main stairs which were installed in 1984 and do not provide much illumination for emergency egress. The trim on these fixtures are covered in wallpaper which is not cut to fit properly. Three small puck style lights, two at dining room stair and one under desk at top of basement stair were more recently added with surface mounted cabling. The puck style lights do pose a potential fire risk due to proximity of adjacent wood and installation location.

Electrical – Telecommunications

Condition: Fair

Existing phone line and line for remote dialer are in working order. These cables are not within conduit inside the house so there is the potential for damage. The NPS standard is to locate exposed low voltage cabling in EMT conduit. The existing phone system does not currently have spare capacity for additional lines.

Electrical – Fire Alarm and Security System

Condition: Fair

Functionality of all devices could not be tested at time of observation. Location and aesthetics of exterior light and horn devices are obtrusive.

Electrical – Lightning Protection

Condition: Fair

Lightning protection systems are intact, however over time, connections deteriorate and components corrode. The integrity of the system cannot be assured. Downleads are not tight to building and are draped loosely in some locations.

Condition Assessment -- Hazardous

Materials

Refer to 'Physical Description -- Hazardous Materials' for detailed descriptions of locations and conditions of hazardous materials.

Contributing Features for the Farm Home

Mass/Form. The two-story hipped massing with wings extending to the east are contributing features, as is the central hall layout and fenestration pattern.

Exterior Materials. Although much of the exterior materials have been replaced, the siding, trim (including corbel and ogee detailing) and chimneys all contribute to the significance.

Openings. The west entry, porches and window openings of the west, central and east wings are all contributing features.

Interior Materials. The original wood tongue and groove flooring is located throughout the west and central wings. Some areas of original plaster are likely but their specific locations were not identified during the site investigation. The original paint and door frame exist at the front entry, per the paint samples analyzed (Appendix F). The stair newel, railings and balustrade are all contributing features.

GARAGE

Chronology of Alterations and Use

Original Construction

The Garage was originally constructed between 1890 and 1910 in the town of Grandview and served as the barber shop and post office. In 1915, Harry S Truman re-located the building to the Truman Farm to act as a Garage for his recently purchased Stratford car.

Significant Alterations/Current condition

Little documentation exists on this out building other than historic photographs. Significant alterations to the Garage include internal stabilization in 1994 and in 2009. New stamped metal siding (as an in-kind replacement) was installed on the exterior in 2008 with new windows on east side and a new wood shingle roof. The exterior was also painted white in 2008.



Figure 3-128: Garage west elevation, ABA 12/6/11



Figure 3-129: Garage north elevation, ABA 12/6/11



Figure 3-130: "Grandview Farm: Shed," Al O'Bright, 8/83, NPS Park Records

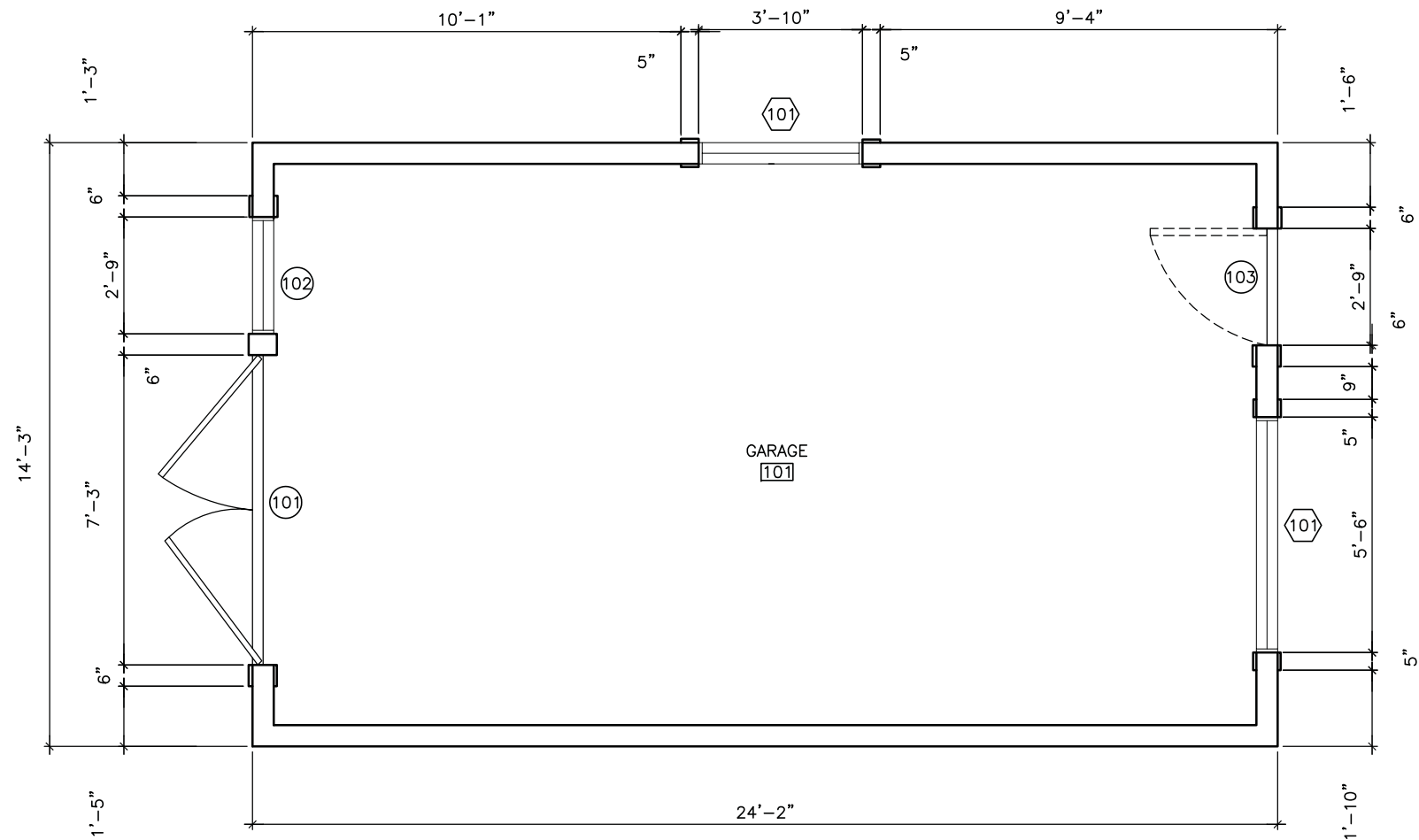


Figure 3-131: "Truman Farm Garage, facing Southwest," York, 2/84, NPS Park Records

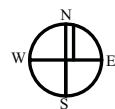
Summary of Documented Work on the Building

Date	Work Described (Source Reference)
1890-1910	What is currently the Garage is built in Grandview as a post office/barber shop. (Evans-Hatch, 2001)
1915	HST moves the post office/barber shop to the Farm to be a Garage for his car. He was elected postmaster for Grandview in 1914. (Evans-Hatch, 2001)
1983	Jackson County purchases the remaining Truman family home (5.3 acres) from the Truman family. (Harry S Truman Library and Museum, legal record on file)
1985, Feb	Truman Farm Garage entered into the National Register of Historic Places and was included as part of the Farm Home's National Historic Landmark status. (NPS NHL, 1985)
1993, Dec	Public Law 103-184, Act of Congress, added Truman Farm to the Harry S Truman National Historic Site. (NPS GMP, 1999)
1994, April	Jackson County conveyed the Truman Farm deed to the federal government and the NPS assumed ownership of the property. (HSTR records)
1994	Garage stabilized internally with cabling. (HSTR maintenance records)
2003-2009	Funds received for additional stabilization (2003); stabilization process completed (2009). (HSTR maintenance records)
2008	The NPS stabilized the structure and installed new metal in-kind siding, east windows and wood shake roof. The exterior was painted white. (HSTR maintenance records)

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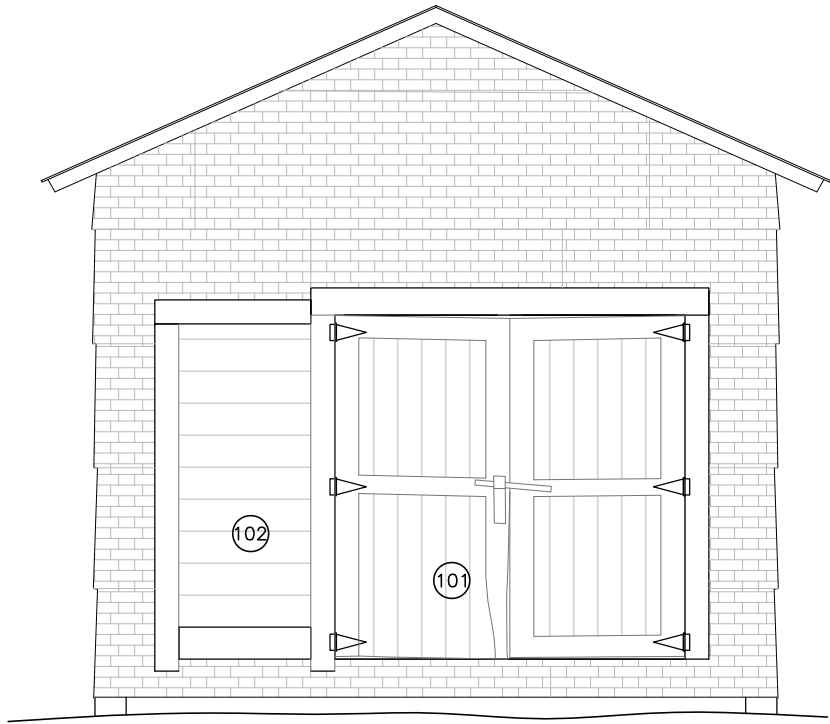


1 GARAGE - PLAN
8/11 SCALE (A)



NOVEMBER 2012	TITLE OF PROJECT TRUMAN FARM HISTORIC STRUCTURES REPORT	
UNITED STATES DEPARTMENT OF THE INTERIOR TRUMAN FARM NATIONAL HISTORIC SITE	TITLE OF DRAWING GARAGE PLAN	
EXISTING CONDITION DRAWINGS SHEET 8 OF 11	NAME OF PARK TRUMAN FARM - HARRY S TRUMAN NATIONAL HISTORIC SITE	
	REGION MIDWEST	STATE MISSOURI

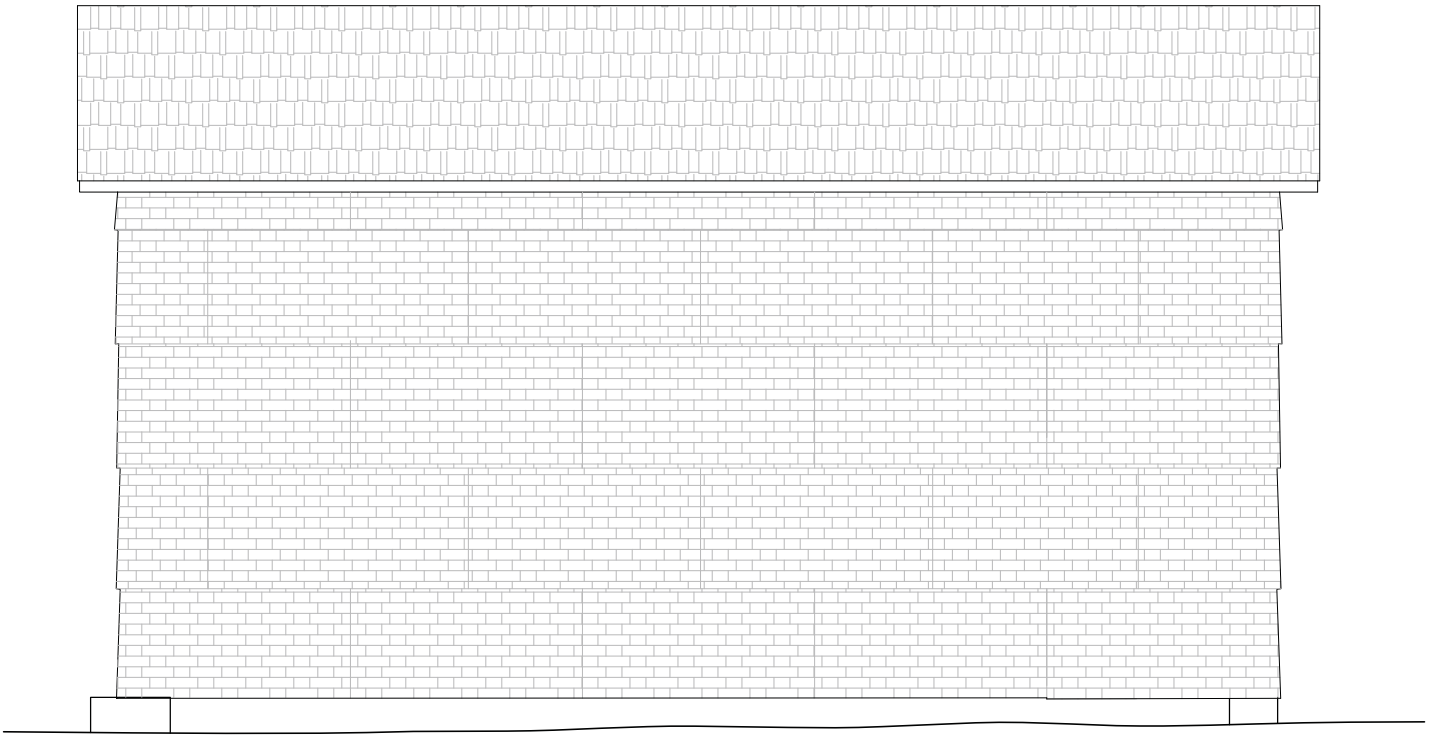
12/3/12 13:49 JORENENANTONUCI R18 N:\A PROJECTS\2011\2011400 TRUMAN FARM HSR\BIM\ACAD\ARCH\09 OF 11_ELEVATION - GARAGE_REV/DWG XREFS: _BASE\VA-GARAGESKETCH.DWG;



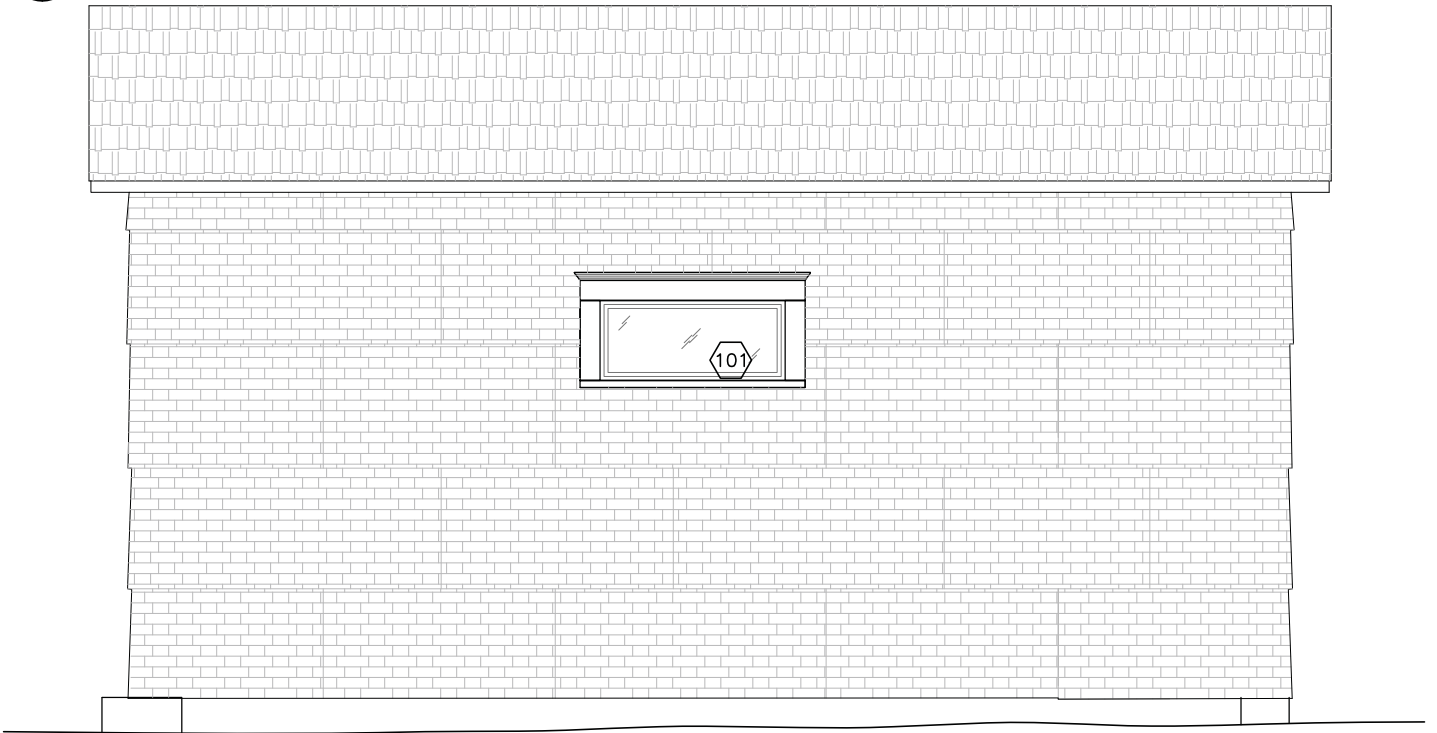
1 GARAGE – WEST ELEVATION
9 | 11 SCALE (A)



3 GARAGE – EAST ELEVATION
9 | 11 SCALE (A)



2 GARAGE – SOUTH ELEVATION
9 | 11 SCALE (A)



4 GARAGE – NORTH ELEVATION
9 | 11 SCALE (A)

SCALE (A) 2 0 2 4
SCALE OF FEET

NOVEMBER 2012	TITLE OF PROJECT TRUMAN FARM HISTORIC STRUCTURES REPORT
UNITED STATES DEPARTMENT OF THE INTERIOR TRUMAN FARM NATIONAL HISTORIC SITE	TITLE OF DRAWING GARAGE ELEVATIONS
EXISTING CONDITION DRAWINGS SHEET 9 OF 11	NAME OF PARK TRUMAN FARM - HARRY S TRUMAN NATIONAL HISTORIC SITE
	REGION MIDWEST
	COUNTY JACKSON
	STATE MISSOURI

General Existing Conditions

The Garage is a simple rectangular wood frame gable structure. What appears to have been the original commercial front faces east. The foundation is composed of six helical piles anchored into the ground. The 2008 stabilization provided new helical piles for the building.

Existing Conditions -- Architecture

Architecture – Roof

The existing roof consists of wood shingles with a 5" exposure. The eave is boxed in with a solid wood soffit and a 1 x 4 fascia, all painted white. Park records indicate it was replaced in 1996 and again in 2008.²⁹ Historic photos indicate the original roofing was wood shingles.



Figure 3-132: Underside of Garage roof, ABA 12/6/11

Architecture – Exterior Walls

Exterior walls consist of nominal 2 x 4 framing with 1 x 12 board sheathing and metal stamped siding to replicate brick. The pattern of the stamped metal is of running bond and is 2'-4" x 4'-8" sheets, painted white. The existing siding is a reproduction of original stamped metal siding, which was replaced in 2008. Park staff report the original stamped metal siding is currently in park storage. There is a flashing drip edge at the base of the siding.

²⁹ From sketch "Farm Home Garage Roof," dated 4/28-5/2/95, on file at HSTR Park Headquarters and Park Records from 2008.



Figure 3-133: Exterior of Garage, east elevation, ABA 12/6/11

Architecture – Exterior Trim

There is no exterior trim on the building with the exception of the east window and door trim discussed in the other sections.

Architecture – Windows

The Garage has three extant windows. One is located on the north elevation and the other two are on the east elevation. One of the east windows is a transom above the infilled door (see door description below). The other east window has a divided lite transom but has been infilled with wood shingles below. Per park staff, the north window is original. All three windows are fixed, though the large window on the east elevation has remnants of historic thumb turn locks, and were replaced in 2008.

Window trim consists of simple 1x wood surrounds with header trim that has an ogee profile that continues over the door on the east elevation. All trim is painted white.



Figure 3-134: East elevation, windows and door, ABA 12/6/11

Architecture – Doors

The Garage has three doors. There is a pair of wood stile and rail swing doors located on the west elevation. Both doors are barn style doors with a padlock securing them closed and modern hardware. Next to the barn doors is a 2'-9" wide single door now infilled with 1x boards.

The east elevation also has a single door that has been infilled with 1x boards. It is 2'-9" wide with a transom above.

The exterior trim around the doors is 1 x 5 boards, painted white. The door header trim on the east elevation has an ogee profile that continues over the windows.



Figure 3-135: Exterior of Garage, west elevation and barn doors, ABA 12/6/11

Architecture – Interior Wall Finishes

Portions of the original plaster are attached to the remaining lath along the wood frame walls. Plaster sample number 5 was taken of this wall plaster and showed a skim coat of lime and a plaster composed of horse hair (see Appendix F for in-depth analysis of the results).



Figure 3-136: Interior Garage wall finishes, ABA 12/6/11

Architecture – Ceiling Finishes

The ceiling retains small areas of the original lath. Remnants of plaster remain (typically between the lath and roof framing).



Figure 3-137: Interior Garage ceiling and roof structure, ABA 12/6/11

Architecture – Floor

The tongue and groove wood flooring runs east-west and shows obvious signs of large portions having been replaced. It is assured this floor is not original due to its previous use for car storage.



Figure 3-138: Interior Garage tongue and groove flooring, ABA 12/6/11

Architecture – Code/Life Safety

The Garage would be best classified as a “U” (Utility) Occupancy and its wood frame construction is a type V-B (non-rated) Rating. Per the 2009 IBC, 5,500 sf and one-story is allowable. The Garage is 340 sf.

Architecture – Accessibility

This building is not currently accessible. It is currently precluded by the change between grade elevation and finish floor (13 ½”) and that none of the doors have accessible lever style hardware.

Existing Conditions -- Structural

Structural – Foundation

The Garage was stabilized during the summer of 2008. The construction documents are dated June 19, 2003. The

Garage is now supported on six helical piles (Chance C150-0132). The helical piers are unfinished steel and show signs of surface rust (figure 3-139).



Figure 3-139: Helical pile, PD 12/6/11

Structural – Floor Framing

The floor framing was rebuilt as part of the stabilization. Unless noted otherwise all the framing described in this paragraph is modern material installed as part of the stabilization project. The floor framing consists of 3 built-up beams each consisting of 4-2x12s (nominal) that are ganged together and span north-south. Although the 2003 construction documents require the framing to be pressure-preservative treated, it could not be confirmed that the 4-2x12 members closest to the ground were in fact treated. No tags were found and the members do not have a green color like the other adjacent preservative treated members. The built-up beams bear on steel U bracket on the helical piers. The built-up beams cantilever a foot or two over the helical pier and support a nominal 2x12 rim joist that spans east-west approximately 10' to the adjacent built-up beam. On the south side the rim joist is connected to the built-up beam with steel angles (approximately L3x3x3/8 x 0'-11" long, figure 3-x) that connect to the beams with 3 approximately 3/8" diameter

thru bolts and connect to the rim joist with 3 approximately 3/8" diameter lag screws. On the north side the rim joist is continuous and rests on top of the built-up beams. The rim joists support 2x12 floor joists that span north-south approximately 14' between rim joists. A 3/4" solid tongue and groove (T&G) flooring spans 16" to the 2x12 joists. The T&G flooring is about 50% original reused wood and 50% new wood.



Figure 3-140: Angle connecting rim joist to built-up beam, PD 12/6/11

The floor joists between the last built-up beam and the east wall are supported by a 2'-6" length of rim joist on the south side. This rim joist cantilevers off the steel angle connection at the built-up beam. This construction is very weak. A stone has been placed under the corner of the Garage and offers support for the weak framing (following figure). The same condition occurs at the southwest corner.



Figure 3-141: Stone supporting Garage corner, PD 12/6/11

The floor framing is near finished grade. Finished grade is within about 6" at the west end and slopes to within about 12" at the east end.

This construction does not match that shown on the 2003 construction drawings, which showed the rim joist being 3-2x12's (instead of one installed) and shows the rim joist resting on top of the built-up beams (instead of connected with the steel angle for the south rim joist). The as-built construction is substantially weaker than that shown on the drawings.

Structural – Roof Framing

The roof framing consists of nominal 2x4 rafters spaced at about 24" o.c. The rafters span north-south approximately 7' (horizontal dimension) between the exterior wall and the ridge where they abut the rafter from the opposite slope. The rafters are sheathed with nominal 1x4 solid wood sheathing spaced at approximately 7" o.c. Approximately 50% of the sheathing was replaced during the 2008 stabilization. The rafters do not align with the ceiling joists.

Many rafters have been replaced with new 2x construction and many 1x sheathing boards were replaced with new as part of the stabilization project.

Structural – Ceiling Framing

The Garage does not have a finished ceiling. Original wood lath is still present in most areas, but the lath is bare. The ceiling joists are nominal 2x4s spaced at 16" o.c. and span approximately 14' between the north and south exterior walls. The ceiling joists do not align with the rafters.

Several new ceiling joists have replaced the original members. The new members are 2x6 Douglas-Fir-Larch.

The ceiling joists and rafters are toe nailed to the wall top plate.

Structural – Wall Framing

The exterior walls are framed with the original nominal 2x4 studs at 16"o.c. Exterior walls are sheathed with wood lath on the inside and nominal 1x12 sheathing on the outside. The sheathing is not spaced. Some of the original plaster remains and is held to the lath with metal bolts and washers that were installed as part of the 2008 stabilization. The exterior finish is metal siding stamped with a brick pattern. The gable end walls with large openings are also framed with nominal 2x4 studs. King studs and headers are generally absent or if present are minimal.

The wall studs run past the face of the floor rim joist and are fastened to the rim joist. The size and number of fasteners are unknown.

Structural – Lateral System

Lateral stability for the building is provided by the exterior walls, wall sheathing, exterior wall finish, and plaster. This system is inherently weak and flexible and does not comply with current codes. The large openings on the east and west gable ends further

weaken the building's north-south lateral strength.

The 2008 stabilization drawings specified that three lines of bracing were to be added to the interior of the building. These were not installed.

Structural – Load Requirements

The required floor live load capacity will depend on the intended use of the building. Per the 2009 IBC the live load is 40 psf for storage of cars, and 100 psf for use as a public gathering space. Floors supporting cars also need to resist the concentrated loads from the tires. The 2009 IBC prescribes this as a 3,000# point load applied over a 4.5 inch x 4.5 inch area. This load is based on a fully loaded 9 passenger Sports Utility Vehicle, which is unlikely to be placed in this building.

The required ceiling live load capacity is 10 psf based on the 2009 IBC and 10 psf total load based on an older code (1946 UBC).

The roof snow load required for the City of Grandview, Missouri is 20 psf if the building is occupied and 16 psf if it is not.

Existing Conditions – Mechanical

Mechanical Physical Description

None.

Plumbing Physical Description

None.

Fire Protection Physical Description

None.

Existing Conditions -- Electrical

Electrical – Infrastructure, Branch Circuits, General Power Outlets and Equipment, Lighting Systems, Telecommunications,

Fire Alarm and Security System, Lightning protection

No electrical systems exist on this building. It appears that there was electrical connected to this building near its original construction as is evidenced by the existing porcelain knob and tube connectors located under the roof eave above the Garage entry door.



Figure 3-142: Garage Building Knob and Tube Connectors, Jon Brooks 12/6/11

Physical Description -- Hazardous Materials

a) Lead Containing Paint

The December 2011 Lead-containing paint (LCP) inspection included a visual inspection and sampling of the Garage structure. On December 6, 2011 paint chip sample was collected from the exterior of the Garage by Landmark Environmental, Inc. and submitted for laboratory analysis. The sample was analyzed at an accredited independent laboratory, Reservoirs Environmental, Inc., which is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental samples by the American Industrial Hygiene Association, Lab ID 101533 - Accreditation Certificate #480. Reservoirs analyzed the sample(s) using Atomic Absorption Spectroscopy (AAS) / Atomic Emission Spectroscopy - Inductively Coupled Plasma (AES-ICP)

per using method USEPA SW846 3050B / AA (7420).

- i. Paints with greater than 0.5 percent by weight lead (lead based paint) are identified at the following building components.

1. Exterior paint on Garage wood siding and trim painted white.

The identified lead based paint (LBP) was observed to be in fair to good condition. Loose/flaking LCP is not identified on the exterior or interior of the Garage.

b) Lead Dust

The interior of the Garage was not painted and loose and flaking paint or dusts with paint debris were not visually identified. Wipe sampling for lead dust analysis was not conducted in the Garage because identified exterior paints were in fair to good condition.

c) Lead in Soils

Areas of the surface soils adjacent to the Garage structure were not observed to have LCP debris and therefore no soils samples were collected.

d) Asbestos

An asbestos-containing material (ACM) Survey was conducted by Landmark Environmental, Inc. on December 6, 2011. The sampling was conducted according to U.S. Environmental Protection Agency (EPA) Asbestos Hazard and Emergency Response Act (AHERA) and U.S. Occupational Safety and Health Administration (OSHA) Chapter 29 Code of Federal Regulations (CFR) 1926.1101 requirements, as well as generally accepted industry standards. A total of two samples were collected in the Garage.

Samples were collected from two types of suspected ACMs, including remnant wall plaster and wall paper.

The samples were analyzed at Reservoirs Environmental, Inc., using Polarized Light Microscopy (PLM). Of the suspect ACMs that were sampled, no materials were confirmed to be ACM by laboratory analysis.

e) *Mold*

Inspections of the structure were performed to identify the readily ascertainable visual extent of mold growth. Moisture testing in building materials was not performed nor was sampling of building materials performed for microbial analysis. Mold was not visually identified.

Summary of Hazardous Material Findings

Building Number	LCS ID 70145
Building Name	Truman Farm Garage
>1% Asbestos Confirmed	No
Detectable Lead in Paint Confirmed	Yes Exterior Painted Surfaces
Detectable Lead in Paint greater than 0.5% by weight (LBP)	Yes Exterior Painted Surfaces
Lead Dusts	None observed no samples collected
Lead Debris on Soils	None Observed no samples collected
Other Hazardous Materials Observed	No
Visual Mold Observed	No
Indication of Buried Tanks	No

General Condition Assessment

Overall, the Garage is in fair condition due mainly to the structural issues. The lateral system is in severely poor condition. The recent stabilization drawings were not followed and the resulting load capacity is far below what was designed.

When the proposed use of the building is determined (i.e. is the public to access the interior?), the assessment can better inform the treatment recommendations.

Condition Assessment -- Architecture

Architecture – Roof

Condition: Good

The roofing is in good condition.

Architecture – Exterior Walls

Condition: Good

The walls are in good condition with the exception of the structural mitigation required.

Architecture – Exterior Trim

Condition: N/A

Architecture – Windows

Condition: Good

The three extant windows are in good condition; however the shingle infill panel is poor.

Architecture – Doors

Condition: Fair/Poor

The barn doors are in fair condition with weathered paint and misaligned hinges that affect the angle in which the doors operate. The 1x wood infill of missing doors is poor.

Architecture – Interior Wall Finishes

Condition: Poor

The remaining lath and plaster are in poor condition.

Architecture – Ceiling Finish

Condition: Poor

The remaining lath and minimal plaster are in poor condition.

Architecture – Interior Trim

Condition: N/A

Architecture – Floor

Condition: Fair

There historic wood floor is heavily worn and stained; it is clear to see where newer flooring has been installed.

Architecture – Code/Life Safety

Condition: Good

The Garage falls within the Type U/V-B code limitations. However, if the park was to consider changing its use beyond storage and if the public was to enter the building, either would trigger the need for code upgrades and a more detailed analysis would be required.

Architecture – Accessibility

Condition: Poor

The building is currently not accessible.

Condition Assessment – Structural

Applicable Codes:

The code references used for the Condition Assessment include the 2009 IBC, 2009 IEBC and ASCE 7-05, Minimum Design Loads for Buildings and Other Structures.

Structural – Foundation

Condition: Good

The six helical piles appear to be performing fine. The piles are not galvanized and show signs of rusting. It's unknown whether the piles were designed to accommodate corrosion.

1 Structural – Floor Framing

2 Condition: Good

3 The rebuilt floor framing is in good
4 condition owing to its recent construction.
5 Pressure-preservative treated lumber was
6 specified which is appropriate due to the
7 close proximity of finished grade to the
8 underside of the framing, but the built-up
9 beams appear to be non-treated.
10

11 Structural – Roof Framing

12 Condition: Fair

13 The wood roof framing is in fair condition
14 in that no dry rot or decay was observed.
15 Most of the damaged members were
16 replaced with new framing during the
17 recent stabilization project.
18

19 Structural – Ceiling Framing

20 Condition: Fair

21 The wood ceiling framing is in fair
22 condition in that no dry rot or decay was
23 observed. Most of the damaged members
24 were replaced with new framing during
25 the recent stabilization project.
26

27 Structural – Wall Framing

28 Condition: Fair

29 The exterior wall framing is in fair
30 condition. Most of the damaged members
31 were replaced with new framing during
32 the recent renovation, but the ends of
33 the wall studs and many other members
34 have some damage. The south top plate is
35 severely damaged by insects.
36

37 Structural – Lateral System

38 Condition: Severe

39 Lateral stability of the building is very,
40 very weak and the building is in danger
41 of collapsing. The large openings in
42 the gable end walls severely weaken
43 the racking resistance of these walls.
44 We understand the gable end walls
45 were severely racked prior to the
46 recent stabilization. The walls were
47

1 straightened, but the lateral bracing
2 recommended in the 2008 drawings has
3 not been installed.
4

5 Structural – Load Requirements

6 Condition: Severe

7 The as-built framing relies on the steel
8 angle connection between the south rim
9 joist and built-up beam to support the
10 floor, wall, and roof dead load as well as
11 floor live load and roof snow load. The
12 total load capacity of this connection is
13 estimated to be less than 600#. The dead
14 load of the floor, wall, and roof exceed
15 this capacity. Any live load on the floor
16 or snow load will further overstress this
17 connection. The live load capacity of the
18 end 3' at the east and west ends is also
19 severely below requirements, but the
20 added stones supporting the corners have
21 improved the capacity.
22

23 The ¾" wood flooring is not adequate
24 to support the wheel loads of a modern
25 heavy car.
26

27 The ceiling live load capacity is estimated
28 to be greater than 10 psf based on
29 calculation of the wood members.
30 However, the deflection under a load of 10
31 psf is about 1". The code would limit the
32 deflection to no more than ½" to prevent
33 damage to plaster ceilings. As noted
34 above, the ceiling live load capacity is
35 limited by the rim joist connection to the
36 built-up floor beam.
37

38 The roof snow load capacity is 14 psf
39 based on calculations of the roof members,
40 which is less than the 20 psf required. The
41 snow load capacity is further limited by
42 the south rim joist connection to the built-
43 up floor beam.
44

45 The roof is not adequately anchored to the
46 walls for uplift due to wind.
47

1 **Condition Assessment – Mechanical**

2 *Mechanical – Condition Assessment:*

3 Condition: N/A

5 *Plumbing – Condition Assessment:*

6 Condition: N/A

8 *Fire Protection – Condition Assessment:*

9 Condition: N/A

13 **Condition Assessment – Electrical**

14 *Electrical – Infrastructure, Branch Circuits,*
15 *General Power Outlets and Equipment,*
16 *Lighting Systems, Telecommunications,*
17 *Fire Alarm and Security System, Lightning*
18 *protection*

19 Condition: N/A

23 **Contributing Features for the**
24 **Garage**

26 **Mass/Form.** The original form has not
27 been altered and remains historically
28 significant with its simple gable form,
29 storefront openings to the east and
30 utilitarian openings to the west. The open
31 layout of the interior remains.

33 **Exterior Materials.** The stamped metal
34 siding has been replicated to match the
35 historic metal siding.

38 **Openings.** The window and door
39 openings are historic and contribute to
40 the significance and history of the Garage,
41 including the orientation of them (retail
42 versus Garage use).

44 **Interior Materials.** The extant plaster
45 walls and ceilings are contributing and
46 should be preserved.

POULTRY HOUSE

Chronology of Alterations and Use

Original Construction

The Poultry House was built around 1900 and was originally located north of the Farm house. The structure was moved between 1917 and 1944 to its present location (refer to Chapter 2, Period Plans for location information).

Significant Alterations / Current condition

Significant alterations to the Poultry House include the move it made between 1917 and 1944 and the 2005 NPS roof replacement.



Figure 3-145: “Grandview Farm: Chicken Coop,” Al O’Bright, 8/83, NPS Park Records



Figure 3-146: “Truman Farm Chicken Coop, facing N/E,” York, 2/84, NPS Park Records



Figure 3-143: Poultry House west elevation, ABA 12/6/11

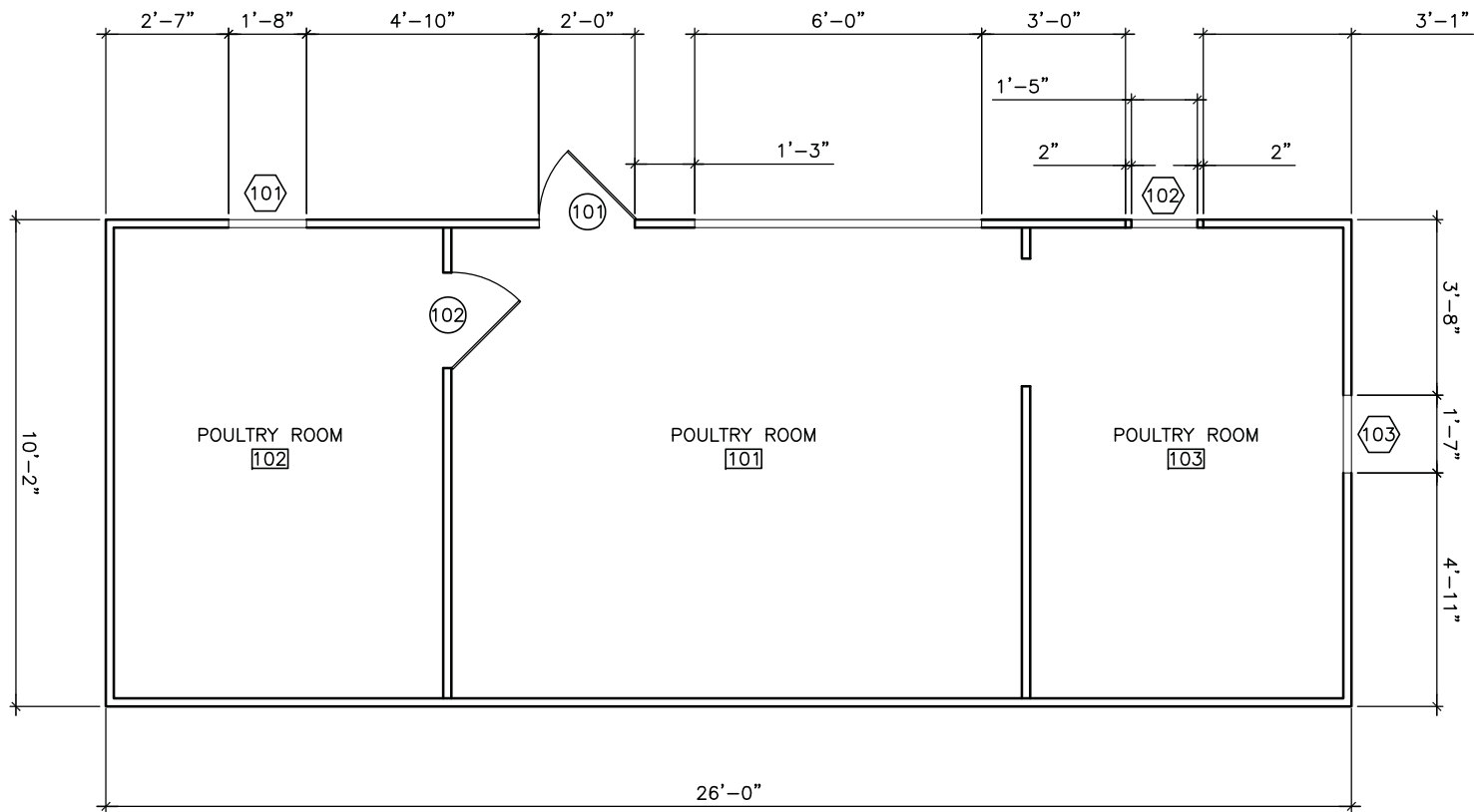


Figure 3-144: Poultry House north elevation, ABA 12/6/11

Summary of Documented Work on the Building

Date	Work Described (Source Reference)
c.1900	The Poultry House was built north of the Farm Home. (Bray, 1983)
1917-1944	Poultry House moved from the north side of the house to the east side. (U.S. Soil Conservation Service, aerial photograph, 1944)
1983	Jackson County purchases the remaining Truman family home (5.3 acres) from the Truman family. (Harry S Truman Library and Museum, legal record on file)
1985, Feb	Truman Farm Poultry House entered into the National Register of Historic Places and was included as part of the Farm Home's National Historic Landmark status. (NPS NHL, 1985)
1993, Dec	Public Law 103-184, Act of Congress, added Truman Farm to the Harry S Truman National Historic Site. (NPS GMP, 1999)
1994, April	Jackson County conveyed the Truman Farm deed to the federal government and the NPS assumed ownership of the property. (HSTR records)
2005	The park woodcrafter replaced rough sawn rafters and roof sheathing in-kind in the Poultry House and replaced roofing using new metal sheets as well as original roofing material. (HSTR maintenance records)

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1
10 11

POULTRY HOUSE - PLAN

SCALE (A)

SCALE (A)

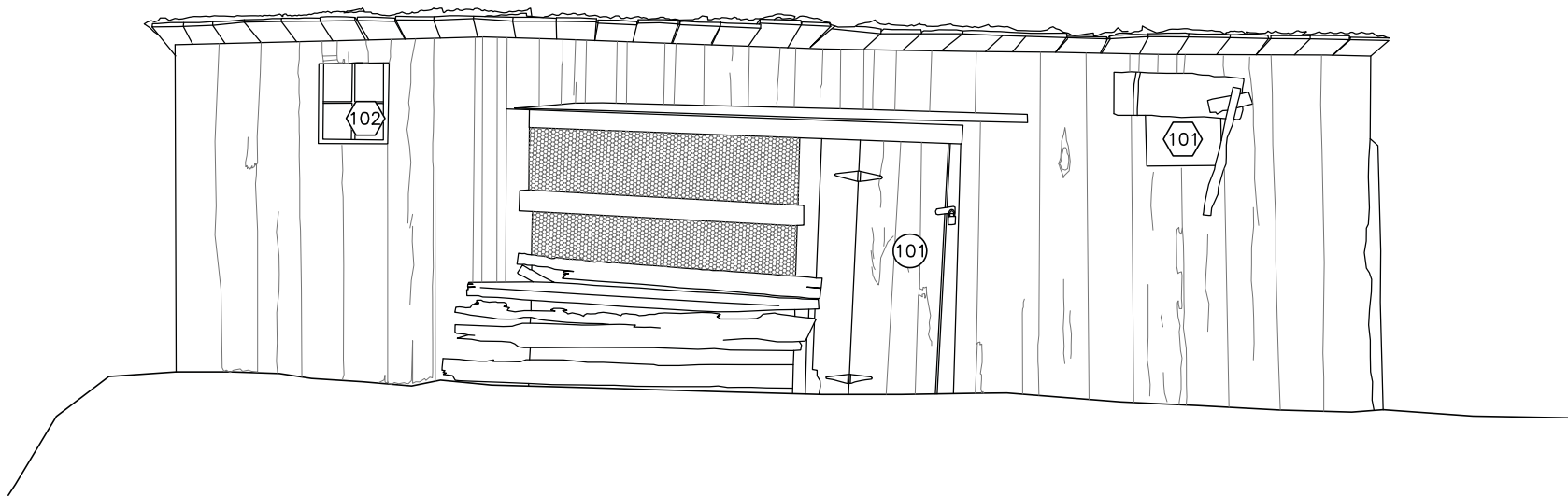


SCALE OF FEET



NOVEMBER 2012	TITLE OF PROJECT TRUMAN FARM HISTORIC STRUCTURES REPORT
UNITED STATES DEPARTMENT OF THE INTERIOR TRUMAN FARM NATIONAL HISTORIC SITE	TITLE OF DRAWING POULTRY HOUSE FLOOR PLAN
EXISTING CONDITION DRAWINGS SHEET 10 OF 11	NAME OF PARK TRUMAN FARM - HARRY S TRUMAN NATIONAL HISTORIC SITE
	REGION MIDWEST
	COUNTY JACKSON
	STATE MISSOURI

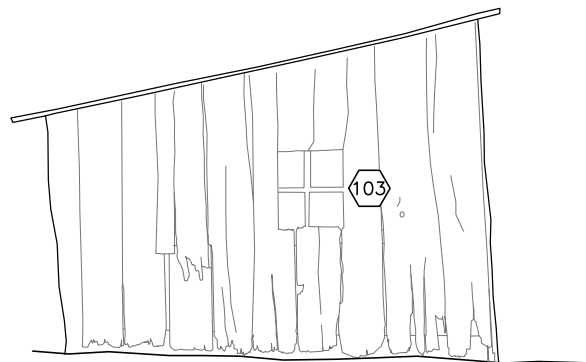
11/25/12 14:24 ADRIENNEANTONUCI R18 N:\VA PROJECTS\2011\2011400 TRUMAN FARM HSR\BIM\ACAD\ARCH\11 OF 11_ELEVATION - POULTRY_REL.DWG XREFS: ..\BASE\VA-POULTRY\SKETCH.DWG.



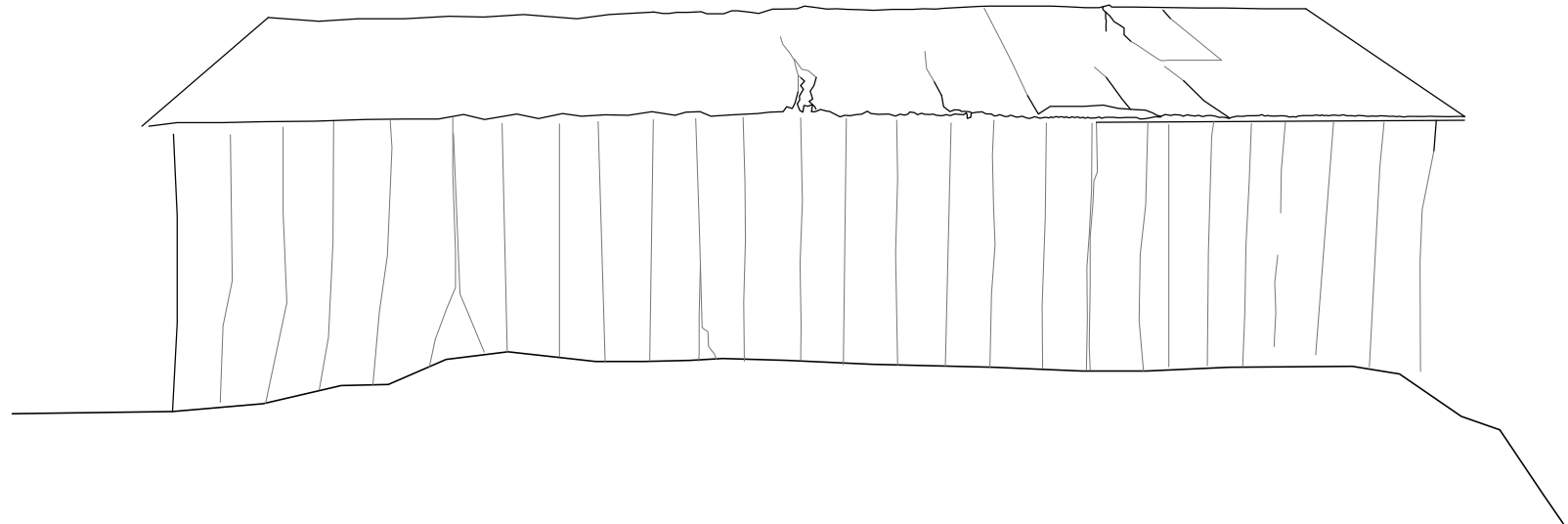
1 POULTRY HOUSE – WEST ELEVATION
11/11 SCALE (A)



2 POULTRY HOUSE – SOUTH ELEVATION
11/11 SCALE (A)



3 POULTRY HOUSE – NORTH ELEVATION
11/11 SCALE (A)



4 POULTRY HOUSE – EAST ELEVATION
11/11 SCALE (A)

SCALE (A) 2 0 2 4
SCALE OF FEET

NOVEMBER 2012	TITLE OF PROJECT TRUMAN FARM HISTORIC STRUCTURES REPORT
UNITED STATES DEPARTMENT OF THE INTERIOR TRUMAN FARM NATIONAL HISTORIC SITE	TITLE OF DRAWING POULTRY HOUSE ELEVATIONS
EXISTING CONDITION DRAWINGS SHEET 11 OF 11	NAME OF PARK TRUMAN FARM - HARRY S TRUMAN NATIONAL HISTORIC SITE
	REGION MIDWEST
	COUNTY JACKSON
	STATE MISSOURI

General Existing Conditions

The Poultry House is a simple utilitarian structure oriented to the west. It is a wood frame structure with a corrugated metal panel shed roof shedding to the east. Its rectangular footprint is subdivided internally into thirds. Currently, the interior is inaccessible.

Existing Conditions -- Architecture

Architecture – Roof

The roof consists of corrugated metal panels (1'-10" wide) replaced in 2005, per park records. Sheathing is 1x10 boards with tar paper.



Figure 3-147: Poultry House east elevation, ABA 12/6/11

Architecture – Exterior Walls

The Poultry House has board (10 1/4" wide) and batten (2 1/4" wide) siding. The west wall is approximately 3" out of plumb per field documentation. There are various gaps and holes in the boards.



Figure 3-148: Poultry House west elevation, ABA 12/6/11

Architecture – Windows/Openings

There are four openings in this structure – three are approximately 1'-10" x 1'-5" and the remaining opening is a large expanse measuring 5'-11" x 5'-9 1/2". None of the openings have glazing but all have chicken wire covering most of the openings. Two of the windows have muntins (north window on the west elevation and window on the north elevation).



Figure 3-149: Poultry House north elevation, ABA 12/6/11

Architecture – Doors/Openings

The one door on the west elevation is comprised of vertical wood boards and has a 2'-0" wide clearance. The door is currently boarded over at the top. It has two diamond hinges and a padlock. The adjacent opening is 6'-0" wide x 5'-9" high with no door – only various boards nailed in place to block access. On the interior, there are door openings on the interior but no visible doors.



Figure 3-150: View of the interior, looking towards the north portion, ABA 12/6/11

Architecture – Interior Wall Finishes

Two interior wall divisions were constructed and are simple board and batten walls that divide the interior of the structure into approximately equal thirds.

Architecture – Floor

Approximately 2/3 of the interior of the structure has a concrete pad. The concrete pad extends past the south elevation of the structure to provide an exterior pad area. The one portion of the structure (northern portion) which does not have the concrete floor has a packed earth floor.



Figure 3-151: Poultry House south elevation and concrete floor extension, ABA 12/6/11

Architecture – Code/Life Safety

The Poultry House would be best classified as a “U” (Utility) Occupancy and its wood frame construction is a type V-B (non-rated) Rating. Per the 2009 IBC, 5,500 sf and one-story is allowable. The Poultry House is 260 sf. The opening to the structure is not currently code compliant (6'-0" w x 5'-9" h) with various boards preventing access.

Architecture – Accessibility

This building is currently not accessible due to it not having an accessible route, small opening size and elevation changes.

Existing Conditions -- Structural

Structural – Foundation

The building does not appear to have a foundation. The wood members appear to be embedded in the ground or simply resting on the ground.

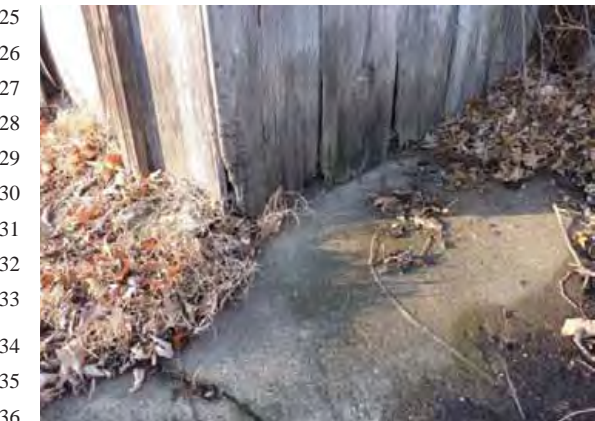


Figure 3-152: Bottom of wall showing decay and no foundation, PD 12/6/11

Structural – Floor Framing

The Poultry House has a dirt floor in the north one-third section and a thin concrete slab on grade in the middle and south sections.

Structural – Roof Framing

The roof framing consists of nominal

1 1x12 sheathing boards spanning from
2 the east wall to the west and supported
3 by 2x4 purlins placed a 1/3 points
4 (approximately) of the sheathing span.
5 The sheathing overhangs the walls by
6 about 9 inches. The roofing is corrugated
7 steel. The sheathing was replaced in 2005
8 by Lewis McKarnin, NPS Wood Crafter.

9 10 ***Structural – Wall Framing***

11 The exterior and interior walls of the
12 entire structure are framed with 1x12
13 nominal vertical sheathing boards. 2x
14 nominal skirt boards are provided at
15 ground level to support the walls.

16 17 ***Structural – Lateral System***

18 Lateral stability for the building is
19 provided by the exterior and interior
20 walls.

21 22 ***Structural – Load Requirements***

23 The roof snow load required per the city
24 of Grandview, Missouri is 16 psf for this
25 unoccupied, agricultural structure.

26 27 **Existing Conditions -- Mechanical**

28 There are no mechanical systems in the
29 Poultry House.

30 31 ***Plumbing Physical Description***

32 There are no plumbing systems in the
33 Poultry House.

34 35 ***Fire Protection Physical Description***

36 There are no fire protection systems in
37 the Poultry House.

38 39 40 **Existing Conditions -- Electrical**

41 ***Electrical – Infrastructure, Branch Circuits,***
42 ***General Power Outlets and Equipment,***
43 ***Lighting Systems, Telecommunications,***
44 ***Fire Alarm and Security System, Lightning***
45 ***protection***

46
47 No electrical systems exist on this
48 building.

General Condition Assessment

Overall, the Poultry House is in very poor condition and is in danger of collapsing. Determining the park's proposed use of the building (a protected "ruin" or if the public or staff would be able to enter) will better inform the assessment and treatment recommendations of this building.

Condition Assessment -- Architecture

Architecture – Roof

Condition: Poor

The corrugated metal panel roof is weathered and rusted.

Architecture – Walls

Condition: Poor

The west wall protrudes by 3" and there are many gaps/holes in the siding. Refer also to structural.

Architecture – Windows/Openings

Condition: Poor

The window openings are in poor condition with dry rot. Without glazing, there is no protection of the building from weather and vermin.

Architecture – Doors/Openings

Condition: Poor

The only entrance to the interior has been boarded over. The adjacent large opening has portions of boards nailed to the bottom.

Architecture – Interior Walls

Condition: Poor

The interior walls are in poor condition, as viewed from the exterior.

Architecture – Floor

Condition: Poor

The concrete pad is in poor condition as it has large cracks running throughout.

Architecture – Code/Life Safety

Condition: Poor

The Poultry House falls within the code limitations for square footage and height. Once the final use is determined by the park, a more detailed code analysis can be performed utilizing the IEBC.

Architecture – Accessibility

Condition: Poor

This building is not accessible.

Condition Assessment – Structural

Applicable Codes:

The code references used for the Condition Assessment include the 2009 IBC, 2009 IEBC and ASCE 7-05 Minimum Design Loads for Buildings and Other Structures.

Structural – Foundation

Condition: Severe

New foundations are needed to anchor the building against wind and support its weight and snow load.

Structural – Roof Framing

Condition: Severe

The recently replaced wood sheathing is in good condition other than the damage caused by the tree limb that broke through the roof. The sheathing boards though are not adequately supported. The 2x4 purlins are severely overstressed and are cracked in places (figure 3-153) and are not adequately anchored. There is a noticeable sag in the roof plane.



Figure 3-153: Cracked original and new 2x4 purlins, PD 12/6/11

Structural – Wall Framing

Condition: Severe

The bottom of the sheathing boards in contact with the ground have rotted away. The wood that remains has a moisture content exceeding 15% and continues to rot. The wall boards are not adequately supported and the walls are not anchored to the ground.

Structural – Lateral System

Condition: Severe

Lateral stability of the building is precarious. Lateral loads are carried by nail bending in the sheathing boards. Because the building isn't anchored to the ground lateral loads are not readily transferred to the ground.

Structural – Load Requirements

Condition: Severe

The roof snow load capacity is 10 psf based on member strength but the end connection capacity is expected to be lower. The roof is not able to support a person on the roof, such as may be required to perform maintenance.

Contributing Features for the Poultry House

Mass/Form. The simple original rectangular form of the building and its shed massing are contributing.

Exterior Materials. Most of the original wood board and batten siding is extant. The corrugated metal roofing is also a contributing feature.

Openings. The window and door openings are original to the structure, though no glazing, doors or hardware remains in situ.

Interior Materials. The separation of the interior into thirds is a contributing design element.