

Bauvais-Amoureux House

STE. GENEVIEVE NATIONAL HISTORICAL PARK
STE. GENEVIEVE, MO

Historic Structure Report

October 18, 2021

Bauvais-Amoureux House

Ste. Genevieve National Historical Park
Ste. Genevieve, MO

October 18, 2021

Prepared for

National Park Service
National Park Service Midwest Regional Office
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Bauvais-Amoureux House Historic Structure Report

Ste. Genevieve National Historical Park
Ste. Genevieve, MO

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Project Purpose and Need

Ste. Genevieve National Historical Park was established as a unit of the National Park Service (NPS) on October 30, 2020. The settlement of Ste. Genevieve was established on the west bank of the Mississippi River approximately 60 miles south of modern St. Louis, Missouri in about 1750. After a major flood in 1785, the village was gradually relocated to its present site on higher ground. The Park was established to "preserve, protect, and interpret for the benefit of present and future generations the themes of French settlement, vernacular architecture, and community form and farming on the frontier associated with Ste. Genevieve".

The Bauvais-Amoureux House is located at 327 St. Marys Road, Ste. Genevieve, Missouri. The property is a part of the Ste. Genevieve Historic District. This District is defined as an area roughly bounded by Main Street and St. Marys Road, Roberts Street, Ninth Street and Seraphin Street in Ste. Genevieve.

The Jean Baptiste St. Gemme Bauvais (Amoureux) House (known throughout the report as the Bauvais-Amoureux House) was built c. 1792 and is one of only three known surviving poteaux-en-terre style houses in Ste. Genevieve and one of only five known in the United States. Important architectural features include the vertical log walls and the heavy timber trusses supporting the steeply pitched roof. The walnut ceiling beams are original. The House underwent multiple alterations during the mid-nineteenth century, including the construction of the galeries, reduction in the House length, and interior alterations. Though the House has been altered, it retains integrity and is a critical contributing structure to the Ste. Genevieve National Historical Park. The House is not only architecturally significant but also plays a significant role in the interpretation of the African American experience before and after the Civil War as the home of a free black woman, Pelagie Vital Amoureux. The House is a part of the Ste. Genevieve Historic District, which was listed on the National Register in 2002.

The goal of the Bauvais-Amoureux House project, as defined by the NPS, is to develop critical planning and design documents preparatory to the eventual ultimate treatment of the House and its reuse. This historic structure report is the first phase in this planning and design effort.

Park Purpose

Ste. Genevieve National Historical Park was authorized by the Consolidated Appropriations Act of 2018 on March 23, 2018. The act incorporates by reference Section 7134 of Senate Bill 1460, which authorizes the establishment of Ste. Genevieve National Historical Park as a unit of the National Park System "to preserve, protect, and interpret for the benefit of present and future generations the themes of French settlement, vernacular architecture, and community form and farming on the frontier associated with Ste. Genevieve."

Park Planning

This document is part of the Ste. Genevieve National Historical Park planning portfolio. A park planning portfolio is the collection of planning documents that guides decision making and satisfies law and policy. The Ste. Genevieve National Historical Park planning portfolio creates a logical, trackable guide for park management actions. The Bauvais-Amoureux House Historic Structure Report addresses resource preservation for the Bauvais-Amoureux House.

The historic structure report was prepared concurrently with the Foundation Document and in advance of a Long-Range Interpretive Plan, Cultural Landscape Plan, and other documents for the park's planning portfolio.

Methodology

The purpose of the historic structure report is to provide a compilation of the findings of research, investigation, analysis, and evaluation of the historic structure. The preservation objectives of the historic property are identified, and treatment measures are recommended for implementing and accomplishing these objectives. The Historic Structure Report serves as a basis for decision-making and direction for preservation of the building. The report also serves as a record of existing conditions and as a basis for planning future preservation and maintenance.

The Historic Structure Report for the Beauvais-Amoureux House addresses key issues specific to this structure, including archival research and physical investigation to determine construction chronology of the house, investigation of existing physical conditions, evaluation of the surrounding landscape, and evaluation of the existing systems to identify needed upgrades.

HISTORY METHODOLOGY

Archival research was performed to identify documentation of the history and construction of the building. The purpose of this research and review of documents was to gather information about the original construction and past repair and modifications of the building for use in assessing existing conditions and developing treatment recommendations. These tasks included:

- Review of research and documentation performed by others on the context and background of the founding and growth of Ste. Genevieve, changes in social history over time, and architectural practices that influenced the Bauvais-Amoureux House.
- Research and review of archival documentation to develop the historical background of the Bauvais-Amoureux House.
- Research and review of archival documentation to assist in determining the chronology of the evolution of the architecture and landscape.
- Consultation with local historians and community stakeholders knowledgeable about Ste. Genevieve and the Bauvais-Amoureux House.
- Interviews with living descendants of the Bauvais and Amoureux families.

EXISTING CONDITION METHODOLOGY

The Bauvais-Amoureux House was previously documented as part of the Historic American Buildings Survey (HABS) in 1956 (HABS No. MO-1114). Other drawing sets reviewed included:

- 1994 drawings for restoration and rehabilitation work.
- 2007 drawings for exterior work, prepared for the Missouri Department of Natural Resources (DNR), Division of State Parks.
- 2011 drawings for electrical work including trenching and new electrical service.

For the historic structure report, drawings were prepared based on drawing sets provided by NPS and from information developed from the HABS documents. These drawings were used for this study as baseline documents to record existing conditions, with field verification or confirmation of select conditions.

The documents were transferred into the current version of Autodesk Revit, a building information modelling software to use for the basis of field work, team collaboration, Changes Over Time graphics, and design option studies. The drawings can be used in the future to prepare drawings for the additional recommended treatments.

The documentation tasks included the following:

- Preparation of measured plans and elevations in Autodesk Revit.
- Documentation of existing construction with photographs.
- Observation and analysis of select conditions and construction of other vertical log structures in Ste. Genevieve for comparative purposes.

CONDITION ASSESSMENT METHODOLOGY

From November 16 to 18, 2020, representatives from the historic structure report team were on site to perform an investigation into the existing conditions and construction of the Bauvais-Amoureux House.

- Visual inspection and condition assessment of the site, context, and landscape features.
- Visual inspection and condition assessment of the architectural features and building materials.
- Visual inspection and condition assessment of the enclosure and structural systems. (See also the Abbreviated Structural and Building Envelope Assessment Report, included as Appendix D.)
- Visual inspection and condition assessment of the mechanical, electrical, and plumbing systems.
- Identification and assessment of integrity of significant character-defining features and elements.

The condition assessment and physical investigation were limited to areas and features that were readily visible; no finishes were removed to expose concealed conditions. Comprehensive sampling and testing of building components to identify constituent materials and/or determine dates of construction were not performed as part of the historic structure report scope. See also section "Additional Research Requirements" within this document for recommendations for further research and testing.

TREATMENT AND USE METHODOLOGY

Treatment alternatives were developed in consultation with NPS with input from community stakeholders and subject matter experts. The treatment methodology tasks included:

- A pre-workshop technical discussion with NPS and the historic structure report team to review critical integrity and stability conditions and refine the treatment approach.
- Selection of a preferred treatment approach and development of specific treatment recommendations with input from the pre-workshop technical discussion.
- Participatory treatment workshop with historic structure report team, NPS, and community stakeholders to discuss the treatment options and identify the preferred alternate.
- Preparation of the Historic Structure Report document, incorporating feedback from NPS, community stakeholders, and subject matter experts.

Building Use

The building is currently operated as a seasonal visitor attraction with plans for possible year-round use.

Executive Summary of Existing Conditions and Treatment

OVERVIEW

This historic structure report was produced for the Ste. Genevieve National Historical Park, the 422nd unit of the NPS, U.S. Department of the Interior. The purpose of the historic structure report is to serve as a guide for the re-use, repair and maintenance, and future rehabilitation work at the Bauvais-Amoureux House. The report was prepared in adherence with NPS policies and guidelines, including The Secretary of the Interior's Standards for the Treatment of Historic Properties, NPS-28: Cultural Resource Management Guideline, and Preservation Brief 43: The Preparation and Use of Historic Structure Reports. The report addresses research into historical documentation, physical evidence of changes over time, an understanding of the current physical condition of the House and site, and recommendations for treatment and re-use in alignment with the park goals for flexible interpretive use and protection of the historic resource, as communicated to the project team.

DEVELOPMENTAL HISTORY

The Bauvais-Amoureux House has a rich history, spanning nearly 230 years. A wealth of primary and secondary resources exist that contribute to the understanding of the House's architectural history and social context. Part 1: Developmental History, "Historical Background and Context" compiles the research conducted by our team and others into a comprehensive contextual narrative that has never before been assembled with a specific focus on the Bauvais-Amoureux House.

This section summarizes the history of early French settlement in Ste. Genevieve in relation to the Bauvais family migration from Kaskaskia, the households of Jean-Baptiste, fils, and his brother Vital, and Jean-Baptiste, fils,'s construction of his unusual-at-the-time poteaux-en-terre house in c. 1792 following regional vernacular traditions. The developmental history follows the family of Jean-Baptiste, fils, through their ultimate sale of the property in 1852 to Benjamin Amoureux and his wife Pelagie Vital, a formerly enslaved woman of color who represents an important shift in the cultural perspective of the House. For the next seventy years, successive generations of the mixed-race Amoureux family shepherd the House into the twentieth century when it is finally sold outside the family in 1923. This period of c. 1792 through 1923 represents the Period of Significance for the House, owing to the influence of the Bauvais and Amoureux families, the national architectural significance of the original structure, and the major alterations that occurred through c. 1900.

CONDITION ASSESSMENT SUMMARY

Part 1: Developmental History, "Condition Assessments" provides a detailed summary of observed construction, maintenance concerns, and existing conditions as of the time of the physical investigation field work in November 2020. This section is tabularly organized into a building feature master list that includes the site and landscape, exterior enclosure, interior finishes, structural systems, and building service, mechanical, and control systems.

In general, the House was found to have a high level of integrity, as defined by the criteria outlined in National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation. However, a number of maintenance conditions were identified as well as areas of significant structural distress due to deterioration and insect damage of the timber framing. Overall, the House could be considered to be in "Fair" to "Poor" condition due to the structural distress. Additional information regarding structural and envelope conditions and treatment recommendations can also be found in the companion report to this historic structure report, the Abbreviated Structural and Building Envelope Assessment Report, prepared in 2021 by the same team. A "Summary Condition Assessment Table" is also provided that identifies the condition rating (on a qualitative scale of Good to Failed), the deficiency rating (on a qualitative scale of None to Critical), and the repair priority (on a qualitative scale of Low to High).

RECOMMENDATIONS FOR ULTIMATE TREATMENT AND USE

The ultimate use for the Bauvais-Amoureux House as part of the Ste. Genevieve National Historical Park has been identified as a year-round interpretive space in which the programming should remain flexible to accommodate future park planning. Stabilization and preservation of the structure has been identified as a key priority, along with sensitive measures to ensure the House is universally accessible for public enjoyment and conditioned for public comfort.

Part 2: Treatment and Use provides a detailed summary of the preferred treatment approach as identified through the participatory workshop with NPS staff and community stakeholders held on June 3, 2021. Recommendations are provided for site and landscape features, accessible entry and pathways through the interior, envelope repairs, structural stabilization, and introduction of new building systems (HVAC, electrical, and fire suppression). The ultimate goal of the preferred treatment approach is to ensure that the House is structurally sound with a weather-resistant enclosure and that modern interventions facilitate the stabilization, enjoyment, and continued use of the House. This goal can be met while protecting and preserving the character defining features that comprise the national significance of the House as an extremely rare form of French Colonial vernacular building technology.

This historic structure report is one document within the Ste. Genevieve National Historical Park planning portfolio, a collection of documents that guides decision making for the historic resources within the park. As part of the planning portfolio, the historic structure report does not represent the final determination of the ultimate treatment or use, but provides recommendations based on the best information available at the time of research and investigation.

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Mike "Skip" Weiler for his dedication to the family history and the Foundation for Restoration of Ste. Genevieve

The City and County of Ste. Genevieve for their stewardship and preservation of important historical documents that help to tell this story.

Ste. Genevieve Catholic Parish for their retention and preservation of important documents that represent people who were not represented in other legal historical records through baptism and marriage.

Additional Research Requirements

This historic structure report represents our understanding of the social history, changes over time, condition assessment, and integrity of the Bauvais-Amoureux House at the time of the report's preparation. While we have endeavored to be thorough in our research and documentation, there are necessarily additional subjects for study, analysis, and testing that can be performed to better inform future documents, treatment, and interpretation of the property in support of Ste. Genevieve National Historical Park.

The following are recommendations for areas of additional study:

HISTORICAL RESEARCH

Review, transcription, and translation of the earliest Ste. Genevieve historical documents which are in French; research for this report relied heavily on translated excerpts, summaries, and indexes previously prepared by others. These documents are primarily located in the following collections, but other collections not noted below may also have significant holdings:

- Ste. Genevieve County Court (original documents)
- State Historical Society of Missouri, Ste. Genevieve Archives, 1756-1930 (microfilm)

Further research into primary and secondary sources related to the founding and development of Ste. Genevieve and the early records of documentation of the town's vertical log structures. Potential collections for further study:

- Charles E. Peterson papers, in the collection of NPS, recently relocated to Ste. Genevieve National Historical Park.
- University of Missouri, Western Historical Manuscripts Collection
- State Historical Society of Missouri, Ste. Genevieve Archives 1756-1930 (microfilm)
- Missouri Historical Society/Missouri History Museum and Library

MATERIALS SAMPLING AND TESTING

In consideration of the preferred treatment approaches and ultimate use, the interpretive goals for the structure have not yet been determined and are pending direction from the Long-Range Interpretive Plan and other park planning efforts. Conceptual treatments provided in this document should be further supported by a thorough review and study of each material and component in order to properly date the periods of construction that exist. The sampling and testing recommended below will inform future restoration and rehabilitation treatment and also assist with interpretive planning:

- Mortar and bousillage analysis (in progress in 2021 by NPS National Center for Preservation Technology and Training (NCPTT)).
- Geotechnical analysis for site soil conditions.

- Finishes analysis to better understand changes over time for the interior plan and to narrow potential dates for existing finishes and partition walls.
- Additional dendrochronological dating, particularly for galerie framing members in an effort to narrow the potential construction date for the galeries which lack documentation in the historical record.
- Lumber and nails analysis to better understand changes over time, particularly for the west elevation modifications which also lack documentation in the historical record.
- Remove exterior siding to observe the top plate at the east elevation for evidence of any galerie framing on the east, potentially to be performed with future siding repairs or replacement.

SURVEY, ASSESSMENT, ANALYSIS

A number of studies to support the ultimate use and interpretation of the House are in progress and others are recommended:

- Developmental Concept Plan to guide property acquisition and use and Foundation Document (in progress).
- Long Range Interpretive Plan.
- Cultural Landscape Report and Cultural Landscape Inventory.
- Archeological Overview and Assessment (planning for the archeological work was initiated by MWAC in 2021 and is scheduled to take place in 2022).
- 2001 unfinished updates to NHL nomination for Ste. Genevieve.
- Risk assessment for seismic events, seismic analysis, and stabilization.
- Risk assessment for future flooding and impact of Mississippi River levee deferred maintenance.

OTHER CONSIDERATIONS

- Public input regarding family name spelling and the final name of the property.
- Historical study into the roles of people of color, both freed and enslaved, through the history of Ste. Genevieve.

Related Studies and Drawings

Related drawing sets, studies and reports provided by NPS were reviewed as part of the preparation of this report. Full citations for these documents are found in the appendix to this report. These documents included:

1936, 1986	HABS Photographs
1956	HABS Measured Drawings
1959, 1970	Ste. Genevieve, National Survey of Historic Sites and Buildings
1986	Tree Ring Dating of French Colonial Vertical Log Houses in St. Genevieve, MO
1994	Measured and Conceptual Drawings
1996	A Preliminary Report on Excavations at the St. Gemme Beauvais/Amoureux House, Ste. Genevieve, Missouri
2001	Ste. Genevieve Historic District, National Register of Historic Places Registration Form
2005	Documents related to hazardous materials clean up of the attic space
2007	Cedar Shingles and Siding Replacement Drawings
2011	New Electrical Work Drawings
2016	Ste. Genevieve Special Resource Study
2016-18	Documents related to the proposed National Historical Park
2019	Quit claim deed conveying the Bauvais-Amoureux House to NPS
2019	Ste. Genevieve Boundary Adjustment Public Law No 116
2020	Forsyth Engineering Structural Analysis
2021	Property acquisitions information
2021	Archeological Overview and Assessment of Ste. Genevieve National Historical Park

Glossary[1]

Arpent (French) A French measurement of land area, roughly equivalent to an English acre; also a unit of measure of distance (approximately 192 English feet).

Bousillage (French) A mixture composed of mud or clay with straw, or hair, for infill between posts in the construction of vertical log buildings.

Caveau (French) A crawl space or cellar.

Collar Tie The horizontal member of a Norman truss, located at the approximate midpoint of the diagonal top chord members.

Colombage (French) Half-timbered construction.

En filade (French) An interior layout that is a single room wide with successive rooms being interconnected, often with aligned doorways.

Galerie (French) Gallery or veranda; a porch extending the full length of either one, two or four sides of a building.

Grenier (French) Attic; the loft of a house.

Habitant(s) (French) French settlers, especially those of French-Canadian descent used to denote a person engaged in agriculture.

King Post The central vertical member of the Norman truss which connects the diagonal top chord members to the collar tie.

Liteaux (French) Small battens or straps onto which roofing thatch or shingles were attached.

Nogging Brick masonry infill between wood framing members.

Norman Truss A French vernacular variation on the "king post truss," characterized by a steep pitch, through purlins, and the elevated position of the collar beam.

Rafter A diagonal roof framing member: "primary rafters" are those of the main roof structure, and "secondary rafters" are those of the galerie roof structures.

Pierrotage (French) Infill of stone and clay daub or lime mortar; packed between the posts of a heavy timber frame.

Poteau(x) (French (pl.)) Timber post or vertical log member.

Poteaux-en-terre (French) "Posts in the ground"; a construction type where the vertical logs are set into the ground.

Poteaux-sur-sole (French) "Posts on a sill"; a construction type where the vertical logs sit on a horizontal sill plate, and the foundation is typically constructed of stone masonry.

Purlin A longitudinal, horizontal member of the roof framing that provides midspan support for the rafters; "through-purlins" pass over the top of the truss diagonal top chords.

Ridge Beam A longitudinal, horizontal member at the apex of the roof framing which supports the top ends of the rafters.

Ridge Brace Truss A longitudinal flat truss at the apex of the roof which provides support between the Norman trusses; the ridge beam forms the top chord of this truss.

Top Chord The diagonal members of the Norman truss that form the distinctive "A-frame" shape, with the crossbar formed by the collar tie.

Top Plate A horizontal wood member that bears on the tops of the vertical log walls.

Trenail A tapered wood pin used in traditional heavy timber construction.

1 Terms referencing French vernacular construction are adapted in part from the glossary provided by Jack Richard Luer and Jesse W. Frances in *Vanishing French Heritage: A Complete Study of the Vertical Log Homes of the Illinois Country*,

A Note on Dates

The dates as presented in this historic structure report are drawn from the information available at the time of writing. In a few cases, the dates are supported by direct historical documentation, but in the majority of cases, the dates proposed are based on the project team's best determination based on factors such as physical evidence, circumstantial documentation, research by others, professional experience, or those dates adopted by general consensus. Further research, investigation, and analysis may refine or refute the dates proposed herein.

No notation Direct attribution of the date or date range given is supported by historical documentation or physical evidence; ex: 1937 or 1852–1923.

Circa (c.) Attribution to within one or two years of the date or date range given is supported by historical documentation or physical evidence, but the precise dates are not known; ex. c. 1792 or c. 1852 – c. 1856.

Dash (–) Indicates that the range given is inclusive of the years between the start and end dates, such as an ongoing event or period of ownership, ex: 1923–1963.

Slash (/) Indicates that two or more specific dates are referenced without being inclusive of the years between; ex: c.1792/c.1852 or 1940/1986.

Decade Span Indicates a ten-year span, but the date or date range given are approximate and may be refuted by further study; ex: 1920s or 1880s – 1900s.

A Note on Resources in this Report

As part of the research into developing the historical background and context, the historic structure report consulted and/or researched collections at the following:

- Mercantile Library at St. Louis University-Ernst Connelly Collection
- Ste. Genevieve Archive in the Missouri State Historical Society
- Ste. Genevieve County Courthouse
- Felix Valle House State Historic Site
- National Park Service Site files
- Various Family Records and collections

A Note on Names as used in this Report

As part of the research into the historical documentation and in consultation with living members of the Bauvais and Amoureux families, this historic structure report has employed the recommended spelling of the family names throughout this document. Additional information is included below in "It's in the Name."

IT'S IN THE NAME

A special challenge in this document is to identify the correct or appropriate spelling of family names. Both Bauvais and Amoureux have multiple spellings in the historic record. Family documents and interviews with family members and local historians have revealed more than one preference for the most appropriate spelling of each name. When the Bauvais family came from France their name was spelled BEAUVAIS. However, early Ste. Genevieve documents show the name spelled BAUVAIS by the family. The below 1785 birth record of Vital and Felicite Bauvais's third daughter shows the following spellings:

Vitale Bauvais — *in his own hand*

Felicite Bauvay

Louis Beauvai

Felicite Beauvais — *in text*

The name has been anglicized, truncated and changed throughout history. There are Bovas that retain a phonetic spelling of the name. Family history notes that a school teacher registered a Bauvais child for the term and simply spelled the name how it literally sounded. The Bova family are direct descendants with long ties both present and past to the community. The St. James surname is a derivative of St. Gemme and stems from J. Felix St. James, who was the son of Augstine St. Gemme and the grandson of J.B. Bauvais, and changed his name to run for political office prior to the Civil War. He died leading troops at the Battle of Shiloh. The St. James are also direct descendants. Modern convention defers mostly to the Beauvais spelling.

Historic documents from the period when the residence was built, clearly show the family spelled the name Bauvais and that spelling was used throughout this document. Additional public input and comment from the family would be valuable in determining the final selection of how to identify this name for future NPS use.

Amoureux has been spelled in a variety of ways as well. Though more consistently spelled as AMOUREUX, varieties include Amoreux and Amoureaux. Felix Joseph's will used the spelling Amoureaux while Felix Henry's 1914 estate probate record spelled the name Ameraux. Benjamin routinely signed his name Amoureux. Amoureux is the spelling used throughout this document.

The documents below support the HSR team's use of the spelling Bauvais-Amoureux House throughout this document. The documents below are provided to illustrate the Bauvais name and signature. They are copies from the Ste. Genevieve Archive at the Missouri Historical Society and the Ste. Genevieve Catholic Church archive.

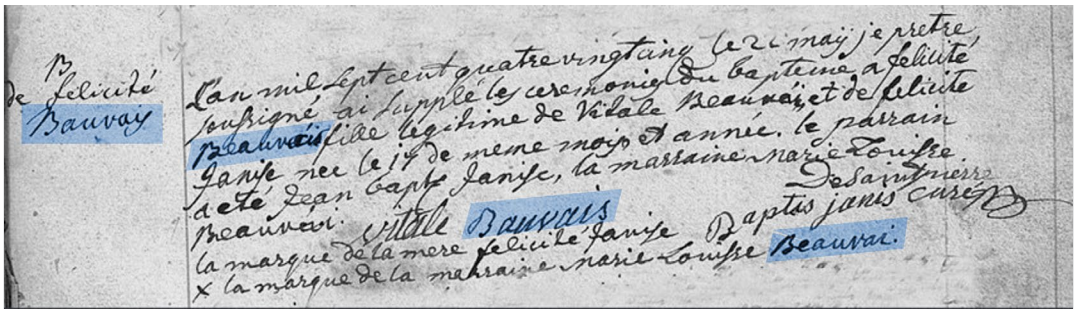


Figure ASD-01. Baptismal record for Felicite Bauvais, third daughter of Vital and Felicite Bauvais, showing the signature of Vitale Bauvais with other spellings for the family name as Bauvay, Beauvais, or Beauvai, from Ste. Genevieve Catholic Church archive.

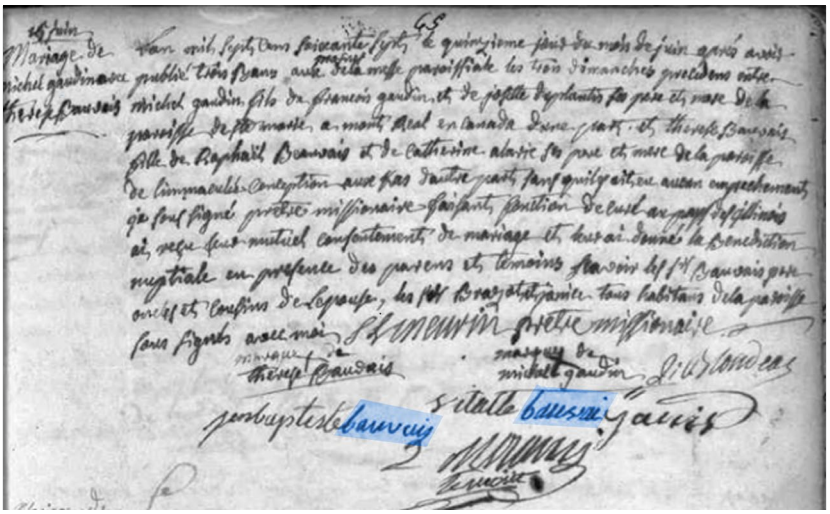


Figure ASD-02. 1767 marriage document from Ste. Genevieve Catholic Church Archive, showing the signatures of Jean Baptiste Bauvay (or Bauvais) and Vitalle Bauvai.

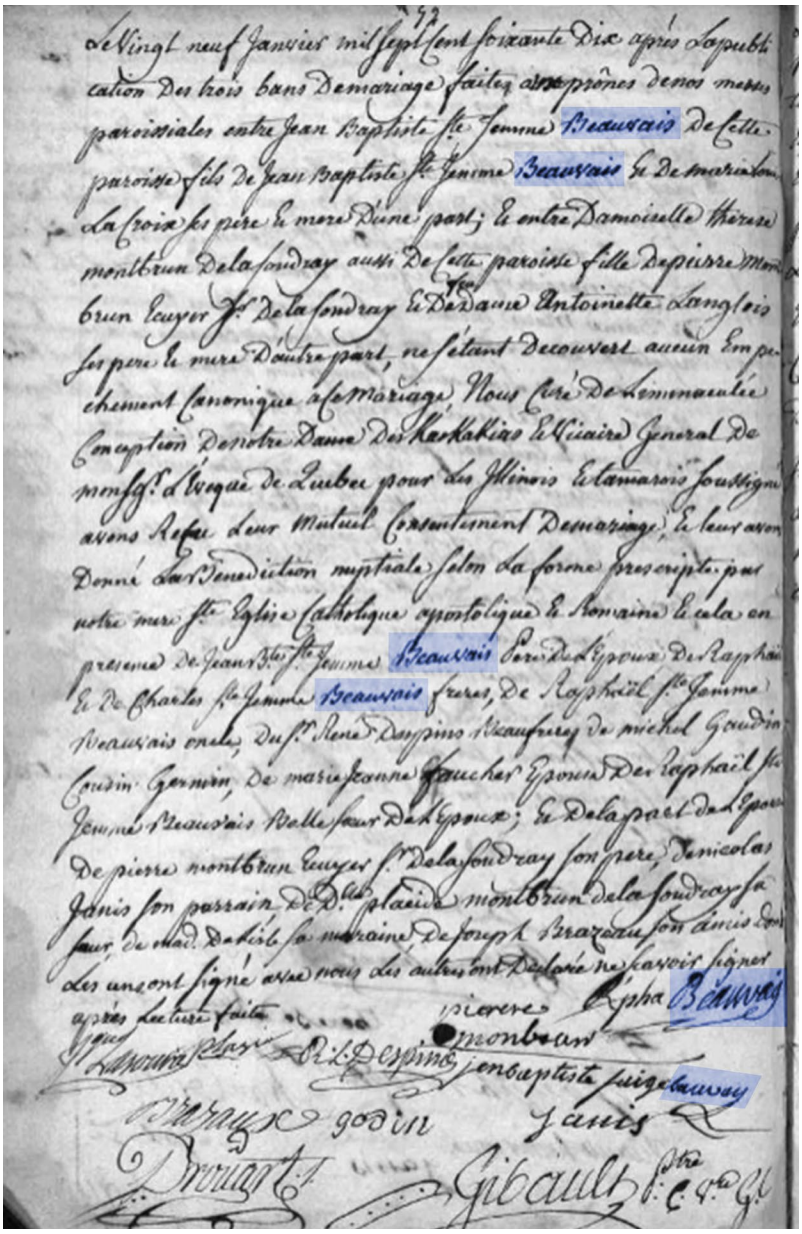


Figure ASD-03. 1770 marriage document from Ste. Genevieve Catholic Church Archive, showing the signatures of R'pha (Raphael) Beauvay (or Beauvais) and Jean Baptiste Bauvay, with Beauvais in the script above.

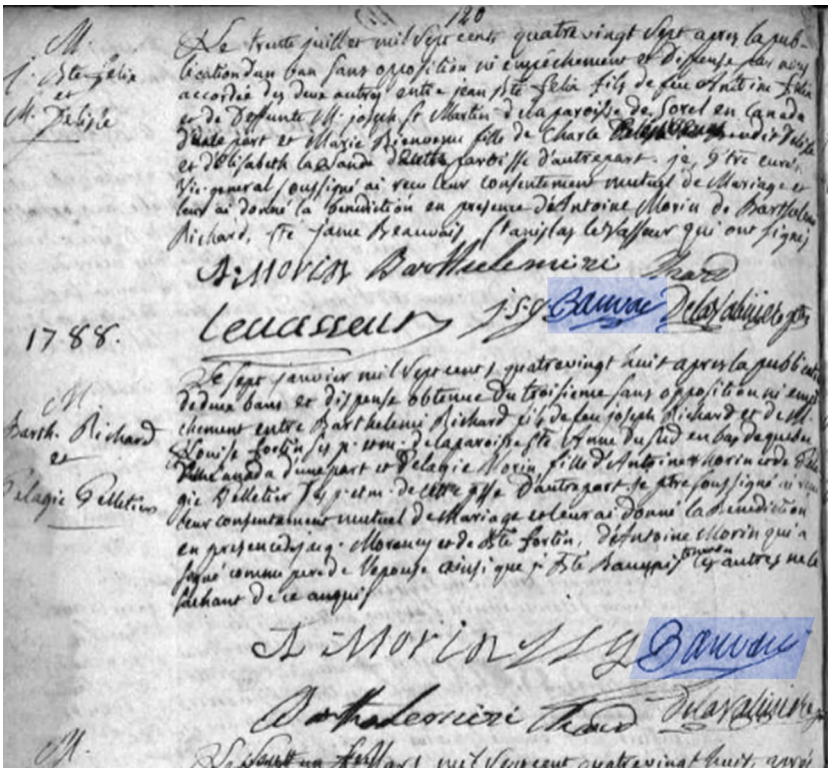


Figure ASD-04. 1778 marriage documents from Ste. Genevieve Catholic Church Archive, showing two of J. S. G. Bauvay's characteristic signature.

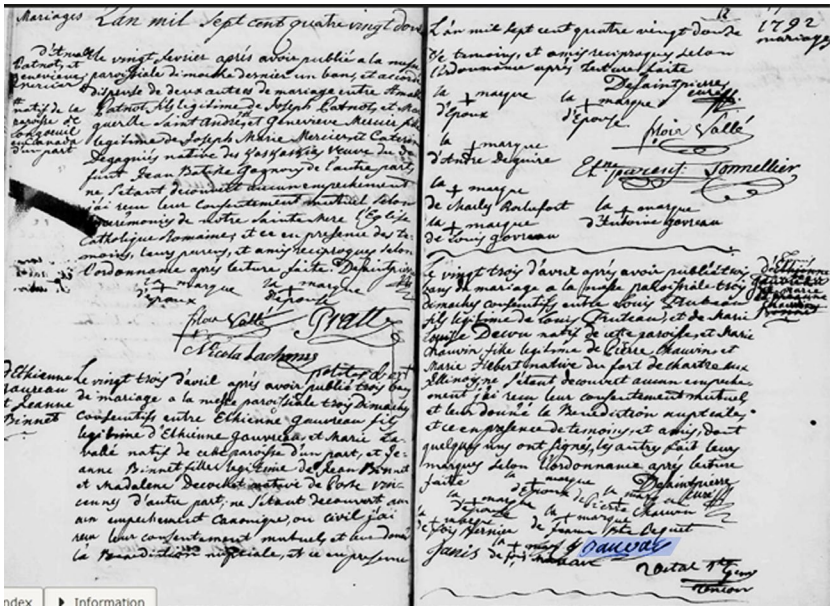


Figure ASD-05. The first signature on 1792 of Jean Baptiste fils in the records after his relocation to Ste. Genevieve. This coincides with the accepted year of construction of the residence. From the Ste. Genevieve Catholic Church Archive.

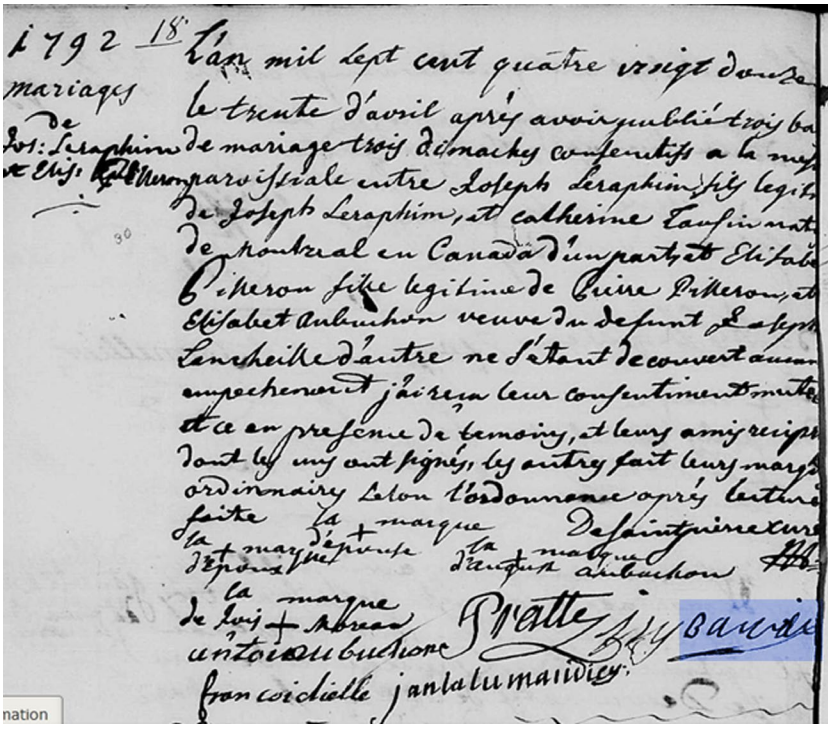


Figure ASD-06. 1792 J. S. G. Bauvay signature in Ste Genevieve marriage records at the Ste. Genevieve Catholic Church Archive.

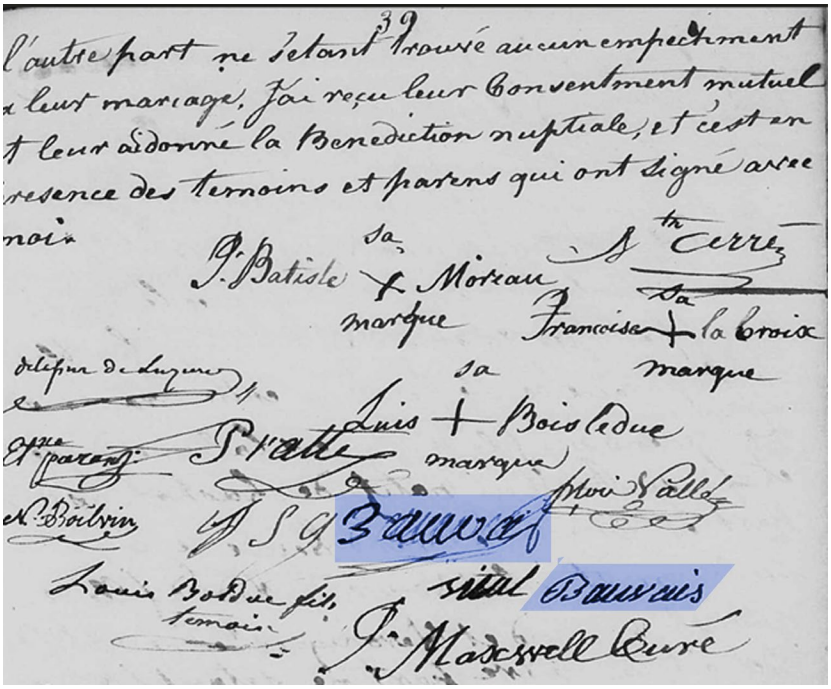


Figure ASD-07. 1797 Ste. Genevieve marriage record signature showing signatures for J.S.G. Bauvay and Vital Bauvais.

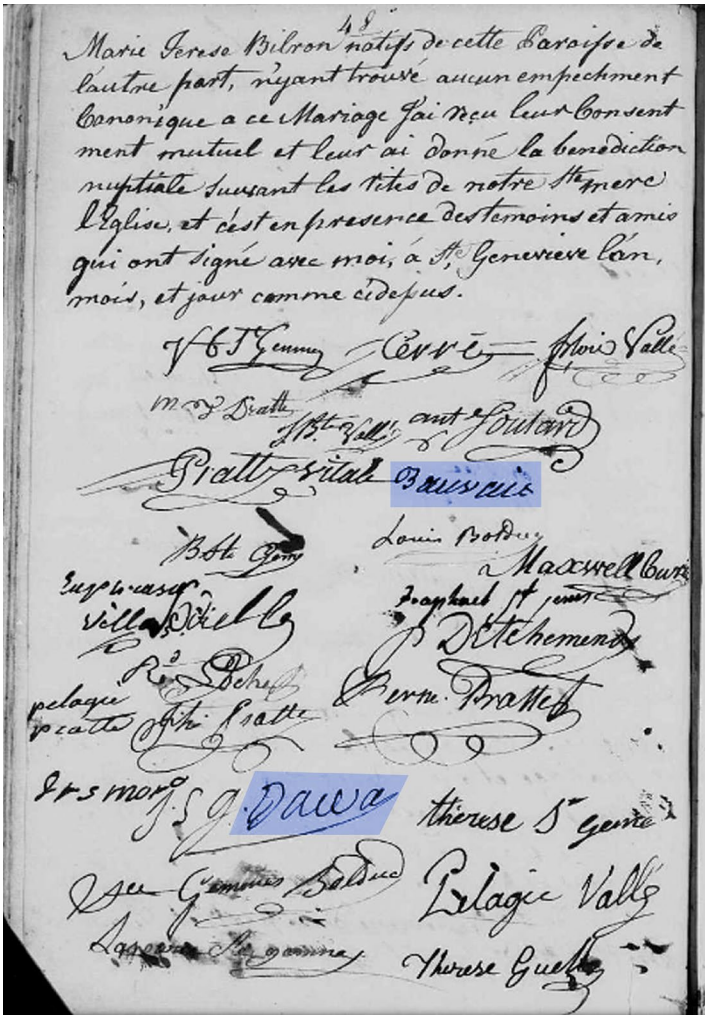


Figure ASD-08. 1798 Ste. Genevieve marriage record for Son Vital's Marriage showing signatures for J.S.G. Bauvay and Vitale Bauvais.

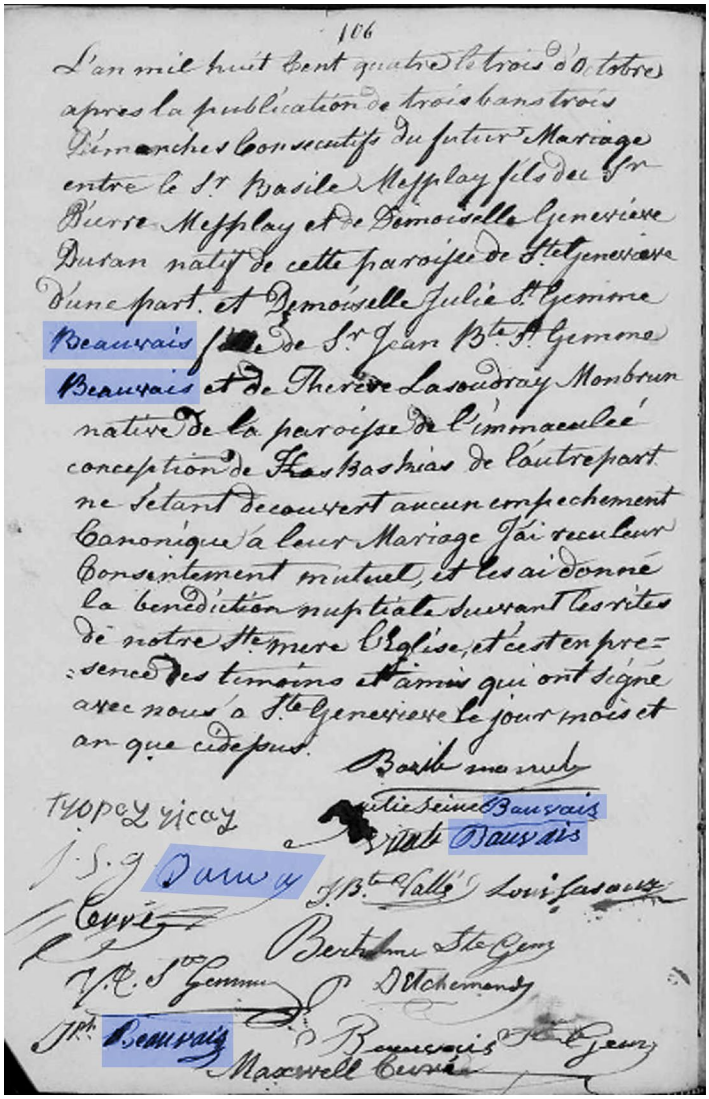


Figure ASD-09. 1804 Ste. Genevieve marriage record for daughter Julie showing signatures for J.S.G. Bauvay, Julie Bauvais, Vitale Bauvais, and Jph. (Joseph) Beauvais, with Beauvais in the script above.

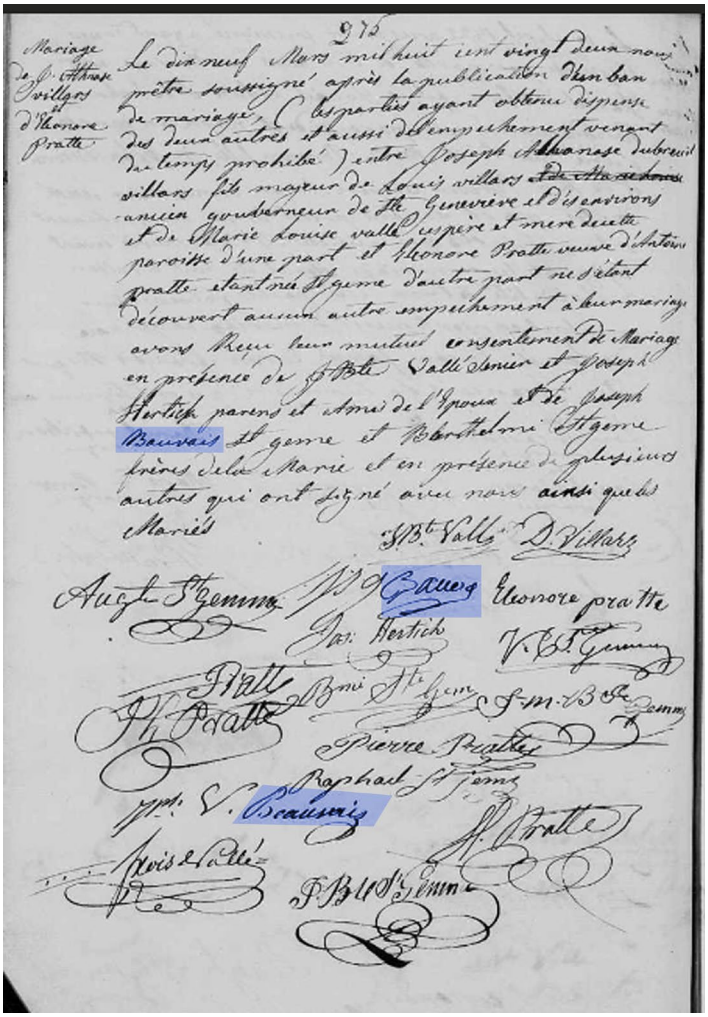


Figure ASD-10. 1822 Ste. Genevieve marriage record signature. First time spelling appears as Beauvais. Other Bauvais family members include J.B. St. Gemme, August St. Gemme, both sons of John Baptiste Ste. Gemme Bauvais. The sons typically signed their name and were routinely referenced in the historical records as August St. Gemme and Raphael St. Gemme.

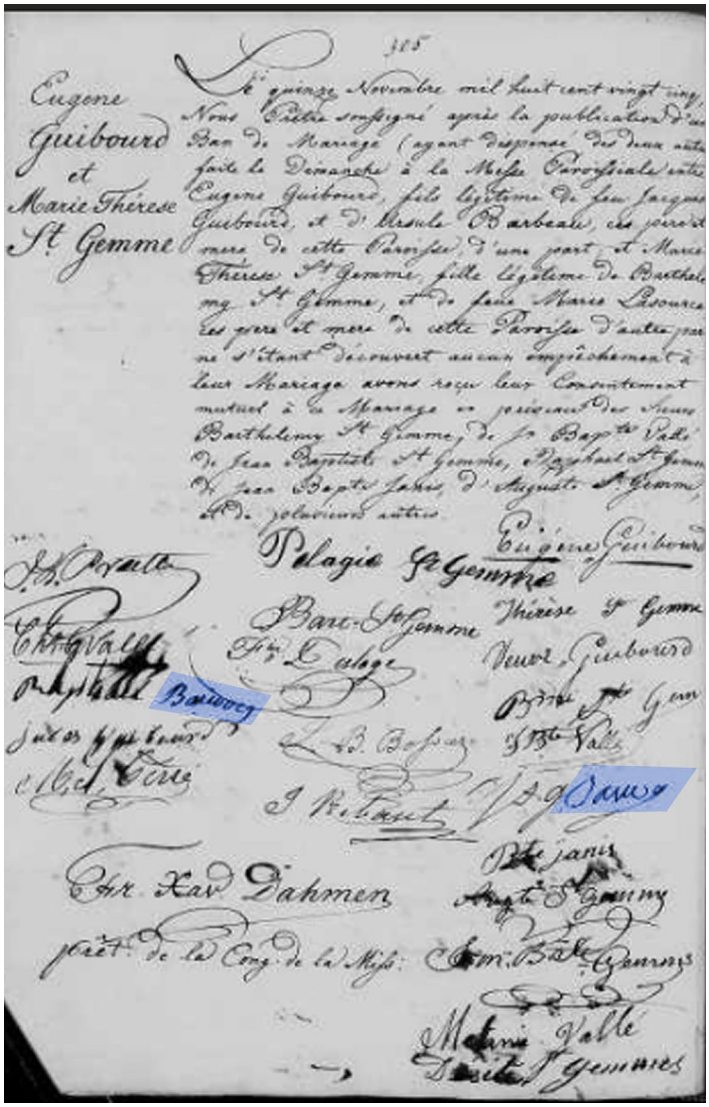


Figure ASD-11. 1825 Ste. Genevieve marriage record signature showing Raphael Bauvais and J.S.G. Bauvay.

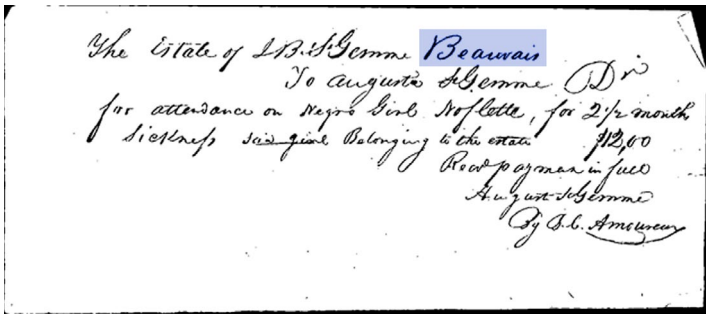


Figure ASD-12. 1833 estate records clearly using Beauvais throughout, and refer to the sons as August St. Gemme and Raphael St. Gemme. Note here that Benjamin Amoureux, future owner and occupant of the residence also signed this document as a clerk. He signed his name B.C. Amoureux.

Part 1: Developmental History

Introduction

DEVELOPMENT OF HISTORY AND EVALUATION OF SIGNIFICANCE

Based on historical documentation and physical evidence gathered during the study, a chronology of construction was developed for the Bauvais-Amoureux House. In cooperation with the NPS, an evaluation of the significance was conducted. This evaluation provided the basis for the recommended treatment alternatives.

DEVELOPMENT OF PRESERVATION OBJECTIVES, REQUIREMENTS FOR TREATMENT AND TREATMENT RECOMMENDATIONS

In cooperation with the NPS, the preservation objectives and requirements for treatment of the Bauvais-Amoureux House were developed. Based on the requirements for treatment, specific work recommendations were developed. Alternatives were also defined where appropriate.

The information gathered through research, condition survey, and review and discussion was compiled into this historic structure report. This report has been compiled following the organizational guidelines of NPS and in accordance with Preservation Brief 43: *The Preparation and Use of Historic Structure Reports*[1] and NPS-28 *Cultural Resource Management Guideline*, Chapter 8: Management of Historic and Prehistoric Structures.

Historical Background and Context

EARLY EUROPEAN SETTLEMENT OF STE. GENEVIEVE

Antecedents of Ste. Genevieve began across the Mississippi River in the Illinois Country. French explorer René-Robert Cavelier, sieur de La Salle, professed a vast proclamation claiming the land for France in 1682. French Canadians, called *habitants*, migrated to Kaskaskia and Cahokia on the east banks of the river when the area was opened for settlement as early as 1699, and a Catholic mission was established.[2] The village of Kaskaskia was founded four years later in 1703, and following that small-scale and subsistence economies, such as lead mining and salt production of the Mississippi River, began as explorers crossed the water. The first land grants west of the Mississippi River occurred in the 1740s, and more permanent European migration across the river was underway. A townsite established by French Creoles was located along the west bank of the Mississippi River, three miles southeast of the present location of Ste. Genevieve. There is no formal documentation of when Ste. Genevieve the city was established, rather it grew gradually. By the early 1750s, the permanent European settlement on the site was identified in the historic record. An early resident of Kaskaskia, Jean-Baptiste Bertlot, *dit* Barrois,[3] performed a survey for Antoine Heneaux in 1751 that included the settlement, and Ste. Genevieve is also shown on a 1755 map prepared by the French cartographer Jacques Nicolas Bellin.[4] The 1752 enumeration of the population of Illinois is another important document establishing early of Ste. Genevieve

1 Deborah Slaton, *Preservation Brief 43: The Preparation and Use of Historic Structure Reports* (Washington, D.C.: National Park Service, Technical Preservation Services, published 2004).

2 The word *habitant* was also used to denote a person engaged in agriculture to distinguish them from other occupations such as *voyageur*, *forgeron*, *journalier*, *marchand*, etc. Information provided by Robert Mueller and referenced from *Relation de la Compagnie de Milice du Poste de Ste Genevieve*, 27 Nov 1779, CUBA 213, Doc. No. 950.

3 From the French "dit" or literally "called," meaning a nickname, alias, or familiar name.

4 Charles E. Peterson. "Early Ste. Genevieve and Its Architecture." (Columbia, MO: *The Missouri Historical Review*, volume XXXV, No. 2. January 1941) 208; Carl J. Ekberg. *Colonial Ste. Genevieve: An Adventure on the Mississippi Frontier*. (Carbondale, Illinois: Southern Illinois University Press, 1996) xxi, 22-29; De Berardinis, Robert. "The 1752 French Census of Illinois." Illinois State Genealogical Quarterly 32, no. 4 (Winter 2000): 195-203.

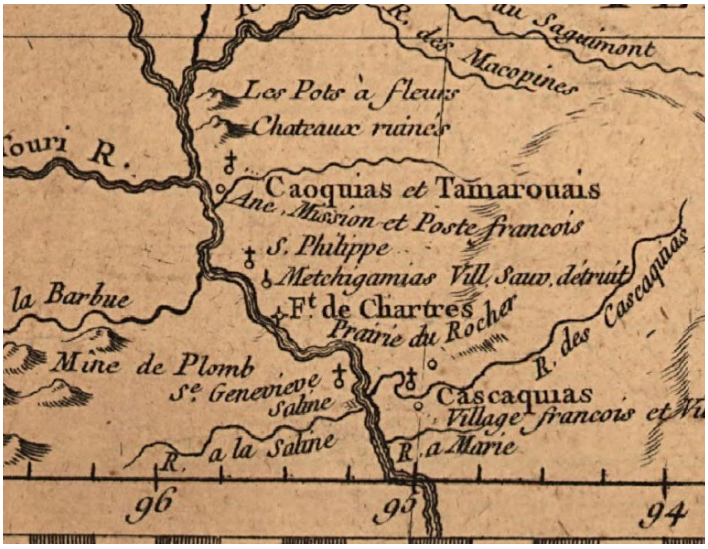


Figure DH-01. The first map illustrating the village of Ste. Genevieve, 1755.(Source: *Partie occidentale de la Nouvelle France ou Canada*, Library of Congress, https://www.loc.gov/resource/g3400.ar077400/)

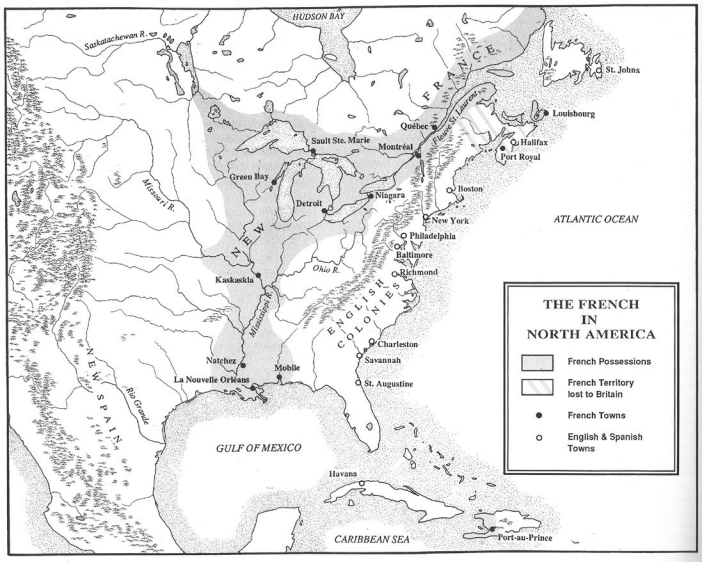


Figure DH-02. Map showing the location of French territory during the eighteenth century. (Source: Luer and Francis, Vanishing French Heritage, 12)

as a small village of 23 people, including 3 likely enslaved persons, on 34 arpents.[5] This area was also known as the Illinois Country, after the confederation of local American Indian communities, and supported about 2,000 French Creole, as opposed to the whole of Louisiana whose population was estimated at 7,000. Most settlements were largely agrarian with small clusters of families, typically from Canada, settled to take advantage of the rich and fertile soil of the Mississippi River valley. Forts and outposts were populated with transient traders, soldiers, missionaries, people of African descent, and American Indians.[6]

A map prepared in 1755 indicates the location of the first village site.

France ceded the territory in 1763, and over a series of years, Spain took control over its new lands west of the Mississippi River, eventually consolidating control of the area in 1769 under Alejandro O'Reilly, the second Spanish governor of the Louisiana Territory. England dominated the lands east of the river. People continued to move from Kaskaskia and Cahokia to Spanish- controlled Ste. Genevieve, and in 1766, a Spanish census was conducted in upper Louisiana. It recorded a population that included 319 free people and 228 enslaved people in the territory, with American Indians accounting for 29 of the enslaved population.[7] Many of the agricultural pursuits in the Illinois Country required large tracts of land and succeeded because of the labor of enslaved people. In Ste. Genevieve, the habitants mostly worked smaller plots of land in long lots located in *le Grand Champ* or the "big field." Wealthier families cultivated several lots that required more labor, and some families would work the lots along with the enslaved people they owned.[8] Slavery was common in Ste. Genevieve with enslaved people often making up 30% to 40% of the community's population.

The first townsite was in the lowlands and routinely suf-

5 De Berardinis, Robert. "The 1752 French Census of Illinois." Illinois State Genealogical Quarterly 32, no. 4 (Winter 2000): 195-203.

6 National Park Service, "French Exploration and Settlement: The National Survey of Historic Sites and Buildings," revised 1960, 24.; Louis Houck. A history of Missouri. (Chicago, IL: R.R. Donnelley and Sons Company, 1908), 245-250.

7 National Park Service. "Ste. Genevieve Final Special Resource Study and Environmental Assessment." 4.

8 Carl J. Ekberg. Colonial Ste. Genevieve, An Adventure on the Mississippi Frontier. (Southern Illinois University Press, Carbondale, Illinois. 1996) 201.

fered from flooding. The river had been a significant threat for several years, and a major river flood in 1785 caused serious damage. This year had been referred to as *"l'Année des grandes eaux"* or year of the great waters. Contemporary reports document that,

> *"the waters have risen so greatly from their source that they have entirely submerged the village of Santa Genoveva. All its inhabitants having been obliged to retire with great haste to the mountains...they abandoned their houses which were inundated and their furniture and other possessions which they had in them. Although the waters have now fallen, those inhabitants remain along the said coast without yet knowing the place where they can settle."* [9]

Consideration to remove Ste. Genevieve to higher and safer ground had been underway, and eventually a new townsite was located by the North and South Gabouri Creeks. The new townsite was formed around a grid pattern, and resources were moved over the course of several years. By 1787, the inhabitants of the new town petitioned to have their lots in the Common Field subdivided. The church did not relocate to the new townsite until 1794, when it was physically moved from the old townsite. A report by Zenon Trudeau, Lieutenant-Governor of Upper Louisiana from 1792 to 1799, stated that the residents were "warned by so many reiterated occasions, they determined at length to seek a position where they might place the houses under shelter." It is here where several of the surviving vertical log structures were constructed by the prominent French Creole[10] families that migrated across the river.[11]

These early settlers built a typical dwelling that was unlike the log cabins seen in most of American westward expansion, made of interlocking horizontal logs. Their settlements were populated largely with timber buildings constructed of vertical logs set either directly in the earth (poteaux-

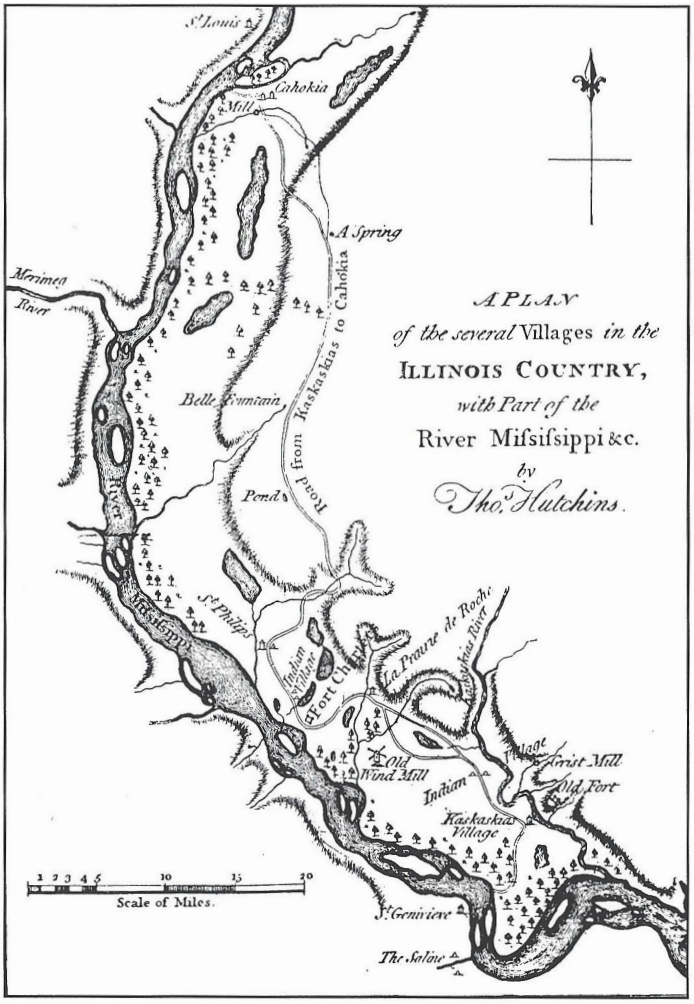


Figure DH-03. 1785 map of villages along the Mississippi River in Illinois Country, including Ste. Genevieve. (Source: Dave Rumsey Map Collection, https://www.davidrumsey.com/maps5570.html)

9 Report of Governor Estevan Miro to Conde de Galvez. (Seville, AGI-papers from the island of Cuba, No.209) July 10, 1785. Earnst Connelly Collection, Mercantile Library, Box 2, History of Ste Genevieve Genevieve File.

10 Creole was the French term for any French, Spanish, African American, or mixed habitant that was notably born in North American.

11 Bonnie Stepenoff. From *French Community to Missouri Town: Ste. Geneviève in the Nineteenth Century* (Columbia, Missouri: University of Missouri Press, 2006) 16-18.; Peterson. *Early Ste. Geneviève*, 212.; Rozier. *History of the Early settlement of the Mississippi Valley*, 16.; Ernst Connelly Papers, Copy of a Report of Zenon Trudeau, January 15, 1798 concerning settlements of the Spanish Illinois Country, Mercantile Library, Box 2 Folder History of Ste. Genevieve ."

en-terre) or resting on a stone foundation or wood sill (poteaux-sur-sole). A galerie often surrounded the house to extend the sheltered exterior living and working space. Early steeply-pitched hipped roofs may have been thatched, and broken-pitch roofs with a steep upper pitch and shallower roofs over the galeries had a shallower-pitch that were likely wood shingles. Some early examples had thatched roofs as opposed to wood shingle roofs.[12] The broken-pitch roof as a building form was brought up the Mississippi River from Lower Louisiana building traditions:

> *Scattered around the country however are several French villages as they are called. The inhabitants of these are all French and the French language is the only one spoke. They who are industrious cultivate a little land in small vegetables. The others live miserably by hunting and fishing, their houses are generally one story high and have curiously peaked roofs, with perhaps a little piazza in front overrun with evergreens, under that are congregated parrots, canary birds, cats, and lapdogs in the great harmony the greatest simplicity of manners prevails among them.*[13]

Habitants farmed plots within the Common Field (le Grand Champ) where long lots that extended from the river were divided among the residents. The larger Common Field was fenced to protect crops from wandering livestock. Henry Marie Brackenridge, an American writer and judge who spent time in Ste. Genevieve around 1793 at the age of seven, described the setting of Ste. Genevieve in his 1834 account as follows:

> *One fence encloses the whole village field, and this is kept up at the common expense. The river side is left open, the steepness of the bank rendering any enclosure unnecessary. The field is divided into a number of small lots, of an equal size; a certain number of arpents in front, and a certain number in depth. The more wealthy possess and cultivate several of these lots, while some of the poorer class do not own one entire...Their agricultural labors commence in the month of April when the inhabitants with their slaves are seen going and returning each morning and evening, for eight or ten days with their ploughs, carts, horses., etc.*[14]



Figure DH-04. 1826 drawing of French residence, after a 1796 map illustration by Georges Collot. (Source: John Carter Brown Archive of Early American Images, https://jcb.lunaimaging.com/luna/servlet/detail/JCB~1~1~189~115900641:French-Habitation-in-the-Country-of . The 1796 original is in the collection of the Bibliotheque Nationale de France, https://gallica.bnf.fr/ark:/12148/btv1b55013299j#.)

The new townsite was laid out roughly in a grid with blocks 350 by 400 feet. Each block was divided into four parts identified as one arpent square. Several more affluent habitants owned an entire block. Each building site was termed an *emplacement* or *terrain*, with arable lots designated as *terres*[15], and all were surrounded by wood or log fences. The built environment retained its predominantly French influence even though the territory shifted from administration by the French to Spanish control in 1762.

12 National Park Service. "French Exploration and Settlement." 26.

13 "St. Louis & French Villages in 1836" Extract from the Journal of George A. Bicknell prepared by Esther U. McNitt, Indiana State Library, Indianapolis for Charles E. Peterson, May 12, 1939. Ernst Connelly Collection. Box 2, Folder Ste Genevieve History.

14 Brackenridge. *Views of Louisiana*, 127.

15 Eckberg, *Colonial Ste. Genevieve*, 44.

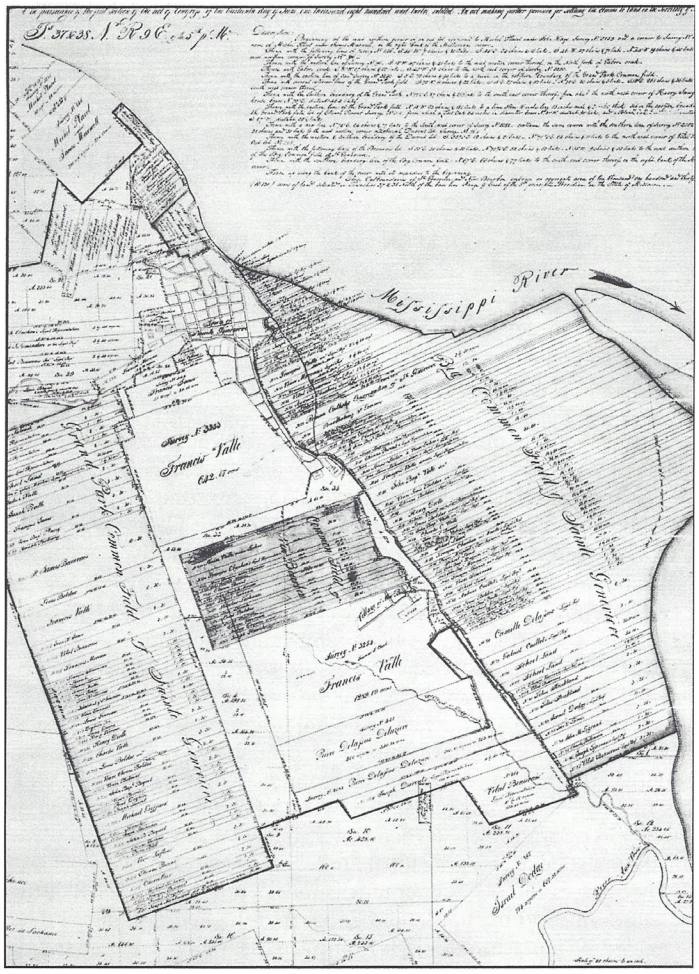


Figure DH-05. Drawing of land ownership within Ste. Genevieve including the long narrow strips associated with the Big Field (Source: Luer and Francis, Vanishing French Heritage, 26, from Ste. Genevieve Museum)

THE BAUVAIS AND AMOUREUX FAMILIES IN STE. GENEVIEVE

BAUVAIS FAMILY

Ste. Genevieve was defined and influenced by a handful of prominent and wealthy families who mostly came from the Illinois Country via French Canada. André Deguire, dit Larose, was considered the first settler in Ste. Genevieve, and indeed Larose is listed in the 1752 census as the principal citizen of the place. The document identifies Larose, his wife, five children, and "one negro" along with a variety of livestock, arms, and land.[16] Among the prominent French Creole that migrated across the river were the Valle, Deguire, Aubuchon, Carpentier, Bolduc, Lachance, and Bauvais families. The 1752 census also identified "J.B. Beauvay" as a resident with one female enslaved person, a small holding of cattle, and one gun.[17] The Bauvais Family can trace their North American roots to 1652 when Jacques Bauvais *dit* St. Gemme, and Jeanne Solde immigrated to Canada from France. Eight descendants, all first cousins of Jacques and Jeanne, arrived in Kaskaskia in the early 1720s. One of these was Jean Baptiste St. Gemme Bauvais, père (father), who was born in Montreal in 1698. Among his ten children with wife Marie Louise Lacroix was Jean Baptiste Bauvais, fils (son), who was born in 1746 in Kaskaskia. Jean Baptiste, fils, began his own family in Kaskaskia before settling permanently in Ste. Genevieve between 1789 and 1791, when he moved with his family and slaves and contributed to several business ventures with his brother Vital. It is estimated that between the brothers, they brought more than 50 enslaved people.[18]

16 "Village Ste. Junnevieve 1752" Census record translation. Transcription accessed at https://s1.sos.mo.gov/records/archives/census/pages/territorial. Note: The transcription identifies J.B. Beauvay as owning one female enslaved person; this is incorrect. The original document identifies one *volontaire* (likely a white laborer) and no enslaved persons as part of the J.B. Beauvay household.

17 Ibid.

18 Ste. Genevieve Archives-State Historical Society of Missouri, file 117. Jean Baptiste, père , estate inventory from 1773 along with baptismal records of his children and grandchildren are in the file which help to date when the sons migrated to Ste. Genevieve. Jean Baptiste, fils,'s son J. B. Bauvais III was born in Kaskaskia in 1789 from his baptismal record from the Church of the Immaculate Conception in Kaskaskia, so on May 8, Jean Baptiste, fils, is still in Kaskaskia. Their next child, Auguste Bauvais was born in 1791 in Ste. Genevieve according to his baptismal record.; Bauvais Family history and genealogical record, three ring binder provided by the family.

The Bauvaises were among the wealthiest merchants in Kaskaskia and owned property on both sides of the Mississippi River. They were among the leading citizens of both Kaskaskia and Ste. Genevieve.[19]

Jean Baptiste, fils, built a family residence in the traditional French Creole style of poteaux-en-terre (post in the ground or vertical logs in the ground) c. 1792 in Ste. Genevieve, just south of the main village and across from the Common Field.[20] He listed the property as his primary residence and the center from which he operated several business ventures with his younger brother Vital, including the production of salt at La Saline, lead mining, and agriculture. The residence was built without a masonry foundation; the vertical eastern red cedar logs were placed directly into the ground approximately three feet deep, forming both the foundation and the exterior walls. It measured 69 by 28 feet in plan and had three interior rooms (a large salle or all-purpose living/sleeping room), a central hall (or trading room), and quisine (kitchen). There were two chimneys. Physical evidence indicates that the original roof was hipped and thatch. This building type has its ancestry in Normandy, France, then Quebec, Canada, and typically had steeply-pitched hipped roofs and followed the *en filade* or linear interior plan. The roof was likely thatched and supported by heavy timber Norman trusses. The simple rectangular plan was built with two fireplaces and no galeries. Poteaux-en-terre walls were filled with bouisillage or pierrotage between the vertical members.[21] The House as originally constructed has undergone several major eras of significant alteration.[22] Though not much information is known about the setting of the original residence or surrounding buildings, information from an estate inventory in



Figure DH-06. Conjectural rendering of the Bauvais-Amoureux House following construction. (Source: Luer and Francis, Vanishing French Heritage, 81).

1811 illustrates that Jean Baptiste, fils, retained the "house in which he lives, with his moiety of the lot on which there are a negro cabin and several fruit trees." The lot was divided by a line running through the middle from the street and going directly towards the hills to the west. A garden and an old barn are also noted. The property was valued at $750.[23]

A flood event that occurred during late 1811 may have impacted Ste. Genevieve, as well as the New Madrid earthquakes and aftershocks that occurred in December 1811 through February 1812. The earthquakes were felt strongly through much of the central and eastern U.S. and are considered to have been the most powerful east of the Rocky Mountains in recorded history. The Mississippi River is said to have acted like a tsunami, flowing deeply in one

19 Jack Luer and Jesse Francis. *Vanishing French Heritage: A Complete Study of the Vertical Log Homes of the Illinois Country*. (Cape Girardeau, MO: The Kellerman Foundation for Historic Preservation, 2014) 82.

20 Richard Guyette. "Tree Ring Dating of French Colonial Vertical Log Houses in St. Genevieve, Missouri." University of Missouri – Columbia (1986 [n.d.]). Dendrochronology data developed on the residence supports the estimated construction date of c. 1792.

21 Luer and Francis. *Vanishing French Heritage*, 46-50. Bousillage was a mixture of clay or mud and straw that was supported by thin strips of wood on a diagonal between the wall logs while pierrotage consisted of flat stone pieces evenly spaced between logs to support a surface mixture of clay or lime and sand.

22 An illustrated timeline of the property provides conceptual renderings of the residence through its different building eras.

23 Estate Inventory, John B. St. Gemme Beauvais, Book D Page 26, Ste Genevieve County Courthouse, Probate Records.



Figure DH-07. 1825 Map of Ste. Genevieve (Source: State Historical Society of Missouri)

direction and then backwards for a time.[24] Although the earthquakes caused severe damage in other communities, Ste. Genevieve survived with little damage.[25]

Some inferences may be made regarding the configuration of the residence based on contemporary documents that described other properties in Ste. Genevieve. Henry Brackenridge provided an excellent description of the Bauvais residence (likely the home of Vital, Jean Baptiste's brother) in his *Recollections of Persons and Places in the West*. Brackenridge published his collection of essays and journal entries from his travels in the Illinois Country in 1810-1811. He described the Bauvais's House as a long, low building with galeries in both the front and back and a central chimney that divided the House into two parts. One part served as the dining room, parlor, and principal bedroom, while the other served as the kitchen. Each side had small rooms at the ends for storage or small private chambers. He described their furniture as common with a rough table and coarse chairs. The yard was enclosed with a fence as were many lots in the town, based on descriptions from early estate inventories and deeds.[26] The fence was constructed of eight-to-ten-inch diameter cedar pickets about seven feet high with a sharpened point at the top resembling a stockade. The front yard was narrow, but the spacious back yard contained the barn, stables, "negro quarters," and other farmyard necessities. A large garden with a variety of vegetables and flowers was also enclosed with pickets. A small orchard was next to the garden. The exterior of the House was whitewashed.[27] The 1811 inventory from the Jean Baptiste, fils, house lists many of the same features described by Brackenridge and some assumptions may be made as to the yard arrangement based on his writings.

An 1825 map illustrates the arrangement of parcels along present-day St. Marys Road during the early nineteenth century, referred to as New Bourbon Street at the time. It intersected a road extending southeast from the village referred to as Common Field Street. Like the other parcels nearby, the Bauvais-Amoureux House parcel is shown as linear and oriented northeast to southwest. No other maps or other images survive from the nineteenth century to illustrate the character and composition of the Bauvais-Amoureux House, leaving only a broad understanding of features present on the parcel based on review of census and other official records.

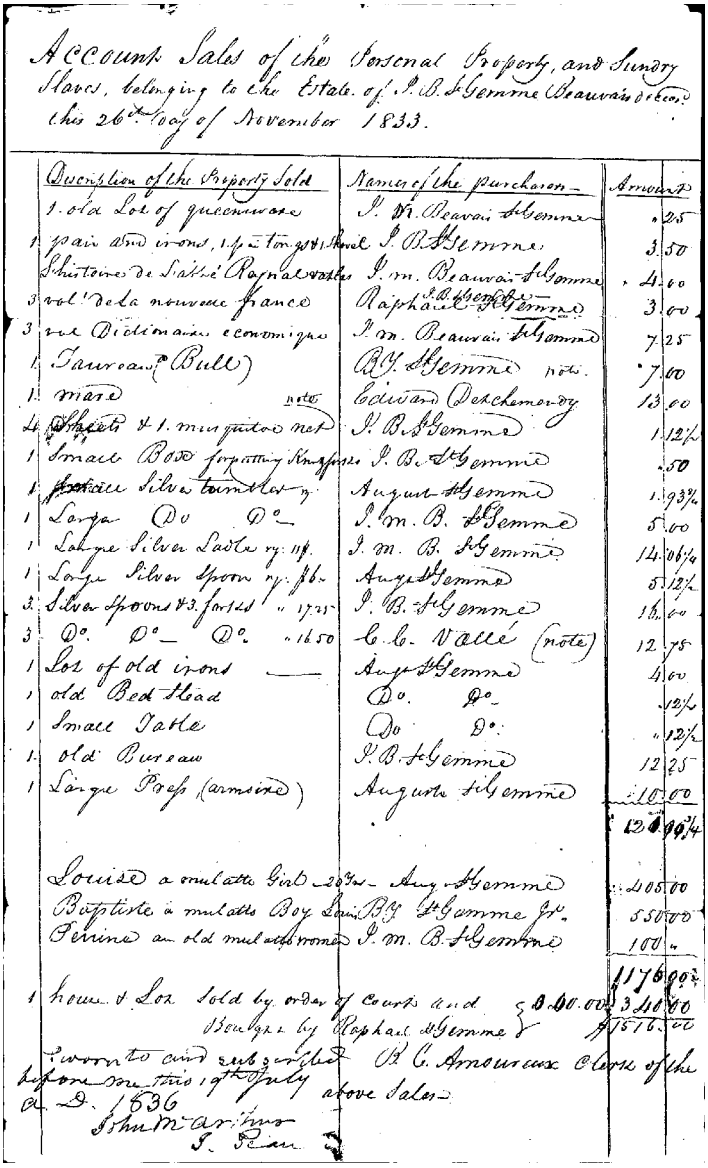
Jean Baptiste, fils, died in 1833, and his estate was sold by court order and purchased by his son Raphael St. Gemme. The estate inventory and resulting sale documented the possessions held by Jean Baptiste, fils, at the house. Auguste St. Gemme (Raphael's brother who also lived in the House) claimed $384.00 against the estate for board and attendance for himself and a servant girl from November 1830 through July 1833. Raphael claimed $40.00 for "20 hundred rails furnished to my father the said St. Gemme Beauvais for inclosing his lot at $2.p.f." Other items described in the sale included livestock, dishware, silverware, furniture, and yards of fabric, which totaled $120.00. Most of these items remained in the family and were purchased by three of the sons of Jean Baptiste, fils: Auguste, J.B. (Jean Baptiste III), or Raphael. Among his other posses-

24 Rozier. *Rozier's History of the Early Settlement of the Mississippi Valley*, 199.

25 Fuller, *The New Madrid Earthquake*, 18-20.

26 Summary of research on estates inventories and deeds describing fences and lot enclosures in Ste. Genevieve between 1767-1820, provided by Robert Mueller on June 1, 2021.

27 Brackenridge. *Recollections*, 20-21. Brackenridge's 1811 journal identifies the family only as "M and Madame Bauvais" but names the baby "Zouzou" on page 242. Zouzou was known to be Catherine Bauvais, the youngest daughter of Vital. This is supported by James Baker's article in *Le Journal*, "Le Petit Anglais: Henry Marie Brackenridge and the Vital Bauvais Family of Ste. Genevieve, Upper Louisiana." Center for French Colonial Studies vol. 21, No. 1 Winter 2005. 1-5.



Account Sales of the personal Property, and Sundry Slaves, belonging to the Estate of J. B. St Gemme Beauvais dec'd this 26th day of November 1833.

Description of the Property Sold	Names of the purchasers	Amounts
1 old Lot of queensware	J. M. Beauvais St Gemme	25
1 pair and irons, 1 fender & tongs & shovel	J. B. St Gemme	3 50
Shutters de Salle Raphael worth	J. m. Beauvais St Gemme	4 60
3 vol. de la nouveau France	Raphael St Gemme	3 00
3 vol. Dictionnaire economique	J. m. Beauvais St Gemme	7 25
1 Taureau (Bull)	R.C. St Gemme note	7 00
1 mare note	Edouard Detchemendy	13 00
4 Chairs & 1 rocking do not	J. B. St Gemme	1 12½
1 small Box for writing Magazine	J. B. St Gemme	50
1 pair Silver tumblers	August St Gemme	1 93¾
1 Large Do Do	J. m. B. St Gemme	5 00
1 Large Silver Ladle wt. 11 p.	J. m. B. St Gemme	14 06¼
1 Large Silver Spoon wt. 3 p.	August St Gemme	5 12½
3 Silver Spoons & 3 forks " 1795	J. B. St Gemme	16 00
3 Do Do Do " 1850	C. C. Vallé (note)	12 75
1 Lot of old irons	Aug. St Gemme	4 00
1 old Bed Head	Do Do	12½
1 small Table	Do Do	12½
1 old Bureau	J. B. St Gemme	12 25
1 Large Press (armoire)	August St Gemme	10 00
		120 99¾
Louise a mulatto Girl 20 yrs	Aug. St Gemme	405 00
Baptiste a mulatto Boy	Louis B.C. St Gemme Jr.	550 00
Perrine an old mulatto woman	J. m. B. St Gemme	100 00
		1176 00¾
1 house & Lot sold by order of Courts and Bought by Raphael St Gemme	860.00	316 00
		1516 00

Sworn to and subscribed before me this 19th July A. D. 1836 John McArthur J. Peace

B. C. Amoureux Clerk of the above Sales

Figure DH-08. Account of Sales Document (Source: Estate Records of J.B. St. Gemme Bauvais, Ste. Genevieve County Courthouse, E-377.)

sions were the House and lot which were sold by order of the court and purchased by Raphael. Jean Baptiste, fils, was also a slave owner, and sold with the estate were three enslaved people, described as follows:

Louise a mulatto girl, 20 years-$405.00

Baptiste a mulatto boy-$550.00

Perrine an old mulatto woman-$100.00[28]

Raphael owned the House for only three years, and upon his death on July 17, 1836, it was purchased by his brother Auguste. A note in the estate records documents that Auguste received $13.50 from the estate "for making a gallery to said R. St. Gemme's house and for one load of posts making in all the above sum."

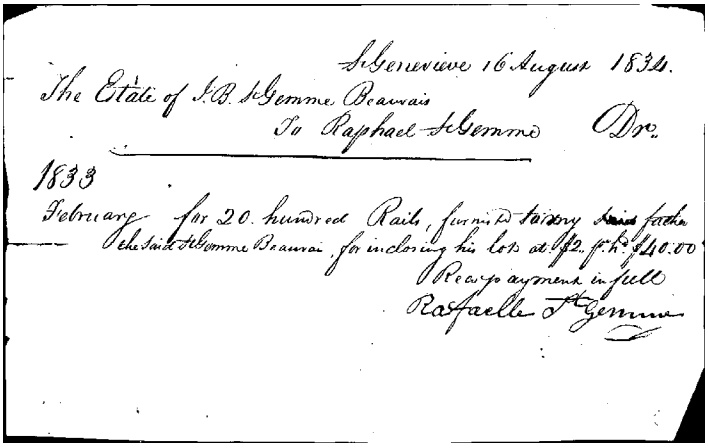
The House underwent significant modifications around this time, most likely while under ownership of the Bauvais family. The roof was transformed from the steep single-pitch hipped form to the broken-pitch gable roof, present today. The galeries, framed with only partially hewn poles as rafters, were added. The framing for the north galerie differs slightly from the south; at the north the rafters underwent more shaping and finishing of the members, which may indicate that the north galerie was constructed somewhat after the south. By this time, the roofing was likely wood shingle, and the exterior vertical log walls may have been whitewashed or plastered.[29] Reconfiguring the roof also likely required alterations within the building, possibly changing the floorplan from the linear en filade to a central hall with rooms on either side and a central fireplace.

Auguste and his wife Desile occupied the House until 1852, when it was purchased by Benjamin C. Amoureux.[30] Likely, Amoureux purchased the House in its present configuration. The property was likely edged to the south and west by road rights-of-way as well as New Bourbon Street to the east.

28 J.B. Bauvais, St. Gemme estate inventory, Ste. Genevieve County Courthouse Probate Records, 1833 File E-377). In a note of irony, Benjamin C. Amoureux signed all these documents as a clerk of the court. Amoureux would later occupy the House with his family in 1852.

29 Richard Guyette. "Tree Ring Dating of French Colonial Vertical Log Houses in St. Genevieve , Missouri." University of Missouri - Columbia (1986 [n.d.]).

30 Estate of Raphael St. Gemme Bauvais. Ste. Genevieve County Courthouse Probate Records, Book E page 377; Sale to Benjamin C. Amoureux , Ste. Genevieve County Courthouse Probate Records, 1852 Book E page 377.



Ste Genevieve 16 August 1834.
The Estate of J.B. St Gemme Beauvais
To Raphael St Gemme Dr.
1833
February for 20 hundred Rails, furnished to Mary Ann Father
the late St Gemme Beauvais for inclosing his lots at 1/2 p.r.h. $40.00
Rec.d payment in full
Raffaelle St Gemme

Figure DH-09. Reimbursement for fence rails (Source: Estate Records of J.B. St. Gemme Bauvais, Ste. Genevieve County Courthouse, E-377.)

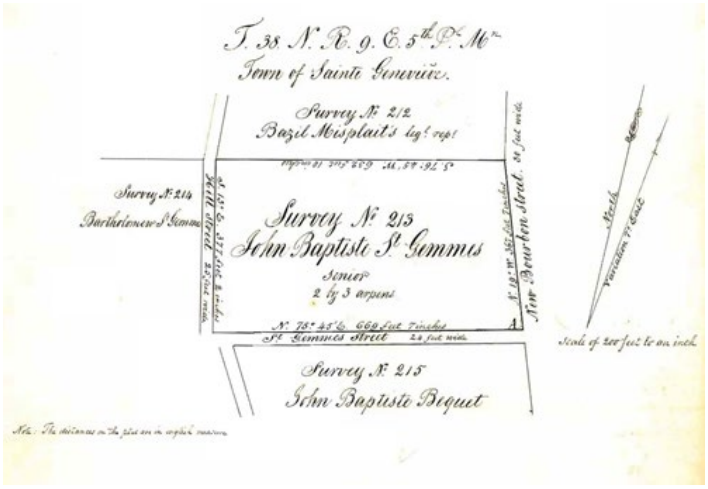
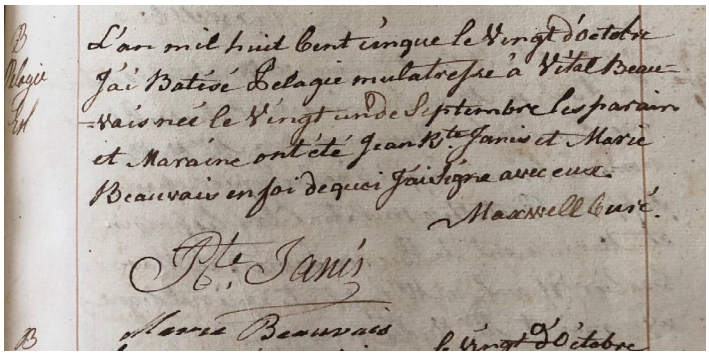


Figure DH-10. 1845 Survey showing the St. Gemmes property along New Bourbon Street. The survey shows a road to the south of the parcel indicated as St. Gemmes Street as well as another to the west. (Source: St Genevieve County Courthouse deed records)

AMOUREUX FAMILY

Mathurin Michael Amoureux immigrated to the United State from France in 1793 due to political unrest during the French Revolution. He settled in Kentucky where his son Benjamin Amoureux was born on November 17, 1797. The family relocated to New Madrid in Upper Louisiana (now Missouri), a little more than 100 miles south of Ste. Genevieve, and Mathurin served as a judge on the Court of Common Pleas as well as a probate judge. By 1812, the family had permanently relocated to Ste. Genevieve. Benjamin was eventually well known from his public roles that included surveyor and clerk of the court. As a result, his signature is found in many legal documents throughout the historical records. Census records also identified him as a farmer. When Benjamin purchased the House in 1852, he was father to five children with Pelagie Vital (Amoureux).

Pelagie was born an enslaved woman on September 21, 1805. Her enslaver was Joseph Vital Bauvais, a wealthy property owner and brother to Jean Baptiste, fils, who built the House c. 1792. Her baptismal record from October 20, 1805, at the Church of Ste. Genevieve identified her as an esclave or slave, but also as a *mulatress* of Vital Bauvais. Upon Vital's death in 1817 at the age of 77, Pelagie was valued at $200.00 and given to his widow Félicité.[31]



L'an mil huit Cent cinque le Vingt d'octobre
J'ai Batisé Pelagie mulatresse à Vital Beau-
vais née le Vingt un de Septembre les parain
et Maraine ont été Jean Bte Janis et Marie
Beauvais en foi de quoi j'ai signé avec eux
Maxwell Curé.
Pte Janis
Marie Beauvais

Figure DH-11. Pelagie Baptismal Record 1805. (Source: Ste. Genevieve Catholic Church Records, Baptisms 1786-1820, Reel 1: 710-951)

31 Brackenridge. *Recollections*, The Bauvais' are vividly described by Henry Brackenridge here. "He dressed with a blue cotton handkerchief on his head with his hair tied back in an eel-skin, a check shirt, coarse linen pantaloons and Indian sandals. He was grave and serious unlike many of the other Frenchmen and he continually had a pipe in his mouth. She was described as a large fat lady with a cheerful countenance except to her colored domestics, to whom she was rigid and severe." 20-21.; Vital Bauvais Estate Inventory, February 8, 1817. http://amoureuxhouse.org/wp-content/themes/amoureux/images/downloads/Vital_Beauvais_Inventory.jpg accessed , Accessed May 4, 2021. The estate inventory documents that Bauvais had six enslaved people: Baptiste, Clement, Antoine, Marie Jeanne, Odile, and Pelagie.

Family lore holds that in 1830, Pelagie and Benjamin stole away in the night to cross the river into Illinois where a priest married them outside. They returned to Ste. Genevieve and presented their marriage certificate to their local parish priest who welcomed them to worship and take communion together.[32] This story is not supported in the historical record. Though Illinois entered the Union as a free state in 1818, areas of southern Illinois held slaves, and miscegenation laws were in place until 1874. It was also illegal for them to marry in Missouri as a slave state. However, marriages between enslaved people in Ste. Genevieve were blessed by the priest and entered into the church record but not legally recognized. Benjamin Amoureux and Pelagie would not legally have married in Ste. Genevieve, though documents such as the baptismal and marriage records of some of their children, which indicate their relationship was recognized. Their first child Felix was born in 1830, while Pelagie was enslaved to Félicité Bauvais. On June 11, 1832, Félicité Bauvais freed Pelagie along with Felix, and Pelagie registered as a free person of color. Her emancipation document from Félicité stated that Pelagie and Felix were free from all bondage and services, "the same as if they had never been slaves." *The Register of Free Negroes and Mulattos* licensed by Ste. Genevieve County dated July 18, 1836, documented Pelagie Vital (her last name given by her enslaver), a "mulatto woman, 33 years old, five feet four inches high and a defective nose."[33]

Pelagie and Benjamin spent the first twenty years of their relationship living separately. She lived a remarkable and independent life from her emancipation in 1832 until they moved into the residence together in 1852. During the 1840s, she filed three different lawsuits against men who mistreated her. She lost all the suits, including one with a scathing verdict from the jury. In a twist of irony, the first man she sued named Jacob Yealy, who was called to answer to the accusation of throwing rocks at her house, served on the jury of the second trial against an enslaved man named Charles. After 1848, there were no more harassment suits

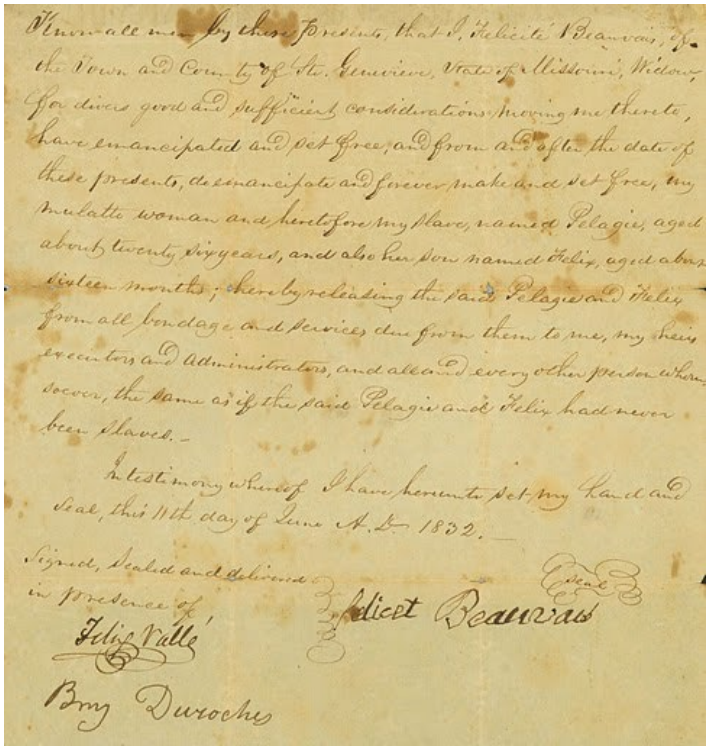


Figure DH-12. Emancipation Document.

filed, but the verdicts and juries reveal the inequity in the system she attempted to use. By 1850, census records identified fifty-year-old Pelagie as the head of the household that included her and her five children from the ages of six to twenty: Felix, Francis, Mary, Amable, and Joseph. Only Felix is listed as a laborer, with no professions identified for the rest of the family.[34] All the children are listed as "mulatto" and have the Amoureux surname, except for Pelagie who is identified as "black" and as Pelagie Vital. She is inconsistently identified in the historic record as either "black" or "mulatto." Two years later Benjamin purchased the House for $700.00 from Auguste Bauvais, the nephew of Vital Bauvais, Pelagie's former enslaver.

Since Pelagie appeared as head of household in the 1840 and 1850 census records, it seems clear that she and Benjamin did not cohabitate until his purchase of the Bauvais residence, because he was also listed in census records but separately. It is not until the 1860 census when Benjamin is listed as head of household, a farmer, and residing with Pelagie, their children, and one grandchild.[35]

32 Leola Amoureux Duckett. "The Amoureux Family in Sainte Genevieve ", 16.

33 "Becoming a Free Woman." http://amoureuxhouse.org/timeline, Accessed May 4, 2021.

34 United States Census, 1850: "Her Days in Court." http://amoureuxhouse.org/timeline, Accessed May 4, 2021.

35 United States Census, 1840, 1850, 1860.

Though living together as a family for the first time, ownership of the property was not stable. Between 1859 and 1868, the House changed hands a total of seven times.[36] It was in and out of Felix Amoureux's (Pelagie and Benjamin's eldest son) ownership more than once, until he finally secured ownership of the property from Jacob Stuppy in 1868. The Amoureuxes occupied the House continuously through this time, even though the ownership entities changed from Fidel Hettig, Felix St. James, and Jacob Stuppy. Once stabilized under Felix Amoureux's ownership, the property would remain in the Amoureux family until the last occupant Frank Boynton Amoureux sells in 1923.[37]

It is unclear why the financial instability struck the family during these years. The 1860 agricultural census for the City of Ste. Genevieve shows that Benjamin had 75 acres of land valued at $1,000.00 with livestock holdings which included horses, cows, pigs, and sheep. Additionally, he reported stockpiles of peas, beans, potatoes, and butter. Also, notably, he reported $100.00 of produce from orchards owned by the family. Only three other families reported that much produce value in Ste. Genevieve. He is identified as a farmer along with Joseph, Amable, Emil, and Felix, all of whom lived in the residence. By 1870, the family had grown, and the House was occupied by Benjamin, Pelagie, their children, and grandchildren, which included both Felix and Joseph's families. Benjamin died in 1878 after receiving the last sacrament from his priest on January 21.[38]

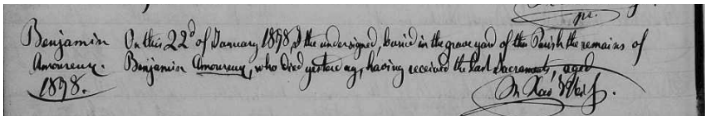


Figure DH-13. B. Amoureux Burial note (Source: Ste. Genevieve Catholic Church Records, Register of Deaths 1839-1883, Reel 5, 4-22).

Pelagie remained in the House with her family, and Felix appeared to have taken on the lead as head of the family household. His assets included fifty acres of tilled land, eight acres of meadow or pasture and fifteen acres of woodland or forest. He had five horses and two mules, three "milch"[39] cows, sheep, thirty pigs, and forty-two chickens, along with fifty pounds of butter. The number of sheep seemed to fluctuate as he documented nine sheep on his land in 1880 with six lambs, two that were slaughtered, one dead of disease, and six killed by dogs. His farm included land, fences, and buildings that were valued at $2,450.00, and the livestock value was in addition to that. This number of resources required outbuildings and pens, but the historic record does not document the location of these associated resources.[40]

It is likely that significant changes were made to the House under Felix's ownership. At a yet unconfirmed date, the west end of the House was reconstructed. The vertical logs of the exterior wall, first roof bay, west chimney, and the first Norman truss were removed, permanently shortening the structure. The west elevation was reconstructed as a wood frame filled with brick nogging, bearing on a limestone foundation. A new brick chimney was also constructed inboard of the west wall. At the east end wall, the poteaux-en-terre construction was also modified to sit on a wood sill bearing on a new limestone foundation. These modifications are visible in the early photographs included with the HABS[41] records and were likely performed to address deterioration of the vertical logs at the east and west foundation walls, and potentially deterioration of the roof hip truss at the west. Based on the physical evidence and historic photographs, these modifications likely date to approximately 1880-c. 1900, during the Amoureux family ownership.

36 Jeremy Wells, "Interpretation of the Financial and Property Ownership Saga of the Amoureux Family from 1859 to 1868." N.d.

37 Amoureux House Property Ownership Abstract. From general files provided by the National Park Service at Ste. Genevieve National Historical Park.

38 United States Census, Agricultural Schedule, Ste. Genevieve County, Missouri, 1860.; Ste. Genevieve Church records database on Benjamin Amoureux final sacraments and death, January 22, 1878.

39 Milch Cow comes from Middle English and refers to a cow kept for milking

40 United States Census, Agricultural schedule, Ste. Genevieve County, Missouri, 1880.

41 "Amoureaux House, 327 St. Marys Road, Sainte Genevieve, Ste. Genevieve County, MO (photographs, measured drawings, written historical and descriptive data), Historic American Building Survey, National Park Service, U.S. Department of the Interior, https://www.loc.gov/item/mo0247.



Figure DH-14. C. 1900 photograph showing the parcel edged by a stone wall along St. Marys Road, wooden picket fencing, a gate at the road leading along the north side of the house, and the north porch with a stair leading to the road. A tree is in the yard east of the house. (Source: Ste. Genevieve: Images of America, p. 24).



Figure DH-15. November 1916 photograph of the house from a similar angle as the image above showing the stone wall and wooden picket fence, gate at the north drive, adjacent tree, and the addition of lattice underneath the north porch. (Source: Missouri State Historical Society, https://mohistory.org/collections/item/N38681)

Pelagie died in 1890 at the House. Her obituary in the *Ste. Genevieve Herald* notes that she passed on Tuesday, November 11, 1890.

> *Mrs. Pelagie Amoureaux, relict of Benjamin C. Amoureaux, aged 85 years, 2 months and 6 days. The deceased leaves 5 children, of whom two, Felix and Joseph Amoureaux, are well known citizens of Ste. Geneviève.*[42]

Felix and various members of his extended family remain in the House and census records illustrate a gradually declining financial situation into the turn of the twentieth century. In 1900, Felix (son of Benjamin and Pelagie), three of his siblings, and their children lived in the House. His son Felix Henry was a widower and lived there with his children Corrine, Leo Joseph, Beatrice, and Lemmyon, but by 1910 only Felix and his son Frank Boynton occupied the House.[43] Felix's death in 1910 may have contributed to the family's financial decline, as his will divided his estate among his children leaving half shares of the House to two of his sons Frank and Alfred. This included all the livestock, machinery, grain, and feed in the estate at the time of his death. He also divided among his sons Benjamin, Frank, Felix Henry, and Alfred equal portions of his land in the Common Field or "Big Field " as it is identified in his will. His daughter Virginia Mayse (née Amoureux) was gifted $200.00 in lieu of a land gift. Mary Louise Stewart (nee Amoureux) was given a parcel of land 150-feet wide to be taken off the south side of the six arpent lot of the residence. This subdivision gifted Mary Louise a tract approximately 150 feet wide that extended the entire depth of the lot (bounded on the north by the remainder of the homestead lot, east by New Bourbon Street, South by an alley-St. Gemme Street, and west by Joseph Gisi's property). Felix's will dictated that the estate pay all his debts and appointed Alfred as the executor of the estate. The will was filed on June 25, 1909, and signed with an "X" marking Felix's signature.[44] Upon his death in 1910, the property with the residence was subdivided for the first time along with his holdings in the Common Field. His son, Felix Henry died in 1914, and his probate record

42 Obituary. *Ste. Genevieve Herald*, November 15, 1890. Note: The term "relict" is used here to mean widow.

43 Missouri Census, 1900 and 1910 and Ste. Genevieve property tax records 1900 and 1910.

44 Felix Joseph Amoureux Last Will and Testament, June 25, 1909. Ste. Genevieve County Courthouse, Book 72 Page 154.

documents that he died intestate, with very little personal property and no money or securities except for his home in Ste. Genevieve. He also died with no debt except for $20.00 owed to the Ste. Genevieve Implement Cement & Stone Company. This indicates that subdividing the estate that supported the family for more than fifty years took its toll on the financial stability of the remaining siblings. After Felix's death, his son Frank Boynton and Frank's wife Alice are the sole residents in the property.[45]

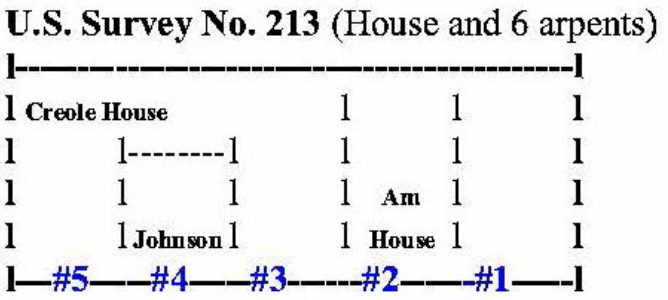


Figure DH-16. Diagram showing the subdivision of parcels from the original property.

Boynton borrowed against the House twice, and in 1915 sold a twenty-foot-wide drive south of the House to Edward Moreau. Personal property tax records between 1900 and 1923 document the financial decline of Frank and Alice. In 1915, five years after he became the sole occupant of the property, he owned one horse, one mule, and four hogs, presumably still utilizing any outbuildings on the site. By 1919, he recorded only one horse, and in 1920, no assets were identified. He reported a general value of between $75 and $80 of total property. This continued until the family sold the property in 1923 to William and Elizabeth Gisi.[46]

AFTER THE BAUVAIS AND AMOUREUX FAMILIES

1923 marked a shift in the history of ownership. The House passed out of Bauvais-Amoureux occupation for the first time since its construction in c. 1792. The Gisi family purchased the residence, but William Gisi was killed in an explosion the following year, leaving behind his two children (aged one and three) and Elizabeth. Gisi was killed while working for the Peerless White Lime Company when dynamite caps he was either carrying or opening exploded. Gisi was twenty-eight years old at the time of his death. His funeral was held at Ste. Genevieve's Catholic church.[47] Elizabeth sued the company for the accidental death of her then husband. Testimony stated that the men utilized lamps attached to their caps that emitted a three-inch flame. When the flame came into contact with particulates in the air, it caused sparks thus igniting the caps carried by Gisi. She won the suit with an award of $8,500.00 in 1931.[48] Elizabeth remarried Anthony Jacob in 1927, and they built a new house on the land immediately south of the Bauvais-Amoureux House. The land was likely subdivided to accommodate the new residence, and they rented the old house.

It is unlikely that any significant renovations occurred at the House from the time Felix Amoureux died in 1910 through the Gisi-Jacob's ownership of the property.By the 1930s, when HABS documented the building, their photographs indicate the east, west, and north walls were covered with wood siding, the south wall remained plastered, and the roofing replaced with corrugated metal panels, which was common practice in Ste. Genevieve at that time. The wood stairs to the grenier as seen in a 1937 HABS photo appear to be the stairs still in place. Based on the HABS photos from the 1930s-1940s, the House appeared to have been in a state of disrepair and may not have been occupied. HABS also prepared measured drawings of the House in 1956, which documented a different configuration of the south galerie posts than is present today and show that the north galerie was not yet enclosed.

45 Felix Henry Amoureux Estate Record, March 17, 1914. Ste. Genevieve County Courthouse, Book J Page 439.

46 Personal Property Tax Book for Ste. Genevieve County. 1900-1923 on microfilm at Ste. Genevieve Public Library.

47 "William Gisi Loses Life In Explosion." *The Perry County Sun* (Perryville, Missouri: September 11, 1924) 1.

48 Jacob v. Peerless White Lime Co., 327 Mo. 868, 40 S.W.2d 556 (1931). From http://www.elaws.us/case/c355426/jacob-v-peerless-white-lime-co/ , Accessed May 3, 2021.

Also included in the collection of HABS photographs is an image of a small cabin or shed in poor repair. This photograph is not listed in the image index for the collection. A small frame house can be seen in the far right background, and behind this house is the south elevation of the Green-Tree Tavern. The frame house is still standing at 284 St. Marys Road, placing this cabin on a now empty parcel north of Seraphin Street, approximately one-quarter mile north of the Bauvais-Amoureux House. It is unknown if this cabin was associated with the Amoureux family in the 1930s, or if the image was simply misfiled.



Figure DH-17. C. 1936 photo showing the east facade and south porch, with an overhead electrical line along the road. A fencepost appears south of the house. A portion of the stone wall along the road remains visible. A crank-handled pump and sheet metal cover are visible in association with the well or cistern inside the fence. (Source: 1936 HABS documentation)

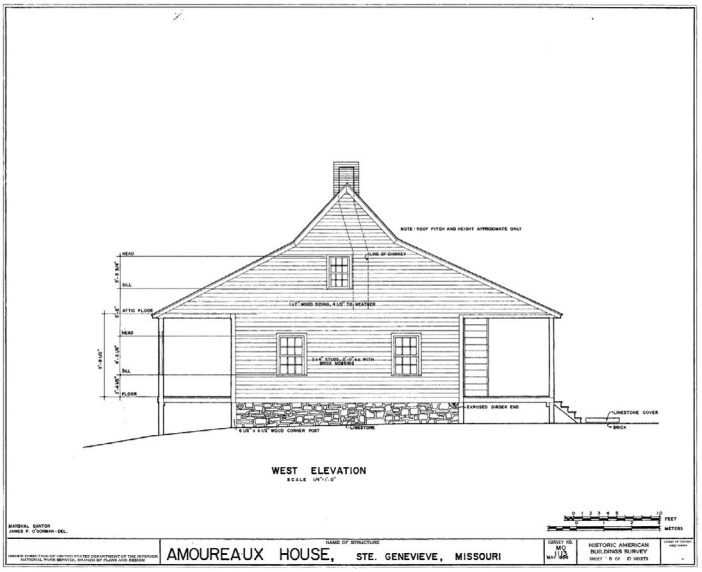


Figure DH-19. One of the measured drawings prepared in 1956 of the Bauvais-Amoureux House (Source: Historic American Buildings Survey, HABS MO_1113)



Figure DH-18. C. 1936 image of the west and south elevations edged closely by a fence to the south. A house is visible to the left (north). (Source: 1936 HABS recordation)



Figure DH-20. Photograph from HABS documentation of a small structure at the intersection of Seraphin Street and St. Marys Road; this structure is no longer extant. (Source: Historic American Buildings Survey, HABS MO_1113)

INTERPRETATION AND COMMEMORATION

Norbert and Frances Donze purchased the Bauvais-Amoureux House from the Jacobs in 1963. The Donzes were important to Ste. Genevieve because of their early and influential historic preservation ethic. They converted the House to a museum and shop and constructed a vertical log gift shop immediately adjacent to the residence. Frances Donze was active as the chair of the Ste. Genevieve Tourist Bureau and organized a committee to pursue the renovation of many of the old buildings in order to attract visitors to what was advertised as the oldest settlement west of the Mississippi River. The group received a technical assistance grant from the Area Redevelopment Administration for $30,000 to support this pursuit.[49] Their purchase and interpretation of the House coincided with a deliberate effort at planning, tourism, and historic preservation across the community. Community-wide surveys and investigations of the historic properties were undertaken, and a historic preservation plan created to guide the effort.[50]

The Donze's preservation efforts included their sons Michael and Jack who also worked at the property. Michael worked stacking wood to burn in the fireplace as the main heat source in the museum, as it was open for tours year-round. Conversations with the brothers indicate that the parents enclosed the back or north galerie in the early 1960s, soon after acquiring the building in part to accommodate Frances Donze's antiques. She had a store with many antique glass and ceramics for sale, and they were displayed on shelves built into the north wall window openings. Michael also remembers a few old fruit trees behind the House where the driveway curved around the property. They also may have dug out the caveau to store root crops. They would cut ice from the frozen river, carry it to the caveau, and pack items in sawdust for refrigeration. They added the flagstone walk from the basement entry to St. Marys Road. They also replaced much of the wood on the south porch because so much was rotted when they acquired the property.



Figure DH-21. Photograph from the Donze era. (Source: From the Donze family collection.)



Figure DH-22. Photograph from the Donze era. (Source: From the Donze family collection.)

Modifications were also made to the interior, including the addition of a lavatory at the northwest corner of the house.. The vertical log gift shop, a separate structure built immediately west of the House, has since been demolished, but the footprint of the concrete foundation is still in place. In 1993, the Missouri and Mississippi Rivers experienced catastrophic flood levels. Although damage to Ste. Genevieve proper was limited by emergency measures; the caveau of the Bauvais-Amoureux House was flooded. The flooding exacerbated differential settlement issues at the first floor and attic floor. In response, shoring was installed in the caveau, which is still in place to support the first-floor

49 "Ste. Genevieve to get ARA Help on Restoration." The Daily Journal (Flat River, Missouri; 14 December 1964) 1.

50 "Modern Planning in an Old town: Federally Sponsored Study Aims at Both Progress and Restoration in Ste. Genevieve." *St Louis Post-Dispatch* (St. Louis, MO: 16 July 1967) 48.



Figure DH-23. Photograph from the Donze era. (Source: From the Donze family collection.)

structure. Although some evidence of settlement in the attic floor can be seen in 1986 HABS photos, the settlement is significantly more pronounced today. The Donzes maintained the property as a visitor attraction until 1994 when the Friends of Villes Maisons Françaises purchased the Bauvais-Amoureux House and donated it to the state of Missouri. Missouri DNR managed it as part of the Felix Vallé State Historic Site.

The Missouri DNR began to research and investigate the properties they acquired and conducted an archeological study in 1996. The study uncovered a penny dated 1862 in soil fill just west of the existing wall, which provides a "no earlier than" date but cannot be used to conclusively date the existing west wall without further archeological study. The west end wall was reconstructed with circular and vertically-sawn lumber. Circular-sawn lumber was available in the mid-1800s, particularly along the Mississippi River. However, the construction of the east end wall with hand-hewn pole framing and cut nails is consistent with the construction of the galeries, indicating that a later construction date can be applied to the west wall with some confidence.

Under the Missouri DNR's stewardship, other maintenance projects were undertaken, including replacement of the exterior siding and roofing with new cedar products in 2007. In 2001, The Bauvais-Amoureux House was listed as contributing to the Ste. Genevieve Historic District. The first bill for a feasibility study for establishing a National Park unit at Ste. Genevieve was also introduced at the state level. Bills were later introduced in 2003 and 2005. The study was finally completed in 2016 and a bill introduced at the federal level to establish a park. Also in 2016, Wilma Gisi Zarinelli sold the house on lot #4 to Henry Johnson. In 2018, the NPS acquired the House along with other historic properties to form the Ste. Genevieve National Historical Park in 2020.



Figure DH-24. The Bauvais-Amoureux House underwater during the Great Flood of 1993. (Source: Bill Nager, *Ste. Genevieve: A Leisurely Stroll Through History*, p. 151)

PERIOD OF SIGNIFICANCE

The period of significance for the nationally significant historic district in Ste. Genevieve begins about 1750 with the establishment of the town and extends through 1846 when the last vertical log house was built in the new Ste. Genevieve.[51] This temporal boundary encompasses the significant archeology of the original townsite as well as the built environment. The National Register of Historic Places Ste. Genevieve Historic District nomination identifies the period of significance as 1790 to 1951. This period begins with the construction of the oldest buildings in the district and extends through the fifty-year recommended

51 New Ste. Genevieve is known as the current town site that replaced the first French village that was closer to the river. The original townsite was significantly damaged after a disastrous flood in 1785 resulted in the gradual relocation of the town.

cut-off date (from the time written in 2001) as established by the National Register. The nomination incorporates discussions of all aspects of the history of the community and architectural styles including ranch houses.

Though precise dates for significance are not associated with the federal acquisition of properties, the Ste. Genevieve National Historical Park enabling legislation was authorized by the Consolidated Appropriations Act of 2018 on March 23 to "preserve, protect, and interpret for the benefit of present and future generations the themes of French settlement, vernacular architecture, and community form and farming on the frontier associated with Ste. Genevieve."[52]

This historic structure report is specific to the Bauvais-Amoureux House and recommends a period of significance that begins in 1792, the presumed construction date of the House by Jean Baptiste St. Gemme Bauvais, and extends through 1923, the year Frank Amoureux sells the House. Frank was the grandson of Pelagie and Benjamin Amoureux and the last Amoureux family member to occupy the House. Between the years of 1792 and 1923, the House effectively had only two family occupants: the Bauvais Family and the Amoureux Family.[53] These two fam ilies formed much of the significant history of the House. Its exceedingly rare architectural style and evolution from its construction through 1852 is credited to the Beauvais Family. Physical features to their credit include a possible new roof configuration, galeries surrounding the House, fencing, and outbuildings such as a barn and slave quarters. Under Amoureux ownership the residence continued its evolution with a new footprint when the west end was removed as well as corresponding interior alterations. Additionally, their family story and its significance, as well as the supporting documentation, represents important events in American history worthy of interpretation.

Statement of Significance

CONTEXT FOR ESTABLISHING SIGNIFICANCE

1960 / 1970 National Historic Landmark District

In 1960, the Ste. Genevieve National Historic Landmark District was recognized for the national significance of its collection of extant French vernacular vertical log architecture and was designated under the theme of "French Exploration and Settlement." As one of the earliest NHL districts, the nomination specifically identified only eight structures believed to have eighteenth century construction dates but established no specific period of significance. When the NHL district nomination was revised and expanded in 1970, the district boundaries were established, and the number of contributing resources was kept at eight but slightly revised to include the Bauvais-Amoureux House (called the "St. Gemme-Amoureux House").

2002 National Register District

The 2002 designation of the Ste. Genevieve National Register District included overlap with the 1960 / 1970 NHL district but was generally broader to encompass buildings also significant at the state and local level. The National Register district was nominated under the following criteria:

- Criterion A (Event) in part for association with an "ethnically diverse population including French, Anglo-Americans, African Americans, and Native Americans."
- Criterion C (Design/Construction) in part for its "French vertical log architecture" that "represents the early French and French Canadian settlement of the community."
- Criterion D (Information Potential) in part for the "potential for significant archeological deposits"

52 National Park Service. Ste. Genevieve National Historical Park Legislation and Map. https://parkplanning.nps.gov/document.cfm?parkID=155&projectID=31496&documentID=86827 accessed 3 May 2021.; National Register nomination.

53 Though the house legally changed hands several times as is documented in previous text and the property timeline, it effectively remained in the hands of these two families for 131 years from 1792 to 1923. Following the death of Jean Baptiste, fils,in 1811, his sons inherited the property and remained there until 1852 when it was sold to Benjamin Amoureux. Amoureux and his wife Pelagie raised their children in the House and it remained occupied by Amoureux family members until Felix's death in 1923.

related to the "French, German, Anglo-American and African American communities." (Note: The National Register nomination does not identify pre-European or American Indian resources under this criterion as the majority of these resources are located outside the district boundaries.)

The period of significance for the National Register district was given as 1790 – 1951, approximately the founding of "New Town" Ste. Genevieve to the minimum age requirement of fifty years at the time of nomination. The Bauvais-Amoureux House (called the "Jean Baptiste St. Gemme Beauvais House") is listed as resource number 93.

2016 Special Resource Study

Public Law 109-319, the Ste. Genevieve County National Historic Site Study Act of 2005 tasked the NPS with studying the historic resources of Ste. Genevieve for potential inclusion in the national park system. The study culminated in a 2016 report that found the Ste. Genevieve district to be nationally significant under the following criteria:

- Criterion 4 (Architecture) for the district's "large and rare collection of French vernacular vertical log houses."
- Criterion 1 (Broad Patterns of United States History) for French colonial settlement, which also includes reference to the vertical log structures. Included also under this criterion is a discussion of the ethnic diversity of Ste. Genevieve, stating: "The richness of the town's cultural heritage is further amplified by the fact that several French vertical log houses had owners and occupants who were free people of African heritage in the years before the Civil War ended slavery in the United States."

The Special Resource Study identified a period of significance for the district of 1750 – 1846, approximately the founding of "Old Town" Ste. Genevieve to the construction date of the last French vertical log structure in New Town.

2018 Ste. Genevieve National Historical Park

In 2018, Ste. Genevieve National Historical Park was established as the 422nd Unit of the National Park Service. Though precise dates for significance are not associated with the federal acquisition of properties, the Ste. Genevieve National Historical Park enabling legislation was authorized by the Consolidated Appropriations Act of 2018 on March 23 to "preserve, protect, and interpret for the benefit of present and future generations the themes of French settlement, vernacular architecture, and community form and farming on the frontier associated with Ste. Genevieve.[54]

2021 Archeological Overview and Assessment

This report identifies a timeframe of c. 1770 – 1860 as the period of significance, representing the major time of "French influence and associated cultural expressions" in Ste. Genevieve.

The report emphasizes the importance of investigating the "archeology of race and race relations" at the Bauvais-Amoureux House (called "Amoureux House"), citing the importance of the story of Pelagie Amoureux to the context of freed African Americans in pre-Civil War Missouri and the ethnic diversity of Ste. Genevieve.

SIGNIFICANCE OF THE BAUVAIS-AMOUREUX HOUSE

Criterion C (Design/Construction)

The Bauvais-Amoureux House is primarily significant under National Register Criterion C, at the national level, for embodying the distinctive characteristics of a late eighteenth-century French vernacular vertical log structure in the poteaux-en-terre style. As one of only five known extant poteaux-en-terre structures in North America, the Bauvais-Amoureux House is a rare example of this construction methodology. Alterations made during the period of significance include construction of the north and south porches (or galeries), modification of the east wall foundation,

54 National Park Service. Ste. Genevieve National Historical Park Legislation and Map. https://parkplanning.nps.gov/document.cfm?parkID=155&projectID=31496&documentID=86827, accessed 3 May 2021.

and reconstruction of the west wall. With these changes, the current building form from the 1840s - c. 1852 time period is intact and envelopes the c. 1792 construction. The house retains a high level of integrity of the original c. 1792 fabric including the post-in-ground vertical logs and Norman truss roof structure, as well as modest levels of integrity for the fabric of the nineteenth century alterations.

Criterion A (Event)

The Bauvais-Amoureux House is also significant under National Register Criterion A, at the national level, for its contribution to the patterns of French colonial settlement, as well as to African American ethnic heritage in Ste. Genevieve. The house plays an important role as one of several sites that tells the story of African American history and culture in the eras immediately before and after the Civil War, including the challenges faced by freed persons, race relations and the struggle for social equality, and the complex nature of mixed-race relationships.

Criterion D (Information Potential)

The Bauvais-Amoureux House is also significant under National Register Criterion D, at the local level, for its potential to contribute our understanding of human history and prehistory. Colonial and Pre-Civil War era deposits are believed to be present at the site. This criterion should be revisited after completion of further archaeological study.

PERIOD OF SIGNIFICANCE

This historic structure report recommends a period of significance specific to the Bauvais-Amoureux House that begins in 1792, the presumed construction date of the House by Jean Baptiste St. Gemme Bauvais, and extends through 1923, the year Frank Amoureux sells the House. Frank was the grandson of Pelagie and Benjamin Amoureux and the last Amoureux family member to occupy the House. Between the years of 1792 and 1923, the House effectively had only two family occupants: the Bauvais Family and the Amoureux Family.[55] These two families formed much of the significant history of the House.

Beyond the architectural fabric, the proposed period of significance from c. 1792 – 1923 takes into consideration the major themes identified by previous documents: patterns of French settlement and African American Ethnic Heritage. The House's exceedingly rare architectural style and evolution from its initial construction through 1852 is credited to the Bauvais Family. Physical features to their credit include a possible new roof configuration, galeries surrounding the House, fencing, and outbuildings such as a barn and slave quarters. Under Amoureux ownership the residence continued its evolution with a new footprint when the west end was removed as well as corresponding interior alterations. Additionally, the Amoureux family with its amazing supporting documentation is an important story in African American history that is necessary to recognize to ensure diverse and inclusive histories are represented.

Chronology of Development and Use

Through the historical research and assisted by the physical evidence of changes over time documented during the physical investigation, a tabular chronology and graphical timeline have been prepared on the following pages to organize the major historical events, important people, and alterations that have influenced the Bauvais-Amoureux House and its site as they currently exist.

55 Though the house legally changed hands several times as is documented in previous text and the property timeline, it effectively remained in the hands of these two families for 131 years from 1792 to 1923. Following the death of Jean Baptiste, fils, in 1811, his sons inherited the property and remained there until 1852 when it was sold to Benjamin Amoureux. Amoureux and his wife Pelagie raised their children in the House and it remained occupied by Amoureux family members until Felix's death in 1923.

DATE RANGE	HISTORICAL EVENT
1698	Jean Baptiste St. Gemme, père (father), is born in Montreal. He marries Marie Louise Lacroix and among their children are Jean Baptiste Bauvais, fils (son), born in 1746 in Kaskaskia. Jean Baptiste, père, died in 1773, as evidenced by his estate inventory file in the SGE-SHSMO File 117.
1750s	Ste. Genevieve is established and noted as the oldest European settlement west of the Mississippi. The original townsite was approximately three miles south of the current location. Significant research has been conducted on the founding date of the community, and no specific evidence exists to support a precise founding date. Ekberg's Colonial Ste. Genevieve explores the likely settlement dates and suggests it was more likely a fluid settlement from Kaskasia to the west side of the river. The first known maps to identify Ste. Genevieve are from 1755.
1752	First census in Ste. Genevieve identifies eight heads of household and 23 individuals.
1762	France cedes land to Spain, and Spain controls the territory until 1800 when it is retroceded back to France.
1785	A severe Mississippi River flood caused a temporary relocation to the hills and later the permanent relocation to the new (current) town site. The move was gradual and by 1795 was largely complete.
1788	Ste. Genevieve floods again.
1789-1791	Jean Baptiste, fils, arrives in Ste. Genevieve between 1789 and 1791. Baptismal records of his children indicate the move likely occurred in 1789. J.B. Bauvais III (son of Jean Baptiste, fils) was born in Kaskaskia in 1789. The next child, Auguste Bauvais was born in 1791 in Ste. Genevieve.
c. 1792	Jean Baptiste, fils, completes construction of his residence. The vertical red cedar log poteaux en terre construction most likely had a steeply pitched thatched roof with a rectangular floor plan. Construction date supported by dendrochronology study.
1793	Mathurin Michael Amoureux (Benjamin Amoureux's father) leaves France due to the French Revolution
1794	Antoine Soulard, an official surveyor for the Spanish Government travels to Ste. Genevieve from St. Louis to make a survey for a fort.
c. 1797	Benjamin Amoureux born in Frankfort, Kentucky
1797	Jean Baptiste, fils,'s daughter Marie-Louise marries Louis Bolduc, son of Louis Bolduc, père, owner of the Bolduc House.
1800	Control of the area returns to France.
1803	The United States acquires the territory as part of the Louisiana Purchase.
1805	Pelagie Vital born in Ste. Genevieve. Her baptismal record are today available at the church archive.

DATE RANGE	HISTORICAL EVENT
1811	Estate inventory for Jean Baptiste, fils, from January 23, 1811, describes the property to include the "the house in which he lives, with his moiety of the lot on which there are a negro cabin and several fruit trees." Moiety is defined as two parts of a lot. A lane that ran east/west in front of the House divided the House from the lot. Valued at $750.00.
1811-1812	New Madrid Earthquakes, a series of three severe earthquakes from December through February cause widespread, regional damage and are today recognized as some of the most intense seismic events experienced in North America since the time of European settlement.
1812	Mathurin Michael Amoureux arrives in Ste. Genevieve
1814	First American Missouri census is taken in October 1814.
1831	Felix Amoureux is born to Benjamin Amoureux and Pelagie Vital on January 7 and baptized on February 13. Pelagie and her son Felix were both enslaved to Felicite Bauvais, wife of Vital Bauvais, the brother of Jean Baptiste, fils).
1832	Pelagie and Felix achieve freedom from enslavement to Felicite Bauvais.
1833	Jean Baptist, fils, dies and the household goods including enslaved people and property are sold by order of the court. The lot and house are purchased by his son Raphael Ste. Gemme Bauvais.
1836	Auguste Ste. Gemme Bauvais, son of Jean Baptist, fils, and brother of Raphael purchase the House upon Raphael's death.
1840	Pelagie Vital takes Jacob Yeally to court for "the throwing of rocks at dwelling house" Yeally is summoned to appear February 11, 1840.
1841	Pelagie files suit against Charles, a man enslaved to Bertel DuRocher, for assaulting Pelagie "in her own dwelling house."
1844	Auguste Ste. Gemme estate inventory from Raphael Ste. Gemme completes the probate file for "a house and lot containing six arpents more or less and being the same on which the said deceased resided at the time of his death."
1840s	Alterations to property may include addition of galeries, reconfiguration of roofline, and reproportion of interior rooms.
1848	Pelagie takes Henry Badeau, a free man of color, to court for threatening her in the streets with violence and not allowing her to pass.
1852	Benjamin Amoureux purchases the residence from Auguste Ste. Gemme Bauvais and his wife Desile. The September 12, 1852, deed record shows the purchase for $700.00 including the 2x3 arpents of land.
1859	Benjamin Amoureux loses the House due to back mortgage payments. Fidel Hettig purchases it for payment of the promissory note on April 19, 1859.

DATE RANGE	HISTORICAL EVENT
1859	The House is sold at Sheriff's sale for a debt of $962.72 on November 24, 1959, and is purchased by J. Felix St. James, brother of Auguste and Raphael and son of Jean Baptist, fils. St. James is an attorney and changed his name from Bauvais to St. James to run for political office.
1860	Felix Amoureux, identified as a free man of color, purchases the property from J. Felix St. James for $150.00 through a quitclaim deed on April 19, 1860. It could be assumed that St. James owned the property as a pass through ownership to clear the record of the debt and hold prior to selling outright to Felix Amoureux. Felix is the son of Pelagie and Benjamin. The House remained occupied by the Amoureux family through this period.
1860	Felix Amoureux sells to Jacob Stuppy through a mortgage deed on September 13, 1860, in the amount of $2,400.
1862	Fidel Hettig (trustee) sells lot through default warranty deed at courthouse sale to Jacob Stuppy for $600 on June 17, 1862
1862	Jacob Stuppy sells through a five year note agreement to Felix Amoureux for $2,600 on June 19, 1862.
1868	Jacob Stuppy sells to Felix Amoureux for $1,400 on May 13, 1868. From 1859 when Benjamin Amoureux defaults on the property through the multiple owner transfers up to this date, the Amoureux family remained in the House whether as a renter or again as eventual owner when Felix finally secured the mortgage in 1868.
1878	Benjamin Amoureux dies on January 21.
1880s- c. 1900	Though the dates are currently unconfirmed, a major renovation is undertaken that includes demolishing the original vertical log wall on the west end. The new west wall is constructed of sawn dimension lumber infill with brick nogging on a limestone foundation. The western most roof truss is permanently removed and the roof framing enclosed with new lumber. A new brick chimney is constructed inside of the new wall. Original vertical log wall at the east is also modified to rest on a limestone foundation.
1890	Pelagie Amoureux dies and House continues in Amoureux ownership under Felix Amoureux.
1909	Felix Amoureux files his last will and testament on June 25, 1909. Felix identifies his children as Felix Henry, Frank Boynton, Benjamin, Alfred, Virginia Mayse nee Amoureux, and Mary Louise Steward nee Amoureux. The will details somewhat extensive holdings including land and property as well as cash. Felix signed the will with "X" his mark.
1910	Felix Amoureux dies, and the estate is divided and distributed with half a share going to sons Frank Boynton and Alfred.
1910	Alfred Amoureux and wife Emma grant property to Frank Boynton.
1914	Felix Henry Amoureux dies intestate with no assets.

DATE RANGE	HISTORICAL EVENT
1923	Frank Boynton Amoureux dies
1923	The Bauvais-Amoureux House is purchased by William Gisi from Frank Boynton who is unmarried at his death in 1923. This marks the end of the Amoureux tenure and stewardship of the property.
1924	William Gisi dies in a mining accident leaving his wife Elizabeth and two children. He was 28 years old.
1925-1931	Elizabeth Gisi receives a settlement from the accident and builds a modern residence (Craftsman style bungalow) next door to the Bauvais-Amoureux House. She and her two children move into the new House and rent the Amoureux House.
c. 1925	Elizabeth Gisi marries Frank Jacobs.
1936-1940	HABS documentation of property showing that the south porch has been partially reconstructed, the north porch is not enclosed, and remnants of the c. 1910 lattice skirting are still in place. Additionally the roof is corrugated metal.
1956	Measured drawings are prepared by HABS.
1960s	Norbert and Frances Donze purchased the House in 1963 and began to renovate and operate it as a House museum. They reconstruct the south porch. The north porch framing is also significantly reconstructed and enclosed with a frame wall and multi-lite windows. An interior partition wall dividing the east great room is removed. Nineteenth century plaster ceilings may have been removed. They install HVAC with ductwork in the attic and ceiling vents to the first floor. The attic is insulated
1993	The Great Flood inundates the House. The caveau is under water, and flood damage raises concerns about structural issues with the vertical logs, floor framing, and roof trusses. Shoring is installed, a sump pump and foundation drain system installed in the cellar, ventilation introduced into the cell by opening a small area of brick infill under the porch, repairs to masonry piers and foundations walls are performed, foundation logs treated with borate rods, and plaster interior finishes are repaired and painted. A steel angle is installed along the inside face of the logs just under the flooring for stabilization.
1994	French Heritage Relief Committee purchases the House and donates it to the State of Missouri
2004-2017	Missouri Department of Natural Resources performs exterior restoration projects and numerous maintenance projects. These include replacing the corrugated metal roof with cedar shakes, center chimney restored to limestone, siding replaced with new cedar lap siding, HVAC system is removed and ceiling vents left in place, insulation and biological contaminants in attic abated, electrical wiring and panel are replaced, termite deterrent system (Terminix) installed, brick chimney at the west end is partially demolished.
2018	The House is donated to the NPS as part of the new Ste. Genevieve National Historical Park.

The Question of the Galeries

Was the Bauvais-Amoureux House originally constructed with galeries? This historic structure report hoped to provide a definitive answer to this important question through the detailed physical investigation and the historical research. Historical sources and French vernacular building practices of the time suggest that the house would likely have had galeries; however, the physical evidence remains inconclusive.

Many of the vertical log structures in Ste. Genevieve have clear physical evidence that they were originally constructed with galeries, including the Bequette-Ribault House (c. 1807), Louis Bolduc House (c. 1793), Janis-Ziegler House (Green Tree Tavern) (c. 1800), and the Guibord-Valle House (c. 1807); all of which were visited in the course of preparing this report. There are significant differences in the top of wall construction between these structures and the Bauvais-Amoureux House. These framing techniques, while different, all involve some physical evidence that would support the existence of galeries on one or all sides if the original galerie structures were to be removed.

- At the Louis Bolduc House, the galerie joists are pinned in place through mortises in the vertical logs *(Figure GL-01)*. The tenon end of the joists are visible in the attic because the ceiling beams sit at a much lower elevation than the top of the log walls *(Figure GL-02)*.
- At the Bequette-Ribault House, the galerie joists are also pinned in place with a wood trenail through a tenon, but the joist bears in a notch on the side of the vertical log rather than a mortise pocket *(Figure GL-01)*.
- The Guibord-Valle House galeries are framed similarly to the Bolduc House *(Figure GL-03)*. Additionally, the galeries at the north and south end walls were permanently removed at some point in the past, and the abandoned mortises in the vertical logs are still in place as evidence that galerie framing once existed.
- Although constructed within a few years of both the Bolduc and Bauvais-Amoureux Houses, the framing of the Janis-Ziegler House (Green Tree Tavern) differs greatly from both. The top plate here is a double member that sandwiches the bearing ends of the

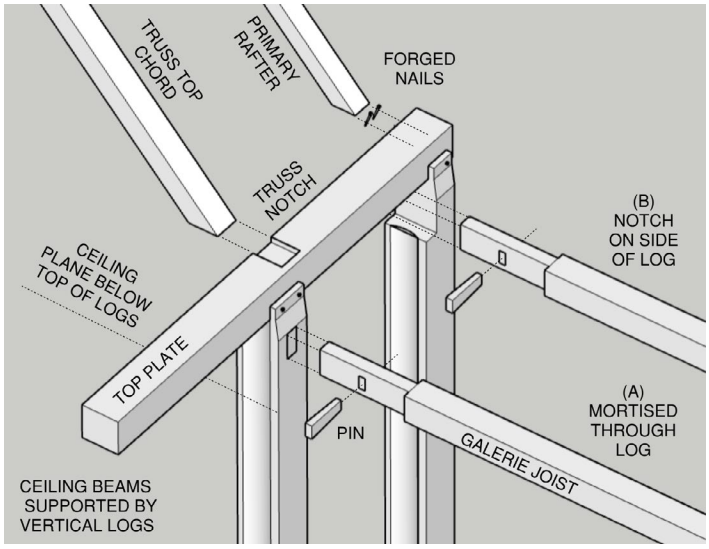


Figure GL-01. Diagram showing galerie and roof framing at the (A) Louis Bolduc House and the (B) Bequette-Ribault House. The galerie joists at the Guibord-Valle House connect in a similar manner to the Bolduc House.



Figure GL-02. Porch joist tenon at the Louis Bolduc House, pinned in place through a mortise in the vertical log (Source: Laura Johnson, NPS).

ceiling beams and galerie joists; however, the plates are not tightly fit like at the Bauvais-Amoureux House, creating a gap between the upper and lower members *(Figure GL-04)*.

PHYSICAL EVIDENCE

At the Bauvais-Amoureux House, physical evidence supporting the presence of galeries as part of the c. 1792 construction has not yet been clearly defined.

GALERIE FRAMING

The vertical logs of the original exterior wall are completely exposed inside the enclosed north galerie, but no notches or mortise pockets in the logs are present. The beams for the existing galeries are attached to the outside face of the lower top plate member *(Figure GL-05)*. These beams appear to be hewn oak. However, both galeries were significantly reconstructed in the 1960s, and it is unclear if these beams are original, historic alterations, or a modern alterations. Further physical investigation, potentially to include the removal of ceiling and wall finishes is needed to determine what evidence of original galeries might be concealed, and dendrochronology is recommended for what framing members appear to be historic fabric.

FORGED NAILS

The c. 1792 construction made extensive use of forged nails for the roof framing, wall framing, and ceiling boards. These nails are large diameter framing nails, approximately 3-inches long with a rectangular shaft tapered on all four sides to a point and irregular hammered heads. Forged nails would only have been used in a narrow window of time at the house due to the rising availability of cut nails after about 1800.

Curiously, at the northeast corner of the attic, multiple primary rafters have one or two forged nails on the east face of the member near the top plate *(Figure GL-06)*. These nails are not driven flush, suggesting that at one time, a smaller wood member was attached to the rafters at this location. There is no evidence of what these nails may have supported, and investigation of other vertical log structures known to have galeries or appentis should be performed to determine if these nails are artifacts of an earlier, now demolished, structure.



Figure GL-03. Galerie joist tenon at the Guibord-Valle House, pinned in place through a mortise in the vertical log; also note the truss top chord bears directly on the top plate in a notch. At the north and south end walls, the galeries were removed, but the abandoned mortises and notches in the top plate are still in place.

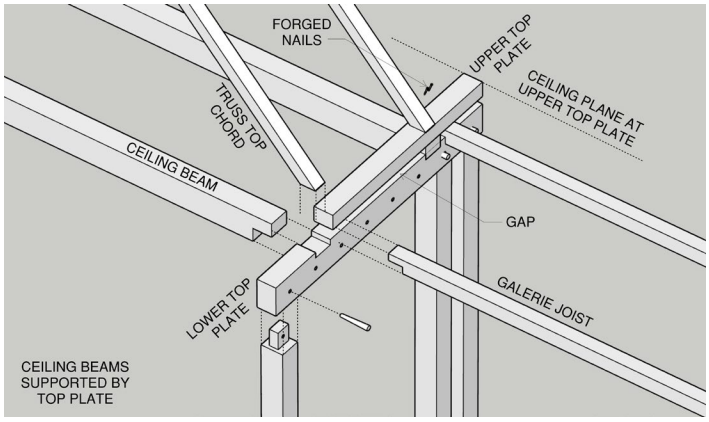


Figure GL-04. Diagram showing galerie and roof framing at the Janis-Ziegler House (Green Tree Tavern). Note that the ceiling beams and galerie joists sit between the upper and lower top plate members, creating a gap.

CUT NAILS

The secondary rafters appear to be attached to the primary rafters with cut nails, suggesting that the existing galeries are not original. Cut nails came into use in the early nineteenth century and remained in common use until after 1900.[56] The rafter nails could be observed in only limited areas where gaps between the framing members partially exposed the nail heads or shafts, and further investigation is necessary to confirm this condition, particularly while these areas are exposed during roofing replacement work. Further analysis of the nails is also recommended, as changes in cut nail manufacturing occurred around 1820 which may help date the construction.

HEWN TIMBERS AND POLE FRAMING

The galerie roofs are framed with pole rafters with hewn top faces to receive the spaced sheathing. The east gable wall was also framed with poles and cut nails. The use of pole framing suggests that the galeries may have been constructed before sawn lumber was an economical material in Ste. Genevieve, especially given the financial standing of the Bauvais family. Other vertical log houses in Ste. Genevieve indicate that sawn lumber was available very early. The roof framing and ceiling beams of the Pierre Dorlac House (c. 1806) were formed entirely of vertically sawn lumber[57]; however, the dendrochronology analysis of the timbers also identified mineralization marks on the wood, possible evidence that the wood had been floated on the river to Ste. Genevieve from another location.[58]

Sawmills, both horse and water-powered, had been established regionally as early as the 1770s. Early mills appeared to not have been commercially successful, and building contracts continued to call for hand-hewn lumber.[59] Other local mills described in historical references were like-

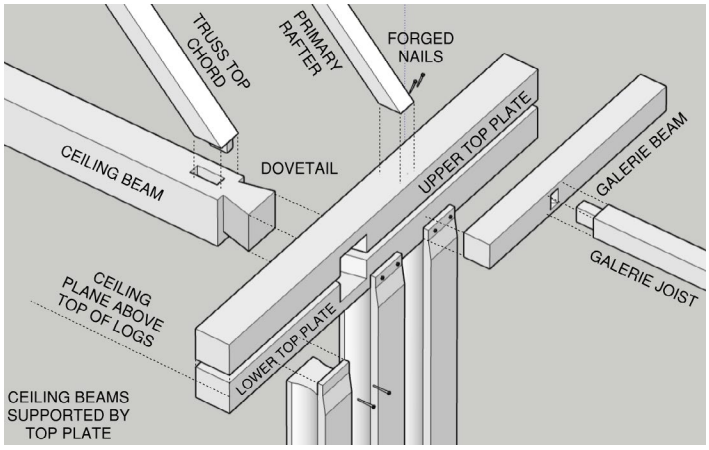


Figure GL-05. Diagram showing galerie and roof framing at the Bauvais-Amoureux House. Note the double top plate with a notch to receive the dovetail end of the ceiling beams which support the trusses. The galerie roof framing is outboard of the vertical logs.



Figure GL-06. Forged nails in the east face of the primary rafters (circled in yellow chalk).

56 Henry Mercer, "The Dating of Old Houses." *A Collection of Papers Read Before the Bucks County Historical Society*, V (1926): 536-549; and Lee Nelson, "Technical Leaflet 48: Nail Chronology as an Aid to Dating Old Buildings." United States: American Association for State and Local History, *History News*, Vol. 24, No. 11 (1968).

57 Lauer and Francis, *Vanishing French Heritage*, 150-152.

58 Richard Guyette. "Tree Ring Dating of French Colonial Vertical Log Houses in St. Genevieve, Missouri." University of Missouri – Columbia (1986 [n.d.]), 15.

59 Louis Houck. *A History of Missouri*, 371-372 and 385; Charles Peterson. *Colonial St. Louis: Building a Creole Capital*. United States: Missouri Historical Society, 1949, 26-27; and summary of research on contracts, estates, and deeds describing structures with galeries in Kaskaskia and Ste. Genevieve between 1725 – 1797, provided by Robert Meuller on June 1, 2021.

ly sugar or grist (flour) mills. By middle of the nineteenth century, widespread adoption of steam-powered sawmills increased the availability of lumber and lowered its cost significantly,[60] suggesting the existing galeries may have been constructed somewhat before that time.

HISTORICAL ACCOUNTS AND DOCUMENTATION

Historical documentation reviewed supports the idea that the house could have originally been built with or without galeries.

BUILDING CONTRACTS

Numerous building contracts exist that describe vertical log houses in the Illinois Country from the mid and late-eighteenth century. These contracts provide a wealth of detail for understanding the size, floorplans, furnishings, and the construction methodology. The contracts often reference galeries, porches, or lean-to structures (appentis) but in many cases are silent on this feature.[61]

PERSONAL ACCOUNTS

In his account Recollections of Persons and Places in the West, Brackenridge described the home of Vital Bauvais in approximately 1801 as "a long, low building, with a porch or shed in front, and another in the rear."[62] Brackenridge does not further describe the porches, so their size and length are unclear. The roof framing of the Vital Bauvais House has been heavily altered by later additions to the home, but investigation of the remaining historic fabric would provide a useful counterpoint to the Bauvais-Amoureux House, as

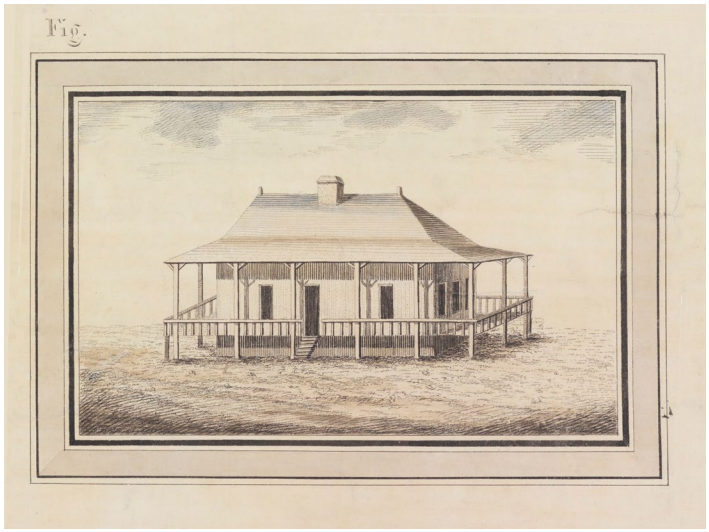


Figure GL-07. Victor Collot, Carte générale du cours de la rivière de l'Ohio, dated 1796. SourceL Bibliotheque nationale de France, https://gallica.bnf.fr/ark:/12148/btv1b55013299j).



Figure GL-08. Jacques Noise (Alexander McNair) House, before 1870, in St. Louis, Missouri (Source: Missouri Historical Society, https://mohistory.org/collections/item/N17103.)

60 Charles Peterson, "Sawdust Trail, Annals of Sawmilling and the Lumber Trade from Virginia to Hawaii via Maine, Barbados, Sault Ste. Marie, Manchac and Seattle to the Year 1860." *Bulletin of the Association for Preservation Technology*, 5, No. 2 (1973), 84-153; and James Elliott Defebaugh, *History of the Lumber Industry of America*. United States: American Lumberman, 1906. Elliott provides industrial census data on mills and lumber production in the United States from 1810 through 1900. For reference, in the 1810 census, Elliott reports only nine sawmills in all of the Territory of Louisiana, but by 1850, 393 sawmills were counted in the State of Missouri alone.

61 Peterson, *Colonial St. Louis*, 8 and 35-37; Natalia Maree Belting, *Kaskaskia Under the French Regime*. (Urbana: Southern Illinois University Press, 1948) 33-36.

62 Brackenridge, *Recollections*, 25.

it is believed that these two houses were built at the same time and have very similar structural systems.

HISTORICAL IMAGERY

An illustration of a "Maison francaise au Pays des Illinois (French house of the Illinois Country)" on Victor Collot's 1796 map of the Ohio River depicts a vertical log house galleried on all four sides, similar to the Bequette-Ribault and Louis Bolduc Houses *(Figure GL-07)*. The earliest historical photographs of vertical log structures also typically show porches or buildings with deep eave overhangs. For example, a c. 1865 photograph of the Jacques Noise (Alexander McNair) House in St. Louis (c. 1780, no longer extant) shows a poteaux-en-terre house with a steeply pitched hipped roof and an overhanging eave that springs from the top plate *(Figure GL-08)*; however, historical photographs of poteaux-en-terre houses without galeries also exist, such as the Bienvenue House (c. 1786, no longer extant) *(Figure GL-09)*.[63]

ARCHEOLOGICAL EVIDENCE

In 1996, archeological studies were performed under both the north and south galeries in an effort to determine if there were previously smaller galeries or steps to the original doorway.[64] The excavations and wire probing documented abandoned limestone piers at the north and south, buried roughly in line with the existing galerie posts.

It was suggested that these may be foundations for early structures of sizes approximately the same as the existing galeries. No evidence that suggested smaller galeries was identified by this study. Based on the early photographs and the 1956 HABS measured drawings, both galeries have since been heavily altered, likely during the 1960s restoration. The piers found by the archeological study may be those for the posts seen the early photographs.

CONCLUSIONS

While certainly not representative of every building typology in eighteenth-century Ste. Genevieve, these sources document that porches or galeries were common to French vernacular houses of the time but were not universally



Figure GL-09. Bienvenue House, c. 1786, in St. Louis, Missouri (Source: Missouri Historical Society, https://mohistory.org/collections/item/N17097)

present. However, it may have been unusual for the Bauvais-Amoureux House to have been originally built without galeries, especially given their presence at Vital Bauvais's house on Main Street. If small or lean-to galerie structures were originally in place, they may have left little physical evidence behind after their removal.

Historical documentation providing specific evidence for the Bauvais-Amoureux House's early appearance is limited. The only known source that makes mention of galeries is the note on Raphael's estate records in which Auguste received a payment of $13.50 from the estate "for making a gallery to said R. St. Gemme's house and for one load of posts making in all the above sum." Raphael died in 1836 but probate on his estate was not settled until 1844, when the house was purchased by Auguste.

Given the probate settlement timeline and the physical evidence, an approximate date for the existing galeries is here suggested to be approximately the 1840s to before c. 1852, when the house was sold to Benjamin Amoureux. Further research and investigation, as well as additional dating through dendrochronology, may be able to narrow and refine these dates.

63 Peterson, *Colonial St. Louis*, 31, pl. 6, and pl. 7.

64 No author. "Preliminary Report on Excavations at the St. Gemme Beauvais/Amoureux House, Ste. Genevieve, Missouri." 1996.

To Thatch or Not to Thatch

The nature of the original roofing for the Bauvais-Amoureux House is the subject of much debate. Architectural historians who have studied the house and other vertical log structures disagree whether the c. 1792 roofing was more likely thatch or wood shingle. Very few of the vertical log houses in Ste. Genevieve have retained artifacts of their early roofing systems,[65] and no historical documentation specific to the Bauvais-Amoureux House has yet been found that describes the roofing.

In *Vanishing French Heritage*, the authors propose that the remnants of the liteaux on the primary rafters and the original steeply-pitched hipped roof of the Bauvais-Amoureux House are characteristic of thatch rather than shingles as the original roof covering.[66] Others have posited that thatch was no longer a preferred roofing material for houses of quality by the mid-eighteenth century, and the later construction date of the House supports wood shingles as the more likely original roofing. The question of whether the House originally had galeries also weighs in on this issue, as thatch would not have been a weathertight covering for a broken-pitch roof.

HISTORICAL DOCUMENTATION

Estate inventories and deeds from late eighteenth-century Ste. Genevieve and the surrounding communities indicate that while thatching was still in use in 1792, it was more commonly applied to utility structures like sheds, barns, and stables.[67] Houses were typically described with shingled roofs when the roofing was given. This is consistent with building contracts of the time in Illinois Country, which often required shingles on buildings of better quality since at least the 1730s.[68]

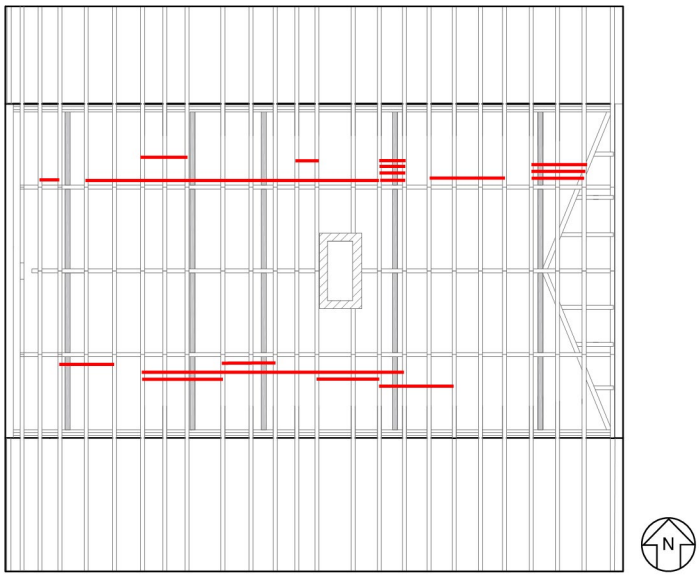


Figure TH-01. Extant liteaux in attic (indicated in red).



Figure TH-02. Extant but loose liteaux at the north roof slope at Truss V.

65 For example, at the time of writing *Vanishing French Heritage*, the authors documented remnants of the original hand-riven oak shingles in the attic of the Joseph Caron House (c. 1825) (Lauer and Francis, *Vanishing French Heritage*, 138-139.). The shingles had been protected by the roof of a later addition. Other examples likely exist and could be documented through further investigation.

66 Lauer and Francis, *Vanishing French Heritage*, 47.

67 Summary of research on estates inventories and deeds describing thatched structures in Ste. Genevieve between 1766 – 1796, provided by Robert Mueller on June 1, 2021.

68 Peterson, *Colonial St. Louis*, 20-21, 35, and 37; Fredric L. Billon, *Annals of St. Louis in Its Early Days Under the French and Spanish Dominations*. (St. Louis, MO: G. I. Jones and Company, 1886) 58; and Belting, *Kaskaskia Under French Regime*, 35-37.

PHYSICAL EVIDENCE

Narrow wood straps or battens (liteaux) are extant in a number of places in the attic *(Figure TH-01)*. The liteaux are hand-riven, approximately 2-inches wide, spaced approximately 6-inches apart, and are attached to the outside face of the primary rafters with forged nails *(Figure TH-02)*. The liteaux are primarily still in place just under the roof line of the galeries where they are protected. In a few locations, the liteaux extend under the bearing end of the galerie rafter, indicating that they were place prior to the installation of the rafters *(Figure TH-03)*. The liteaux do not have holes that would suggest any roofing was ever nailed directly to them.

No liteaux are extant above the galerie roof line; they would have been removed to accommodate the spaced sheathing boards, which were likely added when the galeries were constructed. No liteaux are extant along the lower area of the primary rafters. However, forged nails and a consistent pattern of abandoned nail holes in the rafters indicate that the liteaux were originally installed at regular spacing to the top plate *(Figure TH-04)*. Forged nails and nail holes are also present along the entire length of the hipped roof rafters, indicating that the hipped end also had liteaux. This evidence supports the theory that the original roof was sloped from the ridge to the eave without a change in pitch.

CONCLUSIONS

The use of forged nails indicates that the liteaux were in place prior to the existing galerie framing and are likely artifacts of the c. 1792 roofing. However, the presence of the liteaux alone does not resolve the question of whether the roofing was originally thatch or wood shingle. Battens of this type were used to support numerous roofing materials; thatch could have been tied or lashed to the battens, while wood shakes could have been hung from the battens with wood pegs. Neither of these methods would leave physical marks on the liteaux.

One factor possibly in favor of thatch is that while nails were widely used in the c. 1792 construction and obviously available for securing wood shingles, the liteaux do not have nail holes. However, forged nails were labor intensive



Figure TH-03. Liteaux on south roof slope at Truss II, extending under the gallery rafter bearing end.



Figure TH-04. A consistent pattern of forged nails and abandoned nail holes (marked in yellow chalk) along the hip framing and primary rafter at the northeast corner.

to fabricate and likely expensive; wood shingles would have required thousands of nails. A less costly roofing or attachment method might have been used.

Another factor possibly in favor of thatch are the curious anachronisms used in the construction of the Bauvais-Amoureux House.

- Why would Jean Baptiste, fils, a man of wealth and social standing, build a poteaux-en-terre house when that method was falling out of favor for the more durable poteaux-sur-sole?
- Why would his brother Vital St. Gemme Bauvais do the same, when his immediate neighbors including Jean Baptiste Valle (c. 1794) and Louis Bolduc (c. 1793) were building more structurally sophisticated houses only a year or two later?
- Why do the two Bauvais houses not have diagonal lateral bracing, a centuries-old construction technique for heavy timber and colombage structures?

It may be that the Bauvais-Amoureux House and its near twin the Vital St. Gemme Bauvais House I were built using traditional knowledge somewhat out of date from other 1790s structures in Ste. Genevieve, including thatched roofs. Further investigation is needed, but the question of thatch or shingle may not be able to be definitely resolved.

Illinois Country and Ste. Genevieve in Context

13,000 BP and after | 1690s | c.1740 | 1762-1763 | 1785 | c.1789 | c.1792



American Indian from the Nation of Kaskaskia, from "Carte générale du cours de la rivière de l'Ohio," map by Victor Collot dated 1796 (Bibliothèque nationale de France, https://gallica.bnf.fr/ark:/12148/btv1b55013299j#)

People begin to occupy the Illinois County as early as 13,000 BP (Before Present) with the arrival of the first Paleoindians, who settle on the east and west banks of the Mississippi River.

By the arrival of the first Europeans, the local American Indian communities are members of the Illinois Confederation, a collection of 12 or 13 tribes.

The earliest permanent European settlements in the Illinois Country of New France are founded by French settlers.

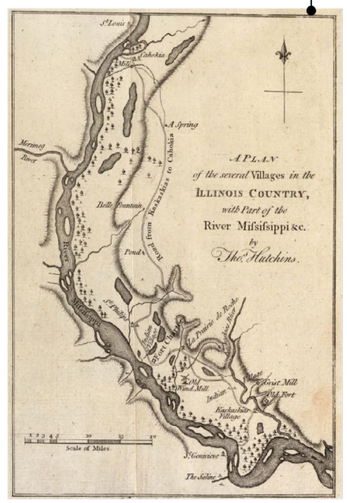
c.1699 Cahokia
c.1703 Kaskaskia
c.1720 Fort de Chartres
c.1722 Prairie du Rocher
c.1764 St. Louis



Cahokia Courthouse, photo c. 1900 (Illinois Historic Preservation Agency) from J. Edwards , "Creole Architecture: A Comparative Analysis...," *International Journal of Historical Archaeology* 10 (3), 2006.

The French settlers bring with them building traditions from both French Canada and Lower Louisiana. A common building form in the Illinois County is the vertical log house with a broken-pitch roof and open galleries.

Ste. Genevieve is founded by French settlers moving from Kaskaskia, becoming the earliest permanent European settlement west of the Mississippi River.



"A Plan of the Several Villages in the Illinois Country...," map by Thomas Hutchins dated 1778 (David Rumsey Historical Map Collection, https://www.davidrumsey.com/maps5570.html).

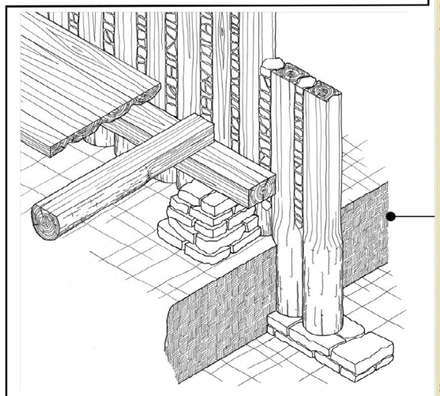


"French Habitation in the Country of the Illinois," 1826 etching after a 1796 map illustration by Georges Collot (The JCB Archive of Early American Images, https://jcb.lunaimaging.com).

Ste. Genevieve comes under Spanish control through the Treaty of Fountainbleau and the Treaty of Paris, which transfered the territory of Louisiana to Spain and lands east of the Mississippi River to Britain.



"An accurate map of North America. Describing and distinguishing the British, Spanish and French dominions...," map by Emanuel Bowen dated 1763 (Library of Congress, https://lccn.loc.gov/74693869)



Excerpt from the HABS drawings for the Vital St. Gemme Beauvais House, showing the poteaux-en-terre construction. This house's construction is similar to the Bauvais-Amoureux House (From Library of Congress, https://www.loc.gov/item/mo0249/).

L'année des grandes eaux

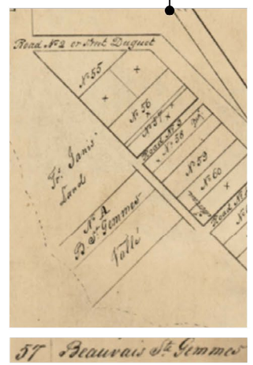
After a major flood, the original site of Ste. Genevieve is abandoned, and the town is relocated to higher ground at its present location

[Translation]

. . . . a house of posts in the ground thirty feet long and twenty-two feet wide, with a lean-to at one end of the said house an a double chimney of stone between the house and the lean-to; the whole to be roofed with shingles. The main posts—that is to say, those at the corners and openings in the wall—shall be of mulberry of suitable dimensions, as shall be the frames of the doors and windows in the said house. There shall be four windows so placed as to allow beds in the corners. The balance of the posts shall be of white oak, well seasoned and squared up. The said house shall be floored and ceiled with boards well planed [?] and grooved, with a partition in which shall be placed one door at the end near the main room. The main room shall be sixteen feet long with two doors cut opposite each other and two windows. There shall be two similar windows in the bedroom. The lean-to shall have one door and one window and shall be floored and ceiled with grooved boards. In addition there shall be excavated under the said house a cellar twenty feet long, fourteen feet wide and six feet deep. The said house shall be well plastered and whitewashed inside and out and the lean-to as well. The said house shall have a ceiling height of eight feet, the floor raised one foot above ground level and the lining of the cellar well made. The lumber for construction shall be subject to examination by experts. All the lumber of the said house shall be of white oak and walnut. The doors and the windows shall be well fitted with the necessary hardware. . . .[95]

Excerpt from a 1769 builder's contract to construct a poteaux-en-terre house in St. Louis, from Charles Peterson, *Colonial St. Louis: Building a Creole Capitol* (Saint Louis : Missouri Historical Society, 1949).

Jean Baptiste St. Gemme Bauvais, fils (son), moves his family from Kaskaskia to Ste. Genevieve and purchases land along New Bourbon Street across from the Common Field.



Excerpt from an 1825 plat map of Ste. Genevieve showing the "Beauvais St. Gemmes" land holding on New Bourbon Street.

Jean Baptiste, fils, constructs a poteaux-en-terre (posts in the earth) house, measuring approximately 26-feet wide by 60-feet long on the site. As originally constructed, the house likely did not have the galleries or broken-pitch roof currently present.

Although no historical documentation for Jean Baptiste, fils,'s house has been yet found, contracts exist for the building of similar structures which help understand how these buildings were constructed and their original appearance.



Model of original structure of the Bauvais House in the Ste. Genevieve welcome center.

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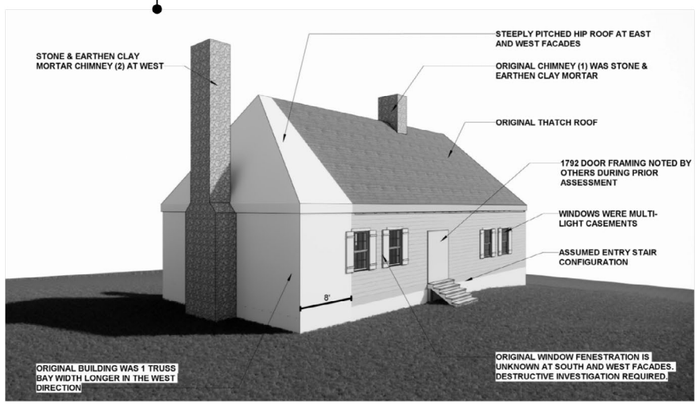
Changes Over Time - The Bauvais House

c.1792

The original house is constructed of hewn vertical cedar logs set directly into the ground (poteaux-en-terre).

- The roof is a steeply-pitched hip and possibly thatched initially.
- The roof structure is formed with hewn white and red oak Norman (king post) trusses and rafters.
- Two stone chimneys are present, one in the center of the house that is still in place and one on the west end that has since been removed. The exterior is whitewashed per historical descriptions of the town. Windows are casements.

Few alterations to the house appear to have been made during the Bauvais Family ownership.



Conceptual rendering of the original construction c.1792

1800

A Period of Swift Change for Ste. Genevieve

1800 Treaty of San Ildefonso
1803 Louisiana Purchase
1812 Territory of Missouri
1821 State of Missouri

Ste. Genevieve returns to French control but shortly after is sold to the United States as part of the Louisiana Purchase and becomes the Missouri Territory, then later the State of Missouri.



"Missouri territory formerly Louisiana," map by Mathew Carey dated 1814 (Library of Congress, https://www.loc.gov/item/2001620466/).

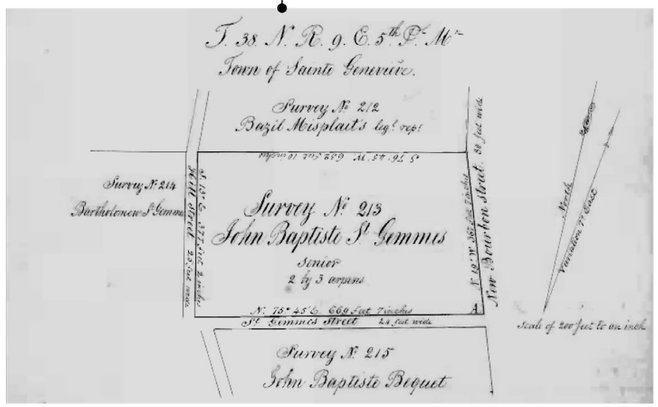
1811

In the first known estate inventory in 1811, the property is described as about 6 arpents (acres) in size, with a "Negro cabin," garden, barn, and several fruit trees, valued at $700.

These features and ancillary structures are no longer standing, and no contemporary surveys survive that indicate the site features.

New Madrid Earthquakes 1811-1812

A series of three major earthquakes from December 1811 to February 1812, considered the largest earthquakes in recorded historyeast of the Rocky Mountains. Ste. Genevieve survives with minor damage.



An 1845 property survey showing the "Jean Baptiste St. Gemmes" property along New Bourbon Street (St Genevieve County Courthouse deed records).

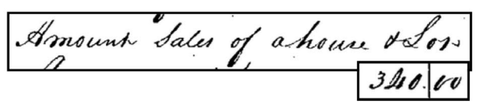
1833-1836

The house passes down through the Bauvais family after a series of deaths.

1833 - Jean Baptiste, fils, dies, and the House is purchased by his son Raphael Ste. Gemme.

1836 - After Raphael's death, it is purchased by his brother Auguste Ste. Gemme in 1836. At this time the house and lot are valued at $340.

1844 - An inventory on Raphael's estate describes the property as "a house and lot containing six arpents more or less and being the same on which the said deceased resided at the time of his death."

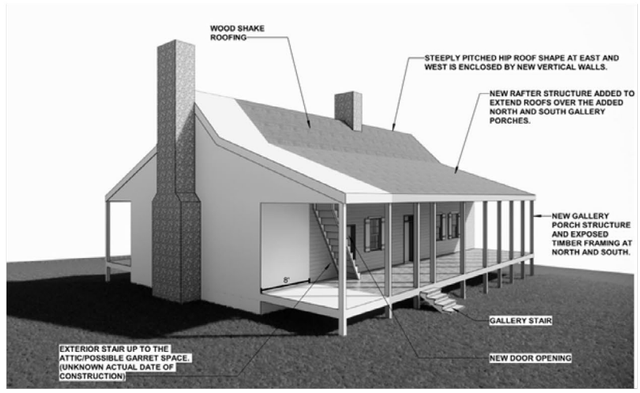


"Amount sales of a house & lot - 340.00," from the 1836 estate statement (St Genevieve County Courthouse records).

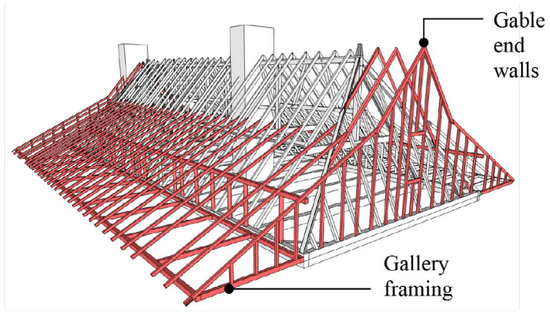
1840s-c.1852

The first major alterations to the house occur during this era, likely after the death of Raphael in 1836.

- Galleries are constructed on the north and south walls.
- Rafters are added to create the broken-pitch gable roof.
- The rafters are partially hewn poles in a mix of local hard and softwoods.
- Gables are constructed on the east and west ends of hewn pole framing.
- The roofing is likely with wood shake. Wood weatherboard siding is added to the north, east, and west walls, and the south wall remains plastered.



Conceptual rendering of the 1840s - c.1852 alterations.



Changes to roof framing that likely date to 1840s - c. 1852, with the contruction of the existing galleries and gable end walls (in red).

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Changes Over Time - The Amoureux House

1852

Benjamin C. Amoureux purchases the house and 6 acre lot and resides there with his wife Pelagie Vital, their children, and other extended family members. The house will remain in the Amoureux family through 1923.



A nineteenth-century photograph believed to be members of the Amoureux family (possibly with Pelagie Vital seated third from the right), from https://amoureuxhouse.org.

It is unclear if the photograph was taken on the south gallery of the Bauvais-Amoureux House.

A Time of Challenge 1859-1868

After the initial purchase in 1852, the Amoureux Family experiences a period of financial difficulty in the 1850s and 1860s, and the house passes through the hands of several owners and trustees. The Amoureux Family maintains continual occupancy during this period. It is unlikely that further major alterations are made to the house until after Felix is able to repurchase the property in 1868.

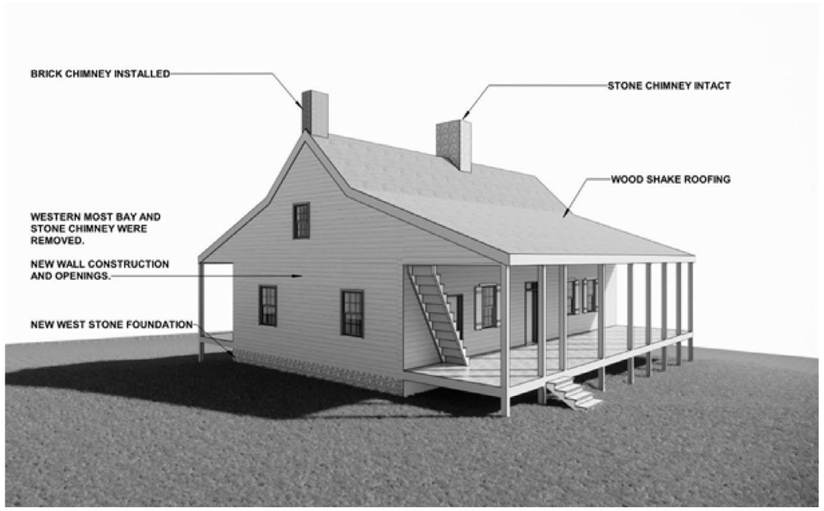
1859-1868

1880s - c. 1900

A second period of major alteration occurs during the Amoureux Family ownership, likely between 1880 and 1900.

- The west log wall, the west chimney, and the first roof truss are removed, permanently shortening the structure by 8 to 12 feet.
- A new west wall is constructed from dimension lumber infilled with brick nogging on a limestone foundation.
- A new brick chimney is constructed inboard of the west frame wall.
- The east log wall is also modified to sit on a limestone foundation.
- Contemporary photos show a picket fence on a stone retaining wall along the road, and a swinging gate at the north drive; these features are no longer present.
- The existing windows are replaced with six-over-six hung window with louvered shutters.
- By 1916, the central chimney has been partially reconstructed with brick.

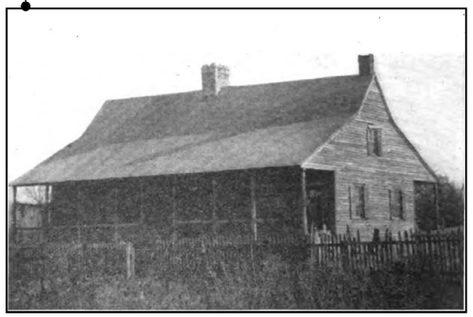
The reasons for these alterations are unknown but are likely be related to deterioration of the foundation logs and water damage to roof truss.



Conceptual rendering of the alternations to the west end wall, likely 1800s - c.1900.

1910

Felix Amoureux dies and the property was subdivided between his sons. This was the first major property division since the Amoureux purchase in 1852. The two photos at right may represent views of the house shortly before and after this transition in ownership.



Undated (c.1900) photograph from Louis Houck, *A History of Missouri,* (Chicago, IL: R.R. Donnelley & Sons, 1908), the earliest found photograph of the house and the only early photograph of the south elevation and taken after the west end was modified.

1923

The house and its lot are sold to William Gisi, ending the Amoureux Family ownership.

Early Views of the House



Undated (c.1900) photograph from Richard Deposki, *Ste. Geneviève (Images of America),* (Charleston, SC: Arcadia, 2008), showing the stone chimney still in place. Note the condition of the property compared to the 1916 photo below.



"Residence of the Ammoureaux Family" dated November 1916 (Missouri Historical Society, https://mohistory.org/collections/item/N38681). Based on this photograph, the house appears to have been recently repaired and painted white. The figures in the photo are believed to be Amoureux family members but are unidentified.

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Changes Over Time - Into the Twentieth Century

1936-1940

After William Gisi's death, his widow Elizabeth Gisi maintains the house as a rental property. She marries Frank Jacobs in 1925.

By the 1930s HABS photos, the house is in poor repair and may be only partially occupied.

- The south galerie has been partially reconstructed. The stairs to the south galerie align with the west entry, not the center door.
- The north galerie is not enclosed. Remnants of the c. 1916 lattice skirting are still in place. The roofing is corrugated metal.
- A garden is partially visible to the west of the house.
- The stone retaining wall along St. Mary's Road is in ruins, and the picket fence along the road and swinging gates are missing.
- Wood picket and wire fences are visible along the north and south property lines.





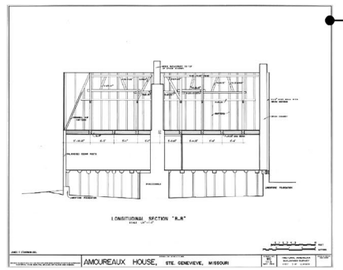




1936 to 1940 photographs from "Amoureaux House, 327 St. Mary's Road" HABS collection (https://www.loc.gov/pictures/item/mo0247/)

1956

The Historic American Building Survey (HABS) produces the first measured drawings of the house, but no contemporary photographs are taken.



1956 section from "Amoureaux House, 327 St. Mary's Road" HABS collection (https://www.loc.gov/pictures/item/mo0247/)

1963

The house is purchased by Norbert and Frances Donze in 1963. The Donzes renovated the house and operated it as a historic house museum until 1993. During the renovations, alterations are made to the interior and exterior.

- The north and south galleries are entirely reconstructed, and the north gallery is enclosed with a frame wall and multi-lite windows.
- The south gallery stairs are relocated to their present location.
- An interior partition wall dividing the east great room is removed.
- Nineteenth-century plaster ceilings may have also been removed.
- HVAC is installed, including ductwork and insulation in the attic with ceiling vents through the first-floor ceiling.

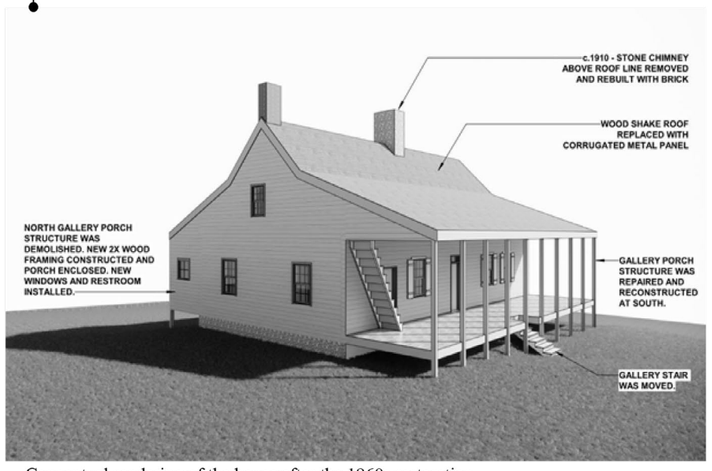


c.1990 photography from the Donze Family collection, showing the interior of the house museum.

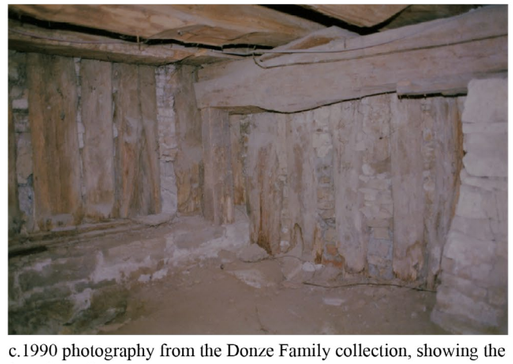
1970

National Recognition 1970

In 1960, Ste. Genevieve is recognized as a National Historic Landmark district. An amendment to the nomination in 1970 specifically identifies the Amoureux House as a contributing property.



Conceptual rendering of the house after the 1960s restoration.



c.1990 photography from the Donze Family collection, showing the logs from the caveau.

1993

The Great Flood of 1993 damages the house.

Shoring and foundation drainage are installed in the caveau, along with other repairs.



Flood levels at the Beauvais-Amoureux House, from Bill Nager, *Ste. Genevieve: A Leisurely Stroll Through HIistory* (Ste. Genevieve: Merchant Street Publishing, 1998).

1994-2017

In 1994, the house is donated to the Missouri DNR who maintains the house as a visitors attraction until 2017.

Missouri DNR performs repairs and maintenance work, including replacement of the roofing and siding in 2007.





2007, shortly after roofing and siding replacement (Courtesy of Engine House No. 1).

2018-2020



Ste. Genevieve National Historical Park is established and the house is acquired by the National Park Service.

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Setting, Site, and Landscape Features - Then and Now

SETTING

The Bauvais-Amoureux House is located at 327 St. Marys Road in Ste. Genevieve, Missouri. The property falls within the Ste. Genevieve Historic District, listed in the National Register of Historic Places, and designated a National Historic Landmark (c. 1960s, as expanded 1970). The district has been proposed for further expansion in a draft National Historic Landmark nomination update (2001) *(Re: Figures DH-SITE-01 and DH-SITE-02)*. The 0.12-acre property also falls within the authorized boundary of Ste. Genevieve National Historical Park *(Re: Figures DH-SITE-03 and DH-SITE-04)*.

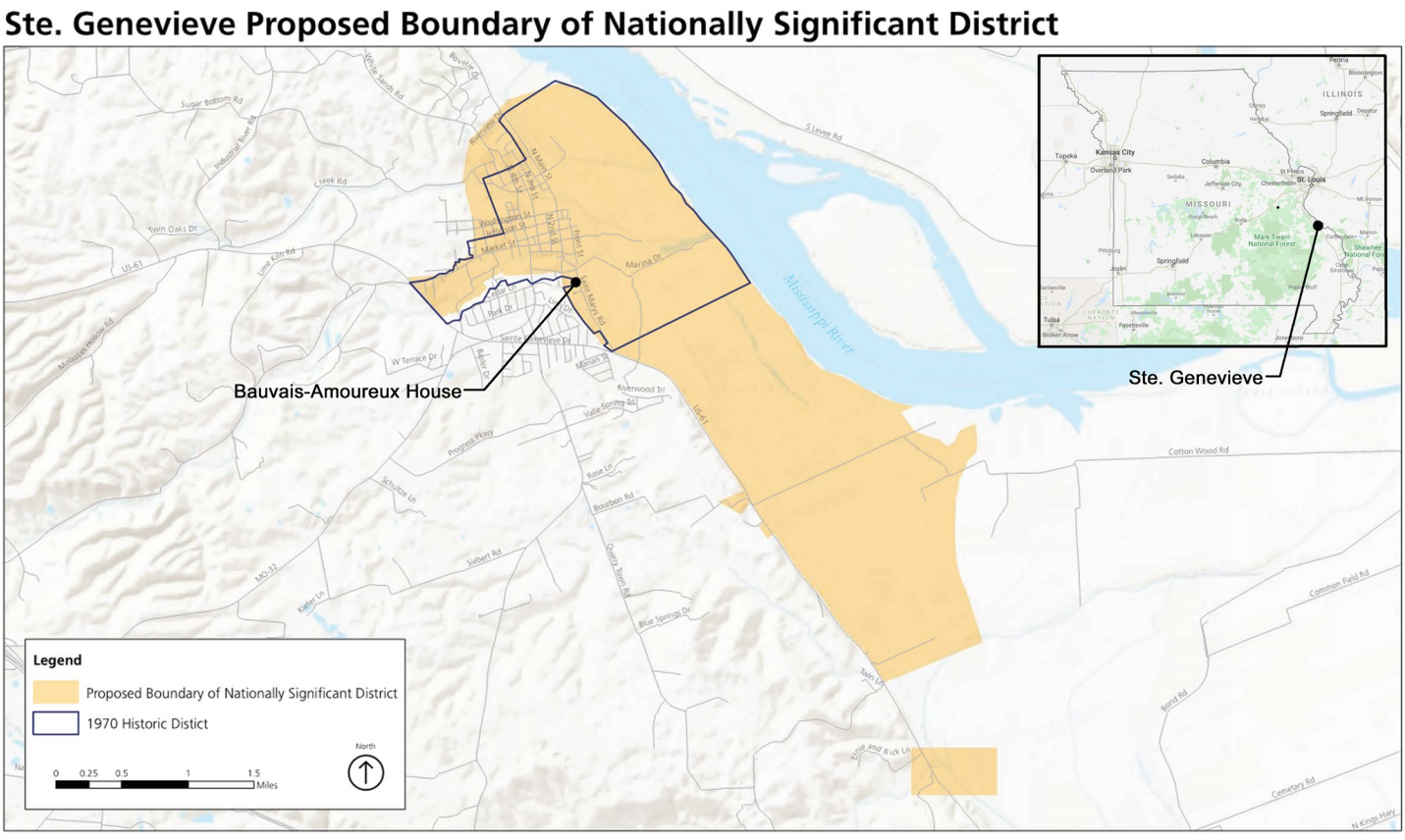


Figure DH-SITE-01. Map of the 1970 Ste. Genevieve National Historic Landmark property, and proposed expanded district based on a 2001 draft nomination update. (Source: National Park Service, Special Resource Study, 17)

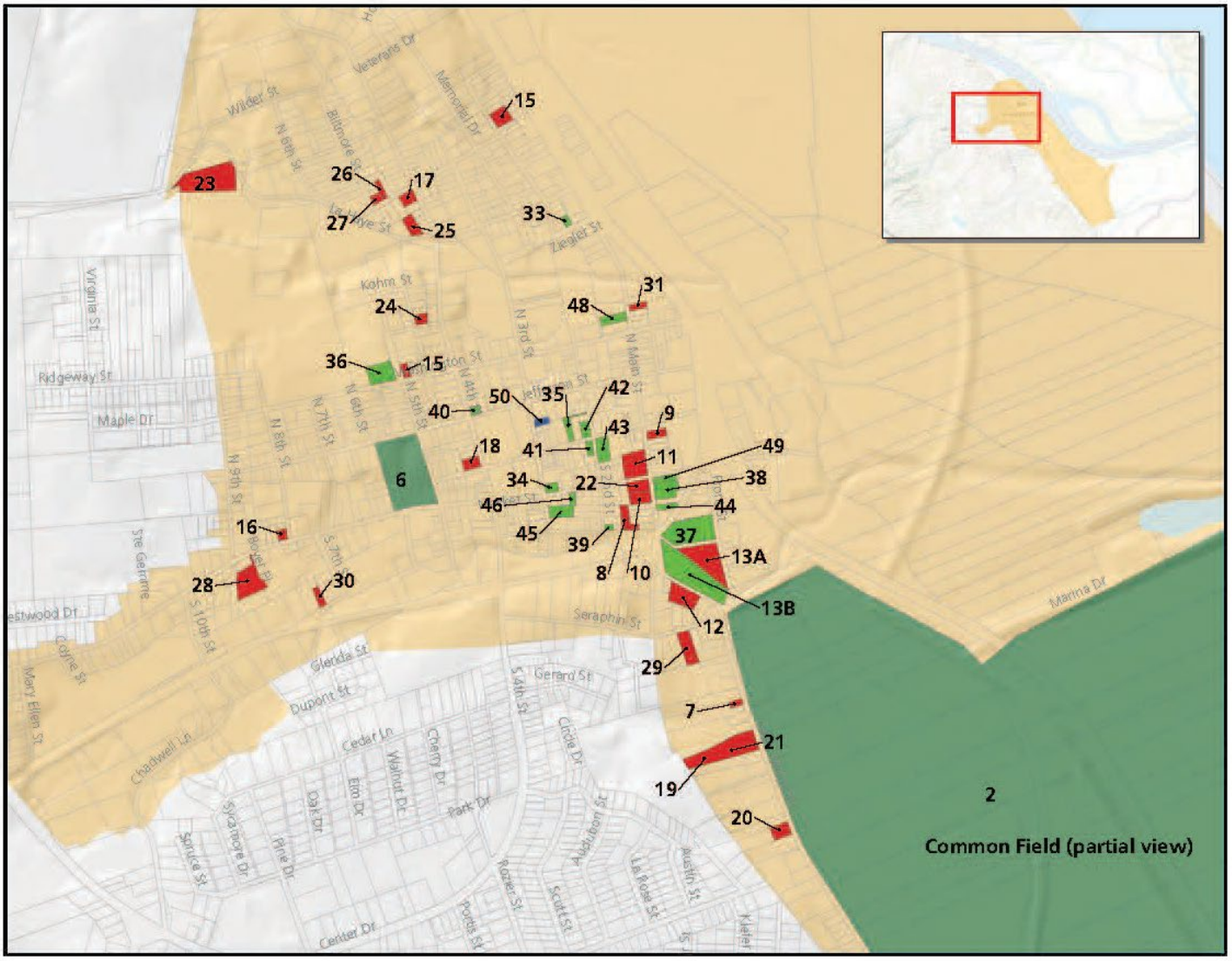


Figure 10. Ste. Genevieve and surrounding area.
(See Chapter 6: Property Inventory for a key to this map.).

Figure DH-SITE-02. Detail of the expanded National Historic Landmark district indicating contributing properties. The Bauvais-Amoureux House is #7. (Source: National Park Service, Special Resource Study, 16)

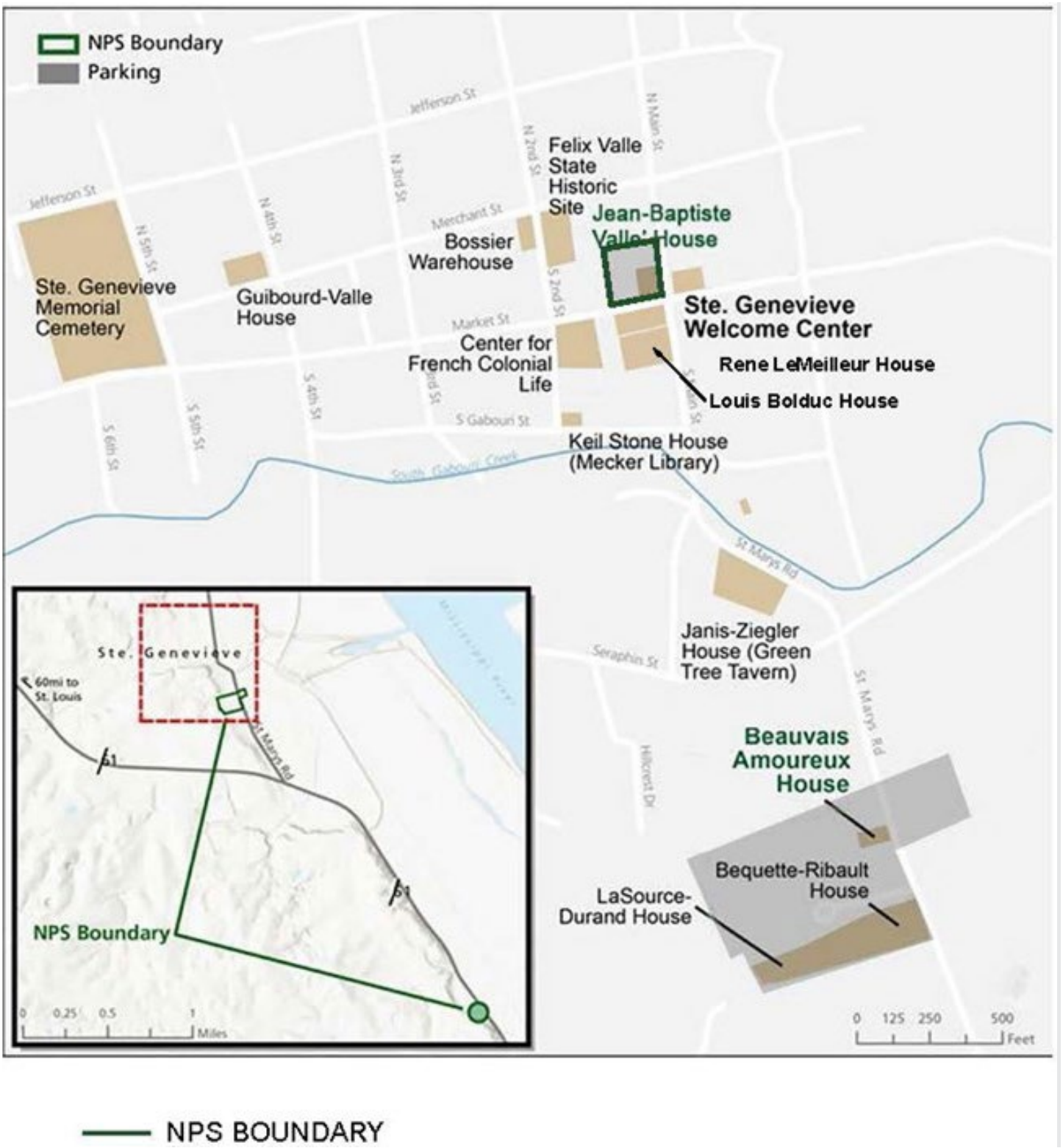


Figure DH-SITE-03. Ste. Genevieve National Historical Park park map. (Source: National Park Service, Ste. Genevieve National Historical Park website, available at https://www.nps.gov/stge/planyourvisit/maps.htm)

Visitors to the Bauvais-Amoureux House arrive via St. Marys Road, a two-lane, two-way, asphalt paved public road *(Re: Figure DH-SITE-05)* The 24-foot-wide road corridor is flanked to the west by a gravel shoulder that is often used by visitors for parking *(Re: Figure DH-SITE-06)*. The road near the House is edged to the east by a 5-foot-wide strip of concrete paving. A commercial boat repair business is located along the road east of the House ("F") *(Re: Figure DH-SITE-07)*.

The house sits on an elevated terrace set a few feet above St. Marys Road. To the north of the Bauvais-Amoureux House is a residential property ("G") *(Re: DH-SITE-04)* that includes a dwelling, a gravel access drive to the south, and outbuilding to the west. The access drive closely edges the Bauvais-Amoureux House. It cuts through the steep slope that edges the terrace and is edged by steep slopes to either side as it passes the Bauvais-Amoureux House to the north. The driveway and an open area adjacent to the outbuilding are used with permission by NPS to access the Bauvais-Amoureux House but is not designated for use by the public.

Another twentieth-century dwelling is located to the south of the Bauvais-Amoureux House that faces St. Marys Road ("C") *(Re: DH-SITE-04)*, while a large twentieth century dwelling fronted by a circular driveway is located to the southwest set back from the road ("D") *(Re: DH-SITE-04)*. The Bequette-Ribault House ("B") *(Re: DH-SITE-04)*, a c. 1808 property of French cultural influence, also falls within the park authorized boundary to the south of the Bauvais-Amoureux House along St. Marys Road. Along with the Bauvais-Amoureux House, it is one of the three surviving examples of *poteaux-en-terre* architecture within Ste. Genevieve.

The Bauvais-Amoureux House property *(Re: DH-SITE-07)* sits atop a level terrace west of St. Marys Road. A relatively steep slope forms the edge of the terrace east of the House. Access to the terrace occurs via a flight of stone steps that lead to a stone walk extending along the south façade of the House. From atop the terrace, views are afforded of the Common Field, a large open space that was established to serve community agricultural needs during the early nineteenth century. Reference appendix for existing boundary and site survey.



Figure DH-SITE-04. Authorized boundary of Ste. Genevieve National Historical Park located along St. Marys Road. The Bauvais-Amoureux House is "E". (Source: National Park Service, Special Resource Study, 40)



Figure DH-SITE-05. View south along St. Marys Road. (Source: LSHLA 2020)



Figure DH-SITE-06. View of the gravel shoulder used by visitors to park near the Bauvais-Amoureux House. (Source: LSHLA 2020)

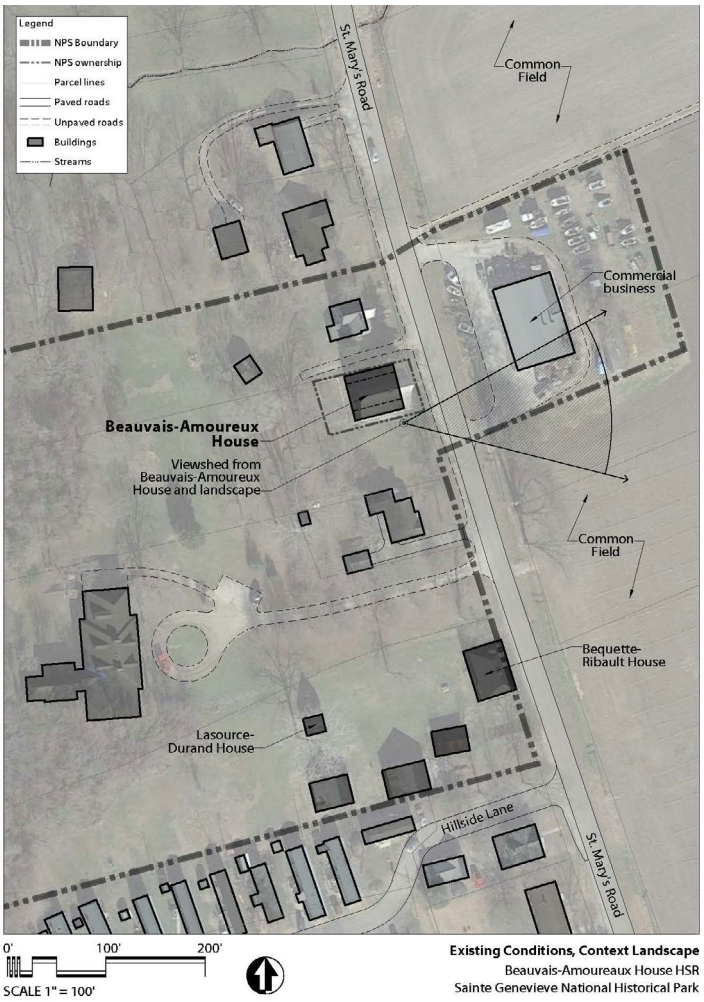


Figure DH-SITE-07. Site plan of the Bauvais-Amoureux House and environs. (Source: LSHLA, 2021, from aerial photography)

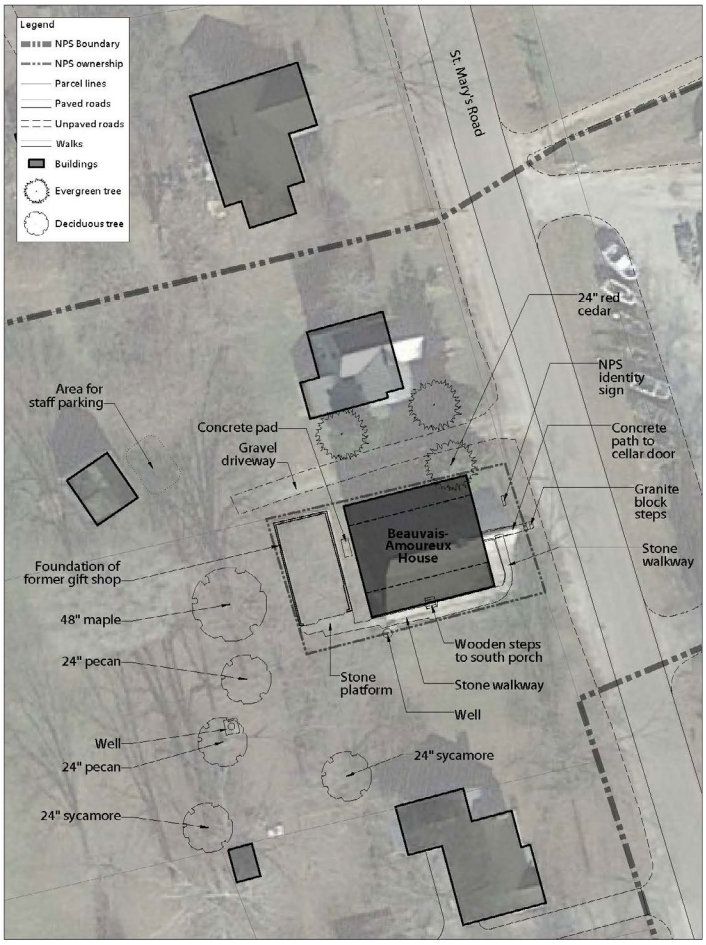


Figure DH-SITE-08. Site plan of the Bauvais-Amoureux House parcel and surrounding properties. (Source: LSHLA, 2021, from aerial photography)



Figure DH-SITE-09. Landscape west of the House. (Source: LSHLA, 2020)



Figure DH-SITE-10. Landscape east and north of the House. (Source: LSHLA, 2020)

Landscape features associated with the parcel include the terrace and slope along St. Marys Road, the stairs leading up the slope to a walkway that provides access to a cellar door in the east façade and connects to a second walkway that edges the south porch façade of the dwelling, a well or cistern, concrete foundation, concrete pad, and an identity sign marking the property as part of Ste. Genevieve National Historical Park that faces St. Marys Road *(Re: DH-SITE-08)*. Turf lawn and a grove of deciduous trees edge the parcel to the south and west. A gravel driveway and eastern redcedar tree edge the property to the north *(Re: DH-SITE-09 & -10)*.

Photographs illustrating change over time around the Bauvais-Amoureux House since c. 1900 (figures DH-SITE-11 through 31)

VIEW SOUTHWEST TOWARD THE EAST AND NORTH FACADES OF THE BAUVAIS-AMOUREUX HOUSE



Figure DH-SITE-11. Excerpt from the c. 1900 photograph showing the parcel edged by a stone wall along St. Marys Road, wooden picket fencing, and a gate at the road leading along the north side of the House. A tree is in the yard east of the House. (Source: Richard Deposki, *Ste. Genevieve: Images of America*, p. 24)

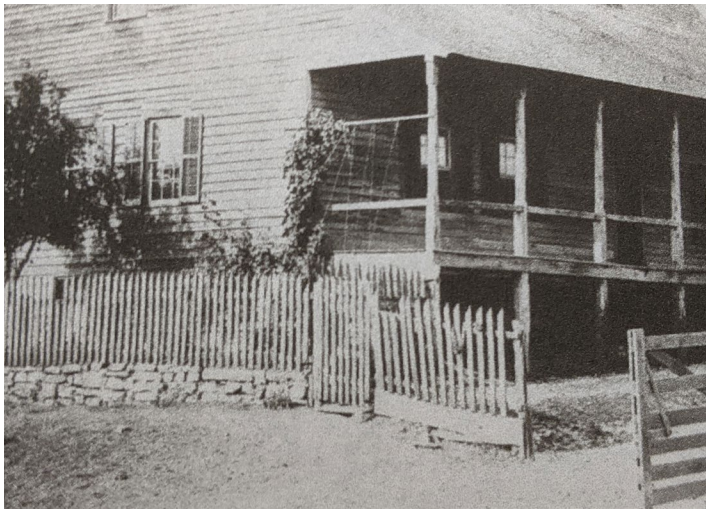


Figure DH-SITE-12. Excerpt from the c. 1916 photograph of the house from a similar angle showing the stone wall, wooden picket fence, gate at the north drive, adjacenttree, and the addition of lattice underneath the north porch. (Source: Missouri Historical Society, https://mohistory.org/collections/item/N38681)



Figure DH-SITE-13. A similar view taken during the HABS photographic documentation in 1986 showing the access road to the east, shrub and ground cover plantings, vines growing on the east façade, and signposts between the house and St. Marys Road. The north porch is enclosed.



Figure DH-SITE-14. The view, 2020, showing the access road and the maturing eastern redcedar tree north of the house. No evidence of earlier wall, fence, or gate features remain.

VIEW WEST TOWARD THE EAST FACADE OF THE BAUVAIS-AMOUREUX HOUSE



Figure DH-SITE-15. C. 1937 photo looking west toward the east façade of the House showing the north and south porches and the slope west of the road. Electrical lines run parallel St. Marys Road.



Figure DH-SITE-16. A similar view, 2020, showing the bank cleared of vegetation and the north porch enclosed, a power line pole, and the NPS identity sign.



Figure DH-SITE-17. View toward the House from St. Marys Road c. 1990s while it was being operated as a museum and gift shop by the Donzes.



Figure DH-SITE-18. A similar view, 2020, showing the walk leading toward the east façade with a different handrail configuration, removal of shutters, changes in signage, the maturation of the cedar tree to the north, and the loss of boxwood to the south.

VIEW NORTHWEST TOWARD THE SOUTH FACADE OF THE BAUVAIS-AMOUREUX HOUSE



Figure DH-SITE-19. C. 1937 photo of the south façade of the House showing the adjacent house, and a fence between the two. A walnut or ash tree is along the road.



Figure DH-SITE-20. Photograph of the House from the 2001 NRHP nomination showing the former road leading into the property, the boxwood plantings, stair along St. Marys Road, and view of the adjacent house to the north.



Figure DH-SITE-21. A similar view, 2020, showing that the fence, road, walnut tree, and boxwood plantings are no longer present, although the walk and handrail survive. The sloped topography has been reestablished and the driveway is no longer present.

VIEWS NORTHWEST TOWARD THE SOUTH AND EAST FACADES OF THE BAUVAIS-AMOUREUX HOUSE



Figure DH-SITE-22. View northwest toward the Bauvais-Amoureux House c. 1970s that includes the c. 1960s-1990s gift shop to the left as well as a driveway following the south façade of the House. Wood stairs lead to the porch, while a low fence and plantings appear to edge the House to the east. The House has two chimneys.



Figure DH-SITE-23. The same view taken as part of the HABS photographic documentation in 1986 showing the south façade of the House edged by boxwood plantings. A tree appears to edge the House to the east, while a two-track driveway leads into the property from St. Marys Road. The wood stairs continue to lead to the porch. The gift shop appears west of the House. The shadow of a house on the adjacent lot to the south is visible. The House continues to feature two chimneys.



Figure DH-SITE-24. A similar view in 2020. Shown is a stone walkway edging the south side of the House. The road, boxwood plantings, gift shop, and plantings east of the House are no longer present, and the House has only one chimney. The wood stairs remain present.

VIEW NORTH TOWARD THE SOUTH FACADE OF THE BAUVAIS-AMOUREUX HOUSE



Figure DH-SITE-25. A HABS photo from 1986 shows the south façade of the House, the driveway, wood stairs, boxwood plantings, stone walk, well, and eastern wall of the gift shop. Electrical lines edge St. Marys Road.



Figure DH-SITE-26. The Bauvais-Amoureux House looking north toward the south facade, 2020. The stone walk, wood stairs, and well remain present, while the driveway and boxwood plantings have been removed. Electrical lines continue to edge St. Marys Road.

VIEW NORTHEAST TOWARD THE SOUTH AND WEST FACADES OF THE BAUVAIS-AMOUREUX HOUSE



Figure DH-SITE-27. A HABS photograph from 1986 shows the south and west façades of the House, driveway, wood stairs, boxwood plantings, stone walk, and well shown with a wooden bucket, with the boat repair shop in the background.



Figure DH-SITE-28. A similar view, 2020. The stone walk, wooden stair, and well remain present. The driveway and boxwood plantings have been removed.

VIEW NORTHEAST TOWARD THE WEST AND SOUTH FACADES OF THE BAUVAIS-AMOUREUX HOUSE



Figure DH-SITE-29. A similar view c. 1940 showing the wood stairs leading to the south porch and more of the adjacent house to the north.



Figure DH-SITE-30. A similar view c. 1990s showing the adjacent gift shop built c. 1960s, the south walkway, the boxwoods, and the driveway.



Figure DH-SITE-31. View looking northeast, 2020, showing the foundation where the gift shop once stood, and the site without the boxwood plantings and driveway. Where the driveway once led to St. Marys Road, the slope has been re-graded.

Assessment of Integrity

Assessment of integrity is based on an evaluation of the existence and condition of the physical features which date to a property's period of significance, taking into consideration the degree to which the individual qualities of integrity are present. The seven aspects of integrity as defined in the National Register Criteria for Evaluation are location, design, setting, materials, workmanship, feeling, and association. As noted in National Register Bulletin 15: *How to Apply the National Register Criteria for Evaluation*:

> Location is the place where the historic property was constructed or the place where the historic event occurred. . . . Design is the combination of elements that create the form, plan, space, structure, and style of a property. . . . Setting is the physical environment of a historic property. . . . Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. . . . Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. . . . Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. . . . Association is the direct link between an important historic event or person and a historic property.

National Register Bulletin 15 defines integrity as "the ability of a property to convey its significance." The essential physical features that define its character and convey its historical significance must be present for the building to be significant. These features are those that define both why a property is significant (National Register Criteria) and when it was significant (period of significance). The tangible features of both the interior and exterior must be preserved to express the building's significance.

The primary historical significance of the Bauvais-Amoureux House is for its time period of construction in c. 1792 and for its use of poteaux-en-terre construction techniques. The House is one of only three known surviving poteaux-en-terre style houses in Ste. Genevieve and one of only five known in the United States. It is also significant for its modifications in 1840s - c. 1852 which added north and south galeries, altering the original roof configuration, exterior material modifications, fenestration design changes, and numerous interior configuration and layout modifications. With these changes, the current building form from the 1840s - c. 1852 time period is intact and envelopes the c. 1792 construction. Though the House has been altered, it retains integrity and is a critical contributing structure to the Ste. Genevieve National Historical Park.

The discussion below considers each of the seven aspects of integrity as they relate to the Bauvais-Amoureux House. The integrity of the House is evaluated below in terms of the most important physical aspects of the building that convey its historic character.

INTEGRITY OF LOCATION

The Bauvais-Amoureux House retains a high degree of integrity of location in relationship to its site. The building location has remained unchanged since its original construction in c. 1792.

INTEGRITY OF DESIGN

The Bauvais-Amoureux House retains a high degree of integrity of design. As mentioned previously, this building is significant for its original construction in c. 1792 and also for its significant alterations in the 1840s - c. 1852 and again during the 1890s to c. 1900. During this later time period, the western most bay of the House was removed and a new west facade was built. The appearance of the House remains consistent with its significant changes during these alterations and currently holds the same form and configuration from 1890's to c. 1900. The form, plan, space, structure and style are generally present from the period of significance.

INTEGRITY OF SETTING

The Bauvais-Amoureux House retains its integrity of setting. The integrity has been diminished due to changes in land use, but the historical significance of the House and site is retained. In its original c. 1792 construction time pe-

riod, the site and surrounding area was used for a significantly different purpose and configuration than is evident today. With that said, the subsequent time periods, within the period of significance, have evolved and elements of these changes exist. One main feature contributing to the setting are the views from the Bauvais-Amoureux House toward the Common Field to the southeast, which was present by the early nineteenth century. This visual connection provides an important historical association for the property related to agricultural and residential land use patterns representative of French agricultural villages during the period. The Common Field is maintained in open space and continues to be cultivated today. There are non-contributing 20th century residential houses and buildings nearby the House. There is also the contributing Bequette-Ribault House, a c. 1808 property of French cultural influence, adjacent to the Bauvais-Amoureux House as well.

INTEGRITY OF MATERIALS AND WORKMANSHIP

The Bauvais-Amoureux House retains a high degree of integrity of materials and workmanship. The c. 1792 heavy timber trusses and the poteaux-en-terre foundation are extraordinarily intact for their age. The dominant exterior materials from the major alteration of the 1840s - c. 1852 time period are conveyed in the wood siding, window fenestration design, stucco surfaces, central stone chimney, and wood shingle roofing.

The interior materials from both time periods are also intact in the timber ceiling beams, wood flooring, wood ceiling boards, plaster surfaces and general plan configuration.

INTEGRITY OF FEELING

Integrity of feeling is expressed in the aesthetic or historic sense of the period of significance. The Bauvais-Amoureux House retains a high degree of integrity of feeling. Despite changes to the site and the surroundings, the House still conveys the historic and aesthetic feeling of the period of significance.

INTEGRITY OF ASSOCIATION

Association is the conveyance of the important historic activities that occurred at the site and are sufficiently intact to convey the activity. The Bauvais-Amoureux House retains a high degree of integrity of association, as a structure in continual residential use since its original construction.

Physical Description

DEFINITIONS

GENERAL DEFINITIONS CONCERNING CONDITION AND PRIORITY RATINGS

(Excerpted from Sections 7.2 and 7.4 of the "Field Operations Manual, Volume 1", United States National Park Service, Washington, D.C., 1985.)

An evaluation of the *CONDITION* of each element as **GOOD, FAIR**, or **POOR** should be indicated on the field input form;

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

1. the element is intact, structurally sound, and performing its intended purpose.
2. there are few or no cosmetic imperfections.
3. the element needs no repair and only minor or routine maintenance.

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

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

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

1. the element is no longer performing its intended purpose.
2. the element is missing.
3. deterioration or damage affects more than 25% of the element and cannot be adjusted or rebuilt.
4. the element shows signs of imminent failure or breakdown.
5. the element requires major repair or replacement.

During the field inspection, each *DEFICIENCY* should be noted by priority as **HIGH, MODERATE**, or **LOW**;

A **HIGH** priority deficiency of an element exists where:

1. there is advanced deterioration which has resulted in the failure of the building element or will result in the failure of the building element if not corrected within two years, and/or;
2. there is accelerated deterioration of adjacent or related building materials as a result of the element's deficiency, and/or;
3. there is a threat to the health and/or safety of the user, and/or;
4. there is a failure to meet a legislative requirement.

A **MODERATE** priority deficiency of an element exists where:

1. there is deterioration which, if not corrected within two to five years, will result in the failure of the building element, and/or;
2. a threat to the health and/or safety of the user may occur within two to five years if the deterioration is not corrected, and/or;
3. there is deterioration of adjacent or related building materials and/or systems as a result of the element's deficiency.

A **LOW** priority deficiency of an element exists where:

1. standard preventative maintenance practices and building conservation methods have not been followed, and/or;
2. there is a reduced life expectancy of affected or related building materials and/or systems, and/or;
3. there is a condition with long-term impact beyond five years.

At the Bauvais-Amoureux House, both the site and the building's physical elements were evaluated for those characteristics that demonstrate the type, period, and method of construction for the House and those elements distinct to the Bauvais-Amoureux House that highlight its value as a nationally significant site. During the field inspection, each element was noted as either **CONTRIBUTING** or **NON-CONTRIBUTING** to the historic character and integrity of the overall district or building as follows:

1. An element **CONTRIBUTING** to the historic significance of a building is one which by location, design, setting, materials, workmanship, feeling and association adds to the property's sense of time and place and historical development, and falls within the Period of Significance.

2. An element **NON-CONTRIBUTING** to the historic significance of a building is one which does not add to the property's sense of time and place and historical development; one that does not fall within the Period of Significance; or one where the location, design, setting, materials, workmanship, feeling and association have been so altered or have so deteriorated that the overall integrity of the element has been irretrievably lost.

3. In some instances, when an element could not be properly assessed or additional research or physical investigation is needed to understand its probable construction date or integrity, the element may be indicated as **NOT ASSESSED**, indicating that further research is needed to determine whether the element is contributing or non-contributing to the property.

The Bauvais-Amoureux House is located at 327 St. Marys Road in Ste. Genevieve, Missouri. The House is recognized as one of only five extant poteaux-en-terre (meaning "post in the earth") vertical log structures in the United States; of which three are located in Ste. Genevieve. In its current form, the House is of the "Mississippi Valley French Colonial" style with modern alterations, having a broken-pitch gable roof, an open galerie (porch) on the south, an enclosed galerie on the north, a walk-out caveau (cellar), and an unfinished grenier (garret or attic) accessible from an exterior stair. The main entrance is centered on the south wall, and the east elevation faces St. Marys Road (historically called New Bourbon Street). The House is currently partitioned in a center-hall plan, with a narrow central passageway flanked by rooms on the east and west. A c.1792 stone masonry chimney is located in the wall between the central hall and the great room to the east, and a partially deconstructed 1880s – c. 1900 brick masonry chimney is located on the inside of the west wall.

The exterior walls at the north, east and south are 12 inch wide vertical cedar logs with pierrotage in between. The vertical logs are placed directly into holes or a trench in the ground. The east logs no longer extend to the ground and now bear on a limestone foundation wall. This structure is covered on the majority of the building with horizontal, weatherboard siding. On the south elevation, where it is protected by the porch, the structure is covered with painted stucco.

The roof is a steeply pitched gable with shed roofs protecting porches on the north and south elevations. Originally thatched with local reeds, the roofing material was later changed to wood shingles, similar to those used today. Later, a metal roof was installed. This roof was replaced with cedar shingles in 2007. Originally the House had two chimneys, the west chimney being removed at an early date. Currently, the House has a central chimney straddling the ridge of the gable and roughly centered in the rectangular floor plan. An abandoned brick chimney at the west wall has been removed to the level of the attic floor. The roof has closed eaves and verges.

The main entrance door is centered on the main facade, although the placement of the door appears to have been modified from its original location. There is a secondary exterior door on this same elevation and another door into the cellar at the east. The main entrance door has multi-paned glazed upper panels with two recessed panels below. This door also has a glazed transom. The secondary door on the south facade has four recessed panels. The doors have flat openings with plain wood moldings and surrounds. The windows are 6 over 6 multi-paned double hung wood frames or 12 light fixed windows set in flat openings with

plain wood moldings and surrounds similar to the doors. The window sills are wood slipsills. The windows on the south facade are flanked by wood shutters. The windows, doors and frames are all painted wood.

The most dramatic alterations to the structure date to the 1880s – c. 1900 when the House was shortened and subdivided. The visible portion of the extant chimney was changed from stone to brick and a new brick chimney was built on the modified west wall. It is believed the siding, doors, windows, trim, and stucco date to this modification. Additional exterior modifications occurred c. 1963 with the reconstruction of the north and south porches, with the north porch being completely demolished and enclosed in its current configuration.

Major interior alterations occurred during the renovation in c. 1852. Plaster and wood partitions subdivided the House into four rooms with a center hall. A plaster ceiling is believed to have been installed throughout the first floor ceilings and were removed in c. 1960. Further changes to the House and grounds are noted in the assessment sections of this report.

Character-Defining Features

An explanation of "character" and how to identify character defining features is described by Preservation Brief 17: Architectural Character—Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving their Character as:

Character refers to all those visual aspects and physical features that comprise the appearance of every historic building. Character-defining elements include the overall shape of the building, its materials, craftsmanship, decorative details, interior spaces and features, as well as the various aspects of its site and environment.

Identifying character defining features assists the owner or steward of the property, researchers, design professionals, and others involved in the alteration, maintenance, and interpretation of the property to protect "those features or elements that give the building its visual character and that should be taken into account in order to preserve them to the maximum extent possible" (from Preservation Brief 17). Character defining features can be as broad as building massing or site orientation, or as specific as moulding and trim details, depending on the specific conditions of the structure being evaluated.

There are numerous important features that contribute to the historic character of the Bauvais-Amoureux House. From a site perspective, the orientation of the residence on the property and its views to the Common Field are important features, as they are from its c. 1792 time period and still maintain integrity.

The form and configuration of the current house are also some of the primary character defining features as well. The house has been changed from its original c. 1792 configuration with modifications made in the 1840s - c. 1852 that are also significant and important in its history. In c. 1852, the current interior room configuration and wall additions, exterior facade shape and materials, the north and south galeries and roof configurations are all contributing features. Both of these significant eras and changes in the house development are important in its history and tell a story as to its development and adaptation over time. The c. 1792 structural frame with the Norman trusses and the poteaux-en-terre construction methodologies are also extremely important. These elements exist today inside of the 1840s – c. 1852 exterior facades.

There are numerous interior materials (ceiling beams, wood ceiling boards, trim and moulding, and wood flooring) that contribute to the changes over time. Elements from multiple periods from the eighteenth and nineteenth centuries are exposed and in view within the same room, as well as later elements which can be seen with wall, door, and flooring additions. Further analysis to ascertain the dating of the elements will be needed in order to rehabilitate and preserve the house in its layout and material use that are from these main contributing time periods.

A summary of the Bauvais-Amoureux House's character defining features is as follows, developed from the guidance provided by Preservation Brief 17.

OVERALL VISUAL ASPECT

ELEMENT	FEATURE OR ELEMENT	COMMENTARY
Setting and Context	Relationship to St. Marys Road and contextual relationship with other contributing properties along St. Marys Road	***c. 1792 with later alterations*** The existing orientation of the House, with the short east elevation facing St. Marys Road (formerly New Bourbon Street), maintains the same orientation as the original construction in relation to eighteenth-century New Bourbon Street. Other extant historic properties also contribute to the French vernacular character of the New Bourbon Street corridor, including the Janis-Zeigler House (Green-Tree Tavern), the Bequette-Ribault House, and the Pierre Dorlac House. The Bauvais-Amoureux House's contextual relationship with these properties and the road is a key character defining feature of the overall site.
Setting and Context	Viewshed to and across the Common Field	***c. 1792 with later alterations*** The farmland to the east of St. Marys Road was historically the *Grand Champ* or Common Field for Ste. Genevieve. Today, this area remains cleared, agricultural land. Removal of the non-contributing property immediately across the street from the House will restore the historic character of the view both from the House and across the Common Field toward St. Marys Road.
Shape and Massing	Broken-pitch, gable roof with galeries	***1840s – c.1852*** The double or broken-pitch roof featuring gable ends and galeries on the long elevations represents a building alteration common to French vernacular structures in Ste. Genevieve in the mid-nineteenth century. Similar alterations at the Bequette-Ribault House and Bolduc House have been removed to restore the structures to an earlier form, but the Bauvais-Amoureux House maintains this character defining massing that documents the House's significant changes over time.
Construction Methodology	Poteaux-en-terre exterior wall framing	***c. 1792*** The Bauvais-Amoureux House is one of only three extant poteaux-en-terre structures in Ste. Genevieve and one of only five in the United States. The vertical log walls set directly in the earth with their pierrotage infill are a key character defining feature, representing a rare and valuable construction methodology with national historical significance. Further, the poteaux-en-terre walls are unusual in that they do not contain the diagonal lateral bracing typical of vertical log structures. Several horizontal members are present, but additional analysis is needed to determine if these members act as lateral bracing.

ELEMENT	FEATURE OR ELEMENT	COMMENTARY
Construction Methodology	First-floor framing	***c. 1792*** The unique framing of the first-floor structure and its independence from the exterior walls represents a key character defining feature for the building structure that is relatively rare among extant French vernacular vertical log structures, likely seen only in the Bauvais-Amoureux House and Vital St. Gemme Beauvais House.
Construction Methodology	Caveau	***c. 1792 with later alterations*** The presence of a caveau or earthen cellar under an elevated first floor is a shared feature for many French vernacular vertical log structures and represents a space important to understanding the domestic needs of the early residents.
Construction Methodology	Norman roof trusses	***c. 1792 and 1840s – c. 1852*** The modified king-post roof trusses, called Norman trusses, are characteristic of French vernacular construction in the New World. At the Bauvais-Amoureux House, the Norman roof trusses with their exposed ceiling beams are important features for the building structure and contribute to the national significance of the construction methodology.
Materials	Roofing and exterior wall covering materials	***1840s – c. 1852, modern replacement materials*** Wood shingles were the roof covering for much of the House's history, since at least the 1840s and possibly earlier, and are characteristic of the roofing treatment for French vernacular vertical log structures in Ste. Genevieve since the eighteenth century. Weatherboard lap siding and plaster were also common exterior wall finishes in Ste. Genevieve. The existing cedar wood tapersawn shake roofing, cedar lap siding, and exterior lime plaster are modern replacement materials that maintain a character defining appearance aligned with the character defining massing.
Openings	Windows and Doors	***c. 1900, 1960s, and later alterations*** The existing wood doors and windows replicate the early twentieth century appearance of the House as visible in historical and HABS photographs. Many of the window rough openings appear to be in their original c. 1792 locations, but there is evidence the original windows were likely casements not hung sashes. Existing door locations appear to have been modified from their original c. 1792 locations at a yet undetermined date, but the original c. 1792 headers are still in place.
Projections	Central Chimney	***c. 1792*** The central stone masonry chimney is original to the c. 1792 construction. It represents a significant feature where it projects above the roof line.

VISUAL CHARACTER AT CLOSE RANGE

ELEMENT	FEATURE OR ELEMENT	COMMENTARY
Craft Details	Four-sided dressed and punchion (one-sided dressed) hewn structural members	***c. 1792 and 1840s – c. 1852*** The structural members for the original c. 1792 construction and the 1840s – c. 1852 galerie and east gable wall alterations were fabricated by hand with an axe which created a distinctive hewn surface, in contrast to later nineteenth century and twentieth century wood framing members which were sawn. In some locations, such as the galerie rafters, gable wall framing, and first floor joists, the punchion members were hewn flat on the top surface only, leaving the other sides as undressed logs or poles. These techniques provide valuable insight into the hand-crafted and labor-intensive nature of building construction in early Ste. Genevieve.
Craft Details	Mortise and tenon wood connections	***c. 1792*** The original c. 1792 construction of the Norman truss roof framing employed finely formed mortise and tenon connections with trenail pegs between the primary roof members. Later alterations to the House roof framing, including the galerie roofs, used nails. Similar to the hewn surface of the original members, these details provide important information in the design and construction of early wood structures in Ste. Genevieve.
Craft Details	Double top plate, truss, and ceiling beam connection	***c. 1792*** While dovetail connections were commonly used in vernacular timber architecture, the double top plate at the Bauvais-Amoureux House represents an unusual form compared to other contemporary structures in Ste. Genevieve. The phased and labor-intensive installation this detail requires provides important insight on the variety of construction methodologies available to the inhabitants of Ste. Genevieve. Further study into this detail may also be able to suggest if other building influences in addition to French vernacular styles contributed to the construction of the Bauvais-Amoureux House.
Craft Details	Scribe or carpentry marks on roof framing	***c. 1792*** Each member of each Norman truss is inscribed with a Roman numeral, II through VI, suggesting that the trusses were fabricated and pre-assembled prior to being lifted into place. Similar marks have been found on numerous other vertical log structures in Ste. Genevieve. These marks provide important insight on the construction methodology of the House.

INTERIOR VISUAL CHARACTER

ELEMENT	FEATURE OR ELEMENT	COMMENTARY
Interior Features	Central chimney and fireplace	***c. 1792*** The central fireplace in the *grand salle* (great room) on the east, is original to the c. 1792 construction. At this time, it is not known if the fireplace surround and stone hearth are original. The placement of the central fireplace, along with other interior finishes, plays an important role in suggesting the original floor plan of the House and the primary interior spaces.
Exposed Structure	Ceiling beams and ceiling planks	***c. 1792*** Ceiling beams are located at each roof truss and at approximately midspan between trusses. At the interior, these beams are exposed to view. In the east great room, the ceiling beams have a carved beaded detail along the arises, suggesting that this room was hierarchically more prominent than the rooms on the west end. This room also features ceiling planks that were hand-planed, which suggests they were intended to be exposed. Little information is currently known on the changes over time for the interior, and the exposed structure in the east great room is the strongest physical evidence of an original or very early interior finish.
Interior Finishes	Wood flooring, wood trim, wood and plaster wall surfaces	***c. 1792, 1880-1923, 1960s, 1960s-2000s*** The finishes utilized throughout the interior all contribute as the character defining features of each room. Even though most of the elements are of unknown date at this time, these materials convey the periods of time that contribute to the houses characteristic elements and should be maintained.

Condition Assessments

ASSESSMENT METHODOLOGY

In the execution of this scope, the project team performed the following:

- Reviewed documentation on the Bauvais Amoureux House provided by NPS and from other sources, as well as available documentation on similar structures in Ste. Genevieve, Missouri; Natchitoches, Louisiana; and Pascagoula, Mississippi.
- Performed a physical investigation of the House from the interior and exterior to observe and document the conditions of the structure, architecture, finishes, building systems, and other components.
- Field verified select dimensions and measurements to confirm conditions as documented by others.
- Assessed the condition and construction methodology of the vertical log walls, first-floor framing, roof trusses, rooms and interior finishes, and site features.
- Performed limited sampling and material analysis, including wood species identification of structural members.
- Performed a level survey using a laser level on the main floor and attic floor to aid in future study of the building physiology and to serve as a benchmark for long-term monitoring for future differential settlement.
- Surveyed and sampled interior materials to identify asbestos containing materials and lead based paint locations.
- Performed a site survey to document topographical, architectural, and utility features on the site.

Further information can be found in the appendices to this report.

Summary Condition Assessment Table

SUMMARY OF CONDITION ASSESSMENT RATINGS & REPAIR PRIORITIES						
Category	**Topic**	**Code**	**Subtopic**	**Assessment**		
SITE AND LANDSCAPE						
G	**BUILDING SITE WORK**			**Condition Rating**	**Deficiency Rating**	**Repair Priority**
G10	**SITE PREPARATION**					
	G1022	**SITE COMPONENTS FOR DEMOLITION**				
		G102201	Abandoned Foundation	Good to Fair	Minor	Low
		G102202	Concrete Pad	Good	None	Low
	G1036	**EMBANKMENTS**				
		G103601	Embankment at St. Marys Road	Poor	Serious	Moderate
G20	**SITE IMPROVEMENTS**					
	G2016	**MARKINGS AND SIGNAGE**				
		G201601	Identity Sign	Good	None	Low
	G2022	**PAVING AND SURFACING**				
		G202201	St. Marys Road and Parking	Good to Fair	Minor	Moderate
		G202202	North Driveway	Poor	Serious	High
	G2030	**PEDESTRIAN PAVING**				
		G203001	East Walkway	Fair	Minor	Moderate
		G203002	South Walkway	Good to Fair	Minor	Moderate
	G2033	**EXTERIOR STEPS**				
		G203301	East Steps to House	Good to Fair	Minor	Moderate
	G2059	**OTHER LANDSCAPE FEATURES**				
		G205901	Cultural Vegetation: Trees	Good	None	Low
		G205902	View East Toward the Common Field	Fair	None	N/A
G30	**SITE MECHANICAL UTILITIES**					
	G3013	**WELL SYSTEMS**				
		G301301	Well or Cistern	Good to Fair	Minor	Low
		G301302	Well or Cistern	Fair	Minor	Low

SUMMARY OF CONDITION ASSESSMENT RATINGS & REPAIR PRIORITIES						
Category	**Topic**	**Code**	**Subtopic**	**Assessment**		
EXTERIORS						
B	**SHELL**			**Condition Rating**	**Deficiency Rating**	**Repair Priority**
B20	**EXTERIOR ENCLOSURE**					
	B2010	**EXTERIOR WALL CONSTRUCTION**				
		B201001	Weatherboard Siding	Fair	Serious	Moderate
		B201002A	Exterior Plaster at South Galerie	Good	Minor	Low
		B201002B	Exterior Plaster Below Galerie Decks	Failed	Serious	High
B30	**ROOFING**					
	B3010	**ROOF COVERINGS**				
		B301001	Wood Shake Roofing	Poor	Critical	High
	B3016	**GUTTERS AND DOWNSPOUTS**				
		B301601	Gutters and Downspouts	Poor	Critical	High
INTERIORS						
B	**SHELL**			**Condition Rating**	**Deficiency Rating**	**Repair Priority**
B20	**EXTERIOR ENCLOSURE**					
	B2021	**WINDOWS**				
		B202101	Windows	Fair to Poor	Serious	Moderate
	B2030	**EXTERIOR DOORS**				
		B203001	Doors	Fair	Minor	Moderate
C	**INTERIORS**					
C30	**INTERIOR FINISHES**					
	C3010	**WALL FINISHES**				
		C301001	Interior Walls and Trim	Good to Fair	Minor	Low
		C301002	Exposed North Log Wall	Good to Fair	Minor	Low
		C301003	Visual Evidence of Settlement Issues	Fair to Poor	Serious	High
	C3020	**FLOOR FINISHES**				
		C302001	Flooring	Good	Mionr	Low
	C3030	**CEILING FINISHES**				
		C303001	Beams and Ceilings	Fair	Serious	Low
		C303002	Concealed Plaster Ceiling	Fair	Minor	Low
E	**FURNISHINGS**					
E20	**FURNISHINGS**					
	E2010	**FIXED FURNISHINGS**				
		E201001	Fireplace Mantel	Good	None	Low

SUMMARY OF CONDITION ASSESSMENT RATINGS & REPAIR PRIORITIES						
Category	**Topic**	**Code**	**Subtopic**	**Assessment**		
EXTERIORS						
A	**SUBSTRUCTURE**			**Condition Rating**	**Deficiency Rating**	**Repair Priority**
A10	**FOUNDATIONS**					
	A1020	**SPECIAL FOUNDATIONS**				
		A102001	Exterior Vertical Log Walls	Fair to Poor	Critical	High
B	**SHELL**					
B10	**SUPERSTRUCTURE**					
	B1010	**FLOOR CONSTRUCTION**				
		B101001	First-Floor Framing System	Failed	Critical	High
		B101002	South Galerie	Fair	Minor	Low
		B101003	North Galerie	Good	Minor	Low
	B1015	**STAIR CONSTRUCTION**				
		B101501	Grenier Stairs	Poor	Serious	High
	B1020	**ROOF CONSTRUCTION**				
		B102001	Norman (King-Post) Trusses	Good to Fair	Critical	High
		B102002	Ridge Braces Trusses	Good to Failed	Critical	High
		B102003	Primary Roof Rafters	Good	Minor	Low
		B102004	Secondary (Galerie) Rafters	Good to Fair	Minor	Low
		B102005	Skip Sheathing	Good to Failed	Serious	High
		B102006	Original Roofing Battens	Good to Fair	Minor	Low
B20	**EXTERIOR ENCLOSURE**					
	B2011	**EXTERIOR WALL CONSTRUCTION**				
		B201101	Exterior Wall Lateral Bracing	Good	none	Low
		B201102	Pierrotage	Good to Fair	Minor	Moderate
		B201103	East End Gable Wall	Good	None	Low
		B201104	West End Frame Wall and Gable Wall	Good	None	Low
B40	**OTHER STRUCTURES**					
	B4010	**CHIMNEYS**				
		B401001	Stone Masonry Chimney	Good	Minor	Low
		B401002	Brick Masonry Chimney	Unknown	Unknown	Unknown

SUMMARY OF CONDITION ASSESSMENT RATINGS & REPAIR PRIORITIES						
Category	**Topic**	**Code**	**Subtopic**	**Assessment**		
MEP-FP SYSTEMS						
B	**SHELL**			**Condition Rating**	**Deficiency Rating**	**Repair Priority**
B20	**EXTERIOR ENCLOSURE**					
	B2030	**EXTERIOR DOORS**				
		B203001	Gaps at Entry Door	Fair	Minor	Moderate
D	**SERVICES**					
D20	**PLUMBING**					
	D2010	**PLUMBING FIXTURES**				
		D201001	Plumbing Fixtures in House	Fair	Minor	Moderate
	D2090	**OTHER PLUMBING SYSTEMS**				
		D209001	Sump Pump at House Caveau	Good	Minor	Low
		D209002	Abandoned Well and Hand Pump	Poor	Minor	Low
		D209003	Cistern	Poor	Minor	Low
	D3012	**GAS SUPPLY SYSTEM**				
		D301201	Gas Utility Serving Site	Good	Minor	Moderate
D30	**HEATING, VENTILATING AND AIR CONDITIONING (HVAC)**					
	D3041	**HVAC EQUIPMENT**				
		D304101	HVAC Equipment Removed	N/A	N/A	N/A
		D304102	HVAC Equipment Removed	Fair	Minor	Low
		D304103	Portable HVAC A/C Units	Good	None	N/A

SUMMARY OF CONDITION ASSESSMENT RATINGS & REPAIR PRIORITIES						
Category	**Topic**	**Code**	**Subtopic**	**Assessment**		
MEP-FP SYSTEMS (CONT'D)						
D50	**ELECTRICAL**			**Condition Rating**	**Deficiency Rating**	**Repair Priority**
	D5010	**ELECTRICAL POWER DISTRIBUTION**				
		D501001	Electrical Panel in House	Good	Minor	Moderate
		D501002	Circuit Directory on Panel	Good	Minor	Moderate
		D501003	Ground Rod Connection	Good	Minor	Moderate
		D501004	Branch Circuits - MC Cable, Romex, Flexible Conduit	Good	Minor	Moderate
	D5020	**POWER DISTRIBUTION AND CONTROL DEVICES**				
		D502001	Receptacles and Switches	Good	Minor	Low
		D502002	Abandoned Ceiling Outlets	Fair	Minor	Low
	D5022	**LIGHTING**				
		D502201	Lighting Fixture Types	Good	Minor	Low
		D502202	Exit Lighting and Emergency Lighting	N/A	N/A	High
	D5030	**COMMUNICATIONS AND SECURITY**				
		D503001	Fiber Optic Service to House	Good	None	Low
	D5037	**FIRE ALARM SYSTEMS**				
		D503701	Fire Alarm System	N/A	N/A	High
	D5038	**SECURITY AND DETECTION SYSTEMS**				
		D503801	Intrusion Alarm Systems	N/A	N/A	High
	D5090	**LIGHTNING HAZARD REDUCTION**				
		D509001	Lightning Protection System	N/A	N/A	High

SUMMARY OF CONDITION ASSESSMENT RATINGS & REPAIR PRIORITIES						
Category	**Topic**	**Code**	**Subtopic**	**Assessment**		
MEP-FP SYSTEMS (CONT'D)						
G	**BUILDING SITE WORK**			**Condition Rating**	**Deficiency Rating**	**Repair Priority**
G30	**SITE MECHANICAL UTILITIES**					
	G3010	**WATER UTILITY**				
		G301001	Water Service Entrance from St. Marys Rd	Good	None	N/A
		G301002	Water Service to House from Meter Pit	Good	None	N/A
		G301003	Water Service Entrance to House	Good	Serious	High
		G301004	Water Service Entrance to House	Good to Fair	Serious	High
	G3020	**SANITARY SEWER**				
		G302001	Sanitary Utility Serving House	Good to Fair	Minor	Low
		G302002	Sanitary Utility Serving House	Good to Fair	Minor	Low
		G302003	Sanitary Utility Serving House	Good to Fair	Minor	Low
G40	**SITE ELECTRICAL UTILITIES**					
	G4010	**ELECTRICAL DISTRIBUTION**				
		G401001	Outdoor Electrical Service to house	Good	None	Low
		G401002	Electrical Meter Socket Grounding at Pole	Good	None	Low

N/A	**GENERAL**		
N/A	**BAUVAIS-AMOUREUX HOUSE**		
	N/A	**N/A**	
		N/A	N/A
		Date:	c. 1792 / c. 1852
		Condition:	See Architectural Assessment.
		Contributing:	See Architectural Assessment.
		Repair Priority:	See Architectural Assessment.

DESCRIPTION

The Bauvais-Amoureux House, built c. 1792, is one of three remaining *poteaux-en-terre* (post-in-ground) houses in Ste. Genevieve, along with the Bequette-Ribault House and the Vital St. Gemme Beauvais House. Only five known examples of this type of house survive within the United States.[69] Original timber Norman trusses and two chimneys remain from the early construction. Continuous porches measuring 10 by 8 feet are on the north and south facades. The north porch was enclosed at some time after 1956. Windows are six-over six double-hung replacements for the original, which were likely casements. Walls are cedar logs sheathed in clapboard and stucco. Alterations occurred around the 1840s and c. 1852. The House was rehabilitated as a house museum c. 1963 and renovated in 2000. NPS acquired the structure in 2018. The House is listed as contributing to the Ste. Genevieve Historic District (NRIS #02000357, April 11, 2002), as well as to the Ste. Genevieve National Historic Landmark.

COMMENTS

Refer to Context Maps and Architectural Descriptions



Figure L-01: Bauvais-Amoureux House, south façade, edged by stone walkway and turf. (Source: LSHLA, 2020)

69 National Park Service, Ste. Genevieve Final Special Resource Study and Environmental Assessment, Missouri (May 2016), 12.

G	BUILDING SITE WORK		
G10	SITE PREPARATION		
	G1022	SITE COMPONENTS FOR DEMOLITION	
		G102201	Former Gift Shop Foundation
		Date:	1960s gift shop
		Condition:	Good to Fair
		Contributing:	Unevaluated
		Repair Priority:	Recommended for removal

DESCRIPTION

A concrete foundation is located 6 feet, 8 inches from the west façade of the Bauvais-Amoureux House. The foundation indicates the location of a former gift shop built in 1968 by Norbert and Frances Donze, who acquired the property in 1963. The Donzes operated the House as a historical museum open to the public until selling the property c. 1994. The gift shop continues to appear in aerial photographs until the mid-2010s.

The foundation measures 22 feet, 1 inch in width and 41 feet, 10 inches in length. At the south end, the foundation is flush with the ground. The foundation rises toward the northwest where it extends to a height of 7 1/2 inches above ground at the corner. Near the northwest corner, the foundation steps down about 1 inch, where it functions as a low retaining wall. The interior of the foundation is turf grass . The concrete foundation is in fair to good condition but exhibits cracking and chipping.

COMMENTS

The concrete structure exhibits cracking and chipping.



Figure L-02: View southeast toward the foundation west of the Bauvais-Amoureux House. (Source: LSHLA, 2020)



Figure L-03: View south across the foundation. (Source: LSHLA, 2020)

G	**BUILDING SITE WORK**		
G30	**SITE MECHANICAL UTILITIES**		
	G3013	**WELL SYSTEMS**	
		G301301	Well or Cistern
		Date:	Undetermined, by 1940
		Condition:	Good to Fair
		Contributing:	Unevaluated
		Repair Priority:	Low

DESCRIPTION

The well or cistern is located south of the House adjacent to the south walkway. The well or cistern is marked by a circular cover composed of a granite slab that measures 3 feet, 9 inches in diameter and 6 inches in height. Short sections of wood boards are attached to the top of the well or cistern cover. The cistern reportedly collapsed and was backfilled sometime prior to NPS acquiring the property. Some settlement in the south galerie framing can likely be attributed to this collapse.

COMMENTS

The well or cistern cover is chipped in places, and the wood boards are cupping and cracking.







↖ Figure L-04: View of the well cover adjacent to the south walkway.

↑ Figure L-05: View east of the well or cistern alongside the south walkway. (Source: LSHLA, 2020)

← Figure L-06: View of the wood boards affixed to the top of the well or cistern cover. (Source: LSHLA, 2020)

G	BUILDING SITE WORK		
G30	SITE MECHANICAL UTILITIES		
	G3013	WELL SYSTEMS	
		G301301	Well or Cistern
		Date:	Undetermined
		Condition:	Fair
		Contributing:	Unevaluated
		Repair Priority:	Low

DESCRIPTION

The second well or cistern is located southwest of the Bauvais-Amoureux House within the turf lawn and near a large pecan tree. The well or cistern is covered by a slab of exposed aggregate concrete, rectangular in shape, that measures 5 feet, 1 inch by 5 feet, 10 inches. Set atop the concrete block is a smaller, square, exposed aggregate concrete well or cistern cap covered with several irregularly placed stone blocks of various sizes. A metal pump extends through the top of the concrete block. The well or cistern structure is in fair condition due to deterioration of the concrete.

COMMENTS

The concrete is pitted and cracked.







↖ Figure L-07: View of the well or cistern near the Bauvais-Amoureux House. (Source: LSHLA, 2020)

↑ Figure L-08: View west of the well or cistern and the trunk of an adjacent pecan tree. (Source: LSHLA, 2020)

← Figure L-09: View east of the well or cistern and the metal pump features. (Source: LSHLA, 2020)

G	**BUILDING SITE WORK**		
G20	**SITE IMPROVEMENTS**		
	G2033	**EXTERIOR STEPS**	
		G203301	East Steps to House
		Date:	c. 1960s
		Condition:	Good to Fair
		Contributing:	Unevaluated
		Repair Priority:	Moderate

DESCRIPTION

To reach the Bauvais-Amoureux House, visitors walk up a flight of stone steps that span the slope of the terrace adjacent to St. Marys Road. The steps are constructed of mortared stone edged by a wooden handrail. The steps lead to a narrow walkway east of the House that leads to a door into the cellar. The steps consist of four treads, 3-feet wide and 15-1/2 inches deep. The risers vary in height with the lowest riser 4 inches high, and the other three 8 inches high. The adjacent wooden handrail is composed of a 1-by-4 plank, 6 feet, 8 inches long, nailed to two 2x4 posts. The steps are in fair to good condition although the granite paving is uneven in places and overgrown with grass in some places. The height of the 8-inch risers is taller than is typically considered desirable for some visitors.

COMMENTS

The treads are uneven in places and vegetation is growing on portions of the steps.







↖ Figure L-10: View southwest of the stone steps leading from St. Marys Road to top of the terrace slope. (Source: LSHLA, 2020)

↑ Figure L-11: View west toward the steps and the walk leading to the cellar door. (Source: LSHLA, 2020)

← Figure L-12: View northwest of the steps and the handrail. (Source: LSHLA, 2020)

G	BUILDING SITE WORK		
G20	SITE IMPROVEMENTS		
	G2030	PEDESTRIAN PAVING	
		G203001	East Walkway
		Date:	c. 1960s
		Condition:	Fair
		Contributing:	Unevaluated
		Repair Priority:	Moderate

DESCRIPTION

At the top of the east steps is a narrow walkway that leads to the door into the cellar of the House. It intersects the south walkway that leads to the south porch entrance of the House. The walkway measures 3 feet in width and is surfaced with mortared stones. Granite slabs set on the end edge the walk to the north, forming a low retaining wall against the adjacent lawn. The walkway is in fair condition because the stone slabs edging the walk are leaning and unstable.

COMMENTS

The stones are set on end to retain the slope and are leaning and unstable.



Figure L-13: View west along the east walkway toward the cellar door. (Source: LSHLA, 2020)

G	**BUILDING SITE WORK**		
G20	**SITE IMPROVEMENTS**		
	G2030	**PEDESTRIAN PAVING**	
		G203002	South Walkway
		Date:	Unetermined, two periods of construction represented
		Condition:	Good to Fair
		Contributing:	Unevaluated
		Repair Priority:	Moderate

DESCRIPTION

The front walk arises from the east walkway leading toward the cellar door. A single stone step marks the transition to the south walkway. The walkway continues around the southeastern corner of the House and then parallels the south porch.

The section of the south walkway that parallels the eastern façade of the House measures 3 feet, 3 inches in width and is edged by granite block curb stones. The stone pieces range from 14 to 25 inches in length and are 4 inches wide and 2 1/2 inches in height.

South of the House the walkway is composed of a northern and southern section. The older section to the south is constructed of granite stones used as pavers closely set with fine grained mortar joints. The newer section to the north is paved with larger stones set with relatively wide aggregate cement mix mortar joints of a contrasting color. The original walk measures 3 feet, 3 inches in width, as does the additional section. The walk leads to a flight of wood stairs that provide access to the front porch and main entrance to the House. The wood stairs include five treads that measure 4 feet in width, 12 inches in depth, and rise 6 inches in height. Wooden handrails mounted on wooden posts edge the stair to either side.

West of the front stairs the walkway narrows to 5 feet, 2 inches in width. The paving stones of this section match the newer construction in terms of materials and paving pattern. The front walk ends at the southwest corner of the House near an irregularly shaped concrete platform associated with the foundation of the former gift shop. The front walk is in fair condition due to evidence of cracked and missing mortar. The surface of the walk is uneven. The newer section includes joints in poor condition that expose stone edges that may become tripping hazards.The eastern segment of the walkway is 3 feet, 3 inches wide and edged with granite block curb stones. Curb stone pieces range from 14 inches to 25 inches in length, are 4 inches wide and 2.5 inches in height. An addition to the older section of the walkway expanded the width to 6 feet, 6 inches and encompassed the south porch support posts. Walkway ends west of the House and foundation.

COMMENTS

Walkway exhibits cracks and missing mortar joints. Surface is uneven and new joints expose stone edges that may be tripping hazards. Some stones cracked.



Figure L-14: View south along the south walkway as it leads around the corner of the House. (Source: LSHLA, 2020)



Figure L-15: View north of the south walkway and the two sections. (Source: LSHLA, 2020)



Figure L-16: View north of the south walkway and the wood stairs leading to the porch. (Source: LSHLA, 2020)

G	**BUILDING SITE WORK**		
G20	**SITE IMPROVEMENTS**		
	G2022	**PAVING AND SURFACING**	
		G202201	St. Marys Road and Parking
		Date:	Late 1790s
		Condition:	Good to Fair
		Contributing:	Contributing (corridor alignment)
		Repair Priority:	Moderate

DESCRIPTION

The house is located at 327 St. Marys Road (formerly New Bourbon Street). Visitor access to the house is from St. Marys Road heading north or south. The 24-foot-wide asphalt roadway is flanked on the west side by a gravel shoulder used for parking. Visitors must park on the road shoulder and walk up the slope in order to reach the House.

COMMENTS

Shoulder is gravel and narrow and does not provide sufficient parking capacity or an accessible path to the house.



Figure L-17: View looking south along St. Marys Road with the Bauvais-Amoureux house to the west (right). (Source: LSHLA, 2020)

G	BUILDING SITE WORK		
G20	SITE IMPROVEMENTS		
	G2022	PAVING AND SURFACING	
		G202202	North Driveway
		Date:	Early 1900s
		Condition:	Poor
		Contributing:	Unevaluated
		Repair Priority:	High

DESCRIPTION

A gravel driveway leads west from St. Marys Road along the north façade of the House. The driveway cuts through the steep slope the edges St. Marys Road to the terrace, and is edged to either side by steep slopes near its intersection with the road. The driveway ends in a small parking area used by NPS with permission. It is not designated for use by visitors.Ruins of a stone wall are present near the east end of the driveway.

COMMENTS

The gravel is poorly leveled and washed away in some locations. The driveway is deeply rutted by vehicle wheels.



Figure L-18: The driveway north of the House cuts through the slopes that edge St. Marys Road to the west. Park staff use the driveway to access an informal parking area near the small shed in the distance. (Source: LSHLA, 2020)

G	**BUILDING SITE WORK**		
G10	**SITE PREPARATION**		
	G1036	**EMBANKMENTS**	
		G103601	Embankment at St. Marys Road
		Date:	Late 1930s
		Condition:	Poor
		Contributing:	Unevaluated
		Repair Priority:	Moderate

DESCRIPTION

The slope that edges St. Marys Road to the west is steep enough that steps are needed to access the terrace on which the houses are sited. Historic photographs indicate that a stone retaining wall edged the property in this location during the early twentieth century. No evidence of the wall appears to survive today.

COMMENTS

The slope is steep and may be subject to erosion issues. It also presents limitations related to accessibility to the House.



Figure L-19: View of the slope that edges St. Marys Road to the west. (Source: LSHLA, 2020)

G	BUILDING SITE WORK		
G20	SITE IMPROVEMENTS		
	G2059	OTHER LANDSCAPE FEATURES	
		G205901	Cultural Vegetation; Trees
		Date:	Undetermined, eastern red cedar tree appears in photographs dating to the early- to mid-twentieth century
		Condition:	Good
		Contributing:	Unevaluated
		Repair Priority:	Low

DESCRIPTION

There are no trees located within the Bauvais-Amoureux House parcel. Located nearby to the southwest is a grove of deciduous shade trees that include sugar maple, pecan, and sycamore trees. North of the House is a single eastern redcedar tree.

The sugar maple (Acer saccharum) tree measures 48 inches in caliper and is located approximately 52 feet west of the Bauvais-Amoureux House. This is the largest tree within the vicinity of the House.

Nearby are three pecan (Carya Illinoinensis) trees that measure 24 inches in caliper and two sycamore (Platanus occidentalis) trees.

The eastern red cedar (Juniperus virginiana) tree also measures 24 inches in caliper. It is located on the steeply sloped bank between the north façade of the House and adjacent gravel driveway. Erosion of the bank may cause undercutting of the tree roots.

COMMENTS

All of the trees near the House appear to be in good condition but should be evaluated by a certified arborist.



Figure L-20: View of the large sugar maple west of the House. (Source: LSHLA, 2020)



Figure L-21: View east of the eastern redcedar tree near the north porch. (Source: LSHLA, 2020)

G	**BUILDING SITE WORK**		
G20	**SITE IMPROVEMENTS**		
	G2059	**OTHER LANDSCAPE FEATURES**	
		G205902	View East Toward the Common Field
		Date:	c. 1792
		Condition:	Fair
		Contributing:	Contributing
		Repair Priority:	Low

DESCRIPTION

The view east from the Bauvais-Amoureux House is toward the Common Field, present by the early nineteenth century. This visual connection provides an important historical association for the property related to agricultural and residential land use patterns representative of French agricultural villages during the period. The Common Field is maintained in open space and continues to be cultivated today.

The settlement pattern of "new" St. Genevieve was composed of a grid layout of streets and a compact residential cluster, with long agricultural parcels to the east in an adjacent "Common Field" *(Re: Figure 30)*. In addition to the village and Common Field were the "commons", which was an area recognized as communal for pasturing and harvesting timber. At Ste. Genevieve, the commons were understood to be any lands outside the village and the Common Field. The village cluster, the Common Field, and the commons is the community arrangement unlike settlement patterns of many other European ethnic groups and fits the settlement type of a "Planned French Village".[70]

The view from the House and from the field toward the House is currently impacted by the presence of a late twentieth century commercial building located east of St. Marys Road across the street from the Bauvais-Amoureux House *(Re: Figure 32)*. Associated with the building are parking areas and cars, boats, and other stored vehicles and equipment.

COMMENTS

The integrity of the view to the Common Field is diminished by the boat repair shop across St. Marys Road to the east.

70 National Park Service, Ste. Genevieve Final Special Resource Study and Environmental Assessment, p 3-7.



Figure L-22: View east toward the Common Field from the lawn south of the Bauvais-Amoureux House. (Source: LSHLA, 2020)



Figure L-23: View east of the adjacent commercial structure with the Bauvais-Amoureux House to the left. (Source: LSHLA, 2020)



Figure L-24: View toward the House from the Common Field. (Source: LSHLA, 2020)

G	**BUILDING SITE WORK**		
G20	**SITE IMPROVEMENTS**		
	G2016	**MARKINGS AND SIGNAGE**	
		G201601	Identity Sign
		Date:	c. 2019
		Condition:	Good
		Contributing:	Unevaluated
		Repair Priority:	Low

DESCRIPTION

Following NPS acquisition of the property in 2018, an identity sign was installed to face St. Marys Road east of the House. The sign sits adjacent to the house atop the terrace west of the road. The wooden sign has routed white painted lettering that reads "Amoureux House" and includes the NPS arrowhead logo. The sign face measures 6 feet in length and is 2 feet tall and 1-1/2 inches wide. It is composed of a wooden panel supported by two 2x4 wood posts. The sign face has routed white painted lettering identifying the *"Amoureux House"*. The identity sign is in good condition.

Note: This sign was removed and replaced by NPS in August 2021.

COMMENTS

The sign is in good condition but may be subject to erosion due to its location atop a slope.



Figure L-25: View west of the NPS identity sign for the House set within the slope facing St. Marys Road. (Source: LSHLA, 2020)

G	BUILDING SITE WORK		
G10	SITE PREPARATION		
	G1022	SITE COMPONENTS FOR DEMOLITION	
		G102202	Concrete Pad
		Date:	Undetermined
		Condition:	Good
		Contributing:	Unevaluated
		Repair Priority:	Low

DESCRIPTION

A small concrete pad is set in the turf grass between the west façade of the House and the eastern edge of the gift shop foundation. The pad measures 7 feet, 4 inches in length and is 32 inches wide. It ranges from flush with the ground to 2 inches in height.

COMMENTS

The function of the pad is not known, but it may have been associated with HVAC or other utility features associated with the former gift shop.



Figure L-26: View east of the concrete pad adjacent to the west façade of the House. (Source: LSH-LA, 2020)

DESCRIPTION OF ENVELOPE SYSTEMS — EXISTING CONDITIONS DOCUMENTATION

The exterior walls of the House on the north, east, and west elevations are covered with cedar weatherboard (lap) siding and cedar trim boards. The south elevation is finished with lime plaster on lath. On the north and south elevations below the galerie decks, the vertical logs are exposed and finished with a failed clay parge coat and paint or limewash. The roofing is cedar tapersawn shake.

Further information on the envelope systems is provided in the *Abbreviated Structural and Envelope Assessment* report, included as an appendix.

B	SHELL		
B20	EXTERIOR ENCLOSURE		
	B2010	EXTERIOR WALLS	
		B201001	Weatherboard Siding
		Date:	2007
		Condition:	Fair
		Contributing:	Non-Contributing
		Repair Priority:	Moderate

DESCRIPTION

The earliest historic photographs of the House show wood weatherboard (lap) siding on the north, east, and west elevations. The south elevation does not appear to have been sided historically.

The existing weatherboard siding was installed in 2007 (Figure EN-01). Un-tapered cedar boards were installed at the east and west end walls, and tapered boards installed at the enclosed north galerie. The existing siding has a 5-inch exposed faces, although historically the exposure appeared to have closer spacing, with perhaps 4.5-inch exposures.

The existing siding is unfinished. In the c. 1916 photograph of the House, the east and north elevations appear to be painted white or limewashed. It is unclear from the earlier photographs if the siding was finished before c. 1916; a c. 1900 photograph of the Bequette-Ribault House shows unfinished weatherboard siding on the south elevation and white plaster on the east elevation, suggesting how the Bauvais-Amoureux House may have appeared prior to c. 1916.

The fasteners are reproduction nails. The exposed vertical nail spacing appears to generally follow the nail patterns shown in early photographs. The siding is installed over asphaltic building paper that has been applied over the vertical logs and frame walls; the building paper stops at the top plate and does not continue up the gable end walls. Sheet metal flashing is present at window heads.

The siding is in aged condition. Numerous locations of warped, split, loose siding boards, and missing nails were documented (Figures EN-02 and EN-03). One missing board was observed at the east elevation of the north galerie, exposing the building paper underlayment. Animal damage, likely from squirrels, was present on trim board at multiple locations.







↑ Figure EN-01. Cedar siding at the west elevation, showing vertical pattern of exposed nails.

↗ Figure EN-02. Warped, split, and loose siding boards at the east elevation.

→ Figure EN-03. Warped, split, and loose siding boards at the west elevation of the north galerie.

B	**SHELL**		
B20	**EXTERIOR ENCLOSURE**		
	B2010	**EXTERIOR WALLS**	
		B201002	Exterior Plaster
		Date:	Unknown (Twentieth Century)
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The south elevation above the galerie deck is finished with lime/sand plaster, reinforced with straw, and applied over wood lath. The plaster is of unknown date but appears to either be a fairly modern application or to have been recently heavily repaired. The plaster is finished with limewash.

The plaster is in good condition with only minor hairline cracking. No areas of potentially debonded or deteriorated plaster were identified.



Figure EN-04. Detail of plaster texture at southeast corner at the handrail, showing large aggregate of sand and straw reinforcing.



Figure EN-05. Minor cracking at upper left corner of window.

B	SHELL		
B30	ROOFING		
	B3010	ROOF COVERINGS	
		B201001	Wood Shake Roofing
		Date:	2007
		Condition:	Poor
		Contributing:	Non-Contributing
		Repair Priority:	High

DESCRIPTION

The earliest historic photographs of the House from c. 1900 show wood shingle roofing. Wood shingle roofs were common regional practice by the latter half of the eighteenth century. If the c. 1792 roofing was thatch, as is supposed based on the extant liteaux and lack of nail holes, it is likely that it was replaced with wood shingles early and that wood shingles have been the primary roofing treatment for much of the House's history.

The existing wood tapersawn shakes were installed in 2007 to replace a metal roof installed c. 1963. The existing tapersawn shakes are cedar, 18 inches long by widths ranging from 3 to 8 inches with an approximately 5-inch exposure. The tapersawn shakes are installed with triple head lap and nailed to the skip sheathing with two concealed nails per tapersawn shake. Concealed roofing felt appears to be interlaced between courses. The ridge detail is a "Boston" style (or capped ridge) with horizontal, lapped tapersawn shakes.

Lead-coated sheet metal flashing is present at the stone masonry chimney. Concealed metal flashing is also present at the ridge and the change in pitch at the galerie roofs.

The existing tapersawn shakes are deteriorated along the eaves and the north galerie roof slope. The exposed faces are eroded, and the tapersawn shakes exhibited warping and splitting. Animal damage, likely from squirrels, was visible along the rake edges and at the ridge. Park staff reports that multiple locations of water intrusion continue to recur despite repairs to the roofing, particularly along the north galerie. Multiple other locations of small leaks and spots of daylight were observed on the underside of the tapersawn shakes from the attic.









↑↑ Figure EN-06. Cedar tapersawn shakes at the south galerie roof, looking east.

↑ Figure EN-07. Deterioration and erosion of exposed face of cedar tapersawn shake.

↗ Figure EN-08. Deterioration of tapersawn shakes at the south eave.

→ Figure EN-09. Moss and algae growth on the north roof slopes.

B	**SHELL**		
B30	**ROOFING**		
	B3016	**GUTTERS AND DOWNSPOUTS**	
		B301601	Gutters and Downspouts
		Date:	2007
		Condition:	Poor
		Contributing:	Non-Contributing
		Repair Priority:	High

DESCRIPTION

A galvanized steel half-round gutter is present at the eave of the south galerie and connects to a round galvanized downspout at the southwest corner. No gutter is present on the north galerie eave.

The gutter appears to be an early-twentieth century feature. The c. 1900 photographs of the House do not show gutters, but the c. 1916 photograph does show a half-round gutter on the south eave only. The north eave does not appear to have ever had a gutter.

The galvanizing on the steel sheet inside the gutter trough has failed and the steel is corroded. The downspout is currently connected to a partially buried extension that runs along the west elevation and daylights near the north drive. The buried PVC piping appears to be damaged, and the downspout extension is leaking at the northwest corner, contributing to the erosion and deterioration of the vertical logs at this area.





↑↑ Figure EN-10. Corrosion of the galvanized gutter at the south eave.

↑ Figure EN-11. Corrosion of the galvanized round downspout at the southwest corner.

B	**SHELL**		
B20	**EXTERIOR ENCLOSURE**		
	B2010	**EXTERIOR WALL CONSTRUCTION**	
		B201002B	Exterior Plaster Below Galerie Decks
		Date:	Unknown
		Condition:	Failed
		Contributing:	Unevaluated
		Repair Priority:	High

DESCRIPTION

Below the galeries on the north and south elevations, the exterior log walls are finished with a thin covering of plaster and a white coating (EN-12 and EN-13). The 1936-40 HABS photographs show this area was previously covered with plaster on wood lath; the nail holes for the lath are readily visible in the exposed faces of the vertical logs.

The existing covering is of unknown date but appears to be a fairly modern application. The white coating appears to be a combination of a polymer film-forming coating (like paint) and limewash. There are several applications of the plaster skim coat which appear to be cement-based and lime-based in various places. The plaster and coating have failed, exposing the logs and pierrotage.



Figure EN-12. Failed exterior plaster and limewash at below the south galerie deck.



Figure EN-13. Failed exterior plaster and limewash at below the north galerie deck.

DESCRIPTION OF ARCHITECTURAL INTERIOR FEATURES AND MAJOR COMPONENTS — EXISTING CONDITIONS DOCUMENTATION

Further information on the architectural features and the existing condition assessment of each element is provided in the appendix. Each element is numbered and coincides with the Architectural drawings, also included in the appendix. All photographs included in this section were taken by BVH Architecture during the field work assessment completed in November 2020.

C	INTERIORS		
C30	INTERIOR FINISHES		
	C3010	WALL FINISHES	
		C301001	Interior Walls and Trim
		Date:	c. 1792; 1880–1923; 1960s; 1960s–2000s
		Condition:	Good to Fair
		Contributing:	Contributing and Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The wall surfaces consist of a large variety of materials and time periods. Due to the original time period of the building's construction and the current settlement and deformed beams and structure, the walls are in good condition overall which indicates that they have been repaired in the recent past. There are minimal cracks in the surfaces. These wall repairs and their actual materials and methodologies are unknown and will require some destructive investigation to learn more.

The wall, door and window interior trim also appear to be from multiple time periods. Further analysis of these elements will be required to date the elements in order to ascertain if they are original or reproductions. Where reproductions have been installed, the review of the usage of these for a particular time period should also be considered during the building's interpretive goals.





↗ Figure A-01. 103-Room A, looking East. Wood trim and plaster walls over palisaded c. 1792 wall construction.

→ Figure A-02. 102-Room B, looking West. Wood trim and plaster walls over palisaded c. 1792 wall construction at south and stone chimney. Previous investigations by others in 1994 indicate that the west wall of Rooms A-B is palisaded construction and was plastered over in c. 1845 / during the major renovation of c. 1852.



Figure A-03. 103-Room A (left) to 102-Room B (right) trim connections, looking East. This detail photo indicates, at the left side of the photo, where the wall between Rooms A and B used to be installed (during the 1994 work it was believed to have been installed in c. 1845 / during the major renovation of 1840s - c. 1852 and was removed c. 1960). The interesting features here show that the trim in Room A is square edged and has a smaller cove base molding and the elements are painted gray. The trim in Room B has a profiled top edge and different cove base molding and the elements are painted an ocher color. Electrical intrusions are also shown.



Figure A-04. 104-Room C, looking East. This room has multiple wall materials and finishes (vertical natural, wide beaded wood boards and plaster) and multiple trim types and finishes (natural wood and painted wood). Previous investigations by others in 1994 indicate that this wood wall was installed in c. 1845 / during the major renovation of 1840s - c. 1852.



Figure A-05. 104-Room C, looking South. This view of this room shows the partial wall construction exposing the wood lathe and plaster next to the brick chimney flue in the corner that once connected to a wood stove (pipe covers still evident). These features are believed by the 1994 study to have been installed in c. 1845 / during the major renovation of the 1840s - c. 1852. The plaster at the chimney is rough and irregular and not finished well. The walls also appear to be painted over wallcovering.



Figure A-06. 100-Room D, looking East. This room has multiple wall materials and finishes (vertical natural, wide beaded wood boards and plaster) and multiple trim types and finishes (natural wood and painted wood). The wood wall is continuous. The wall between Rooms C and D is of a newer era and was installed prior to 1956 (HABS).





↢↢ Figure A-07. 101-Hall, SW Corner. The hall also has multiple finishes (vertical natural, wide beaded wood boards and plaster) and multiple trim types and finishes (natural wood and painted wood).

↢ Figure A-08. 101-Hall. The c. 1792 chimney stone has been exposed and the original plaster removed. This is evident at the base of the wall, just behind the wood baseboard trim. You will notice the stone has a precise mortared stone edge for the plaster to be installed.



Figure A-09. 106-North Porch, looking West. This space is not original and was demolished and reconstructed as an enclosed porch with walls (drywall) and windows c. 1963. The original palisaded wood log construction from c. 1792 is intact. All of the original exterior wood siding (1956 HABS) or possible original stucco finish have been removed.

C	**INTERIORS**		
C30	**INTERIOR FINISHES**		
	C3020	**FLOOR FINISHES**	
		C302001	Flooring
		Date:	Possibly c. 1792. Possibly c. 1852. With later additions of date unknown.
		Condition:	Good
		Contributing:	Contributing and Non-Contributing
		Repair Priority:	Low

DESCRIPTION

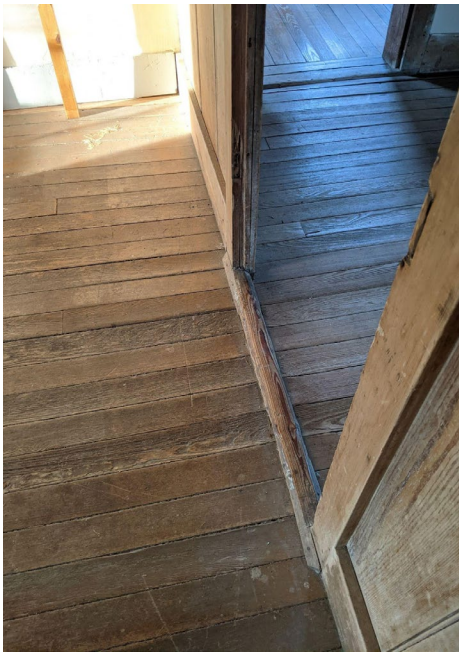
The floor materials are all made of wood. Multiple conditions and time periods exist. The wood floor board widths vary depending on the room. There are multiple door, saddle threshold types, and the floor heights vary.



Figure A-10. 102- Room B at bottom to 101-Hall at top. These two rooms are most likely from very early in the building's construction time period and show early connections to the door openings and walls, but further investigations will be required. The wood orientations are consistent, but the board widths do not match.



Figure A-11. 106-North Porch at bottom to 101-Hall at top. The north porch flooring is wood but was installed in c. 1963.





↢↢ Figure A-12. 104-Room C, left to 101-Hall at right. The wood flooring between these two rooms is continuous under the wood wall partition, most likely dating these floors to very early in the buildings construction time periods, they are either original to c. 1792 or previous investigations by others in 1994 indicate that this wood wall was installed in c. 1845, (during the major renovation in the 1840s - c. 1852) which would indicate the floor is this possible construction date as well. The dating of the wood wall and further investigations will help to determine this.

↢ Figure A-13. 100-Room D at left to 104-Room C at right, at Door 100B. The wood floor in Room D has been added on top of another floor layer at an unknown date.

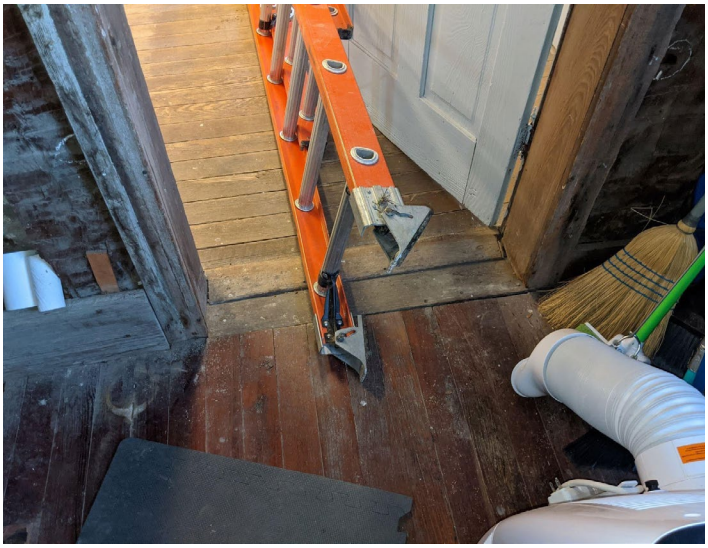


Figure A-14. 107-Restroom at bottom to104- Room C at top. This flooring connection is through an early exterior wall opening dating to at least prior to 1956 (HABS).

C	**INTERIORS**		
C30	**INTERIOR FINISHES**		
	C3030	**CEILING FINISHES**	
		C303001	Beams and Ceilings
		Date:	c. 1792. Unknown dates
		Condition:	Fair
		Contributing:	Contributing and Non-Contributing
		Repair Priority:	Moderate to Low

DESCRIPTION

These components indicate Multiple conditions and time periods with each element having individual detailing. All components are wood but multiple wood types are used. The prior 1994 study indicates that a c. 1840 (or during the major renovation in 1840s - c. 1852) plaster ceiling used to be installed throughout the first floor ceilings and were removed in c. 1960.





← Figure A-15. 103-Room A and 102-Room B beaded profile edge timber beams and wood ceiling / attic floor boards appear to be original to c. 1792. The beams are hewn and show a very precise and interesting beaded edge along their full length at both bottom edges. It needs to be noted that if a prior plaster ceiling was installed in this space during the major renovation of the 1840s - c. 1852, the beaded edge of these beams were covered over in that campaign. The ceiling floor boards are hand planed and secured to the beams with forged nails. The ceiling boards are in Fair condition and are made of random widths and longer inconsistent lengths.

↑ Figure A-16. 04-Room C has square edged timber beams with wood ceiling boards. These ceiling boards / attic floor boards are in much better condition than those in rooms A and B. The boards in Room C are standard consistent lengths that only span from one beam to the next. They are also consistent board widths. The beams are cut and smoothly finished. The beam seen second from left was identified by Jack Luer in 1994 as having hail hole patterns consistent with a (now missing) palisaded wall.



↖ Figure A-17. 100-Room D, square edged timber beams with wood ceiling boards, looking East. The conditions here match those of Room C.



↙ Figure A-18. 101-Hall, looking North. The ceiling in this hallway is new and appears to be drywall attached to the wood beam framing above. An older plaster ceiling appears to be concealed above the drywall.

↓ Figure A-19. 106-North Porch, looking East. Wood bead board ceiling installed in c. 1963. This ceiling has prior water damage in its entirety.



B	**SHELL**		
B20	**EXTERIOR ENCLOSURE**		
	B2021	**WINDOWS**	
		B202101	Windows
		Date:	c. 1852 design. Most likely created/major repairs in 1960s-2000s
		Condition:	Fair to Poor
		Contributing:	Non-Contributing
		Repair Priority:	Moderate

DESCRIPTION

The window fenestration that exists is from multiple time periods. There are some units missing in their entirety. It does not appear that any of the windows contain historic original materials. The conditions vary but overall each unit needs significant repair work.



Figure A-20. South Porch Window 101. Typical window type and configuration. Recreated c. 1852 shutters are fixed to the wall and inoperable.



Figure A-21. East and West Facade Windows at First Floor typical window type and configuration and condition.



Figure A-22. 106-North Porch, Window opening 106, looking into 103-Room A. This opening shows the c. 1792 timber framed rough opening. This opening has reproduction c. 1792 shutters and hardware installed.



Figure A-23. 106-North Porch Window opening 106. This opening has reproduction c. 1792 shutters and hardware installed. The shutter hardware hinge appears to be in the original framing location.



Figure A-24. 106-North Porch, Window opening 105, looking into Room A. This opening shows the c. 1792 timber framed rough opening.



Figure A-25. Typical 106-North Porch Windows are in Poor condition and were installed in c. 1963.

B	**SHELL**		
B20	**EXTERIOR ENCLOSURE**		
	B2030	**EXTERIOR DOORS**	
		B203001	Doors
		Date:	Some elements are likely from c. 1792, c. 1852, and other modern eras
		Condition:	Fair
		Contributing:	Contributing and Non-Contributing
		Repair Priority:	Moderate

DESCRIPTION

There are multiple door conditions & time periods evident with numerous door & trim styles and missing doors. There are also numerous hardware types and locations with missing hardware and evidence of prior hardware locations.





← Figure A-26. 101-Hall, South Door out to South Porch. Door 101 has numerous prior repairs evident in numerous locations. The door appears to have been adapted / altered to fit this current opening. There are holes through the door on the opposite side for prior hardware lock and handle. Stiles have been cut, exposing mortise interior at edges.

↑ Figure A-27. 106-North Porch, Door 101a, looking South. These two openings may possibly be from c. 1792 due to their central building location and matching elements in transom configuration, meeting rail design and wood trim profiles. But, the actual door and transom and trim date is unknown. These elements have features of very early construction, but further investigation and dating should be undertaken to ascertain dating of these elements.







↖ Figure A-28. 100-Room D, South Door out to South Porch. Door date is unknown. This door and Door 104 are very similar but unique to the building.

↑ Figure A-29. 100-Room D, East Door 100A (beyond is Door opening 102 into 102-Room B). This door design is unique to the building and is the only example. It is not clear if this door is a reproduction or is original to c. 1852. In prior notes, dating of this wall will help determine the date of the door as well.

← Figure A-30. 103-Room A, Door 103, west. This opening is within the original c. 1792 timber framing. The door opening is most likely from this era. Destructive investigation of the current plaster will help to determine this. This door opening, along with the opposite one to the south in room B have evidence on the wood jambs of prior hardware types and locations, from which era (possibly c. 1852) is unknown at this time.

E	**FURNISHINGS**		
E20	**FURNISHINGS**		
	E2010	**FIXED FURNISHINGS**	
		E201001	Fireplace Mantel
		Date:	Unknown
		Condition:	Good
		Contributing:	Unevaluated
		Repair Priority:	Low



A-31. 103-Room A, looking West. Fireplace mantel. The actual dating of this mantel is not known. Due to the significant movement of the structural elements in this room and the current condition of the plaster surfaces, if this mantel dates to very early construction periods, it has been removed from its original location and reinstalled here. It is possible that it is of a much later time period because the 1956 HABS drawings do not note that this mantel exists or that there is a hearth in this space. Also, the HABS drawings show a wall between Rooms A and Room B existed at that time, located almost in the center of this mantel/ chimney location. It should be noted that the detailing of the stone hearth appears to be an added feature. Its connections and detailing to adjacent trim and wall surfaces and the wood flooring is peculiar.

C	INTERIORS		
C30	INTERIOR FINISHES		
	C3010	WALL FINISHES	
		C301002	Exposed North Log Wall
		Date:	c. 1792
		Condition:	Good to Fair
		Contributing:	Contributing
		Repair Priority:	Low





← Figure A-32. 106-North Porch at east. Exposed c. 1792 wall construction and window framing. The exposure of these elements is one of the character defining features that shows visually why this building is so important. Further study of how much and where this feature should be exposed in the final rehabilitation building use should be carefully considered as part of the interpretive approach.

↑ Figure A-33. Stack of reproduction c. 1792 casement windows and shutters located at the 106-North porch. While these elements are important to see how a building from this very early time period once looked, this particular building has a much longer period of significance. How the building will be interpreted should be studied to ascertain how much visual display will show from each of the significant time periods.

C	**INTERIORS**		
C30	**INTERIOR FINISHES**		
	C3010	**WALL FINISHES**	
		C301003	Visual Evidence of Settlement Issues
		Date:	c. 1792
		Condition:	Fair to Poor
		Contributing:	Contributing and Non-Contributing
		Repair Priority:	High



Figure A-34. 102-Room B at left, 103-Room A at right, looking west. The Attic and 1st floor framing deflections are highly visible in the beam and floor bowing, where the chimney and its solid foundation produces a crown in the middle of the building.



Figure A-35. 102-Room B, looking south. Downward bowed Attic Beams and flooring deflections and movement.







↖ Figure A-36. 102- Room B, looking South, at Window 102. Evidence of wall cracking starting to return to the surfaces.

↑ Figure A-37. 104-Room C, looking north. These two photos show significant wall cracking. This wall surface is the most deteriorated and cracked of all walls in the entire structure. The wood beam to wall connection joints have pulled away from their original locations approximately 1-½". There is a distinct horizontal crack running the walls entire length at the wood beam line.

← Figure A-38. 104-Room C, looking north at the west corner. Additional wall cracks at the surfaces above the door, horizontally at the wood beam and down the NW corner.

C	**INTERIORS**		
C30	**INTERIOR FINISHES**		
	C3030	**CEILING FINISHES**	
		C303002	Concealed Plaster Ceiling
		Date:	Unknown
		Condition:	Fair
		Contributing:	Unevaluated
		Repair Priority:	Low

DESCRIPTION

Above the center hall, a plaster-on-lath ceiling is visible under the loose attic floorboards. The lath was supported by dimensional lumber running east-west and secured to the ceiling beams. The date of this ceiling is unknown and requires further study.



Figure A-39. Concealed plaster ceiling over center hall, seen from the attic under the loose floorboards.



Figure A-40. Concealed plaster-on-lath ceiling over center hall, seen near the south wall. Note the lath runs north-south, parallel with the ceiling beams.

DESCRIPTION OF STRUCTURAL SYSTEMS — EXISTING CONDITIONS DOCUMENTATION

The exterior walls of the House on the north and south elevations are constructed of vertical logs embedded in the soil (poteaux-en-terre construction), and the east elevation is constructed of vertical logs that have been cut to bear on a wood sill on a stone masonry foundation. The original west wall was also constructed of vertical logs, but this wall has been removed and replaced with a wood frame wall with brick nogging on a stone masonry foundation. The voids between the vertical logs are infilled with stone and clay nogging, called pierrotage. The lateral bracing within the vertical log walls are hewn timbers, set horizontally rather than diagonally.

The first floor is structurally separate from the vertical log walls. The first floor is supported by timber edge beams that span east-west and are supported by stone masonry piers. The partially-hewn log joists spanning north-south bear on the timber edge beams. Multiple supplemental joists have been installed, and shoring has also been installed to provide additional support to the floor framing.

The primary roof framing is a truss system, consisting of "Norman" trusses (a variation of the king-post truss) spanning north-south and bearing on ceiling beams. The ceiling beams are dovetailed into a double top plate that sits on the top of the wall logs. A ridge truss runs east-west to brace the Norman trusses against the central stone masonry chimney. The primary roof rafters span from the ridge beam, are supported at midspan by a continuous purlin, and bear on the top plate. The roof framing for the 1840s - c. 1852 galeries at the north and south elevations is constructed of secondary rafters that align with the primary rafters and are supported at midspan by a purlin on vertical posts. The east end gable wall is constructed from partial-hewn poles, and the west end gable wall is constructed from dimensional lumber.

Further information on the structural systems is provided in the *Abbreviated Structural and Envelope Assessment* report, included as an appendix.

B	**SHELL**		
B10	**SUPERSTRUCTURE**		
	B1020	**ROOF CONSTRUCTION**	
		B102001	Norman (King-Post) Trusses
		Date:	c. 1792
		Condition:	Good to Fair (damage to some members)
		Contributing:	Contributing
		Repair Priority:	High

DESCRIPTION

The primary roof framing is formed by Norman trusses (S-01). The truss members are hewn red and white oak, nominally 5 by 7 inches in size. The top chords of the truss are the main diagonal members, and the horizontal collar tie, located at midspan of the top chords, forms the distinctive "A" shape of a Norman-style truss. The king post is the vertical member spanning from the collar tie to the apex of the truss. The top chords bear on the ceiling beams. The connections between members are mortise and tenon with trenails (wood pegs) (S-02). The original hip framing is still present at the east end (S-03), but the west hip framing has been removed.

Carpentry marks were found on each of the timber truss members, numbering the Trusses from II to VI (west to east) (S-04). Truss I is no longer extant, but a fragment of one of the top chord members was located in the caveau, where it was repurposed as a supplemental floor joist.

Termite damage was present at the bearing end of multiple trusses (S-05). At the apex of Truss VI at the east end, the top ends of the truss members and the connection of the hip framing to the king post of Truss VI had significant water damage (S-06).



Figure S-01. View of Truss V, looking west.



Figure S-02. Mortise and tenon connection between truss top chord and collar tie.



Figure S-03. Original hip roof framing still in place at the east end wall.



Figure S-04. Carpenter's mark on a top chord of Truss VI at the east end.



Figure S-05. Termite damage to the bearing end of Truss IIII and the ceiling beam.



Figure S-06. Deterioration of the king post and top chord connection at Truss VI.

B	SHELL		
B10	SUPERSTRUCTURE		
	B1020	ROOF CONSTRUCTION	
		B102002	Ridge Braces Trusses
		Date:	c. 1792
		Condition:	Good to Failed
		Contributing:	Contributing
		Repair Priority:	High

DESCRIPTION

The ridge brace trusses are flat trusses, running east-west, that provide lateral bracing for the Norman trusses. The truss members are red oak and are nominally 3 by 5 inches in size. The top chord of the ridge brace truss serves as the roof ridge beam. The ridge beam is connected to the top end of the king post at each Norman truss. The intermediate diagonal struts connect the top and bottom chords. The ridge brace trusses are supported by the central stone masonry chimney. The connections between the wood members are all mortise and tenon with trenails.

Differential settlement of the exterior walls relative to the stone masonry chimney has damaged the ridge brace truss where they pocket into the masonry. At the east side of the chimney, the top and bottom chords are displaced, and the diagonal strut to the truss king post is partially missing (S-07). At the west face of the chimney, the top and bottom chords are displaced, and the bottom chord member has cracked (S-08). The visible displacement of the bottom chord is greater than that of the top chord because the top chords were re-leveled during repairs to the roof performed in 2007.

At the west end of the roof, the ridge brace truss is missing to the west of Truss II and was likely removed at the same time as Truss I, the west hip framing, and the west vertical log wall. The mortise for the connection of one of the missing diagonal struts is partially intact (S-09).







↑ Figure S-07. Ridge brace truss at the east side of the chimney, showing displacement of the bottom chord and partially missing diagonal strut.

↗ Figure S-08. Ridge brace truss at the west side of the chimney, showing failed (cracked) bottom chord.

→ Figure S-09. Cut end of ridge beam at the west end of the roof, showing partially intact mortise for now missing diagonal strut.

B	SHELL		
B10	SUPERSTRUCTURE		
	B1020	ROOF CONSTRUCTION	
		B102003	Primary Roof Rafters
		Date:	c. 1792
		Condition:	Good
		Contributing:	Contributing
		Repair Priority:	Low

DESCRIPTION

The primary roof rafters are hewn red oak, nominally 3 by 5 inches. The rafters bear on the ridge beam at the apex of the roof and bear on the top plate at the north and south vertical log walls (S-10). A continuous, hewn oak, horizontal purlin is located approximately at the rafters' mid-span. At the ridge beam, the rafters are notched and lapped. The bearing end of the rafters are toe nailed to the top plate with wrought nails. All the extant rafters appear to be original (S-11).

No insect or water damage was observed on rafter members, but several rafters, particularly on the south roof slope were displaced at the bearing end.

At the east end, the original hip rafters are still mostly in place. The center rafter that connected to the apex of Truss VI is missing.





← Figure S-10. Primary rafters and horizontal purlin just west of Truss II.

↑ Figure S-11. Primary rafters bearing on the south top plate with wrought nails.

B	**SHELL**		
B10	**SUPERSTRUCTURE**		
	B1020	**ROOF CONSTRUCTION**	
		B102004	Secondary (Galerie) Rafters
		Date:	1840s - c. 1852
		Condition:	Good to Fair
		Contributing:	Contributing
		Repair Priority:	Low

DESCRIPTION

The secondary rafters span from the primary rafters to the galerie edge beam to form the roofs of the galeries at the north and south elevations. The rafters are partially hewn poles, approximately 5 to 6 inches in diameter, and are formed of a mix of locally available hardwoods and softwoods (S-12). The secondary rafters align with the primary rafters but are set at a lower slope to form the distinctive broken pitch roof shape. The secondary rafters are toe nailed to the primary rafters with cut nails and have a "birdsmouth" cut at the bearing end. An intermediate purlin on vertical posts supports the secondary rafters approximately midspan (S-13). The rafter tails extend beyond the galerie perimeter beam approximately 12-inches to form an eave.

Approximately 8 secondary rafters have been partially replaced in kind with a splice connection at the purlin. Multiple rafter tails have also been replaced, likely due to deterioration. Rafter tails that appeared to be original exhibited deterioration of varying severity.



Figure S-12. Secondary rafters at the south galerie, looking west.



Figure S-13. Secondary rafters at the north galerie with the intermediate purlin and vertical posts, looking east.

B	SHELL		
B10	SUPERSTRUCTURE		
	B1020	ROOF CONSTRUCTION	
		B102005	Skip Sheathing
		Date:	1840s - c. 1852
		Condition:	Good to Failed (variable)
		Contributing:	Contributing
		Repair Priority:	High (with roofing replacement)

DESCRIPTION

Open or "skip" sheathing was applied over the primary and secondary rafters to support the wood roof shingles. The boards appear to be nominally 6 to 8 inches wide by 1-inch thick, are typically set with 3 to 4-inch gaps between boards and are a mix of vertical and circular-sawn wood (S-14). Numerous cut and wire nails are visible from the undersides of the boards, evidence of multiple generations of roofing replacement (S-15). The attachment of the skip sheathing boards to the rafters could not be observed from the underside of the roof.

The skip sheathing boards appear to be mostly original or early fabric with limited modern replacement boards. Some boards are severely deteriorated.



Figure S-14. Skip sheathing visible from the grenier interior, showing deterioration of sheathing boards.



Figure S-15. Multiple generations of cut and wire nails from past roofing replacements were present.

B	**SHELL**		
B10	**SUPERSTRUCTURE**		
	B1020	**ROOF CONSTRUCTION**	
		B102006	Original Roofing Battens
		Date:	c. 1792
		Condition:	Good to Fair
		Contributing:	Contributing
		Repair Priority:	Low

DESCRIPTION

Several locations of hand-riven liteaux (battens or stripping to which the c. 1792 roofing was attached) are still fastened to the primary rafters with wrought nails on the north and south (S-16 through S-19). All the extant liteaux are located below the line of the current galerie roofs. The placement of the extant liteaux, along with abandoned wrought nails still in place and nail holes on the outside faces of the primary rafters, suggests that the c. 1792 roofing was applied from ridge to top plate without interruption by galerie roof framing.

The original roofing may have been thatch. No evidence of thatching was found during the physical investigation for the historic structure report; however, the liteaux do not have patterns of nail holes to suggest that they once received wood shakes. See sections "A Question of the Galeries" and "To Thatch or Not to Thatch" for additional discussion.





↞ Figure S-16. Intact liteaux at the northeast corner of the primary roof, looking east.

← Figure S-17. Partially intact liteaux at the north slope of the primary roof, looking west.





↞ Figure S-18. Liteaux in S-16 attached to the primary rafter with wrought nails.

← Figure S-19. Liteaux in S-16 attached to the primary rafter with wrought nails.

A	SUBSTRUCTURE		
A10	FOUNDATIONS		
	A1020	SPECIAL FOUNDATIONS	
		A102001	Exterior Vertical Log Walls
		Date:	c. 1792
		Condition:	Fair to Poor
		Contributing:	Contributing
		Repair Priority:	High

DESCRIPTION

The exterior walls of the House were originally constructed of vertical red cedar logs that act as bearing walls to support the roof framing. The logs are approximately 7 to 10-inches wide and are set directly into the earth with variable spacing of 5 to 12 inches between logs that are in-filled with limestone and clay pierrotage. The vertical logs are continuous from the foundation to the top plate except at locations of lateral wall bracing. Below grade, the logs are unshaped (S-20). Above grade, the log-to-log faces are slightly concave to key in the pierrotage, and the exterior faces are hewn flat. At the top of the wall, the logs are notched to receive the double top plate and are connected to the top plate with two wrought nails (S-21).

The vertical log walls appear to be in their original condition at the north and south elevations, and the pierrotage appears to be mostly original where it was visible. At the east end wall, the original vertical logs are still in place, but have been cut above grade to bear on a wood sill on a stone masonry foundation; this modification was performed at an unknown date and was likely due to deterioration of the logs. The original log west end wall was entirely demolished, along with a stone masonry chimney at an unknown date and replaced with a dimensional lumber frame wall and brick chimney.

At the north and south walls, above grade, the logs are in good condition with little evidence of distress or deterioration. However, the logs were found to be deteriorated below grade, resulting in a significant loss of structural capacity (S-22). Differential movement between the exterior walls and the central chimney is also occurring and is readily visible in the displacement of the grenier floor.







↑ Figure S-20. Vertical logs visible from the inside the caveau, showing the transition from unhewn to hewn logs.

↗ Figure S-21. Vertical log at the north elevation (now an interior wall) exposed to show the connection to the top plate.

→ Figure S-22. Below-grade deterioration of the vertical logs at the northwest corner, exposed due to soil erosion and animal burrowing.

B	**SHELL**		
B10	**SUPERSTRUCTURE**		
	B2011	**EXTERIOR WALL CONSTRUCTION**	
		B201101	Exterior Wall Lateral Bracing
		Date:	c. 1792
		Condition:	Good
		Contributing:	Contributing
		Repair Priority:	Low

DESCRIPTION

Lateral bracing of the vertical log walls was part of the original construction. The lateral bracing is horizontal, rather than vertical, which is somewhat unusual for French vernacular buildings in Ste. Genevieve; only the Vital St. Gemme Beauvais House, another poteaux-en-terre structure also constructed c. 1792, has horizontal lateral bracing.

The bracing is formed by hewn logs, likely red cedar, set horizontally in the wall, located approximately 3-feet below the top plate (S-23). This is roughly level with the original window and door heads. Similar to the top plate, the vertical logs are notched to fit around the horizontal bracing member and are fastened with two wrought nails (S-24). The logs are also slightly offset vertically at the bracing member.



Figure S-23. Area of lateral bracing at the north elevation, evident by the discontinuous vertical logs.



Figure S-24. Connection of the vertical logs to the horizontal bracing member.

B	SHELL		
B10	SUPERSTRUCTURE		
	B2011	EXTERIOR WALL CONSTRUCTION	
		B201102	Pierrotage
		Date:	c. 1792
		Condition:	Good to Fair
		Contributing:	Contributing
		Repair Priority:	Moderate

DESCRIPTION

The voids between the vertical logs are infilled with rough limestone units set in a clay binder called pierrotage. The clay binder did not appear to have straw or other vegetative material mixed in with the clay. At the east elevation, the pierrotage was protected by the wood weatherboard siding; at the south elevation, the pierrotage was protected by lime plaster on lath above the galerie decking. Below the galerie decking at the north and south, the pierrotage had been previously painted or lime washed and was partially exposed. At the original north elevation (now an interior wall), the pierrotage and vertical logs are exposed for interpretive purposes. Inside the caveau, a thin clay parge coating had been applied to the logs and pierrotage.

Some areas of loss of the clay binder or limestone units were present where the pierrotage was exposed below the galeries (S-25). At the northwest corner, water and animal damage had caused a larger area of loss of pierrotage and logs. The clay binder was somewhat brittle and easily damaged. Repairs to the pierrotage made with Portland-cement based mortar had failed (S-26).



Figure S-25. Failed parging exposing the pierrotage under the south galerie deck.



Figure S-26. Failed cementitious repair to the pierrotage under the south galerie deck.

B	**SHELL**		
B10	**SUPERSTRUCTURE**		
	B2011	**EXTERIOR WALL CONSTRUCTION**	
		B201103	East End Gable Wall
		Date:	The 1840s - c. 1852
		Condition:	Good
		Contributing:	Contributing
		Repair Priority:	Low

DESCRIPTION

The east end gable wall is constructed from partially-hewn pole framing of 3 to 4-inch diameters, spaced at approximately 2 to 3-ft on center, and fastened with cut nails (S-27 and S-28). The gable wall framing sits on the original c. 1792 top plate and extends onto the end beams at the galeries. Several of the vertical framing members appear to be salvaged or repurposed rafters with birdsmouth notches at the bottom of the member. Further investigation is needed to determine if these members were salvaged from another location on the Bauvais-Amoureux House or if they came from another structure. Some of the framing around the gable window has been replaced with modern dimension lumber. Analysis of the nails and joinery detailing may also help inform the date of construction for the gable wall.



Figure S-27. East gable wall framing.



Figure S-28. Gable framing members fabricated from partially hewn poles and attached with cut nails.

B	SHELL		
B10	SUPERSTRUCTURE		
	B2011	EXTERIOR WALL CONSTRUCTION	
		B201104	West End Frame Wall and Gable Wall
		Date:	1880s - c. 1900
		Condition:	Good
		Contributing:	Contributing
		Repair Priority:	Low

DESCRIPTION

At an unknown date, but likely in the second half of the nineteenth century, the original vertical log wall at the west end of the House was removed along with the westernmost roof truss. A new frame wall on a stone masonry foundation was constructed to the east of the original log wall location, permanently shortening the House by approximately 8 to 12 feet. The frame wall was constructed of 2 by 4-inch wood studs spaced at approximately 24 to 30 inches (S-29 and S-30). Brick nogging is present between the studs to the level of the top plate. The wood studs appear to be a combination of vertical and circular-sawn lumber. See section "The Question of the Galeries" for additional discussion on lumber.

Several studs at the gable appear to be modern replacement members or repurposed wood from another structure



Figure S-29. Frame construction at west gable wall, looking slightly south.



Figure S-30. Frame construction at west gable wall, looking slightly north.

B	**SHELL**		
B10	**SUPERSTRUCTURE**		
	B1010	**FLOOR CONSTRUCTION**	
		B101001	First- Floor Framing System
		Date:	c. 1792
		Condition:	Failed
		Contributing:	High
		Repair Priority:	Contributing (shoring non-contributing)

DESCRIPTION

Lateral bracing of the vertical log walls was part of the original construction of the exterior walls. The first-floor framing is independent of the vertical log exterior walls. The floor framing is constructed of two large diameter oak beams, running east-west, that are supported by masonry piers (S-31). Partially-hewn oak log joists run north-south and are notched at the bearing ends where they rest on the edge beams or sit in joist pockets where they intersect with the stone masonry chimney (S-32). The original hewn floor planks have been replaced with hardwood boards of an unknown date. The masonry piers are rubble limestone set in a clay mortar. The piers have been recently painted or limewashed.

Multiple supplemental joists have been installed at various dates. Some of the supplemental joists appear to be repurposed timbers from other structures (S-33) and some are hewn logs to match the original construction.

Most of the original first-floor structural members remain intact but are in a partially failed condition. Insect damage has caused significant loss of member section; some oak logs have lost all integrity, and only the bark remains of the original log (S-34). An extensive shoring system was installed in the 1990s to address deflection of the first floor after the Great Flood of 1993. This shoring system is now performing as the primary structural support for the first floor.





↗ Figure S-31. Floor framing and shoring from the west wall of the caveau, looking southeast; the edge beam is concealed by the shoring beam.

→ Figure S-32. Floor framing and shoring from the caveau door, looking west. Note the wood retaining wall in the middle foreground. This wall was constructed during the 1994 repairs to stabilize the change in grade of the caveau floor between the original (higher) grade and around the center which was excavated to its current depth sometime before the 1956 HABS drawings.



Figure S-33. Hewn oak timber at the far west end of the caveau. A carpentry mark of “I” was observed on the west face of the timber just north of the mortise pocket, indicating that this is one of the top chord members from missing Truss I.



Figure S-34. Termite damage to oak joist with only bark remaining and recently installed supplemental oak joist immediately to the right.

B	**SHELL**		
B40	**OTHER STRUCTURES**		
	B4010	**CHIMNEYS**	
		B401001	Stone Masonry Chimney
		Date:	c. 1792
		Condition:	Good
		Contributing:	Contributing and Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The stone masonry chimney is one of two stone chimneys constructed as part of the original house. The chimney at the west end wall is no longer extant and has been identified only through an archeological study performed in 1996 that partially mapped the chimney stack foundation. The existing chimney is located just east of the center of the House. The chimney is limestone random ashlar units, likely originally set in a clay mortar but later repointed with a cementitious mortar. The chimney appears to have been recently lime washed or painted in the caveau, and older paint or limewash was observed in the grenier (S-35).

The topmost section was removed and reconstructed with brick c. 1916. In 2007, the brick was removed, and the top was reconstructed in limestone to recreate the historic appearance (S-36).

Some minor areas of mortar loss or failing pointing mortar were observed in the grenier below the roofline. No evidence of displacement or distress of the masonry were observed.



Figure S-35. Chimney in the grenier, looking east.



Figure S-36. Reconstructed area of chimney above roofline, looking northeast.

B	**SHELL**		
B40	**OTHER STRUCTURES**		
	B4010	**CHIMNEYS**	
		B401002	Brick Masonry Chimney
		Date:	1880s - c. 1900
		Condition:	Unknown
		Contributing:	Potentially Contributing
		Repair Priority:	Unknown

DESCRIPTION

When the west end wall was reconstructed, a brick masonry chimney approximately 1-foot 6-inches wide by 2-feet deep was added just inside the frame wall. Historic photos of the House c. 1900 and c. 1916 show the brick chimney penetrating the roofline.

The upper part of the chimney was deconstructed sometime after 2007 (S-37).



Figure S-37. Remnants of brick masonry chimney in grenier.

B	**SHELL**		
B10	**SUPERSTRUCTURE**		
	B1010	**FLOOR CONSTRUCTION**	
		B101002	South Galerie
		Date:	c. 1900 / c. 1963
		Condition:	Fair
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The south galerie is an open porch extending the full length of the south elevation (S-38). The deck of the galerie is approximately level with the interior finished floor. The south galerie was likely originally constructed somewhere around the 1840s - c. 1852, modified in 1900s, nearly completely reconstructed c. 1963, and repaired in 2007. The existing construction except the grenier stairs appears to date to c. 1963 or later.

In its current form, the south galerie is constructed of re-purposed dimension lumber from other structures. The joists are nominal 2x10s that are set into the pierrotage with a Portland-cement based mortar on one end and supported by a 2x10 rim joist on the other end. The main stairs appear to be recently constructed (S-39).

The galerie perimeter beam is supported by ten vertical posts, nominally 4-inches square. The posts are finished with a chamfer detail that somewhat matches the historic photographs of the north galerie posts. The number and placement of the posts and porch beams does not align with the original construction; the earliest photos of the House show nine posts on each side, which is consistent with the westernmost end of the House being shortened.

The railing is a single nominal 4x4, set into the posts with a mortise and tenon connection (S-40). The railing appears to have been designed to match the c. 1916 photo of the House that shows the north galerie in good detail. The railing is set approximately 30-inches above the walking surface. The galerie decking is constructed of nominal 1-inch boards of varying widths. The boards are nailed to the joists with reproduction nails.

Near the west end, there is visible deflection in the south galerie framing. This deflection was likely caused by the recent collapse of the adjacent well.







↑ Figure S-38. South galerie, looking west.

↗ Figure S-39. Modern stairs to south galerie.

→ Figure S-40. Galerie railing to vertical post detail.

B	SHELL		
B10	SUPERSTRUCTURE		
	B1015	STAIR CONSTRUCTION	
		B101501	Grenier Stairs
		Date:	c. 1900
		Condition:	Poor
		Contributing:	Contributing
		Repair Priority:	High

DESCRIPTION

The grenier stairs date to at least 1936, as they appear to be the same stairs shown in the earliest HABS photographs (S-41). The stairs are in poor condition.



Figure S-41. Grenier stairs at the south galerie, note the deterioration of the stringer and treads. The vertical posts are later modifications.

B	**SHELL**		
B10	**SUPERSTRUCTURE**		
	B1010	**FLOOR CONSTRUCTION**	
		B101003	North Galerie
		Date:	c. 1963
		Condition:	Good
		Contributing:	Non-Contributing (as an enclosed porch)
		Repair Priority:	Low

DESCRIPTION

The north galerie was originally constructed around the 1840s - c. 1852 as an open porch extending the full length of the north elevation but was completely reconstructed and enclosed c. 1963 (S-42 and S-43).

In its current form, the north galerie is constructed of repurposed lumber, potentially from other structures or from features that were deconstructed at the House. At the underside of the galerie, vertically-sawn, circular-sawn, and hewn boards are visible.

The joists are nominal 2x10s that are set into the pierrotage with a Portland-cement based mortar on one end and supported by a 2x10 rim joist on the other end. Frame walls constructed of nominal 2x4 wood studs enclose the north galerie on three sides. Ten nominal 4x4 posts support the galerie; the bearing ends of several posts were heavily deteriorated.



Figure S-42. North galerie from the interior, looking east.



Figure S-43. East elevation of the north galerie with enclosed walls and windows c. 1963.

B	SHELL		
B10	SUPERSTRUCTURE		
	B2011	EXTERIOR WALL CONSTRUCTION	
		B201101	Original Door Header
		Date:	c. 1792
		Condition:	Good
		Contributing:	Contributing
		Repair Priority:	N/A

DESCRIPTION

In the exposed poteaux-en-terre wall in the enclosed north galerie, an abandoned opening header can be seen just west of the existing hall door (S-44 and S-44). The opening has been infilled with hewn vertical logs which appear to have been salvaged, likely from the new opening or possibly even the missing west log wall. Chinking or plaster has been applied to the gaps between the logs; this plaster appears to be a modern repair.

The rough dimensions of this opening would have been approximately 4'-3", suggesting a double door. The height of the header shows the original entry was lower than the existing door openings and roughly aligned with the heads of the original window openings framed into the north wall. The opening would have been centered on the north elevation, based on the house's original length, before the west wall and first truss bay were removed. It is likely the location of the original north door. Infrared thermographic scans of the south elevation suggest that a similar header is concealed behind the exterior plaster, suggesting that the north and south elevations had aligning central entries.

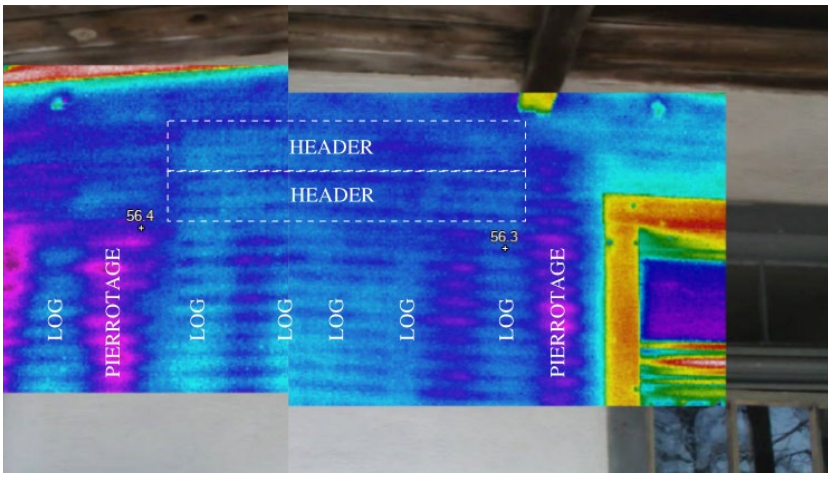


Figure S-46. Composite thermograph of the south elevation, west of the existing center door, showing thermal anomalies consistent with a double header, suggesting an infilled opening. Note the thermal differences between the clay-set pierrotage and the fill used between logs below the header, suggesting these are different materials.





↑↑ Figure S-44. Infilled double opening at north exterior wall.

↑ Figure S-45. Double header above infilled opening. Note the abandoned mortise pocket in the vertical log fourth from right.

DESCRIPTION OF MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS — EXISTING CONDITIONS DOCUMENTATION

FIRE PROTECTION

The existing Bauvais-Amoureux House currently has no type of commercial or residential fire suppression system. Any inclusion of a fire suppression system associated with the preservation or revitalization project for the property would require a new fire water main be extended to the House from St. Marys Road.

HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

General Conditions:

The existing Bauvais-Amoureux House currently has no heating, ventilating, or air conditioning systems. The existing high roof and grenier characteristic of the House allows the interior heat to stratify in an upward direction thus keeping the living spaces below the grenier temperature.

Shade trees provide a means to block the summer sun to help keep the House interior temperature lower. The covered galleries allowed occupants to reside outside in the shade during the day and provided a cooler place to sleep at night. Opening windows on opposite sides of the building would allow for cross-ventilation providing a natural pathway to allow breezes to pass through the House, cooling the spaces as well.

G	BUILDING SITE WORK		
G30	SITE MECHANICAL UTILITIES		
	G3010	WATER UTILITY	
		G301001	Water Service Entrance from St. Marys Road
		Date:	1960s and later
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	N/A

DESCRIPTION

The water service serving the Bauvais-Amoureux House originates from a water main located along St. Marys Road. The water service extends to the west side of the road where it routes to a meter pit. The water service to this site along with other sites appear to have been recently replaced along with the water main at the street as have many of other properties that connect to the water main along St. Marys Road. This is evident by the numerous concrete replacement patches where property water services route from the individual locations back to the main location at the street *(Re: Photograph M-01)*.



Figure M-01: Existing street patching where utility piping has been replaced.

G	**BUILDING SITE WORK**		
G30	**SITE MECHANICAL UTILITIES**		
	G3010	**WATER UTILITY**	
		G301002	Water Service to House from Meter Pit
		Date:	1960s and later
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	N/A

DESCRIPTION

The water service serving the Bauvais-Amoureux House is limited to a 3/4" rigid copper water service from the water utility main located at St. Marys Road to the east of the House.

The water service enters the site where it passes through a water meter pit located at the east end of the site *(Re: Photograph M-02 identified with the blue painted circle and photograph M-03)*. The water service routes from an underground meter pit location to the northwest corner of the House where it then routes out of the ground under the north enclosed gallerie.



Figure M-02: Existing water service meter pit location indicated by blue paint.



Figure M-03: Existing water utility meter pit location.

G	BUILDING SITE WORK		
G30	SITE MECHANICAL UTILITIES		
	G3010	WATER UTILITY	
		G301003	Water Service Entrance to House
		Date:	1960s and later
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	High

DESCRIPTION

The water piping breaches the ground below the north gallerie where the exposed piping is insulated with 1/2" thick closed-cell elastomeric insulation *(Re: Photograph M-04)*. Although the water service main has pipe insulation, this insulation would not provide protection against freezing conditions. Water has to be isolated at the underground meter pit to winterize the House currently.



Figure M-04: Existing water utility piping and sanitary service main exiting the ground under the north gallerie.

G	**BUILDING SITE WORK**		
G30	**SITE MECHANICAL UTILITIES**		
	G3010	**WATER UTILITY**	
		G301004	Water Service Entrance to House
		Date:	1960s and later
		Condition:	Good to Fair
		Contributing:	Non-Contributing
		Repair Priority:	High

DESCRIPTION

From the side of the 3/4" water main, a 1/2" branch line routes to the west where it terminates at a sill cock at the west end of the gallerie *(Re: Photographs M-05 and M-06)*. Immediately ahead of the sill cock, there is approximately 6-8 inches of copper pipe which is not insulated *(Re: Photograph M-07)*.







↖ Figure M-05: Existing water and vent piping under north gallerie.

↑ Figure M-06: Existing water and vent piping under north gallerie.

← Figure M-07: Existing water piping to sill cock and vent piping under north gallerie.

G	**BUILDING SITE WORK**		
G30	**SITE MECHANICAL UTILITIES**		
	G3020	**SANITARY SEWER**	
		G302001	Sanitary Utility Serving House
		Date:	1960s and later
		Condition:	Good to Fair
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The Bauvais-Amoureux House is served by a single 4" cast iron hub and spigot, sanitary waste service which extends from St. Marys Road located east of the House. The sanitary main extends to the west from the street along the north side of the House outside the footprint of the north gallerie. Here the sanitary main offsets to the south to a location under the northwest corner of the north gallerie. Once under the gallerie, it offsets up out of the ground.

There is a hub with a vented cap located just to the north of the gallerie which protrudes out of the ground approximately 12-inches *(Re: Photograph M-08)*.

It is assumed that this hub is used as a cleanout location where the sanitary sewer offsets to the east from the House to St. Marys Road.



Figure M-08: Existing hub from underground sanitary sewer main north of north gallerie.

G	**BUILDING SITE WORK**		
G30	**SITE MECHANICAL UTILITIES**		
	G3020	**SANITARY SEWER**	
		G302002	Sanitary Utility Serving House
		Date:	1960s and later
		Condition:	Good to Fair
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

At the location where the 4" sanitary utility offsets out of the ground under the northwest end of the north gallerie, it extends up through the gallerie floor to a restroom.

Approximately 6-8 inches above the ground there is a cleanout plug in the sanitary pipe *(Re: Photograph M-09)*.

Above the cleanout location, a 1-1/2" copper drain waste and vent (DWV) pipe is connected to the vertical main which serves the lavatory at the restroom above the gallerie *(Re: Photograph M-10)*.



Figure M-09: Existing sanitary sewer main at ground below north gallerie.



Figure M-10: Existing sanitary piping below north gallerie.

G	**BUILDING SITE WORK**		
G30	**SITE MECHANICAL UTILITIES**		
	G3020	**SANITARY SEWER**	
		G302003	Sanitary Utility Serving House
		Date:	1960s and later
		Condition:	Good to Fair
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The 4" sanitary line continues up through the gallerie floor where it serves the water closet located above. Ahead of the connection of the lavatory waste to the 4" sanitary main, is another 1-1/2" copper sanitary pipe which offsets up and routes to the west exterior wall from below the gallerie structure where it then offsets up and terminates with an open end approximately 10-feet above grade *(Re: Photographs M-12, M-13 and M-14)*. This pipe acts as the vent for the lavatory and water closet located at the restroom above the gallerie floor.







↖ Figure M-12: Existing copper vent line below north gallerie.

↑ Figure M-13: Existing sanitary piping below north gallerie.

← Figure M-14: Existing vent piping routing up west side of structure.

D	**SERVICES**		
D20	**PLUMBING**		
	M1030	**PLUMBING FIXTURES**	
		M103001	Plumbing Fixtures in House
		Date:	1960s and later
		Condition:	Fair
		Contributing:	Non-Contributing
		Repair Priority:	Moderate

DESCRIPTION

At the location where the 4" sanitary utility offsets out of the ground From the underside of the gallerie, the 3/4" copper water line extends up through the gallerie floor where it serves the two plumbing fixtures of the restroom.

In this restroom are a single, floor-set, flush tank water closet and a wall-mounted lavatory *(Re: Photograph M-15)*.

The Bauvais-Amoureux House does not have any plumbing fixtures other than the lavatory and water closet located at this restroom. Both of these fixtures are of vitreous china construction and appear in fair shape. This single water service penetrates the floor structure where it branches off to serve both fixtures. Single isolation valves are provided for each fixture *(Re: Photograph M-16)*. The lavatory is served by cold water only.



Figure M-15: Existing lavatory and water closet at restroom of Main Floor.



Figure M-16: Existing isolation valves for plumbing fixtures located below existing lavatory.

D	SERVICES		
D20	PLUMBING		
	D2090	OTHER PLUMBING SYSTEMS	
		D209001	Sump Pump at House Caveau
		Date:	c. 2004
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

Located at the caveau level of the House is a sump pump which is believed to have been added after the 1993 flood. The pump is located in a floor depression just inside the caveau door from outside. The pump discharge piping exits the caveau through the east foundation wall where it terminates on site *(Re: Photograph M-17)*. The capacity of the sump pump is unknown as it was not removed from the sump to evaluate its condition.



Figure M-17: Existing covered sump pit and pump at caveau level.

D	**SERVICES**		
D20	**PLUMBING**		
	D2090	**OTHER PLUMBING SYSTEMS**	
		D209002	Abandoned Well and Hand Pump
		Date:	Undetermined
		Condition:	Poor
		Contributing:	Not Assessed
		Repair Priority:	Low

DESCRIPTION

At the southwest corner of the site is an old hand-pump. It is assumed that this hand-pump is associated with an underground well. The hand-pump's handle has been disconnected indicating that it and the well have been abandoned *(Re: Photograph M-18)*.

It is unclear if this hand-pump and associated well served the Bauvais-Amoureux House based on its location in reference with the House. Reference the location of the hand-pump location and the Bauvais-Amoureux House in the background *(Re: Photograph M-19)*.



Figure M-18: Existing abandoned well at southwest corner of the site (looking towards the south).



Figure M-19: Existing abandoned well at southwest corner of the site (looking towards the east).

D	SERVICES		
D20	PLUMBING		
	D2090	OTHER PLUMBING SYSTEMS	
		D209003	Cistern
		Date:	Undetermined
		Condition:	Poor
		Contributing:	Not Assessed
		Repair Priority:	Low

DESCRIPTION

Historical photos of the time period around 1936 indicate that near the southwest corner of the south gallerie was an underground cistern with an aboveground hand-pump. This cistern would have been connected to a cast iron pipe which extended to above ground where it would have been connected to the gutter downspout near the southwest corner of the gallerie. This gutter and downspout would have been used to collect stormwater off of the roof and stored in the cistern. The hand-pump would have been used to bring the water to the surface where it could be pumped into buckets or other collection devices similar to a water-well. The collection pipe from the downspout and the cistern along with the hand pump has since been removed and the old cistern abandoned in place. The round concrete lid over the cistern remains in place today *(Re: Photograph M-20)*. Storm water off of the south side of the roof currently is collected by the downspout at the west end where it discharges into a 4" or 6" diameter, white, polyvinyl chloride (PVC) drain line *(Re: Photograph M-21)* located just below the surface of the ground. The PVC drain offsets down below the surface of the ground where it then routes to the northwest corner of the site. There it daylights with an open end. The PVC drain at the northwest is fragmented and broken in several locations and appears plugged with debris *(Re: Photographs M-22)*.







↑ Figure M-20: Existing cistern location.

↗ Figure M-21: Existing southeast downspout.

→ Figure M-22: Existing downspout daylighting out of ground at north end of site.

D	**SERVICES**		
D20	**PLUMBING**		
	D3012	**GAS SUPPLY SYSTEM**	
		D301201	Gas Utility Serving Site
		Date:	1960s and later
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Moderate

DESCRIPTION

A 2007 facility exterior revitalization project removed and replaced the exterior siding and roofing materials. This work also included removing an old natural old natural gas-fed water heater, the flue through the roof, and some existing natural gas piping at the west exterior of the structure to facilitate the siding replacement.

As the lavatory would have been the only plumbing fixture served by the gas-fired hot water, with the removal of the water heater the House was left with cold water only.

The existing gas utility piping from St. Marys Road runs underground along the north side of the House outside the footprint of the north gallerie *(Re: Photograph M-23 as identified by the yellow utility locator paint and flags).* The gas line is stubbed up through the ground where a valve and capped end is present just west of the building *(Re: Photograph M-24).*



Figure M-23: Existing gas utility location depicted by yellow flags.



Figure M-24: Existing gas utility capped west of building.

B	SHELL		
B20	EXTERIOR ENCLOSURE		
	B2030	EXTERIOR DOORS	
		B203001	Gaps at Entry Door
		Date:	Undetermined
		Condition:	Fair
		Contributing:	Not Assessed
		Repair Priority:	Moderate

DESCRIPTION

At the south main entry door off of the gallerie, daylight is present under the door with a gap estimated at between 3/8" to 1/2". This size of gap allows a significant amount of air infiltration and insect intrusion at the door due to the absence of an adequate door threshold below the door *(Re: Photograph M-25)*.

Weather-stripping is also lacking at the door's jambs and head *(Re: Photograph M-26)*.



Figure M-25: Existing gap below entry door from south gallerie.



Figure M-26: Existing entry door from south gallerie.

D	SERVICES		
D30	HEATING, VENTILATING AND AIR CONDITIONING (HVAC)		
	D3041	HVAC EQUIPMENT	
		D304101	HVAC Equipment Removed
		Date:	1960s and later
		Condition:	N/A
		Contributing:	Non-Contributing
		Repair Priority:	N/A

DESCRIPTION

Photos of the grenier interior taken in 1980 indicate that a central HVAC unit served the Bauvais-Amoureux House. This system would not have been original to the House and was likely added well after the House would have been used as a residence. This HVAC system provided air circulation to the main four rooms in the House and to the north enclosed gallerie *(Re: Photograph M-27 and M-28)*.

In 2005, the air conditioning unit was deemed unrepairable and was ultimately removed along with the ductwork and grenier insulation as part of a hazardous material cleanup in the grenier space. The clean-up of the grenier was deemed necessary due to the deterioration of the roof which allowed access by birds and other rodents and which had deposited their feces on the ductwork, air conditioning unit, and insulation.

The HVAC unit and ductwork removed in 2005 was never replaced and the House exists today without any type of heating or air conditioning system or air duct distribution.



↑ Figure M-27: 1980 photo of old HVAC unit and associated ductwork located at the grenier space.



→ Figure M-28: 1980 photo of old ductwork located at the grenier space.

D	**SERVICES**		
D50	**ELECTRICAL SYSTEMS**		
	D5020	**POWER DISTRIBUTION AND CONTROL DEVICES**	
		D502002	Abandoned Ceiling Outlets
		Date:	1960s and later
		Condition:	Fair
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The air distribution ductwork which was located at the grenier and removed in 2005 ran the east/west length of the north gallerie up in the grenier. The ductwork was insulated with flexible fiberglass insulation. The ductwork branched out within the grenier to multiple round ceiling supply air outlet grilles.

The ductwork was removed but the ceiling supply air grilles remain today left abandoned in place *(Re: Photographs M-29, M-30 and M-31 for ceiling diffusers).*







↖ Figure M-29: Existing vintage HVAC outlets at ceiling.

↑ Figure M-30: Existing vintage HVAC outlets at ceiling.

← Figure M-31: Existing vintage HVAC outlets at ceiling.

D	**SERVICES**		
D30	**DISTRIBUTION SYSTEMS**		
	D3041	**HVAC EQUIPMENT**	
		D304102	HVAC Equipment Removed
		Date:	1960s and later
		Condition:	Fair
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

Along with the ceiling supply air outlet grilles being abandoned in place, the HVAC system's main return air grille located at the center hallway was also abandoned in place *(Re: Photographs M-32 and M-33)*.

After the grenier cleanup, wood planks were laid across the First level ceiling joists allowing access across the grenier space which remain to this day.



Figure M-32: Existing ceiling return air grille at center hallway.



Figure M-33: Existing ceiling return air grille at center hallway.

D	SERVICES		
D30	DISTRIBUTION SYSTEMS		
	D3041	HVAC EQUIPMENT	
		D304103	Portable HVAC A/C Units
		Date:	c. 2018
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	N/A

DESCRIPTION

Portable electric plug-in air conditioning units have been used to provide temporary air conditioning whenever the House has been open for tours or special events. These portable units are stored in the restroom space located at the west end of the north enclosed gallerie *(Re: Photograph M-34)*

Access to the grenier can only be made currently utilizing a steep exterior stairway located at the west end of the south gallerie *(Re: Photograph M-35- stairway is located at the left side of the photo).*

Should any kind of HVAC system be planned for this House, access will be an issue if located in the unconditioned and unheated grenier so it is recommended that any added HVAC system be located somewhere on the Main Level of the House for access and maintenance purposes should HVAC be considered.



Figure M-34: Existing portable HVAC units stored in restroom.



Figure M-35: Existing south gallerie showing existing exterior staircase to grenier level.

G	**BUILDING SITE WORK**		
G40	**SITE ELECTRICAL UTILITIES**		
	G4010	**ELECTRICAL DISTRIBUTION**	
		G401001	Outdoor Electrical Service to House
		Date:	1960s and later
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The electrical utility company serving the building is Citizens Electric Corporation. Primary power is routed overhead along Saint Marys Road to an oil-filled, pole-mounted transformer bank with three transformers. This transformer bank is approximately 170 feet away to the north from the Bauvais-Amoureux House. From the transformer bank, a 240/120-volt, single-phase, 3-wire service feeder is routed overhead across Saint Marys Road to a wooden pole and then south to a wooden pole along Saint Marys Road to a wooden pole in front of the Bauvais-Amoureux House. *(Re: Photograph E-01)* At this pole, the service feeder is routed down the pole in 2" polyvinyl chloride (PVC) conduit to a 200-amp meter socket with a 200-amp, 2-pole and 60-amp, 2-pole service disconnect breakers. *(Re: Photograph E-02)* The breakers are manufactured by Square "D" and have a 10,000-amp interrupting current (A.I.C.) rating.



↑ Figure E-01: Existing Utility Power Pole with Electric Meter, Fiber Optic Termination Box, and Overhead Utility Lines.



→ Figure E-02: Existing Communication Utility Company Demarcation Box Under the Porch.

G	BUILDING SITE WORK		
G40	SITE ELECTRICAL UTILITIES		
	G4010	ELECTRICAL DISTRIBUTION	
		G401001	Electrical Meter Socket Grounding at Pole
		Date:	c. 2011
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

From the 200-amp meter socket, a bare #6 American Wire Gauge (A.W.G), copper grounding conductor is routed and stapled to the wooden power pole and then routed down to a driven ground rod.

D	**SERVICES**		
D50	**ELECTRICAL**		
	D5010	**ELECTRICAL POWER DISTRIBUTION**	
		D501001	Electrical Panel in House
		Date:	c. 2011
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Moderate

DESCRIPTION

From the bottom of the 200-amp meter socket, the 240/120-volt, single-phase, 3-wire, plus ground feeder is routed underground to a 200-amp load center in the Bauvais-Amoureux House. The underground feeder is transitioned underground with a 45-degree elbow up to above grade, then another 45-degree elbow up to an expansion fitting, and then up to the 200-amp load center. The feeder below the load center is in unsupported PVC conduit.

The 240/120-volt, 200-amp load center is manufactured by Square "D"; has a main 200-amp, 2-pole breaker; one, 60-amp, 2-pole; seven, 20-amp, 1-pole; and one, 15-amp, 1-pole branch breakers. The branch breakers are manufactured by Square "D" type home line with a 10,000 A.I.C. rating. There are twelve blank spaces for future breakers. *(Re: Photographs E-03 and E-04)* The current electrical service was installed in 2011. *(Re: EA-01 and EA-02)*



Figure E-03: Existing 240/120-Volt, Single-Phase, 3-Wire, 200-Amp Load Center on West End of North Galerie.



Figure E-04: Existing 240/120-Volt, 200-Amp, Load Center with Door Open Showing Circuit Breakers (JMK 11/24/20).

D	SERVICES		
D50	ELECTRICAL		
	D5010	ELECTRICAL POWER DISTRIBUTION	
		D501002	Circuit Directory on Panel
		Date:	c. 2011
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Moderate

DESCRIPTION

The circuit directory for the load center indicates that the branch breakers serve the following loads:

1. 20-amp, 1-pole – Lights, receptacles in office room
2. 20-amp, 1-pole – Receptacles display case room
3. 20-amp, 1-pole - Lights on porch
4. 20-amp, 1-pole - Lights under the house
5. 20-amp, 1-pole – Lights in middle room
6. 20-amp, 1-pole – Outside receptacles, porch receptacle
7. 20-amp, 1-pole - Panel receptacle
8. 15-amp, 1-pole – Spare

10/11. 50-amp, 2-pole – 50 receptacles on panel *(Re: Photograph E-05).*

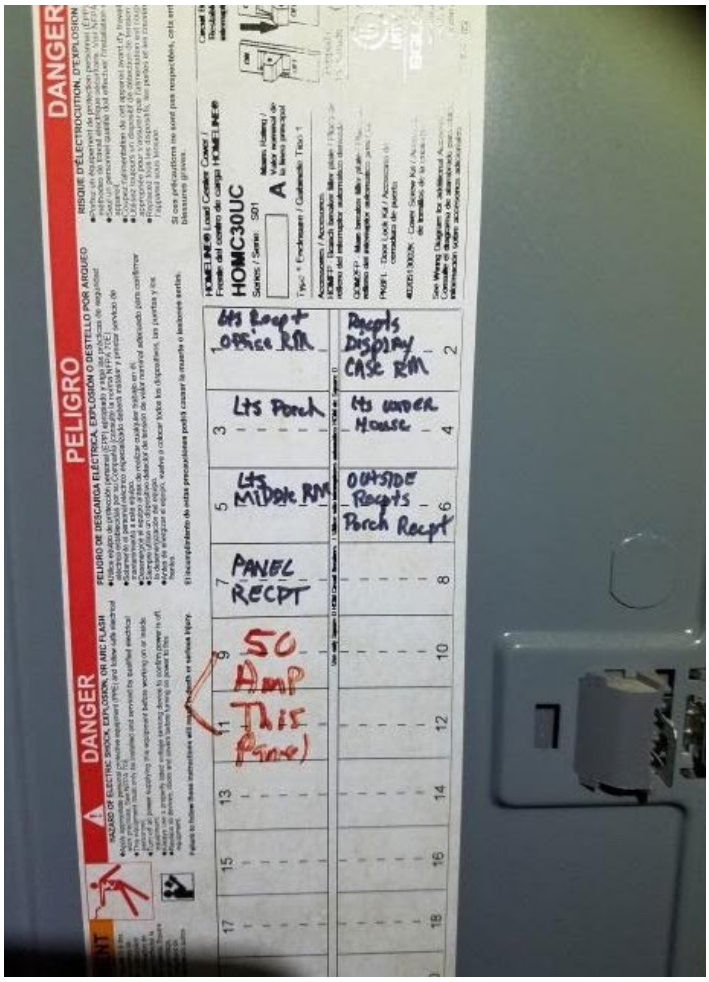


Figure E-05: Existing 240-120-Volt, 200-Amp, Load Center with Door Open Showing Circuit Directory.

D	**SERVICES**		
D50	**ELECTRICAL**		
	D5010	**ELECTRICAL POWER DISTRIBUTION**	
		D501003	Ground Rod Connection
		Date:	c. 2011
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Moderate

DESCRIPTION

A #6 A.W.G. bare copper grounding conductor is routed out of the bottom of the load center in a 2" lock PVC conduit shared with three metal clad (MC) interior wiring cables. The 2" conduit penetrates the first floor and stops. The #6 grounding conductor is then stapled to the wood structure and is routed down to a driven ground rod. *(Re: Photograph E-06)*



Figure E-06: Existing Bore #6 Copper Grounding Electrode Wire Exiting 2" PVC Conduit from Load Center Above to Driven Ground Rod.

D	SERVICES		
D50	ELECTRICAL		
	D5010	ELECTRICAL POWER DISTRIBUTION	
		D501004	Branch Circuits - MC Cable, Romex, Flexible Conduit
		Date:	c. 2011
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Moderate

DESCRIPTION

Branch circuits are routed from the load center to receptacles and lighting fixtures using MC cable. MC cables are routed in 2" PVC up to the attic area where then the MC cable is then routed exposed over to serve lighting fixtures and receptacles. Also, three MC cables are routed in 2" PVC down to below the porch where then the MC cable is routed exposed over to serve lighting fixtures and receptacles. *(Re: Photograph E-07)*

The MC cable has two #12 A.W.G. phase and neutral conductor, along with one #12 A.W.G. equipment grounding conductor. The MC cable was installed in 2011.

There are also some wiring using non-metallic, sheathed cable (Romex) and conductors in flexible metal conduit which was installed prior to 2011. *(Re: Photographs E-08 and E-09)*



Figure E-07: Existing Metal Clad (MC) cable Exiting a 2" PVC Conduit from the Load Center Above.



Figure E-08: Existing Non-Metallic Sheathed Cable Installed Before 2011.

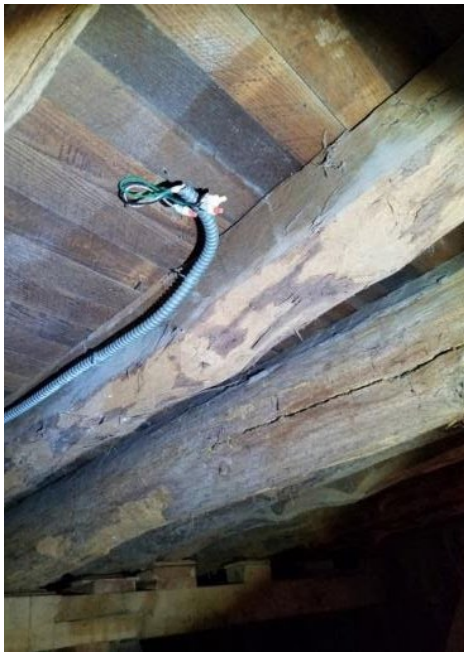


Figure E-09: Existing Abandoned Wiring Conductors in Flexible Metal Conduit.

D	**SERVICES**		
D50	**ELECTRICAL**		
	D5022	**LIGHTING**	
		D502201	Lighting Fixture Types
		Date:	Undetermined
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The exterior of the building has no lighting fixtures. The caveau has two surface-mounted lighting fixtures attached to the ceiling. Northeast room on the first floor has one incandescent lamp holder mounted on the ceiling with parabolic aluminized reflector (PAR) lamp. Southeast room on the first floor has one incandescent lamp holder with a PAR lamp. *(Re: Photograph E-10)* Northwest room on the first floor has four fluorescent, 4', 2-lamp industrial lights with reflectors. The lighting fixtures are surface-mounted to the ceiling. There is fabric hung underneath the lighting fixtures in this room to reduce glare and lighting levels. *(Re: Photograph E-11)* Southwest room on the first floor has one incandescent lamp holder with a PAR lamp.





← Figure E-10: Existing Incandescent Lighting with PAR Lamps in East Room on First Floor.

↑ Figure E-11: Existing Fluorescent Lighting Fixture with Cloth Covering in the Northwest Room on First Floor.

D	SERVICES		
D50	ELECTRICAL		
	D5020	POWER DISTRIBUTION AND CONTROL DEVICES	
		D502001	Receptacles and Switches
		Date:	Undetermined
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

Under the North Galerie, at the west end, there are two ground-fault circuit interrupter (GFCI) receptacles mounted in a surface box with a weatherproof, in-use, plastic cover.

In the lower Caveau, near the entrance door on the east side, there are two toggle switches mounted in a surface-mounted metal box with a double-gang metal coverplate. In the lower level, at the east end, there are two GFCI receptacles mounted in a surface-mounted, metal box with a double-gang, plastic ivory coverplate.

In the southwest room, on the first floor near the entrance door, there is a brown toggle switch to control lighting. The toggle switch is mounted in a buff-colored, surface box with buff-colored, surface raceway up to the ceiling. *(Re: Photograph E-12)* There is a 120-volt, duplex receptacle on the north wall and the south wall. *(Re: Photograph E-13)*

In the southeast room, on the first floor on the south wall, there is a toggle switch mounted flush in the wall with a plastic, ivory faceplate to control display lighting. There is a 120-volt, duplex receptacle on the east wall and the south wall.

In the northeast room, on the first floor, there are two, 120-volt, duplex receptacles on the north wall.

In the northwest room, on the first floor, there is a 120-volt, duplex receptacle on the south wall. Also, in the northwest room, on the ceiling, south wall, and north wall, there are electrical junction boxes.

On the north galerie, there are two toggle switches to control lighting. At the west end, there is a 240-volt, 50-amp receptacle and a 120-volt, duplex receptacle.



Figure E-12: Existing Toggle Switch Mounted in Surface Metal Raceway in Northwest Room on First Floor.



Figure E-13: Existing Receptacle in Metal Box Being Powered with Metal Clad (MC) Cable in the East Room on First Floor.

D	SERVICES		
D50	ELECTRICAL		
	D5030	COMMUNICATIONS AND SECURITY	
		D503001	Fiber Optic Service to House
		Date:	Undetermined
		Condition:	Good
		Contributing:	Non-Contributing
		Repair Priority:	Low

DESCRIPTION

The local utility communications company has routed an underground fiber optic cable up to a termination box mounted on the same power pole as the electrical meter. From the pole-mounted termination box, the fiber optic cable was routed underground in PVC conduit over to another demarcation termination box mounted under the North Galerie. *(Re: Photograph E-14)* From the demarcation box, there is one copper communication cable routed over to a work area on first floor. There is also a coiled-up copper communications cable not being used. *(Re: Photograph E-15)*



Figure E-14: Existing Fiber Optic Service to Demarcation Box Under the Porch.



Figure E-15: Existing Communication Utility Company Demarcation Box Under the Porch.

D	SERVICES		
D50	ELECTRICAL		
	D5022	LIGHTING	
		D502202	Exit Lighting and Emergency Lighting
		Date:	N/A
		Condition:	N/A
		Contributing:	N/A
		Repair Priority:	High

DESCRIPTION

The building does not have exit lighting or emergency lighting.

D	SERVICES		
D50	ELECTRICAL		
	D5037	FIRE ALARM SYSTEMS	
		D503701	Fire Alarm System
		Date:	N/A
		Condition:	N/A
		Contributing:	N/A
		Repair Priority:	High

DESCRIPTION

The building does not have a fire alarm system.

D	SERVICES		
D50	ELECTRICAL		
	D5038	SECURITY AND DETECTION SYSTEMS	
		D503801	Intrusion Alarm Systems
		Date:	N/A
		Condition:	N/A
		Contributing:	N/A
		Repair Priority:	High

DESCRIPTION

The building does not have an intrusion alarm system.

D	SERVICES		
D50	ELECTRICAL		
	D5090	LIGHTNING HAZARD REDUCTION	
		D509001	Lightning Protection System
		Date:	N/A
		Condition:	N/A
		Contributing:	N/A
		Repair Priority:	N/A

DESCRIPTION

The building does not have a lightning protection system.

Description of Safety (Summary)

LIMITED PHASE 2 ENVIRONMENTAL ASSESSMENT

A limited Phase 2 Environmental Assessment was performed to determine the presence or absence of asbestos-containing materials (ACM) and lead-based paint (LBP). No analysis of soil or groundwater was performed. Bulk samples for ACM identification were taken for laboratory analysis by Polarized Light Microscopy; sampling was performed where materials were already damaged. Testing for LBP was performed non-destructively in situ using direct readings from an X-Ray Fluorescence (XRF) spectrum analyzer. A survey was also performed to identify other potentially hazardous materials, including fluorescent light fixtures, ballast, and chemicals.

Non-friable ACM was positively identified in concentrations greater than 1% in the interior drywall and joint compound located at the c. 1963 exterior walls of the north galerie. Positive ACM results lower than 1% concentrations were also identified in some of the grenier insulation and the window glazing putty.

Over 200 sample locations were tested using XRF and multiple locations were positively identified as containing LBP. Based on this survey, LBP should be assumed to be present at all windows and window trim (potentially excluding the attic windows), all surface finishes in the office room at the southwest corner, and at all doors, door frames, and trim.

For other hazardous materials, several packages of maintenance products were identified in the caveau, including paint thinner and repair compounds. Fluorescent light ballasts and bulbs were also identified on the first floor.

Further information on the limited Phase 2 Environmental Assessment is provided in the *Hazardous Materials Survey of Beauvais Amoureux House* report, included as an appendix.

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Part 2: Treatment & Use

Requirements for Treatment and Use

LAWS, REGULATIONS, AND FUNCTIONAL REQUIREMENTS

Key laws, regulations, and functional requirements that apply to the recommended work include the following:

- National Park Service Cultural Resources Management Guideline (Director's Order 28), which requires planning for the protection of cultural resources on park property.
- Section 106 of the National Historic Preservation Act (NHPA), which mandates that federal agencies, including the NPS, take into account the effects of their actions on properties listed or eligible for listing in the National Register of Historic Places and give the Advisory Council on Historic Preservation a reasonable opportunity to comment.

Treatment of the building and site are also to be guided by the following:

- Secretary of Interior's Standards for the Treatment of Historic Properties
- NPS Management Policies 2006
- Uniform Federal Accessibility Standards
- All current applicable Building Codes

The NPS is self-regulating in terms of enacting and enforcing building code standards. The Bauvais-Amoureux House is therefore not legally subject to local or state building code requirements. When undertaking repairs to buildings structures, NPS endeavors to have the work comply with model building code standards.

With historic structures, attempts to achieve strict conformance with model building code standards that are intended for new buildings can lead to destruction of the historic fabric. Alternative compliance procedures, such as Chapter 12 of the IEBC relating to historic buildings, should be referenced in determining code compliance.

PRESERVATION OBJECTIVES

The recommendations provided in this report have been developed in accordance with the Secretary of the Interior's Standards.

The NPS has identified four treatments for historic properties[1], and there are separate standards for each of these treatments: preservation, rehabilitation, restoration, and reconstruction. The four treatments are defined as follows:

1 Revised by Anne E. Grimmer, The Secretary Of The Interior's Standards For The Treatment Of Historic Properties With Guidelines For Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings (Washington, D.C.: U.S. Department of the Interior, National Park Service Technical Preservation Services, 2017)

PRESERVATION

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

REHABILITATION

The act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

RESTORATION

The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

RECONSTRUCTION

The act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

The selection of a treatment depends on a number of factors, including the relative importance of the property in history, the physical condition of the property, the proposed use, and code requirements.

Based on the conversations with the NPS, the chosen treatments for the Bauvais-Amoureux House are Preservation and Rehabilitation.

TREATMENT OPTIONS

Component	Integrity	Contributing	Treatment Options
Exterior	Low (modern replacement options)	Contributing & Non-Contributing	Restoration
Structure	High (but poor condition)	Contributing	Preservation Rehabilitation Restoration
Interior	Moderate (many levels of alterations)	Contributing & Non-Contributing	Preservation Rehabilitation Restoration
Landscape	Low (significant alterations and loss of historic features)	Contributing & Non-Contributing, & TBD	Rehabilitation Reconstruction
Building Systems	N/A	Non-Contributing	Rehabilitation

CODE ANALYSIS

The NPS has adopted the following Building Codes and Industry Standards which were used for the analysis of this report:

- IBC 2021 with Appendices
- IEBC 2021 with Appendices
- NFPA 101 Life Safety Code
- ABAAS

The building is currently unoccupied and has been previously used as a residence. The NPS would like to use the House as a key element of the newly created Ste. Genevieve National Historical Park. This occupancy would align with the occupancy definition of Group B in the 2021 IBC and per IEBC Special Occupancy exceptions for Museums (historic buildings). The recommendation is to allow the first floor to be assigned the B occupancy with the basement and attic remaining unoccupied.

CODE ISSUES – DISABLED ACCESSIBILITY – UNIFORM FEDERAL ACCESSIBILITY STANDARDS

In the NPS Management Policies 2006, Chapter 5 Cultural Resource Management, it states in section 5.3.2 Physical Access for Persons with Disabilities that,

> "The National Park Service will provide persons with disabilities the highest feasible level of physical access to historic properties that is reasonable, consistent with the preservation of each property's significant historical features. Access modifications for persons with disabilities will be designed and installed to least affect the features of a property that contribute to its significance. Modifications to some features may be acceptable in providing access once a review of options for the highest level of access has been completed. However, if it is determined that modification of particular features would impair a property's integrity and character in terms of the Advisory Council's regulations at 36 CFR 800.9, such modifications will not be made. To the extent possible, modifications for access will benefit the greatest number of visitors, staff, and the public, and be integrated with or close to the primary path of travel for entrances and from parking areas. In situations where access modifications cannot be made, alternative methods of achieving program access will be adopted."

The NPS is committed to providing persons with disabilities the highest feasible level of physical access to historic properties that is reasonable as noted above. However, if it is determined that the modification of particular features would impair a property's integrity and character, such modifications should not be made. The Bauvais-Amoureux House should be made accessible from the public right of way, onto the site, and into the main first floor of the building. Access to the basement and the attic is impractical from within the historic structure. Access to these spaces would significantly impact preserving the building's architectural integrity.

Access to the basement level should be limited. Providing access into this space by widening the east doorway would impact the c. 1792 construction intact at this location. Access could be accomplished by providing an accessible route to the existing door opening at the east and to provide a means to visually see into the space without actually entering it. Further development of interpretive information about this space and its french construction methodologies could be provided in an adjacent space or alternate building, as part of the future interpretive planning study.

The architectural design preferred option included in this report shows how to accommodate accessibility and code stairway access and upgrades to the first floor level. First floor accessibility could be achieved through the implementation of a new ramp and stairway at the west facade. Once inside the building many of the door widths and thresholds would need to be modified to accommodate wheelchair access. The doorways should be chosen based on areas to be accessed and by their original construction dates, as some walls and doors date to c. 1852 and others to c. 1792.

The following specific accessibility code deficiencies have been identified:

Basement Level:

- The basement level is not required to be accessible since it will not likely contain occupied program spaces.

First Level:

- Doorways are typically too narrow for UFAS accessibility. Minimum clear passage width is 32 inches, the majority of the doors are 31 inches wide.
- Many of the doorways have inaccessible thresholds. Maximum vertical level changes are limited to 1/4 inches and sloping offsets are limited to 1/2 inch.
- The building has no accessible restrooms, drinking fountains, or mop sinks which would be required for public occupancy. These elements can be accommodated in a nearby building within the historical park.
- There is no accessible compliant signage throughout the site or building which should be provided to define the accessible route both on the site and through the building.
- The flooring in the main east room (Room103) currently exceeds the maximum slope and cross-slope requirements for walking surfaces as identified by UFAS and the Denver Service Center. Resetting and leveling the flooring should be coordinated with the structural repairs to the floor framing system.

Second Level:

- The exterior stair treads, and risers at the main stair do not meet minimum accessibility codes. The existing stair risers are 9 inches high and the treads are 6 3/4 inches. Treads should be a minimum of 11 inches deep and treads and risers need to be uniform. Railings need to be within required heights and shape criteria and have proper end extensions, these requirements are not met by the current staircase. The second floor is not required to be accessible since it will not likely contain occupied program spaces. Any modifications to this exterior stair would impact the historic character of the building and are therefore not recommended.

CODE ISSUES - BUILDING CODE AND LIFE SAFETY

The following specific building code and life safety deficiencies based on the 2021 International Building Code and NFPA 101 have been identified.

General Building:

- Existing construction type deficiencies will need to be addressed by the sensitive installation of an automatic fire sprinkler system.
- The building lacks code compliant exit signage throughout the building which should be provided prior to any occupancy.

Basement Level:

- The basement level does not meet minimum headroom clearances. This can be an issue if there are expectations that there will be mechanical and/or electrical equipment that requires specific exiting requirements. These spaces are not recommended to be within the basement. General ceiling heights in occupied space should be 7 feet minimum, current head height is approximately 6 feet 6 inches. In its current condition the basement is not occupiable.
- The door accessing the basement is too narrow for UFAS accessibility.

First Level:

- The front porch perimeter lacks a safety railing. The IBC requires a guardrail at changes in level greater than 30 inches along walking surfaces.
- The steps at the front porch do not have adequate and consistent treads and risers and do not have code compliant handrails.
- Doorways are typically too narrow for IBC exit path requirements. Minimum clear passage width is 32 inches and existing widths are typically 31 inches.
- Some of the doors may swing in the wrong direction for emergency exiting depending on the final identified occupant load and identified exit paths. Doors should swing in the direction of egress when the occupant load is more than 50. The most practical solution to this deficiency is to limit the interior occupant load to less than 50.
- The existing floor structure and shoring are insufficient to support the live loads required for Assembly-rated occupancies, which are typically 100 psf for general assembly and corridor spaces. Coordination with the structural improvements will be required.

Second Level:

- The main exterior stair does not meet configuration requirements for an emergency exit stair. The risers and treads are inconsistent and not properly sized. The width of the stair is less than the required 36 inches. The most practical solution to this deficiency is to limit the occupancy to private usage and classify it as a business area utilizing the occupant load factor 150 to allow for 6 occupants. The preferred solution is to not allow any occupants to the second floor level.

CODE ISSUES - MECHANICAL, PLUMBING, FIRE AND FUEL GAS:

The mechanical codes adopted by the City of Genevieve, MO are as follows:

- 2012 International Plumbing Code based on the 2012 International Plumbing Code with local amendments
- 2012 International Mechanical Code based on the 2012 International Mechanical Code with local amendments
- 2012 International Fire Code based on the 2012 International Fire Code with local amendments
- 2012 International Fuel Gas Code based on 2012 International Fuel Gas Code with local amendments

The State of Missouri currently has adopted the 2018 International Energy Conservation Code but the City of Genevieve has not adopted this code. The State of Missouri allows individual municipalities to adopt any combination of codes and may even forego code adoption. The City of Genevieve currently has not adopted any form of the IECC nor has it adopted the NFPA 101 Life safety Code.

CODE ISSUES - ELECTRICAL

The electrical codes adopted by the City of St. Genevieve, Missouri, are as follows:

1. 2012 National Electrical Code
2. 2012 International Existing Building Code
3. 2012 International Residential Building Code

The following Codes have not been adopted:

1. 2018 International Energy Conservation Code
2. NFPA 101 Life Safety Code

Ultimate Treatment and Use

LANDSCAPE AND SITE ACCESS

The topography of the site, with the steep slope at St. Marys Road, and the lack of existing accessible parking or an existing accessible path to the house from the street presents challenges for visitors with mobility needs. The narrow parcel specific to the Bauvais-Amoureux House provides limited area to introduce sufficient parking and accessible paths. However, with the acquisition of several adjacent properties by the park, including the Creole (Wilhauk) House and the parcel immediately to the north, sufficient space is now available to consider multiple options for parking for personal vehicles as well as busses and larger vehicles.

The preferred site accessibility treatment includes aspects of Options #1 and #2. Visitors may approach the site along St. Marys Road travelling either from downtown Ste. Genevieve to the north or from Highway 61 to the south. From either direction Option #1 proposes that the circular drive for the Creole House will provide the primary parking area for visitors, and the relatively level grade between the Creole House and the Bauvais-Amoureux House allows for an accessible path between the properties. Option #2 proposes to provide an additional area of accessible parking immediately to the north of the house, reducing the walking distance between the parking area and the new accessible entrance on the west elevation.

The proximity of the Bauvais-Amoureux House to other historic resources along St. Marys Road, including the nearby Bequette-Ribault House, creates opportunity for additional walking paths or a longer self-guided walking trail. Interpretive nodes along these paths can be used to educate visitors on the cultural landscape, the relationship to the Common Field, historic photographs, and the changes over time of the House itself.

In considering what site and landscape features might be considered for recreation and interpretive purposes, little historical documentation exists on ancillary structures and site features that existed prior to c. 1900, when the earliest historical photographs were taken. Additional archeological study may be able to assist with identifying evidence for historical site features such as property boundaries, adjacent roads/road rights-of-way, a barn, cabin, orchard, fences, and other features described in the early property inventories.

ARCHITECTURAL TREATMENT

The preferred treatment recommends a Rehabilitation approach that introduces sensitive interventions for accessibility, along with modern materials and systems for code considerations and visitor enjoyment. For the purposes of visitor experience, the south elevation has been identified as the primary façade, although the primary visitor entrance would be shifted to the west for accessibility purposes. An occupancy limit of maximum 50 people is recommended to accommodate egress needs without requiring significant modifications to existing doorways.

To address accessibility needs, the preferred treatment proposes a new accessible ramp at the west elevation and to create a new accessible entrance through the west elevation frame wall. Modest

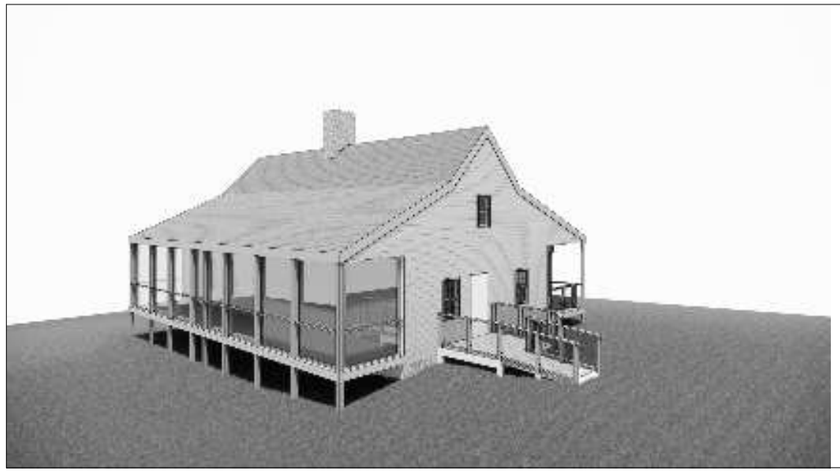
variations on this approach, such as shifting the accessible ramp to the north or south galerie in lieu of a new entrance at the west can also be considered, still maintaining the west elevation as the primary rehabilitation zone. When the ultimate use, programming, and interpretive plan for the House are finalized by NPS, the preferred approach presented in this historic structure report should be revisited to ensure that the goals and treatments align with park needs. Select interior doorways would be widened to provide a path that makes the interior fully accessible to all visitors. This approach minimizes the visual impact of the accessible entrance and the impact to the vertical log walls, which are a character defining feature, while still providing a full and equitable experience to visitors of all capabilities. Due to deflection of the floor framing structure in the east room, the flooring should be leveled, potentially in tandem with the structural repairs to the floor joists.

As part of the preferred treatment, the north galerie is recommended to remain enclosed to provide space for the new mechanical room and to protect the north poteaux-en-terre wall, which is currently unfinished as an interpretive choice to allow visitors to understand the vertical log construction of the original exterior walls. The exterior walls and floor framing of the northern exterior galerie are not historic; the preferred architectural treatment proposes to remove the existing walls enclosing the north galerie and install a new curtain wall system to improve the transparency of this space as an interpretation of an open galerie. The curtain wall mullions are proposed to align with new vertical wood posts to represent the galerie posts, and the curtain wall would be set inboard of the vertical posts to emphasize the early galerie construction. The proposed placement of the new mechanical room in the rehabilitation zone of the north galerie has been chosen for several reasons. First, placement in the attic is not preferred. The goals are to: eliminate water sources within the attic level, to limit any weight concerns of the new equipment on the timber framed structure, limit connecting equipment to the originating sources within the site, and to limit the visibility of the equipment within the attic so that visitors can see the most intact fully visible historic elements of the attic as unhindered by new construction. Secondly, the mechanical room was not recommended within the caveau, again to limit the impact of new work on the historic fabric. Also, placing the equipment below grade can create issues with its operation. The treatment options for the north galerie are flexible and may need to be revisited when the ultimate use and Long-Range Interpretive Plan are finalized by NPS. Some consideration has been given to the option that the north galerie should be restored as an open structure, which impacts the treatment and interpretation for the exposed north wall. The preferred treatment approach presented here is proposed conceptually based on feedback from NPS and other stakeholders and the June 3, 2021, treatment workshop. Further analysis of aesthetics and impact to the historic fabric should be performed as part of any future rehabilitation project.

At the south galerie, the existing wood railing does approximate the railing in historical photographs but the configuration of a single rail at 30-inches above the walking surface does not meet modern requirements for fall restraint guardrails. The preferred treatment approach proposes to introduce a new low profile wood and transparent modern railing system behind the existing wood gallerie railing. This would show the predominantly historic wood framing configurations while adding code required guardrail elements behind the recreated historic features. The proposed use of transparent panels allows for full visibility through the railing so as to not deter from the view toward the south, but options such as cable rails and other systems with a low visual profile can be considered. The existing stairs would remain to show a more historic configuration at the south facade. A new code

compliant stairway would be added at the west to meet modern building code and accessibility railing requirements.

Because of live load restrictions and accessibility challenges, the caveau and attic are not recommended to be directly accessible. However, these spaces contain character defining features and are important for visitors to experience to understand the national significance of the Bauvais-Amoureux House and its construction methodology as a rare poteaux-en-terre structure. The implementation of a means to view the attic truss and framing construction by using digital technology or other methods to view the space in real time is highly recommended. This methodology could be highlighted with additional interpretive planning efforts for the building in totality. Interpretation through exhibit diagrams and models, interactive digital displays, or methods for physical viewing, such as exposure windows, can be used to make these spaces available and enjoyable to the public at the first floor level.

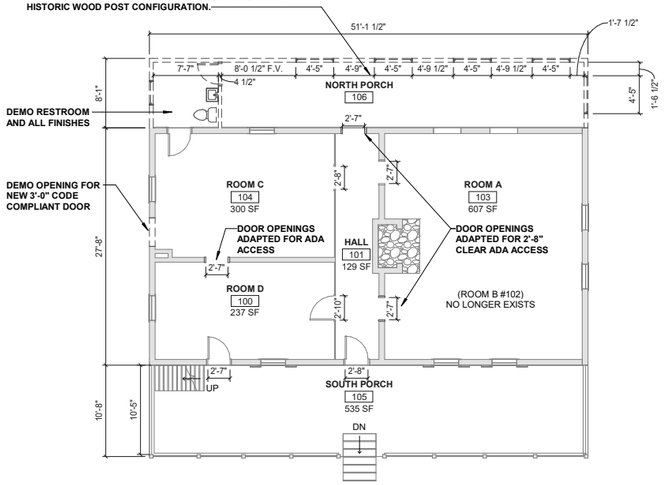


NW VIEW



SW VIEW

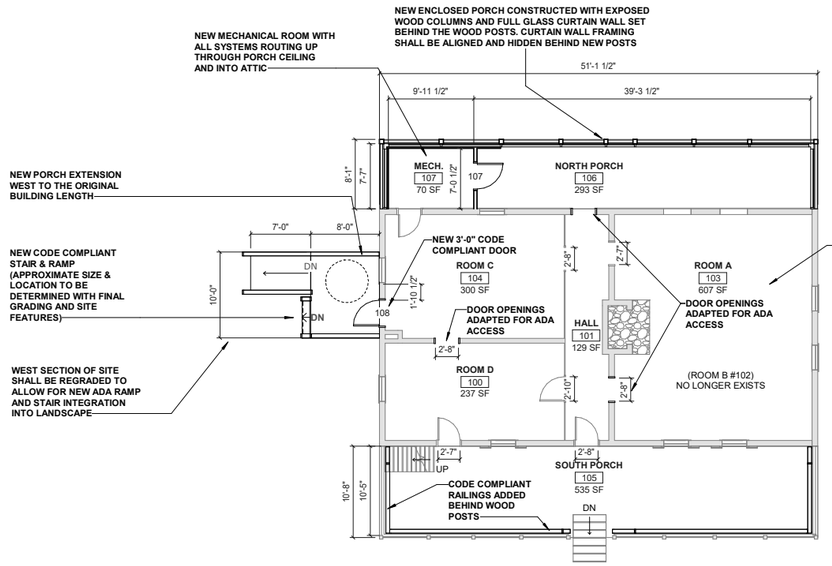
AT NORTH PORCH EXTERIOR, DEMO:
- ALL PORCH WINDOWS
ALL INTERIOR FINISHES AT N, W AND E PLUS FLOOR AND CEILING.
- REMOVAL OF CEDAR SIDING
- UTILIZE EXISTING 2X WOOD FRAMING FOR NEW GALLERIE FRAMING / ADDED FRAMING WHERE POSSIBLE FOR NEW HISTORIC WOOD POST CONFIGURATION.



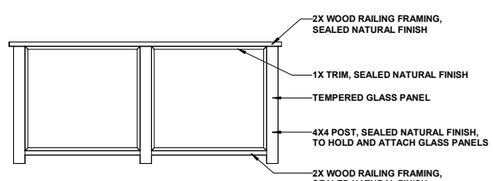
2 PROPOSED FIRST FLOOR PLAN DEMO
1/8" = 1'-0"

NEW MECHANICAL ROOM WITH ALL SYSTEMS ROUTING UP THROUGH PORCH CEILING AND INTO ATTIC

NEW ENCLOSED PORCH CONSTRUCTED WITH EXPOSED WOOD COLUMNS AND FULL GLASS CURTAIN WALL SET BEHIND THE WOOD POSTS. CURTAIN WALL FRAMING SHALL BE ALIGNED AND HIDDEN BEHIND NEW POSTS



1 PROPOSED FIRST FLOOR PLAN
1/8" = 1'-0"



5 PROPOSED RAILING ELEVATION
1/2" = 1'-0"

	DESIGNED: JCAWBY CADD BHEIDE TECH. REVIEW: DATE: 09/24/2021	SUB SHEET NO. A1	TITLE OF SHEET PREFERRED TREATMENT APPROACH STE. GENEVIEVE NATIONAL HISTORICAL PARK	DRAWING NO. PKG. NO. SHEET 1 OF 3

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ENVELOPE SYSTEMS

The existing roofing, exterior wall cladding, and windows are modern replacement materials in need of maintenance and replacement. Some maintenance items are identified to be performed in the short term (as soon as can reasonably be performed) as serious or critical items for protecting the House from water intrusion and further weather-induced deterioration.

- **Roofing System:** The existing tapersawn cedar shake roofing system, along with the gutters and downspouts, roofing flashing, and cedar trim have reached the end of their useful service life and should be replaced in the short term as a critical maintenance item for maintaining a weather-resistant roofing system. Replacement in kind is recommended.
- **Weatherboard Siding:** The existing cedar weatherboard siding, along with the window cap flashing, and cedar trim, are nearing the end of their useful service life and should be replaced within the next 3 to 5 years as a serious maintenance item for maintaining a weather-resistant envelope. Replacement in kind is recommended.
- **Exterior Plaster:** At the south galerie, the exterior plaster is in good condition and in need of only minor repairs to maintain its serviceability. Below the north and south galeries, the finish on the exterior logs has failed, exposing the logs and pierrotage to the weather. New lime plaster should be applied to the walls below the galerie decks in the short term as a serious maintenance item to protect the exterior logs until structural repairs can be performed.
- **Windows:** The existing windows, along with their trim, weatherstripping, and hardware are in need of maintenance for serviceability. Repairs or replacement should be considered in the next 3 to 5 years as a serious maintenance item for maintaining a weather-resistant envelope and for security of the property. Consideration should be given to the interpretation plan for the House and whether the windows should be replaced in kind as double-hung and fixed multi-lite units or if the windows should be restored to their original design and configuration as casements.

STRUCTURAL SYSTEMS

Distress conditions from damage related to water intrusion, insect infestation, and differential settlement issues were identified at the roof framing, exterior vertical log walls, and first-floor framing. In some cases, such as the roof framing, targeted repairs can be performed to stabilize the structure in situ with minimal impact to the historic fabric. For the log walls and the first-floor framing, the distress conditions affect the stability of the overall system and a broader intervention is required to stabilize the structure.

In considering the options for treating the structural distress conditions, a Rehabilitation approach that includes in-kind replacement and respects the historic construction methodology has been identified as the preferred approach. This approach is described as Structural Treatment Alternate #2, which proposes to replace the deteriorated bearing ends of the vertical logs with new cedar logs with a preference for traditional carpentry methods and minimizing or concealing modern materials where they are required. Structural Treatment Alternate #2 also proposes to replace the existing shoring system in the caveau with a new supplemental structural system with a lesser visual impact but preserving the failed original log joists in place for their value as c. 1792 historic fabric. A new floor structure can be designed to meet new live load requirements and coordinated to provide additional localized support for heavy exhibits or furnishings.

Structural Treatment Alternate #2 is not without risk and careful consideration is required for the shoring and protection of the existing structure during the vertical log replacement. The rehabilitation design will need to thoroughly research the availability of old-growth cedar timber for the replacement, and acquisition of sufficient material to complete the repairs may be an involved process. Second growth cedar timbers of sufficient diameter are readily available from lumber suppliers; however, second growth timber has lower density and increased porosity compared to old growth and will be less resistant to the effects of water and fungal decay when in direct contact with soil. If old growth timber is not available, second growth timber may be able to be treated or coated to extend the service life; this type of treatment would not be visible. A service

life expectancy with a monitoring program should be established for all major structural repairs, potentially in the range of 75 to 100 years.

MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE SUPPRESSION SYSTEMS

RECOMMENDATIONS FOR FIRE SUPPRESSION

As a large portion of the Bauvais-Amoureux House fire suppression system piping would likely need to be installed in areas where no heat would exist, the use of a wet-pipe fire suppression system would not be recommended. Temperatures in the caveau and grenier can be below freezing under normal winter months.

The use of an anti-freeze system, while included as a possible solution, these systems have had a falling out as a viable fire suppression system option as they tend to make fires worse. As these systems typically use propylene glycol or glycerin as the antifreeze solution, the mixtures of the solutions with water do not always remain in the intended mixture and naturally separate over time due to gravity. Thus, when the proportion of the active ingredients near a sprinkler becomes too high relative to water, an antifreeze solution can actually serve as fuel for a fire when the sprinkler discharges. It is with this reason, an antifreeze system is not recommended.

The early warning systems such as VESDA, while offering an advantage of early detection, they rely on other fire suppression systems to actively extinguish the fire which for the Bauvais-Amoureux House does not offer much benefit as this building is anticipated to not be occupied full-time.

The recommended fire suppression system for the Bauvais-Amoureux House would be a dry-pipe sprinkler system. The use of a dry-pipe fire suppression system will allow fire protection of the entire House including the non-tempered areas such as the caveau and grenier.

If NPS desires to provide a higher degree of protection for the House from an accidental activation, a pre-action, dry-pipe system would be recommended. The addition of smoke and heat detectors would provide an additional layer of detection, ensuring no sprinkler system activation unless a fire event occurs.

Advantages of using a pre-action, dry-pipe fire sprinkler system:

- A dry-pipe sprinkler system provides automatic protection in spaces where freezing is possible.
- A dry-pipe sprinkler system with pre-action device offers an advantage when compared to conventional wet-type and dry-pipe sprinkler systems for the protection of collections, artifact and water sensitive documents. The addition of the pre-action devices such as heat and smoke detectors provide an added safeguard against false discharges of the sprinkler system as the supplemental devices must be activated first before the water in the piping system is discharged.

Disadvantages of using a pre-action, dry-pipe fire sprinkler system:

- Increased complexity – Dry-pipe systems require additional control equipment and air pressure supply components which increases system complexity. Without proper maintenance this equipment may be less reliable when comparable to a wet-pipe system.
- Higher installation and maintenance costs - The added complexity impacts the overall dry-pipe installation cost. This complexity also increases maintenance expenditure, primarily due to added service labor costs.
- Lower design flexibility - There are strict requirements regarding the maximum permitted size (typically 750 gallons) of individual dry-pipe systems unless the water delivery time is less than 60 seconds.
- Increased fire response time - Up to 60-seconds may pass from the time a smoke or heat detector activates and a sprinkler head opens until water is discharged onto the fire. This will delay fire extinguishing actions, which may produce increased content damage.
- Increased corrosion potential - Following operation, dry-pipe sprinkler systems must be completely drained and dried. Otherwise remaining water may cause pipe corrosion and premature failure. This is not a problem with wet pipe systems where water is constantly maintained in piping.

HVAC SYSTEM RECOMMENDATION

Any consideration of the options presented in this Historic Structures Report for Bauvais-Amoureux House will be influenced by whether or not the NPS takes a preservation or rehabilitation approach to this building. Whether to add just heating or further enhance the indoor environment by adding cooling, dehumidification or humidification will include more extensive modifications to the building envelope required as part of a rehabilitation effort. If preservation is the chosen path, then providing limited heating and upgraded ventilation would be recommended. If rehabilitation is the chosen path, the building's lack of wall, roof and floor insulation and an adequate vapor barrier will need to be addressed to allow any mechanical system to operate efficiently. Without addressing the building envelope, increasing equipment operating capacities will be required.

If the NPS decides upon the preservation path, HVAC Option #1 including an electric furnace and additional duct coil for heating would be recommended. If natural gas is desired over electricity for heating, Option #2 including a high-efficiency, gas-fired furnace would be the preferred system option. Each of these options would be able to provide the limited heat to temper the building. If a rehabilitation approach is desired, cooling and dehumidification could be added. These system options provide for system simplicity, low first cost, low anticipated maintenance costs, and flexibility of a duct system that can be installed hidden from view.

Option #3 including the geothermal system would require additional information such as the ground thermal conductivity test be performed to determine the potential capacity of a well field, exploration of utility locations of the south grounds where a potential well field could be located, the impact of drilling of the geothermal wells with the existing vegetation and any landscape potential and may also require a possible archeological study in this area of the potential well field. Since Option #3 has many unknowns related to the site and would have the highest first cost and have higher potential maintenance costs associated with it, recommending this alternative would not be the preferred option.

In summary, the preferred options for the Bauvais-Amoureux House would be Option #1 or Option #2 depending on the desired energy source for heating.

ELECTRICAL RECOMMENDATIONS

PRIMARY POWER DISTRIBUTION

The existing power pole with the electrical meter, fiber optic box, and overhead electrical and communication lines disrupts the view to the east looking at the fields.

It is recommended to relocate the power pole to the north, as far as possible, but still be within the property lines; along with this, the overhead utility company communication lines could be routed underground or routed overhead on the opposite side of the road.

This work and associated costs will need to be coordinated with the local electrical and communication utility companies. *(Re: Electrical Drawing ES-1 in Appendix)*

ELECTRICAL SERVICE

When the existing outside power pole is relocated, then the existing 240/120-volt, single-phase underground electrical service to the building will need to be replaced. It would be recommended, along with replacing the underground electrical electric service, to also replace the indoor electrical load center with a new electrical panel.

The new electrical panel would conform to NPS standards, such as panelboard construction, copper bus bars, copper lugs, surge suppression device, adequate spare breakers, and space.

The new electrical panel could be installed in the same location as the previous load center or installed in a different location to better serve building improvements.

GROUNDING

When the new electrical panel is installed, it is recommended to install a grounding electrode system to a copper-clad driven ground rod and to the metallic water service.

INTERIOR WIRING

If the new electrical panel is located in the same location as the previous panel, then the existing MC cables can be reconnected to the new panel. If the new electrical panel is installed in a different location, then the previous load center then some of the existing metal clad cables will have to be rerouted or replaced.

If additional lighting fixtures are added to serve building improvements, it is recommended to use an MC cable wiring method, as it is easier to conceal and route around the various wood structure of the building.

LIGHTING

The existing incandescent and fluorescent lighting should be replaced with light emitting diode (LED) type for energy conservation. The new LED lighting should have the style and locations needed to compliment the building improvements and intended usage.

DEVICES (SWITCHES AND RECEPTACLES)

Lighting control may be needed to be modified to be compatible with future building use. Additional receptacles may need to be added to support future building use needs.

COMMUNICATIONS

Depending on the future use of the building, it is recommended to extend the existing fiber optic line into the building to a small rack-mounted patch panel. From the patch panel, Category 6A, copper, twisted-pair data cables can be extended out to new communication outlets to serve future loads.

The new rack-mounted patch panel needs to be installed in a small closet or cabinet in a conditioned space.

FIRE ALARM SYSTEMS

It is recommended to add a fire alarm system to the building. The fire alarm system would monitor the flow and tamper switches on the new fire sprinkler system.

An aspirating-type, smoke detection system would sample the air on all three levels and provide early smoke detection of the spaces.

EXIT LIGHTING AND EMERGENCY LIGHTING

Depending on the future use of the building, exit lighting and egress lighting may be required to be installed. The egress lighting could be accomplished by utilizing the normal lighting fixtures, backed up by a small battery powered inverter.

INTRUSION ALARM SYSTEM

It is recommended to add an intrusion alarm system to the building. The intrusion motion detectors could be the wireless-type.

LIGHTNING PROTECTION SYSTEM

A lightning protection system could be added to the building; however, the visible lightning arrestors on the roof, and the grounding conductors routed down the outside of the building to ground rods, would be visible on the sides of the building and would be objectionable to look at.

Treatment Alternatives

LANDSCAPE AND SITE ACCESSIBILITY RECOMMENDATIONS

SITE ACCESS ALTERNATIVE OPTIONS

Treatment options for access to the Bauvais-Amoureux property were developed to provide alternatives for consideration by the NPS related to parking and visitor circulation in conformance with Architectural Barriers Act Accessibility Standards. Due to the presence of steep slopes immediately adjacent to the land parcels along St. Marys Road, the proposed alternatives (Figure Figure TU-SITE-01) illustrate potential ways in which visitors might arrive, park, and reach the environs of the Bauvais-Amoureux House. Each of the alternatives assumes the use of an adjacent parcel given the limited land area associated with the current property. However, each of the adjacent parcels fall within the authorized boundary of Ste. Genevieve National Historical Park. The acquisitions of easements or adjacent parcels would be required to implement any one of the access alternatives presented herein. Given the proximity of the Bauvais-Amoureux House to other historic properties of interest, the alternatives also indicate the potential to establish a walking tour within the block along St. Marys Road so visitors might experience several properties built during a similar time frame as the Bauvais-Amoureux House, such as the Bequette-Ribault House and the Lasource-Durand House.

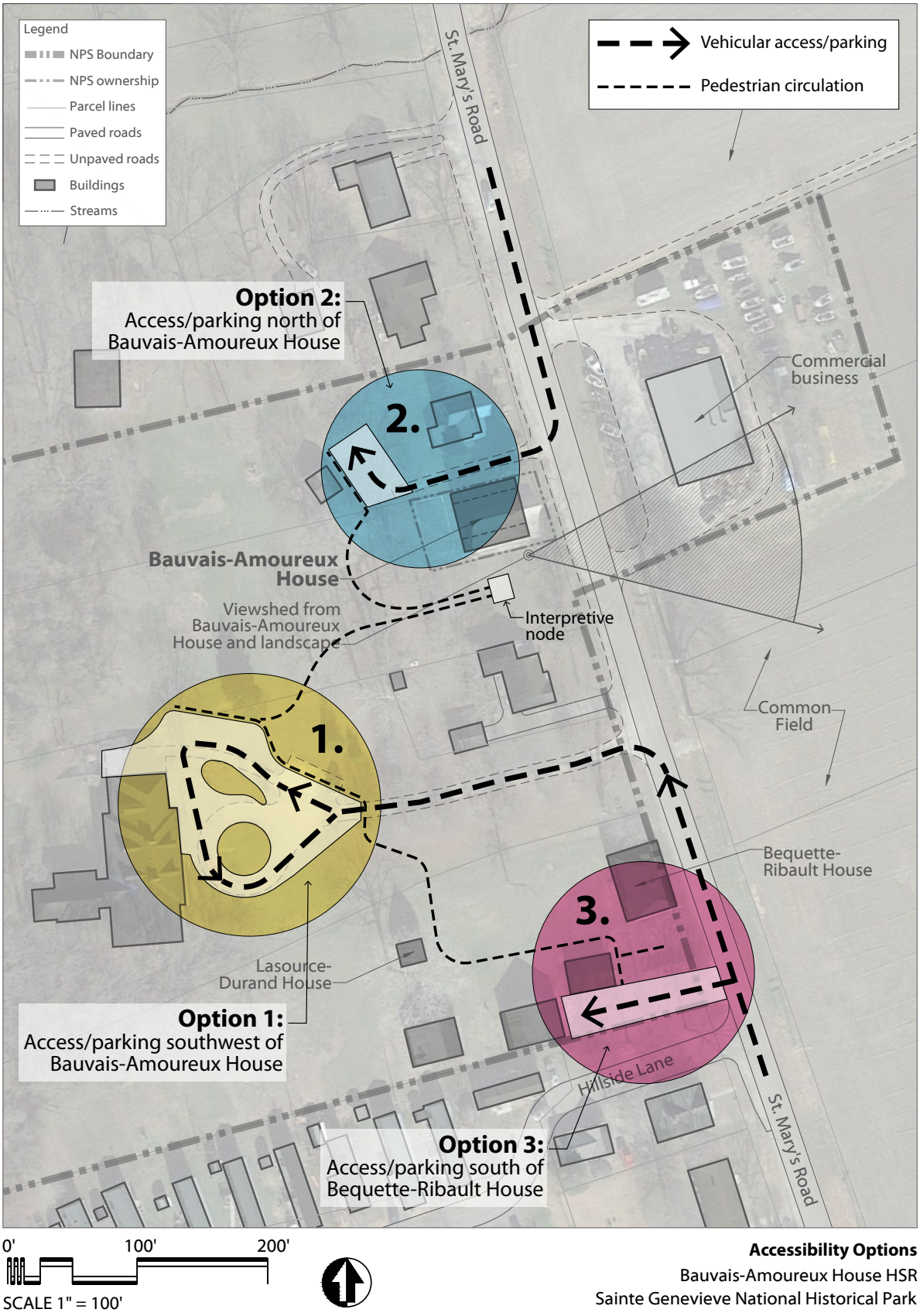


Figure TU-SITE-01. Site Access Treatment Options.

PREFERRED SITE ACCESS ALTERNATIVE

Based on review of the 80% draft HSR and a workshop conducted by team members along with the NPS, the team pursued further development of Options 1 and 2, with the understanding that Option 1 might be implemented in the short term to accommodate visitors while more extensive site development and programming is undertaken. The image below indicates the site access and landscape treatment recommendations included in support of the HSR. Landscape treatment recommendations that expand on the drawing follow (Figure TU-SITE-02).

SITE ACCESS TREATMENT OPTION 1

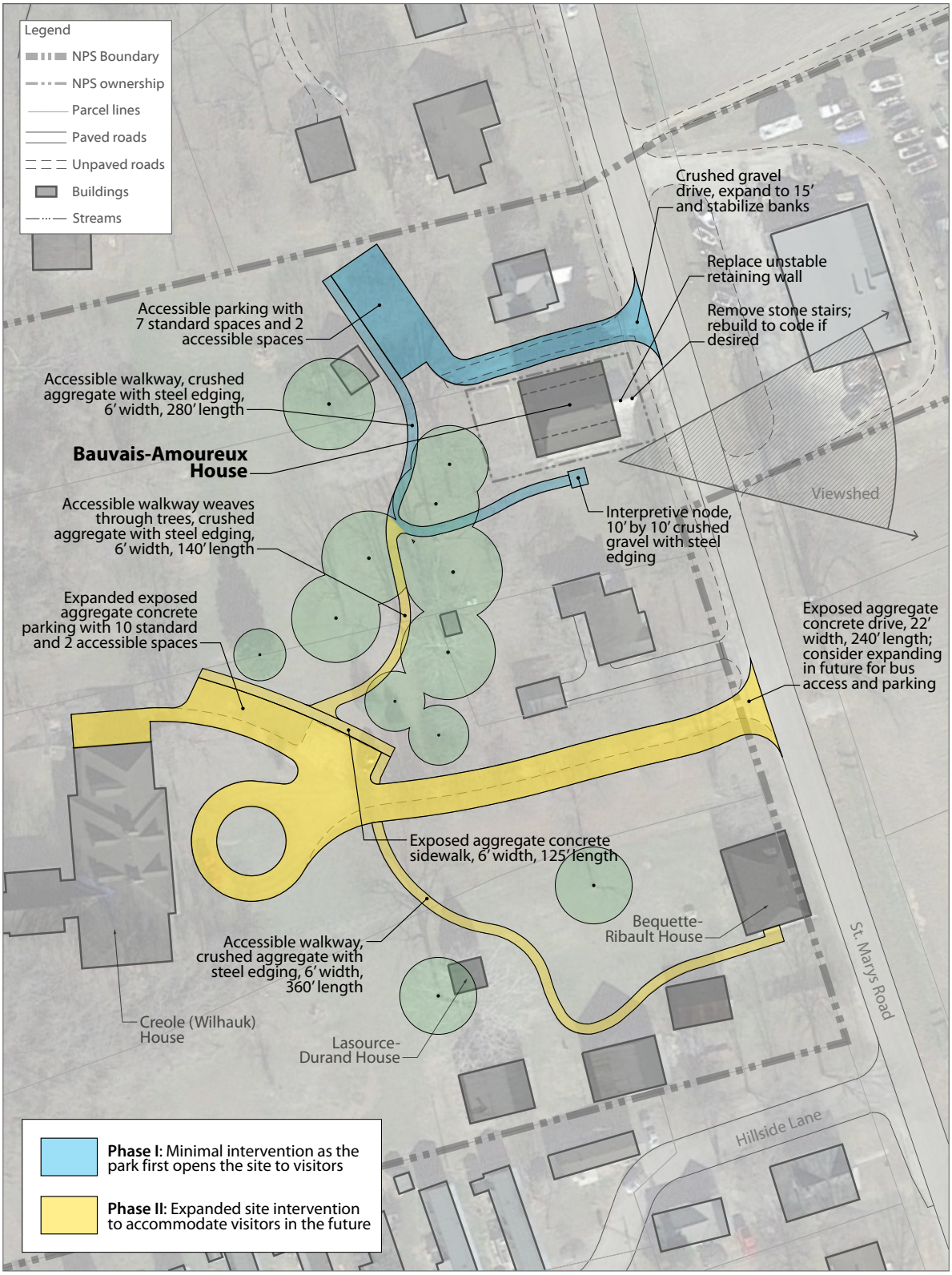
This option would provide vehicular access from St. Marys Road, south of the Bauvais-Amoureux House, via the large circular driveway fronting the Wilhauk Residence and set back some distance from the road. The circular driveway is edged by level terrain potentially offering ample opportunity for parking and the establishment of an accessible visitor walkway leading to the Bauvais-Amoureux House across gently sloping topography. The walk would potentially lead to the yard south of the Bauvais-Amoureux House. An additional visitor walkway might also lead from the parking area south and east to the Lasource-Durand House, the Bequette-Ribault House, and associated structures.

SITE ACCESS TREATMENT OPTION 2

This option would provide vehicular access from St. Marys Road, north of the Bauvais-Amoureux House, via an improved version of the existing residential gravel driveway that leads to a small out-building structure. The access drive cuts through the steep slope west of St. Marys Road, passing the north façade of the Bauvais-Amoureux House, and ends in a relatively level open area adjacent to the outbuilding. There is sufficient level terrain to accommodate a small parking area and develop an accessible walk leading to the open lawn south of the Bauvais-Amoureux House.

SITE ACCESS TREATMENT OPTION 3

This option would provide vehicular access from St. Marys Road south of the Bequette-Ribault House where there is currently access and parking on gently sloping topography. The parking area would be expanded, and an accessible walk developed to the Bequette-Ribault House, Lasource-Durand House, and other associated structures, as well as lead to the lawn south of the Bauvais-Amoureux House.



Site Accessibility
Bauvais-Amoureux House HSR
Sainte Genevieve National Historical Park

Figure TU-SITE-02. Illustration of Landscape Treatment Recommendations including Site Accessibility and Parking.

LANDSCAPE TREATMENT RECOMMENDATIONS

- Undertake archeological survey of the Bauvais-Amoureux House property and the adjacent properties likely to be included in future parking and accessible walk development. Investigate the information potential of the properties. Identify any known or likely below-ground resources that should be protected and avoided in the siting of features that will require ground disturbance. Consider further investigating and documenting the presence of a pre-Contact-era site on the terrace associated with the house.

- Consider undertaking LiDAR study of the Bauvais-Amoureux House and adjacent properties likely to be included in future parking and accessible walk development to determine the potential locations of former roads, gardens, buildings, and other features that are no longer in evidence aboveground to complement an archeological survey.

- Evaluate the stability of the steeply sloped terrain along St. Marys Road and the gravel driveway north of the Bauvais-Amoureux House to determine the need to stabilize the soil and undertake any treatments necessary to protect against erosion.

- Consider alternatives for providing an entrance drive, accessible parking facilities, and an accessible walk providing access to an interpretive node and an accessible entrance into the Bauvais-Amoureux House. Alternatives, which might be developed in two phases, include use of the gravel driveway north of the house to provide access to a small parking area near an existing shed and of the Creole House driveway where a larger parking facility might be developed to accommodate more cars as well as buses. Both parking areas could be connected to an accessible walk leading to an interpretive node near the house and an accessible entrance. The smaller parking area could be developed first as a way to minimize site interventions until visitation increases, requiring expansion of visitor amenities and accessibility to the Bauvais-Amoureux House. In order to accommodate future needs, the Creole House site might be developed. The smaller parking area could continue to serve park operations and maintenance access needs should the larger parking area be developed.

- Evaluate the potential compatibility of several materials and finishes for establishment of new parking and accessible walk features. Consider using paving materials that are finished with a warm brown hue, which is more visually compatible with the historic property than blue-gray or bright white surfaces. Consider using materials such as crushed aggregate and exposed aggregate concrete to convey a vernacular character as possible. Where crushed aggregate is used to surface new circulation features, contain the material with steel landscape edging.

- Consider using the minimum dimensions possible in accommodating the new circulation features, such as roads, parking bays, and walks, while ensuring that the features meet anticipated visitation needs and accessibility guidelines. Accessible walks are recommended to be 6 feet wide. The smaller parking area is anticipated to include seven parking spaces, two of which would be accessible, while the larger parking area is proposed to include ten parking spaces, two of which would be accessible.

- Provide an opportunity for visitors to understand the architecture of the Bauvais-Amoureux House from the south exterior as well as the important view to the Common Field to the east by establishing an interpretive node near the stairs leading to the south galerie and front door. Pave the interpretive node with the same material as the accessible walk.
- Consider alternatives for enhancing the understanding of the Common Field that might include providing a wayside exhibit at the interpretive node or providing a link to an online interpretive site that includes historic maps and photographs. Alternatively, should the opportunity arise to acquire the building located east of St. Marys Road that is within the viewshed of the Bauvais-Amoureux House, consider options for removal to enhance this key viewshed and visual connection between historic aspects of Ste. Genevieve.
- Document all landscape features planned for change or removal. Retain documentation records in the park archives.
- Remove the existing stone stairs leading to the Bauvais-Amoureux House cellar entrance due to their unstable condition and the trip hazard posed by the inconsistent riser heights. Should access from St. Marys Road remain desirable, rebuild the stairs in accordance with current codes and conventions. Edge new stairs with code compliant handrails.
- Replace the existing retaining wall that edges the walkway leading to the cellar entrance. Remove the unstable stonework. Reestablish a stone retaining wall along the walk margins that is structurally sound and stable. Use compatible stone in constructing the new wall.
- Retain and maintain the stone walkway that edges the Bauvais-Amoureux House to the south. Consider the suitability of the walk to support accessibility needs. Should the south walkway be incorporated into the accessible circulation system associated with the property, consider alternatives for enhancing accessibility while retaining the existing stone pavers.
- Retain and maintain the well or cistern structure located along the margin of the south walkway. Undertake further investigations into the history and date of origin of the well as part of the recommended archeological investigations, to determine whether it was present during the period of significance. Further evaluate the treatment of the structure once additional information has been determined.
- Retain and maintain the well or cistern structure located southwest of the Bauvais-Amoureux House. Undertake further investigations into the history and date of origin of the well as part of the recommended archeological investigations, to determine whether it was present during the period of significance. Further evaluate the treatment of the structure once additional information has been determined.
- Retain and maintain existing trees southwest of the Bauvais-Amoureux House to provide shade and to help screen potential contemporary parking facilities. Engage an arborist to evaluate all trees to remain and identify any hazardous or potentially hazardous conditions requiring pruning or other recommended treatment. Ensure that trees are evaluated regularly, at least annually, for the same purpose.

ARCHITECTURAL ALTERNATIVES

DESIGN OPTION CONCEPT OVERVIEW AND INTENT

The preferred treatment approach is included in an earlier section of this report. The information contained in this section highlights design options that were explored as additional alternatives but are not preferred to be implemented at the house. The main objectives of these design options were to preserve the historic fabric, provide accessibility and stairway access to the building for use by all and to maximize areas of the building that are not original or are missing from the historic building footprint.

In each of the options 2 and 3, the area of new construction directly adjacent to the existing building (other than the stair or ramp areas in most cases) have been limited to the size and shape of the original western most bay that was removed in 1880s to c. 1900. This area of construction could be used as an interpretive zone and could be designed using methods that could emphasize the original c. 1792 through c. 1852 time periods, when this western bay existed.

In relation to accessibility and access for all visitors, the main access to the building itself should be from the north porch addition or from the west facade. This location would not only entail the least amount of impact to the appearance of the building from the street and from the perceived front south facade, but also have the least impact on the most character defining materials still intact from the c. 1792 time period. These areas are also recommended as rehabilitation zones because the north porch is from c. 1963 and the west wall of the existing building dates to the 1880s - c. 1900. The other three main exterior walls at the north, east and south are from c. 1792 and contain poteaux-en-terre construction. All means to limit new construction or widening of doors within these walls is highly recommended.

The design options indicate accessibility options that could be gained from grade to the first and second floor/ attic level. The first floor level can be accommodated easily by means of stairways and ramps. First floor accessibility could be achieved through the implementation of several measures indicated on the design options. The length required for these features, as shown on the design options, show the approximate areas required but final designs in conjunction with a chosen landscape design configuration and features would be required. Most ideally, if ramps are utilized, they would be designed into the site to limit their impact visually and could become a more natural progression to ideally shorten the length of ramps required.

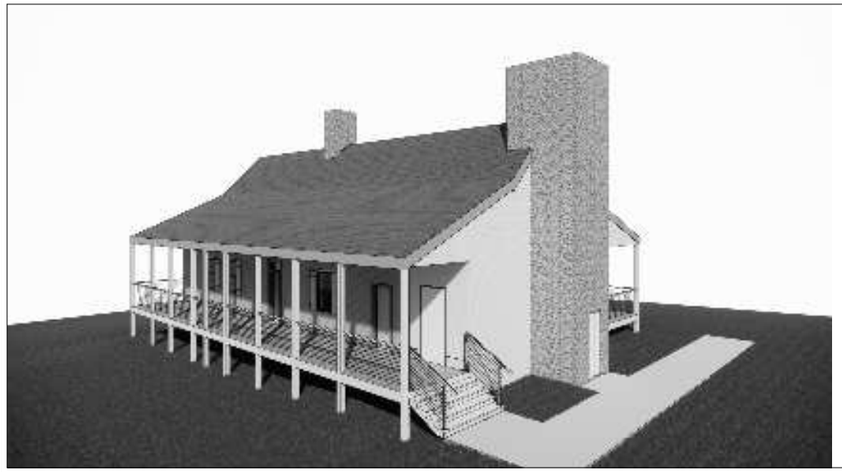
The attic level space is considered a highly important character defining space that visitors should be able to see. The goal for all visitors is to understand the construction techniques used during the building's original construction in c. 1792. The design options indicate accessibility options that could be gained to the second floor attic level. Design options 2 and 3 show means to access the attic level from outside the existing building footprint and to provide a larger viewing window into the attic from a viewing platform adjacent to the west wall.

In each of these options, the integration of a new mechanical, electrical and fire protection room is shown, again outside of the existing most historic building footprint portions. This room would contain the equipment with most of the distribution being routed vertically into the attic. This distribution would need to be coordinated for its design impact and to install the least intrusive methods within the attic (to limit visual intrusions any occupants would be able see) and new connections at the finished ceiling level of the first floor and possibly a portion of the basement.

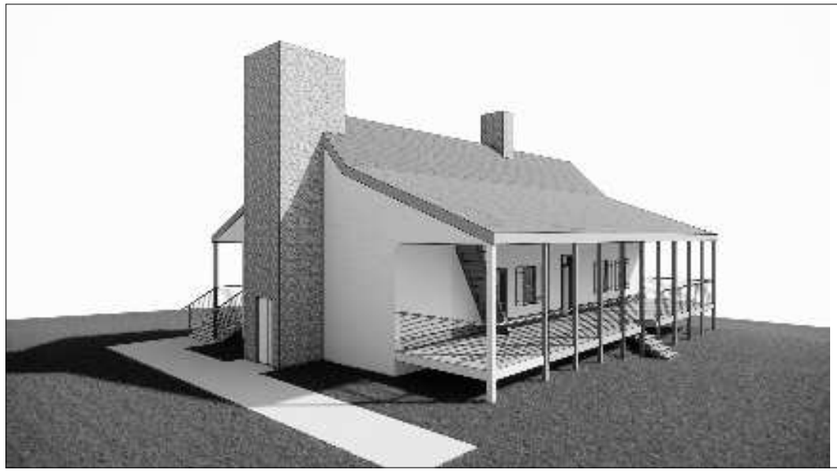
The design options attached have specific notes indicating the design intent for each.

Two additional design concepts, not included in this report, were also explored for their feasibility and impact. The concepts endeavored to provide 100% fully accessible stairway and ada elevator lift from grade to first floor and up to the attic level. The minimum sizes required for these elements was out of scale to this historic building and their impact was detrimental to the historic fabric and scale of this house. Fully accessible and code means to the second floor is not recommended. Please refer to the preferred treatment approach which provides the least impact to this important structure and its small residential scale.

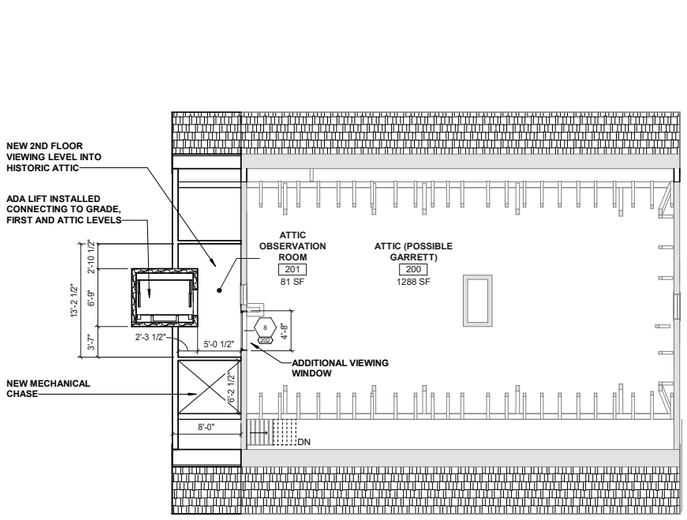
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OPTION 2 - NW

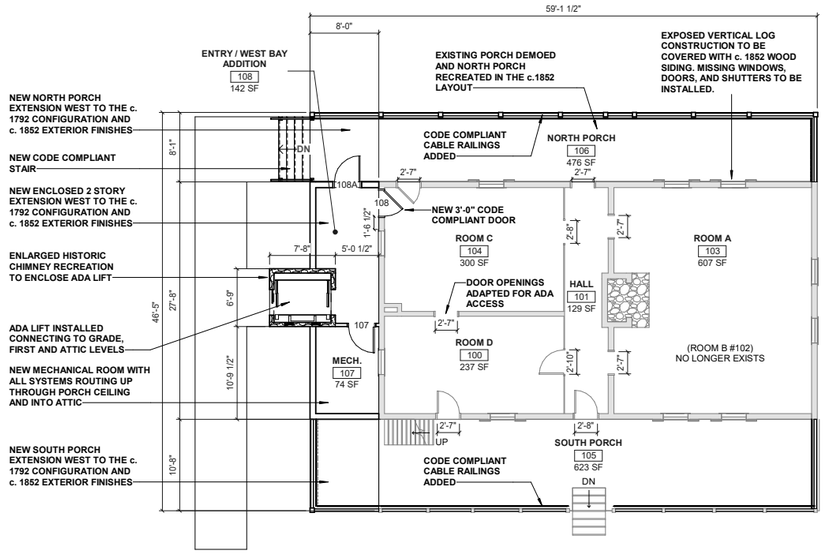


OPTION 2 - SW



2 PROPOSED ATTIC (POSSIBLE GARRET) FLOOR PLAN

1/8" = 1'-0"

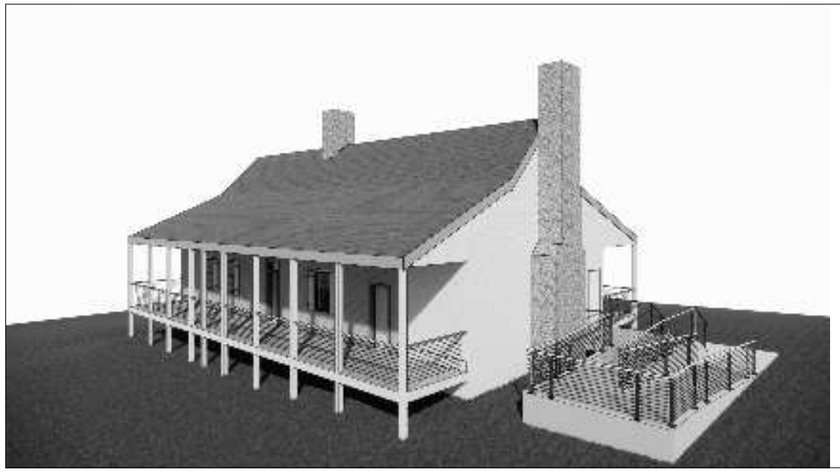


1 PROPOSED FIRST FLOOR PLAN

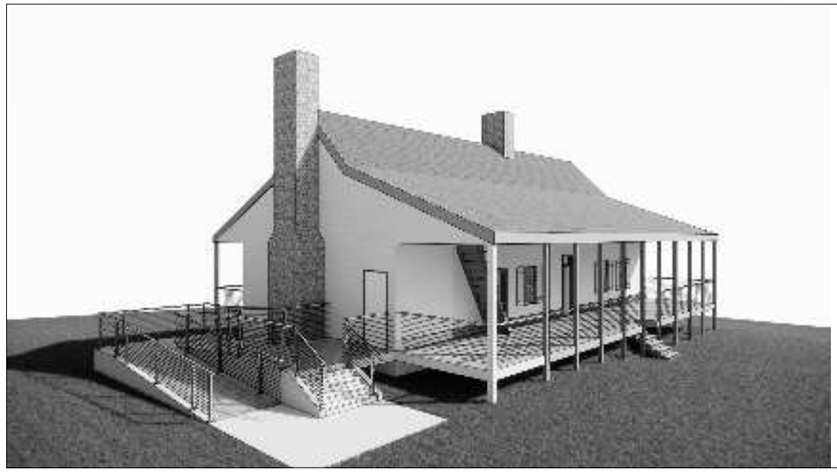
1/8" = 1'-0"

	DESIGNED: JCAWBY CADD: BHEIDE TECH. REVIEW: DATE: 09/24/21	SUB SHEET NO. A2	TITLE OF SHEET DESIGN OPTION 2 STE. GENEVIEVE NATIONAL HISTORICAL PARK	DRAWING NO. PKG. NO. SHEET 2 OF 3

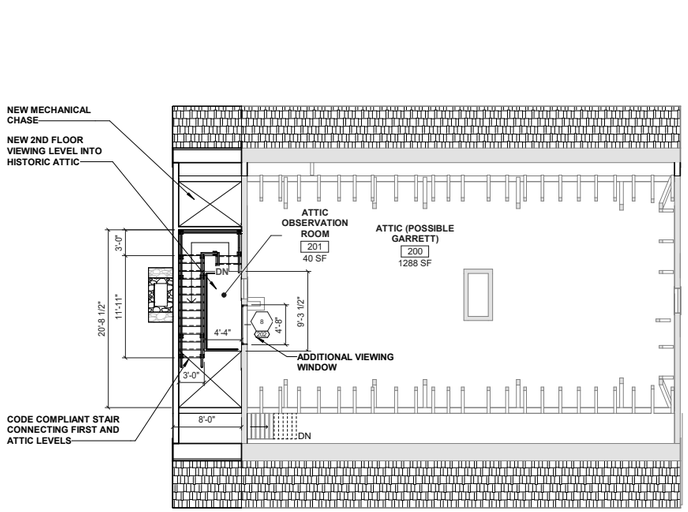
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OPTION 3 - NW

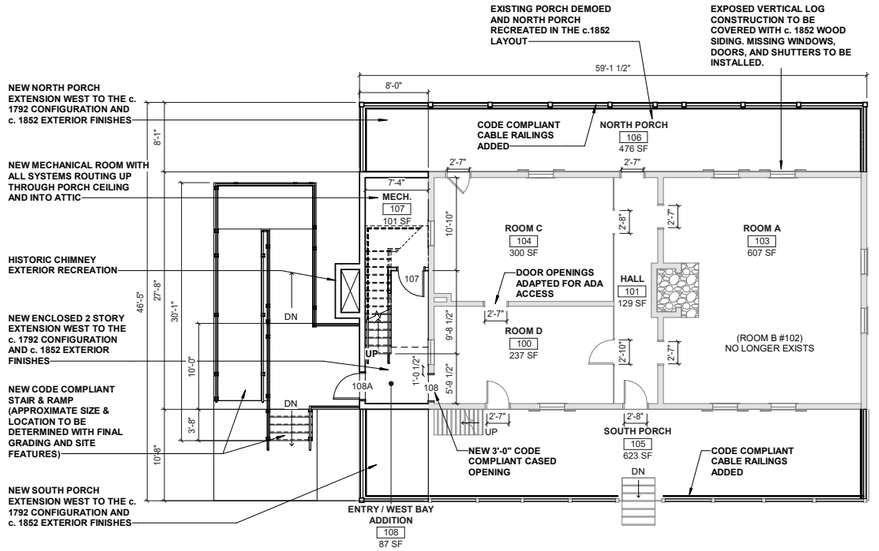


OPTION 3 - SW



2 PROPOSED ATTIC (POSSIBLE GARRET) FLOOR PLAN

1/8" = 1'-0"



1 PROPOSED FIRST FLOOR PLAN

1/8" = 1'-0"

	DESIGNED: JCAWBY CADD BHEIDE TECH. REVIEW: DATE: 09/24/21	SUB SHEET NO. A3	TITLE OF SHEET DESIGN OPTION 3 STE. GENEVIEVE NATIONAL HISTORICAL PARK	DRAWING NO. PKG. NO. SHEET 3 OF 3

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ENVELOPE ALTERNATIVES

The Abbreviated Structural and Envelope Assessment Report provides a detailed condition assessment and treatment recommendations for the exterior finishes. A summary of the recommendations contained within that report is provided here.

CEDAR TAPERSAWN SHAKE ROOFING

The existing cedar tapersawn shake roofing is at the end of its useful service life and should be replaced. Maintaining a watertight roof is critical to the protection of the original roof structure, and per park staff, repairs to the roofing system have not resolved ongoing water intrusion issues. The cedar tapersawn shakes, flashing, and other roofing accessories are not historic and can be replaced with modern materials sensitive to the existing construction and appropriate for a wide range of time within the proposed period of significance. Roof replacement should be performed as soon as park operations and budgets allow. New tapersawn, premium-grade, treated cedar shakes along with new flashing, gutters, downspouts, and other repairs as required are recommended.

CEDAR WEATHERBOARD SIDING

The existing cedar lap or weatherboard siding is nearing the end of its useful service life and should be replaced. The cedar siding and trim boards are not historic and can be replaced with modern materials to replicate the appearance of the House in historic photography. Replacement siding should be premium-grade treated cedar with an exposed face between 4.5 to 5 inches and exposed nail heads to match historic nail patterns. Untreated cedar siding with either an oil or lime wash finish may be more historically appropriate than unfinished cedar, although it would increase cyclical maintenance requirements. For an unfinished wood appearance, consideration should still be given to treating the concealed faces of the siding to extend the service life of the wood.

Siding replacement should be considered within 3 to 5 years and should be coordinated with other exterior repairs, such as window and door trim and restoration of the galerie framing.

LIME PLASTER

At the south elevation, the exterior face of the vertical logs was finished with lime plaster rather than weatherboard siding. The lime plaster is generally in serviceable condition and does not require repair or replacement.

Below the decking of both galeries, the exterior face of the vertical logs also appear to have previously been finished with plaster on lath. The lime plaster and lath were removed at some point during the twentieth century, and the logs and pierrotage finished with layers of paint and lime wash. These coatings have failed. The failed coatings should be removed and the logs refinished with new lime wash to protect the wood and the clay pierrotage binder.

FOUNDATION, EXTERIOR WALL, AND FIRST-FLOOR STRUCTURE ALTERNATIVES

The vertical logs were found to have loss of integrity below-grade, where the logs function as the foundation for the exterior bearing wall and roof framing. The deterioration was observed to affect approximately 85% of the vertical logs. Although the logs do not appear to be in imminent danger of failure, the deterioration compromises their long-term structural performance. Continued differential settlement relative to the central stone masonry chimney should be expected, which will increase the distress to the roof framing. Additionally, with a compromised foundation, the exterior walls and roof framing are vulnerable to damage from future natural disasters, particularly another major flooding event.

The roof framing is directly supported by the exterior vertical log walls. Distress to the roof structure was documented, both as a global condition related to the differential settlement of the exterior walls and damage to specific framing members by insects and water intrusion. This distress presents in the form of deflected and failed bracing struts, deflection of the ridge beam, failed truss and ceiling beam bearing conditions, damage to the Truss VI top chords and king post, rotation of the primary rafters at bearing conditions, and deflection of the wall top plate.

In addition to the deterioration of the vertical logs, the framing of the first floor has failed in place due to significant insect damage and deterioration of the original log joists. The existing shoring is providing the structural support for the first floor but, as designed, may not support the building code-required live loads for the intended use as an interpretive space with un-metered visitor access.

Many treatment alternatives to stabilize, strengthen, or restore the capacity of the House's structural systems are available, with varying impacts to the historic fabric, load paths, and visitor experience. NPS has expressed a preference for treatments that preserve the historic fabric whenever possible, replace materials in-kind, and repair or replacement methods that respect the unique construction technology represented by a poteaux-en-terre structure.

Other treatment alternatives not included in this report were also explored for feasibility and impact to the structure. In the course of the treatment workshop, these alternatives were determined to have a negative impact to the integrity and significance of the structure and were removed from further consideration.

TREATMENT ALTERNATE #1

MONITOR EXTERIOR WALLS, IMPROVE FIRST FLOOR SHORING, AND STABILIZE TRUSSES

The first treatment alternate employs a Preservation-focused approach with the least intervention to the historic fabric (Figure TU-S-01). The intent is to stabilize the existing construction, provide supplemental structural support, and monitor the structure for continued evidence of differential settlement or other distress conditions. This approach is the most conservative for conservation of the historic fabric and minimizes irreversible treatments in the short term. It should be understood that Alternate #1 will likely not be a long-term solution and that repair or stabilization of the vertical logs will be required at some point in the future.

- The vertical logs walls will remain in place in their current condition. Regular visual inspection will be performed by park staff to identify early signs of differential settlement, including cracks in plaster finishes and documentation of level gauges to be installed at strategic locations. No less than once annually, to be performed at approximately the same time of year, a laser-assisted level survey will be performed of the top plate and attic floor (the structures supported by the vertical logs) to document any differential settlement of the logs. While evidence of movement or further distress are not identified, the monitoring procedures will proceed annually; if movement or distress occur, further consideration for more invasive stabilization, repairs, or replacement will be required.
- The existing shoring will be redesigned to provide the structural support for the first floor required by building code. The original log joists will remain in place but will not take any of the first-floor load. Steel shoring can provide smaller member sizes and reduce the visual impact to visitors inside the caveau. Steel is also readily identifiable to laypersons as a modern intervention and will not be misinterpreted as part of the original construction. Point shoring can also be installed to support specific interpretive exhibits as required. The new shoring will require localized excavation for foundations and should be coordinated with required archeological studies.
- Truss connections and bearing conditions that are damaged or deteriorated will be stabilized in place or repaired with partial member replacements. To preserve the truss timbers wherever possible, stabilization be performed with supplemental structural steel, which may require the construction of steel "shoes" at truss bearing conditions and the introduction of steel tension rods running north-south. Where partial member replacement is required, such as the apex of Truss VI, replacement shall be in-kind using detailing appropriate for the original construction era and methods. These repairs can be performed above the attic floor to minimize visual impact on the interior. The attic flooring should be replaced, or a new walkway constructed to provide access for maintenance staff.

Structural Treatment Alternate #1

Advantages

- Preserves the most historic fabric of the treatment alternates.
- Preserves the historic construction methodology and the structural character-defining features with minimal modern interventions.
- Respects the materials, condition, and age of structure, and modern interventions are readily differentiated from the historic fabric through design decisions and material selection.
- No impact to the interpretation or visitor experience on the first-floor interior, as the repairs are contained within the caveau and grenier.
- Lower risk during construction because fewer structural members are disturbed during repairs compared to the other treatment alternates.
- Stabilization measures are reversible but do have some impact on the in-situ historic materials.

Disadvantages

- This alternate is not a permanent solution. Monitoring the vertical log walls allows better understanding of the behaviour of the structure which will influence the long-term treatment recommendations.
- The shoring that will remain in the caveau will be extensive, which impacts the visitor experience and understanding of this space.
- The structure will be vulnerable to damage by natural disasters, such as a flooding event.

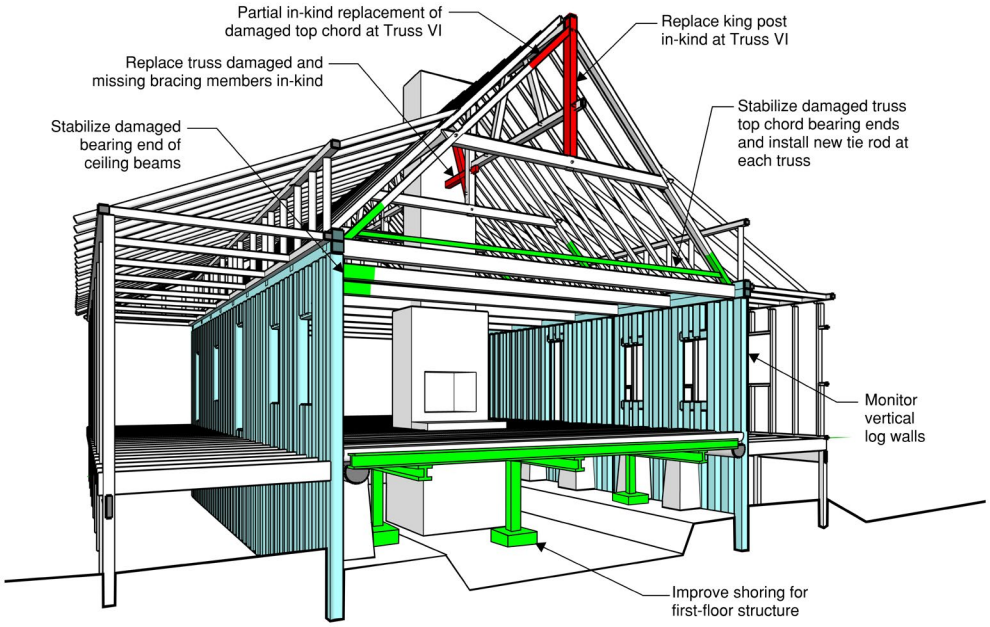


Figure TU-S-01. Isometric section looking west, showing impact of structural Alternate #1.

TREATMENT ALTERNATE #2 (PREFERRED TREATMENT)

REPLACE DETERIORATED LOG BEARING ENDS, PROVIDE SUPPLEMENTAL FIRST-FLOOR STRUCTURE, AND STABILIZE TRUSSES

The second treatment alternate employs a Rehabilitation-focused approach that requires significant intervention to the historic fabric (Figure TU-S-02). The intent is to re-establish the structural performance of the exterior walls and first floor, using in-kind materials and construction technologies compatible with the original construction. This approach preserves as much of the historic fabric as possible but does involve fabric loss and irreversible treatments. Alternate #2 is expected to provide a long-term repair solution and improves the House's resiliency in the event of future natural disasters, such as another major flood event.

- The vertical logs walls at the north and south walls will undergo partial member replacement to replace the lowest one-third of each log. The replacement log will be cedar, hewn to match the existing construction, and spliced to the existing log just below the first floor. Further investigation and structural analysis should be performed to determine if partial replacement of every log is required, or if replacements can be strategically located. The pierrotage above the line of replacement shall be stabilized and protected in place, but the pierrotage below will require full documentation and reconstruction. This work will require careful shoring of the structure and phasing of log replacement. The work will also require removal and reconstruction of the north and south galeries, as well as significant excavation along the north and south walls. This work should be coordinated with required archeological studies as it will disturb any remaining archeological evidence of the builder's trench and other below-grade evidence of the original construction.
- The existing shoring will be removed from the caveau. Supplemental floor joists will be installed to provide the structural support for the first floor; the original log joists will remain in place but will not take any of the first-floor load. A new beam along the east-west centerline (similar to the existing shoring) will likely be required to support the floor joists. The new floor framing can be steel or timber. Point shoring may also be installed to support specific interpretive exhibits.
- Truss stabilization and repairs in the attic will be performed as described in Alternate #1.

Structural Treatment Alternate #2

Advantages

- Replacing the logs in-kind can be performed using historically appropriate materials and construction methodologies, which preserves the key character defining feature of the poteaux-en-terre construction.
- The log joists will remain in-situ to preserve the original structural system of the first floor, and visible modern interventions in the caveau will be less obtrusive than existing shoring.
- Lower initial construction costs, but costs will be required for regular monitoring and future repairs.

Disadvantages

- This approach is intended to provide long-term structural performance; however, wood in direct contact with soil is subject to deterioration, and repairs or log replacements should be anticipated in the future.
- Replacing the failed bearing ends of the logs represents a significant and irreversible loss of historic fabric.
- Replacing the logs will require partial deconstruction of the galerie structures and potential disturbance to the pierrotage and interior finishes.
- Excavations along the north and south walls will permanently disturb any archaeological resources adjacent to the House.
- Higher risk during construction due to disturbing the vertical logs; careful shoring design and monitoring during construction will be required.
- This alternate also likely represents the highest initial construction cost due to the in-kind replacement materials and complexity of the repair work.

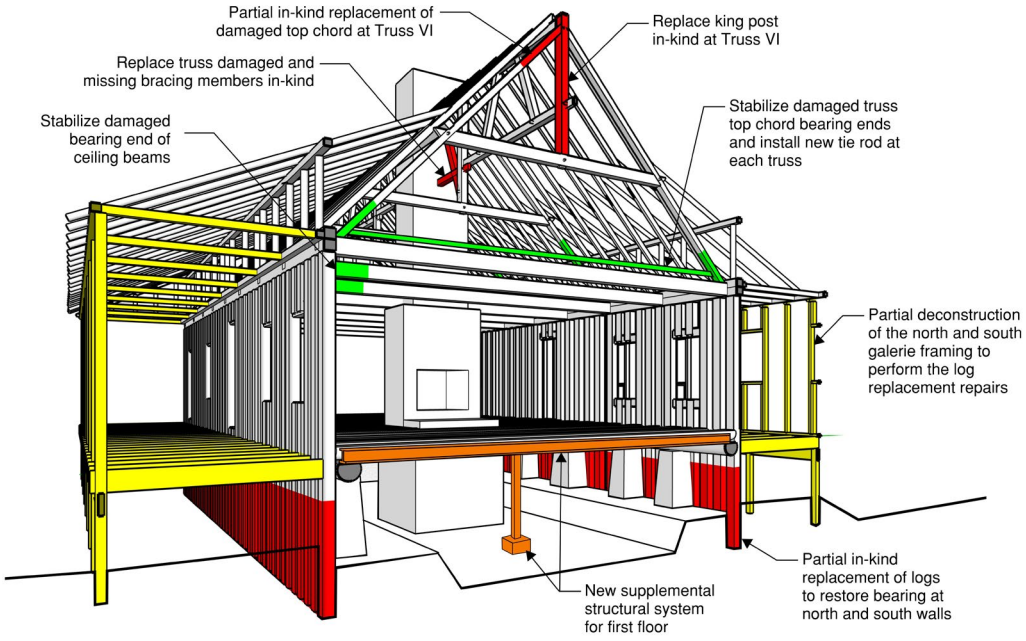


Figure TU-S-02. Isometric section looking west, showing impact of structural Alternate #2.

PLUMBING ALTERNATIVES

WATER UTILITY

The existing water service to the Bauvais-Amoureux House is assumed in satisfactory condition as it has been serving the House for a number of years. The size of the water service is appropriately sized if the Park's Service desires the water service to remain in place to serve the exterior sill cock. The City of Ste. Genevieve is making improvements to the water service in the Summer of 2021.

Pending the pressure from the municipal lines after these improvements, a supplementary pump for the new fire suppression system may not be required.

It is recommended that the plumbing fixtures be removed at the existing restroom and that this room be used to accommodate any mechanical equipment to serve the House.

It is the understanding that the Bauvais-Amoureux House will not be an occupied building and that a restroom will not be required in this House in the future as the House will not be occupied full time. The House will only be used for short tours.

SANITARY WASTE UTILITY

The existing 4" sanitary sewer for the Bauvais-Amoureux House is of ample size to continue to serve the House. It is recommended that the sanitary main leaving the House be scoped with a camera and cleaned to ensure its integrity to serve the House into the future.

It is recommended that any space in the House used for mechanical equipment will want to be provided with a floor drain which can be connected to the existing sanitary main serving the House.

It is recommended that the 1-1/2" DWV sanitary vent currently running up the exterior side of the west wall of the building be removed and a new vent through the roof be added. A new vent line through the roof to serve the sanitary system would provide a more aesthetically pleasing appearance versus the existing vent exposed at the west wall. Providing a 4" vent through the roof is recommended to meet the plumbing code.

GAS UTILITY

The existing gas utility at the Bauvais-Amoureux House is recommended to be left in its current state with the utility capped outside the building if this utility is not used for any heating equipment in the building. If the desire is to utilize gas to heat the building, it can easily be extended to any new equipment added.

FIRE PROTECTION ALTERNATIVES

The structure currently has no fire suppression system. Property protection and life safety are the benefits a fire suppression system would offer. It is with these benefits that the Bauvais-Amoureux House is recommended to be upgraded with an automatic fire suppression system. This is based on the building techniques and materials used in its construction where extensive use of wood timbers and other wood construction make up a vast majority of the structure. Protection against fire is of major importance.

Utilizing active fire safety features found in modern automatic fire detection and suppression systems provide occupant notification, alarm transmittance and the ability to suppress fire growth until the fire department arrives. Relying on active systems with proper maintenance and alarm supervision, they have a high degree of reliability.

Active fire protection is characterized by detection and response. Detection of a fire through smoke or heat sensors initiates a chain of events that reduces threats from a fire. Once a detection system is activated, other actions including sounding alarms and opening of fire sprinklers or other fire suppression systems occur. Fire protection system minimum requirements are to detect a fire, alert the occupants or fire department of a fire emergency, control smoke, and control or extinguish the fire.

FIRE SUPPRESSION SYSTEM TYPE

There are many types of fire protection or suppression systems utilized in buildings today to mitigate the risk against the loss of life and property in the event of a fire. The fire suppression system should be based on the building occupancy group, size of the building/fire area, height of the building, and occupant load. The fire suppression system should comply with the current NFPA and IBC requirements as they relate to building usage.

The various types of systems in use range from wet-pipe systems, dry-pipe systems, anti-freeze systems, deluge systems, and pre-action systems. Each of these system types has certain characteristics which are listed as follows:

Wet-Pipe System - A wet pipe system is the most common type of system. It is a sprinkler system employing automatic sprinklers attached to a piping system containing water and connected to a water supply so that water discharges immediately from sprinklers opened by heat from a fire.

Dry-Pipe System - A dry pipe system is the second most common type of system. A dry-pipe fire suppression system is a piping system filled with pressurized air or nitrogen instead of water. This air holds a remote valve, known as a dry pipe valve, in a closed position. Located in a heated space, the dry-pipe valve prevents water from entering the pipe until a fire causes one or more sprinklers to operate. Once this happens, the air escapes and the dry pipe valve releases. Water then enters the pipe, flowing through open sprinklers onto the fire. It is used in spaces where the ambient temperature may be cold enough to freeze the water in a wet pipe system, rendering the system inoperable, such as in unconditioned attic spaces or crawl spaces. Dry-pipe systems often require a small air compressor to be utilized to maintain the pressure in the system as the system can and will lose air pressure over time and the air compressor may have to activate to maintain any loss in pressure. Another form of dry system involves the use of dry heads. This type of system assumes the piping system has water in it but the heads stay dry until such time as their activation. These types of heads are used when protecting outdoor areas such as balconies, breezeways, porches, etc. or when protecting cold storage areas such as freezers where the piping system is installed in a tempered space but needs to protect a space which has a freeze potential.

Antifreeze System – Antifreeze systems are used in spaces where the ambient temperature may be cold enough to freeze the water in a wet pipe system. This system employs automatic sprinklers attached to a piping system containing an antifreeze solution. The antifreeze solution is discharged, followed by water, immediately upon operation of sprinklers opened by heat from a fire.

Pre-action System - A pre-action system is used in locations where accidental activation is undesired, such as in museums or collection spaces housing valuable or historic artifacts. This type of system employs automatic sprinklers attached to a piping system that contains air that might or might not be under pressure. This type of system employs the use of additional detection devices such as smoke or heat detectors which have to activate within the same areas as the sprinklers. When the supplemental heat or smoke detector activates, the pre-action valve will open and allow water to flow into the piping. Water will not flow from the sprinklers until a fire has generated enough heat to open one or more sprinklers.

Each of the types of fire suppression systems requires some form of inspection, testing and maintenance. The following outlines a typical schedule of inspection, testing and maintenance:

Monthly - Control valves, alarm valves, and pressure gauges should be inspected, tested, and maintained monthly. Control valves should have the appropriate identification and wrench, be accessible, and be locked in the open position or electronically supervised during inspection. Pressure gauges should show that normal water supply pressure is being maintained.

Quarterly - The fire department connection (FDC), water flow/supervisory signal devices, and alarm devices should be inspected, tested, and maintained quarterly. The FDC should be visible and accessible and identification signs and caps should be in place.

Annually- Sprinklers, pipe and fittings, hangers and any seismic braces, and spare sprinklers should be inspected, tested, and maintained annually. Sprinkler heads should be installed in the proper orientation (e.g., upright, pendant, or sidewall); not show signs of leakage; and should be free of corrosion, foreign materials, paint, and physical damage.

Additional Testing and Maintenance - There are specific requirements for the testing and maintenance of the valve and device components of sprinkler systems that should be done quarterly, semiannually, and annually. Fire sprinkler system service contractors are usually contracted to perform these services. Mechanical water flow devices, including but not limited to water motor gongs should be tested quarterly. Vane-type or pressure switch-type water flow devices should be tested semiannually.

Additional fire and smoke systems are available which are considered Early Warning Systems. One such system utilizes air sampling and is referenced by the name of "VESDA" which stands for "Very Early Warning Aspirating Smoke Detection". The VESDA system is designed to alarm the occupants to a danger as soon as possible. The VESDA air sampling fire detection system detects invisible by-products of materials as they degrade during the pre-combustion stages of a developing fire. By actively and continuously sampling air, the system operates independently of air movements. Air samples are continuously drawn from the monitored environment, typically through a sampling pipe network with the aid of a high efficiency aspirator. The air samples pass through a filter assembly to screen out large airborne dust particles before they reach the air-sampling detector. Once inside the air-sampling detector, the samples are exposed to a high-intensity, broad-spectrum light source. The incident light scattered from smoke particles in the air sample passes through a series of optical components to a solid state light receiver. The light is converted to an electronic signal and passed to the control system. At the control module, the signal is processed and presented on a graph to visually indicate the level of smoke present in the monitored area. Depending upon smoke levels and the preprogrammed alarm levels, the appropriate output signals are generated. The first of three staged alarm levels (ALERT) may simply indicate that the system has detected something out of the ordinary that should be investigated. The second level (ACTION) indicates that a potential fire exists and that emergency procedures should begin. The third level (FIRE) signifies an actual fire condition.

Early warning systems such as the VESDA system should be considered when aesthetics in the space are of utmost importance or when reducing the risk of vandalism. Many areas that cause environmental issues to conventional detection where an early warning system can offer a suitable solution while avoiding false alarm and reducing maintenance demands. Areas with high temperatures, cold areas, areas with high humidity, dusty areas, are areas where VESDA can be of an advantage. VESDA systems have been used in combination with other extinguishing systems where a conventional water based system may cause damage on a sprinkler head discharge. The VESDA system can be used in combination with conventional fire suppression systems as an early warning system which signal a warning before a fire grows to a level that a sprinkler system needs to be activated. Another combination includes the use of a VESDA system in combination with systems utilizing chemical agents such FM 200 which uses hydrofluorocarbons used to fight the fire. VESDA with systems using gaseous agent systems such as Inergen which is a mixture of nitrogen, argon and carbon dioxide, smothers the fire. Chemical agent and gaseous agent systems are typically used in locations where water damage would be most critical. Chemical agents when used in such critical spaces such as data centers and mission critical facilities can damage computer systems while gaseous agents work very well for this application.

FIRE SERVICE

Any added automatic fire suppression system for the Bauvais-Amoureux House will require a separate fire water service to be installed to the building. This water service will be in addition to any existing potable water service to the building serving domestic water needs. The fire service size anticipated would need to be a minimum 4" in size with the water service provided with a post indicator valve near the street giving the fire department visual indication of whether the fire service is active or is inactive due to maintenance.

The fire service to the House should enter the building in a heated space or room. At the Bauvais-Amoureux House, it is recommended that an insulated chase from below grade to inside the building be provided protecting the fire service from freezing. A room inside the building will be needed to house the fire entrance assembly. Ample space will be needed for the fire entrance assembly including backflow preventers, valves, drain and test connections, and an air compressor to keep the piping system charged with air.

A fire department connection or FDC will also be needed allowing the local fire department to connect their water supply to the building fire suppression system if the main fire service is down for serving or maintenance. The FDC would generally be located 40-feet or more from the building for safety of the fire fighters.

HVAC ALTERNATIVES

If the goal of the NPS is to take a Preservation approach for the Bauvais-Amoureux House, it is critical to understand what spaces, features, and finishes are historic in a building, what should be retained, and what the realistic heating, ventilating, and cooling needs are for the structure, its occupants, and its contents.

In the eighteenth century, early heating and ventilation relied upon common sense methods of managing the environment. Builders purposely sited houses to capture winter sun and prevailing summer cross breezes; they chose materials that could help protect the inhabitants from the elements, and took precautions against precipitation and damaging drainage patterns. The location and sizes of windows, doors, porches or galleries, and the floor plan itself often evolved to maximize ventilation. Heating was primarily from fireplaces or stoves. Thermal insulation was rudimentary, such as wattle and daub, brick nogging or infill like bousillage or pierrotage.

By the nineteenth century, residential designs of the period often used gravity hot air systems utilizing floor and ceiling grilles. The technology of the age, however, was not sufficient to produce "tight" buildings in terms of air communication between interior and exterior conditions, and there was still only a moderate difference between internal and external temperatures. This was due, in part, to the limitations of early insulation, the almost exclusive use of single glazed windows, and the absence of airtight construction. The presence of ventilating fans and the reliance on architectural features, such as operable windows, cupolas and transoms, allowed sufficient air movement to keep buildings well ventilated, and allowed building materials to behave in a fairly traditional way, expanding and contracting with the seasons.

The twentieth century saw development of new technologies and the notion of fully integrating mechanical systems. Gas furnaces developed in the nineteenth century were improved and made more efficient, with electricity becoming the critical source of power for building systems in the latter half of the century. Forced air heating systems with ducts and registers became popular for all types of buildings. The insulating qualities of building materials improved. Synthetic materials, such as spun fiberglass batt insulation, were fully developed by mid-century. Prototypes of insulated thermal glazing and integral storm window systems were promoted in construction journals. Caulking to seal out perimeter air around window and door openings became a standard construction detail.

The last quarter of the twentieth century has seen making HVAC systems more energy efficient and better integrated. The use of vapor retarders to control moisture migration, air barriers to control air migration, thermally efficient windows, caulking and gaskets, compressed thin wall insulation, and other high performance practices have become standard. New integrated systems now combine interior climate control with fire suppression, lighting, air filtration, temperature and humidity control, and security detection.

Computers regulate the performance of these integrated systems based on the time of day, day of the week, occupancy, and outside ambient temperature.

Although twentieth century mechanical systems technology has had a tremendous impact on making historic buildings comfortable, the introduction of these new systems in older buildings is not without problems. The attempt to meet and maintain modern climate control standards may actually damage historic resources. Modern systems are often over-designed to compensate for inherent inefficiencies of some historic buildings materials and plan layouts. Energy retrofit measures, such as installing exterior wall insulation and vapor retarders or the sealing of operable windows and vents, ultimately affect the performance and can reduce the life of aging historic materials.

In general, the greater the differential between the interior and exterior temperature and humidity levels, the greater the potential for damage. As natural vapor pressure moves moisture from a warm area to a colder, dryer area, condensation will occur on or in building materials in the colder area. Too little humidity in winter, for example, can dry and crack historic wood or painted surfaces. Too much humidity in winter causes moisture to collect on cold surfaces, such as windows, or to migrate into walls. As a result, this condensation deteriorates wood or metal windows and causes rotting of walls and wooden structural elements. Condensation can also cause wetting of buildings with insulation which holds moisture against exterior surfaces. Moisture migration through walls can cause the corrosion of metal anchors, angles, nails or wire lath, can blister and peel exterior paint, or can leave efflorescence and salt deposits on exterior masonry. In cold climates, freeze-thaw damage can result from excessive moisture in external walls. Therefore, improvements to the building envelope should not be performed without careful consideration and analysis of the impact to the structure and materials. Undesired and unanticipated effects of poorly considered envelope improvements can be more detrimental to the building more so than any benefit they may provide.

It is assumed that the Bauvais-Amoureux House will not be a full-time occupied building and will be open to limited tours. Due to its limited occupancy, maintaining occupant comfort would be considered less critical and the approach to preservation of the historic materials and techniques used to construct the House should take precedence. Maintaining the building in its current state with no vapor retarder and little if any insulation will allow for a relatively small difference between internal and external temperatures and relative humidity. This is similar to how this building has performed for much of its life as a private residence before modern HVAC systems. Reducing swings in temperature and humidity will allow the building materials to naturally expand and contract with the seasons. Providing a "low-tech" approach for this building through limited heating and improved ventilation may offer the best preservation approach for the interior environment and building structure. The benefits of providing heat to the building interior will protect any water utility entrance for fire suppression, and providing improved ventilation will create a more tolerant and consistent environment for visitors touring the building by moving air throughout the building.

If the NPS goal is to implement a strategy of Rehabilitation such as, a museum setting, upgrading the building to support the proposed use would need to be addressed. The building envelope would require the addition of air sealing, vapor retarders, and insulation at walls, floors, and the roof or attic. To use the building in its current condition would not be possible if some form of museum environment were desired. Extensive demolition or alteration of wall, floor, and roof finishes would be required to maintain the interior environmental conditions at a level appropriate for sensitive collections. Museum collections typically need to reside in a stable environment for both temperature and relative humidity levels.

ENVIRONMENTAL CONSIDERATIONS

In order to design environments suitable for the storage of collectable materials, it is best to understand that many factors with the environment can impact any collections, artifacts, and documents within the space. This section is included for reference, and the classification of the building and systems will be determined for each alternative.

The factors within the environment are as follows:

BIOLOGICAL DAMAGE

Higher temperatures and higher humidity levels support biological activity. Accelerated mold growth, corrosion of base materials, and chemical deterioration can result in most organic materials.

MECHANICAL DAMAGE

Very low relative humidity levels, temperatures or high fluctuations of relative humidity and temperature can lead to mechanical damage. This can be caused by the expansion and contraction of materials. Very low relative humidity levels or very low temperatures increase the stiffness of organic materials making them vulnerable to fracture.

LIGHT

All wavelengths of light are damaging to archival materials. Ultraviolet light, wavelengths less than 400- nanometers, can cause the most extensive damage. Over exposure to light can cause photochemical or photophysical damage to collections and is dependent upon the intensity, the type of light, and the duration of exposure. Since light damage is cumulative, light exposure levels are measured by calculating total exposure. Total exposure is the product of intensity of the source multiplied by the duration of exposure.

CHEMICAL DAMAGE

Elevated temperatures and increased relative humidity levels are also a cause of chemical damage. Archival records, such as papers, photographic negatives, and magnetic media, are the most susceptible to the chemical damage.

AIRBORNE POLLUTANTS

Fine particles and gaseous pollutants can lead to deterioration of collections. Sources of pollutants include outside air, building materials, occupants, maintenance practices. Gaseous pollutants react with the moisture in paper and the moisture in the air to produce acids which speed up the rate of paper deterioration and can lead to embrittlement. Airborne particulates can abrade, disfigure and obscure test in addition to increasing the potential for the presence of mold spores.

CLASSIFICATIONS FOR COLLECTION STORAGE ENVIRONMENTS

ASHRAE, recognizes six primary classes of control for general museum, art galleries, libraries and archives spaces. Chapter 21 of the 2003 ASHRAE HVAC Applications Handbook, describes a minimum of six levels of control for maintaining the building and any possible collections which may be stored or put on display should this be a desire of NPS. The six levels of control are Types AA, A, B, C, and D. The outlined levels of control vary from AA, which includes precision control allowing for no seasonal changes, to D, which is limited to preventing dampness. ASHRAE describes Type A as the optimum for most museums and galleries, based on the goal of providing a balance between risks and benefits. Type AA level of control may be pursued if even greater control and less risk are desirable (reference appendix for Table 4 from 2003 ASHRAE Applications Handbook).

The ASHRAE Table 4 provides a valuable analysis for buildings that will not or are not capable of adhering to the precise controls of Level AA. The table clearly identifies the level of risks in terms of both mechanical and chemical damage to collections being stored in environments such as A, B, C, or D, in comparison to the more precise Levels AA.

The building envelope is a critical element in determining possible classes of fluctuation control in a particular building. ASHRAE considers the typical building construction, typical type of building, typical building use, and the HVAC system used to determine the practical limit of climate control. The building classes recognized by ASHRAE are Classes I, II, III, IV, V, and VI. The building classes are subdivided into categories of control. Classes I and II are considered uncontrolled; Classes III and IV are partial control; Classes V and VI are climate controlled. The following is a summary of these classifications:

UNCONTROLLED

Building Class I – buildings contain no mechanical devices; thus, the environmental conditions inside the spaces are approximately equal to the outdoor conditions.

Building Class II – buildings consist of ventilation only in the form of exhaust fans, open windows, supply fans, or attic venting, high temperatures and relative humidity gradients can be anticipated.

PARTIALLY CONTROLLED

Building Class III – buildings utilize heating and ventilating to control temperature fluctuations, high humidity conditions can be anticipated.

Building Class IV – buildings utilize basic HVAC systems capable of heating, cooling, limited humidification, and limited dehumidification. Temperature fluctuations of 15° F and relative humidity fluctuations of 30% could be anticipated.

CLIMATE CONTROLLED

Building Class V – buildings utilize more precise HVAC systems capable of heating, cooling, humidification, and dehumidification. Often operate with seasonal drift to limit operating costs or to protect the building envelope. Additional characteristics may include well-insulated or double glazed windows, vapor barriers, and double doors or airlocks.

Building Class VI – buildings utilize mechanical systems designed with precise controls to provide a relatively constant environment. The components are specifically designed to accommodate the specialized environment. Both construction costs and operating costs are typically high.

Please refer to appendix of this historic structure report for a copy of Table 5 from the 2003 ASHRAE *HVAC Applications Handbook*. Table 5 provides a complete summary of the classification categories.

VENTILATION AIR AND VENTILATION AIR QUANTITY

Any new heating, ventilating and air conditioning systems will need to provide some form of outside air for ventilation. Outside air may be introduced to the building either by natural means or by mechanical means depending on the availability of openings used for air introduction.

In a natural method, outside air can be introduced through operable windows, as long as natural ventilation can be achieved within a certain distance of the building perimeter and there is no treatment needed to the outside air, such as filtration. Outside air can also be introduced through an existing chase or building opening such as a lined chimney.

With mechanical ventilation, fans are used to introduce outside air directly into a space or by removing air from a space. This includes the use of positive pressure ventilation, negative exhaust ventilation, and balanced systems that use both supply and exhaust ventilation.

With mechanical ventilation systems, energy codes often mandate the use of some form of energy recovery method to precondition outside air before its introduction into the building HVAC system. Energy recovery ventilators (ERV) offer a means for this pre-treatment of outside air by passing building exhaust air from the building through an internal energy recovery device. The use of an ERV reduces the conditioning load that the outside air imposes on the HVAC system equipment which in turn reduces energy consumption to heat or cool the indoor space.

Outside air to be used for ventilation will need to be introduced in quantities as dictated by the International Mechanical Code and ASHRAE. ASHRAE Standard 62.1 – *Ventilation for Acceptable Indoor Air Quality* lists the required ventilation air required for various types of commercial buildings and occupancies. If the building is classified as a residential property, ASHRAE Standard 62.2 *Ventilation and Acceptable Indoor Air Quality in Residential Buildings* would be used to determine the ventilation requirements. ASHRAE mandates specific amounts of outside air required for ventilation based on the number of occupants and the number of square feet of occupied space based on a particular building usage.

ENERGY EFFICIENCY

Energy code requirements dictate system equipment energy efficiencies to ensure the building operates in compliance with the energy code utilizing the least amount of energy, decreasing greenhouse gas emissions and pollution and by increasing economic and environmental sustainability while lessening peak energy demand, increasing utility reliability and improving indoor air quality.

Generally, the HVAC system equipment options would need to meet minimum energy code efficiencies in the State of Missouri. However, since this building is on the National Register of Historic Places, it is exempt from the energy code requirements. Under the *Secretary of Interior's Standards for Historic Structures*, guidelines exist for restoration, preservation, reconstruction and rehabilitation of historic and significant buildings which apply to the incorporation of new building systems. Any added HVAC system will be selected and sized to be as compliant as reasonably possible with the energy codes while imposing minimal impact on the historic features and fabric of the building.

Equipment used for cooling can include exterior-located condensing units and heat pumps. They will need to be provided with a seasonal energy efficiency rating (SEER) minimum of SEER 14, or in the case of the heat pumps, a heating seasonal performance factor (HSPF) minimum of HSPF 8.2. For an indoor furnace unit, it will need to be provided with a thermal heating efficiency rating of a minimum annual fuel efficiency rating (AFUE) of 90% if the unit were to be gas-fired. To achieve this heating efficiency, any gas-fired furnace will have to be a condensing-type of furnace. This type of furnace has two heat exchangers. One heat exchanger is used similar to a standard efficiency furnace where fuel combusts creating heat, water vapor and combustion byproducts. The water vapor and combustion byproducts would normally go up a flue pipe and be exhausted to the outdoors on a standard furnace where the system fails to capture approximately 20% of the heat produced. With a high-efficiency furnace, a second heat exchanger allows the water vapor to condense into a liquid. In this process of transforming water vapor to condensate, the liquid releases heat which the furnace recycles and uses to warm the air. By utilizing the waste heat which would normally escape up the flue, the furnace operates more efficiently which in turn costs less to operate. Another alternative to gas-fired equipment would be the use of electric heat as a heating option. If electric heat were desired, the existing electrical service will need to be reviewed to make sure it can accommodate the increased electrical load placed on it by an electrical coil at a furnace unit.

MECHANICAL AND ELECTRICAL SPACE

Simplicity, maintenance, access to equipment, and installation are things to consider when providing a heating, ventilation and air conditioning system. As it is assumed this building will not be manned full-time, providing a system which requires reduced maintenance and supervision will be important. Providing an enclosed and conditioned mechanical space for the equipment with adequate clearance for access, along with room for the other building systems such as fire suppression and electrical services, will be important. Since the Bauvais-Amoureux House will be assumed to be a non-occupied building in the future, it is recommended that the existing restroom plumbing fixtures be removed and the restroom be repurposed as a mechanical/electrical space as the electrical service currently exists at this room. The room can be configured to accommodate the fire suppression system and mechanical equipment to be located in this room as well *(Reference appendix for drawing M-1 for a floor plan indicating the proposed layout for mechanical/electrical space)*.

HEATING, VENTILATING, AND AIR-CONDITIONING OPTIONS

Providing an HVAC system without some form of cooling and dehumidification capabilities would not be recommended as this building will serve occupants present during building tours. Providing cooling and dehumidification during the summer months will provide an indoor environment with more stable temperature and humidity levels when compared to the existing conditions thus limiting the large swings currently experienced. As upgrading the building envelope may not be the best course of action due primarily to the destructive nature to the building facade and interior surfaces, consideration to the building's existing envelope will need to be taken into account when selecting the HVAC system capacity.

To provide a building environment addressing both preservation and rehabilitation, controlling any rapid offsets or swings in temperature and humidity should be taken into consideration. Incorporation of mechanical cooling and dehumidification should address these concerns. One option is to provide mechanical cooling and dehumidification utilizing direct expansion cooling where a cooling coil is used as part of the HVAC system coupled with an exterior-located, air-cooled condensing unit for heat rejection. The resultant indoor temperature and humidity levels during the summer months can be kept at more desirable levels. An add-on humidifier to the central HVAC system can be included to provide additional moisture within the building during the drier winter months to help maintain a more stable indoor relative humidity. The indoor temperature and humidity level goals should be approximately 68-72 degrees fahrenheit with 25-35% relative humidity during the winter and 72-75 degrees fahrenheit with 50% relative humidity during the summer months. These conditions will provide a relatively stable environment addressing both preservation and rehabilitation goals. The system equipment capacities will need to take into consideration the existing structure's floor, wall and roof compositions and R-values along with expected infiltration rates due to building leakage.

Location of an air-cooled condensing unit will need to be reviewed with any building exterior improvements with regard to site and landscaping. To maintain adequate airflow and prevent air short-cycling, locating the condensing unit below the north gallery is not recommended. Providing a location which offers adequate maintenance clearance and code required access to the unit's electrical disconnect switch will be required.

It would be recommended that any new HVAC equipment be located in a mechanical space at the main level of the House and not in the caveau or grenier as access to these two spaces may be difficult. The caveau has limited head room and this space has been subject to flood waters in the past. The grenier access can only be made via the south gallerie stairway which is steep and narrow and does not provide safe access *(Re: Photograph M-30)*. Utilizing the existing restroom at the west end of the north gallerie is recommended for housing the new HVAC equipment as this room can be easily converted to a mechanical and electrical room. The room will need to be large enough to provide the code required clearance spaces and maintenance clearance space. Limited building insulation will be needed to allow for tempering of this space to protect the fire water entrance from freezing. If the mechanical system involves any distribution ductwork, it is recommended that ductwork be installed at the grenier above. Access to the grenier would not need to be made very often to maintain ducts.

Options for adding HVAC for the Bauvais-Amoureux House included as follows:

HVAC EQUIPMENT OPTIONS:

Option #1 – Furnace System with Electric Heat: This equipment option would include a vertical electric furnace, insulated metal ductwork for air distribution and control thermostat.

Air distribution would be accomplished by use of insulated metal ductwork installed to the grenier and run to new air outlets located at the perimeter of the Main Level rooms. Return air ductwork and a return air grille would be provided at the Main Level mechanical room with the grille located at the north gallerie allowing a return air pathway utilizing the central hallway and other open doorways.

An energy recovery ventilator would be provided at the mechanical room and be ducted to the furnace with ventilation air introduced using a duct within a chimney extension at the grenier allowing outside air to be drawn into the ERV and then ducted to the furnace return air. Exhaust air from inside the building would be exhausted out of the building at the grenier space.

A single wall-mounted, central thermostat would provide system control and temperature monitoring. Unless multiple furnaces were provided, only one zone of control would be present.

ELECTRIC FURNACE SYSTEM – ADVANTAGES

- Simple system to control and operate
- Furnace relative small physical size making them easy to mount in the grenier space
- Relatively inexpensive to replace should equipment breakdown or wear out
- Lowest first cost compared to other more sophisticated systems such as air handling units and boilers
- Cooling and Humidification could be added to enhance environmental conditions
- Allows an energy recovery unit for ventilation to be incorporated into system
- Can provide a Building Class IV with a Type B Class of Control assuming building envelope upgraded
- Does not require an increase in electrical service if heating capacity is limited in size
- With a proper vapor barrier and added insulation, temperature and humidity levels should be able to maintained at 72°F and 50% RH in the summer and 68°F and 30% RH in the winter with a drift of approximately 10°F and 10% RH

ELECTRIC FURNACE SYSTEM – DISADVANTAGES

- Limited heating capacity – up to 25 kW which may require additional duct electric heating coil to boost heating capacity
- Requires periodic maintenance for equipment similar to standard residential equipment
- Allows for ductwork to route in the grenier space providing a less intrusive means of air distribution
- If heat pumps are utilized over condensing units, heat pumps have a slightly higher first cost
- A single thermostat providing only a single zone of control of the furnace system
- Limited capability to providing enhanced environmental control
- May require that the main electrical service be increased in capacity if the service cannot handle the increase load imposed by the added electric heat

Option #2 – Furnace System with Natural Gas Heat: Similar to the electric version of this system, natural gas heat can be provided as the heating energy source if natural gas is desired over electricity. Equipment would have a natural gas-fired heat exchanger included with the vertical furnace in lieu of an electric heating coil. Ductwork distribution and ventilation air would be handled similarly to the electric option with ductwork located up in the grenier and an ERV located in the mechanical space.

GAS-FIRED FURNACE SYSTEM – ADVANTAGES

- Simple system to control and operate
- Relatively inexpensive to replace should equipment breakdown or wear out
- Furnace relative small physical size making them easy to mount in the grenier space
- Lowest first cost compared to other more sophisticated systems such as air handling units and boilers
- Similar to the electric furnace option, if cooling is desired, the gas-fired furnace can be provided with a refrigerant cooling coil with refrigerant piping connected to an exterior air cooled condensing or heat pump.
- Humidification can be added to enhance environmental conditions
- Allows an energy recovery unit for ventilation to be easily ducted to the furnace system
- Can provide a Building Class IV with a Type B Class of Control
- With a proper vapor barrier and added insulation, temperature and humidity levels should be able to maintained at 72°F and 50% RH in the summer and 68°F and 30% RH in the winter with a drift of approximately 10°F and 10% RH

GAS-FIRED FURNACE SYSTEM – DISADVANTAGES

- Requires periodic maintenance for equipment similar to standard residential equipment
- Requires that a flue and combustion air pipe be run to the roof or through the west wall to serve the furnace system

- Allows for ductwork to route in the grenier space providing a less intrusive means of air distribution
- If heat pumps are utilized over condensing units, heat pumps have a slightly higher first cost
- A single thermostat providing only a single zone of control of the furnace system
- Limited capability to providing enhanced environmental control
- If heat pumps are utilized over condensing units, heat pumps have a slightly higher first cost

Option #3 – Geothermal Heat Pump System: A third option for providing heat and/or cooling to the House could include a geothermal heat pump system. The geothermal system is a hydronic system which utilizes a series of exterior vertical wells for heat injection during the winter and heat rejection during the summer. The wells would be filled with thermally conductive grout with a piping loop associated with each well. The system utilizes a distribution pump which pumps water to and from the indoor heat pump to the exterior wells and back. This system option would require that a conductivity test be performed prior to design to determine the ground conditions and its ability to conduct or absorb heat. This test also helps determine the depth and number of wells needed.

The indoor water source heat pump can be located in a mechanical room with the grenier used duct distribution system similar to furnace options. Similar to the furnace options, the geothermal heat pump system can easily incorporate the addition of an energy recovery ventilator into its duct system for introduction of preconditioned outside air for ventilation.

The geothermal heat pump system may require a slightly larger mechanical room for housing the distribution pump and other hydronic system specialties such as water treatment equipment, hydronic expansion tank and air control equipment.

A single wall-mounted, central thermostat would provide system control and temperature monitoring. Unless multiple heat pumps were provided, only one zone of control would be present. System heating or cooling would be controlled through the central control thermostat.

GEOTHERMAL HEAT PUMP SYSTEM – ADVANTAGES

- Reduced energy consumption as heating and cooling of the loop water is provided by the ground loop heat exchanger versus mechanical heating and cooling
- Lower cost to operate when compared to alternative system using natural gas for heating and electricity for heating as the ground provides the means for heat injection and heat rejection
- Humidification can be added to enhance environmental conditions for critical areas
- Allows an energy recovery unit to be easily ducted similar to the furnace systems
- Can provide a Building Class IV with a Type B Class of Control

GEOTHERMAL HEAT PUMP SYSTEM – DISADVANTAGES

- May require a slightly larger mechanical space to House heat pump and water loop equipment
- Requires more sophisticated controls for water loop equipment control
- Highest first cost when compared to furnace system primarily due to cost of drilling the vertical borings and added piping system associated with the exterior well field
- Requires water treatment for the loop piping system
- Requires make-up water for the loop piping system should the piping system need draining or experience a leak
- May require an additional small boiler for adding heat to the loop piping system during prolonged periods of cold weather

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ADDITIONAL COLLECTIONS AND SOURCES CONSULTED:

Mercantile Library at St. Louis University

Ste. Genevieve Archive in the Missouri State Historical Society

Ste. Genevieve County Courthouse

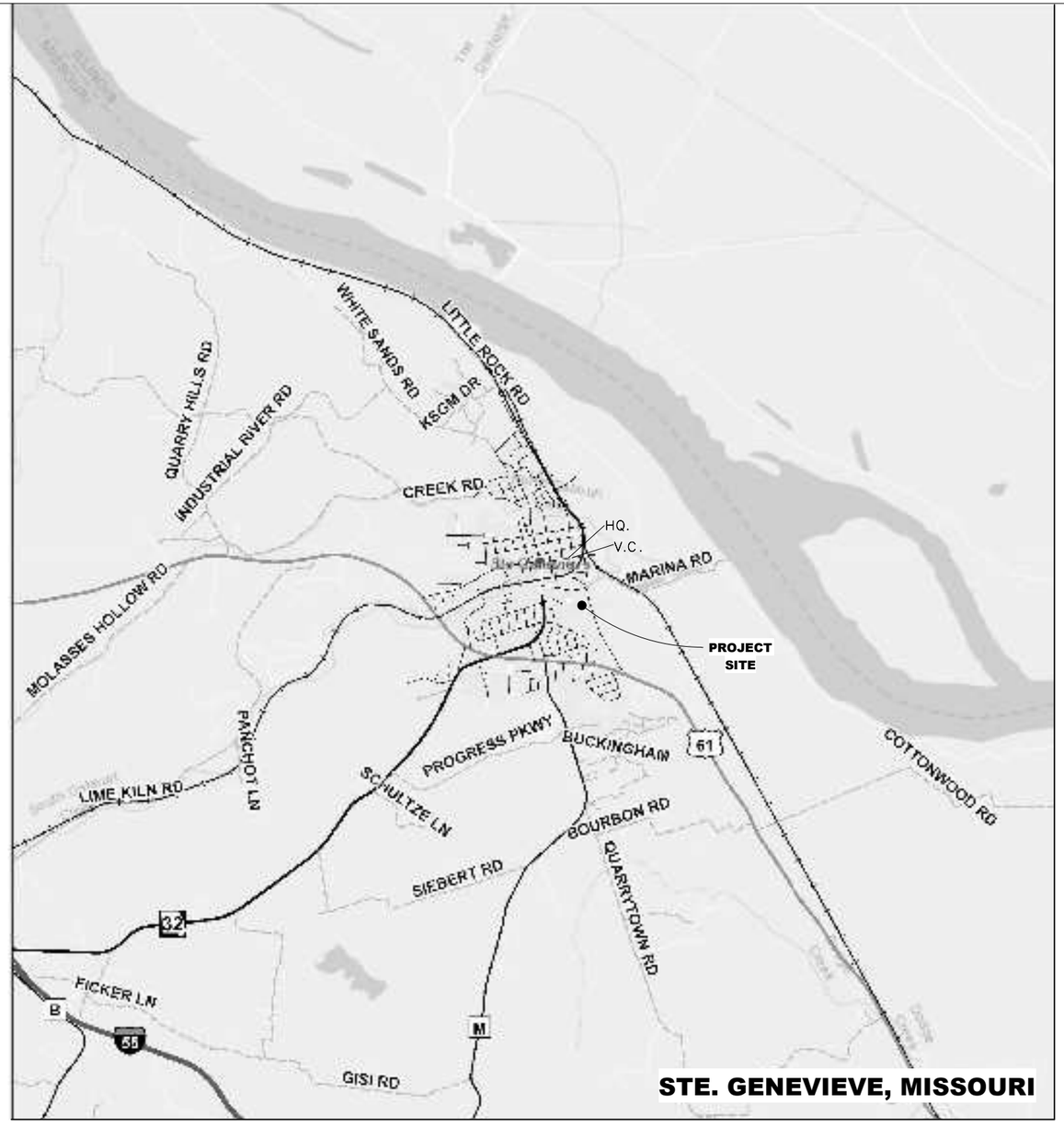
Felix Valle House State Historic Site

National Park Service Website Files

Various Family Records and Collections

Appendices

Appendix A - Existing Condition Drawings





LEGEND

V.C.	VISITOR CENTER
HQ.	PARK HEADQUARTERS

BVH NOTE:

THE DRAWINGS SHOWN WERE CREATED BASED ON LIMITED FIELD VERIFICATION. PRIOR DWGS CONSULTED WERE:
- **THE 1956 HABS**
- **THE 1994 "STABILIZATION OF THE AMOUREAX HOUSE"**

DWGS ARE TO BE USED FOR GENERAL SCALE, MASSING AND CONFIGURATION PURPOSES ONLY.

SCALE OF MILES
1 0 1
1 0 1
SCALE OF KILOMETERS

STE. GENEVIEVE NATIONAL HISTORICAL PARK

Mark	Sheet	REVISION	Date	Initial

QUALITY DESIGN CERTIFICATION
- ☐ Prepared in Accordance with Design Development (Title I)_____ OR
- ☐ Variance from Design Development (Title I) Approved by Superintendent on_____ OR
- ☐ Construction Drawing Not Preceded by Design Development (Title I)

Project Manager _____ Date _____

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
DENVER SERVICE CENTER

HISTORIC STRUCTURE REPORT
BAUVAIS-AMOUREUX HOUSE

STE. GENEVIEVE NATIONAL HISTORICAL PARK

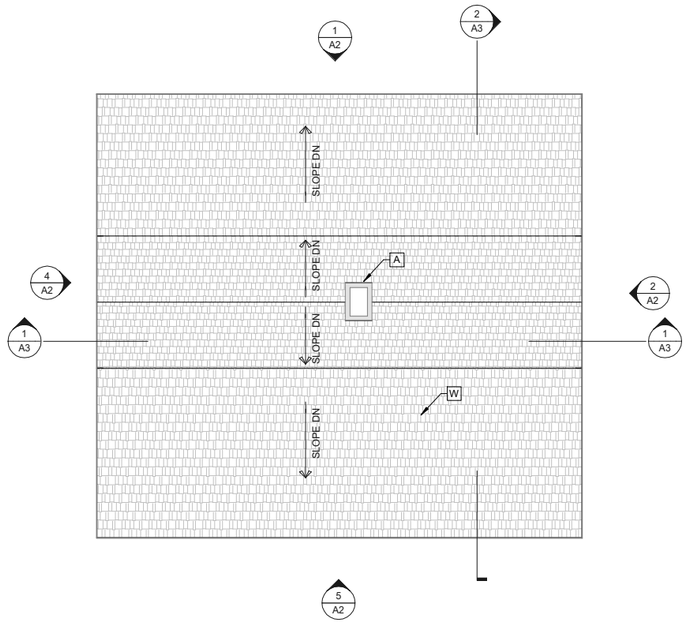
REGION MIDWEST | COUNTY STE. GENEVIEVE COUNTY | STATE MISSOURI

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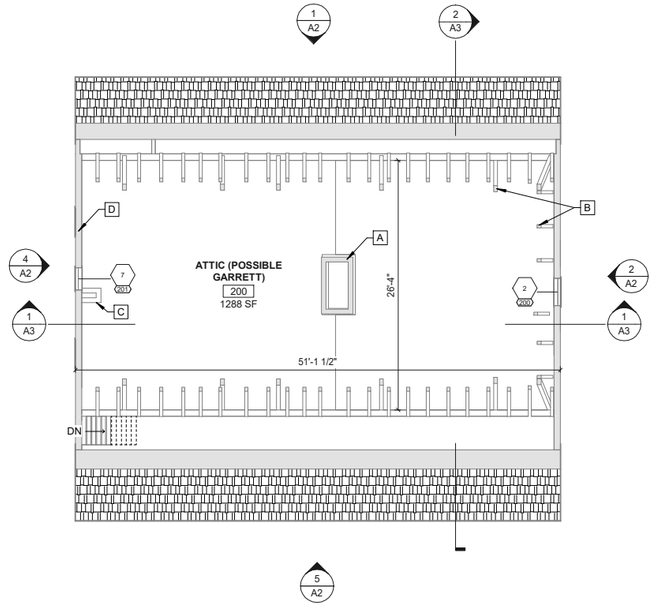
SHEET 1 OF 6

BASIC 9/21/2021 6:21:31 PM BHEIDE BIM 360://20062 – NPS Bauvais Amoureux House HSR/20062 NPS Bauvais Amoureux House HSR_AM.rvt
DATA:



4 EXISTING ROOF PLAN

1/8" = 1'-0"



3 EXISTING ATTIC (POSSIBLE GARRET) FLOOR PLAN

1/8" = 1'-0"

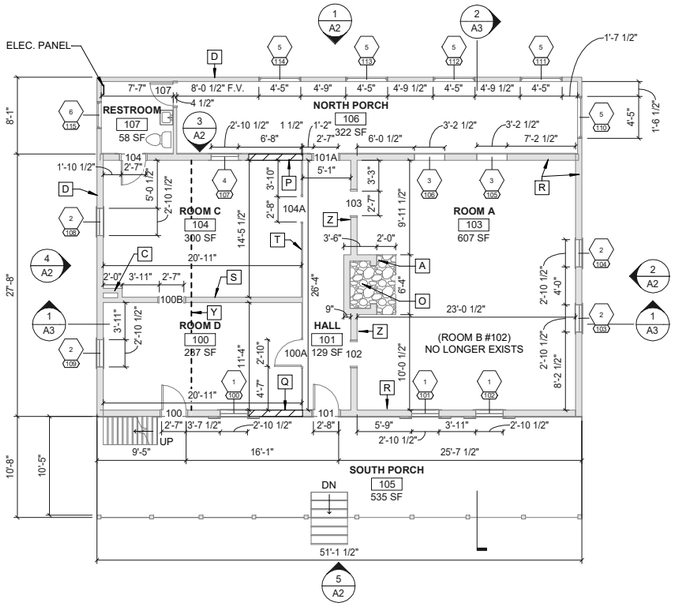
NOTE LIST

A. STONE CHIMNEY
B. TIMBER FRAMING ELEMENTS
C. REMNANTS OF REMOVED BRICK CHIMNEY, CUT OFF AT ATTIC FLOOR LEVEL
D. 2X WOOD FRAMING

E. STONE CHIMNEY FOUNDATION
F. STONE PIER
G. 1994 WOOD SHORING SYSTEM THRU-OUT
H. 1994 BULKHEAD RETAINING WALL
I. DIRT FLOOR AND STONE STEPPING STONES
J. SUMP PUMP AND PIT
K. GALERIE FRAMING
L. WEST WALL STONE FOUNDATION
M. NORTH AND SOUTH VERTICAL LOG WALLS
N. EAST WALL VERTICAL LOGS RESTING ON STONE FOUNDATION

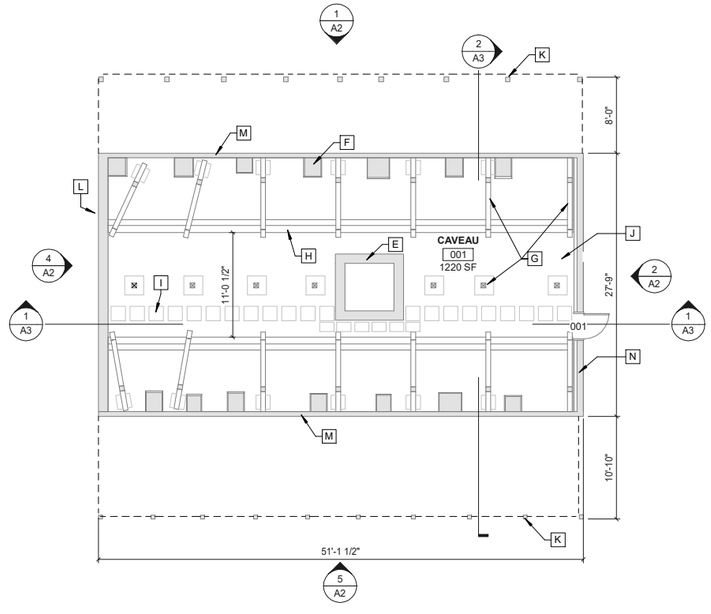
O. STONE HEARTH
P. 1792 DOOR FRAMING, INFILLED WITH VERTICAL LOGS.
Q. 1792 DOOR FRAMING NOTED BY OTHERS DURING PRIOR ASSESSMENT
R. PALISADED LOG WALL
S. WOOD AND PLASTER PARTITION
T. WOOD PARTITION

U. WOOD LAP SIDING
V. PLASTER WITH LIME WASH
W. WOOD SHAKE ROOFING
X. CLAY PARGING
Y. LIKELY ORIGINAL LOCATION OF NOW MISSING VERTICAL LOG WALL
Z. INTERIOR VERTICAL LOG WALL



2 EXISTING FIRST FLOOR PLAN

1/8" = 1'-0"



1 EXISTING LOWER LEVEL CAVEAU PLAN

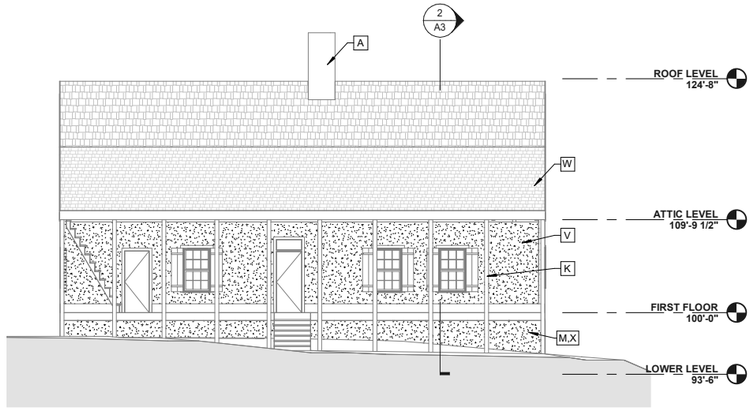
1/8" = 1'-0"

BVH NOTE:

THE DRAWINGS SHOWN WERE CREATED BASED ON LIMITED FIELD VERIFICATION. PRIOR DWGS CONSULTED WERE:
- **THE 1956 HABS**
- **THE 1994 "STABILIZATION OF THE AMOUREAX HOUSE"**

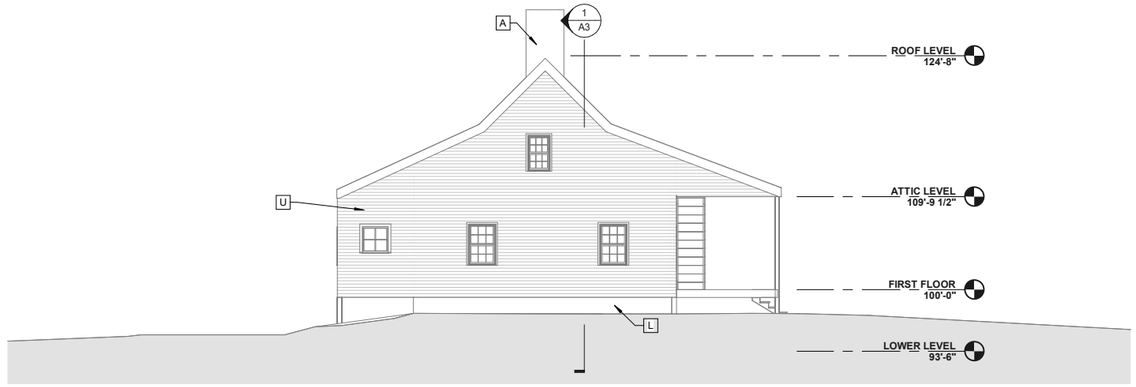
DWGS ARE TO BE USED FOR GENERAL SCALE, MASSING AND CONFIGURATION PURPOSES ONLY.

	DESIGNED: JCAWBY CADD BHEIDE TECH. REVIEW: DATE: 09/24/2021	SUB SHEET NO. A1	TITLE OF SHEET EXISTING FLOOR PLANS & ROOF PLAN STE. GENEVIEVE NATIONAL HISTORICAL PARK	DRAWING NO. PKG. NO. SHEET 2 OF 6



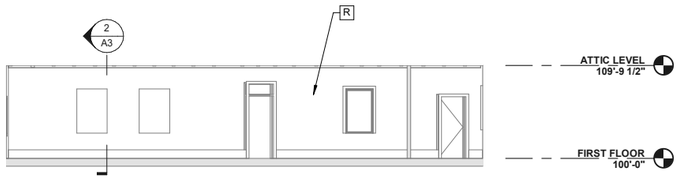
5 EXISTING SOUTH ELEVATION

1/8" = 1'-0"



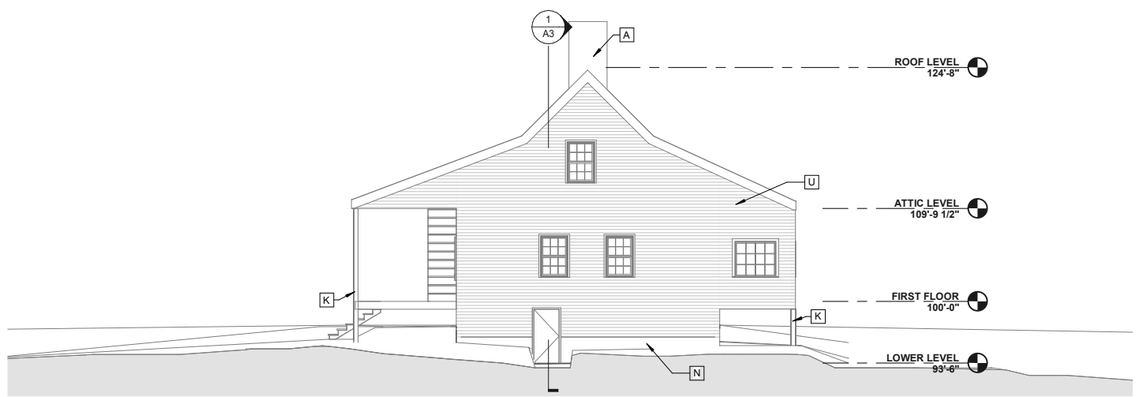
4 EXISTING WEST ELEVATION

1/8" = 1'-0"



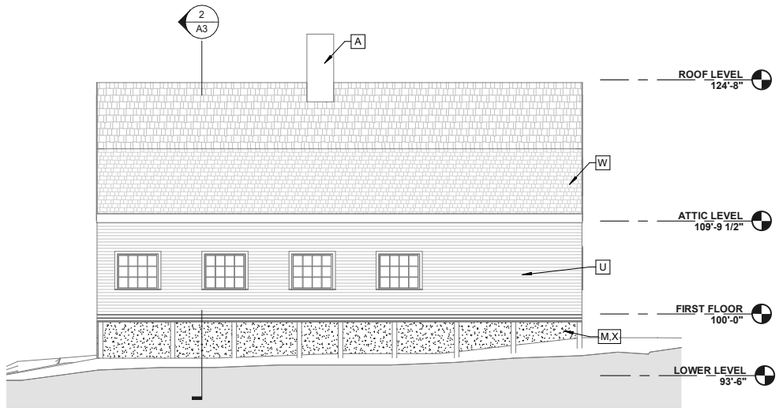
3 EXISTING NORTH ELEVATION - INT. PORCH

1/8" = 1'-0"



2 EXISTING EAST ELEVATION

1/8" = 1'-0"



1 EXISTING NORTH ELEVATION

1/8" = 1'-0"

NOTE LIST

A. STONE CHIMNEY
B. TIMBER FRAMING ELEMENTS
C. REMNANTS OF REMOVED BRICK CHIMNEY, CUT OFF AT ATTIC FLOOR LEVEL
D. 2X WOOD FRAMING

E. STONE CHIMNEY FOUNDATION
F. STONE PIER
G. 1994 WOOD SHORING SYSTEM THRU-OUT
H. 1994 BULKHEAD RETAINING WALL
I. DIRT FLOOR AND STONE STEPPING STONES
J. SUMP PUMP AND PIT
K. GALERIE FRAMING
L. WEST WALL STONE FOUNDATION
M. NORTH AND SOUTH VERTICAL LOG WALLS
N. EAST WALL VERTICAL LOGS RESTING ON STONE FOUNDATION

O. STONE HEARTH
P. 1792 DOOR FRAMING, INFILLED WITH VERTICAL LOGS.
Q. 1792 DOOR FRAMING NOTED BY OTHERS DURING PRIOR ASSESSMENT
R. PALISADED LOG WALL
S. WOOD AND PLASTER PARTITION
T. WOOD PARTITION

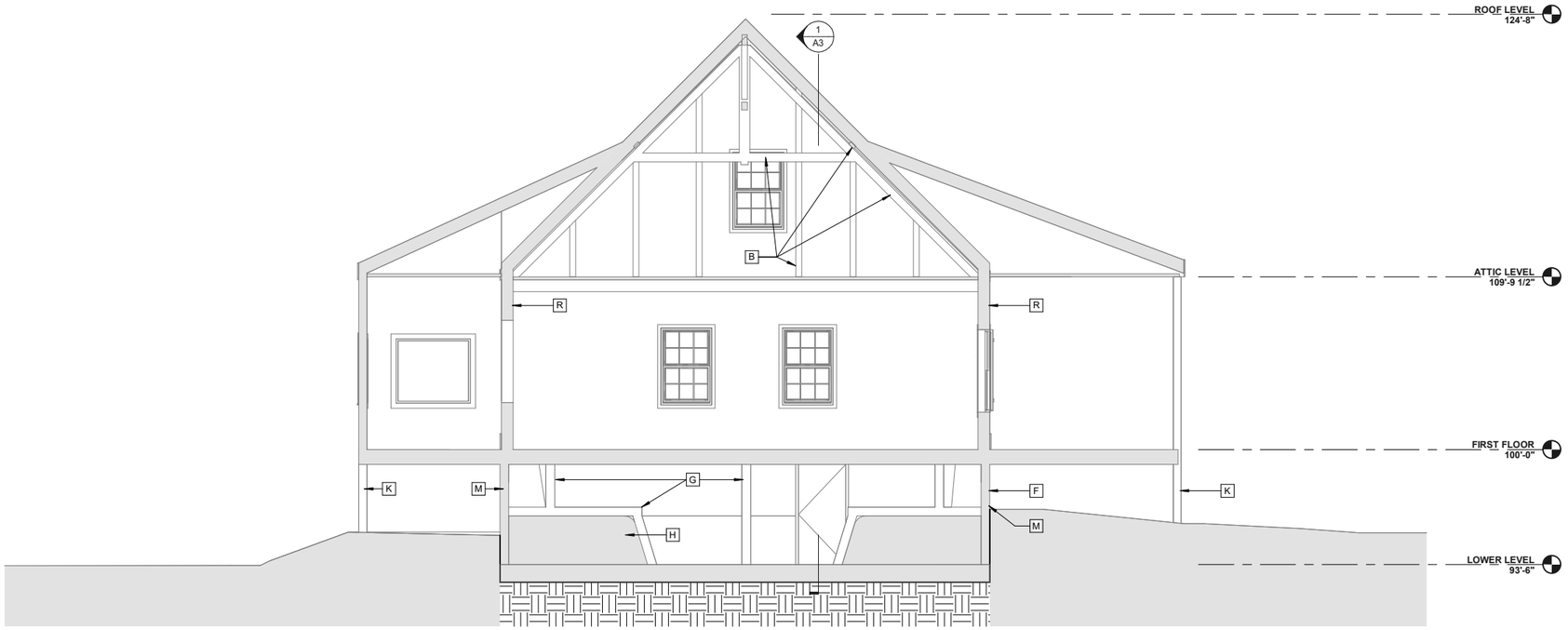
U. WOOD LAP SIDING
V. PLASTER WITH LIME WASH
W. WOOD SHAKE ROOFING
X. CLAY PARGING
Y. LIKELY ORIGINAL LOCATION OF NOW MISSING VERTICAL LOG WALL
Z. INTERIOR VERTICAL LOG WALL

BVH NOTE:

THE DRAWINGS SHOWN WERE CREATED BASED ON LIMITED FIELD VERIFICATION. PRIOR DWGS CONSULTED WERE:
- **THE 1956 HABS**
- **THE 1994 "STABILIZATION OF THE AMOUREAX HOUSE"**

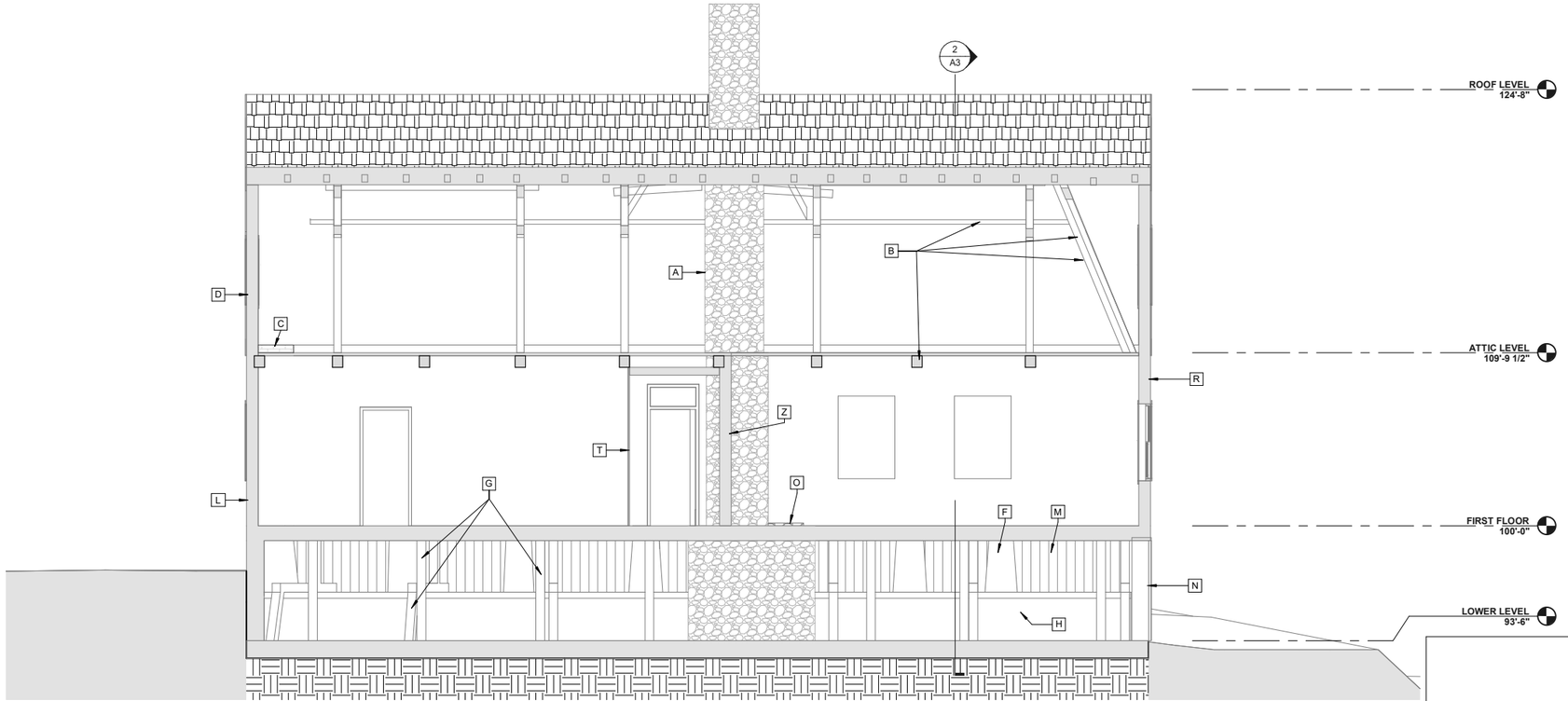
DWGS ARE TO BE USED FOR GENERAL SCALE, MASSING AND CONFIGURATION PURPOSES ONLY.

	DESIGNED: JCAWBY CADD BHEIDE TECH. REVIEW: DATE: 09/24/2021	SUB SHEET NO. A2	TITLE OF SHEET EXISTING BUILDING EXTERIOR ELEVATIONS STE. GENEVIEVE NATIONAL HISTORICAL PARK	DRAWING NO. PKG. NO. SHEET 3 OF 6



2 TRANSVERSE BUILDING SECTION

1/4" = 1'-0"



1 LONGITUDINAL BUILDING SECTION

1/4" = 1'-0"

NOTE LIST

A. STONE CHIMNEY
B. TIMBER FRAMING ELEMENTS
C. REMNANTS OF REMOVED BRICK CHIMNEY, CUT OFF AT ATTIC FLOOR LEVEL
D. 2X WOOD FRAMING

E. STONE CHIMNEY FOUNDATION
F. STONE PIER
G. 1994 WOOD SHORING SYSTEM THRU-OUT
H. 1994 BULKHEAD RETAINING WALL
I. DIRT FLOOR AND STONE STEPPING STONES
J. SUMP PUMP AND PIT
K. GALERIE FRAMING
L. WEST WALL STONE FOUNDATION
M. NORTH AND SOUTH VERTICAL LOG WALLS
N. EAST WALL VERTICAL LOGS RESTING ON STONE FOUNDATION

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P. 1792 DOOR FRAMING, INFILLED WITH VERTICAL LOGS.
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R. PALISADED LOG WALL
S. WOOD AND PLASTER PARTITION
T. WOOD PARTITION

U. WOOD LAP SIDING
V. PLASTER WITH LIME WASH
W. WOOD SHAKE ROOFING
X. CLAY PARGING
Y. LIKELY ORIGINAL LOCATION OF NOW MISSING VERTICAL LOG WALL
Z. INTERIOR VERTICAL LOG WALL

BVH NOTE:

THE DRAWINGS SHOWN WERE CREATED BASED ON LIMITED FIELD VERIFICATION. PRIOR DWGS CONSULTED WERE:
- **THE 1956 HABS**
- **THE 1994 "STABILIZATION OF THE AMOUREAX HOUSE"**

DWGS ARE TO BE USED FOR GENERAL SCALE, MASSING AND CONFIGURATION PURPOSES ONLY.

DESIGNED: JCAWBY
CADD
BHEIDE
TECH. REVIEW:
DATE: 09/24/2021

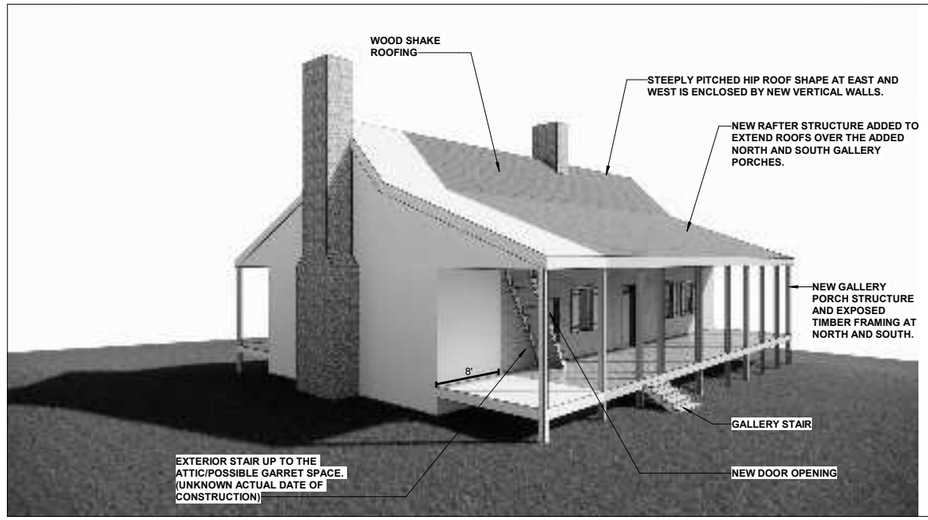
SUB SHEET NO. A3

TITLE OF SHEET
EXISTING BUILDING SECTIONS
STE. GENEVIEVE NATIONAL HISTORICAL PARK

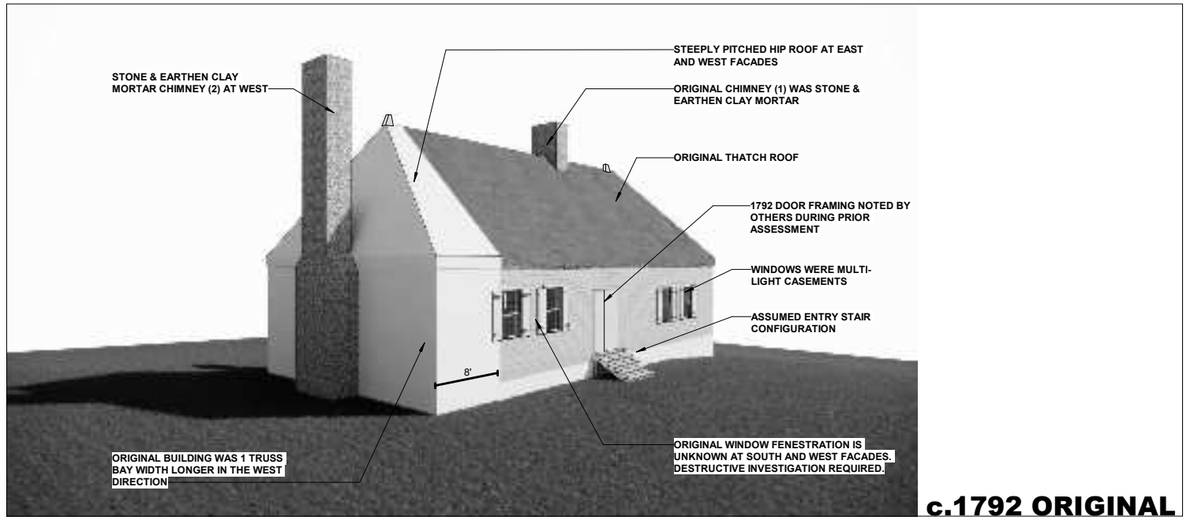
DRAWING NO.

PKG. NO.

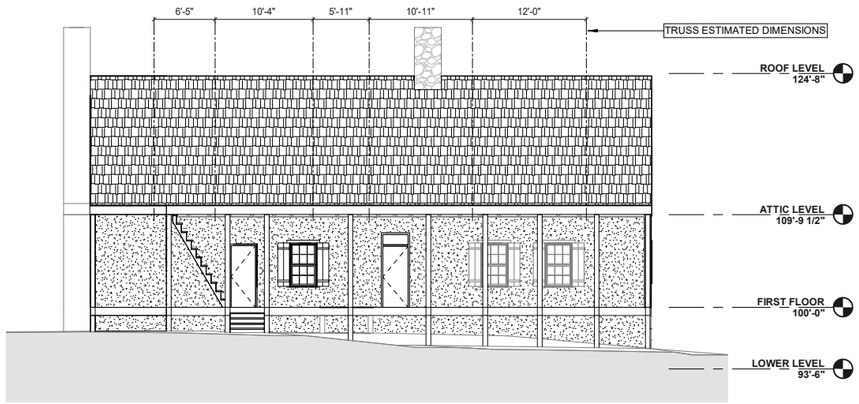
SHEET 4 OF 6



c.POST 1852

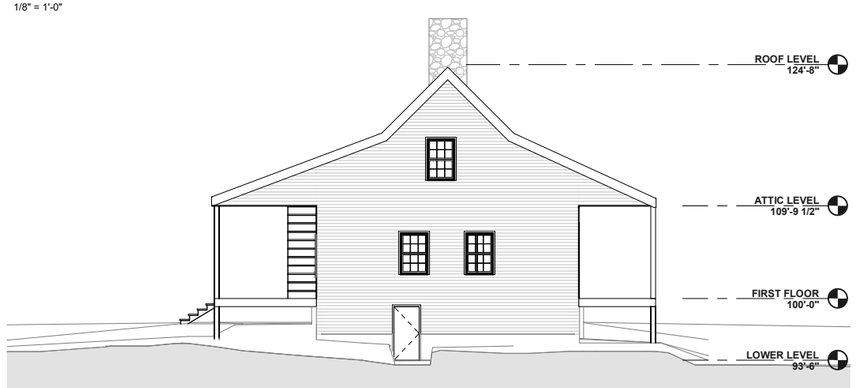


c.1792 ORIGINAL



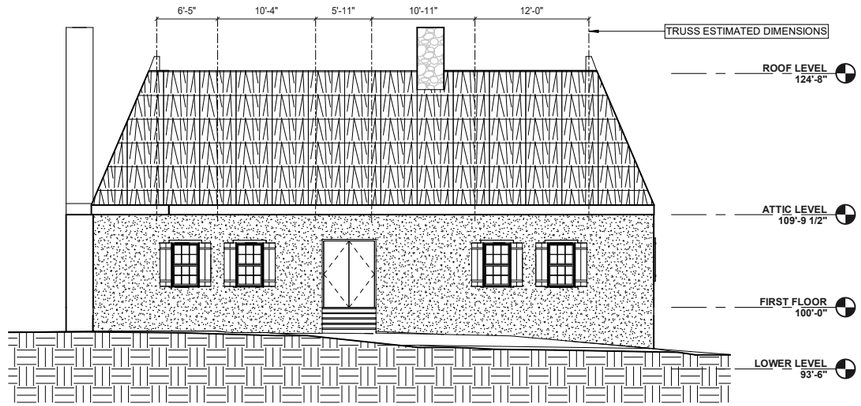
4 1852 MODIFICATIONS SOUTH ELEVATION

1/8" = 1'-0"



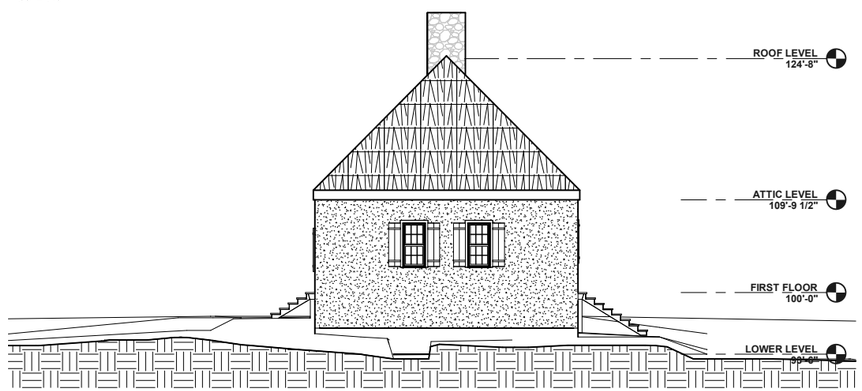
3 1852 MODIFICATIONS EAST ELEVATION

1/8" = 1'-0"



2 ORIGINAL SOUTH ELEVATION

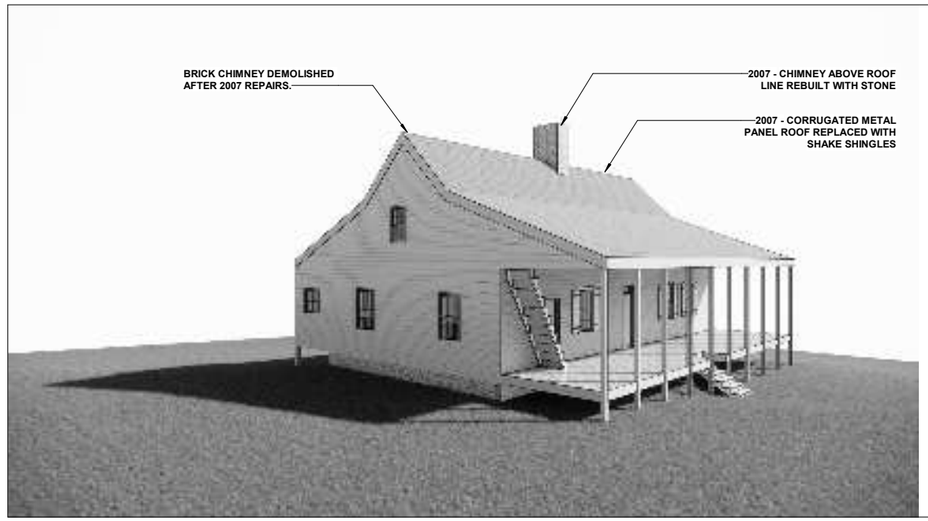
1/8" = 1'-0"



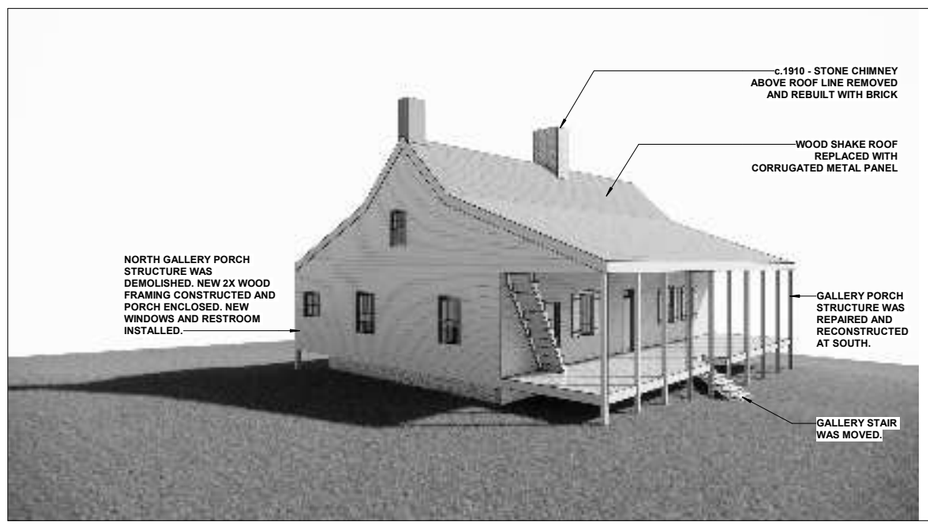
1 ORIGINAL EAST ELEVATION

1/8" = 1'-0"

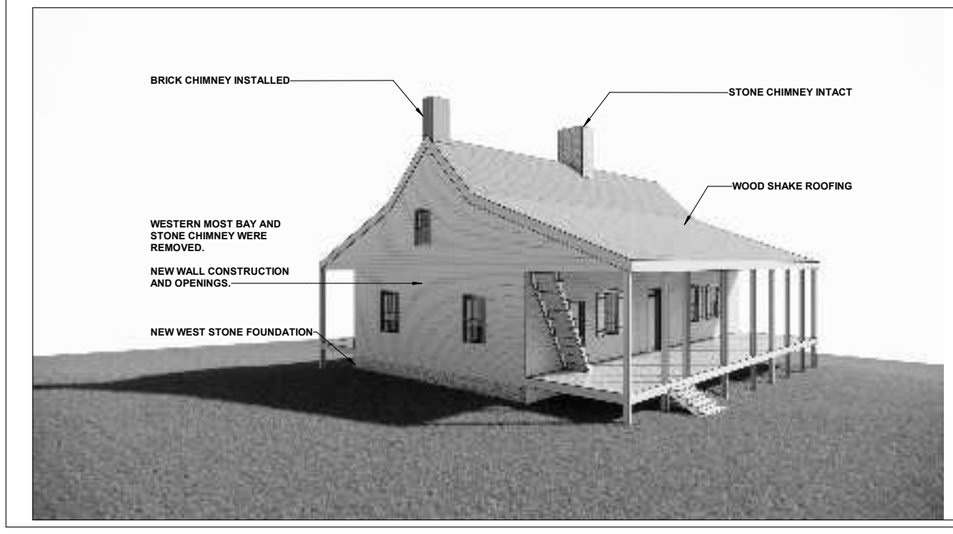
	DESIGNED: JCAWBY CADD BHEIDE TECH. REVIEW: DATE: 09/24/2021	SUB SHEET NO. A4	TITLE OF SHEET: BUILDING CHRONOLOGY STE. GENEVIEVE NATIONAL HISTORICAL PARK	DRAWING NO. PKG. NO. SHEET 5 OF 6



2020



c.1960



c.1880 - 1900

DRAFT 09/24/2021

DESIGNED: JCAWBY
CADD: BHEIDE
TECH. REVIEW:
DATE: 09/24/2021

SUB SHEET NO. A5

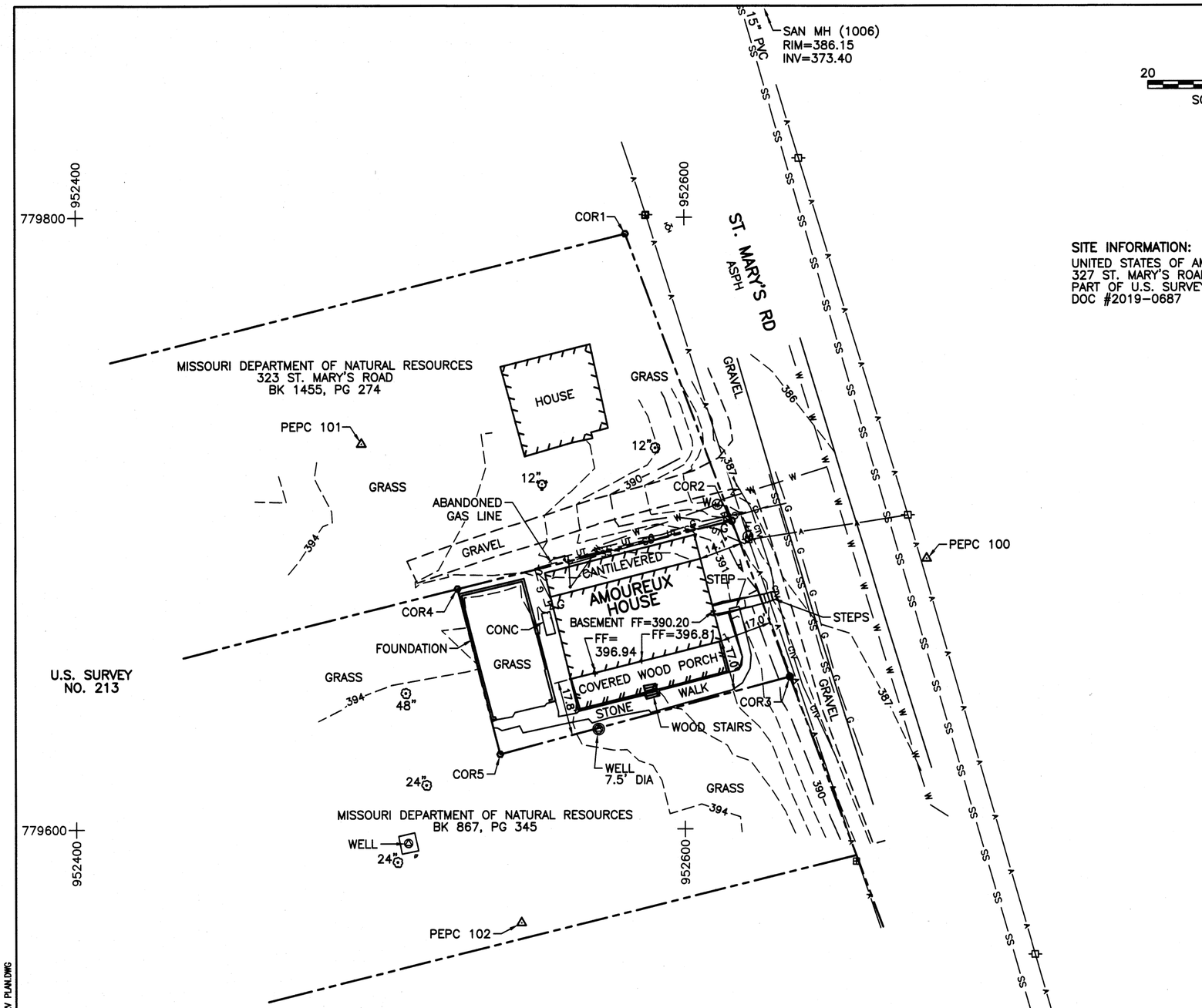
TITLE OF SHEET
BUILDING CHRONOLOGY
STE. GENEVIEVE NATIONAL HISTORICAL PARK

DRAWING NO.

PKG. NO.

SHEET 6 OF 6

Appendix B - Topographical Survey



SITE INFORMATION:
UNITED STATES OF AMERICA
327 ST. MARY'S ROAD
PART OF U.S. SURVEY 213, STE. GENEVIEVE, MO
DOC #2019-0687

LEGEND

- CONTROL POINT
- DIA. DECIDUOUS TREE
- DIA. CONIFEROUS TREE
- FIRE HYDRANT
- WELL
- W WATER METER
- WATER LINE
- CLEANOUT
- SANITARY SEWER
- POWER POLE
- E ELECTRIC METER
- AERIAL ELECTRIC LINE
- TELEPHONE SPLICE BOX
- UT UNDERGROUND TELE LINE
- GAS VALVE
- GAS LINE
- SIGN
- BUILDING LINE
- BUILDING OVERHANG
- FOUND 1" SQUARE BOLT
- SET 5/8" ROD W/CAP
- PROPERTY LINE
- CONTOUR LINE

CONTOUR INTERVAL = 1'

UTILITY NOTE

THE LOCATIONS OF THOSE BURIED AND ABOVEGROUND UTILITIES SHOWN ARE APPROXIMATE, ARE SHOWN FOR CONTRACTOR INFORMATIONAL USE ONLY, AND ARE NOT TO BE REFERENCED FOR CONSTRUCTION PURPOSES. THE IMPLIED PRESENCE OR ABSENCE OF UTILITIES IS NOT TO BE CONSTRUED BY THE OWNER, ENGINEER, CONTRACTOR, OR SUBCONTRACTORS TO BE AN ACCURATE AND COMPLETE REPRESENTATION OF UTILITIES THAT MAY OR MAY NOT EXIST ON THE CONSTRUCTION SITE. BURIED AND ABOVEGROUND UTILITY LOCATION, IDENTIFICATION, AND MARKING ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. REROUTING, DISCONNECTION, PROTECTION, ETC. OF ANY UTILITIES MUST BE COORDINATED BETWEEN THE CONTRACTOR, UTILITY COMPANY, AND OWNER. SITE SAFETY, INCLUDING THE AVOIDANCE OF HAZARDS ASSOCIATED WITH BURIED AND ABOVEGROUND UTILITIES, REMAIN THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

CONTROL & PROPERTY CORNERS

POINT	NORTHING	EASTING	ELEV	DESCRIPTION
PEPC 100	779688.31	952679.49	385.09	SET 80D NAIL
PEPC 101	779725.84	952493.82	393.40	SET 80D NAIL
PEPC 102	779569.42	952546.14	394.22	SET 80D NAIL
COR1	779794.57	952580.60	389.12	FOUND 1" SQUARE BOLT
COR2	779700.80	952615.50	388.84	FOUND IRON ROD
COR3	779649.77	952634.48	389.09	SET 5/8" REBAR W/CAP
COR4	779678.47	952525.33	392.89	FOUND 1" SQUARE BOLT
COR5	779624.45	952539.19	394.17	FOUND 1" SQUARE BOLT

HORIZ: NAD 83, MISSOURI STATE PLANE EAST, GEOID 18, MODOT VRS
VERT: NAVD 88
METHOD: REDUNDANT GPS OBSERVATIONS UTILIZING MODOT VRS NETWORK

CONTROL STATION

NAME	NORTHING	EASTING	ELEV	DESCRIPTION
SG-11	777002.72	953931.65	385.59	NGS STATION PID 186011

GRID FACTOR = 0.9999400
ADJUSTED BY M.D.N.R. 2002

I HEREBY CERTIFY THAT THE ABOVE PLAT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT THE SURVEY WAS EXECUTED IN ACCORDANCE WITH THE CURRENT MISSOURI MINIMUM STANDARDS FOR BOUNDARY AND TOPOGRAPHIC SURVEYS AS ESTABLISHED BY THE MISSOURI DEPARTMENT OF AGRICULTURE AND THE MISSOURI BOARD FOR ARCHITECTS, PROFESSIONAL ENGINEERS AND PROFESSIONAL LAND SURVEYORS, AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MISSOURI.

STATE OF MISSOURI · JASON B FLAMM · NUMBER LS-2006000177 · PROFESSIONAL LAND SURVEYOR

JASON B. FLAMM LICENSE NO. LS-2006000177
EXPIRES: 12-31-2022

12-11-2020
DATE

PREPARED FOR: NATIONAL PARK SERVICE
FIELD SURVEY COMPLETED 11/23/2020

Prairie Engineers
ENGINEERS · SURVEYORS · SCIENTISTS
Prairie Engineers, P.C.
404 N. Main St.
Columbia, IL 62236
(217) 605-0403

DESIGNED: BB
CADD: BB
TECH. REVIEW: JF
DATE: 12/9/20

SUB SHEET NO.

TITLE OF SHEET
EXISTING BOUNDARY & SITE SURVEY
STRUCTURE REPORT & ABBREVIATED STRUCTURAL & BUILDING ENVELOPE ASSESSMENT
SAINT GENEVIEVE NATIONAL HISTORICAL PARK
SAINT GENEVIEVE, MISSOURI

DRAWING NO. —
PMIS/PKG NO. 311235
SHEET 1 OF 1

DEC 10, 2020 11:39 AM BBRENNAN
I:\JOBS\2020\306.2001 NPS PROJECTS RR&A\DRAWINGS\CIVIL\C1 EXSURV PLAN.DWG

Appendix C - Architectural Condition Reports from Layer

Bauvais-Amoureux House

20062 NPS Bauvais Amoureux House HSR - Rooms
November 16-17, 2020

Rooms Condition Report



BVH
ARCHITECTURE

CAVEAU 001
Field Data

Floor Material	-
Floor Direction	-
Ceiling Material	-
Ceiling Direction	-
Wall North	
Wall North Material	-
Wall North Base	-
Wall East	
Wall East Material	-
Wall East Base	-
Wall South	
Wall South Material	-
Wall South Base	-
Wall West	
Wall West Material	-
Wall West Base	-



PXL_20201117_145026075.jpg
001 - BASEMENT
Wall East



PXL_20201117_144822743.jpg
001 - BASEMENT
Wall East



PXL_20201117_144917579.jpg
001 - BASEMENT
Wall East



PXL_20201117_144907699.jpg
001 - BASEMENT
Wall East



PXL_20201117_144201550.jpg
001 - BASEMENT
Wall East



PXL_20201117_144828144.jpg
001 - BASEMENT
Wall East



PXL_20201117_144841469.jpg
001 - BASEMENT
Wall East



PXL_20201117_145048928.jpg
001 - BASEMENT
Wall East



PXL_20201117_144952183.jpg
001 - BASEMENT
Wall East



PXL_20201117_145015753.jpg
001 - BASEMENT
Wall East



PXL_20201117_143923047.jpg
001 - BASEMENT
Wall East



PXL_20201117_144025436.jpg
001 - BASEMENT
Wall North



PXL_20201117_144650545.jpg
001 - BASEMENT
Wall North



PXL_20201117_144752566.jpg
001 - BASEMENT
Wall North



PXL_20201117_144716973.jpg
001 - BASEMENT
Wall North



PXL_20201117_144621111.jpg
001 - BASEMENT
Wall North



PXL_20201117_144757537.jpg
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Wall North



PXL_20201117_144028345.jpg
001 - BASEMENT
Wall North



PXL_20201117_144558394.jpg
001 - BASEMENT
Wall North



PXL_20201117_144546733.jpg
001 - BASEMENT
Wall North



PXL_20201117_144116537.jpg
001 - BASEMENT
Wall South



PXL_20201117_144009792.jpg
001 - BASEMENT
Wall South



PXL_20201117_144220153.jpg
001 - BASEMENT
Wall South



PXL_20201117_144331011.jpg
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Wall South



PXL_20201117_144013195.jpg
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Wall South



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Wall South



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Wall South



PXL_20201117_144408168.jpg
001 - BASEMENT
Wall South



PXL_20201117_143958142.jpg
001 - BASEMENT
Wall West



PXL_20201117_144121456.jpg
001 - BASEMENT
Wall West



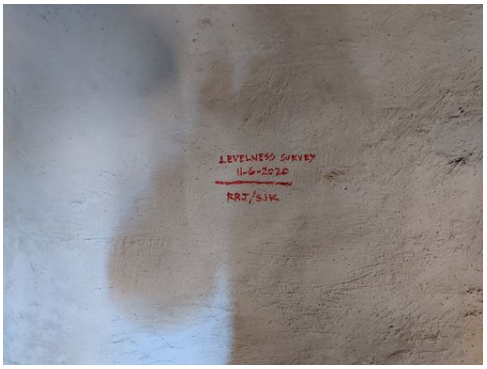
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001 - BASEMENT
Wall West



PXL_20201117_144021281.jpg
001 - BASEMENT
Wall West



PXL_20201117_144537666.jpg
001 - BASEMENT
Wall West



PXL_20201117_144707774.jpg
001 - BASEMENT
Wall West



PXL_20201117_144459817.jpg
001 - BASEMENT
Wall West

ROOM D 100
Field Data

Floor Material	Wood - 5-1/8"-5-1/4" wide
Floor Direction	N-S
Ceiling Material	Log - 6"-7" wide X 8-1/2"-9" tall square edge, Wood boards, 9-1/4" wide
Ceiling Direction	N-S
Wall North	
Wall North Material	Plaster, Exposed plaster lathe
Wall North Base	Wood, painted. 6-1/2" with base cove molding
Wall East	
Wall East Material	Wood panels, varied width with beaded edge
Wall East Base	Wood 6-3/4" x 1" thick with 3/4" round cove molding
Wall South	
Wall South Material	Plaster
Wall South Base	Wood, painted. 5-3/4" with base cove molding (recessed below flr level periodically)
Wall West	
Wall West Material	Plaster
Wall West Base	Wood, painted. 5-3/4" with base cove molding (recessed below flr level periodically)



2020-11-16_02-50-20.jpg

100 - ROOM D Wall South



2020-11-16_02-50-31.jpg
100 - ROOM D
Wall South



2020-11-16_02-52-13.jpg
100 - ROOM D
Wall North



2020-11-16_02-53-04.jpg
100 - ROOM D
Wall West



2020-11-16_02-53-18.jpg
100 - ROOM D
Wall West



2020-11-16_02-54-37.jpg
100 - ROOM D
Wall South



2020-11-16_02-55-14.jpg
100 - ROOM D
Wall North



2020-11-16_03-01-19.jpg
100 - ROOM D
Wall East



2020-11-16_03-01-43.jpg
100 - ROOM D
Wall West



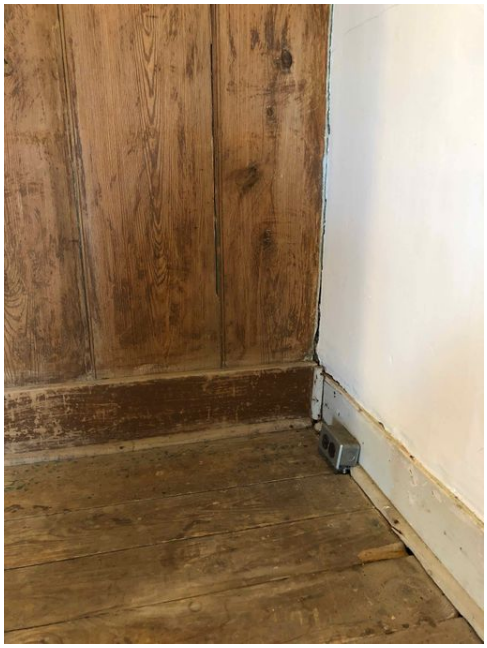
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100 - ROOM D
Wall South



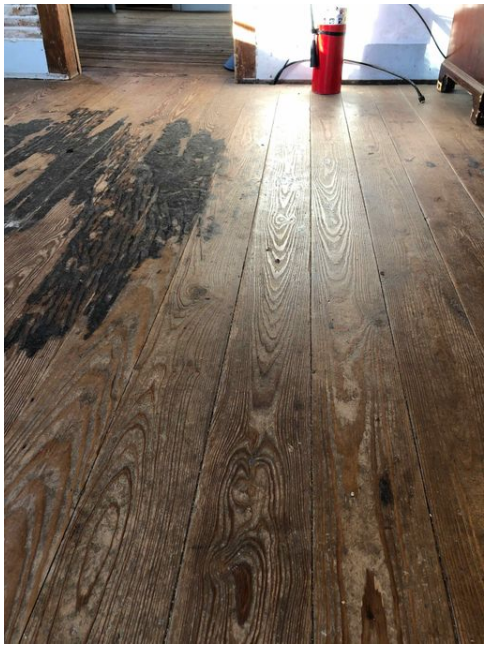
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100 - ROOM D
Wall South



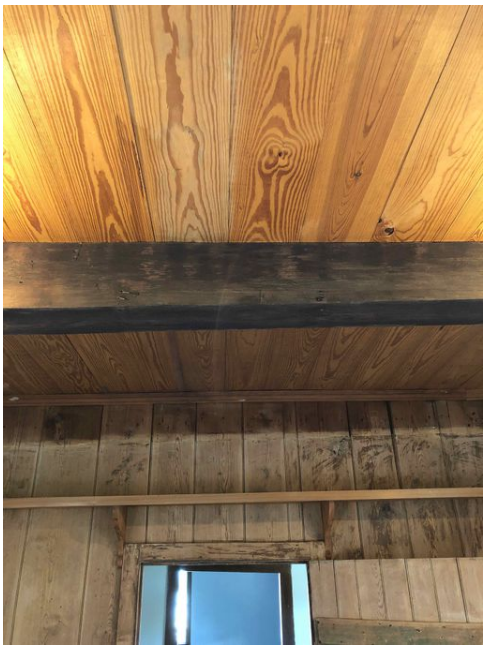
2020-11-16_03-03-05.jpg
100 - ROOM D
Wall North



2020-11-16_03-03-35.jpg
100 - ROOM D
Wall East



2020-11-16_03-04-12.jpg
100 - ROOM D
FLOOR



2020-11-16_03-04-35.jpg
100 - ROOM D
CEILING



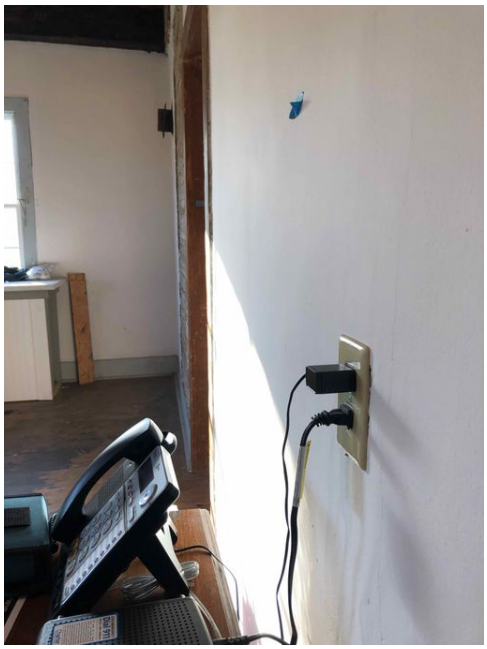
2020-11-16_03-04-57.jpg
100 - ROOM D
Wall East



2020-11-16_03-05-37.jpg
100 - ROOM D
Wall South



2020-11-16_03-05-55.jpg
100 - ROOM D
FLOOR



2020-11-16_03-06-37.jpg
100 - ROOM D
Wall North

HALL 101
Field Data

Floor Material	Wood - 4-1/2" & 3-3/8" wide
Floor Direction	W-E
Ceiling Material	Plaster
Ceiling Direction	-
Wall North	
Wall North Material	Plaster
Wall North Base	Wood 7-1/4" x 7/8" thick
Wall East	
Wall East Material	Plaster, Stone
Wall East Base	Wood 7-1/4" x 7/8" thick
Wall South	
Wall South Material	Plaster
Wall South Base	Wood 7-1/4" x 7/8" thick
Wall West	
Wall West Material	Wood panels, varied width with beaded edge
Wall West Base	Wood 7-1/4" x 7/8" thick



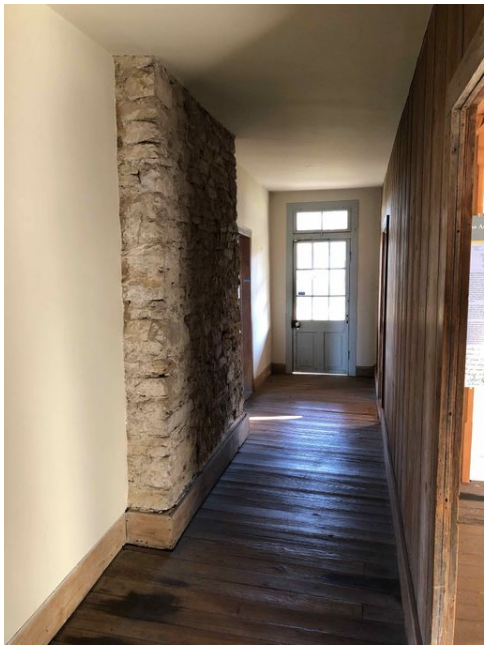
2020-11-16_03-07-08.jpg
101 - HALL
Wall North



2020-11-16_03-07-25.jpg
101 - HALL
Wall West



2020-11-16_03-07-51.jpg
101 - HALL
Wall East



2020-11-16_03-09-04.jpg
101 - HALL
Wall East



2020-11-16_03-09-26.jpg
101 - HALL
Wall East



2020-11-16_03-09-42.jpg
101 - HALL
CEILING



2020-11-16_03-09-57.jpg
101 - HALL
Wall West



2020-11-16_03-10-37.jpg
101 - HALL
Wall East



2020-11-16_03-11-03.jpg
101 - HALL
Wall East



2020-11-16_03-11-24.jpg
101 - HALL
Wall West



2020-11-16_03-11-50.jpg
101 - HALL
Wall South

ROOM B 102
Field Data

Floor Material	Wood - 3-1/8" wide
Floor Direction	W-E
Ceiling Material	Log - 6-1/2"-7-1/4" wide X 9-1/2" tall with cove mold beaded corner, Wood boards, varied width with beaded edge
Ceiling Direction	N-S
Wall North	
Wall North Material	No wall exists
Wall North Base	-
Wall East	
Wall East Material	Plaster
Wall East Base	Wood, painted. 7-5/8" tall. 3/4" tall round bead at top. 3/4"w x 1-1/2"t base cove molding
Wall South	
Wall South Material	Plaster
Wall South Base	Wood, painted. 7-5/8" tall. 3/4" tall round bead at top. 3/4"w x 1-1/2"t base cove molding
Wall West	
Wall West Material	Plaster
Wall West Base	Wood, painted. 7-5/8" tall. 3/4" tall round bead at top. 3/4"w x 1-1/2"t base cove molding



2020-11-16_04-08-06.jpg
102 - ROOM B
FLOOR



2020-11-16_04-08-32.jpg
102 - ROOM B
FLOOR



2020-11-16_04-09-07.jpg
102 - ROOM B
FLOOR



2020-11-16_04-12-29.jpg
102 - ROOM B
FLOOR



2020-11-16_04-13-39.jpg
102 - ROOM B
FLOOR



2020-11-16_04-13-59.jpg
102 - ROOM B
FLOOR



2020-11-16_04-14-51.jpg
102 - ROOM B
FLOOR



2020-11-16_04-15-33.jpg
102 - ROOM B
FLOOR



2020-11-16_04-16-20.jpg
102 - ROOM B
FLOOR



2020-11-16_04-16-45.jpg
102 - ROOM B
FLOOR



2020-11-17_08-43-17.jpg
102 - ROOM B
CEILING



2020-11-17_08-45-34.jpg
102 - ROOM B
CEILING



2020-11-17_08-46-18.jpg
102 - ROOM B
CEILING



2020-11-17_08-46-41.jpg
102 - ROOM B
CEILING



2020-11-17_08-54-04.jpg
102 - ROOM B
CEILING



2020-11-17_08-55-18.jpg
102 - ROOM B
CEILING



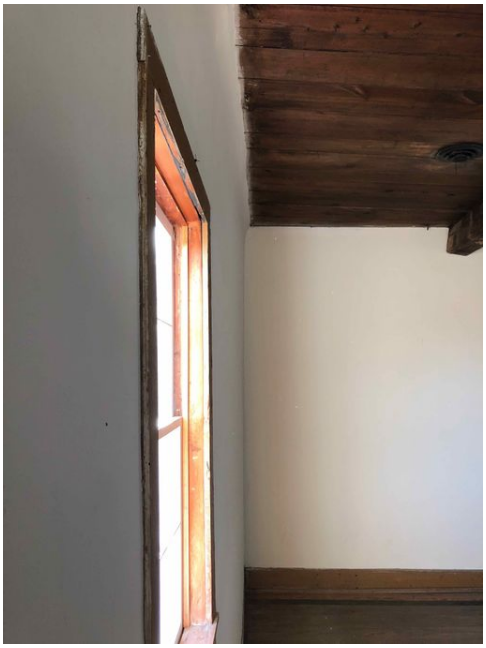
2020-11-17_08-56-14.jpg
102 - ROOM B
Wall East



2020-11-17_08-56-28.jpg
102 - ROOM B
Wall East



2020-11-17_08-57-08.jpg
102 - ROOM B
Wall East



2020-11-17_08-57-45.jpg
102 - ROOM B
Wall East



2020-11-17_08-58-23.jpg
102 - ROOM B
Wall East



2020-11-17_09-26-26.jpg
102 - ROOM B
Wall East



2020-11-17_09-27-11.jpg
102 - ROOM B
Wall East



2020-11-17_09-27-35.jpg
102 - ROOM B
Wall East



2020-11-17_09-28-00.jpg
102 - ROOM B
Wall South



2020-11-17_09-29-50.jpg
102 - ROOM B
Wall South



2020-11-17_09-30-51.jpg
102 - ROOM B
Wall South



2020-11-17_09-31-16.jpg
102 - ROOM B
Wall South



2020-11-17_09-31-38.jpg
102 - ROOM B
Wall South



2020-11-17_09-31-58.jpg
102 - ROOM B
Wall South



2020-11-17_09-32-18.jpg
102 - ROOM B
Wall South



2020-11-17_09-33-38.jpg
102 - ROOM B
Wall West



2020-11-17_09-34-39.jpg
102 - ROOM B
Wall West



2020-11-17_09-34-52.jpg
102 - ROOM B
Wall West



2020-11-17_09-35-18.jpg
102 - ROOM B
Wall West



2020-11-17_09-37-18.jpg
102 - ROOM B
Wall West



2020-11-17_09-37-39.jpg
102 - ROOM B
Wall West



2020-11-17_09-38-29.jpg
102 - ROOM B
Wall West



2020-11-17_09-38-45.jpg
102 - ROOM B
Wall West



2020-11-17_09-39-16.jpg
102 - ROOM B
Wall West



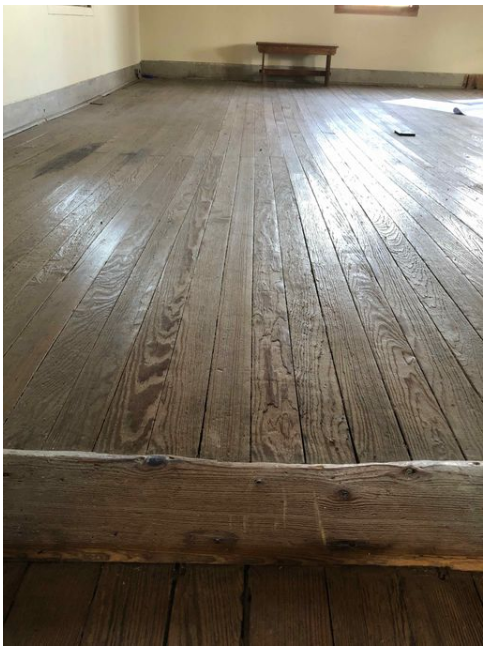
2020-11-17_09-40-04.jpg
102 - ROOM B
Wall West



2020-11-17_10-45-03.jpg
102 - ROOM B
FLOOR

ROOM A 103
Field Data

Floor Material	Wood - 3-1/8" wide
Floor Direction	W-E
Ceiling Material	Log - 6-1/2"-7-1/4" wide X 9-1/2" tall with cove mold beaded corner, Wood boards, varied width with beaded edge
Ceiling Direction	N-S
Wall North	
Wall North Material	Plaster
Wall North Base	Wood, painted. 7" tall. 7/8" base cove molding
Wall East	
Wall East Material	Plaster
Wall East Base	Wood, painted. 7" tall. 7/8" base cove molding
Wall South	
Wall South Material	No Wall exists
Wall South Base	-
Wall West	
Wall West Material	Plaster
Wall West Base	Wood, painted. 7" tall. 7/8" base cove molding



2020-11-16_03-16-58.jpg
103 - ROOM A
FLOOR



2020-11-16_03-19-32.jpg
103 - ROOM A
FLOOR



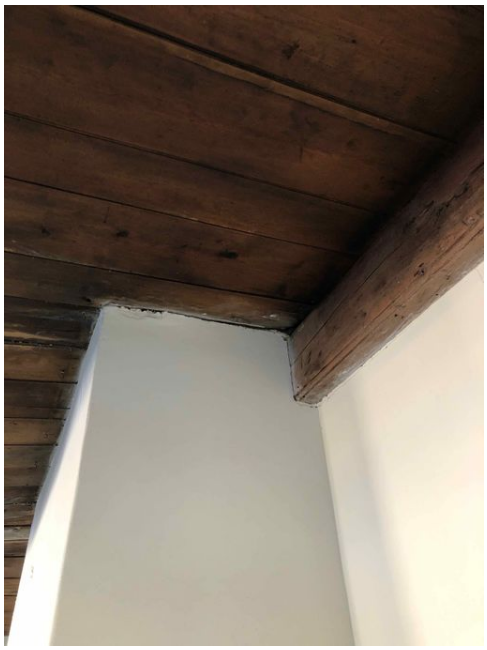
2020-11-16_03-20-47.jpg
103 - ROOM A
FLOOR



2020-11-16_03-21-26.jpg
103 - ROOM A
CEILING



2020-11-16_03-22-01.jpg
103 - ROOM A
CEILING



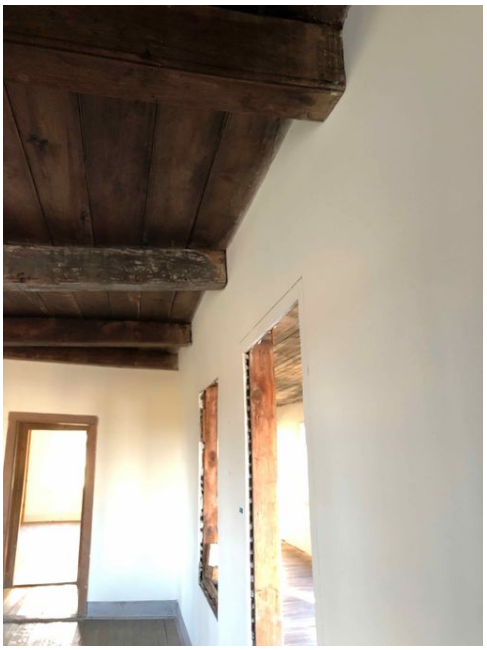
2020-11-16_03-23-27.jpg
103 - ROOM A
CEILING



2020-11-16_03-24-04.jpg
103 - ROOM A
Wall North



2020-11-16_03-24-31.jpg
103 - ROOM A
Wall North



2020-11-16_03-24-54.jpg
103 - ROOM A
Wall North



2020-11-16_03-25-27.jpg
103 - ROOM A
Wall East



2020-11-16_03-25-43.jpg
103 - ROOM A
Wall East



2020-11-16_03-27-57.jpg
103 - ROOM A
Wall East



2020-11-16_03-32-51.jpg
103 - ROOM A
Wall West



2020-11-16_03-33-20.jpg
103 - ROOM A
Wall West



2020-11-16_03-33-51.jpg
103 - ROOM A
Wall West



2020-11-16_03-34-12.jpg
103 - ROOM A
Wall West



2020-11-16_03-35-01.jpg
103 - ROOM A
Wall West



2020-11-16_03-36-01.jpg
103 - ROOM A
Wall West



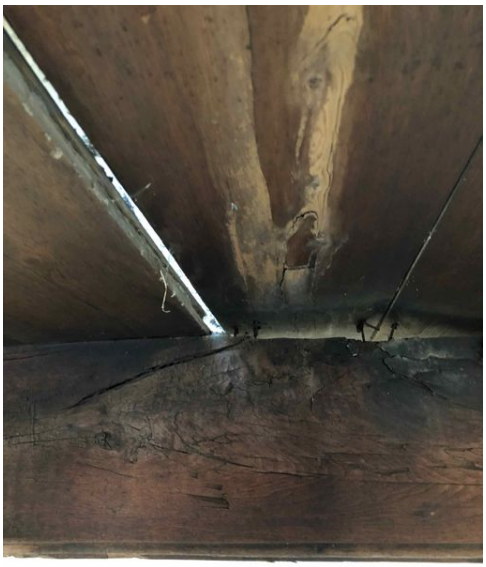
2020-11-16_03-37-11.jpg
103 - ROOM A
Wall North



2020-11-16_03-38-12.jpg
103 - ROOM A
Wall North



2020-11-16_03-39-13.jpg
103 - ROOM A
Wall West



2020-11-16_03-41-16.jpg
103 - ROOM A
CEILING



2020-11-16_03-41-43.jpg
103 - ROOM A
Wall West



2020-11-16_03-45-06.jpg
103 - ROOM A
Wall West



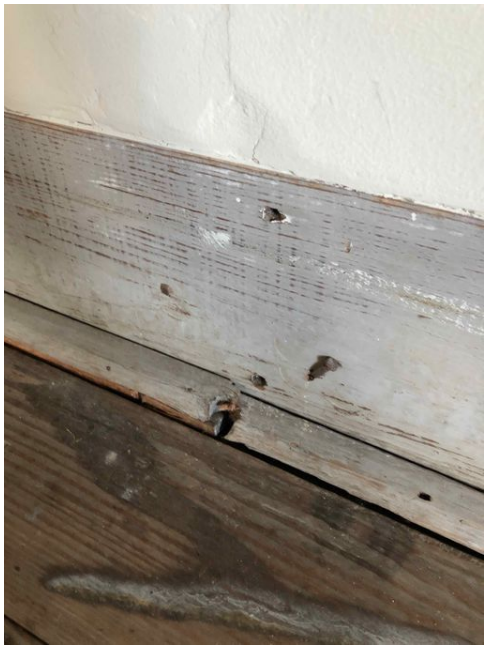
2020-11-16_03-45-20.jpg
103 - ROOM A
Wall West



2020-11-16_03-53-53.jpg
103 - ROOM A
FLOOR



2020-11-16_03-54-38.jpg
103 - ROOM A
Wall North



2020-11-16_03-55-26.jpg
103 - ROOM A
Wall North



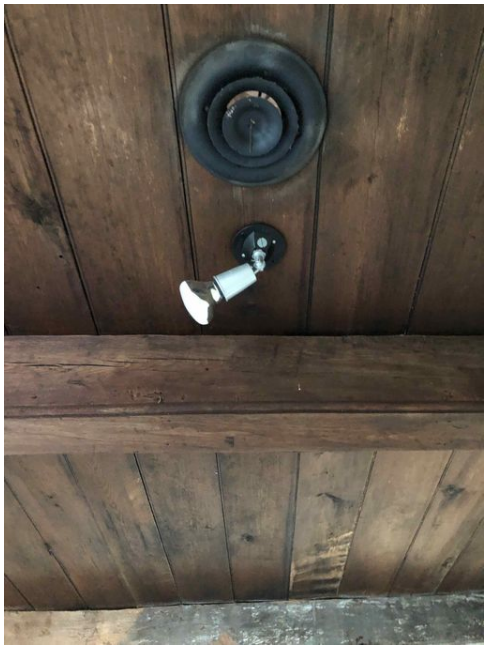
2020-11-16_03-56-06.jpg
103 - ROOM A
FLOOR



2020-11-16_03-56-29.jpg
103 - ROOM A
FLOOR



2020-11-16_03-57-02.jpg
103 - ROOM A
FLOOR



2020-11-16_03-58-28.jpg
103 - ROOM A
CEILING



2020-11-16_03-59-30.jpg
103 - ROOM A



2020-11-16_03-59-56.jpg
103 - ROOM A



2020-11-16_04-01-21.jpg
103 - ROOM A
CEILING



2020-11-16_04-22-56.jpg
103 - ROOM A
CEILING



2020-11-16_04-28-11.jpg
103 - ROOM A
Wall West



2020-11-16_04-30-46.jpg
103 - ROOM A
Wall West



2020-11-16_04-31-41.jpg
103 - ROOM A
Wall West



2020-11-16_04-32-41.jpg
103 - ROOM A
Wall West



2020-11-16_04-33-24.jpg
103 - ROOM A
Wall West

ROOM C 104
Field Data

Floor Material	Wood - 4-1/2" & 3-3/8" wide
Floor Direction	W-E
Ceiling Material	Log - 6"-7" wide X 8-1/2"-9" tall square edge, Wood boards, 9-1/4" wide
Ceiling Direction	N-S
Wall North	
Wall North Material	Plaster
Wall North Base	Wood, painted. 7"-7-1/2" tall
Wall East	
Wall East Material	Wood panels, varied width with beaded edge
Wall East Base	Wood 7-1/4" x 7/8" thick
Wall South	
Wall South Material	Plaster, Exposed plaster lathe
Wall South Base	Wood, painted. 7"-7-1/2" tall
Wall West	
Wall West Material	Plaster
Wall West Base	Wood, painted. 7"-7-1/2" tall



2020-11-16_03-16-40.jpg
104 - ROOM C
Floor Material



2020-11-16_03-17-03.jpg
104 - ROOM C
FLOOR



2020-11-16_03-17-35.jpg
104 - ROOM C
FLOOR



2020-11-16_03-18-00.jpg
104 - ROOM C
CEILING



2020-11-16_03-19-52.jpg
104 - ROOM C
CEILING



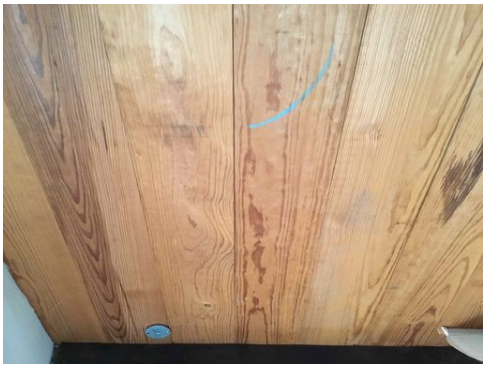
2020-11-16_03-20-29.jpg
104 - ROOM C
CEILING



2020-11-16_03-22-36.jpg
104 - ROOM C
CEILING



2020-11-16_03-24-01.jpg
104 - ROOM C
CEILING



2020-11-16_03-32-27.jpg
104 - ROOM C
CEILING



2020-11-16_03-33-07.jpg
104 - ROOM C
Wall North



2020-11-16_03-33-21.jpg
104 - ROOM C
Wall North



2020-11-16_03-33-52.jpg
104 - ROOM C
Wall North



2020-11-16_03-34-22.jpg
104 - ROOM C
Wall North



2020-11-16_03-39-22.jpg
104 - ROOM C
Wall North



2020-11-16_03-41-08.jpg
104 - ROOM C
Wall North



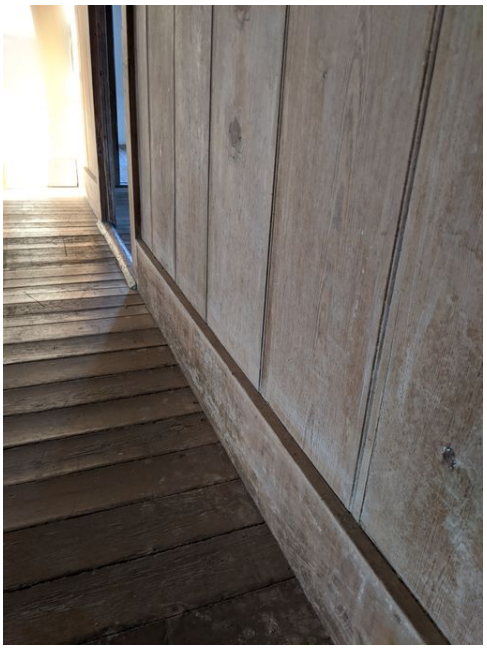
2020-11-16_03-41-32.jpg
104 - ROOM C
Wall North



PXL_20201116_215350090.jpg
104 - ROOM C
Wall East



PXL_20201116_215420657.jpg
104 - ROOM C
Wall East



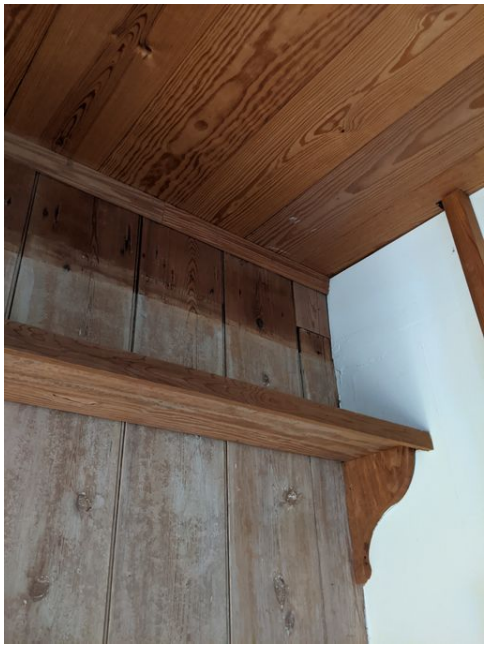
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104 - ROOM C
Wall East



PXL_20201116_215414415.jpg
104 - ROOM C
Wall East



PXL_20201116_215533094.jpg
104 - ROOM C
Wall East



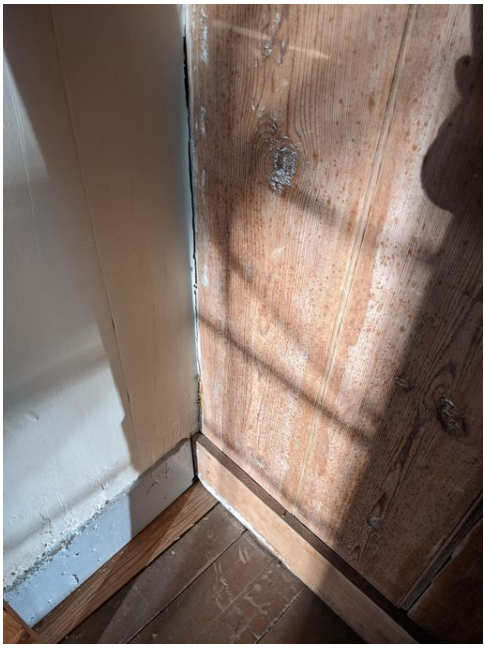
PXL_20201116_215428621.jpg
104 - ROOM C
Wall East



PXL_20201116_215444597.jpg
104 - ROOM C
Wall East



PXL_20201116_215503124.jpg
104 - ROOM C
Wall East



PXL_20201116_215522367.jpg
104 - ROOM C
Wall East



PXL_20201116_215436167.jpg
104 - ROOM C
Wall East



PXL_20201116_215517869.jpg
104 - ROOM C
Wall East



PXL_20201116_215021653.jpg
104 - ROOM C
Wall North



PXL_20201116_215027254.jpg
104 - ROOM C
Wall North



PXL_20201116_215056021.jpg
104 - ROOM C
Wall North



PXL_20201116_215042337.jpg
104 - ROOM C
Wall North



PXL_20201116_215032354.jpg
104 - ROOM C
Wall North



PXL_20201116_214948937.jpg
104 - ROOM C
Wall North



PXL_20201116_215009958.jpg
104 - ROOM C
Wall North



PXL_20201116_215036737.jpg
104 - ROOM C
Wall North



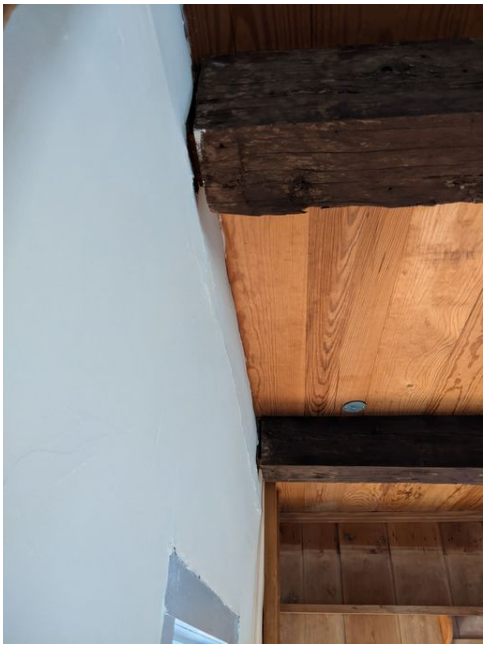
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104 - ROOM C
Wall North



PXL_20201116_215139883.jpg
104 - ROOM C
Wall North



PXL_20201116_215247584.jpg
104 - ROOM C
Wall North



PXL_20201116_215243051.jpg
104 - ROOM C
Wall North



PXL_20201116_215105137.jpg
104 - ROOM C
Wall North



PXL_20201116_215208861.jpg
104 - ROOM C
Wall North



PXL_20201116_215117553.jpg
104 - ROOM C
Wall North



PXL_20201116_215223805.jpg
104 - ROOM C
Wall North



PXL_20201116_215148316.jpg
104 - ROOM C
Wall North



PXL_20201116_215112888.jpg
104 - ROOM C
Wall North



PXL_20201116_212337882.jpg
104 - ROOM C
Wall South



PXL_20201116_215631748.jpg
104 - ROOM C
Wall South



PXL_20201116_215619754.jpg
104 - ROOM C
Wall South

Bauvais-Amoureux House

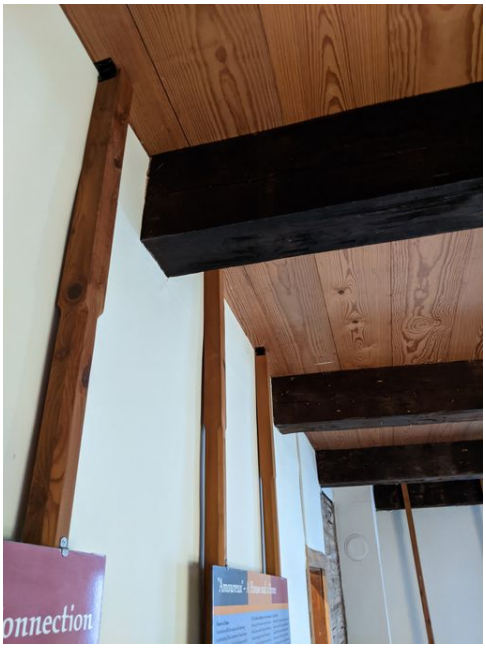
20062 NPS Bauvais Amoureux House HSR - Rooms
November 16-17, 2020



PXL_20201116_215545222.jpg
104 - ROOM C
Wall South



PXL_20201116_215542225.jpg
104 - ROOM C
Wall South



PXL_20201116_215606013.jpg
104 - ROOM C
Wall South



PXL_20201116_215555851.jpg
104 - ROOM C
Wall South



PXL_20201116_215643992.jpg
104 - ROOM C
Wall South



PXL_20201116_215625837.jpg
104 - ROOM C
Wall South



PXL_20201116_215827938.jpg
104 - ROOM C
Wall South



PXL_20201116_215802707.jpg
104 - ROOM C
Wall South



PXL_20201116_215834400.jpg
104 - ROOM C
Wall South



PXL_20201116_215747968.jpg
104 - ROOM C
Wall South



PXL_20201116_215839849.jpg
104 - ROOM C
Wall South



PXL_20201116_215918004.jpg
104 - ROOM C
Wall South



PXL_20201116_215908216.jpg
104 - ROOM C
Wall South



PXL_20201116_215733398.jpg
104 - ROOM C
Wall South



PXL_20201116_215651603.jpg
104 - ROOM C
Wall South

SOUTH PORCH 105
Field Data

Floor Material -

Floor Direction -

Ceiling Material -

Ceiling Direction -

Wall North
Wall North Material -

Wall North Base -

Wall East
Wall East Material -

Wall East Base -

Wall South
Wall South Material -

Wall South Base -

Wall West
Wall West Material -

Wall West Base -

0

NORTH PORCH 106
Field Data

Floor Material	Wood - 3-1/8" wide
Floor Direction	N-S
Ceiling Material	Wood boards, 3-1/4" with beaded edge
Ceiling Direction	W-E
Wall North	
Wall North Material	Drywall
Wall North Base	None
Wall East	
Wall East Material	Drywall
Wall East Base	None
Wall South	
Wall South Material	Vertical log with limestone & clay chinking/mortar
Wall South Base	Wood 8-1/2"-9-1/4" tall exposed above wd flr x 1" thick
Wall West	
Wall West Material	Drywall
Wall West Base	None



PXL_20201116_221353466.jpg

106 - NORTH PORCH
Wall East



PXL_20201116_221418760.jpg
106 - NORTH PORCH
Wall East



PXL_20201116_221326874.jpg
106 - NORTH PORCH
Wall East



PXL_20201116_221334449.jpg
106 - NORTH PORCH
Wall East



PXL_20201116_221343112.jpg
106 - NORTH PORCH
Wall East



PXL_20201116_221404650.jpg
106 - NORTH PORCH
Wall East



PXL_20201116_220640006.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_220751596.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_220711939.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_220736795.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_220757356.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_220802536.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_220744870.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_220826046.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_221138577.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_220821059.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_220931354.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_222814135.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_222806872.jpg
106 - NORTH PORCH
Wall South



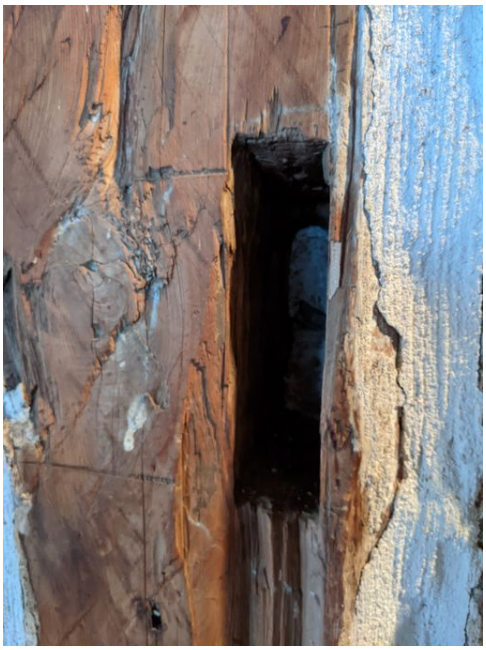
PXL_20201116_221929944.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_222948298.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_222828925.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_222930645.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_222749099.jpg
106 - NORTH PORCH
Wall South



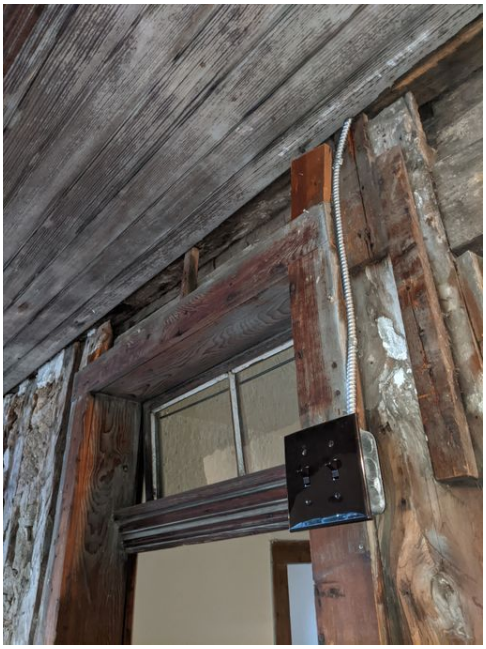
PXL_20201116_221912757.jpg
106 - NORTH PORCH
Wall South



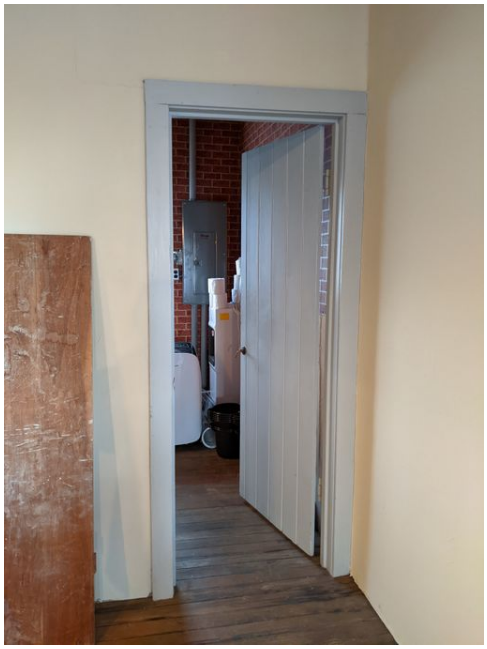
PXL_20201116_221459676.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_222912018.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_223311749.jpg
106 - NORTH PORCH
Wall South



PXL_20201116_223018716.jpg
106 - NORTH PORCH
Wall West



PXL_20201116_222730590.jpg
106 - NORTH PORCH
Wall West



PXL_20201116_221430768.jpg
106 - NORTH PORCH
Wall West



PXL_20201116_221426254.jpg
106 - NORTH PORCH
Wall West



PXL_20201116_222720380.jpg
106 - NORTH PORCH
Wall West

RESTROOM 107
Field Data

Floor Material	Wood - 3-1/8" wide
Floor Direction	N-S
Ceiling Material	Wood boards, 3-1/4" with beaded edge
Ceiling Direction	W-E
Wall North	
Wall North Material	Drywall
Wall North Base	None
Wall East	
Wall East Material	Drywall
Wall East Base	None
Wall South	
Wall South Material	Vertical log with limestone & clay chinking/mortar
Wall South Base	Wood 8-1/2"-9-1/4" tall exposed above wd flr x 1" thick
Wall West	
Wall West Material	Drywall
Wall West Base	None



PXL_20201116_223146706.jpg

107 - RESTROOM
Wall East



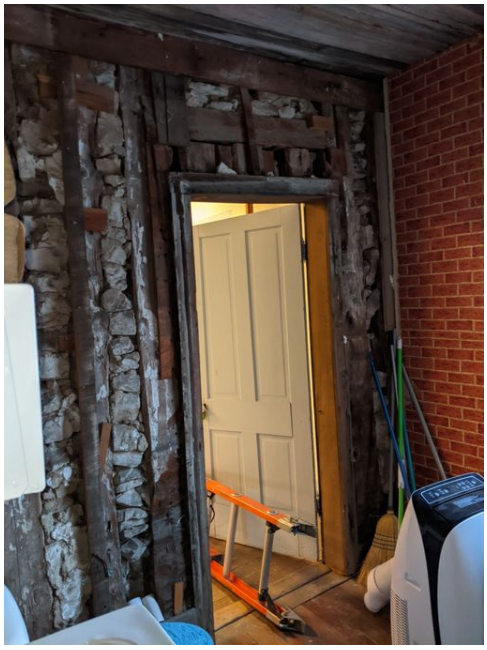
PXL_20201116_223114323.jpg
107 - RESTROOM
Wall East



PXL_20201116_223157434.jpg
107 - RESTROOM
Wall East



PXL_20201116_223210378.jpg
107 - RESTROOM
Wall North



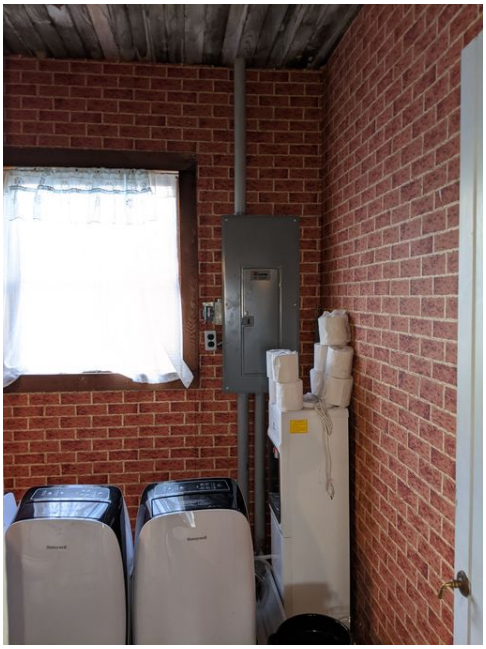
PXL_20201116_223102211.jpg
107 - RESTROOM
Wall South



PXL_20201116_223122368.jpg
107 - RESTROOM
Wall South



PXL_20201116_223132080.jpg
107 - RESTROOM
Wall South



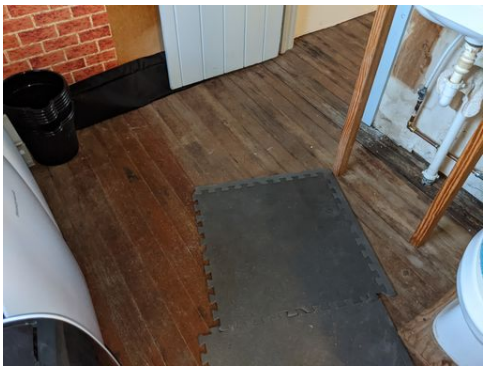
PXL_20201116_223047434.jpg
107 - RESTROOM
Wall West



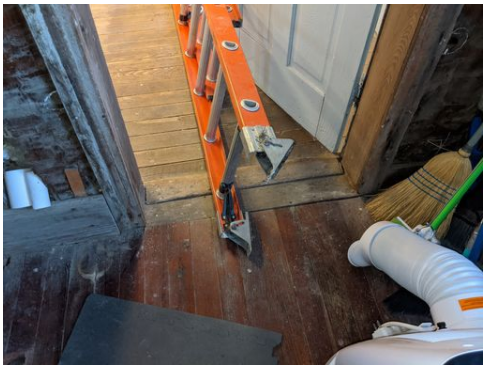
PXL_20201116_223038389.jpg
107 - RESTROOM
Wall West



PXL_20201116_223053814.jpg
107 - RESTROOM
CEILING



PXL_20201116_223245744.jpg
107 - RESTROOM
FLOOR



PXL_20201116_223256972.jpg
107 - RESTROOM
FLOOR



PXL_20201117_195041765.jpg
107 - RESTROOM
Wall East

ATTIC (POSSIBLE GARRETT) 200
Field Data

Floor Material -

Floor Direction -

Ceiling Material -

Ceiling Direction -

Wall North
Wall North Material -

Wall North Base -

Wall East
Wall East Material -

Wall East Base -

Wall South
Wall South Material -

Wall South Base -

Wall West
Wall West Material -

Wall West Base -


PXL_20201117_200552521.PANO.jpg
200 - ATTIC


PXL_20201117_200434139.PANO.jpg
200 - ATTIC



PXL_20201117_200811468.PANO.jpg
200 - ATTIC



PXL_20201117_200240745.PANO.jpg
200 - ATTIC



PXL_20201117_200335820.PANO.jpg
200 - ATTIC



PXL_20201117_200630495.PANO.jpg
200 - ATTIC



PXL_20201117_150237580.jpg
200 - ATTIC



PXL_20201117_150305299.jpg
200 - ATTIC



PXL_20201117_145901231.jpg
200 - ATTIC



PXL_20201117_152332715.jpg
200 - ATTIC



PXL_20201117_152339914.jpg
200 - ATTIC



PXL_20201117_152614090.jpg
200 - ATTIC
Wall East



PXL_20201117_152620654.jpg
200 - ATTIC
Wall East



PXL_20201117_152648188.jpg
200 - ATTIC
Wall East



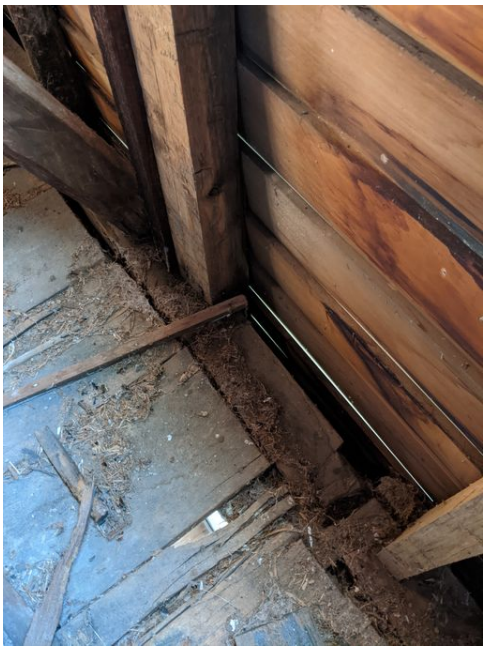
PXL_20201117_152658812.jpg
200 - ATTIC
Wall East



PXL_20201117_152705199.jpg
200 - ATTIC
Wall East



PXL_20201117_145554412.jpg
200 - ATTIC
Wall East



PXL_20201117_152653643.jpg
200 - ATTIC
Wall East



PXL_20201117_152914488.jpg
200 - ATTIC
Wall East



PXL_20201117_145546515.jpg
200 - ATTIC
Wall East



PXL_20201117_150102124.jpg
200 - ATTIC
Wall East



PXL_20201117_152539179.jpg
200 - ATTIC
Wall East



PXL_20201117_152547569.jpg
200 - ATTIC
Wall East



PXL_20201117_145814678.jpg
200 - ATTIC
Wall North



PXL_20201117_152807283.jpg
200 - ATTIC
Wall South



PXL_20201117_152826405.jpg
200 - ATTIC
Wall South



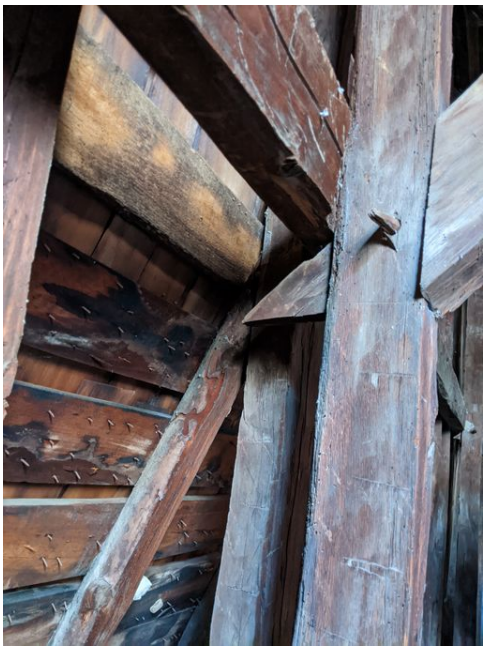
PXL_20201117_153221018.jpg
200 - ATTIC
Wall South



PXL_20201117_145558336.jpg
200 - ATTIC
Wall South



PXL_20201117_145705465.jpg
200 - ATTIC
Wall South



PXL_20201117_152719382.jpg
200 - ATTIC
Wall South



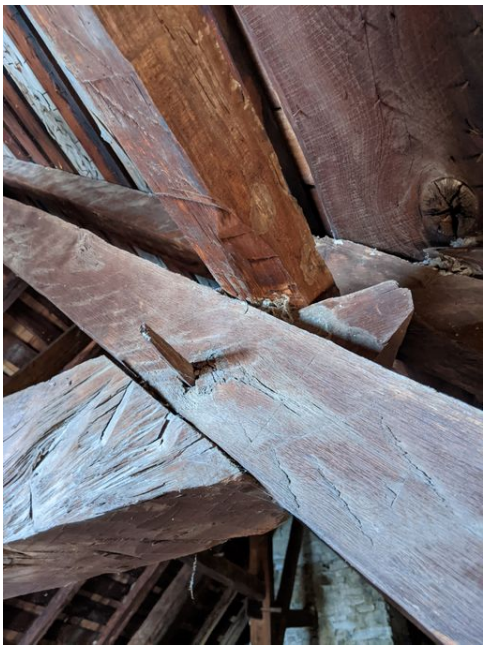
PXL_20201117_152821715.jpg
200 - ATTIC
Wall South



PXL_20201117_145727316.jpg
200 - ATTIC
Wall South



PXL_20201117_152812039.jpg
200 - ATTIC
Wall South



PXL_20201117_152627741.jpg
200 - ATTIC
Wall South



PXL_20201117_152732486.jpg
200 - ATTIC
Wall South



PXL_20201117_153224984.jpg
200 - ATTIC
Wall South



PXL_20201117_150017611.jpg
200 - ATTIC
Wall West



PXL_20201117_145941171.jpg
200 - ATTIC
Wall West



PXL_20201117_145956752.jpg
200 - ATTIC
Wall West



PXL_20201117_150043876.jpg
200 - ATTIC
Wall West



PXL_20201117_150036506.jpg
200 - ATTIC
Wall West



PXL_20201117_152636001.jpg
200 - ATTIC
Wall West



PXL_20201117_145937972.jpg
200 - ATTIC
Wall West



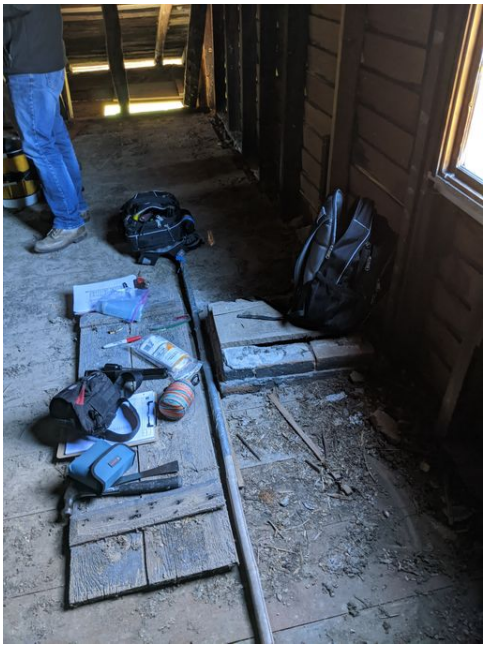
PXL_20201117_145948918.jpg
200 - ATTIC
Wall West



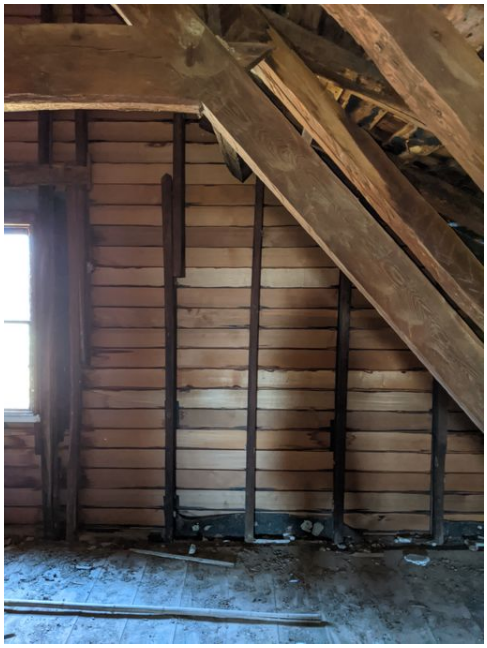
PXL_20201117_152905079.jpg
200 - ATTIC
Wall West



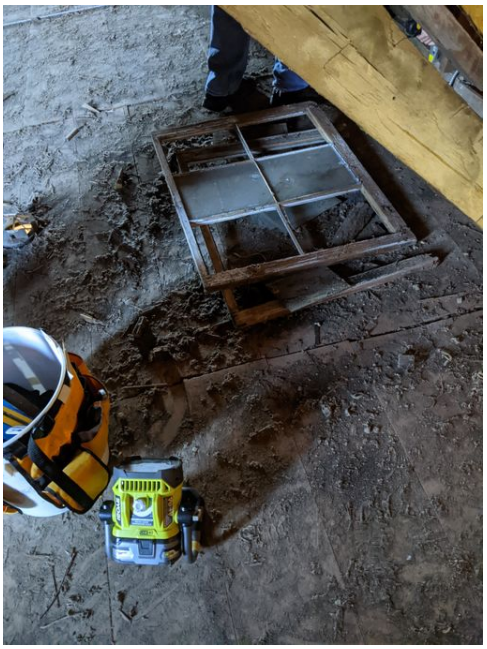
PXL_20201117_153009964.jpg
200 - ATTIC
Wall West



PXL_20201117_153024760.jpg
200 - ATTIC
Wall West



PXL_20201117_153015599.jpg
200 - ATTIC
Wall West



PXL_20201117_153214069.jpg
200 - ATTIC
Wall West



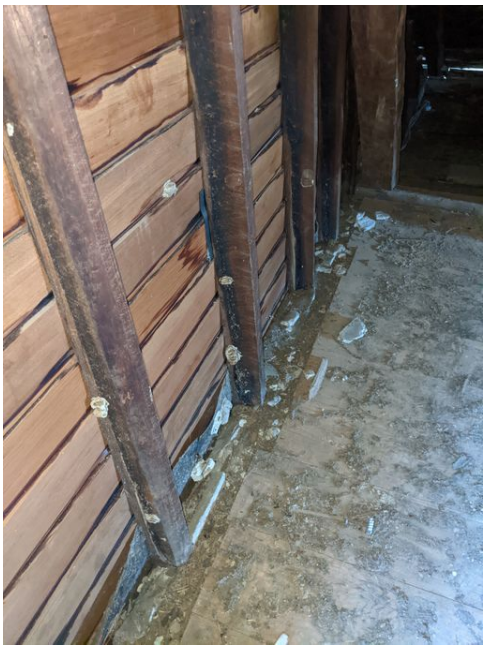
PXL_20201117_152938384.jpg
200 - ATTIC
Wall West



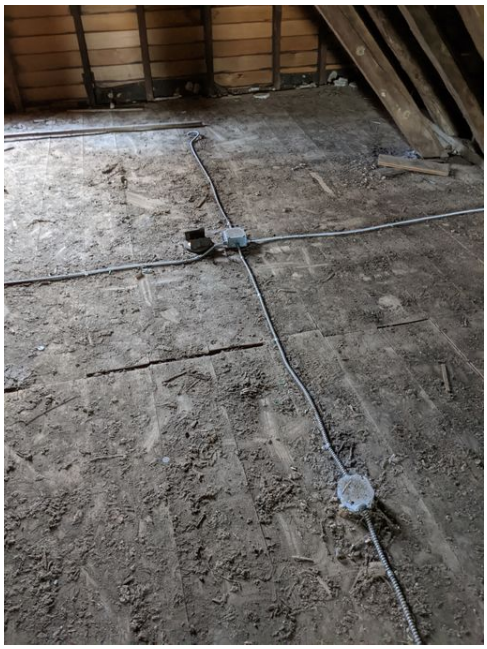
PXL_20201117_153101274.jpg
200 - ATTIC
Wall West



PXL_20201117_153048372.jpg
200 - ATTIC
Wall West



PXL_20201117_153033523.jpg
200 - ATTIC
Wall West



PXL_20201117_152952335.jpg
200 - ATTIC
Wall West

Bauvais-Amoureux House

20062 NPS Bauvais Amoureux House HSR - Windows
November 16-17, 2020

Windows Condition Report



BVH
ARCHITECTURE

Window 100
Field Data

What is window operability type?	Double Hung
Muntin configuration	6 over 6
Is window in working or non working condition?	Not Working
Operation Description	wd blocks and nails at sash . no hardware
Hardware Condition	-
Hardware Components	HC5 = 100% of parts missing
Wood Condition	W2 = VERY GOOD (10% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P2 = VERY GOOD (10% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G1 = 100% INTACT
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P3 = GOOD (25% Scrape, sand and new paint required)
Glazing Putty Condition	GP1 = 100% INTACT
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	window appears to be newer, not original. muntin width is 9/16" wide at interior
Shutter, exterior	Yes, Fixed
Shutter hardware	no hardware



2020-11-17_10-04-36.jpg
Window 100



2020-11-17_10-04-49.jpg
Window 100



2020-11-17_10-05-01.jpg
Window 100



2020-11-17_10-05-20.jpg
Window 100



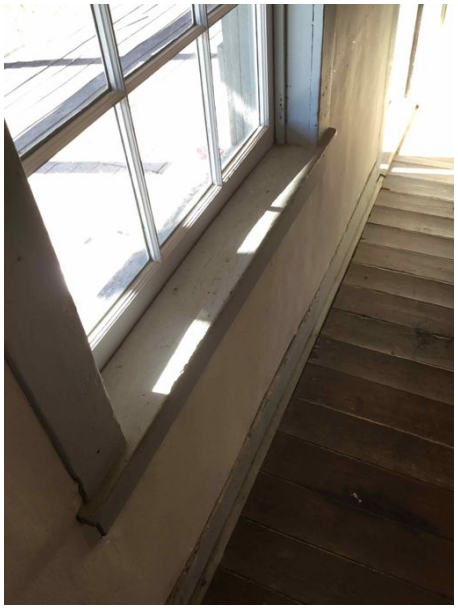
2020-11-17_10-08-29.jpg
Window 100



2020-11-17_10-08-50.jpg
Window 100



2020-11-17_10-09-21.jpg
Window 100



2020-11-17_10-09-43.jpg
Window 100



2020-11-17_10-10-40.jpg
Window 100



2020-11-17_10-10-50.jpg
Window 100



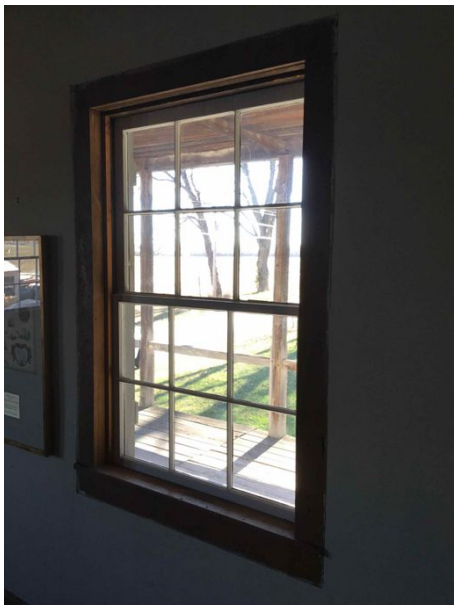
2020-11-17_10-11-12.jpg
Window 100



2020-11-17_10-11-43.jpg
Window 100

Window 101
Field Data

What is window operability type?	Double Hung
Muntin configuration	6 over 6
Is window in working or non working condition?	Not Working
Operation Description	nailed shut
Hardware Condition	-
Hardware Components	HC5 = 100% of parts missing
Wood Condition	W3 = GOOD (25% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P3 = GOOD (25% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G1 = 100% INTACT
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P3 = GOOD (25% Scrape, sand and new paint required)
Glazing Putty Condition	GP2 = 25% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	Yes, Fixed
Shutter hardware	no hardware



2020-11-17_10-23-25.jpg
Window 101



2020-11-17_10-23-42.jpg
Window 101



2020-11-17_10-24-08.jpg
Window 101



2020-11-17_10-24-24.jpg
Window 101



2020-11-17_10-24-35.jpg
Window 101



2020-11-17_10-24-56.jpg
Window 101



2020-11-17_10-25-08.jpg
Window 101



2020-11-17_10-27-07.jpg
Window 101



2020-11-17_10-27-21.jpg
Window 101



2020-11-17_10-27-37.jpg
Window 101



2020-11-17_10-27-49.jpg
Window 101



2020-11-17_10-27-59.jpg
Window 101

Window 102
Field Data

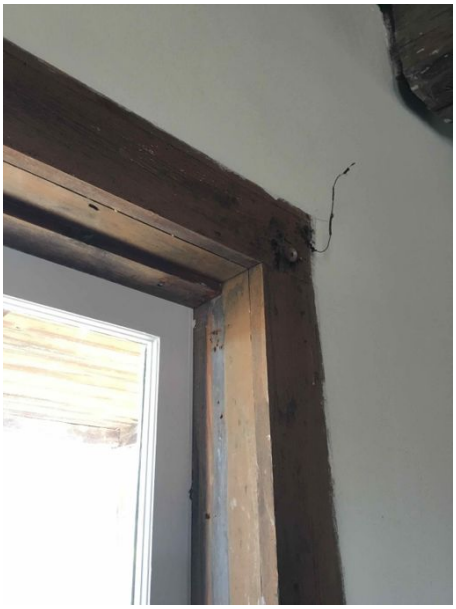
What is window operability type?	Double Hung
Muntin configuration	6 over 6
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	HC5 = 100% of parts missing
Wood Condition	W2 = VERY GOOD (10% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P3 = GOOD (25% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G1 = 100% INTACT
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P3 = GOOD (25% Scrape, sand and new paint required)
Glazing Putty Condition	GP1 = 100% INTACT
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	Yes, Fixed
Shutter hardware	no hardware



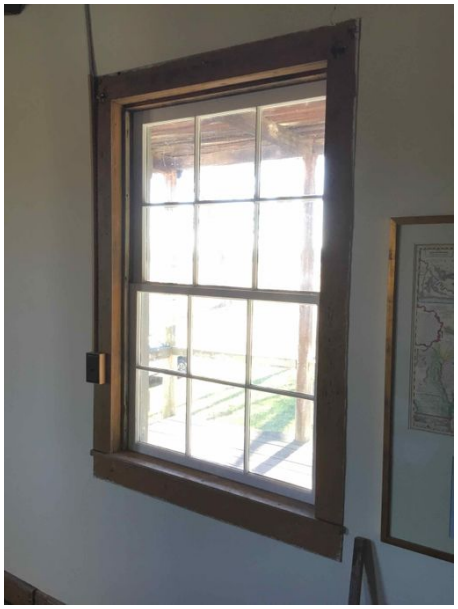
2020-11-17_10-33-28.jpg
Window 102



2020-11-17_10-33-39.jpg
Window 102



2020-11-17_10-33-54.jpg
Window 102



2020-11-17_10-34-34.jpg
Window 102



2020-11-17_10-34-57.jpg
Window 102



2020-11-17_10-35-42.jpg
Window 102



2020-11-17_10-36-09.jpg
Window 102



2020-11-17_10-36-26.jpg
Window 102

Window 103
Field Data

What is window operability type?	Double Hung
Muntin configuration	6 over 6
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	HC5 = 100% of parts missing
Wood Condition	W1 = EXCELLENT (No Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P2 = VERY GOOD (10% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G1 = 100% INTACT
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P3 = GOOD (25% Scrape, sand and new paint required)
Glazing Putty Condition	GP1 = 100% INTACT
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



2020-11-17_10-42-29.jpg
Window 103



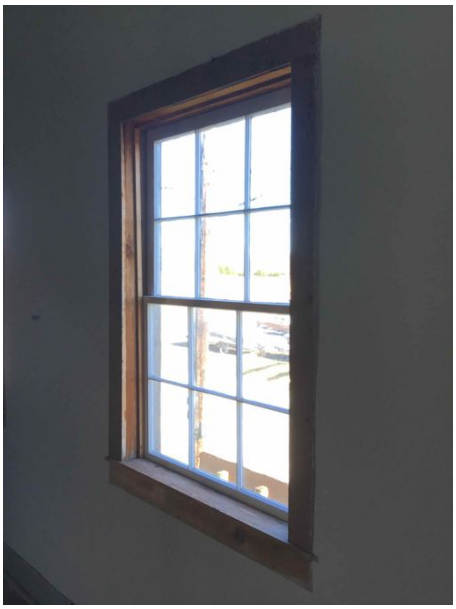
2020-11-17_10-42-45.jpg
Window 103



2020-11-17_11-01-55.jpg
Window 103



2020-11-17_11-02-13.jpg
Window 103



2020-11-17_11-02-46.jpg
Window 103

Window 104
Field Data

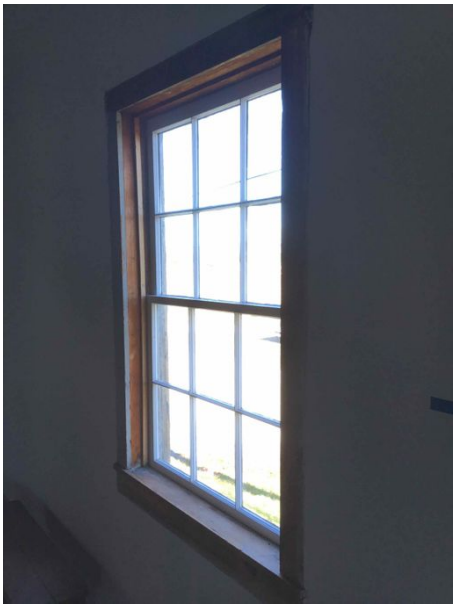
What is window operability type?	Double Hung
Muntin configuration	6 over 6
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	HC5 = 100% of parts missing
Wood Condition	W2 = VERY GOOD (10% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P1 = EXCELLENT (No new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G1 = 100% INTACT
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P3 = GOOD (25% Scrape, sand and new paint required)
Glazing Putty Condition	GP1 = 100% INTACT
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



2020-11-17_10-43-07.jpg
Window 104



2020-11-17_10-43-18.jpg
Window 104



2020-11-17_11-03-12.jpg
Window 104



2020-11-17_11-03-29.jpg
Window 104



2020-11-17_11-03-49.jpg
Window 104



2020-11-17_11-04-10.jpg
Window 104

Window 105
Field Data

What is window operability type?	-
Muntin configuration	-
Is window in working or non working condition?	-
Operation Description	-
Hardware Condition	-
Hardware Components	-
Wood Condition	-
Paint / Stain - INTERIOR	-
Paint / Stain Condition - INTERIOR	-
Wood type - INTERIOR	-
Glass Condition	-
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	-
Glazing Putty Condition	-
Does the unit have an existing storm window?	-
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	-
Shutter hardware	-



PXL_20201117_173629267.jpg
Window 105



PXL_20201116_221220153.jpg
Window 105



PXL_20201116_221121607.jpg
Window 105



PXL_20201117_173650901.jpg
Window 105



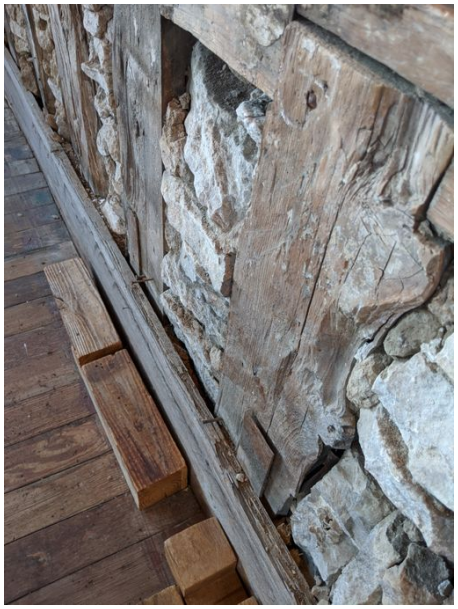
PXL_20201117_173621503.jpg
Window 105



PXL_20201117_173635602.jpg
Window 105



PXL_20201116_221111932.jpg
Window 105



PXL_20201116_221250649.jpg
Window 105



PXL_20201116_221300016.jpg
Window 105



PXL_20201116_221231878.jpg
Window 105



PXL_20201116_221138577.jpg
Window 105



PXL_20201117_173552471.jpg
Window 105



PXL_20201116_221309009.jpg
Window 105



PXL_20201117_173706897.jpg
Window 105



PXL_20201117_173610129.jpg
Window 105



PXL_20201117_173616550.jpg
Window 105



PXL_20201117_173602530.jpg
Window 105



PXL_20201117_173503009.jpg
Window 105



PXL_20201117_173510606.jpg
Window 105



PXL_20201117_173524030.jpg
Window 105



PXL_20201117_173330546.jpg
Window 105



PXL_20201117_173533933.jpg
Window 105



PXL_20201117_173520201.jpg
Window 105

Window 106
Field Data

What is window operability type?	-
Muntin configuration	-
Is window in working or non working condition?	-
Operation Description	-
Hardware Condition	-
Hardware Components	-
Wood Condition	-
Paint / Stain - INTERIOR	-
Paint / Stain Condition - INTERIOR	-
Wood type - INTERIOR	-
Glass Condition	-
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	-
Glazing Putty Condition	-
Does the unit have an existing storm window?	-
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	-
Shutter hardware	-



PXL_20201116_221902431.jpg
Window 106



PXL_20201116_221934973.jpg
Window 106



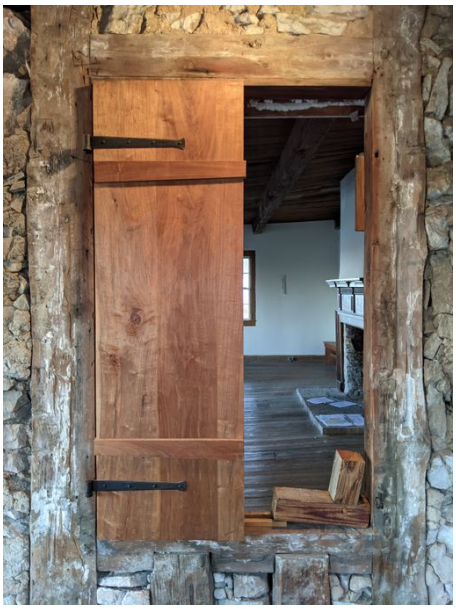
PXL_20201116_221929944.jpg
Window 106



PXL_20201116_222041256.jpg
Window 106



PXL_20201116_221940603.jpg
Window 106



PXL_20201116_222256999.jpg
Window 106



PXL_20201116_222046469.jpg
Window 106



PXL_20201116_221920651.jpg
Window 106



PXL_20201116_221912757.jpg
Window 106

Window 107
Field Data

What is window operability type?	-
Muntin configuration	-
Is window in working or non working condition?	-
Operation Description	-
Hardware Condition	-
Hardware Components	HC5 = 100% of parts missing
Wood Condition	-
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	-
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	-
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	-
Glazing Putty Condition	-
Does the unit have an existing storm window?	-
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



2020-11-17_01-52-51.jpg
Window 107



2020-11-17_01-53-06.jpg
Window 107



2020-11-17_01-53-21.jpg
Window 107



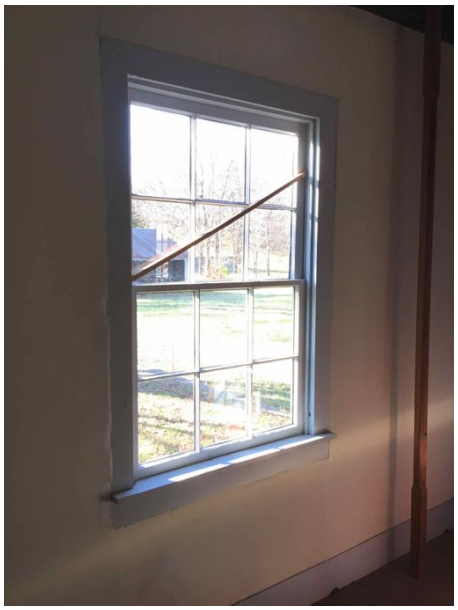
2020-11-17_01-53-38.jpg
Window 107



2020-11-17_01-53-51.jpg
Window 107

Window 108
Field Data

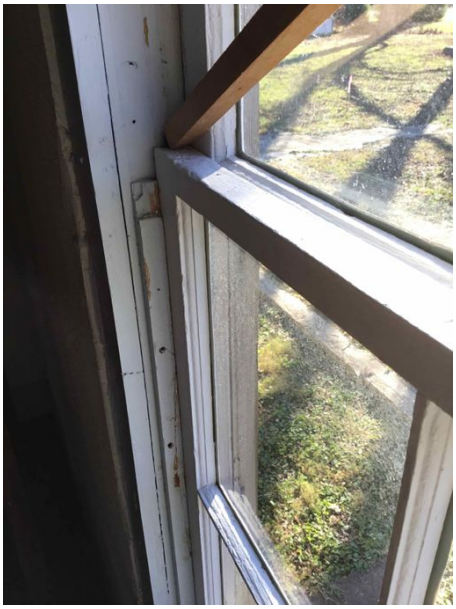
What is window operability type?	Double Hung
Muntin configuration	6 over 6
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	HC5 = 100% of parts missing
Wood Condition	W4 = FAIR (50% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P3 = GOOD (25% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G1 = 100% INTACT
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P3 = GOOD (25% Scrape, sand and new paint required)
Glazing Putty Condition	GP2 = 25% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



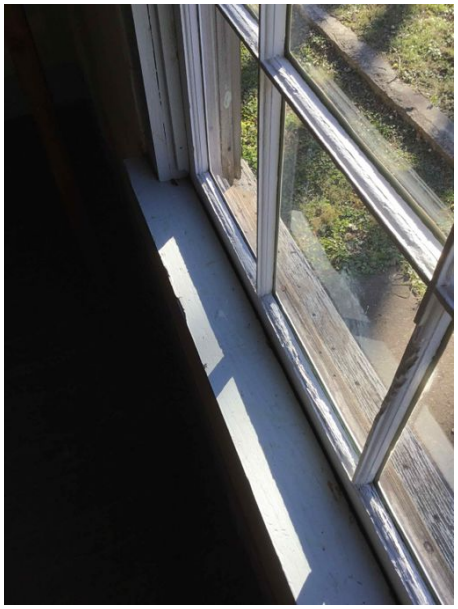
2020-11-17_02-11-28.jpg
Window 108



2020-11-17_02-11-40.jpg
Window 108



2020-11-17_02-11-56.jpg
Window 108



2020-11-17_02-12-06.jpg
Window 108



2020-11-17_02-12-26.jpg
Window 108



2020-11-17_02-13-08.jpg
Window 108



2020-11-17_02-13-21.jpg
Window 108



2020-11-17_02-13-31.jpg
Window 108

Window 109
Field Data

What is window operability type?	Double Hung
Muntin configuration	6 over 6
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	HC5 = 100% of parts missing
Wood Condition	W1 = EXCELLENT (No Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P2 = VERY GOOD (10% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G1 = 100% INTACT
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P2 = VERY GOOD (10% Scrape, sand and new paint required)
Glazing Putty Condition	GP2 = 25% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



2020-11-17_02-15-24.jpg
Window 109



2020-11-17_02-15-34.jpg
Window 109



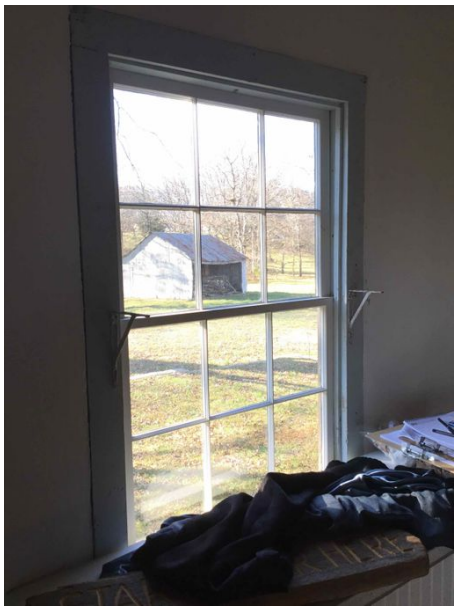
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Window 109



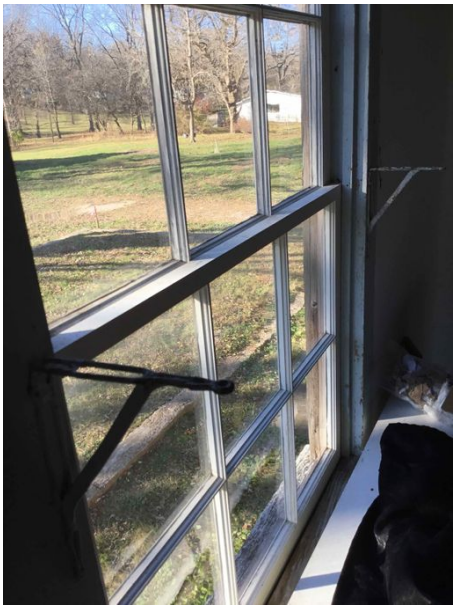
2020-11-17_02-16-19.jpg
Window 109



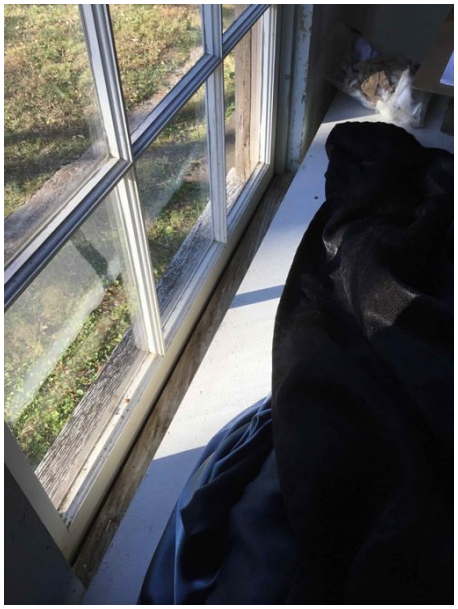
2020-11-17_02-16-40.jpg
Window 109



2020-11-17_02-22-39.jpg
Window 109



2020-11-17_02-22-51.jpg
Window 109



2020-11-17_02-23-01.jpg
Window 109



2020-11-17_02-23-15.jpg
Window 109

Window 110
Field Data

What is window operability type?	Fixed
Muntin configuration	12 pane
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	-
Wood Condition	W4 = FAIR (50% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G2 = 10% MISSING / CRACKED / CHIPPED
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Glazing Putty Condition	GP4 = 75% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



2020-11-17_10-47-52.jpg
Window 110



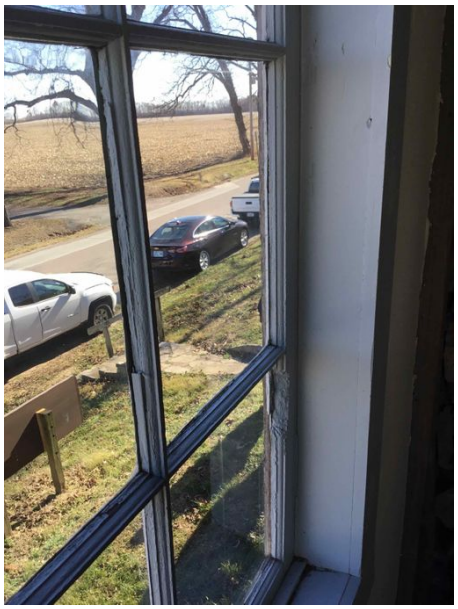
2020-11-17_10-48-09.jpg
Window 110



2020-11-17_11-09-27.jpg
Window 110



2020-11-17_11-09-38.jpg
Window 110



2020-11-17_11-09-52.jpg
Window 110



2020-11-17_11-10-03.jpg
Window 110

Window 111
Field Data

What is window operability type?	Fixed
Muntin configuration	12 pane
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	-
Wood Condition	W4 = FAIR (50% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G2 = 10% MISSING / CRACKED / CHIPPED
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Glazing Putty Condition	GP4 = 75% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



2020-11-17_10-50-25.jpg
Window 111



2020-11-17_10-50-39.jpg
Window 111



2020-11-17_11-10-27.jpg
Window 111



2020-11-17_11-10-48.jpg
Window 111



2020-11-17_11-11-03.jpg
Window 111

Window 112
Field Data

What is window operability type?	Fixed
Muntin configuration	12 pane
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	-
Wood Condition	W4 = FAIR (50% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G2 = 10% MISSING / CRACKED / CHIPPED
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Glazing Putty Condition	GP4 = 75% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



2020-11-17_10-51-35.jpg
Window 112



2020-11-17_10-51-44.jpg
Window 112



2020-11-17_11-11-31.jpg
Window 112



2020-11-17_11-11-51.jpg
Window 112



2020-11-17_11-12-18.jpg
Window 112

Window 113
Field Data

What is window operability type?	Fixed
Muntin configuration	12 pane
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	-
Wood Condition	W4 = FAIR (50% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G2 = 10% MISSING / CRACKED / CHIPPED
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Glazing Putty Condition	GP4 = 75% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



2020-11-17_10-51-56.jpg
Window 113



2020-11-17_10-52-07.jpg
Window 113



2020-11-17_11-12-38.jpg
Window 113



2020-11-17_11-15-28.jpg
Window 113

Window 114
Field Data

What is window operability type?	Fixed
Muntin configuration	12 pane
Is window in working or non working condition?	Not Working
Operation Description	-
Hardware Condition	-
Hardware Components	-
Wood Condition	W4 = FAIR (50% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G2 = 10% MISSING / CRACKED / CHIPPED
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Glazing Putty Condition	GP4 = 75% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	no hardware



2020-11-17_10-52-30.jpg
Window 114



2020-11-17_10-52-43.jpg
Window 114



2020-11-17_11-15-46.jpg
Window 114



2020-11-17_11-16-08.jpg
Window 114



2020-11-17_11-17-13.jpg
Window 114

Window 115
Field Data

What is window operability type?	Awning
Muntin configuration	4 pane
Is window in working or non working condition?	Working
Operation Description	Make shift awning window.
Hardware Condition	H5 = POOR
Hardware Components	HC3 = 50% of parts missing
Wood Condition	W5 = POOR (75% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G1 = 100% INTACT
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Glazing Putty Condition	GP5 = 100% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	-
Shutter, exterior	No
Shutter hardware	-



2020-11-17_10-53-18.jpg
Window 115



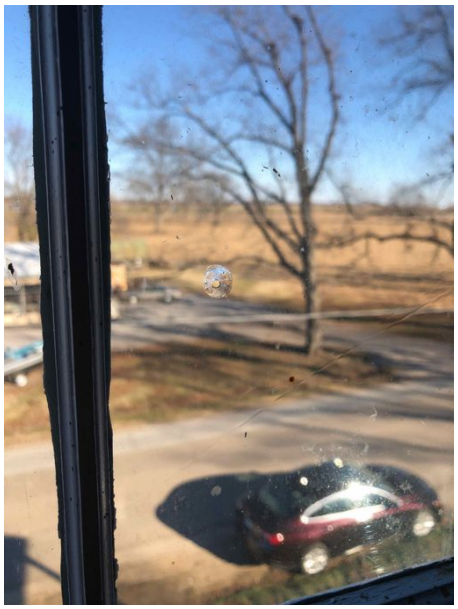
2020-11-17_10-53-28.jpg
Window 115



2020-11-17_10-53-47.jpg
Window 115

Window 200
Field Data

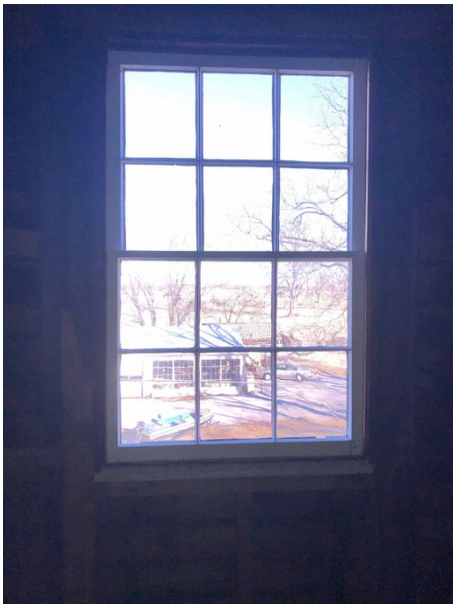
What is window operability type?	Double Hung
Muntin configuration	6 over 6
Is window in working or non working condition?	Working
Operation Description	-
Hardware Condition	H5 = POOR
Hardware Components	HC5 = 100% of parts missing
Wood Condition	W3 = GOOD (25% Repair required)
Paint / Stain - INTERIOR	Paint
Paint / Stain Condition - INTERIOR	P4 = FAIR (50% Scrape, sand and new paint required)
Wood type - INTERIOR	Cannot see wood grain
Glass Condition	G2 = 10% MISSING / CRACKED / CHIPPED
Is the glass textured or patterned?	YES
Paint Condition - EXTERIOR	P5 = POOR (75% Scrape, sand and new paint required)
Glazing Putty Condition	GP4 = 75% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	34 5/8" Wide - 53 3/4" Tall
Shutter, exterior	No
Shutter hardware	-



2020-11-17_02-16-27.jpg
Window 200



2020-11-17_02-17-51.jpg
Window 200



2020-11-17_02-18-25.jpg
Window 200



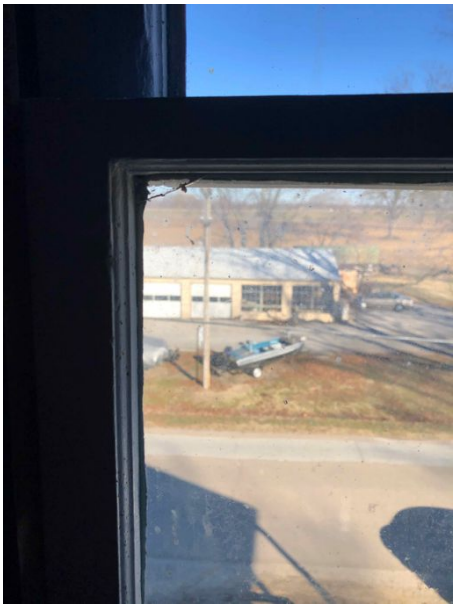
2020-11-17_02-19-28.jpg
Window 200



2020-11-17_02-20-08.jpg
Window 200



2020-11-17_02-20-44.jpg
Window 200



2020-11-17_02-21-00.jpg
Window 200



2020-11-17_02-21-28.jpg
Window 200



2020-11-17_02-21-52.jpg
Window 200



2020-11-17_02-26-16.jpg
Window 200



2020-11-17_02-26-29.jpg
Window 200



2020-11-17_02-28-09.jpg
Window 200



2020-11-17_02-28-33.jpg
Window 200

Window 201
Field Data

What is window operability type?	Double Hung
Muntin configuration	6 over 6
Is window in working or non working condition?	Not Working
Operation Description	No finish on window interior. Can see wood but type is not distinguishable.
Hardware Condition	-
Hardware Components	HC5 = 100% of parts missing
Wood Condition	W5 = POOR (75% Repair required)
Paint / Stain - INTERIOR	Unfinished
Paint / Stain Condition - INTERIOR	P6 = SEVERE (100% Scrape, sand and new paint required)
Wood type - INTERIOR	-
Glass Condition	G2 = 10% MISSING / CRACKED / CHIPPED
Is the glass textured or patterned?	-
Paint Condition - EXTERIOR	P6 = SEVERE (100% Scrape, sand and new paint required)
Glazing Putty Condition	GP5 = 100% MISSING / CRACKED
Does the unit have an existing storm window?	NO
Storm window condition	-
Dimensions / Notes	28" Wide - 45" Tall
Shutter, exterior	No
Shutter hardware	-



2020-11-17_02-06-07.jpg
Window 201



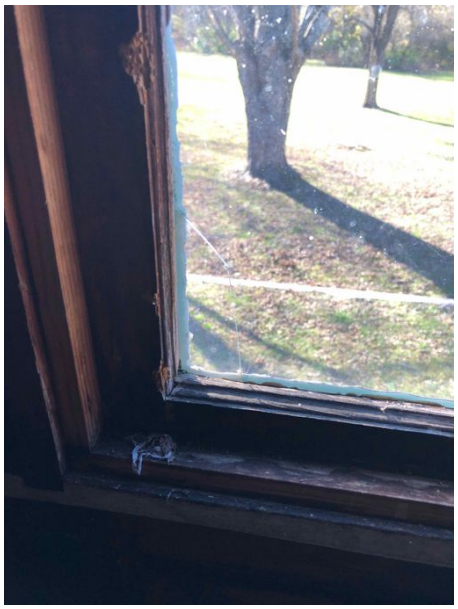
2020-11-17_02-06-25.jpg
Window 201



2020-11-17_02-06-36.jpg
Window 201



2020-11-17_02-06-47.jpg
Window 201



2020-11-17_02-07-12.jpg
Window 201



2020-11-17_02-07-41.jpg
Window 201



2020-11-17_02-07-58.jpg
Window 201



2020-11-17_02-24-41.jpg
Window 201



2020-11-17_02-24-59.jpg
Window 201



2020-11-17_02-25-26.jpg
Window 201

Bauvais-Amoureux House

20062 NPS Bauvais Amoureux House HSR - Doors
November 16-17, 2020

Doors Condition Report



BVH
ARCHITECTURE

Bauvais-Amoureux House

20062 NPS Bauvais Amoureux House HSR - Doors
November 16-17, 2020

Field Data

Door Type	Vertical Wood Boards
Door Finish	Painted
Wood Casing Material/Finish	Wood, Painted
Door Thickness	3/4"
Door Notes	-



PXL_20201117_195041765.jpg



PXL_20201116_223146706.jpg

Bauvais-Amoureux House

20062 NPS Bauvais Amoureux House HSR - Doors
November 16-17, 2020

Field Data

Door Type	Vertical Wood Boards
Door Finish	Painted
Wood Casing Material/Finish	Wood, Painted
Door Thickness	
Door Notes	Partially set in limestone foundation wall. Strap hinges, pad lock. No threshold.


PXL_20201117_145026075.jpg


PXL_20201117_145015753.jpg



PXL_20201117_143923047.jpg



PXL_20201117_143743352.jpg

Field Data

Door Type	4 panel
Door Finish	Painted
Wood Casing Material/Finish	Wood, Painted
Door Thickness	1-1/16"
Door Notes	Elevated threshold.



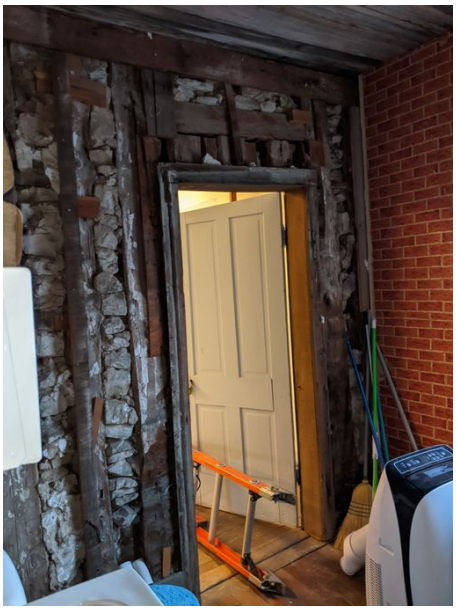
PXL_20201116_215139883.jpg



PXL_20201116_214948937.jpg



PXL_20201116_215148316.jpg



PXL_20201116_223102211.jpg

Field Data

Door Type	4 panel
Door Finish	Painted
Wood Casing Material/Finish	Wood, Painted
Door Thickness	1-3/8"
Door Notes	Multiple hardware types and time periods. Elevated threshold.



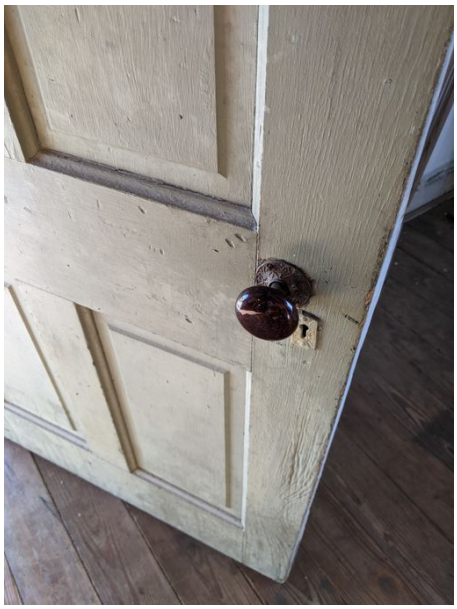
PXL_20201117_194111563.jpg



PXL_20201117_194122571.jpg



PXL_20201117_194117192.jpg



PXL_20201117_194139924.jpg



PXL_20201117_194056632.jpg

Field Data

Door Type	Vertical Wood Boards - Beaded Edge
Door Finish	Natural
Wood Casing Material/Finish	Wood, Natural
Door Thickness	1"
Door Notes	Minimal hardware. Missing hardware. Evidence of prior hardware outlines. Elevated threshold.



PXL_20201117_194235443.jpg



PXL_20201117_194242800.jpg



PXL_20201117_194220892.jpg



PXL_20201117_194156327.jpg



PXL_20201117_194214394.jpg



PXL_20201117_194225900.jpg



PXL_20201117_194209450.jpg



PXL_20201117_194644008.jpg

Field Data

Door Type	9 Divided lites over 2 panels, Transom window - 2 Lite
Door Finish	Painted
Wood Casing Material/Finish	Wood, Painted
Door Thickness	1-1/4"
Door Notes	Broken and missing wood areas. Adapted / added hardware. Newer weatherstripping. Door has attempted areas of repair. Door appears to have been adapted / altered to fit this current opening. Holes thru door on opposite side for prior hardware lock and handle. Stiles have been cut, exposing mortise interior at edges.



PXL_20201117_194336118.jpg



PXL_20201117_194328738.jpg



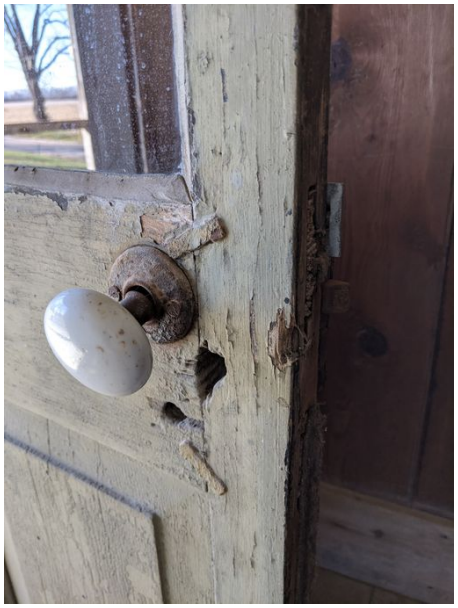
PXL_20201117_194400640.jpg



PXL_20201117_194421051.jpg



PXL_20201117_194512665.jpg



PXL_20201117_194411078.jpg



PXL_20201117_194521889.jpg



PXL_20201117_194428861.jpg



PXL_20201117_194252858.jpg



PXL_20201117_194300348.jpg



PXL_20201117_194502094.jpg



PXL_20201117_194454504.jpg



PXL_20201116_161527320.jpg



PXL_20201117_194549243.jpg



PXL_20201117_194531381.jpg

Field Data

Door Type	No Door, Transom window - 2 Lite
Door Finish	-
Wood Casing Material/Finish	Wood, Natural
Door Thickness	-
Door Notes	Elevated threshold. Evidence of prior hardware in jambs.



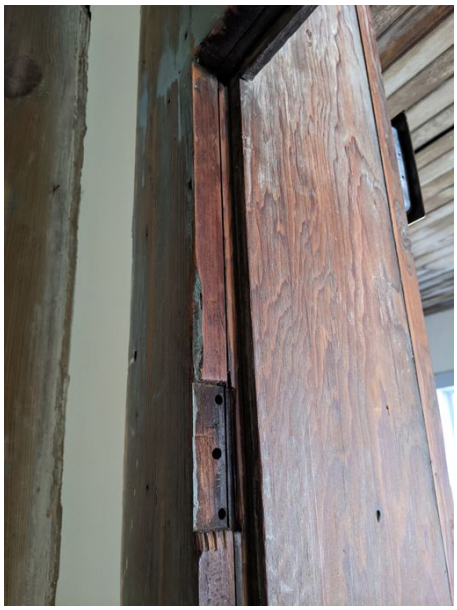
PXL_20201117_194919758.jpg



PXL_20201117_194927714.jpg



PXL_20201117_195024703.jpg



PXL_20201117_194954495.jpg



PXL_20201117_195018547.jpg



PXL_20201117_194937800.jpg



PXL_20201117_194940847.jpg



PXL_20201117_195010838.jpg



PXL_20201117_195029068.jpg

Field Data

Door Type	No Door
Door Finish	-
Wood Casing Material/Finish	Wood, Natural
Door Thickness	-
Door Notes	Elevated threshold. Evidence of prior hardware in jambs.



PXL_20201117_194622637.jpg



PXL_20201117_194609253.jpg



PXL_20201117_194616610.jpg



PXL_20201117_194629960.jpg

Field Data

Door Type	No Door
Door Finish	-
Wood Casing Material/Finish	Wood, Natural
Door Thickness	-
Door Notes	Elevated threshold. Evidence of prior hardware in jambs.



PXL_20201117_194713442.jpg



PXL_20201117_194703136.jpg



PXL_20201117_194728552.jpg

Field Data

Door Type	No Door
Door Finish	-
Wood Casing Material/Finish	Wood, Natural
Door Thickness	-
Door Notes	Change of floor elevation at this doorway



PXL_20201116_215625837.jpg



PXL_20201116_215631748.jpg

Field Data

Door Type	No Door
Door Finish	-
Wood Casing Material/Finish	Wood, Natural
Door Thickness	-
Door Notes	Elevated threshold. Evidence of prior hardware in jambs.



PXL_20201117_194737541.jpg



PXL_20201117_194744166.jpg



PXL_20201117_194906195.jpg



PXL_20201117_194909958.jpg

Appendix D - RRJ Abbreviated Structural & Envelope Report

Beauvais-Amoureux House

Ste. Geneviève National Historical Park
Ste. Geneviève, Missouri
PMIS 311235

Abbreviated Structural and Building Envelope Assessment Report

2021



Beauvais-Amoureux House, south elevation.

Prepared for:
National Park Service, Midwest Regional Office
601 Riverfront Drive, Omaha, Nebraska 68102
402.661.1601 | Information Desk

Prepared by
Raths, Raths & Johnson, Inc.
500 Joliet Road, Suite 200, Willowbrook, Illinois 60527
630.325.6160 | Main Number

BEAUVAIS-AMOUREUX HOUSE
ABBREVIATED STRUCTURAL and BUILDING EVELOPE ASSESSMENT REPORT
Ste. Geneviève National Historical Park

Ste Geneviève, Missouri

Recommended: _____ Date: _____
Superintendent,
Ste. Geneviève National Historical Park

Concurred: _____ Date: _____
Associate Regional Director,
Cultural Resources, Interior Regions 3,4, and 5

Approved: _____ Date: _____
Regional Director,
Interior Regions 3,4, and 5

NPS PMIS # 311235

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APPENDED

Appendix A – Cost Estimate for Treatment Recommendations

PROJECT TEAM

Raths, Raths and Johnson, Inc.

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George R. Mulholland, P.E., S.E. | Structural Engineer
Demetria Boatwright | Structural Engineering Staff

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National Park Service – Ste. Geneviève National Historical Park

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GLOSSARY[1]

Bousillage. (French) A mixture composed of mud or clay with straw, hair, or Spanish moss, for infill between the posts in the construction of vertical log buildings.

Caveau. (French) A crawl space or cellar.

Collar Tie. The horizontal member of a Norman truss located at the approximate midpoint of the diagonal top chord members.

Galerie. (French) Gallery or veranda; a porch extending the full length of either one, two, or four sides of a building.

Grenier. (French) Attic; the loft of a house.

King Post. The central vertical member of the Norman truss that connects the diagonal top chord members to the collar tie.

Liteaux. (French) Small battens or straps onto which roofing thatch was attached.

Nogging. Brick masonry infill between wood framing members.

Norman Truss. A French vernacular variation on the "king post truss," characterized by a steep pitch, through purlins, and the elevated position of the collar beam.

Rafter. A diagonal roof framing member: "primary rafters" are those of the main roof structure, and "secondary rafters" are those of the galerie roof structures.

Pierrotage. (French) Infill of stone and clay daub or lime mortar; packed between the posts of a heavy timber frame.

Poteau(x). (French) Timber post or vertical log member.

Poteaux-en-terre. (French) "Posts in the ground"; a construction type where the vertical logs are set into the ground.

Poteaux-sur-sole. (French) "Posts on a sill"; a construction type where the vertical logs sit on a horizontal sill plate, and the foundation is typically constructed of stone masonry.

Purlin. A longitudinal, horizontal member of the roof framing that provides midspan support for the rafters; "through-purlins" pass over the top of of the truss diagonal top chords.

Ridge Beam. A longitudinal, horizontal member at the apex of the roof framing which supports the top ends of the rafters.

Ridge Brace Truss. A longitudinal flat truss at the apex of the roof that provides support between the Norman trusses; the ridge beam forms the top chord of this truss.

Top Chord. The diagonal members of the Norman truss that form the distinctive "A-frame" shape, with the crossbar formed by the collar tie.

Top Plate. A horizontal wood member that bears on the tops of the vertical log walls.

Trenail. A tapered wood pin used in traditional heavy timber construction.

---

[1] Terms referencing French vernacular construction are adapted in part from the glossary provided by Jack Richard Luer and Jesse W. Frances in *Vanishing French Heritage: A Complete Study of the Vertical Log Homes of the Illinois Country*, (Chesterfield, MO: Independent Publishing Corporation), 202-209.

A NOTE ON DATES

No notation. Direct attribution of the date or date range given is supported by historical documentation or physical evidence; ex: 1937 or 1852–1923.

Circa (c.). **A**ttribution to within one or two years of the date or date range given is supported by historical documentation or physical evidence, but the precise dates are not known; ex. c. 1792 or c. 1852 – c. 1856.

Dash (–). Indicates that the range given is inclusive of the years between the start and end dates, such as an ongoing event or period of ownership, ex: 1923 – 1963.

Slash (/). Indicates that two or more specific dates are referenced without being inclusive of the years between; ex: c.1792/c.1852 or 1940/1986.

Decade Span. Indicates a ten-year span, but the date or date range given are approximate and may be refuted by further study; ex: 1920s or 1880s – 1900s.



P1. Overall view of the Beauvais-Amoureux House, front (south) elevation.



P2. Overall view of the street (east) elevation of the Beauvais-Amoureux House, note the masonry foundation extending to the first-floor level.

INTRODUCTION

Raths, Raths & Johnson, Inc. (RRJ) was contracted by the National Park Service (NPS) to perform an abbreviated structural and envelope assessment of the Beauvais-Amoureux House (the House) and prepare a report of findings, to include observed conditions, limited structural analysis, and preliminary treatment recommendations with probable construction costs. This assessment was prompted by park staff concerns related to ongoing water intrusion at the roof, as well as deterioration and distress at the roof trusses, floor framing, and exterior vertical log walls. This report was prepared in advance of a Historic Structures Report (HSR) for the House, which will address a detailed historical overview, timeline of the site's physical development and use, and broader recommendations for the treatment and interpretation of the site. Additional research and analysis performed within the scope of the HSR may expand upon or update information provided in this report.

From November 16 to 18, 2020, representatives from RRJ and BVH Architecture were on-site to perform a physical investigation into the structural systems, the condition of the existing structural and architectural members, and the condition of the exterior cladding and roofing. The physical investigation was limited to areas readily visible; no overly intrusive investigation was performed, and no finishes were removed to expose concealed conditions.

General Description

The Beauvais-Amoureux House is located at 327 St. Mary's Road in Ste. Geneviève, Missouri (Photographs P1 and P2). The House is recognized as one of only five extant *poteaux-en-terre* (meaning "post in the earth") vertical log structures in North America; of which three are located in Ste. Geneviève. In its current form, the House is of the "Mississippi Valley French Colonial" style[2] with modern alterations, having a broken-pitch gable roof, an open *galerie* (porch) on the south, an enclosed galerie on the north, a walk-out *caveau* (cellar), and an unfinished *grenier* (garret or attic) accessible from an exterior stair. The main entrance is centered on the south wall, and the east elevation faces St. Mary's Road (historically called New Bourbon Street). The House is currently partitioned in a center-hall plan, with a narrow central passageway flanked by rooms on the east and west. A c. 1792 stone masonry chimney is located in the wall between the central hall and the great room to the east, and a partially deconstructed 1880s – c. 1900 brick masonry chimney is located on the inside of the west wall.

[2] Jay Edwards, "Louisiana's French Creole Architecture." National Register of Historic Places Nomination Form (Washington, DC: U.S. Department of the Interior, National Park Service, 1991), https://catalog.archives.gov/id/73972785.

Methodology

In the execution of this scope, the project team performed the following:

- Reviewed documentation on the Beauvais-Amoureux House provided by NPS and from other sources, as well as available documentation on similar structures in Ste. Geneviève, Missouri; Natchitoches, Louisiana; and Pascagoula, Mississippi.
- Performed a physical investigation of the House from the interior and exterior.
- Field verified select dimensions and measurements to confirm conditions as documented by others.
- Measured knot sizes, depth of checks, and slope of grain to assess and the condition of and assist in grading the individual wood members at trusses and beams.
- Probed the soil adjacent to vertical logs in an effort to identify below-grade deterioration, supported by visual confirmation of vertical log decay conditions with shallow test pits at select locations.
- Performed moisture content readings at foundation logs to develop a qualitative moisture content profile.
- Performed qualitative resistance drilling at select vertical logs, structural joists, trusses, *rafters*, and *purlins* in an effort to identify areas of concealed decay.
- Collected samples of wood from select structural members for species identification.
- Collected discrete samples of the original *pierrotage*, replacement cementitious pierrotage and *bousillage*, parging, lime wash or paint, and soil for laboratory studies.
- Performed a level survey using a laser level on the main floor and attic floor to aid in future study of the building physiology and to serve as a benchmark for long-term monitoring for future differential settlement.
- Placed level marks using a laser level on foundation logs, piers, chimney, and shoring members in the caveau to aid in future study of the building physiology and to serve as a benchmark for long-term monitoring for future differential settlement.

ABBREVIATED HISTORY OF DEVELOPMENT

The House has undergone several eras of significant alteration. The construction dates given below are supported through historical documentation in the form of deeds, tax rolls, and liens; by dendrochronological dating of select framing members performed by Dr. Richard Guyette of the University of Missouri – Columbia;[3] or by physical evidence, such as lumber type, nails, and other construction practices that can be generally associated with a specific period of time.

- c. 1792 – c. 1852: As originally constructed by the Beauvais family, the House had a hipped roof covered in thatch. The exterior vertical log walls may have been whitewashed or plastered.
- c. 1852: Under ownership by the Amoureux family, the end gable walls, galeries, and broken pitch roof were constructed. The roofing was likely replaced with wood shake.
- Likely c. 1852: The east, west, and north walls were covered with wood weatherboard siding, the south wall was plastered.
- 1880s – c. 1900: At a yet unconfirmed date, the west end of the structure was demolished and reconstructed. The vertical logs of the exterior wall, the west hipped roof framing, and the westernmost Norman truss were removed, permanently shortening the structure by approximately 8 to 12 feet. The interior layout was likely heavily modified during this time.
- 1880s – c. 1900: At the east end wall, the poteaux-en-terre construction was also modified to sit on wood sill bearing on a new limestone foundation.
- Before 1936: The roofing was replaced or covered with corrugated metal panels, which was common practice in Ste. Geneviève at that time.

[3] Richard Guyette. "Tree Ring Dating of French Colonial Vertical Log Houses in St. Geneviève, Missouri," unpublished report. (University of Missouri – Columbia, n.d. [1986]).

- 1936 – 1940: Photographs were taken by the Historic American Buildings Survey (HABS).[4] Photographs were again taken for the HABS collection in 1986.
- 1956: Measured drawings of the House were prepared for the HABS collection.
- 1963: The Donze family acquired the House and renovated it for use as a historic house museum. The interiors were modified, both galeries reconstructed, and the north galerie enclosed. A standalone structure was also constructed immediately to the west of the House.
- 1993: The Great Flood of 1993 flooded the caveau of the Beauvais-Amoureux House, exacerbating differential settlement issues at the first floor and attic floor. Shoring, which is still in place, was installed to support the first-floor structure.
- 1994-2017: Under the stewardship of the Missouri Department of Natural Resources (DNR), numerous repairs were performed, including replacing the exterior siding and roofing with new cedar products in 2004.
- 2018 – 2020: NPS acquired the House in 2018 along with other historic properties to form the Ste. Geneviève National Historical Park, established in 2020.

STRUCTURAL SYSTEMS

Physical Description – Original Construction

The House was originally constructed with vertical logs embedded in the soil (poteaux-en-terre construction), which extend to the top of the first floor on all four sides (Photograph P3). The voids between the vertical logs were infilled with stone and clay *nogging*, called pierrotage. The lateral bracing within the vertical log walls is horizontal rather than diagonal; this is a somewhat unusual bracing system, seen only at the Beauvais-Amoureux House and the Vital St. Gemme Beauvais House,[5] which was constructed at approximately the same time with similar wall and floor structural systems.

The c. 1792 hipped roof framing is a truss system (Photograph P4 and Figure 1), consisting of (A) six "Norman" trusses, of which five are extant, (B) nine ceiling beams spanning between the south and north walls, a (C) roof *ridge beam* (D) and *ridge brace trusses* spanning east to west between the Norman trusses, (E) horizontal purlins at approximately mid-height of the truss *top chords*, (F) primary rafters spanning from the ridge beam to the (G) wall *top plate*, (H) a stone masonry chimney that also assists with bracing the Norman trusses, and



P3. Exposed vertical logs, with pierrotage and horizontal bracing at north wall.



P4. Norman roof trusses, looking east.

[4] "The Amoureaux House, Ste. Geneviève, Ste. Geneviève County, Missouri" (photographs, measured drawings, written historical and descriptive data), Historic American Building Survey (National Park Service, U.S. Department of the Interior, 1956), https://www.loc.gov/item/mo0247/.

[5] "Vital St. Gemme Beauvais House I, 20 South Main Street, Sainte Geneviève, Ste. Geneviève County, MO" (photographs, measured drawings, written historical and descriptive data). Historic American Building Survey (National Park Service, U.S. Department of the Interior, 1985), https://www.loc.gov/item/mo0249/.

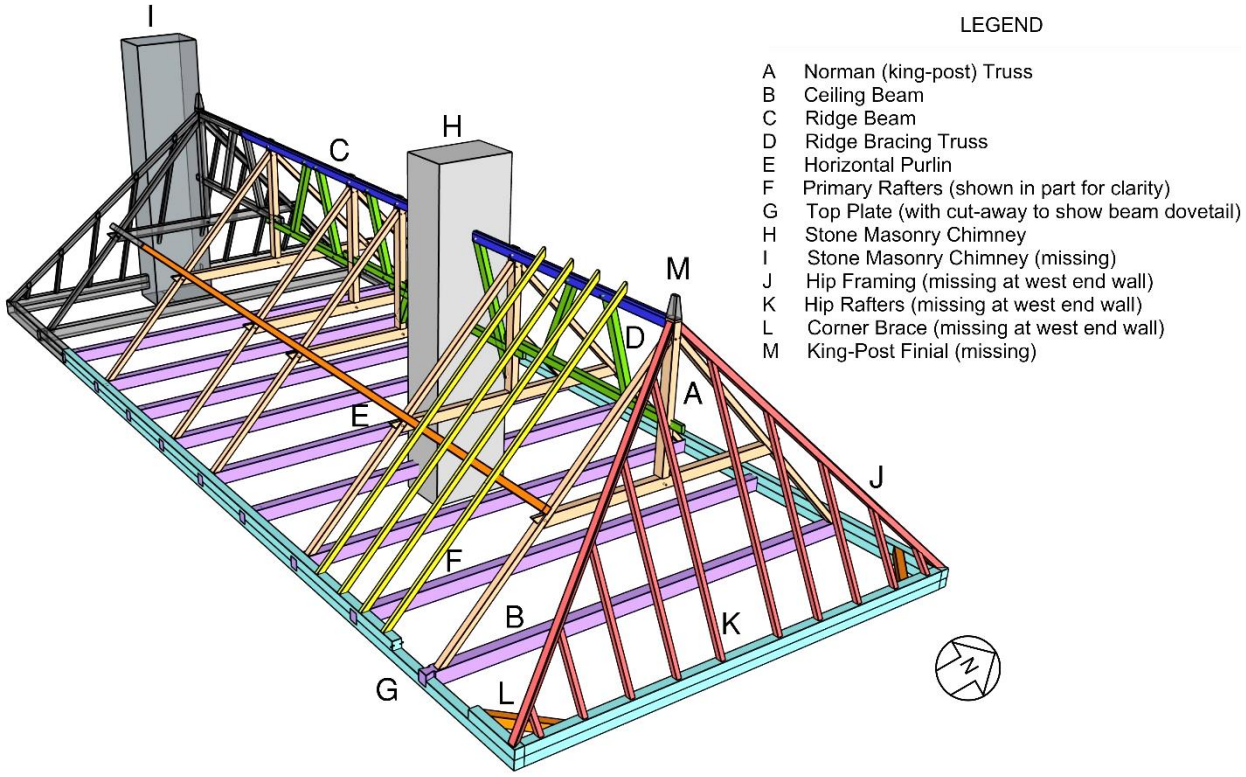


Figure 1. Schematic diagram of roof framing, c. 1792, with conceptual west hip framing.

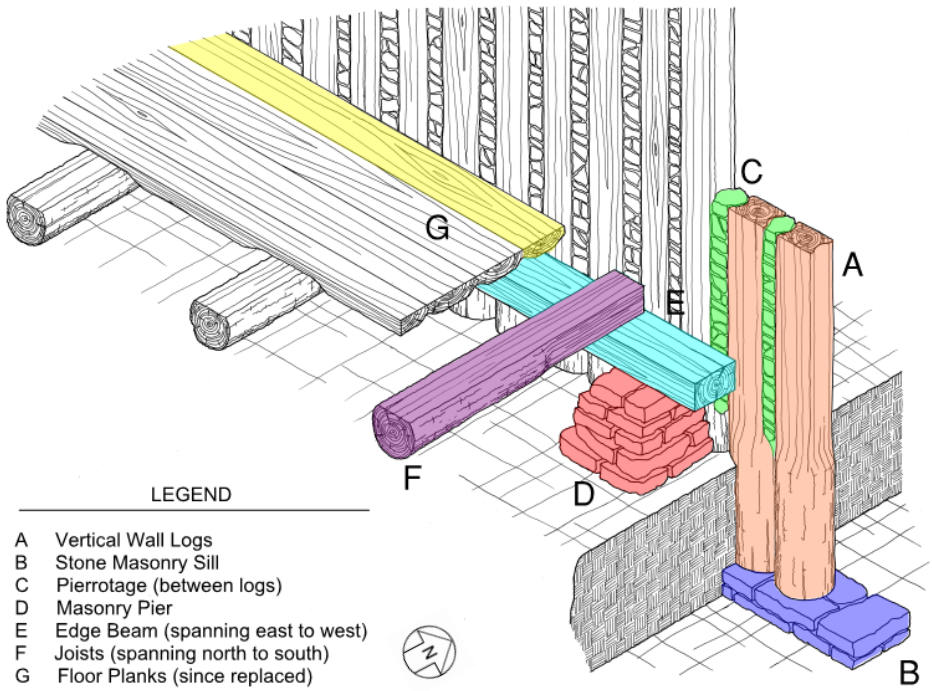


Figure 2. Schematic diagram of first floor construction, c. 1792 (based on HABS drawings from the Vital St. Gemme Beauvais House).

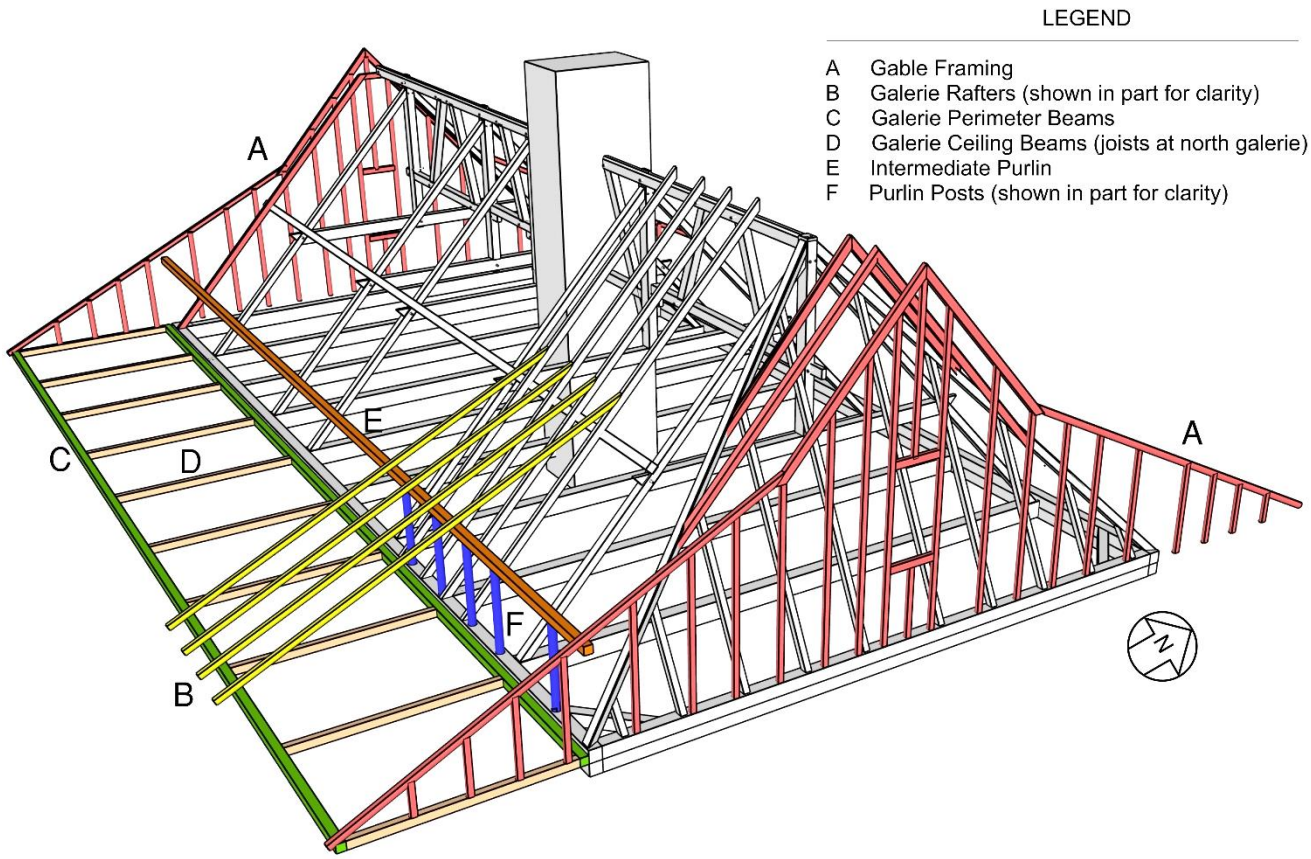


Figure 3. Schematic diagram of roof framing, c. 1852.

(J) diagonal hip framing, and (K) hip rafters that were located at the east and west ends.

The first floor is structurally separate from the vertical log walls (Figure 2). The first floor is supported by (D) masonry piers. Full-length timber (E) edge beams span east to west, bearing on the masonry piers, and (F) timber joists span north to south, bearing on the edge beams. The joists were hewed in place to create a level surface for the (G) first-floor wood planks. Analysis of the relationship between the wall and floor framing for poteaux-en-terre structures suggests that the floor framing was likely constructed prior to the vertical logs.[6]

Physical Description – Later Alterations

The existing roof is a broken-pitch gable that spans the full length of the structure (Figure 3). Based on historical documentation, the (A) gable end walls and full-length galeries were installed c. 1852. As originally constructed, both galeries were open. New (B) rafter members were installed to form the galerie roofs; each galerie rafter member attaches to one of the original roof rafters at approximately the primary roof horizontal purlin and spans out to the galerie (C) perimeter beam with an (E) intermediate horizontal purlin on (F) posts that bear on the wall top plate. At the south galerie ceiling, (D) timber joists span from the perimeter beam to the top plate; at the north, these beams have been replaced with modern dimension lumber joists.

At a later point in time, a portion of the west end of the House was removed, and the west wall was reconstructed. The framing at the east and west gable walls differs, suggesting that the existing west wall was constructed sometime after the east. The existing west end wall was constructed with a stone masonry foundation, a brick masonry chimney, and wood studs

[6] Luer and Frances, *Vanishing French Heritage*, 78-79.

with brick nogging. Based on existing truss spacing, historical documentation, and previous studies of the House by the Missouri DNR and others, likely between 8 to 12 feet were permanently removed from the west end. The archeological excavations performed in 1996 located a chimney foundation, remnants of foundation logs, and the possible footprint of the caveau excavation at the west, narrowing this dimension to closer to 8 feet.[7] The reasoning for the alteration is unknown, but one of the original six roof trusses was lost. Only five roof trusses remain within the present attic space. It is believed that there were six original roof trusses, based on carpentry marks in Roman numerals found on each truss member, starting with Roman numeral "II" at the existing westernmost truss to Roman numeral "VI" for easternmost truss. Truss "I" is no longer extant.

Vertical Log Walls

Description of Existing Construction

The vertical log walls, according to the dendrochronology report, are composed of *Juniperus virginiana* (eastern red cedar). Below grade, the logs



P5. Southeast corner from inside the caveau, showing the vertical logs, clay parge, and stone foundation at the east.



P6. Close-up view of north end of west elevation masonry foundation wall. Note the end of first-floor beam is exposed.



P7. Exterior north and south elevation logs are covered with parging, which appears to be clay and straw.



P8. Close-up of clay parging with straw.

[7] No Author Rep., "*Preliminary Report on Excavations at the St. Gemme Beauvais/Amoureux House, Ste. Genevieve, Missouri*," (No date [1996]), 5.

are unhewn; above grade, the log-to-log faces were hewn slightly concave to key in the pierrotage, and the outward faces were hewn flat to allow application of wall treatments. It has not been confirmed how deep the logs were originally set in the ground. During the restoration of the c. 1807 Bequette-Ribault House, the third extant poteaux-en-terre structure in Ste. Geneviève, the vertical logs were found to be approximately 24 inches below grade on average.[8]

The poteaux-en-terre construction is wholly intact in its original form on the north and south elevations. The Missouri DNR may have added one additional log at the southwest corner as part of the 2007 restoration work. On the east elevation, the logs are intact but have been modified to bear upon a wood sill and stone masonry foundation wall. The reconstructed west wall also has a stone masonry foundation (Photographs P5 and P6).

The voids between logs are filled with a mixture of clay and stone known as pierrotage. It was noted that some of the clay fill between logs on the south elevation below the galerie had been replaced with a cementitious material. On the exterior side of the vertical log walls below the north and south galeries, the logs are coated with a clay parging reinforced with vegetative material mixed with the clay (Photographs P7 and P8). The parge was limewashed or painted. At the caveau interior, a thin clay parge coat has been applied over the pierrotage and logs; based on HABS photography, the interior parge coat postdates 1986.

The logs terminate at the attic level, where they are notched to receive a horizontal top plate made of two members that total 12.5 inches deep by 5 inches wide. The bottom of the two top plate members is fastened to the vertical logs with two forged nails installed through the exterior face of the vertical log (Photograph P9). The king post or "Norman" trusses bear directly upon the first-floor ceiling beams, which are dovetailed into the double top plate.



Photograph P9. Vertical logs notched to receive top plate, with two forged nails per log, as exposed at the north wall.

Condition Assessment

Where exposed, the vertical logs showed no signs of present or past insect infestations, though it was observed that every log had several chemical treatment rods, possible boron, installed on the interior and exterior in the caveau. Cedar is not as attractive to termites as other types of wood because cedar contains allelochemicals which make it naturally insect resistant. The allelochemicals also make the wood denser and darker, hence the red color of the cedar.

There are previous reports of building settlement and floor deflection issues after the Great Flood of 1993 and by the Missouri DNR in 1998. Pronounced differential settlements can be easily observed by the naked eye on the first and attic levels, but little evidence of active differential movement of the vertical logs was observed during the physical investigation. This is based upon the intact condition of the pierrotage, clay-parge coating, contemporary interior plaster, and exterior plaster on the south elevation, all of which exhibited little to no evidence of distress that is traditionally associated with differential movement. Small cracks in the interior and exterior plaster were present at window openings, but these are common and not necessarily indicative of deleterious building movement.

Probing

The soil adjacent to the vertical logs was probed to determine the condition of the logs below grade at the north and south walls. A 30-inch-long hex-head screwdriver was inserted at an approximate 45-degree

[8] Melburn D. Thurman, *Building a House in 18th Century Ste. Genevieve.* Ste. Genevieve, MO: Pendragon Press, 1984, 5.



P10. Probe extended into soil at 45 degrees approximately 6 inches from vertical log.



P11. Test pit exposed deteriorated wood below grade and the log appeared hollow.

angle at various distances from the logs. The probing began at about 6 inches away from the face of the log, which would contact the log at about 6 inches below grade (Photograph P10). The probing was performed on each log at multiple depths until no resistance was felt at the log face. The probing encompassed about 85% of the logs at the north and south walls, both on the interior and exterior faces. It was determined that the logs typically have integrity to a depth of 10 to 12 inches below the caveau interior grade, and only 15% of the logs have integrity deeper than could be determined by the probe.

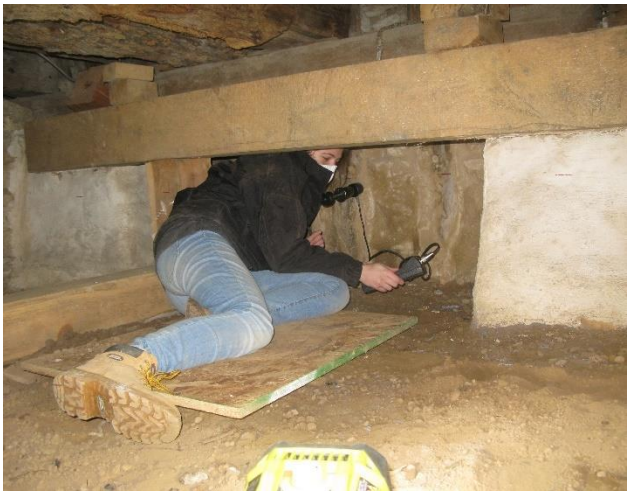
Test Pits

Small test pits were created in the soil adjacent to the vertical log wall with a small hand shovel on both the interior and the exterior faces one location where the log did not appear to have below-grade integrity based on the probing (Figure 4). Approximately 12 inches below the interior grade of the caveau, the log material was still intact, but the wood was fibrous and easily broken across the grain (Photograph P11). A sample of this deteriorated wood was removed from an existing hole at the northeast corner of the building for further analysis. It was noted that the soil adjacent to the south wall was wet, while that adjacent to the north wall was comparatively dry.

Moisture Content Readings

The moisture content of the wood was measured using electric resistance meters on the interior face of about 90% of the logs on the north and south elevations. Readings were taken slightly above the interior caveau grade and at approximately exterior grade, which is 12 to 18 inches higher than the grade inside the caveau.

Electric resistance meters indicate moisture content (MC) as a percentage of the oven-dry weight of the wood by measuring electrical conductivity between two probes inserted into the wood. This method works well because moisture is an excellent conductor of electricity and dry wood is an effective insulator. High conductivity generally indicates high moisture levels in the wood. Measurements above 20% MC are widely accepted to indicate a level of moisture that support fungal decay.



P12. View of personnel using Delmhorst RDM-2 meter in vertical logs within caveau.

Moisture content was measured using two devices: a Delmhorst BD–2100 with a 6 to 40% MC range on wood and contact pins with $^{5}/_{16}$-inch penetration and a Delmhorst RDM-2 with a 4.5 to 60% MC range and contact pins with 1-inch penetration.

- The Delmhorst BD-2100 resistance meter provides for rapid measurement in numerous locations but provides more qualitative and comparative MC measurements. See Table 1.

Table 1. Delmhorst BD-2100 MC Readings

Elevation	Member	Reading Location	MC (%)
South	Vertical Log	Caveau Grade	24-28%
South	Vertical Log	Exterior Grade	12-15%
North	Vertical Log	Caveau Grade	24-28%
North	Vertical Log	Exterior Grade	8-10%

- The Delmhorst RDM-2 resistance meter provides a more accurate MC measurement than the BD-2100 since the meter was designed to read moisture within wood only. The meter also allows the operator to input the temperature of the wood and wood species. The meter also provides a hammer-like probe handle to insert the probes to a depth of 1 inch (Photograph P12). The MC reading at a 1-inch depth is considered to be representative of the MC through the full depth of the member. The Delmhorst RDM-2 was used to take readings at select locations. See Table 2.

Table 2. Delmhorst RDM-2 MC Readings

Elevation	Member	Reading Location	MC (%)
North/South	Vertical Log	Caveau Grade	18-48%
North/South	Vertical Log	Exterior Grade	17- 29%
East	Vertical Log	At Sill	19%
East	Vertical Log	1 foot Above Sill	18%
N/A	Floor Joist	First Floor Framing	14%

These readings generally indicate that the moisture content of the logs is elevated where logs are in contact with soil and that the interior moisture content is sufficiently high to support fungal and other modes of biological deterioration of the wood.

Qualitative Resistance Drilling

About 85% of the exposed vertical logs of the north and south elevations were resistance-drilled from the interior slightly above grade. This simplified qualitative technique allows an experienced investigator to identify potential voids or soft spots in a wood member. Drilling was performed with a $^{1}/_{8}$-inch-diameter wood drill bit to a depth of about one-half of the diameter of each log. In places where voids were found, further drill holes were made higher up in the log to determine the height of the void or deterioration.

Three hollow logs were found on the north elevation, and five hollow logs were found on the south elevation (Figure 4). There was not a direct correlation between moisture content levels and hollow logs.

Stone Masonry Foundations

At the east end wall, the poteaux-en-terre logs have been modified to bear on a stone masonry foundation; the west end wall has been reconstructed as a frame wall on a stone masonry foundation. The stone and mortar were in good condition, without significant weathering, debonded mortar joints, or other evidence of distress or deterioration. The stones currently in place appear to be the same as those documented in the 1936-1940 HABS photographs, but the walls have since been heavily repointed on both interior and exterior faces.



P13. First-floor structure, viewed from the caveau, showing original log joists, masonry piers with limewash, and shoring.

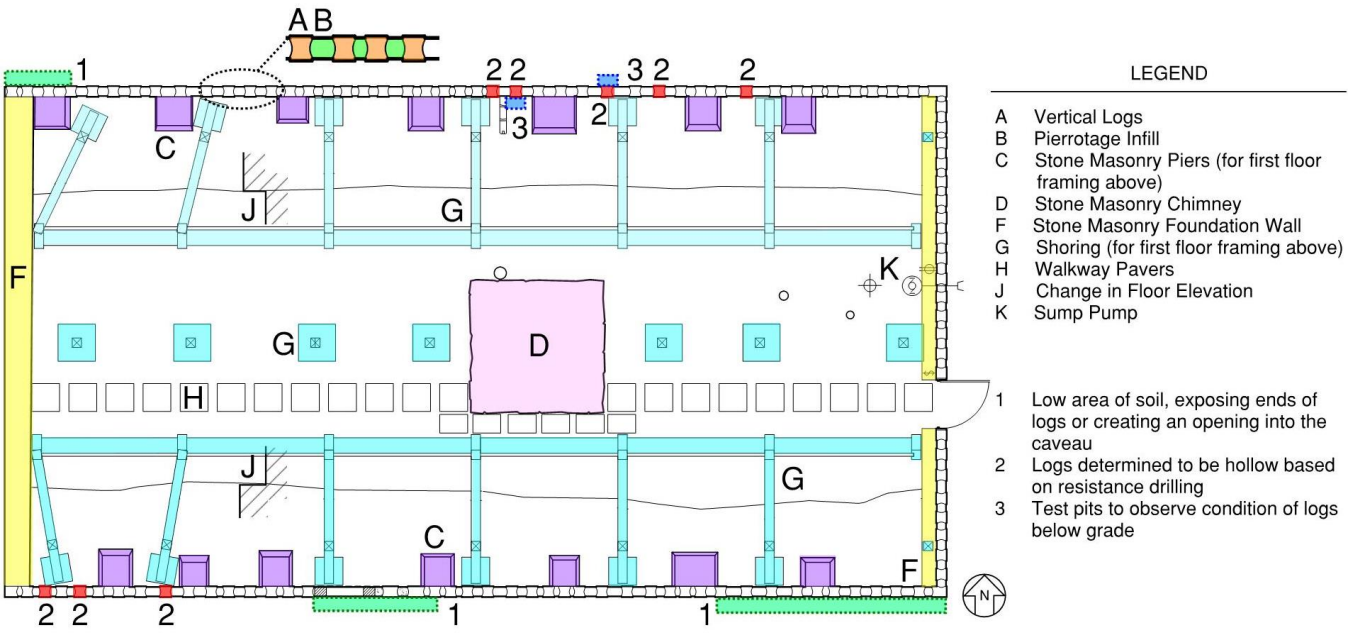


Figure 4. Caveau floor plan.

First-Floor Structure

Description of Existing Construction

The first-floor structure is constructed of large oak logs as joists, some with bark and some semi-hewn (Photograph P13). These joists span the full width of the structure in the north-south direction but are not engaged with the vertical log walls, like at the Bequette-Ribault House. Rather, they bear on a hewn timber beam that spans across stone masonry piers adjacent to the interior side of the vertical logs (Figures 5 and 6), making the floor structural system independent of the wall and roof structural system. Three of the joists are supported on one end by the timber beam, and the other end is pocketed into the stone masonry chimney stack. It is believed that the joists were installed prior to the erection of all the vertical log walls and that the tops of the joists were hewn in place to render level support for the original wood floorboards (no longer extant).[9] Multiple supplementary joists have been added between original log joists and some original joists may have been replaced (Figure 6); these supplementary joists are composed of a combination of reclaimed timbers and semi-hewn logs and appear to have been installed at various points in time. The newer joists are typically spliced at their midpoint and supported by the longitudinal shoring beam.

Condition Assessment

The log joists are in "poor" to "failed" condition from insect and fungal decay, meaning that the original



P14. Deteriorated original log joists.

[9] Luer and Frances, *Vanishing French Heritage*, 78-79.



P15. Replacement joist with splice at longitudinal shoring beam.
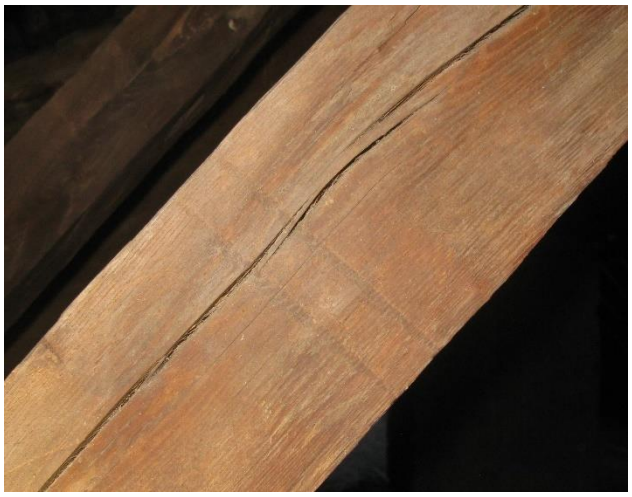


P16. Approximately every other beam supports with a roof truss.

floor framing members have little to no structural capacity remaining (Photograph P14). Extensive shoring in the caveau now provides five bearing supports for most joists, as opposed to the original two end supports adjacent to the north and south walls. The original log joists have been supplemented with several new members, which are spliced over the middle line of the shoring (Photograph P15). The shoring consists of a combination of vertical wood posts and metal screw adjustable posts and was reportedly installed after the damage from the Great Flood of 1993. No active termite infestation was observed, but it was not possible to determine whether powder post beetle or other insect infestations are active.



Photograph P17. Mortise connection at truss collar tie with protruding tenon and trenail.



P18. Carpenter's mark showing Roman numeral II on truss top chord.



P19. Carpenter's mark showing Roman numeral VI on truss top chord.

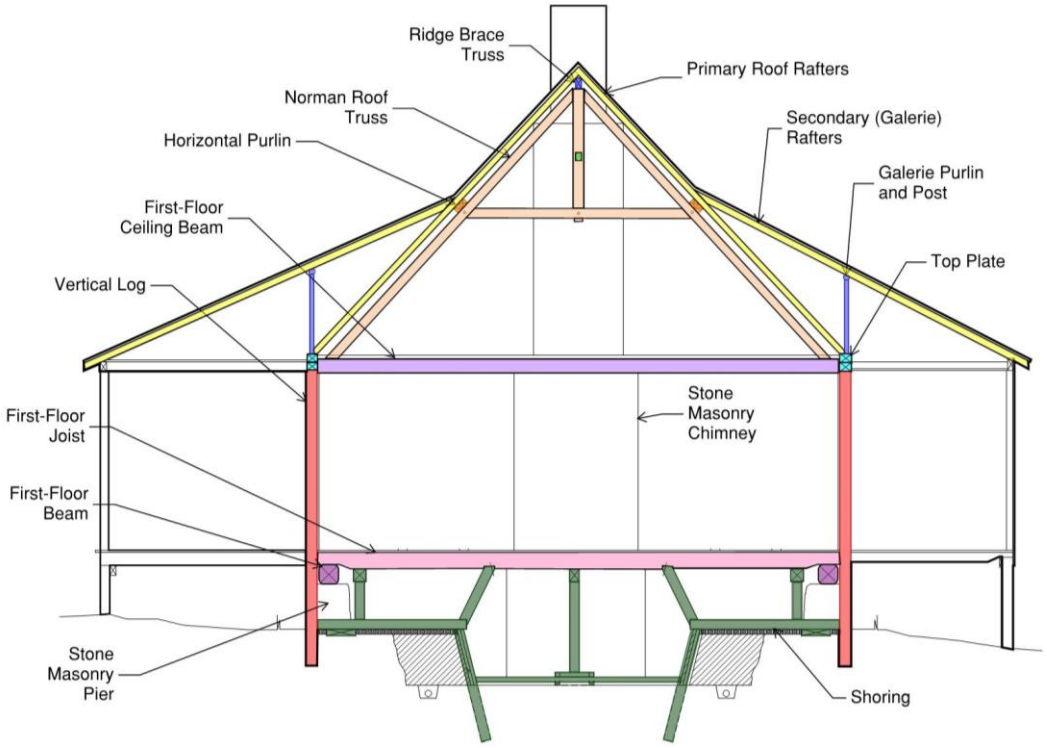


Figure 5. Transverse section looking west, showing framing members (based on Missouri DNR drawings).

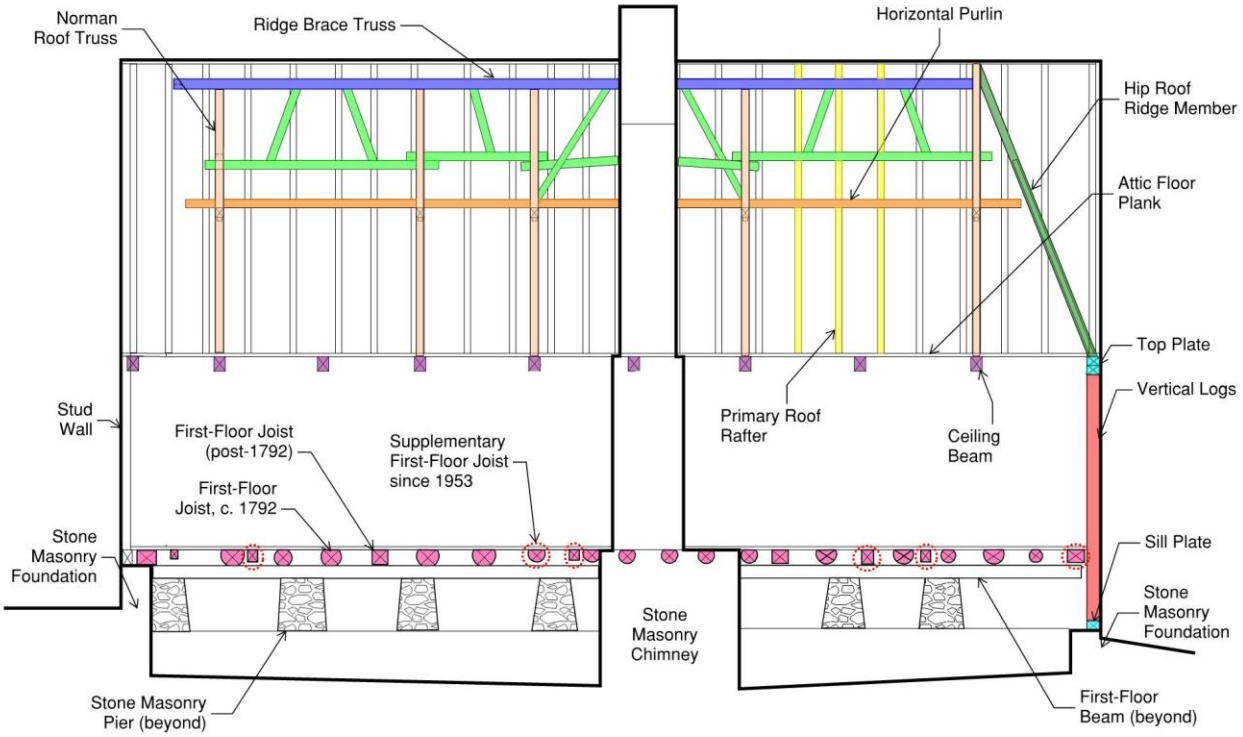


Figure 6. Longitudinal section looking north, showing framing members (based on Missouri DNR drawings).



P20. C. 1792 rafters at the main roof with horizontal purlin. Note the trenail purlin splice.



P21. Connection of primary rafter to upper top plate with a forged nail.



P22. East end wall, showing hipped roof framing members still in place.

Discussion

There has been considerable downward movement of the first-floor level that is caused by relative settlement between the brick piers and chimney stack, as well as significant deflection of the log floor joists. A laser level survey was performed on the first floor to better understand these phenomena and serve as a benchmark to quantify future differential settlements. It is apparent that the stone masonry chimney stack is the most stable vertical bearing element and has been prone to the least settlement. A more detailed discussion of the laser level survey and the results is included below.

Roof Structure

Description of Existing Construction

The construction of the c. 1792 roof framing includes roof trusses, roof ridge bracing trusses, a horizontal purlin, primary rafters, and ceiling beams. See Figures 1, 3, 5, and 6 for diagrams of the roof structure.

- The five roof trusses are Norman-style trusses: triangular-shaped with a vertical king post, a horizontal collar tie, and diagonal top chords.
- The trusses bear directly on the first-floor ceiling beams that span between the north and south vertical log walls (Photograph P16 and Figure 5).
- The trusses spacing varies between approximately 10 feet to 12 feet on-center, except Trusses III and IIII, which are spaced approximately 5 feet 4 inches on-center.
- All truss members are hand-hewn from red or white oak, and as such, their dimensions vary. The truss top chords are nominally 5 x 5 inches, the king posts are nominally 6 x 5 inches, the horizontal collar ties are nominally 7 x 5 inches, and the first-floor ceiling beams are nominally 8.5 inches x 5 inches at the ends and 10.5 x 5 inches at the midspan.
- The truss members are connected by mortise and tenon connections and secured with *trenails*. One trenail was typically used; only one location at Truss V has two trenails at the connection between the king post and horizontal collar tie member. The horizontal collar tie-to-top chord and king post-to-horizontal collar tie connections each have full-depth mortises with protruding



P23. Hipped roof framing members connected with forged nails.

tenons (Photograph P17). The connections between the top chord and the ceiling beam and the king post have partial-depth mortises.

- Each truss member has a carpenter's mark in Roman numerals, indicating the trusses were fabricated on the ground and assembled in place, piece by piece. The first truss from the reconstructed west stud wall was marked as Roman numeral II (Photograph P18), indicating it was originally the second truss from the west, and the easternmost truss was marked as Roman numeral VI (Photograph P19). Therefore, it appears there were originally six trusses, and the west stud wall was constructed between the original first and second trusses.

If the truss spacing between Trusses I and II was similar to that of the other trusses (10 to 12 feet), and the hip framing dimensions were similar to that of the east end, approximately 8 to 12 feet of the original building was removed from the west end, which supports the conclusions of the 1996 archeological survey.

- The c. 1792 roof rafters are hewn, roughly shaped members (Photograph P20), spaced nominally 24 inches on-center but ranging from as little as 18 inches to as much as 28 inches. The rafters vary in size but average approximately 4.5 x 3.5 inches. The rafters are connected together at the ridge with a single horizontal trenail and bear on the ridge beam. The members span from the roof peak to the top plate, with midspan support from the horizontal purlin, which spans



Figure 7. Diagram of missing ridge brace truss members (in white) at cut end of ridge beam at west.

longitudinally across the roof trusses. The bearing ends of the rafters may be mortised into the top plate and are also secured with one wrought nail, toenailed through the rafter end into the upper top plate member (Photograph P21).

- The c. 1852 roof rafters for the galeries align with the primary rafters and are attached just below the purlin with cut nails. The rafters are roughly shaped and hewn flat on the top face. A horizontal purlin on posts provides midspan support; many of the posts appear to be replacements.
- The original hip roof construction, including the ridge rafters and common rafters, is present at the east end of the attic (Photographs P22 and P23).
- At the west end, the ridge beam has been partially removed. The cut end shows evidence of a mortise connection, likely for one of the diagonals for the ridge brace truss (Figure 7). Along with the carpenter's marks on the trusses and this missing hip framing at the west end, this fragment is clear evidence that the House originally extended further to the west than the existing footprint.

Condition Assessment

The existing roof framing members are individually generally in "good" condition, but localized distress conditions are negatively affecting the structural stability of the roof framing.

- The wood is generally in good condition, considering its age. The oak used for the truss members was obviously selected for its high



P24. Termite damage at Truss IV, south bearing, Note the displacement of the rafter bearing (left) and the displacement of the top plate to expose the dovetail end of the ceiling beam.



P25. Truss VI, south bearing, exhibits termite damage within the truss top chord and first-floor ceiling beam end.

quality. Very few knots are present, and no splits were observed, and the wood has little to no slope of grain. Except where distressed by outside conditions, like settlement or insect/water damage, the truss members are nearly in their original condition, without warping, splitting, or shrinkage.

- Past termite damage is visually apparent in several trusses at the top chord-to-ceiling beam connection, where the beam dovetails into the double top plate. The loss of section is visually apparent more within the first-floor ceiling beam than the sloped top chord (Photographs P24 and P25). No active termite activity was observed.
- Several roof trusses exhibit displacement at their bearing ends.
- The horizontal ridge beam is connected to the top of the truss king posts (Figures 5 and 6) and is pocketed into the reconstructed upper portion of the stone masonry chimney. The bottom chord of the ridge brace truss is supported by the original stone masonry portion of the chimney and a mortise and tenon connections within the king posts (Photograph P26).
- On the west side of the chimney, the lower half of the diagonal bracing member between the chimney and Truss IIII is missing (Photographs P27).
- On the east side of the chimney, the bracing member between the chimney and Truss V is cracked (Photographs P28). This damage appears to be related to the differential settlement of the exterior walls (and subsequently, the trusses) relative to the chimney, which has not settled.
- Water damage is present at the top of the king post at Truss VI, where the hip framing connects with the primary roof. The king post at Truss VI extends above the ridge beam, supporting the belief that the end trusses had finials that originally penetrated the roof (Photograph P29). The damage at this location is significant, with deterioration of the trenail connection and material loss of the structural wood members.
- At the attic floor, the wood planks are damaged and loose around the chimney, creating an unsafe walking surface (Photograph P30). The vertical displacement of the attic floor is pronounced.

Qualitative Resistance Drilling

Qualitative resistive drilling was performed on the first-floor ceiling beams and sloped top chord adjacent to the beam connection to identify potential interior decay within the members. Significant insect damage was found at six truss bearing points based on the resistance drilling (Photograph P31).

It was found that the insects traveled within the timbers without exposing themselves to the outside. This type of damage is concealed from view and not able to be assessed visually. No active insect activity was observed during our visit. See section "Pest Damage" for further discussion.



P26. Ridge brace truss connection on the west side of the stone masonry chimney.



P27. Roof ridge brace truss at east face of the chimney. Note the vertical displacement and missing lower portion of the diagonal bracing member.



P28. Cracked bottom chord member at west side of chimney.



P29. Water damage to the Truss VI king post and other framing members at the ridge.



P30. Displaced and missing attic floor planks. Note the effect of the differential settlement on the floor level around the chimney.



P31. Resistance drilling into wood members to detect insect infestation damage.

Discussion

While several galerie rafters did appear to be modern replacement members, the framing of the c. 1792 roof appeared to be in its original condition. One or two members of the ridge brace trusses may be replacement members, but the Norman truss members, purlins, and rafters all appeared to be original fabric. Despite a long history of alterations, the c. 1792 roof structure retains extraordinary integrity and the c. 1852 galerie roof structures retain substantial integrity.

The roof structure is under stress due to localized deterioration of connections and differential settlement of the exterior walls relative to the chimney. The 2007 restoration work performed by the Missouri DNR included resetting the displaced ridge beam and partial reconstruction of the stone masonry chimney. This work reduced the visible deflection of the roof ridge when viewed from the exterior but did not address the underlying cause of the differential settlement. Some differential settlement would be normal and expected for a structure of this age. A comparable level of minor differential settlement can be seen in the attic floor in the 1986 HABS photographs and in the photos taken in the early 1990s published in *Vanishing French Heritage*. The severity of the differential movement between 1986 and today was reportedly accelerated by the Great Flood of 1993.

LEVEL AND TOP PLATE SURVEYS

Level and top plate surveys were performed using a Bosch GCL 2-160 self-leveling cross-line laser mounted on a tripod. When properly leveled, the device emits horizontal and vertical laser planes allowing the user to measure floor levels at various points relative to the horizontal laser plane and other elements, such as top plates relative to the vertical laser plane.

First Floor Survey

A level survey was performed on the topside of the first floor to understand the deflections and differential settlements within the first-floor structure and establish a benchmark for long-term monitoring (Figure 8). It should be noted that the first floor is supported by stone masonry piers within the caveau separately from the exterior walls and roof framing.

- The level survey indicates generally, the floor east of the chimney is approximately 2 to 3 inches lower than the floor adjacent to the chimney. This indicates that the stone masonry piers for the first-floor framing have settled relative to the stone masonry chimney.
- The floor west of the chimney exhibits less settlement along the north and south walls.
- Furniture and other interior obstructions interfered with readings along the west wall.

Attic Floor Survey

A levelness survey was performed within the attic to understand the relative movement between the vertical log walls and the center stone masonry chimney, the deflection of the first-floor ceiling beams, and to establish a benchmark for long-term monitoring (Figure 9). Since some ceiling beams are supported by both the exterior wall vertical logs and the center stone masonry chimney, the differential elevations should be a strong indicator of the settlement of the exterior wall vertical logs.

- The greatest area of floor deflection occurs around the stone masonry chimney, where the differential elevation is as much as 4 to 5 inches higher compared to the exterior walls. This is supported by visual observations of displaced and damaged attic floor planks. These measurements further support the level survey at the first floor, showing differential settlement between the chimney and the exterior walls.
- At the eastern half of the attic, deflection of the ceiling planks is shown in deep red. These planks deflected under foot traffic and should be avoided when accessing the attic.
- The relative high points along the east and west walls may be related to the later alterations that added limestone foundations.

Top Plate Survey

A plan survey was performed on the top plates at the north and south exterior walls to understand the relative lateral (outward) movement of the top plates (Figure 10).

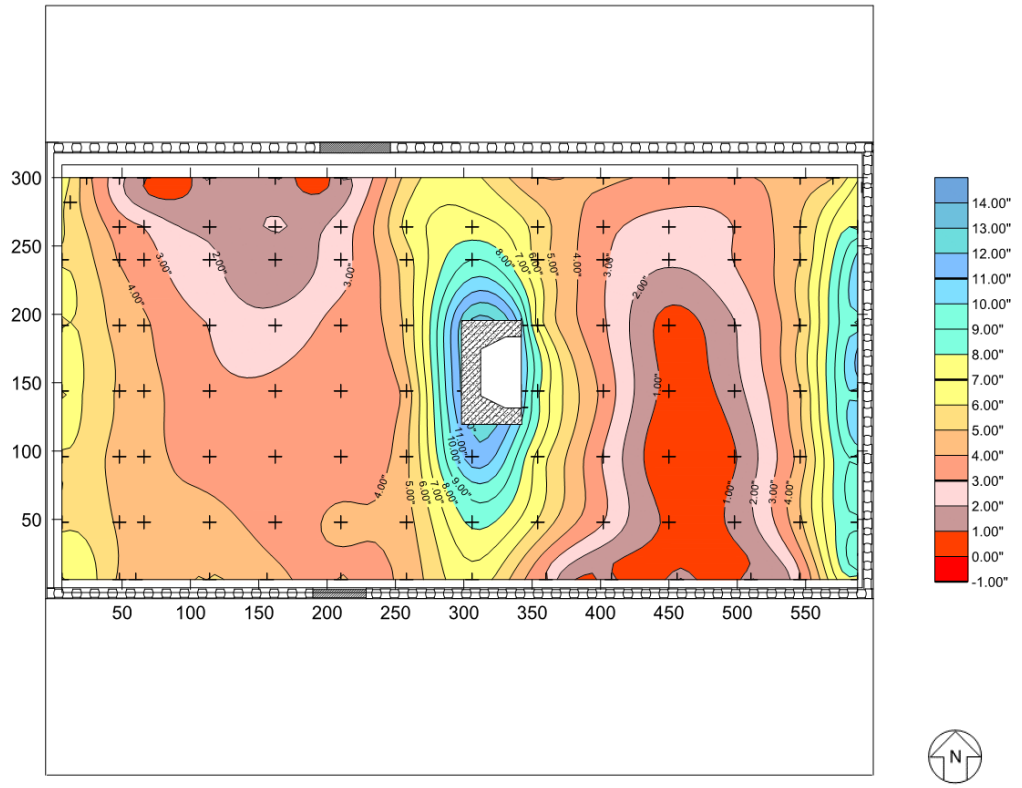


Figure 8. Attic Floor Plan Level Survey.

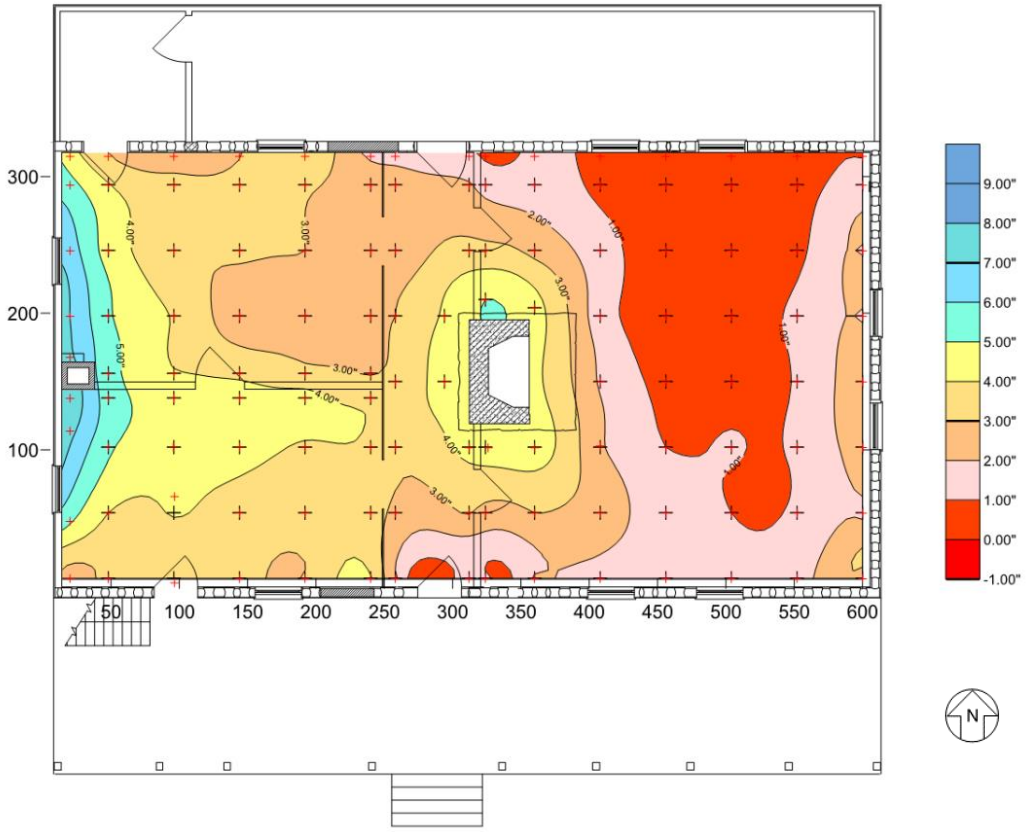


Figure 9. First Floor Plan Level Survey.

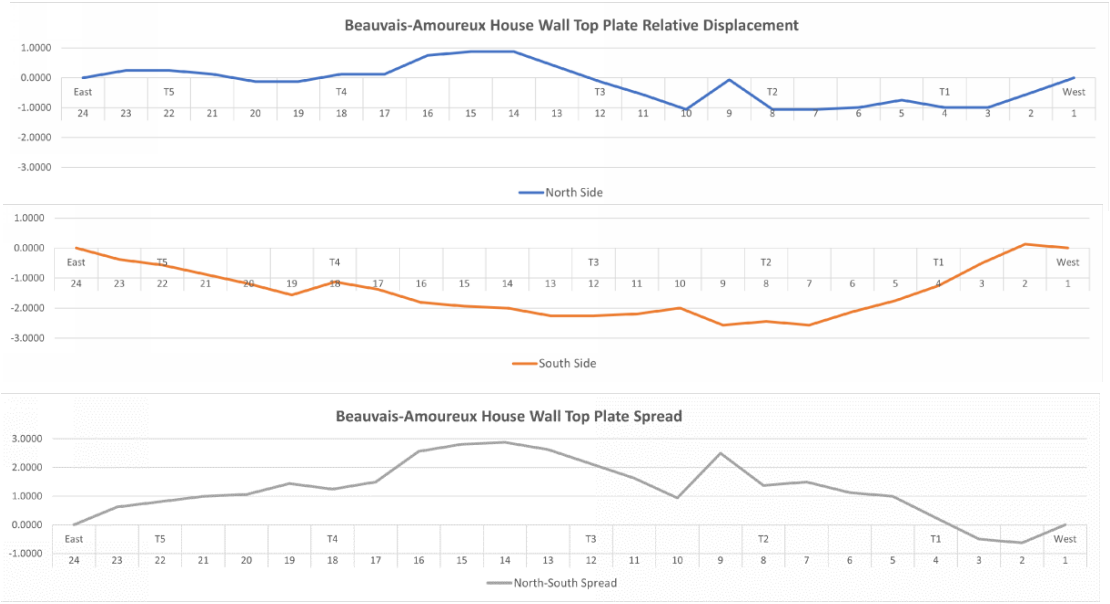


Figure 10. Top Plate Plan Survey, showing relative displacement in inches, from east to west. Positive values indicate outward displacement and negative values indicate inward displacement.

- The survey measured a significant outward bowing on the south side. This would indicate that the Norman roof trusses are sagging (and consequently spreading), and the rafters are sharing the roof loads, causing the top plates to displace outward.
- The top plate is constructed of two wood members. At the north, the upper top plate member was also observed to have a torsional deformation (twisting or rotation) that would also be caused by the spreading of the trusses and roof rafters.



P32. Concealed insect damage demonstrated by a timber fragment found in the grenier.

The results of the plan survey support other observational evidence that the trusses are distressed, due in part to the differential settlement of the exterior walls and in part to the insect damage to the truss-to-ceiling beam bearing connections. The spread of the trusses is redistributing roof loads to rafters in eccentric and unintended load paths. This distress is also contributing to the rotation of the bearings ends of at least one truss member and several c. 1792 rafters and are likely putting additional stress on the original trenail and wrought nail connections between roof members.

PEST DAMAGE

Insect Damage

Damage to wood structural members caused by various wood-boring insects was documented during the physical investigation. No live insects were observed, and no entomological analysis was performed within the scope of the structural assessment to verify insect species. In some cases, the damage observed followed well-recognized patterns of insect activity; in other cases, it may be

possible that multiple insect vectors are responsible for the damage observed.

In many cases, the extent of damage from insects to the wood structural members was not visible from visual observation alone, as evidenced by a timber fragment found in the grenier (Photograph P32). It is unclear where this fragment originated, but concealed insect damage is well demonstrated by the loss of section visible in the fragment cross-section.

Termites

Four species of termites occur naturally in Missouri. All these species are closely related and belong to the genus *Reticulitermes.* All of Missouri's native Reticulitermes termites are subterranean.[10] Subterranean termites live in colonies below ground and only enter into a wooden structure to feed. When above ground, they construct mud tubes as a link between their food source and colony, which protect them from predators and dry air. The clay infill of the pierrotage construction allows termites to propagate to the interior wood members at elevated floors without detection. Termites eat the wood cellulose, which weakens the rigidity and strength of the wood members. Because termites do not prefer cedar, the damage was most severe at oak members. No termite damage was observed on the cedar vertical logs.

Termite damage to the floor's joists is severe (Photograph P33). Some logs were observed to be completely hollow, with only the bark remaining. Without the extensive shoring installed in the 1990s, the first-floor framing may have collapsed (Photographs P34).

Areas of termite damage were also observed at roof truss members, particularly the bearing connections of multiple truss top chords to the ceiling beams. Although much less pronounced than the conditions observed in the caveau, termite damage in the attic has had a negative impact on the structural stability of the trusses.



P33. Termite damage of floor joist.



P34. Caveau shoring, south half of basement. Note wood beam shoring line along south wall and midspan of basement, as well as diagonal members.



P35. Powder post beetle damage of caveau floor joists.

[10] Richard M. Houseman, "Subterranean Termites," University of Missouri – Columbia, Department of Entomology, https://extension.missouri.edu/publications/g7420. Accessed March 28, 2021.

Powder Post Beetles

Powder post beetles are within the group of wood-eating beetles referred to as "woodworm" because they spend several years as grubs tunneling through the wood before they depart as an adult beetle. The wood that they inhabit was sometimes colonized before the tree was felled; thus the structure may have been infested from its initial construction. The adult beetle lays its eggs in crevices in the timber, with larvae emerging soon afterward, eating their way through the timber for the next several years. Eventually, pupation will occur in chambers just below the surface. The adult beetle emerges from the timber through an exit hole or "flight hole." A mating flight then follows, and, subsequent to mating, the female seeks out a suitable place to lay eggs, and the cycle begins again.[11]

This cycle may take place over and over again within the protected confines of the affected structure. This is a long-term infestation and has caused significant structural damage but has been mostly confined to the outer 2 inches of the affected logs (Photograph P35). As previously mentioned, it was not possible to determine whether woodworm infestation was active during our visit. Woodworm activity could be determined during the mating season in midsummer.

Carpenter Ants

Carpenter ants are another common wood-destroying insect, with five species occurring in Missouri. Unlike termites, carpenter ants do not feed on wood but carve out large areas of interconnected tunnels, called galleries, as nests, which are generally clean of wood pulp and frass. Carpenter ants prefer wood with a high interior moisture content and will infest wood that has been damaged or decayed by fungal activity or other insects. Damage from carpenter ants can be significant in structural members, and winged females will leave their parent colony to establish satellite colonies in nearby members.[12]

Like termite damage, carpenter ant damage may be concealed within the interior of a structural member and not readily visible to the naked eye. No evidence of active carpenter ants was observed during the physical investigation. In some cases, it may be difficult to differentiate the damage caused by termites compared to that caused by carpenter ants.



P36. Trim at the south galerie with insect and squirrel damage.

Animal Damage

Damage from larger animal pests was also observed at the House. Common animal pests in Missouri include squirrels, mice, and rats, burrowing animals like groundhogs, birds, and bats. Controlling damage from animal pests is typically approached through sealing potential entry points, eliminating attractive nuisances like overhanging trees or woodpiles, and performing regular inspections for signs of infestation. Cruelty-free repellant treatments like ultrasonic devices, ammonia-based repellants, and predator urine are often anecdotally described as effective, but in practice, may have limited or inconsistent success. No active animal infestations were observed, but park staff reported ongoing issues with squirrels and groundhogs, specifically.

Squirrels

Damage likely attributable to squirrels was observed at wood fascia boards, wood trim, and along the edges of roof shakes where the wood had been gnawed, and also occasionally, holes had been chewed entirely

[11] Richard M. Houseman, "Wood-Boring Beetles," University of Missouri – Columbia, Department of Plant Sciences, https://extension.missouri.edu/publications/g7422. Accessed March 28, 2021.

[12] Richard M. Houseman, "Carpenter Ants," University of Missouri – Columbia, Department of Entomology, https://extension.missouri.edu/publications/g7423. Accessed March 28, 2021.

through the wood (Photograph P36). Attics are attractive nesting locations for squirrels; this is especially true for a structure that is not permanently occupied. Controlling squirrel damage is best performed through controlling access to the roof by keeping tree limbs and other climbing paths trimmed and by closing off entry paths into the attic.

At the Beauvais-Amoureux House, the open soffit into the south galerie roof has wire between the rafter tails, but this may provide only limited control for squirrel infestation. Regular inspection and maintenance are needed to repair damage caused by squirrels and to seal any entry points into the structure that may be created. Controlling entry points for squirrels will also prevent entry of birds and bats.



P37. Suspected animal burrow hole into caveau under the south galerie.

Burrowing Animals

Along the foundation walls at the north and south elevations, several low spots or holes appeared to be animal burrows (Photograph P37). Multiple burrowing animals are native to this area of Missouri, including groundhogs, which may alternately be called woodchucks or marmots. Groundhogs are aggressive diggers who can easily also burrow through the deteriorated ends of the vertical logs to gain access to the caveau. If deterrent methods are ineffective, below-grade barriers in the form of heavy wire mesh may need to be considered.



P38. Cementitious material aggregate after the sample was placed in a dilute muriatic acid solution, showing river sand at 100x magnification.

LABORATORY STUDIES

Laboratory studies were performed on samples of several materials from the House. Techniques employed included analysis with reactive chemicals, sedimentation analysis, and microscopic examination.

Cementitious Material

A cementitious material was placed between the logs on the exterior side of the south wall just above grade and below the galerie. This was an apparent alteration or repair to the original pierrotage. The sample of the cementitious material was placed in a dilute muriatic acid (hydrochloric acid, HCl) solution, which produced an immediate bubbling reaction that completely consumed the binding paste, leaving only the aggregate. This reaction is consistent with a binder of calcium carbonate ($CaCO_3$, lime) and the release of carbon dioxide (CO_2) gas. The aggressive nature of the bubbling indicated that the mixture has a high lime content with little to no portland cement. This alteration appeared old and could have occurred any time within the nineteenth or early twentieth centuries. The aggregate that remained was a well-graded river sand (Photograph P38).

Clay Binder, Parging, and Nearby Soil

Samples of the binder in the pierrotage and the parging were removed for qualitative sedimentary analysis. The samples were only removed from areas

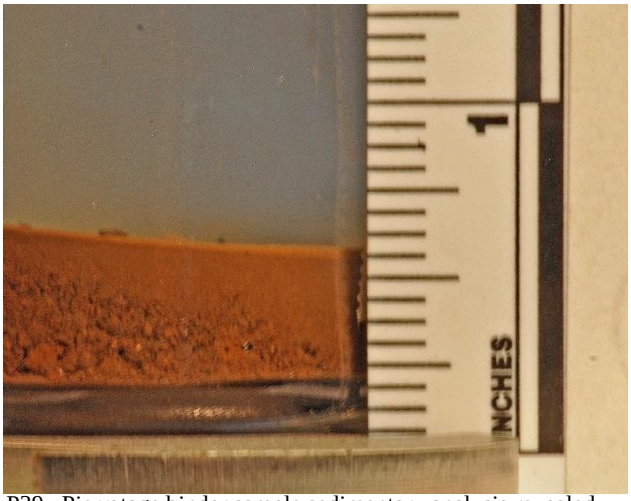
that were already debonded. A sample of the soil to the southeast and within 10 feet of the House and about 1 foot below grade was also removed for comparative analysis.

Sedimentary analysis is a way to determine a soil's texture. This type of testing is used in areas of the world where earthen construction is common and assists with developing appropriate soil textures for rammed earth and adobe construction, as well as selecting appropriate clay mortars.

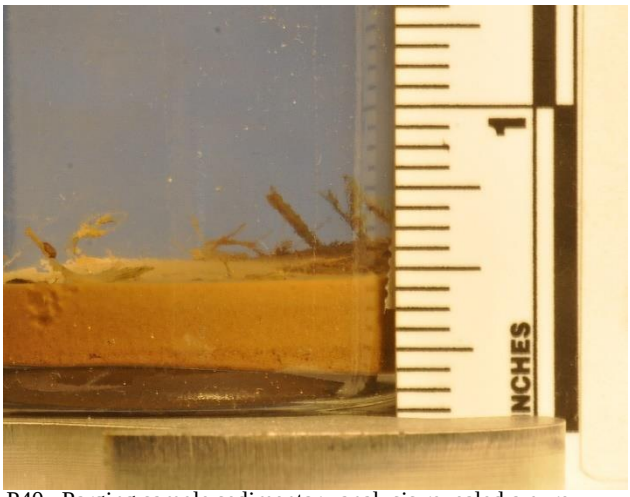
A soil's texture is determined by the mineral particle sizes it contains, as well as the content and composition of contributing organic matter. For soil minerals, sand (2.00 to 0.05 mm in diameter), silt (0.05 to 0.002 mm), and clay (smaller than 0.002 mm) are the predominant particle sizes and are derived from rock that has broken down over thousands of years by climatic and environmental action. Mineral particles are carried and naturally sorted by waterways, which deposit these particles on their beds and banks over thousands of years. Sand will quickly settle due to the larger particle size, while slits and clays remain suspended longer and settle farther away from the bank in overflow events. The banks of the Mississippi River would be an ideal place for quarrying appropriate sands and clays for building construction. For construction purposes, the smaller the mineral particles, the more impermeable the soil becomes, such as soils with heavy clay content. Sand in the soil, like in concrete, will help to control shrinkage. The ratio of particle sizes affects the appropriateness of their use in construction for pierrotage, bousillage, and parging, a phenomenon no doubt well understood by the early French settlers.

For the sedimentary analysis, material samples were broken apart and placed in a clear jar with clean water. The jar was shaken vigorously until the sample was completely suspended. Over a three-day period, the jars were allowed to sit undisturbed, and the soil particles settled into strata, with sand particles settling first at the bottom, silt next, and finally the clay at the top. Organic matter stayed in suspension, floated to the top, or settled on top of the clay layer.

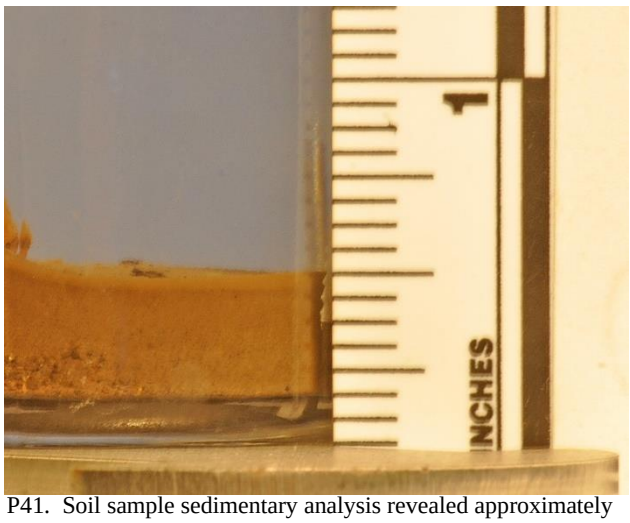
- The clay binder of the pierrotage was found to contain a mixture of about 25% sand and 75% clay/silt. Insignificant amounts of organic matter were detected (Photograph P39).



P39. Pierrotage binder sample sedimentary analysis revealed approximately 25 percent sand and 75 percent clay/silt.



P40. Parging sample sedimentary analysis revealed a pure mixture of clay/silt with some vegetative material used as reinforcing.



P41. Soil sample sedimentary analysis revealed approximately 25% sand and 75% clay/silt.

- The parging was found to contain a pure mixture of clay/silt. It also had significant amounts of organic matter in the form of straw (Photograph P40).
- The soil was found to contain a mixture of about 25% sand and 75% clay/silt. Though a bit darker in color than the pierrotage binder, the textural comparison between these two samples was the same (Photograph P41).

The pierrotage binder is believed to be from the original construction. Its similarity in texture to the soil from the vicinity of the House would indicate that the clay could have been quarried on site. It is doubtful that the parging is original but was rather a maintenance technique; this is supported by 1937 HABS photographs which show the exterior walls below the galeries were at one time covered with stucco on wood lath, which based on historic photography was common practice for treating exterior walls of log structures in Ste. Geneviève in the nineteenth century. The analysis suggests that the pure clay/silt mix was carefully chosen because of its compatibility with the clay binder and that the straw was added to control shrinkage.

Whitewash

Samples of the whitewash were removed from the parging on the outside of the south vertical log wall above grade and below the galerie. Samples were removed only where the whitewash that already become detached from the parging. It was noted that the whitewash debonded at the whitewash/parging interface and not within the body of the parging. A sample of the whitewash was placed in a dilute HCl solution, which had an immediate bubbling reaction that completely consumed the sample. The whitewash was likely lime without added Portland cement, and the bubbling reaction was a release of CO_2 gas. Unfortunately, this analysis provides no clue as to the age of the whitewash.

Decayed Cedar Wood

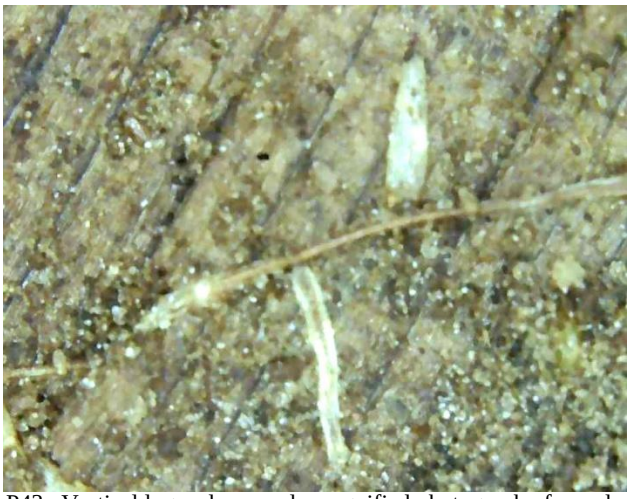
Samples of decayed cedar wood were removed from below grade at the northwest corner of the building where a hole in the ground already existed, and the bases of decayed logs were exposed. No evidence of insect damage was observed.

The samples were broken and examined using a 50X to 100X digital handheld microscope. Evidence of wood rot, which is a fungal growth, was evident by the presence of hyphae (filaments) and lower-level plant growth (Photographs P42 and P43).

If wood is exposed to long-term moisture or repeated wetting and drying, the moisture can allow biological growth to occur, resulting in decay to the wood elements. This decay phenomenon is observed where the logs are below the ground or when in regular contact with moisture, such as a leaking downspout. When the moisture content rises above the fiber saturation point of the wood, the wood is prone to decay from fungal attack. The fiber saturation point is generally accepted to be about 30% moisture content, but as discussed above, levels higher than 20% can promote biological deterioration. Locations



P42. Vertical log cedar sample magnified photograph of wood decay (fungal growth).



P43. Vertical log cedar sample magnified photograph of wood decay (fungal growth).

at the base of the logs with localized, elevated moisture content compared to logs in other areas should be a cause for further monitoring.

WOOD SPECIES IDENTIFICATION

A robust program of wood species identification was performed as part of the 1986 dendrochronology analysis, which identified species from 7 samples taken from the Beauvais-Amoureux House, 16 samples from the Vital St. Gemme Beauvais House (poteaux-en-terre of similar date and construction methodology), 21 samples from the Bequette-Ribault House (also poteaux-en-terre but of slightly later date), and 99 samples from 21 other log structures in Ste. Geneviève.[13]

Of the three poteaux-en-terre structures, the exterior wall logs were found to be uniformly constructed from red cedar, while truss members and beams were found to be white oak. *Poteaux-sur-sole* structures contemporaneous with the Beauvais-Amoureux House were more commonly found to have wall logs of oak, likely because the logs were not in direct contact with the earth.

To support the 1986 wood species identification, a further 23 samples were taken from various structural members of the Beauvais-Amoureux House as part of the 2020 physical investigation. Samples were removed from vertical logs, truss members, ceiling beams, joists, purlins, rafters, and other members.

See Table 3 for wood species identification by sample.

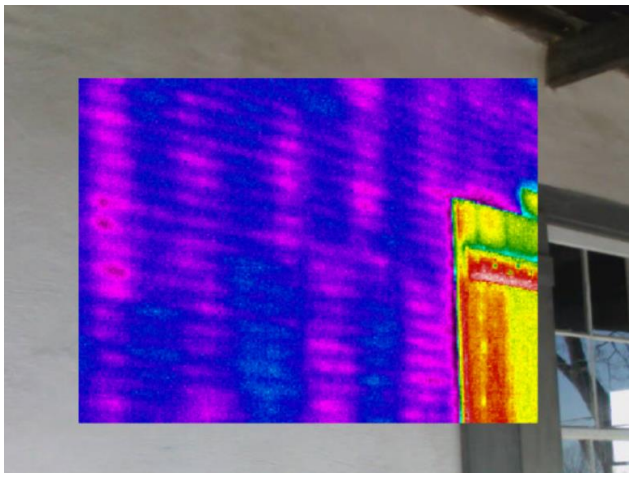
[13] Guyette, "Tree Ring Dating."

Table 3. Wood Species Identification				
Member	**Location**	**Construction Date**	**2020 Assessment[1]**	**1986 Dendro[2]**
Roof Trusses				
Truss Collar	Not given (1 sample)	c. 1792	---	White Oak
King Post	Truss II	c. 1792	Red Oak	
Top Chord	Truss III	c. 1792	White Oak	
Top Chord	Truss IIII	c. 1792	Red Oak	
King Post	Truss IIII	c. 1792	Red Oak	
Roof Rafters				
Roof Rafter		c. 1792	Hardwood, Black Cherry	
Roof Rafter	North Slope	c. 1792	Hardwood, Black Walnut	
Roof Rafter	North Slope	c. 1792	Hardwood, Black Cherry	
Roof Rafter	South Slope	c. 1792	Hardwood, Black Cherry	
Roof Rafter		c. 1792	Hardwood, Beech	
Galerie Rafter	North Slope	c. 1852	Cedar	
Galerie Rafter	South Slope	c. 1852	Cedar	
Galerie Rafter		c. 1852	Southern Yellow Pine	
Galerie Rafter	North Slope	c. 1852	Southern Yellow Pine	
Galerie Rafter	North Slope	c. 1852	Southern Yellow Pine	
Galerie Rafter	South Slope	c. 1852	Southern Yellow Pine	
Roof Members, Other				
Horizontal Purlin		c. 1792	Hardwood, Maple	
Top Plate		c. 1792	Red Oak	
Ceiling Beam	Between Truss V and VI	c. 1792	Hardwood, Black Walnut	
Floor Framing				
Floor Joist		c. 1792	Red Oak	
Floor Joist		c. 1792	White Oak	
Wall Framing				
Vertical Log	Not given (6 samples)	c. 1792	---	Red Cedar
Vertical Log	South Wall	c. 1792	Cedar	
Vertical Log	North Wall	c. 1792	Eastern Red Cedar	
Vertical Log	North Wall	c. 1792	Eastern Red Cedar	
Vertical Log	North Wall	c.1792	Cedar	

Notes:
1. As sampled and identified as part of the scope of the 2020 structural assessment.
2. As sampled and identified by the University of Missouri in 1986, the dendrochronology report does not specify sampling location.



P44. View down south galerie from the east, showing plaster on south elevation.



P45. Infrared thermographic image of the south elevation, showing plaster on lath. Note the vertical logs and horizontal bracing can also be seen in this image.



P46. 1937 HABS photo, showing deteriorated plaster on lath below the south galerie.

ENVELOPE ASSESSMENT

Unlike the structural systems, which retain a high level of integrity, much of the exterior of the Beauvais-Amoureux House is not historic.

Exterior Plaster

The Beauvais-Amoureux House is oriented with the primary facade facing south. Above the south galerie decking, the exterior logs are finished with plaster on wood lath that is painted white (Photograph P44). The wood lath is not exposed but was confirmed using infrared thermographic imaging (IRT) (Photograph P45). The plaster is of an unknown age and generally in serviceable condition with only minor hairline cracking. No areas of potentially debonded or deteriorated plaster were identified through IRT or sounding with a rubber mallet.

The 1937-1940 photographs in the HABS collection (Photograph P46) show heavily deteriorated plaster on wood lath that is no longer extant at the exterior logs below the north and south galeries; this appears to have been a common treatment for vertical log structures in Ste. Geneviève in the mid to late-nineteenth century. Currently, the exterior logs are finished with a thin parge coat. The parging is in very poor condition (Photograph P47). In some areas, the parging appeared to have multiple coats of a white film-forming paint, while other areas appeared to have paint or limewash applied directly over the pierrotage and foundation logs.



P47. Parging, limewash, and paint surfaces below south galerie are in poor condition, exposing the original pierrotage.

Cedar Lap Siding

Description of Existing Construction

The existing lap siding was installed in 2007 by the Missouri DNR to replace previous wood siding.[14] The siding is a combination of untapered boards at the east and west end walls and tapered boards at the enclosed north galerie. The siding boards are cedar, unpainted, have approximately 5-inch exposures, and appear to be installed over a single layer of asphaltic building paper. The building paper stops at the roof sill plate, exposing the boards in the attic.

The siding is secured with exposed nails. Nail patterns align roughly vertically and are spaced approximately 22 to 30 inches on-center horizontally, depending on the spacing of framing members or exterior logs. Siding nails are modern reproductions to resemble hand-wrought nails, approximately 2.5 inches long.

Condition Assessment

The existing siding boards are in "fair" condition, meaning that they are generally performing as intended but with limited remaining service life. Warping, splits, checks, missing nails, and loose boards were commonly observed (Photographs P48, P49, and P50). One missing board was observed on the east elevation. Several areas of animal damage to siding or trim boards were also observed.

Discussion

Based on historic narratives that describe the exterior treatment of French vernacular structures in Ste. Geneviève, the House was likely originally plastered and/or whitewashed.[15] By the mid to late nineteenth century, it appears that wood lap siding may have been commonly in use in Ste. Geneviève, as can be seen in early photographs, the Vital St. Gemme Beauvais House (Photograph P51) in the collection of the Missouri History Museum.[16] It is reasonable to



P48. Split siding board on west elevation.



P49. Missing nail at siding board on the west elevation.



P50. Warped and loose siding boards on the north elevation.

[14] Engine House No. 1, Inc., "Historic Renovation of Bauvais-Amoureux House," architectural drawings, Ste. Geneviève, Missouri, January 12, 2007.

[15] Charles E. Peterson, "Early Ste. Genevieve and Its Architecture," *The Missouri Historical Review* XXXV, No. 2 (1941): 207-232; Henry Marie Brackenridge, *Recollections of Persons and Places in the West* (Philadelphia, PA: James Kay, Jun. & Co., 1834), 24.

[16] Richard Deposki. *Ste. Geneviève (Images of America)* (Charleston, SC: Arcadia, 2008), 29 and 32.



P51. C. 1916 photograph of the Vital St. Gemme Beauvais House, in the collection of the Missouri History Museum (https://mohistory.org/collections/item/N38680).



P52. C. 1900 photograph of the Beauvais-Amoureux House, from *Ste. Genevieve (Images of America), p.* 24. Note the central chimney is still stone.



P53. C. 1916 photograph of the Beauvais-Amoureux House, in the collection of the Missouri History Museum (https://mohistory.org/collections/item/N38681), Note the central chimney is now brick.

conclude that along with the structural alterations made by the Amoureux family starting in c. 1852 that the east and west end walls were covered with lap siding at the same time. In the earliest photographs of the Beauvais-Amoureux House (Photographs P52 and P53), the north wall also has weatherboard siding; however, the south wall appears to have always been plastered. In review of the available historical photographs, the wood lap siding appears to have an exposed face of somewhat less than 5 inches, perhaps closer to a 4.5-inch exposure.

Cedar Shake Roofing

Description of Existing Construction

The existing cedar shake roofing was installed in 2007 by the Missouri DNR to replace a previous metal roof (Photograph P54).[17] The existing shakes are 18 inches long by widths ranging from 3 to 8 inches with an approximately 5-inch exposure (Photograph P55). The shakes are installed with triple head lap over open (or skip) sheathing over pole rafters and secured in place with concealed nails. Underlayment (roofing felt) appears to have been interlaced between courses but is not continuous under the shakes. The 2007 roofing replacement drawings indicate that lead sheet flashing was to have been installed at the ridge and the change in roof pitch. A half-round galvanized steel gutter is present at the eave of the south galerie (Photograph P56), but no gutter is present on the north eave. The tails of the galerie rafters are exposed along the north and south eaves. Lead sheet flashing is present at the stone chimney, which was partially reconstructed as part of the 2007 roofing replacement. The ridge is capped or "Boston" style[18] with horizontal, lapped shakes.

[17] Engine House No. 1., "Historic Renovation"

[18] Sharon A. Park, "Preservation Brief 19: The Repair and Replacement of Historic Wooden Shingle Roofs," *The Preservation of Historic Architecture* (Guilford, CT: The Lyons Press), 191-202. [Note: This version of Preservation Brief 19 differs from the one currently published on www.nps.gov.]



P54. Existing cedar shake roof on the south-facing roof slopes, showing shake coursing, chimney flashing, and capped ridge detail.



P55. Loose shake found on ground, showing extreme erosion of the exposed face.

Condition Assessment

The cedar shakes are in "fair" to "poor" condition, meaning that while they are generally performing as intended in most areas, localized areas of heavily deteriorated shakes are present, and the roofing has little remaining service life.

NPS has reported water intrusion through the roofing, particularly along the north eave. Evidence of water staining from small leaks through the shakes was observed in numerous locations in the attic, and pinpoints of daylight could be seen through the underside of the roof. The shakes were weathered, deteriorated, and heavily eroded; on the north slopes, algae and moss growth was prevalent due to shading by the adjacent cedar trees. Shakes and sheathing boards at both eaves were deteriorated (Photograph P57), as were multiple rafter tails (Photograph P58). Evidence of animal damage was also observed at the edges of shakes (Photograph P59).

Most of the open sheathing appeared to be original to the c. 1852 construction of the galeries or possibly early replacement boards, with only limited boards appearing to be modern replacements (Photographs P60 and P61). The sheathing boards were a mix of vertically and circular sawn nominal 1-inch by 6 to 8-inch boards, with space between boards of generally 3 to 4 inches (and larger in some locations). In localized areas, the sheathing boards were deteriorated due to water; water staining patterns on the sheathing boards suggest that significant water intrusion has occurred in the past.

Multiple generations of nails penetrated the open sheathing, representing a long history of roofing replacements. No hand-wrought or early cut nails with the characteristic hooked heads were observed. The blunt-tipped, stamp-headed, rectangular-shaft cut nails in place likely dated to the mid-1800s and later, with at least two, perhaps three, generations of cut nails, in lengths of 2 or 2.5 inches.[19] Cut nail spacing appeared to be fairly regular, and nails of comparable shaft diameter and length could in some areas be paired; measurements of paired nails suggest that the earlier shakes were approximately 5 to 6 inches wide. Several types of wire nails were also observed, of varying length and shaft diameter. Wire nails were available as early as the 1880s and generally supplanted the use of cut nails in the United States by around 1900.[20] Since wire nails have a 100-year history of use with little change in production technology, visually dating wire nails is difficult. It was also more difficult to interpret potential shake width using wire nail spacing due to the multiple

[19] Henry Mercer, "The Dating of Old Houses," *A Collection of Papers Read Before the Bucks County Historical Society,* V (1926): 536-549.

[20] Peter Priess, "Wire Nails in North America," *Bulletin of the Association for Preservation Technology* 5, no. 4 (1973): 87-92.



Photograph P56. Half-round galvanized gutter at the south eave, showing corrosion of the gutter and decay and biological growth on the shakes.



Photograph P59. Animal damage to edges of shakes.



Photograph P57. Wet and deteriorated sheathing boards below eave overhang (looking up).



P60. Open sheathing at south galerie roof, from the underside. The dark staining is evidence of exposure to water.



Photograph P58. Deteriorated rafter tails at south eave (looking up).



P61. Deteriorated and replacement open sheathing boards.

generations of wire nails in place; at a few locations where wire nails patterns could be determined, shake widths and lengths used after c. 1900 likely varied, similar to a modern overlap pattern.

Discussion

As originally constructed, c. 1792 by the Beauvais family, the House was likely a thatched, hipped roof.[21] Several locations of hand-riven *liteaux* (battens or stripping to which the thatch bundles were attached) are still fastened to the rafters with hand-wrought nails on the north and south (Photograph P62). There is much discussion if the Beauvais-Amoureux House was originally constructed with galeries on one or more sides; the placement of the extant liteaux, wrought nails still in place where liteaux have been removed, and a pattern of regular nail holes on the outside surface of the primary rafters suggests that the roof was once thatched along the full length of the primary rafters and that the galeries are later alterations. During the 2020 physical investigation, no remnants of the thatching was found. During the c. 1852 alterations by the Amoureux family, the roof shape was modified from hip to broken-pitch gable. The original thatch roof would have been replaced likely with wood shakes, as thatching requires a steep roof with a continuous slope to remain watertight. The intersections of the original hips also likely featured a finial where the head of the king post projected through the roofing, similar to those seen at the Bequette-Ribault House and the Louis Bolduc House (Photograph P63) in their restored states. These finials are suspected to have been points for water leakage and were removed;[22] evidence of water damage to the top of Truss VI was observed, supporting this supposition.

Vernacular building practices coming south from the Quebec region introduced the use of Norman trusses and roof shakes of several wood types, including pine, oak, and cedar, with cedar being prized for its superior decay resistance.[23] French Creole vernacular building practices coming north from Louisiana contributed to the broken-pitch gable roof and the



P62. Thatching liteaux or straps, secured to the c. 1792 rafters with wrought nails.



P63. King post finial at the Louis Bolduc house, with a projecting comb ridge.



P64. C. 1900 photograph of the Bequette-Ribault House, in the file of digital resources for the Beauvais-Amoureux House provided by NPS.

[21] Peterson, "Early Ste. Genevieve," 207-232.
[22] Luer and Frances, *Vanishing French Heritage*, 86.
[23] Association for Preservation Technology, "Early Roofing Materials," *Bulletin of the Association for Preservation Technology* 2, no. 1/2 (1970): 18-88.

additions of the galeries, along with a shared tradition of wood shake roofs.[24]

Documentation of historic buildings in Ste. Geneviève, including drawings and photographs within HABS collections, historic photographs from other sources, and secondary sources, such as modern publications, were surveyed regarding wood shake roof practices in Ste. Geneviève in the nineteenth century. This research was conducted in an effort to identify appropriate detailing and treatment for a roofing replacement project.

- The early photograph of the Vital St. Gemme Beauvais House (Photograph P52) shows modest overlap of the shakes at the rakes, no eave gutter, and regular shake coursing, consistent exposures, and a traditional overlap pattern. The ridge detail is not fully clear in the photo, but it may be capped or board ridge. The House appears to be well-kept. The building immediately to the right (south) has since been demolished or significantly altered, but this photograph shows a half-round gutter with round downspout at the eave of the broken-pitched wood shake roof.

- The c. 1900 photograph of the Bequette-Ribault House (Photograph P64) shows a projecting comb ridge, modest overlap of the shakes at the rakes and eave, no eave gutter, and regular shake coursing, consistent exposures, and a traditional overlap pattern. In this photo, the House appears to be occupied but in need of exterior repairs; damaged ridge combs and loose siding boards are visible.

- *Ste. Geneviève (Images of America)* includes a photograph of the Beauvais-Amoureux House, supposedly taken in 1937 but more likely dating to c. 1900, showing the House from the northeast, in good repair with a wood shake roof, picket fence on a stone wall, and a swinging gate on the north drive (Photograph P52). The shakes have regular coursing, consistent exposures, and a traditional overlap pattern. There is no gutter. The ridge does not appear to be a projecting comb. Because of weather patterns, the ridge comb would likely have projected from the north-facing slope and would be readily visible in this image. Here, the ridge appears to be a board ridge. The stone chimney is still in place, dating this photograph to no later than 1908.[25]

  A slightly later, possibly c. 1916 photograph shows the chimney has been replaced with brick and the shake roof repaired (Photograph P53).

  The earliest HABS photographs of the Beauvais-Amoureux House are dated 1936 or 1937 and show the House to be in disrepair with a corrugated metal roof, no picket fence or gate, and a partially collapsed stone wall. Telephone poles and wires are also visible in the earliest HABS photos.

  Based on twentieth-century documentation reviewed, the roofing on the House remained corrugated metal through the twentieth century until replaced with wood shakes by the Missouri DNR in 2007. The *Ste. Geneviève (Images of America)* photography likely dates well before 1937. The picket fence along the road is very similar to that in the c. 1900 Bequette-Ribault House photograph, but the image lacks other identifying features to help narrow the date.

- An unindexed photograph of an ancillary structure behind the Beauvais-Amoureux House dated 1936 is included in the HABS photographs (Photograph P65) (the Janis-Ziegler House/Green-Tree Tavern is visible in the background). The structure is in very poor condition with a heavily deteriorated and poorly

[24] Jay D. Edwards, "Creole Architecture: A Comparative Analysis of Upper and Lower Louisiana and Saint Domingue," *International Journal of Historical Archaeology* (2006): 27.

[25] A similar photograph showing the stone chimney was published in Louis Houck's *A History of Missouri: From the Earliest Explorations and Settlements Until the Admission of the State into the Union, Volume 1* (Chicago, IL: R. R. Donnelley & Sons Company, 1908), p. 358.



P65. 1936 HABS photograph of an ancillary structure on the grounds of the Beauvais-Amoureux House, showing an old and deteriorated wood shake roof.

repaired wood-shake roof. The shakes appear to have triple head lap, and the ridge is a board ridge. This structure is no longer extant.

- In a partial survey performed in December 2020 of vertical log structures in downtown Ste. Geneviève with wood shake roofs, none used a board ridge. Projecting comb ridges are commonly used; currently, the Janis-Ziegler House/Green-Tree Tavern, Bequette-Ribault House, Louis Bolduc House, and Guibourd-Vallé House, among others, feature projecting comb ridges as part of their historic interpretation. Other properties, including the Felix Vallé House, Vital St. Gemme Beauvais House, and Antoine Oneille House, feature a capped or "Boston"-style ridge.

Galerie Structures

Physical Description

The south galerie is the primary entrance. The galerie is an open-framed wood galerie at the same elevation as the first floor. The steps to the galerie are roughly centered on the south elevation, aligned with the entry to the center hall. Currently, there are ten wood posts, approximately equally spaced along the south elevation, and the galerie is enclosed with a single rail set at approximately 30 inches above the decking. The galerie joists are nominal 2x10 lumber, spaced at 24 inches on-center; the joists are pocketed into the vertical log wall with a cement-based grout and appear to be reclaimed members from another



P66. Mortise and tenon connections at the c. 1963south galerie railings.

structure. At the west end of the galerie, the framing has settled by about 12 inches; per NPS, this settlement is related to the recent collapse of a well just south of the west end of the galerie. Post and rails are connected with mortise and wood pins (Photograph P66), and the posts chamfered. Several of the beams and part of the perimeter beam at the south galerie are replacement members. The wood decking is nominal 1x boards of various width, secured to the joists with modern wire nails or reproduction "cut" nails. At the west end of the south galerie, a steep flight of 13 stairs leads to the grenier.

The Donze family enclosed the north galerie with a frame wall and wood siding sometime prior to the 1986 HABS photographs (Photograph P67). There is visibility of the framing is limited to the lower part of the posts, the joists, and the underside of the decking. The north galerie has similar framing as the south and is constructed of a combination of vertically and circular sawn lumber. The decking boards are a mix of hewn, vertically sawn, and circular sawn boards.

Condition Assessment

The existing framing at the south galerie is aged but generally in “good” condition, meaning it is performing as intended. Localized deterioration of wood was observed at a few joist ends and a few locations where the rail board is mortised into the post. The decking was generally in serviceable condition, and no areas of deteriorated wood, loose boards, or tripping hazards were observed.



P67. 1986 HABS photograph from the northeast, showing the north galerie enclosed.



P68. Deteriorated post end at north galerie.

At the north galerie, the bearing ends of several posts where in contact with soil were heavily deteriorated (Photograph P68).

The grenier staircase is in "poor" condition, meaning that it has limited serviceability and needs repair (Photograph P69). Several treads are deteriorated or loose, and the stair structure is not well supported and, despite shoring at the back, is easily displaced at the base, making the stairs somewhat hazardous.



P69. Deterioration of the grenier stairs.

Discussion

Both the north and the south galeries have been heavily altered, if not completely reconstructed, with at least two major periods of alteration. In the *Ste. Geneviève (Images of America)* photograph, the north galerie is shown with nine posts, vertically continuous from edge beam to grade and decoratively chamfered. The 1937 HABS photographs, in which the House is in disrepair, show the south galerie as also having nine posts; three of the posts are not vertically continuous, only one post appears to be chamfered, and the other posts area a mix of roughly shaped poles and hewn lumber. The south galerie stairs are not centered, and the railing is missing. Where visible in the 1937 HABS photographs, the north galerie posts are the chamfered posts visible in the c. 1900 and c. 1916 images.

The 1986 HABS photographs appear to represent the existing conditions, indicating that the galeries were altered or reconstructed during the Donze family ownership. Currently, ten posts are present at both the north and south galeries; at the south, these posts have a decorative chamfer, but not as prominent as the chamfer seen in the historic imagery. The stairs have been centered on the south galerie and a railing has been installed. Since these 1986 images, a few of the framing members and the stairs have been replaced, but other members appear to date to at least 1986.

None of the fabric at the south galerie appears to be original, but the presence of several hewn decking boards at the north galerie suggest that some of the early decking may have been reused. The vertical posts, edge beams, and joists at both galeries appear to be replacement members. Evidence of notching and abandoned anchor holes indicate that the lumber used by the Donzes to rebuild the two galeries was reclaimed wood from another structure. The archaeological study conducted in 1996 did identify

buried limestone foundations roughly in line with the current galerie posts along both the north and south elevations, suggesting that while the galeries have been altered and rebuilt, they are roughly the same size as originally constructed.

The grenier stairs do appear to be the same stairs visible in the 1937 HABS photographs. The knots, holes, and wood grain visible on the stringer and risers align with the boards still extant. Several of the treads appear to be replacements, but many may date before 1937.

TREATMENT RECOMMENDATIONS

The vertical logs that make up the poteaux-en-terre construction and the Norman-style roof framing, including the king-post trusses and rafters, have high integrity, are character-defining features, and should be preserved. The long-term preservation challenges for wooden buildings are significant and well-recognized among heritage professionals.[26] However, with proper care, maintenance, and key structural interventions, the life of the House can be extended for the enjoyment of future generations.

Schematic budget costs to address treatment recommendations below are attached as Appendix A.

Vertical Log Walls

The exterior walls are stable for the moment but need continual monitoring to extend the life of this component of the House. Ultimately, structural intervention will become necessary, but the adoption of a conservation approach may be preferable at present. Although the logs are compromised below grade, and some are hollow above grade, they are independent of the support system for the first-floor structure. Additionally, the wall top plates distribute the load of the roof trusses and rafter across the log walls so that they are not directly bearing upon specific logs. Therefore, the presence of the wall top plate reduces the effects of section loss or deterioration within individual logs. With this understanding, stabilization or restoration efforts related to the exterior walls must avoid preferentially loading any individual log.

Monitoring

- A benchmark with dated markings for a level survey has been installed in the caveau so that future relative movements can be monitored. We recommend subsequent surveys be performed annually until foundation stabilization can be performed.
- A plan survey can be performed to measure the relative horizontal movement of the north and south wall top plates; this measurement will be an early warning sign of movement related to distress of the roof framing, and the readings from the 2020 survey can serve as a benchmark to determine if movement or displacement occurs in the future.
- It was also observed that the moisture content of wood structural members is typically higher in the caveau than elsewhere in the House. In addition to the levelness survey already in place, we recommend the installation of data loggers in the caveau, first floor, attic, and outside the structure that will collect air temperature, relative humidity, and dewpoint measurements on a cyclical basis to study and better understand the microclimates within the structure, especially in the caveau.

Long-Term Stabilization

Treatment of the exterior vertical logs to address long-term stabilization of the House will likely require highly invasive measures. Options to consider may include replacement of foundation logs to the first floor, permanent shoring of the existing logs with underpinning, or construction of a modern, concealed foundation. This treatment has the potential to negatively impact arguably the most important character-defining feature (the poteaux-en-

[26] Marikh Laht, "Environmental Problems in Preserving Wooden Buildings at the Estonian Open Air Museum," *ASTM STP 1351 – Wood Structures: A Global Forum on the Treatment, Conservation and Repair of Cultural Heritage*, Kelley, S., Loferski, J., Salenikovich, A., and Stern, E., ASTM: Philadelphia (2000), 105.

terre construction, of which the Beauvais-Amoureux House is one of only five remaining), raises complex questions regarding integrity, potentially affects interpretation and visitor experience, and impacts park maintenance and operating costs. We recommend that monitoring be performed in the interim and formal treatment recommendations be developed as part of the broader site treatment and interpretation discussions within the HSR currently under development. Alignment with other park governing documents, those both currently in process and those not yet developed, is important.

Exterior Grading and Surface Runoff

Although a sump pit with ejector pump is present within the caveau to remove bulk water, the vertical logs exhibit interior moisture content levels, which will promote fungal decay. The soil adjacent to the south wall and within the caveau along the south wall was moist. Low spots, pits, and holes dug by animals were observed under both the north and south galeries.

To potentially reduce the moisture within the vertical logs and the caveau, exterior regrading should be performed to promote positive drainage away from the exterior walls. To reestablish a positive surface slope, the grade should be increased approximately 12 inches over 6 feet along the north and south elevations, with deeper fill as required to level low spots and animal burrows. New soil should be clean fill with a similar ratio of clay/sand-to-organic material as the soil at the site and compacted in layers by hand. Regrading work will require little to no disturbance of subsurface conditions, but an archaeological survey should be performed in advance of the work in compliance with NPS requirements.

Additionally, the buried downspout extension along the west elevation is broken and is discharging water at the low spot on the northwest corner. The downspout should be disconnected from the damaged line and can be extended above grade along the west elevation to discharge water away from the exterior walls and visitor walking paths.

First-Floor Structure

The first-floor structure with the 1990s-installed shoring remains intact in a partially failed condition. For present usage, the floor framing is safe as shored for small groups. We recommend that unrestricted access to the House not be allowed until repairs can be performed. We do not recommend that permanent furnishings or exhibits be moved into the House until further repair or stabilization is performed.

Long-Term Stabilization

Similar to the treatment of the vertical log walls, treatment of the first-floor structure to address long-term stabilization of the House may require invasive measures, particularly if there is a desire to remove the shoring for interpretative purposes. This may require replacement of many of the floor framing members. Because the floor framing is independent of the exterior walls, this work could be done separately, but because of logistical challenges and spatial constraints, it may be more logical and cost-effective to perform work on these two systems concurrently. The same considerations for historic fabric, impact to park operations, and impact to visitors as discussed with the exterior walls would apply to treatment recommendations for the floor framing. Because the floor framing is currently stable, we recommend that formal treatment recommendations be developed as part of the HSR.

Roof Framing

The roof framing is distressed because of the damage of several of the truss connections. However, the roof trusses are character-defining features that are highly significant and other than localized distress, the trusses are in good condition. Every effort should be made for their preservation.

Roof Framing and Attic Repairs

- The localized damage at the apex of Truss VI can also be stabilized with steel brackets and rods or could be repaired by partial removal and replacement of the king post and the top portion of the southern top chord. With either approach, the trusses should be stabilized against further spreading and adequate to resist code-mandated loads to the roof structure. With stabilization of

the truss connections, the rafters will be returned to their original structural intention and will not require strengthening, other than minor repairs to assure that the ridge and wall top plate connections can transfer the anticipated loads.
- The damaged and missing members of the ridge brace trusses should be reinforced or replaced in kind.
- The floorboards in the attic are unsafe and should be replaced or reset as required to provide a safe walking surface.

Approach A – Truss Stabilization

The following is an approach for strengthening and stabilizing the roof structure while either preserving or restoring the existing roof trusses. Both Approach A and B, as described below, would require extensive structural studies of the existing Norman trusses, roof rafters, and their sharing of the roof loads.

- To stabilize the truss connections, add a horizontal metal tie rod above the first-floor ceiling beam with a metal shoe at the truss top chord-to-ceiling beam connection. The metal tie rods can be located within the attic space to minimize impact to interpretation and visitor experience.
- To preserve the historic beams in place, the termite-related section loss at the bearing will need to be addressed. Several options exist for the treatment of this failed connection:
    - Stabilization of the existing beams with metal shoes and tie rods can be performed. These interventions will likely be visible from the first floor and may impact interpretation and visitor experience.
    - For concealed repairs, horizontal metal rod reinforcement with epoxy adhesive can be used to fill the void spaces created by the termite damage and provide some supplementary strength to the end of the member. Since there is little data on repairs of this nature, the expected life span and adequacy of the repair are unknown.
    - Partial or full replacement of the walnut ceiling beams can be performed. This option represents a significant loss of historic fabric and will require careful analysis and shoring of the roof framing.

If the trusses and ceiling beams are restored to their original structural intent, the exterior wall top plates should not continue to displace. Therefore, adding additional visible tie rods within the first-floor space may not be required. If only the trusses and beams are repaired, monitoring of the relative horizontal movement of the top plate should be performed regularly to check the performance of the truss tie rod repairs.

Approach B: Reinforcing Rafters to Share Truss Loads

If the trusses and ceiling beams cannot be adequately repaired, the roof rafters will be required to resist some of the roof loads in a way they were not originally intended, and therefore the likelihood of continued splaying of the wall top plates will continue. The top plates would need to be tied together, requiring steel rods to be installed across the width of the House. The rods would need to be placed at the center of the top plate, which would require the rods to be exposed within the first-floor living space and visible to visitors. In this scenario, the rafters would also need to be mechanically fastened to the wall top plate connection, as the historic connection detail may not be sufficient to resist the increased loads being applied to the rafters.

Siding

The existing cedar lap or weatherboard siding is nearing the end of its useful service life and should be replaced. The cedar siding and trim boards are not historic and can be replaced with modern materials to replicate the appearance of the House in historic photography. Siding replacement should be considered within 3 to 5 years.

- Premium grade cedar siding should be used. This will provide a prolonged service life since the siding will not be painted. Consideration should be made to whether an oil or limewash treatment to non-pressure treated cedar siding may be more historically appropriate, though it would increase cyclical maintenance requirements.
- Board exposure should fall within 4.5 to 5 inches, and exposed siding nails can be aligned with framing members and historic placement.

- The felt underlayment and flashings at window and door heads should be replaced.
- Window restoration or replacement, although outside the scope of this assessment, should be considered at the same time.

Roofing

The existing cedar shake roofing is at the end of its useful service life and should be replaced. Maintaining a watertight roof is critical to the protection of the original roof structure, and per park staff, repairs to the roofing system have not resolved ongoing water intrusion issues. The cedar shakes, flashing, and other roofing accessories are not historic and can be replaced with modern materials sensitive to the existing construction and appropriate for a wide range of potential periods of significance, to be determined by the HSR. Roof replacement should be performed as soon as park operations and budgets allow.

The following recommendations are made for a replacement roofing system:

- Tapersawn, premium-grade cedar shakes will provide excellent service life and a historically appropriate appearance (Figure 11). Based on historic documents and a general understanding of wood shake manufacture in the mid-1800s, a rustic or rough-split shake would likely not represent a historically appropriate appearance. The smooth finish of a tapersawn shake will provide the appearance of a shingle with the superior performance of a shake.
- Shakes of approximately 5-inch widths and triple head-lap, set in regular coursing with traditional overlap pattern, also appear to align with physical evidence observed at the House of mid-1800s roofing and the limited historic photographic evidence for local practices that has been reviewed.
- Interleaving of asphalt-impregnated roofing felt between shake courses is a fairly modern treatment but should be considered for improved water shedding of the shakes. A continuous underlayment is not recommended to allow the shakes to "breathe" and dry to the interior, but a layer of ventilated mesh (sometimes called “cedar breather”) between the shakes and the open

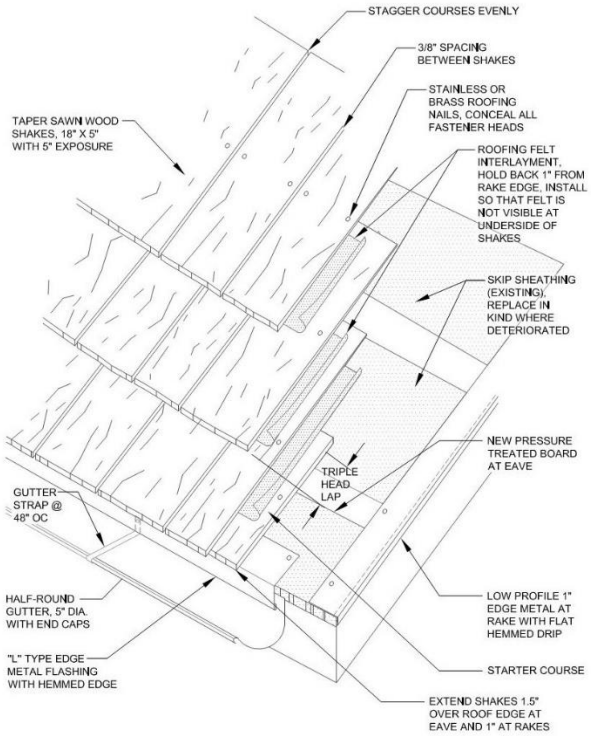


Figure 11. Conceptual eave and rake detail.

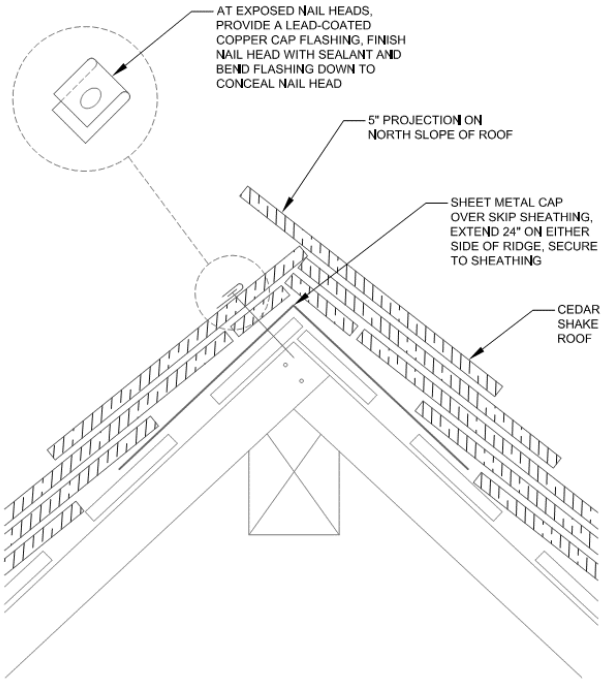


Figure 12. Conceptual ridge detail with projecting comb.

sheathing boards will promote drying and extend the service life of the shakes. Care should be taken during installation so that the interlayment felt is not visible from the interior.

- A historically appropriate ridge cap may depend on the period of significance (Figure 12 or 13). A projecting ridge comb has support as a local practice both historically and in modern restorations. Further research might indicate if a board ridge would a more appropriate treatment (Figure 13). Either way, the capped or Boston-style ridge currently in place is anachronistic for this region.

    - Attic ventilation should also be considered during the roofing replacement design. If required, the ridge cap can incorporate a low-profile or concealed open vent to promote air circulation within the attic.

- Concealed sheet metal flashings at the eaves and rakes (Figure 11), ridge (Figure 12), and the change in slope (Figure 14), should be considered. With open sheathing, these conditions are sensitive to leakage. At eaves and rakes, low profile edge metals, although not historically appropriate, are recommended for better water resistance at these conditions.

    - For fully concealed sheet metal, stainless steel or copper are recommended with a cedar shake roof for durability.
    - Where sheet metal is visible, a matte gray appearance would likely be the most historically appropriate. Lead mining in this region of Missouri dates back to the eighteenth century, and lead would likely be the flashing material used during much of the House's early history. For durability, lead-coated copper would be recommended over pure lead sheets. Lead and lead-coated copper should not be used for downspouts or where visitors are able to touch the sheet metal.
    - In lieu of lead or lead-coated copper, sheet copper with a tin-zinc coating is also available. Marketed as "Freedom Gray" or TCS-II with a satin finish, this product provides the matte gray finish of lead without the environmental and worker-safety considerations. Natural tannins and acids that leach from cedar shakes may affect the finish of a tin-zinc coating, and consultation with the manufacturer is recommended.
    - Copper has a long history of use for roofing and is chemically compatible with cedar. The service life of copper or a coated copper sheet

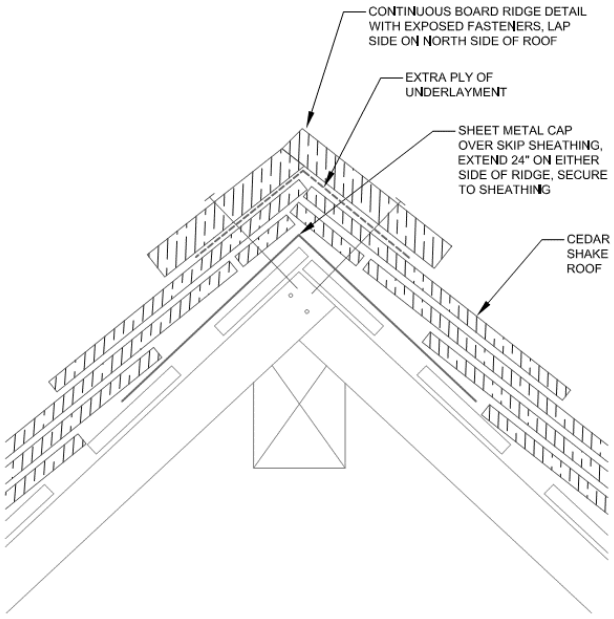


Figure 13. Conceptual ridge detail with board ridge.

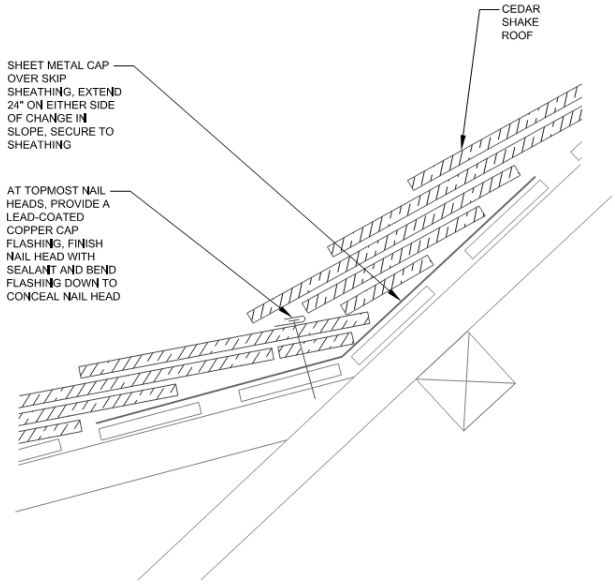


Figure 14. Conceptual detail at break in slope.

would match or exceed that of the shake roofing. For downspouts and gutters, copper theft is a factor to consider.
    - Galvanized steel sheet, both painted and unpainted, was widely available for roofing use by the middle of the nineteenth century. Galvanized gutters and downspouts would be appropriate pending determination of the period of significance; however, when in contact with cedar, the service life of galvanized sheet metal is reduced and may not match the service life of other components of the roofing system.

  For these reasons, we recommend that lead-coated copper, tin-zinc-coated copper, or uncoated copper be considered for visible metal flashings.
- Localized replacement of the skip sheathing in kind will be required.
- Localized replacement of deteriorated rafter tails can also be performed in tandem with roofing replacement.
- Gutters are recommended at the north and south eaves. Historic photographs showing half-round gutters and round downspouts indicate that they were a regional practice at the end of the nineteenth century. Documentation of the House does not support a gutter on the north eave; however, control of water shedding from the roof and eave flashing will reduce the opportunity for water intrusion at the roof edge.

  Gutters and downspouts should be of a similar metal to that selected for the roof flashing.

    - If lead-coated copper is selected for roof flashings, the downspouts should be of a metal of a similar matte gray appearance but should be lead-free. Galvanized steel sheet would be an alternative to consider because downspouts are easily replaced if damaged.
    - If uncoated copper is selected for roof flashings, a prefinished steel or aluminum sheet in a color to resemble patinated copper might be considered to deter copper theft.

Appendix E - 2003 ASHRAE Table

Table 4 Temperature and Relative Humidity Specifications for Museum, Library, and Archival Collections

Type	Set Point or Annual Average	Maximum Fluctuations and Gradients in Controlled Spaces			Collection Risks and Benefits
		Class of Control	Short Fluctuations plus Space Gradients	Seasonal Adjustments in System Set Point	
General Museums, Art Galleries, Libraries, and Archives All reading and retrieval rooms, rooms for storing chemically stable collections, especially if mechanically medium to high vulnerability.	50% rh (or historic annual average for permanent collections) Temperature set between 59 and 77°F *Note*: Rooms intended for loan exhibitions must handle set point specified in loan agreement, typically 50% rh, 70°F, but sometimes 55% or 60% rh.	**AA** Precision control, no seasonal changes	±5% rh, ±4°F	Relative humidity no change Up 9°F; down 9°F	No risk of mechanical damage to most artifacts and paintings. Some metals and minerals may degrade if 50% rh exceeds a critical relative humidity. Chemically unstable objects unusable within decades.
		A Precision control, some gradients or seasonal changes, not both	±5% rh, ±4°F	Up 10% rh, down 10% rh Up 9°F; down 18°F	Small risk of mechanical damage to high-vulnerability artifacts; no mechanical risk to most artifacts, paintings, photographs, and books. Chemically unstable objects unusable within decades.
			±10% rh, ±4°F	RH no change Up 9°F; down 18°F	
		B Precision control, some gradients plus winter temperature setback	±10% rh, ±9°F	Up 10%, down 10% rh Up 18°F, but not above 86°F Down as low as necessary to maintain RH control	Moderate risk of mechanical damage to high-vulnerability artifacts; tiny risk to most paintings, most photographs, some artifacts, some books; no risk to many artifacts and most books. Chemically unstable objects unusable within decades, less if routinely at 86°F, but cold winter periods double life.
		C Prevent all high-risk extremes	Within 25 to 75% rh year-round Temperature rarely over 86°F, usually below 77°F		High risk of mechanical damage to high-vulnerability artifacts; moderate risk to most paintings, most photographs, some artifacts, some books; tiny risk to many artifacts and most books. Chemically unstable objects unusable within decades, less if routinely at 86°F, but cold winter periods double life.
		D Prevent dampness	Reliably below 75% rh		High risk of sudden or cumulative mechanical damage to most artifacts and paintings because of low humidity fracture; but avoids high-humidity delamination and deformations, especially in veneers, paintings, paper, and photographs. Mold growth and rapid corrosion avoided. Chemically unstable objects unusable within decades, less if routinely at 86°F, but cold winter periods double life.
Archives, Libraries Storing chemically unstable collections	Cold Store: –4°F, 40% rh	±10% rh ±4°F			Chemically unstable objects usable for millennia. Relative humidity fluctuations under one month do not affect most properly packaged records at these temperatures (time out of storage becomes lifetime determinant).
	Cool Store: 50°F 30 to 50% rh	(Even if achieved only during winter setback, this is a net advantage to such collections, as long as damp is not incurred)			Chemically unstable objects usable for a century or more. Such books and papers tend to have low mechanical vulnerability to fluctuations.
Special Metal Collections	Dry room: 0 to 30% rh	Relative humidity not to exceed some critical value, typically 30% rh			

Note: Short fluctuations means any fluctuation less than the seasonal adjustment. However, as noted in the section on Response Times of Artifacts, some fluctuations are too short to affect some artifacts or enclosed artifacts.

Table 5 Classification of Climate Control Potential in Buildings

Category of Control	Building Class	Typical Building Construction	Typical Type of Building	Typical Building Use	System Used	Practical Limit of Climate Control	Class of Control Possible
Uncontrolled	I	Open structure	Privy, stocks, bridge, sawmill, well	No occupancy, open to viewers all year.	No system.	None	D (if benign climate)
	II	Sheathed post and beam	Cabins, barns, sheds, silos, icehouse	No occupancy. Special event access.	Exhaust fans, open windows, supply fans, attic venting. No heat.	Ventilation	C (if benign climate) D (unless damp climate)
Partial control	III	Uninsulated masonry, framed and sided walls, single-glazed windows	Boat, train, lighthouse, rough frame house, forge	Summer tour use. Closed to public in winter. No occupancy.	Low level heat, summer exhaust ventilation, humidistatic heating for winter control.	Heating, ventilating	C (if benign climate) D (unless hot damp climate)
	IV	Heavy masonry or composite walls with plaster. Tight construction; storm windows	Finished house, church, meeting house, store, inn, some office buildings	Staff in isolated rooms, gift shop. Walk-through visitors only. Limited occupancy. No winter use.	Ducted low level heat. Summer cooling, on/off control, DX cooling, some humidification. Reheat capability.	Basic HVAC	B (if benign climate) C (if mild winter) D
Climate controlled	V	Insulated structures, double glazing, vapor retardant, double doors	Purpose-built museums, research libraries, galleries, exhibits, storage rooms	Education groups. Good open public facility. Unlimited occupancy.	Ducted heat, cooling, reheat, and humidification with control dead band.	Climate control, often with seasonal drift	AA (if mild winters) A B
	VI	Metal wall construction, interior rooms with sealed walls and controlled occupancy	Vaults, storage rooms, cases	No occupancy. Access by appointment.	Special heating, cooling, and humidity control with precision constant stability control.	Special constant environments	AA A Cool Cold Dry

Source: Adapted from Conrad (1995).

Table 6 Airborne Pollutant Performance Targets for Museum, Gallery, Library, and Archival Collections

Key Airborne Pollutants	Maximum Average Concentrations of Airborne Pollutants Allowed for Each Preservation Target, ppbv for Performance Target of			Reference Concentration Range, ppbv		Range of Indoor-Outdoor Ratio, %	
	100 y	10 y	1 y	Clean Low Troposphere	Urban Area	HVAC without Filters[a] or NV[b]	HVAC with Filters
Acetic acid	100[c]	100	400	0.3 to 5	0.5 to 20[d]	>100	>100
Hydrogen sulfide	0.01	0.1	0.71	0.01 to 1	0.02 to 1	10 to 400	10 to 300
Nitrogen dioxide	0.1	1	5.2	0.2 to 20	3 to 200	1 to 90	1 to 30
Ozone	0.1	1	5.0	2 to 200	20 to 300	1 to 100	1 to 30
Sulfur dioxide	0.1	1	3.8	0.1 to 30	6 to 100	10 to 50	1 to 10
Fine particles ($PM_{2.5}$)	0.1	1	10	1 to 30	1 to 100	10 to 100	10 to 30

Source: Adapted from Tétreault (2003).

Note: This extrapolation of minimum risk for most collections over an extended period of exposition assumes temperature between 68 to 86°F, cleanliness of the collection, and below 60% rh; hypersensitive objects such as lead, vulcanized natural rubber, silver and most sensitive colorants are excluded and require special control measures.

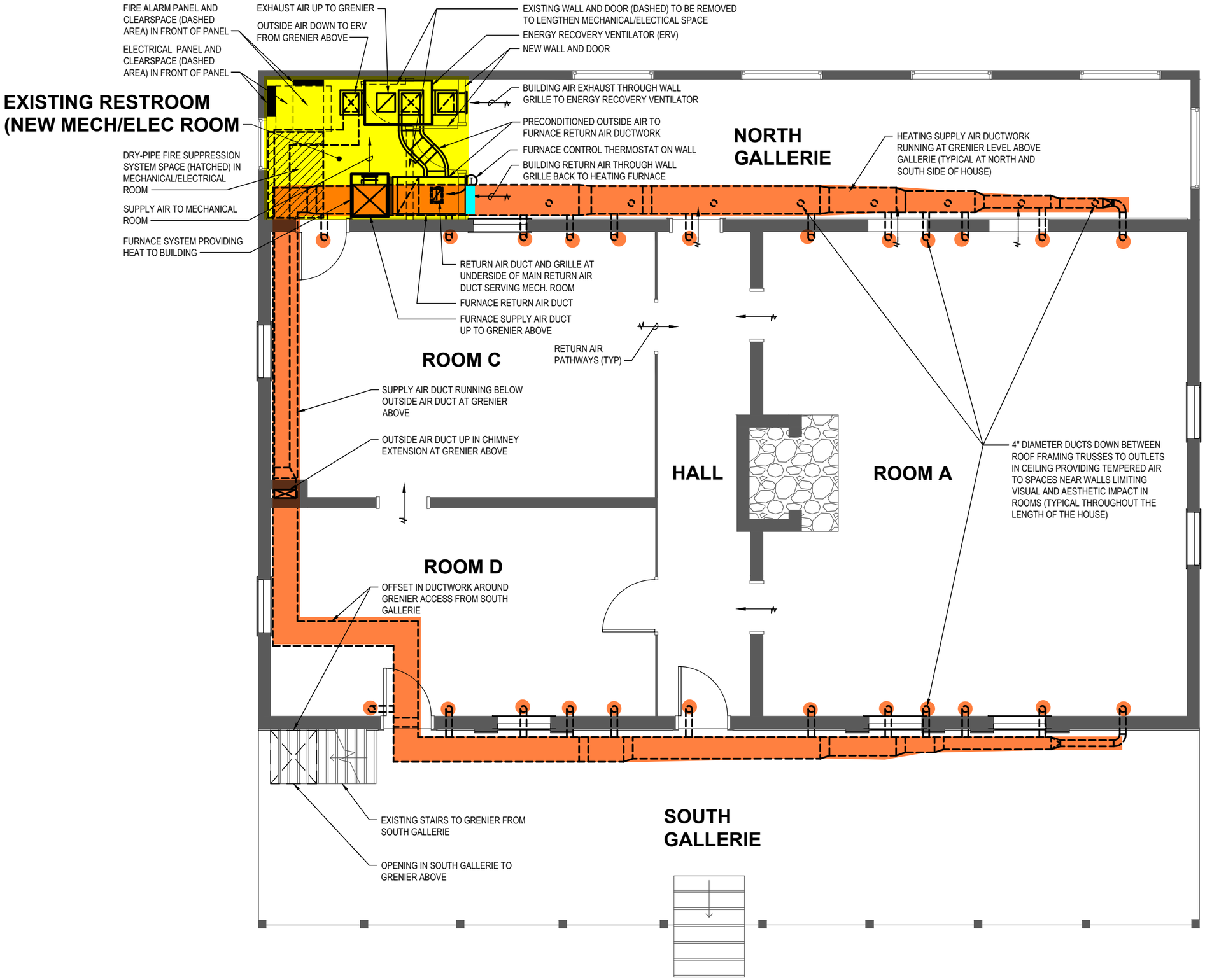
[a]HVAC has no high-performance particle or gaseous filters.

[b]NV: natural ventilation.

[c]Because NOEAL of acetic acid on objects was found at high levels, concentration lower than 100 ppbv is not mandatory.

[d]Acetic acid levels can be as high as 10 000 ppbv inside enclosures made with inappropriate materials.

Appendix F - MEP Main Level Plan



MAIN LEVEL FLOOR PLAN

NO SCALE

NPS BEAUVAIS-AMOUREAUX HOUSE
HISTORIC STRUCTURES REPORT

SKETCH MS-1

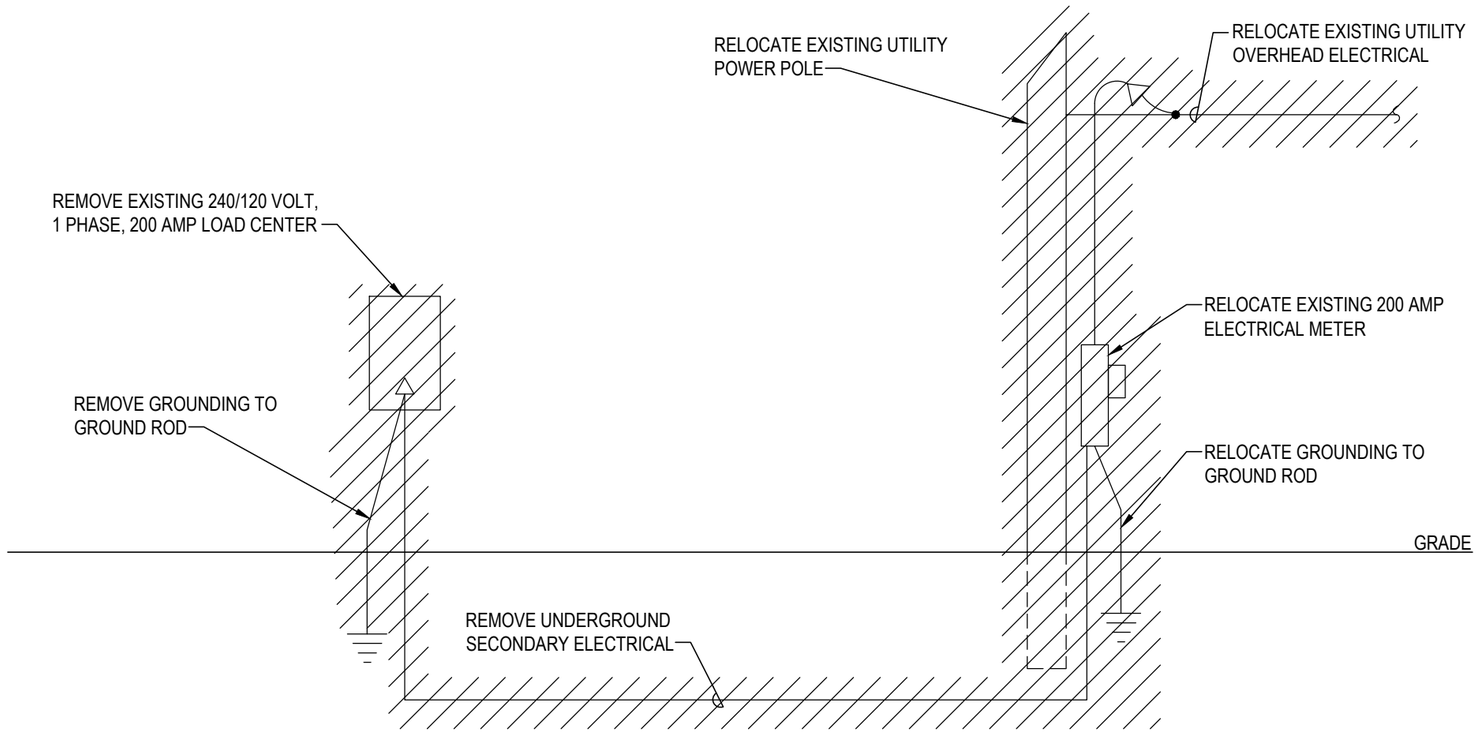
DRAWING REFERENCED:

DATE MAY 2021

PROJECT NO. 2020 8222

ALVINE Engineering

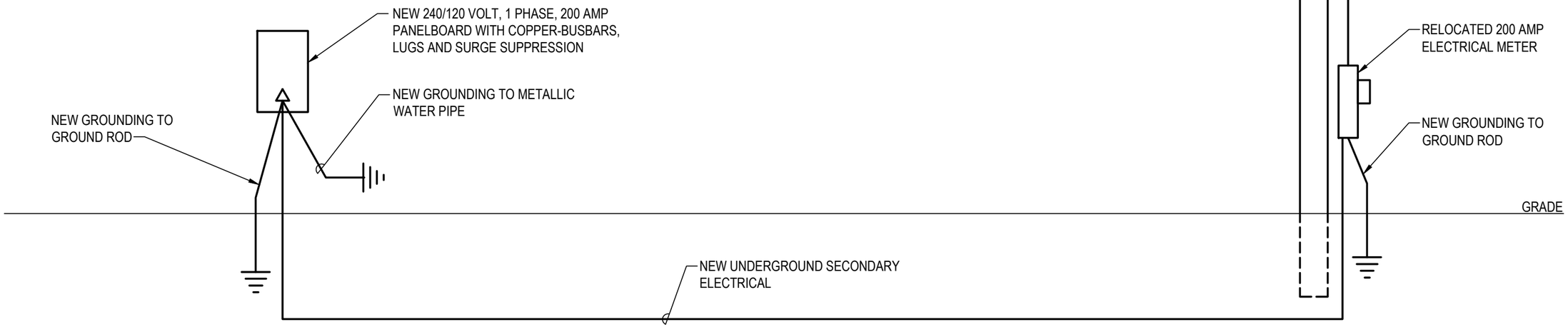
Appendix G - Electrical Riser Plan



ELECTRICAL RISER DIAGRAM - DEMOLITION

1 / ES-1

NO SCALE



ELECTRICAL RISER DIAGRAM - NEW WORK

2 / ES-1

NO SCALE

NPS BEAUVAIS-AMOUREUX HOUSE MEPT HISTORIC STRUCTURES REPORT-
PHASE III - HISTORIC STRUCTURES REPORT

DATE	PROJECT NO.	-	SKETCH
MAY 14, 2021	20208222		ES-1

ALVINE Engineering

Appendix H - Phase 2 Environmental Survey Report

GEI Consultants

Consulting Engineers and Scientists

February 1, 2021
GEI Project 2004933

VIA EMAIL: lmblank@rrj.com

Lurita McIntosh Blank
Raths, Raths & Johnson, Inc.
500 Joliet Road
Suite 200
Willowbrook, IL 60527

Dear Ms. McIntosh Blank:

Re: Environmental Survey of Lead-Based Paint, Asbestos, and Hazardous Materials
Beauvais-Amoureux House
Ste. Genevieve, Missouri

GEI Consultants, Inc. is pleased to submit this report presenting the findings of the lead-based paint, asbestos, and hazardous materials survey performed at the Beauvais-Amoureux House located at 327 St. Mary's Road, St. Genevieve, Missouri on November 16 and 17, 2020. This work was completed in accordance with the Standard Agreement between Raths, Raths, & Johnson, Inc. and GEI dated October 09, 2020 and the RRJ, Inc. Task Order Number 140P6020F0146 dated October 5, 2020.

GEI subcontracted SITEX Environmental, Inc. of St. Louis Missouri to lead the field investigation activities at the Beauvais-Amoureux House. The investigation report prepared by SITEX is attached.

If you have any questions, please feel free to contact me at 618-830-4036.

Sincerely,

GEI CONSULTANTS, INC.

Nathan McNurlen
Project Manager

Attachments
Hazardous Materials Survey of Beauvais Amoureux House – SITEX Environmental, Inc.

c: Mr. Bob Acker – GEI Consultants
Mr. David Russian – GEI Consultants

SITEX Project No: 16276

HAZARDOUS MATERIALS SURVEY

Of

Beauvais Amoureux House
327 Saint Mary's Road
Sainte Genevieve, Missouri 63670

Prepared for:

GEI Consultants
400 North Lakeview Parkway, Suite 140
Vernon Hills, Illinois 60061

Prepared by:

SITEX Environmental, Inc.
1525 South Broadway
St. Louis, Missouri 63104

December 8, 2020

SITEX
Est. 1987

Your Sole Provider of Environmental Health & Safety Services

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EXECUTIVE SUMMARY

SITEX Environmental, Inc. (SITEX) was awarded the contract by GEI Consultants, Inc. (GEI) to perform a hazardous materials survey of the Beauvais Amoureux House located at 327 Saint Mary Road in Sainte Genevieve, Missouri. This assessment was performed to determine the presence or absence of asbestos-containing materials (ACM) and lead-based paint (LBP) for the purposes of building renovation and demolition. Bulk samples of suspect building materials were analyzed for asbestos content by Polarized Light Microscopy (PLM). Paint on surfaces was tested for lead content using an X-Ray Fluorescence (XRF) spectrum analyzer. Additionally, SITEX took an inventory of universal hazardous materials including fluorescent light fixtures, ballast, and chemicals. The estimated quantities of these items are summarized at the end of this report.

SURVEY INTRODUCTION/SCOPE OF WORK

This survey was conducted by Robert H. Hill II from November 16, 2020 and November 17, 2020. The 1790s French log/timber structure is a one-story log cabin residential structure with partial basement. The structure is part of the National Park Service (NPS). The exterior roof is pitched with cedar shake shingles. The interior ceilings consist of hardwood and/or painted plaster or drywall. Interior walls consisted of painted drywall, plaster and log/timber. Interior floors consisted of hardwood flooring.

ASBESTOS SURVEY SUMMARY TABLE DEFINITIONS

Sample Number

A number is assigned to each sample to track results. A homogenous area is defined as an area of material that is uniform in color, texture and age. Each homogenous area was given a distinct letter designation. An example of the numbering sequence is as follows:

BA-DW-D1

BA = Beauvais Amoureux House
DW = Drywall Joint Compound System
D = Homogeneous area designation (4th identified homogeneous area)
1 = First sample taken of material description

Sample Description

Describes the bulk sample material collected.

Approximate Quantity

Approximate quantity of ACM broken down by location.

Abbreviations

AI = Attic Insulation
CH = Chinking
DG = Door Glazing
DW = Drywall Joint Compound System
MO = Mortar
MS = Black Mastic
PL = Plaster
ST = Stucco
WG = Window Glazing

Condition

Condition of the suspect material at the time of this inspection. This is based on the discretion of the inspector. The condition categories are as follows:

Good = no visible damage
Fair = minor damage
Poor = major damage, needs action as soon as possible

Accessibility

Indicates how accessible the suspect material is and to what group of people. The categories are as follows:

Low = material is inaccessible or access is very limited
Moderate = material is only accessible to maintenance personnel
High = material is accessible to the general public

Friability (Non-Friable versus Friable)

A designation to indicate friability (extent to which material, when dry, may be crushed, crumbled or reduced to powder with hand pressure):

Friability (Non-Friable versus Friable) Continued

No = non-friable
Yes = friable

Bulk Sample Results

Positive - > 1% Asbestos
Negative - < or = 1% Asbestos

The United States Environmental Protection Agency (U.S. EPA) guidelines for classifying asbestos containing material is any material that contains equal to or greater than one percent (1%) asbestos by visual estimated weight percent (% weight).

ASBESTOS SURVEY SUMMARY

SITEX collected up to three bulk samples of each homogeneous suspect asbestos continuing building materials (ACBM) which was observed throughout the interior or exterior of the structure.

Bulk samples were collected in discrete locations or in aeras which already had sustained water and/or physical damage.

Assumptions

SITEX assumed that the suspect asbestos attic insulation was focused on a portion of the attic where boards were placed over the ceiling joists on either side of the fireplace stack.

SAMPLE NUMBER	SAMPLE LOCATION	SAMPLE DESCRIPTION	APPROXIMATE QUANTITY	CONDITION	ACCESSIBILITY	FRIABILITY	SAMPLE RESULTS
BA-AI-A1	Attic Center North Side	Yellowish Attic Insulation	133 SF	Good	Low	No	Positive
BA-AI-A2	Attic Center North Side			Good	Low	Yes	Negative
BA-AI-A3	Attic Center South Side			Good	Low	No	Negative
BA-CH-B1	South Wall Covered Porch	White Chinking	11 SF	Good	High	Yes	Negative
BA-CH-B2	South Wall Covered Porch			Good	High	Yes	Negative
BA-CH-B3	South Wall Covered Porch			Good	High	Yes	Negative
BA-WG-C1	Transom Window	Off-White Window Glaze	12 LF (Two Panes)	N/A	N/A	N/A	No Sample
BA-WG-C2	Transom Window			Good	Medium	Yes	Negative
BA-WG-C3	Transom Window			Good	Medium	Yes	Positive
BA-WG-D1	Attic Windows	Off-White Window Glaze	146 LF (12 Panes)	Fair	Medium	No	Negative
BA-WG-D2	Attic Windows			Fair	Medium	No	Negative
BA-DW-D3	Attic Windows			Fair	Medium	Yes	Negative
BA-PL-E1	Room D North Wall	White Plaster	1,950 SF	Good	High	Yes	Negative
BA-PL-E2	Room A/B North Wall			Good	High	No	Negative
BA-PL-E3	Room A/B North Wall			Good	High	No	Negative
BA-DW-F1*	**Southeast Wall Covered Porch**	**Drywall with Joint Compound**	**495 SF**	**Good**	**High**	**No**	**Positive**
BA-DW-F2*	**Southeast Wall Covered Porch**			**Good**	**High**	**No**	**Positive**
BA-DW-F3*	**Southeast Wall Covered Porch**			**Good**	**High**	**No**	**Positive**

SAMPLE NUMBER	SAMPLE LOCATION	SAMPLE DESCRIPTION	APPROXIMATE QUANTITY	CONDITION	ACCESSIBILITY	FRIABILITY	SAMPLE RESULTS
BA-DW-G1**	**Restroom Southwest Corner Wall**	**Drywall with Joint Compound**	**225 SF**	**Good**	**High**	**No**	**Positive**
BA-DW-G2**	**Restroom Southeast Corner Wall**			**Good**	**High**	**No**	**Positive**
BA-DW-G3**	**Restroom East Wall**			**Good**	**High**	**No**	**Positive**
BA-MO-H1	Fireplace Mortar (soft)	Light Gray Fireplace Mortar	40 LF	Good	Medium	No	Negative
BA-MO-H2	Fireplace Mortar (soft)			Good	Medium	No	Negative
BA-MO-H3	Fireplace Mortar (soft)			Good	Medium	No	Negative
BA-ST-I1	Beneath Front Porch	White Exterior Stucco	950 SF	Fair	Low	No	Negative
BA-ST-I2	Beneath Front Porch			Fair	Low	No	Negative
BA-ST-I3	Beneath Front Porch			Fair	Low	No	Negative
BA-WG-J1	South Front Porch	White Window Glaze	180 LF (12 Panes)	Fair	High	No	Negative
BA-WG-J2	South Front Porch			Fair	High	No	Negative
BA-WG-J3	West Exterior Room D			Fair	High	No	Negative
BA-WG-K1	North Exterior	White Window Glaze	205 LF (12 Panes)	Poor	Low	Yes	Negative
BA-WG-K2	North Exterior			Poor	Low	Yes	Negative
BA-WG-K3	North Exterior			Poor	Low	Yes	Negative
BA-DG-L1	South Front Door	Brown Door Glaze	163 LF (9 Panes)	Good	High	No	Negative
BA-DG-L2	South Front Door			Good	High	No	Negative
BA-DG-L3	South Front Door			Good	High	No	Negative

SAMPLE NUMBER	SAMPLE LOCATION	SAMPLE DESCRIPTION	APPROXIMATE QUANTITY	CONDITION	ACCESSIBILITY	FRIABILITY	SAMPLE RESULTS
BA-MS-M1	Room D	Black Mastic	36 SF	Poor	High	No	Negative
BA-MS-M2	Room D			Poor	High	No	Negative
BA-MS-M3	Room D			Poor	High	No	Negative
BA-FM-N1	Fireplace Flue Mortar	Off-White Fireplace Mortar	5 LF	Good	Low	No	Negative
BA-FM-N2	Fireplace Flue Mortar			Good	Low	No	Negative
BA-FM-N3	Fireplace Flue Mortar			Good	Low	No	Negative

Notes:
Listed items in **Bold** denote asbestos containing building materials (ACBMs).
The United States Environmental Protection Agency (U.S. EPA) has defined an asbestos material to contain equal to or greater than one percent asbestos.
The Occupational Safety and Health Administration (OSHA) has determined asbestos detected at any level is a potential health exposure hazard.
Bulk samples were analyzed using Polarized Light Microscopy (PLM) by a trained McCrone Research Institute microscopist
PLM Methodology using United States Environmental Protection Agency (U.S. EPA) EPA/600/R-93/116 based on a total visual estimated weight percentage.
* = Asbestos found in the joint compound of the drywall joint compound bulk sample.
** = Asbestos found in the surface texture and joint compound of the drywall joint compound bulk sample.
Bulk samples ending with 1/2/3 denote each sample collected per homogeneous sample set.
Negative = A non-regulated material containing less than one percent asbestos (<1%).
Positive = A regulated material containing asbestos equal to or greater than one percent (>1%).
SF = Square feet.
LF = Linear feet.
N/A = Not applicable.
No Sample = Denotes missing bulk sample (empty sample baggie) when logged into the laboratory for analysis.

ASBESTOS SAMPLING AND ANALYTICAL PROCEDURES

Random bulk samples, representative of the suspect asbestos-containing building materials of each homogeneous area, were collected. Representative sampling is based on the following criteria:

1. The distribution of the suspect material throughout the homogeneous area.
2. The suspect material's physical characteristics and application.
3. Random sampling patterns determined for each homogeneous area.

Suspect materials, sampled and analyzed should be considered to be representative of materials in each homogeneous area if:

1. They exhibit similar physical characteristics. (i.e. color, texture).
2. The application of the sampled material can be correlated to the application of unsampled material by physical appearance and time of application.

All bulk samples collected were analyzed using the Environmental Protection Agency's Method for the Detection of Asbestos in Bulk Samples (EPA 600/M4-82020, December 1982) and the McCrone Research Institute's The Asbestos Particle Atlas as method references.

The bulk samples were collected on November 16 and 17, 2020. A total of 42 bulk samples were collected by Robert H. Hill II for asbestos analysis. SITEX was responsible for determining if asbestos was present on the exterior and interior of the structure and if present, provide estimated quantities of asbestos materials found. The samples, along with the proper Chain-of-Custody forms were sent to SITEX Environmental Solutions, Inc. (SITEX) for bulk sample analysis. The analysis of the bulk samples was performed on November 18, 2020 to November 24, 2020. SITEX uses McCrone Institute certified microscopist and is an environmental laboratory. A copy of the McCrone Institute microscopists credentials are included in this report as Appendix E – Laboratory and Accreditations and Individual Certifications.

XRF LEAD-BASED PAINT SURVEY SUMMARY

The XRF lead paint survey shots are included in this report and summarized in Appendix C – XRF Lead Paint Summary. An X-ray Fluorescence analyzer spectrum (XRF) was used for the lead survey. The InnoV-X Systems Delta Standard (model DS-2000, Serial #501736) was calibrated by the manufacturer. A copy of XRF Manufacturer's calibration and the field calibration is included with this report as Appendix D – XRF Certificate of Calibration.

Assumptions

SITEX assumed that pre-manufactured, anodized or baked-on surfaces were not LBP due to the paint composition and processes. Therefore, no shots were taken of the gray interior power panels.

Typically, these materials contain negligible amounts of lead which are below the regulated threshold limits for LBP. These materials are usually classified as lead-containing materials (LCM).

Except for the restroom and attic windows, SITEX is assuming all exterior windows on the first floor are LBP (window trim and window frames) based on shots taken.

SITEX is assuming that all walls and baseboards in Room D were LBP based on shots taken.

XRF Lead Shot Sample Identification and Documentation

Each lead shot taken was immediately recorded onto the Lead Paint Survey field log sheet. The following paragraphs provide an explanation of the terms used on the lead paint survey log sheet.

Lead Survey Paint Field Log Sheet

The lead paint survey field log sheet includes the shot number, shot location, a description of the building component shot, its condition, paint substrate, paint color, XRF shot results, positive/negative, and estimated quantity. The following paragraphs provide an explanation of the above-mentioned terms used on the lead paint survey data sheet.

Shot Number

The shot number is a three-digit sequential number beginning with 001. The shot number includes pre- and post-calibration shots, and quality control shots (duplicates or re-takes). An example of the numbering sequence is as follows:

001 = First shot taken for the lead survey

Shot Location

Describes the shot's physical location of the painted building component within the facility exterior or interior.

Component

Describes the painted building component material being tested.

Condition

Describes the physical condition of the building component material. Two physical conditions exist which include intact or deteriorated as described in these categories.

Intact: Exterior surfaces with large surface areas with no deteriorated paint.

Intact: Interior surfaces with large surface areas with no deteriorated paint.

Intact: Interior and Exterior components with small surface area with no deteriorated paint.

Deteriorated: Exterior components with large surface area more than 10 square feet of deteriorated paint or, Interior components with large surface more than 2 square feet of deteriorated paint or interior and exterior components with small surface area more than 10 percent (10%) of the total surface area of the component.

Substrate

Defines the composition of the material (concrete, metal, wood, plastic) to which the paint is adhered to.

Color

Provides the physical description of the color of the painted building component. Color helps the lead-risk assessor determine homogenous areas (similar painting history), and can assist with certain types of older paint known to contain lead (battleship gray, red).

Results

Shows the units of measure for the painted building component. For purposes of this survey, the XRF direct-reading instrument displays the lead content in milligrams per square centimeter (mg/cm^2). This unit of measure can be directly compared to the federal HUD guideline definition of LBP.

Positive/Negative

The determination of whether a painted component is positive or negative is given by the XRF direct-reading measurement displayed in mg/cm^2. Painted building components which are equal to (=) or greater than (>) 1.0 mg/cm^2 are considered to be lead-based paint (LBP). LBP is regulated under the United States Environmental Protection Agency (USEPA), HUD federal regulatory lead standards, and State of Missouri lead regulations.

Painted building components which do not exceed (<) 1.0 mg/cm^2 are not considered to be LBP and are not regulated. However, the Occupational Safety and Health Administration (OSHA) regulates lead exposure to workers. OSHA considers any amount of lead in a painted building component to be a lead-containing material (LCM). According to OSHA, LCMs have the potential to create lead exposure hazards to workers.

For purposes of this survey the following terms will be used to represent the following:

Positive: Painted component which contains > or = 1.0 mg/cm^2 lead content.
Negative: Painted component which contains < 1.0 mg/cm^2 lead content.

Painted components which are listed as positive are LBP; these materials are regulated.

Painted components which are negative are LCM; these materials are non-regulated.

Quantity

The approximate estimated quantities of the lead building component expressed as square feet (SF), linear feet (LF), or each (Each).

Pre- and post-calibration shots do not have a quantity associated with these shots.

Regulatory Guidance

Lead-based paint is considered 1.0 milligrams per square centimeter (mg/cm^2) for the XRF instrumentation, or 0.5 lead percent by weight (% weight) if a physical lead paint chip sample had been collected.

Lead testing combinations were followed in accordance with the federal United States Department of Urban and Housing Development (HUD) guidelines. The XRF instrument was pre- and post-calibrated using a manufactured coin, a negative plastic-coated lead template (SRM 2570), and a positive plastic-coated lead template (SRM 2573).

According to the Resource Conservation Recovery Act (RCRA) for Lead-Based Paint (LBP) renovation/demolition activities, general construction debris which contains lead must be analyzed by the Toxicity Characteristic Leaching Procedure (TCLP) to determine toxicity. Construction debris that exceeds 5 parts per million (ppm) will be disposed of as hazardous waste. Construction debris that is below 5 ppm is considered to be non-hazardous and be disposed into a sanitary landfill.

The Occupational Safety and Health Administration (OSHA) has determined that any level of lead in a substance is defined as a Lead Containing Material (LCM). When disturbing LCMs the contractor is held to specific work practices and employee protection in accordance with the Lead in Construction Standard 20CFR 1926.62.

LBP PAINT SAMPLING AND ANALYTICAL PROCEDURES

The direct-reading shots were taken on November 16, 2020 and November 17, 2020. A total of 291 shots were taken by State of Missouri Lead Risk-Assessor Robert Hill II. SITEX did not collect paint chip samples because the direct-reading instrument had no inconclusive readings. SITEX identified

26 painted building components which were identified with LBP on the interior and exterior of the structure. SITEX identified 98 painted building components whose lead containing materials or LCM on the interior and/or exterior.

UNIVERSAL HAZARDOUS MATERIALS INVENTORY

SITEX took an inventory of hazardous materials which were observed on the interior of the structure. The inventory is summarized below with the materials identified.

Material Identification	***Location***	***Estimated Quantities***
Plus 3 Joint Compound	Basement	5 Pound Bag
Sunny Side Paint Thinner	Basement	1 Gallon
Quick Wall Surface Bonding Cement	Basement	10 Pounds
Gold Bond Gypsolite	Basement	10 Pounds
Fluorescent Light Ballast	First Floor	4 Ballast
Fluorescent Light Bulbs	First Floor	8 Bulbs (Two / light Fixture)

CONCLUSIONS AND RECOMMENDATIONS

SITEX performed an asbestos and LBP survey of Beauvais Amoureux House located at 327 Saint Mary's Road in Sainte Genevieve, Missouri in preparation of planned demolition and renovation. SITEX presents the following conclusions and recommendations.

Identified Asbestos Containing Materials (ACM)

Based on the bulk samples collected and review of laboratory analytical results the following ACM was identified on the interior of the building.

Bulk Sample Number	***Floor***	***Location***	***Estimated Quantities***
BA-DW-F1/2/3	First Floor	Covered Porch	495 Square Feet (SF)
BA-DW-G1/2/3	First Floor	Restroom	225 SF

Identified Lead-Based Paint Building Components

Shot Number	Shot Location	Result	Estimated Quantity
004	Room D	Door Frame	17 LF
005	Room D	Door	1 Each (~35 SF)
007	Room D	Wall	560 SF
014	Room D	Wall	560 SF
017	Room D	Shelf	~25 LF
021	Room D	Wall	560 SF
022	Room D	Window Trim	3 Each
023	Room D	Window	3 Each
028	Room C	Window	1 Each
032	Room C	Door Frame	2 Each (~34 LF)
053	Room D	Baseboard	~64 LF
082	Covered Porch	Window	6 Each
093	Covered Porch	Transom Window	1 Each
097	Covered Porch	Ceiling	~350 SF
114	Hallway	Door	1 Each (~35 SF)
115	Hallway	Transom Window	1 Each
143	Room A/B	Window Frame	2 Each
221	Front Porch	Window	3 Each
223	Front Porch	Window Frame	3 Each
226	Front Porch	Door Trim	1 Each (~17 LF)
227	Front Porch	Door Frame	1 Each (~17 LF)
229	Front Porch	Door	1 Each (~35 LF)
232	Front Porch	Window	3 Each
233	Front Porch	Window Trim	3 Each
236	Front Porch	Window Frame	3 Each
237	Front Porch	Window Trim	3 Each

Recommendations

ACM

Asbestos Containing Building Materials (ACBM) were found on the interior of the Subject Property. At the time of the site reconnaissance, the observed suspect ACBM was in excellent condition. Prior to future planned renovation/demolition activities, suspect or confirmed ACBM should be removed by a Missouri licensed asbestos abatement contractor.

LBP

Lead-based paints were found to be present on the interior and exterior of the Subject Property. SITEX recommends that these materials be stabilized and/or removed by a State of Missouri lead abatement contractor prior to the demolition/renovation activities.

Additionally, the results indicate that some of the paint does contain lead below 1.0 mg/cm^2. The Occupational Safety & Health Administration (OSHA) regulations require proper handling and safety precautions when working with any amount of lead-containing paint. SITEX recommends that the use of cutting equipment that will raise the temperature of the lead-containing surface above 250° F be prohibited.

Universal Hazardous Materials

SITEX recommends that these materials be properly packaged and labeled and disposed off-site by a licensed waste hauler prior to the demolition/renovation activities.

SURVEY TEAM

The representative for SITEX Environmental, Inc. conducting the survey was Robert H. Hill II. Mr. Hill is accredited in Missouri as an asbestos inspector and Lead Risk Assessor. Mr. Hill's certifications are included in Appendix E – Laboratory Accreditations and Individual Certifications of this report.

Limitations

One bulk sample (BA-WG-C1) was missing at the time when the bulk samples were analyzed. The bulk sample likely fell out of the sampling bag in the field during collection. However, the bulk sample collected is deemed a miscellaneous sample by industry sampling protocols which requires at least one sample per U.S. EPA guidelines. The homogeneous set contained two bulk samples (BA-WG-C2 and BA-WG-C3). The number of bulk samples collected is more than enough for bulk sample analysis and is representative for asbestos content determination.

Disclaimer

These results do not imply nor deny conditions that may have existed prior to our sampling or previous inspections. This survey and sampling were performed in a thorough and professional manner consistent with industry standards.

The ACM and LBP survey are representative of bulk samples collected and XRF shots taken at the time of the survey. SITEX performed limited destructive sampling. The analytical results are valid only for the bulk samples collected and the XRF shots taken.

If during renovation and/or demolition activities, additional suspect asbestos and/or lead is

uncovered, SITEX recommends that a State of Missouri licensed asbestos or lead inspector collect a bulk sample for analysis to determine the presence of asbestos or taken additional shots to determine the presence of lead.

The Asbestos and Lead-Based Paint (LBP) Survey Team consisted of the following State of Missouri licensed individuals.

Surveyed by:



Robert Hill II
Missouri Asbestos Inspector
Missouri Certificate #7118020416MOSR2164

Missouri Lead Risk Assessor
Missouri Certificate #01057-200133036

FIGURE

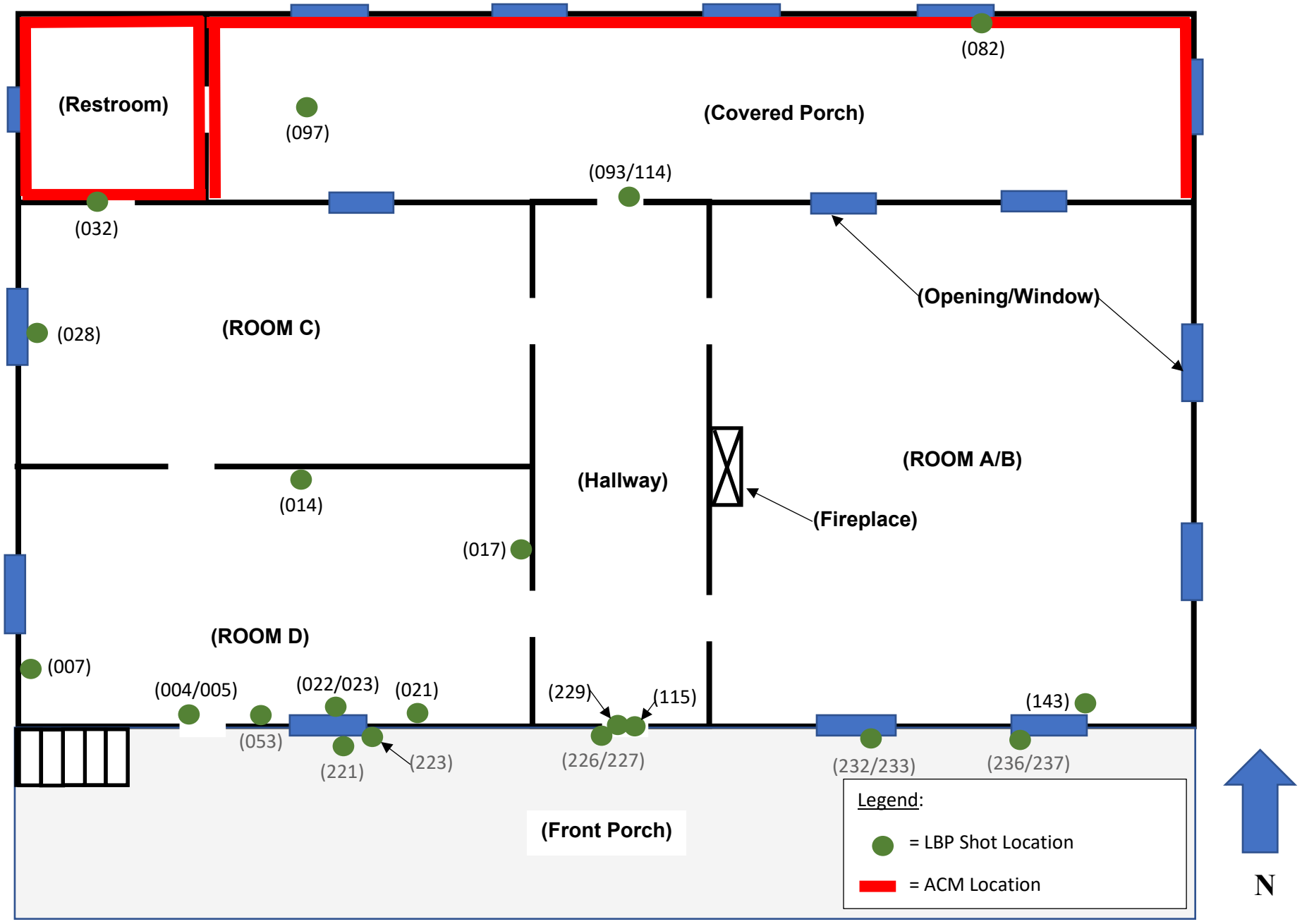
Asbestos and Lead Bulk Sample Locations

APPENDICES

Appendix A – SITEX Laboratory PLM Analysis Reports
Appendix B – Photograph Log
Appendix C – XRF Lead Paint Summary Log Sheets
Appendix D – XRF Certificate of Calibration
Appendix E – Laboratory Accreditation and Individual Certifications

FIGURE

Beauvvais Amoureux Log/Timber Floor Plan
Asbestos Bulk Sampling and Lead-Based Paint Shot Locations



APPENDIX A

SITEX LABORATORY PLM ANALYSIS REPORT

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Fax: (314) 421-0234

Your Sole Provider of Environmental Health & Safety Services

POLARIZED LIGHT MICROSCOPY ANALYSIS REPORT

(Method : EPA/600/R-93/116)

Project No.: 16276
Report No.: 20-11-0024
Project Name: Beauvis Amoureux House

Date Received: 11/16/2020
Date Analyzed: 11/18-11/24/2020
Customer PO:

Customer: GEI Consultants, Ltd.
Contact: Robert Hill II
Phone: 314-421-0600

Sample Info		Client Provided Information		Analytical Info			Non-Asbestos		Asbestos
Sample No.	Sample ID	Sample Description	Material Type	Appearance	Texture	Color	% Non-Fibrous	% Fibrous	% Type
00204	BA-AI-A1	Attic Insulation	Insulation	Homogeneous, Fibrous	Grainy, Fibrous	Tan	1-5% (other)	90-95% Mineral Wool	None Detected
00205	BA-AI-A2	Attic Insulation	Insulation	Homogeneous, Fibrous	Grainy, Fibrous	Tan	1-5% (other)	90-95% Mineral Wool	None Detected
00206	BA-AI-A3	Attic Insulation	Insulation	Homogeneous, Fibrous	Grainy, Fibrous	Tan	1-5% (other)	90-95% Mineral Wool	None Detected
00207	BA-CH-B1	White Chinking Interior Wall	Chinking	Homogeneous, Non-Fibrous	Rough	White	10-20% Perlite 80-90% (other)		None Detected
00208	BA-CH-B2	White Chinking Interior Wall	Chinking	Homogeneous, Non-Fibrous	Rough	White	10-20% Perlite 80-90% (other)		None Detected
00209	BA-CH-B3	White Chinking Interior Wall	Chinking	Homogeneous, Non-Fibrous	Rough	White	10-20% Perlite 80-90% (other)		None Detected
00210	BA-WG-C1	Off-White Window Glaze	Sample Not Submitted						
00211	BA-WG-C2	Off-White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	Off-White	>95% (other)		None Detected
00212	BA-WG-C3	Off-White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	Off-White	>95% (other)		None Detected
00213	BA-WG-D1	Off-White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	Off-White	>95% (other)		None Detected
00214	BA-WG-D2	Off-White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	Off-White	>95% (other)		None Detected
00215	BA-WG-D3	Off-White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	Off-White	>95% (other)		None Detected
00216	BA-PL-E1	White Plaster Throughout	Plaster	Hetrogenous, Non-Fibrous	Rough	White	20-30% Quartz 70-80% (other)		None Detected

ANALYST:

REVIEWED BY: Robert H Hill II

Laboratory Disclaimer:
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Date Analyzed: 11/18-11/24/2020
Customer PO:

Customer: GEI Consultants, Ltd.
Contact: Robert Hill II
Phone: 314-421-0600

Sample Info		Client Provided Information		Analytical Info			Non-Asbestos		Asbestos
Sample No.	Sample ID	Sample Description	Material Type	Appearance	Texture	Color	% Non-Fibrous	% Fibrous	% Type
00216A	BA-PL-E1	White Plaster Throughout	Plaster	Hetrogenous, Non-Fibrous	Rough	White	10-20% Perlite 80-90% (other)		None Detected
00216B	BA-PL-E1	White Plaster Throughout	Plaster	Hetrogenous, Non-Fibrous	Rough	Gray	1-5% Hair 90-95% (other)		None Detected
00217	BA-PL-E2	White Plaster Throughout	Plaster	Hetrogenous, Non-Fibrous	Rough	White	10-20% Perlite 80-90% (other)		None Detected
00217A	BA-PL-E2	White Plaster Throughout	Plaster	Hetrogenous, Non-Fibrous	Rough	Gray	1-5% Hair 90-95% (other)		None Detected
00218	BA-PL-E3	White Plaster Throughout	Plaster	Hetrogenous, Non-Fibrous	Rough	White	10-20% Perlite 80-90% (other)		None Detected
00218A	BA-PL-E3	White Plaster Throughout	Plaster	Hetrogenous, Non-Fibrous	Rough	Gray	1-5% Hair 90-95% (other)		None Detected
00219	BA-DW-F1	Drywall w/Joint Compound	Joint Compound	Homogeneous, Non-Fibrous	Smooth	White	10-20% Perlite 80-90% (other)		None Detected
00219A	BA-DW-F1	Drywall w/Joint Compound	Joint Compound	Homogeneous, Non-Fibrous	Smooth	Tan	>95% (other)		1-5% Chrysotile
00219B	BA-DW-F1	Drywall w/Joint Compound	Drywall	Homogeneous, Non-Fibrous	Smooth	White	10-20% Cellulose 80-90% (other)		None Detected
00220	BA-DW-F2	Drywall w/Joint Compound	Joint Compound	Homogeneous, Non-Fibrous	Smooth	White	10-20% Perlite 80-90% (other)		None Detected
00220A	BA-DW-F2	Drywall w/Joint Compound	Joint Compound	Homogeneous, Non-Fibrous	Smooth	Tan	>95% (other)		1-5% Chrysotile
00220B	BA-DW-F2	Drywall w/Joint Compound	Drywall	Hetrogenous, Non-Fibrous	Smooth	White	10-20% Cellulose 80-90% (other)		None Detected
00221	BA-DW-F3	Drywall w/Joint Compound	Joint Compound	Homogeneous, Non-Firous	Smooth	White	10-20% Synthetic 10-20% Perlite 70-80% (other)		None Detected

ANALYST:

REVIEWED BY: Robert H Hill II

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POLARIZED LIGHT MICROSCOPY ANALYSIS REPORT

(Method : EPA/600/R-93/116)

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Report No.: 20-11-0024
Project Name: Beauvis Amoureux House

Date Received: 11/16/2020
Date Analyzed: 11/18-11/24/2020
Customer PO:

Customer: GEI Consultants, Ltd.
Contact: Robert Hill II
Phone: 314-421-0600

Sample Info		Client Provided Information		Analytical Info			Non-Asbestos		Asbestos
Sample No.	Sample ID	Sample Description	Material Type	Appearance	Texture	Color	% Non-Fibrous	% Fibrous	% Type
00221A	BA-DW-F3	Drywall w/Joint Compound	Joint Compound	Homogeneous, Non-Fibrous	Smooth	Tan	>95% (other)		1-5% Chrysotile
00221B	BA-DW-F3	Drywall w/Joint Compound	Drywall	Homogeneous, Non-Fibrous	Smooth	White	10-20% Cellulose 80-90% (other)		None Detected
00222	BA-DW-G1	Drywall w/Joint Compound Texture	Texture	Homogeneous, Non-Fibrous	Smooth	Gray	>95% (other)		1-5% Chrysotile
00222A	BA-DW-G1	Drywall w/Joint Compound Texture	Joint Compound	Homogeneous, Non-Fibrous	Smooth	Tan	>95% (other)		1-5% Chrysotile
00222B	BA-DW-G1	Drywall w/Joint Compound Texture	Drywall	Homogeneous, Non-Fibrous	Smooth	White	10-20% Cellulose 80-90% (other)		None Detected
00223	BA-DW-G2	Drywall w/Joint Compound Texture	Texture	Homogeneous, Non-Fibrous	Smooth	Gray	>95% (other)		1-5% Chrysotile
00223A	BA-DW-G2	Drywall w/Joint Compound Texture	Joint Compound	Homogeneous, Non-Fibrous	Smooth	Tan	>95% (other)		1-5% Chrysotile
00223B	BA-DW-G2	Drywall w/Joint Compound Texture	Drywall	Hetrogenous, Non-Fibrous	Smooth	White	10-20% Cellulose 80-90% (other)		None Detected
00224	BA-DW-G3	Drywall w/Joint Compound Texture	Joint Compound	Homogeneous, Non-Fibrous	Smooth	Tan	>95% (other)		1-5% Chrysotile
00224A	BA-DW-G3	Drywall w/Joint Compound Texture	Drywall	Homogeneous, Non-Fibrous	Smooth	White	10-20% Cellulose 80-90% (other)		None Detected
00225	BA-MO-H1	Fireplace Mortar	Mortar	Homogeneous, Non-Fibrous	Rough	Tan	>95% (other)		None Detected
00226	BA-MO-H2	Fireplace Mortar	Mortar	Homogeneous, Non-Fibrous	Rough	Tan	>95% (other)		None Detected
00227	BA-MO-H3	Fireplace Mortar	Mortar	Homogeneous, Non-Fibrous	Rough	Tan	>95% (other)		None Detected

ANALYST:

REVIEWED BY: Robert H. Hill II

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POLARIZED LIGHT MICROSCOPY ANALYSIS REPORT

(Method : EPA/600/R-93/116)

Project No.: 16276
Report No.: 20-11-0024
Project Name: Beauvis Amoureux House

Date Received: 11/16/2020
Date Analyzed: 11/18-11/24/2020
Customer PO:

Customer: GEI Consultants, Ltd.
Contact: Robert Hill II
Phone: 314-421-0600

Sample Info		Client Provided Information		Analytical Info			Non-Asbestos		Asbestos
Sample No.	Sample ID	Sample Description	Material Type	Appearance	Texture	Color	% Non-Fibrous	% Fibrous	% Type
00228	BA-ST-I1	Exterior Stucco	Stucco	Hetrogenous, Non-Fibrous	Rough	White	10-20%Quartz 80-90% (other)		None Detected
00228A	BA-ST-I1	Exterior Stucco	Adhesive	Homogeneous, Non-Fibrous	Tacky	Tan	>95% (other)		None Detected
00228B	BA-ST-I1	Exterior Stucco	Plaster	Homogeneous, Non-Fibrous	Rough	Off-White	>95% (other)		None Detected
00229	BA-ST-I2	Exterior Stucco	Stucco	Hetrogenous, Non-Fibrous	Rough	White	20-30% Quartz 70-80% (other)		None Detected
00229A	BA-ST-I2	Exterior Stucco	Plaster	Homogeneous, Non-Fibrous	Rough	Off-White	>95% (other)		None Detected
00230	BA-ST-I3	Exterior Stucco	Stucco	Homogeneous, Non-Fibrous	Rough	White	20-30% Quartz 70-80% (other)		None Detected
00230A	BA-ST-I3	Exterior Stucco	Plaster	Homogeneous, Non-Fibrous	Rough	Off-White	>95% (other)		None Detected
00231	BA-WG-J1	White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	White	>95% (other)		None Detected
00232	BA-WG-J2	White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	White	>95% (other)		None Detected
00233	BA-WG-J3	White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	White	>95% (other)		None Detected
00234	BA-WG-K1	White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	White	>95% (other)		None Detected
00235	BA-WG-K2	White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	White	>95% (other)		None Detected
00236	BA-WG-K3	White Window Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	White	>95% (other)		None Detected

ANALYST:

REVIEWED BY: Robert H Hill II

Laboratory Disclaimer:
The test data only pertains to the items tested. No assumptions or conclusions should be made to materials or samples not analyzed in this report.
SITEX maintains liability limited to cost of analysis.
Interpretation and uses of test resutls are the responsibility of the client.
This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by SITEX.

1525 South Broadway
St. Louis, Missouri 63104
Phone: (314) 421-0600
Fax: (314) 421-0234

Your Sole Provider of Environmental Health & Safety Services

POLARIZED LIGHT MICROSCOPY ANALYSIS REPORT

(Method : EPA/600/R-93/116)

Project No.: 16276
Report No.: 20-11-0024
Project Name: Beauvis Amoureux House

Date Received: 11/16/2020
Date Analyzed: 11/18-11/24/2020
Customer PO:

Customer: GEI Consultants, Ltd.
Contact: Robert Hill II
Phone: 314-421-0600

Sample Info		Client Provided Information		Analytical Info			Non-Asbestos		Asbestos
Sample No.	Sample ID	Sample Description	Material Type	Appearance	Texture	Color	% Non-Fibrous	% Fibrous	% Type
00237	BA-WG-L1	Brown Door Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	Brown	>95% (other)		None Detected
00238	BA-WG-L2	Brown Door Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	Brown	>95% (other)		None Detected
00239	BA-WG-L3	Brown Door Glaze	Glaze	Homogeneous, Non-Fibrous	Smooth	Brown	>95% (other)		None Detected
00240	BA-MS-M1	Black Mastic	Mastic	Homogeneous, Fibrous	Tacky	Black	30-40% (other)	40-50% Cellulose 1-5% Synthetic	None Detected
00241	BA-MS-M2	Black Mastic	Mastic	Homogeneous, Fibrous	Tacky	Black	30-40% (other)	40-50% Cellulose 1-5% Synthetic	None Detected
00242	BA-MS-M3	Black Mastic	Mastic	Homogeneous, Fibrous	Tacky	Black	30-40% (other)	40-50% Cellulose 1-5% Synthetic	None Detected
00243	BA-FM-N1	Fireplace Mortar	Mortar	Homogeneous, Non-Fibrous	Rough	Gray	10-20% Quartz 80-90% (other)		None Detected
00244	BA-FM-N2	Fireplace Mortar	Mortar	Homogeneous, Non-Fibrous	Rough	Gray	10-20% Quartz 80-90% (other)		None Detected
00245	BA-FM-N3	Fireplace Mortar	Mortar	Homogeneous, Non-Fibrous	Rough	Gray	10-20% Quartz 80-90% (other)		None Detected

ANALYST:

REVIEWED BY: Robert H Hill II

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CHAIN OF CUSTODY / LABORATORY WORK REQUEST

SITEX Environmental Inc.
1525 S. Broadway
St. Louis, MO 63104-4014

Phone: (314) 421-0600
FAX: (314) 421-0234

Project Name: Beauvais Amoureux House
Project Address: 327 Saint Marys Road
Saine Genevieve, Missouri
63670

Invoice to: SITEX Environmental, Inc
1525 S. Broadway
St. Louis, Missouri 63104

Project # : 16276
Contact : Robert Hill II

Date : 11/16/2020
P.O. # : N/A

					Matrix					Preservative						Analysis Required						
Sample ID	Description	Date/Time Sampled	# of Cont	Type	Bulk	Air	Water	Soil	Sludge	Unpres.	HNO_3	NaOH	H_2SO_4	HCl	Cold	PLM / DS	PLM - Composite					
BA-AI-A1/2/3	Attic Insulation	11/16/2020	3	Baggie	X					X						X						
BA-CH-B1/2/3	White Chinking Interior Wall	11/16/2020	3	Baggie	X					X						X						
BA-WG-C1/2/3	Off-White Window Glaze	11/16/2020	3	Baggie	X					X						X						
BA-WG-D1/2/3	Off-White Window Glaze	11/16/2020	3	Baggie	X					X						X						
BA-PL-E1/2/3	White Plaster Throughout	11/16/2020	3	Baggie	X					X						X						
BA-DW-F1/2/3	Drywall w/Joint Compound	11/16/2020	3	Baggie	X					X						X						
BA-DW-G1/2/3	Drywall w/Joint Compound Texture	11/16/2020	3	Baggie	X					X						X						
BA-MO-H1/2/3 RHH	Fireplace Mortar	11/16/2020	3	Baggie	X					X						X						
BA-ST-I1/2/3	Exterior Stucco	11/16/2020	3	Baggie	X					X						X						
BA-WG-J1/2/3	White Window Glaze	11/16/2020	3	Baggie	X					X						X						
BA-WG-K1/2/3	White Window Glaze	11/16/2020	3	Baggie	X					X						X						
BA-DG-L1/2/3	Brown Door Glaze	11/16/2020	3	Baggie	X					X						X						
BA-MS-M1/2/3	Black Mastic	11/16/2020	3	Baggie	X					X						X						
BA-FM-N1/2/3	Fireplace Mort	11/16/2020	3	Baggie	X					X						X						

Comments:

Stop at first positive per homogeneous area sample.

Turn Around Time

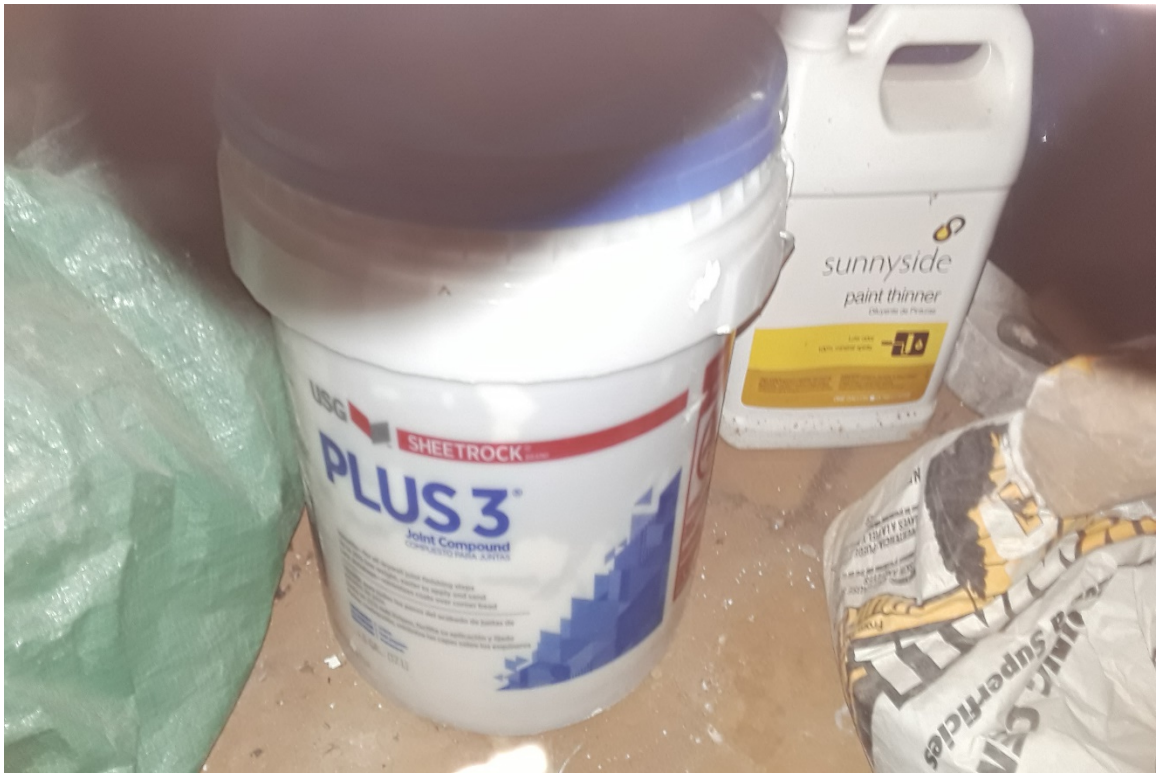
___ < 8 hours
___ Same Day
___ 24 hour
___ 48 hour
X 3-5 Day

Samples Taken By
rhh

Relinquished By	Date/Time	Received By	Date/Time
Robert H Hill II	11/16/20	X	11/16/2020 4:42pm

APPENDIX B

PHOTOGRAPH LOG



Photograph 1: Hazardous Materials in basement.



Photograph 2: Hazardous Materials in basement.



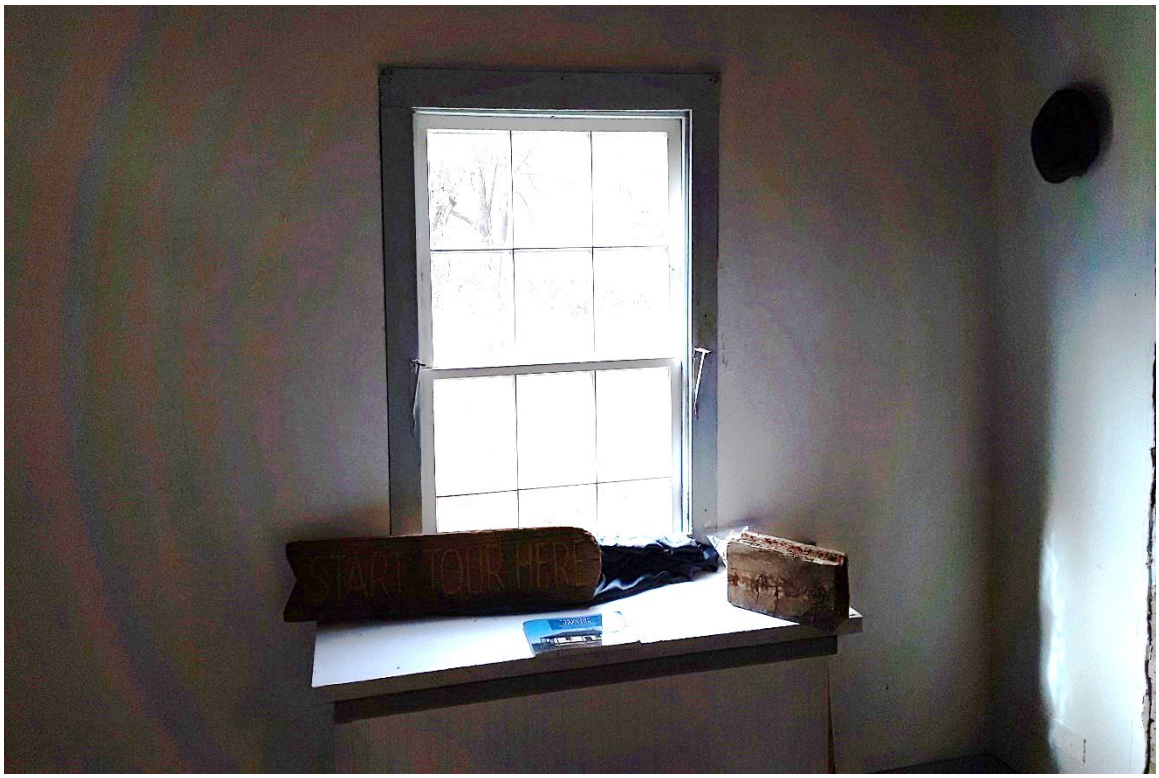
Photograph 3: Hazardous Materials in basement.



Photograph 4: LBP Door, Door Trim and Walls in Room D.



Photograph 5: LBP Walls, door, door trim, windows, window trim and baseboard.



Photograph 6: LBP Walls, windows and window trim in Room D.



Photograph 7: LBP Door Frame in Room C.



Photograph 8: Room C Fluorescent light fixtures and ballast.



Photograph 9: LBP Windows and asbestos drywall.



Photograph 10: LBP Transom above door in covered porch.



Photograph 11: LBP Hallway / main entrance door and transom window.



Photograph 12: LBP Window Frame (Assumed all window frames to be LBP) in Room A/B.



Photograph 13: Asbestos drywall with joint compound in restroom.



Photograph 14: Asbestos drywall with joint compound in restroom.



Photograph 15: Asbestos drywall with joint compound in restroom.



Photograph 16: LBP windows, window frame, door and door trim front porch.



Photograph 17: LBP windows, window frame, door and door trim front porch.



Photograph 18: Typical view of attic showing fireplace and board across hallway below.



Photograph 19: Typical view of basement showing fireplace and floor joists and partial crawlspace.



Photograph 20: Typical view of attic window.



Photograph 21: View of the front of the log/timber structure facing north.



Photograph 22: View of back of house facing south.



Photograph 23: View of log/timber structure exterior east side.



Photograph 24: Exterior stucco beneath front porch.



Photograph 25: Exterior west side of the log/timber structure.

APPENDIX C

XRF LEAD PAINT SUMMARY LOG SHEETS

LEAD PAINT SURVEY

Project Name: Beauvais Amoureux House
Date Collected: November 16, 2020
On-Site Technician: Robert Hill II
Project Number: 16276
Project Location: 327 Saint Mary's Road
Instrument Used: Olyumpus Innov-X

SAMPLE	LOCATION	COMPONENT	CONDITION	SUBSTRATE	COLOR	RESULTS	POS/NEG	QUANTITY
001	Calibration	Coin	Intact	Metal	Silver	Pass	NA	NA
002	Calibration	SRM 2570	Intact	Plastic	White	0.00±0.00	NA	NA
003	Calibration	SRM 2573	Intact	Plastic	Red	**1.35±0.08**	NA	NA
004	**Room D**	**Door Frame**	**Intact**	**Wood**	**Gray**	**1.42±0.10**	**Pos**	**17 LF**
005	**Room D**	**Door**	**Intact**	**Wood**	**Olive**	**1.28±0.08**	**Pos**	**~35 SF**
006	Room D	Door Trim	Intact	Wood	Grey	0.36±0.01	Neg	NA
007	**Room D**	**West Wall**	**Intact**	**Plaster**	**White**	**2.66±0.13**	**Pos**	**560 SF**
008	Room D	West Window Frame	Intact	Wood	Grey	0.00±0.00	Neg	NA
009	Room D	West Window	Intact	Wood	White	0.00±0.00	Neg	NA
010	Room D	West Window Sill	Intact	Wood	Grey	0.22±0.02	Neg	NA
011	Room D	North Door Trim	Intact	Wood	Brown	0.32±0.03	Neg	NA
012	Room D	Beam	Intact	Wood	Dr Brown	0.00±0.00	Neg	NA
013	Room D	Door Frame	Intact	Wood	Brown	0.17+0.01	Neg	NA
014	**Room D**	**North Wall**	**Intact**	**Plaster**	**White**	**4.5±0.00**	**Pos**	**560 SF**
015	Room D	Paneling	Intact	Wood	Brown	0.24±0.02	Neg	NA
016	Room D	Shelf	Intact	Wood	Dr Green	0.77±0.04	Neg	NA
017	**Room D**	**Shelf Brace**	**Intact**	**Wood**	**Green**	**2.33±0.09**	**Pos**	**~25 LF**
018	Room D	Panel Door	Intact	Wood	Brown	0.15±0.01	Neg	NA
019	Room D	Door Trim	Intact	Wood	Brown	0.19±0.02	Neg	NA
020	Room D	Door Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
021	**Room D**	**South Wall**	**Intact**	**Plaster**	**White**	**2.41±0.11**	**Pos**	**560 SF**
022	**Room D**	**Window Trim**	**Intact**	**Wood**	**Grey**	**2.43±0.02**	**Pos**	**3 Each**
023	**Room D**	**Window**	**Intact**	**Wood**	**White**	**4.12±0.13**	**Pos**	**3 Each**
024	Room D	Window Sill	Intact	Wood	Grey	0.09±0.01	Neg	NA
025	Room D	Floor	Intact	Wood	Brown	0.00±0.00	Neg	NA
026	Room C	Wall	Intact	Plaster	White	0.16±0.04	Neg	NA
027	Room C	Window Trim	Intact	Wood	Grey	0.00±0.00	Neg	NA
028	**Room C**	**Window**	**Intact**	**Wood**	**White**	**2.56±0.13**	**Pos**	**1 Each**
029	Room C	Window Sill	Intact	Wood	Grey	0.00±0.00	Neg	NA
030	Room C	Window Frame	Intact	Wood	Grey	0.00±0.00	Neg	NA
031	Room C	Door	Intact	Wood	Grey	0.34±0.01	Neg	NA
032	**Room C**	**Door Frame**	**Intact**	**Wood**	**Brown**	**2.76±0.14**	**Pos**	**2 Each**
033	Room C	Door Trim	Intact	Wood	Grey	0.32±0.01	Neg	NA
034	Room C	North Wall	Intact	Plaster	White	0.20±0.00	Neg	NA

LEAD PAINT SURVEY

Project Name: Beauvais Amoureux House
Date Collected: November 16, 2020
On-Site Technician: Robert Hill II
Project Number: 16276
Project Location: 327 Saint Mary's Road
Instrument Used: Olyumpus Innov-X

SAMPLE	LOCATION	COMPONENT	CONDITION	SUBSTRATE	COLOR	RESULTS	POS/NEG	QUANTITY
035	Room C	Window Frame	Intact	Wood	Grey	0.58±0.01	Neg	NA
036	Room C	Window Trim	Intact	Wood	Grey	0.20±0.00	Neg	NA
037	Room C	Window Sill	Intact	Wood	Grey	0.23+0.00	Neg	NA
038	Room C	North Baseboard	Intact	Wood	Grey	0.41±0.00	Neg	NA
039	Room C	Beam	Intact	Wood	Dr Brown	0.00±0.00	Neg	NA
040	Room C	Panel Wall	Intact	Wood	Brown	0.20±0.00	Neg	NA
041	Room C	Door Trim	Intact	Wood	Brown	0.05±0.00	Neg	NA
042	Room C	Door Frame	Intact	Wood	Brown	0.06±0.00	Neg	NA
043	Room C	Threshold	Intact	Wood	Brown	0.00±0.00	Neg	NA
044	Room C	Baseboard East	Intact	Wood	Brown	0.13±0.00	Neg	NA
045	Room C	Floor	Intact	Wood	Dr Brown	0.25±0.00	Neg	NA
046	Room C	Floor	Intact	Wood	Lt Brown	0.00±0.00	Neg	NA
047	Room C	Outlet	Intact	Metal	Brown	0.00±0.00	Neg	NA
048	Room C	(N1) Post	Intact	Wood	Brown	0.00±0.00	Neg	NA
049	Room C	Shelf	Intact	Wood	Brown	0.00±0.00	Neg	NA
050	Room C	Shelf Bracket	Intact	Wood	Brown	0.00±0.00	Neg	NA
051	Room C	Crown Molding	Intact	Wood	Brown	0.00±0.00	Neg	NA
052	Room C	Ceiling	Intact	Wood	Brown	0.00±0.00	Neg	NA
053	**Room D**	**Baseboard**	**Intact**	**Wood**	**Grey**	**1.11±0.05**	**Pos**	**~64 LF**
054	Bathroom	Door Trim	Intact	Wood	Grey	0.10±0.00	Neg	NA
055	Bathroom	Window Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
056	Bathroom	Window Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
057	Bathroom	Window	Intact	Wood	White	0.00±0.00	Neg	NA
058	Bathroom	Window Sill	Intact	Wood	Brown	0.01±0.00	Neg	NA
059	Bathroom	Door	Intact	Wood	Grey	0.56±0.00	Neg	NA
060	Bathroom	Door Trim	Intact	Wood	Grey	0.00±0.00	Neg	NA
061	Bathroom	Door Frame	Intact	Wood	Grey	0.00±0.00	Neg	NA
062	Bathroom	Door Panel	Intact	Metal	Grey	0.00±0.00	Neg	NA
063	Bathroom	Sink	Intact	Porcelain	White	0.01±0.00	Neg	NA
064	Bathroom	Toilet	Intact	Porcelain	White	0.01±0.00	Neg	NA
065	Bathroom	Towel Dispencer	Intact	Metal	White	0.00±0.00	Neg	NA
066	Bathroom	Celing	Intact	Wood	Brown	0.07±0.00	Neg	NA
067	Back Porch	North Wall	Intact	Drywall	White	0.00±0.00	Neg	NA
068	Back Porch	Window Trim	Intact	Wood	Blue	0.01±0.00	Neg	NA

LEAD PAINT SURVEY

Project Name: Beauvais Amoureux House
Date Collected: November 16, 2020
On-Site Technician: Robert Hill II
Project Number: 16276
Project Location: 327 Saint Mary's Road
Instrument Used: Olyumpus Innov-X

SAMPLE	LOCATION	COMPONENT	CONDITION	SUBSTRATE	COLOR	RESULTS	POS/NEG	QUANTITY
069	Back Porch	Window Frame	Intact	Wood	Blue	0.03±0.00	Neg	NA
070	Back Porch	Window	Intact	Wood	Blue	0.11±0.01	Neg	NA
071	Back Porch	Window Sill	Intact	Wood	Blue	0.01±0.00	Neg	NA
072	Back Porch	Window Trim	Intact	Wood	Blue	0.01±0.00	Neg	NA
073	Back Porch	Window Frame	Intact	Wood	Blue	0.01±0.00	Neg	NA
074	Back Porch	Window	Intact	Wood	Blue	0.05±0.00	Neg	NA
075	Back Porch	Window Sill	Intact	Wood	Blue	0.01±0.00	Neg	NA
076	Back Porch	Window Trim	Intact	Wood	Blue	0.01±0.00	Neg	NA
077	Back Porch	Window Frame	Intact	Wood	Blue	0.01±0.00	Neg	NA
078	Back Porch	Window	Intact	Wood	Blue	0.07±0.00	Neg	NA
079	Back Porch	Window Sill	Intact	Wood	Blue	0.01±0.00	Neg	NA
080	Back Porch	Window Trim	Intact	Wood	Blue	0.01±0.00	Neg	NA
081	Back Porch	Window Frame	Intact	Wood	Blue	0.11±0.02	Neg	NA
082	**Back Porch**	**Window**	**Intact**	**Wood**	**Blue**	**5.00±0.34**	**Pos**	**6 Each**
083	Back Porch	Window Sill	Intact	Wood	Blue	0.02±0.00	Neg	NA
084	Back Porch	Window Trim	Intact	Wood	Blue	0.01±0.00	Neg	NA
085	Back Porch	Window Frame	Intact	Wood	Blue	0.12±0.01	Neg	NA
086	Back Porch	Window	Intact	Wood	Blue	0.08±0.00	Neg	NA
087	Back Porch	Window Sill	Intact	Wood	Blue	0.04±0.00	Neg	NA
088	Back Porch	Window Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
089	Back Porch	Window Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
090	Back Porch	Shutter	Intact	Wood	Brown	0.00±0.00	Neg	NA
091	Back Porch	Door Trim	Intact	Wood	Brown	0.07±0.00	Neg	NA
092	Back Porch	Door Frame	Intact	Wood	Brown	0.30±0.00	Neg	NA
093	**Back Porch**	**Transom**	**Intact**	**Wood**	**Brown**	**1.07±0.06**	**Pos**	**1 Each**
094	Back Porch	Window Trim	Intact	Wood	Grey	0.10±0.00	Neg	NA
095	Back Porch	Window Frame	Intact	Wood	Grey	0.25±0.03	Neg	NA
096	Back Porch	Window Sill	Intact	Wood	Grey	0.11±0.00	Neg	NA
097	**Back Porch**	**Ceiling**	**Intact**	**Wood**	**Brown**	**1.12±0.09**	**Pos**	**~350 SF**
098	Back Porch	Diffuser	Intact	Wood	Brown	0.00±0.00	Neg	NA
099	Back Porch	Floor	Intact	Wood	Brown	0.00±0.00	Neg	NA
100	Hallway	Transom	Intact	Wood	Grey	0.00±0.00	Neg	NA
101	Back Porch	East Wall	Intact	Drywall	White	0.00±0.00	Neg	NA
102	Back Porch	West Wall	Intact	Drywall	White	0.00±0.00	Neg	NA

LEAD PAINT SURVEY

Project Name: Beauvais Amoureux House
Date Collected: November 16, 2020
On-Site Technician: Robert Hill II
Project Number: 16276
Project Location: 327 Saint Mary's Road
Instrument Used: Olyumpus Innov-X

SAMPLE	LOCATION	COMPONENT	CONDITION	SUBSTRATE	COLOR	RESULTS	POS/NEG	QUANTITY
103	Hallway	Door Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
104	Hallway	North Wall	Intact	Plaster	White	0.00±0.00	Neg	NA
105	Hallway	East Wall	Intact	Plaster	White	0.00±0.00	Neg	NA
106	Hallway	Door Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
107	Hallway	Door Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
108	Hallway	Threshold	Intact	Wood	Brown	0.00±0.00	Neg	NA
109	Hallway	Baseboard	Intact	Wood	Brown	0.00±0.00	Neg	NA
110	Hallway	Door Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
111	Hallway	Door Frame	Intact	Wood	Brown	0.35±0.07	Neg	NA
112	Hallway	South Wall	Intact	Plaster	White	0.00±0.00	Neg	NA
113	Hallway	Door Trim	Intact	Wood	Grey	0.00±0.00	Neg	NA
114	**Hallway**	**Door**	**Intact**	**Wood**	**Grey**	**5.00±0.47**	**Pos**	**1 Each**
115	**Hallway**	**Transom**	**Intact**	**Wood**	**Grey**	**5.00±0.51**	**Pos**	**1 Each**
116	Hallway	Floor	Intact	Wood	Brown	0.00±0.00	Neg	NA
117	Hallway	Paneling	Intact	Wood	Brown	0.00±0.00	Neg	NA
118	Hallway	Door Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
119	Hallway	Door Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
120	Hallway	Baseboard	Intact	Wood	Brown	0.00±0.00	Neg	NA
121	Hallway	Ceiling	Intact	Wood	White	0.00±0.00	Neg	NA
122	Calibration	Coin	Intact	Metal	Silver	Pass	NA	NA
123	Calibration	SRM 2570	Intact	Plastic	White	0.00±0.00	NA	NA
124	Calibration	SRM 2573	Intact	Plastic	Red	1.12±0.07	NA	NA

LEAD PAINT SURVEY

Project Name: Beauvais Amoureux House **Date Collected:** November 17, 2020

On-Site Technician: Robert Hill II **Project Number:** 16276

Project Location: 327 Saint Mary's Road **Instrument Used:** Olyumpus Innov-X

SAMPLE	LOCATION	COMPONENT	CONDITION	SUBSTRATE	COLOR	RESULTS	POS/NEG	QUANTITY
125	Calibration	Coin	Intact	Metal	Silver	Pass	NA	NA
126	Calibration	SRM 2570	Intact	Plastic	White	0.00±0.00	NA	NA
127	Calibration	SRM 2573	Intact	Plastic	Red	1.16±0.03	NA	NA
128	Hallway	Air Return	Intact	Metal	White	0.00±0.00	Neg	NA
129	Room AB	North Wall	Intact	Plaster	White	0.00±0.00	Neg	NA
130	Room AB	Baseboard	Intact	Wood	Grey	0.00±0.00	Neg	NA
131	Room AB	East Wall	Intact	Plaster	White	0.00±0.00	Neg	NA
132	Room AB	Window Trim	Intact	Wood	Grey	0.00±0.00	Neg	NA
133	Room AB	Window Frame	Intact	Wood	White	0.00±0.00	Neg	NA
134	Room AB	Window	Intact	Wood	Grey	0.00±0.00	Neg	NA
135	Room AB	Window Sill	Intact	Wood	Brown	0.00±0.00	Neg	NA
136	Room AB	Window Trim	Intact	Wood	Brown	0.06±0.00	Neg	NA
137	Room AB	Window Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
138	Room AB	Window	Intact	Wood	White	0.00±0.00	Neg	NA
139	Room AB	Window Sill	Intact	Wood	Brown	0.00±0.00	Neg	NA
140	Room AB	South Wall	Intact	Plaster	White	0.00±0.00	Neg	NA
141	Room AB	Baseboard	Intact	Wood	Brown	0.05±0.00	Neg	NA
142	Room AB	Window Trim	Intact	Wood	Brown	0.06±0.00	Neg	NA
143	**Room AB**	**Window Frame**	**Intact**	**Wood**	**Brown**	**3.36±0.23**	**Pos**	2 Each
144	Room AB	Window	Intact	Wood	White	0.5±0.00	Neg	NA
145	Room AB	Window Sill	Intact	Wood	Brown	0.10±0.00	Neg	NA
146	Room AB	Outlet	Intact	Metal	Brown	0.01±0.00	Neg	NA
147	Room AB	Window Trim	Intact	Wood	Brown	0.04±0.00	Neg	NA
148	Room AB	Window Frame	Intact	Wood	Brown	0.24±0.00	Neg	NA
149	Room AB	Window	Intact	Wood	White	0.01±0.00	Neg	NA
150	Room AB	Window Sill	Intact	Wood	Brown	0.08±0.00	Neg	NA
151	Room AB	West Wall	Intact	Plaster	White	0.00±0.00	Neg	NA
152	Room AB	South Door Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
153	Room AB	North Door Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
154	Room AB	Fireplace Mantle	Intact	Wood	Brown	0.01±0.00	Neg	NA
155	Room AB	Ceiling	Intact	Wood	Brown	0.00±0.00	Neg	NA
156	Room AB	Floor	Intact	Wood	Lt Brown	0.00±0.00	Neg	NA
157	Room AB	Diffuser	Intact	Metal	Dr Brown	0.01±0.00	Neg	NA
158	Room AB	Diffuser	Intact	Metal	Dr Brown	0.00±0.00	Neg	NA

LEAD PAINT SURVEY

Project Name: Beauvais Amoureux House
Date Collected: November 17, 2020
On-Site Technician: Robert Hill II
Project Number: 16276
Project Location: 327 Saint Mary's Road
Instrument Used: Olyumpus Innov-X

SAMPLE	LOCATION	COMPONENT	CONDITION	SUBSTRATE	COLOR	RESULTS	POS/NEG	QUANTITY
159	Room AB	Log Stand	Intact	Metal	Olive	0.07±0.00	Neg	NA
160	Attic	Truss	Intact	Wood	Brown	0.00±0.00	Neg	NA
161	Attic	Rafter	Intact	Wood	Brown	0.00±0.00	Neg	NA
162	Attic	Purlin	Intact	Wood	Brown	0.00±0.00	Neg	NA
163	Attic	Floor Plank	Intact	Wood	Brown	0.00±0.00	Neg	NA
164	Attic	Top Plate	Intact	Wood	Brown	0.00±0.00	Neg	NA
165	Attic	Porch Rafter	Intact	Wood	Brown	0.00±0.00	Neg	NA
166	Attic	West Window Frame	Det	Wood	Brown	0.00±0.00	Neg	NA
167	Attic	West Window	Det	Wood	Brown	0.00±0.00	Neg	NA
168	Attic	West Window Sill	Det	Wood	White	0.00±0.00	Neg	NA
169	Attic	East Window Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
170	Attic	East Window	Intact	Wood	White	0.11±0.02	Neg	NA
171	Basement	Ceiling	Intact	Wood	Brown	0.00±0.00	Neg	NA
172	Basement	Joist	Intact	Wood	Brown	0.00±0.00	Neg	NA
173	Basement	Support Beam	Intact	Wood	Brown	0.00±0.00	Neg	NA
174	Basement	Support Post	Intact	Wood	Brown	0.00±0.00	Neg	NA
175	Basement	Retaining Wall	Intact	Wood	Brown	0.00±0.00	Neg	NA
176	Basement	Footing	Intact	Stucco	White	0.00±0.00	Neg	NA
177	Basement	Footing	Intact	Stucco	White	0.00±0.00	Neg	NA
178	Basement	Footing	Intact	Stucco	White	0.00±0.00	Neg	NA
179	Basement	Footing	Intact	Stucco	White	0.00±0.00	Neg	NA
180	Basement	Footing	Intact	Stucco	White	0.00±0.00	Neg	NA
181	Basement	Footing	Intact	Stucco	White	0.00±0.00	Neg	NA
182	Basement	Footing	Intact	Stucco	White	0.00±0.00	Neg	NA
183	Basement	South Wall	Intact	Timber/Mud	Grey	0.00±0.00	Neg	NA
184	Basement	West Wall	Intact	Stone	Grey	0.00±0.00	Neg	NA
185	Basement	Footing	Intact	Stucco	White	0.00±0.00	Neg	NA
186	Basement	Footing	Intact	Wood	White	0.00±0.00	Neg	NA
187	Basement	Footing	Intact	Wood	White	0.00±0.00	Neg	NA
188	Basement	Footing	Intact	Wood	White	0.00±0.00	Neg	NA
189	Basement	Footing	Intact	Wood	White	0.00±0.00	Neg	NA
190	Basement	Footing	Intact	Wood	White	0.00±0.00	Neg	NA
191	Basement	Footing	Intact	Metal	White	0.00±0.00	Neg	NA
192	Basement	North Wall	Intact	Timber/Mud	Grey	0.00±0.00	Neg	NA

LEAD PAINT SURVEY

Project Name: Beauvais Amoureux House
Date Collected: November 17, 2020
On-Site Technician: Robert Hill II
Project Number: 16276
Project Location: 327 Saint Mary's Road
Instrument Used: Olyumpus Innov-X

SAMPLE	LOCATION	COMPONENT	CONDITION	SUBSTRATE	COLOR	RESULTS	POS/NEG	QUANTITY
193	Basement	East Wall	Intact	Timber/Mud	Grey	0.00±0.00	Neg	NA
194	Basement	North Fireplace	Intact	Stucco	White	0.00±0.00	Neg	NA
195	Basement	South Fireplace	Intact	Stucco	White	0.00±0.00	Neg	NA
196	Basement	Door	Det	Wood	Grey	0.20±0.00	Neg	NA
197	Basement	Door Frame	Det	Wood	Grey	0.00±0.00	Neg	NA
198	Basement	Door Trim	Det	Wood	Grey	0.08±0.00	Neg	NA
199	East Exterior	East Foundation	Intact	Rock	White	0.00±0.00	Neg	NA
200	South Exterior	South Foundation	Det	Stucco	White	0.01±0.00	Neg	NA
201	South Exterior	South Porch Wall	Intact	Stucco	White	0.00±0.00	Neg	NA
202	Porch	Porch Post	Intact	Wood	Brown	0.00±0.00	Neg	NA
203	Porch	Porch Rail	Intact	Wood	Brown	0.00±0.00	Neg	NA
204	Porch	Porch Floor Joist	Intact	Wood	Brown	0.00±0.00	Neg	NA
205	Porch	Porch Floor	Intact	Wood	Brown	0.00±0.00	Neg	NA
206	Porch	Porch Stair Rail	Intact	Wood	Brown	0.00±0.00	Neg	NA
207	Porch	Porch Step Tread	Intact	Wood	Brown	0.00±0.00	Neg	NA
208	Porch	Porch Step Stringer	Intact	Wood	Brown	0.00±0.00	Neg	NA
209	Porch	Porch Trim Board	Intact	Wood	Brown	0.00±0.00	Neg	NA
210	Porch	Porch Ceiling	Intact	Wood	Brown	0.00±0.00	Neg	NA
211	Porch	Porch Ceiling Joist	Intact	Wood	Brown	0.00±0.00	Neg	NA
212	Porch	Porch Step Post	Intact	Wood	Brown	0.00±0.00	Neg	NA
213	Porch	Attic Stair Tread	Det	Wood	Brown	0.00±0.00	Neg	NA
214	Porch	Attic Stair Riser	Det	Wood	Brown	0.00±0.00	Neg	NA
215	Porch	Attic Stair Stringer	Det	Wood	Dr Brown	0.00±0.00	Neg	NA
216	Porch	Attic Stair Post	Det	Wood	Dr Brown	0.00±0.00	Neg	NA
217	Porch	Wall	Intact	Plaster	White	0.00±0.00	Neg	NA
218	Porch	Door Trim	Intact	Wood	Grey	0.05±0.00	Neg	NA
219	Porch	Window Shutter	Intact	Wood	Grey	0.22±0.01	Neg	NA
220	Porch	Window Trim	Intact	Wood	Grey	0.53±0.04	Neg	NA
221	**Porch**	**Window**	**Intact**	**Wood**	**White**	**3.43±0.29**	**Pos**	**3 Each**
222	Porch	Window Sill	Intact	Wood	Grey	0.40±0.00	Neg	NA
223	**Porch**	**Window Frame**	**Intact**	**Wood**	**Grey**	**1.02±0.01**	**Pos**	**3 Each**
224	Porch	Shelf	Det	Wood	Brown	0.00±0.00	Neg	NA
225	Porch	Shelf Support	Det	Wood	Brown	0.00±0.00	Neg	NA
226	**Porch**	**Door Trim**	**Intact**	**Wood**	**Grey**	**1.04±0.01**	**Pos**	**1 Each**

LEAD PAINT SURVEY

Project Name: Beauvais Amoureux House **Date Collected:** November 17, 2020

On-Site Technician: Robert Hill II **Project Number:** 16276

Project Location: 327 Saint Mary's Road **Instrument Used:** Olyumpus Innov-X

SAMPLE	LOCATION	COMPONENT	CONDITION	SUBSTRATE	COLOR	RESULTS	POS/NEG	QUANTITY
227	**Porch**	**Door Frame**	**Intact**	**Wood**	**Grey**	**1.02±0.01**	**Pos**	**1 Each**
228	Porch	Transom	Intact	Wood	Grey	0.44±0.04	Neg	NA
229	**Porch**	**Door**	**Intact**	**Wood**	**Olive**	**5.00±0.67**	**Pos**	**1 Each**
230	Porch	Window Shutter	Intact	Wood	Grey	0.34±0.06	Neg	NA
231	Porch	Window Frame	Intact	Wood	Grey	0.39±0.08	Neg	NA
232	**Porch**	**Window**	**Intact**	**Wood**	**White**	**3.23±0.37**	**Pos**	**3 Each**
233	**Porch**	**Window Trim**	**Intact**	**Wood**	**Grey**	**1.45±0.11**	**Pos**	**3 Each**
234	Porch	Window Sill	Intact	Stucco	Grey	0.04±0.00	Neg	NA
235	Porch	Window Shutter	Intact	Wood	Grey	0.01±0.00	Neg	NA
236	**Porch**	**Window Frame**	**Intact**	**Wood**	**Grey**	**1.47±0.18**	**Pos**	**3 Each**
237	**Porch**	**Window Trim**	**Intact**	**Wood**	**Grey**	**1.03±0.01**	**Pos**	**3 Each**
238	Porch	Window	Intact	Wood	White	0.21±0.02	Neg	NA
239	Porch	Window Sill	Intact	Wood	Grey	0.29±0.03	Neg	NA
240	Porch	Downspout	Intact	Metal	Grey	0.04±0.00	Neg	NA
241	West Exterior	Lap Siding	Intact	Wood	Grey	0.00±0.00	Neg	NA
242	West Exterior	Window Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
243	West Exterior	Window Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
244	West Exterior	Window	Intact	Wood	White	0.00±0.00	Neg	NA
245	West Exterior	Window Sill	Det	Wood	Brown	0.00±0.00	Neg	NA
246	West Exterior	Window Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
247	West Exterior	Window Frame	Intact	Wood	Brown	0.00±0.00	Neg	NA
248	West Exterior	Window	Det	Wood	White	0.25±0.03	Neg	NA
249	West Exterior	Window Sill	Det	Wood	Brown	0.00±0.00	Neg	NA
250	West Exterior	Window Trim	Intact	Wood	Brown	0.00±0.00	Neg	NA
251	West Exterior	Window	Intact	Wood	White	0.00±0.00	Neg	NA
252	West Exterior	Window Sill	Det	Wood	White	0.00±0.00	Neg	NA
253	North Exterior	Foundation	Intact	Stucco	White	0.00±0.00	Neg	NA
254	North Exterior	Floor Joist	Intact	Wood	Brown	0.00±0.00	Neg	NA
255	North Exterior	Subfloor	Intact	Wood	Brown	0.00±0.00	Neg	NA
256	North Exterior	Post	Intact	Wood	Brown	0.00±0.00	Neg	NA
257	North Exterior	Lap Siding	Intact	Wood	Brown	0.00±0.00	Neg	NA
258	North Exterior	Window Trim	Det	Wood	Grey	0.05±0.02	Neg	NA
259	North Exterior	Window	Det	Wood	Yellow	0.07±0.03	Neg	NA
260	North Exterior	Window Sill	Det	Wood	Grey	0.04±0.01	Neg	NA

LEAD PAINT SURVEY

Project Name: Beauvais Amoureux House **Date Collected:** November 17, 2020

On-Site Technician: Robert Hill II **Project Number:** 16276

Project Location: 327 Saint Mary's Road **Instrument Used:** Olyumpus Innov-X

SAMPLE	LOCATION	COMPONENT	CONDITION	SUBSTRATE	COLOR	RESULTS	POS/NEG	QUANTITY
261	North Exterior	Window Trim	Det	Wood	Grey	0.05±0.001	Neg	NA
262	North Exterior	Window	Det	Wood	Yellow	0.11±0.02	Neg	NA
263	North Exterior	Window Sill	Det	Wood	Grey	0.02±0.00	Neg	NA
264	North Exterior	Window Trim	Det	Wood	Grey	0.09±0.01	Neg	NA
265	North Exterior	Window	Det	Wood	Yellow	0.28±0.03	Neg	NA
266	North Exterior	Window Sill	Det	Wood	Grey	0.05±0.00	Neg	NA
267	North Exterior	Window Trim	Det	Wood	Grey	0.09±0.01	Neg	NA
268	North Exterior	Window	Det	Wood	Yellow	0.16±0.03	Neg	NA
269	North Exterior	Window Sill	Det	Wood	Grey	0.02±0.00	Neg	NA
270	East Exterior	Window Trim	Det	Wood	Grey	0.00±0.00	Neg	NA
271	East Exterior	Window	Det	Wood	Yellow	0.00±0.00	Neg	NA
272	East Exterior	Window Sill	Det	Wood	Grey	0.00±0.00	Neg	NA
273	East Exterior	Window Trim	Det	Wood	Grey	0.00±0.00	Neg	NA
274	East Exterior	Window Frame	Det	Wood	Grey	0.00±0.00	Neg	NA
275	East Exterior	Window	Intact	Wood	White	0.00±0.00	Neg	NA
276	East Exterior	Window Sill	Det	Wood	White	0.00±0.00	Neg	NA
277	East Exterior	Window Trim	Det	Wood	Grey	0.00±0.00	Neg	NA
278	East Exterior	Window Frame	Det	Wood	Grey	0.00±0.00	Neg	NA
279	East Exterior	Window	Intact	Wood	White	0.00±0.00	Neg	NA
280	East Exterior	Window Sill	Det	Wood	White	0.00±0.00	Neg	NA
281	East Exterior	Window Trim	Det	Wood	Grey	0.01±0.00	Neg	NA
282	East Exterior	Window Frame	Det	Wood	Grey	0.02±0.00	Neg	NA
283	East Exterior	Window	Intact	Wood	White	0.74±0.002	Neg	NA
284	East Exterior	Window Sill	Det	Wood	White	0.08±0.02	Neg	NA
285	West Exterior	Window Trim	Intact	Wood	Grey	0.00±0.00	Neg	NA
286	West Exterior	Window Frame	Det	Wood	Grey	0.00±0.00	Neg	NA
287	West Exterior	Window	Det	Wood	White	0.00±0.00	Neg	NA
288	West Exterior	Window Sill	Det	Wood	White	0.00±0.00	Neg	NA
289	Calibration	Coin	Intact	Metal	Brown	Pass	NA	NA
290	Calibration	SRM 2570	Intact	Plastic	White	0.00±0.00	Neg	NA
291	Calibration	SRM 2573	Intact	Plastic	Red	1.17±0.08	Pos	NA

APPENDIX D

XRF CERTIFICATE OF CALIBRATION

OLYMPUS®

Your Vision, Our Future

Olympus America, Inc.
110 Magellan Circle
Webster, TX 77598
Tel: (281) 922-9300
Fax: (281) 922-9303
www.olympus-ims.com
ho.ani@olympus-ossa.com





Date Certified:	18-Mar-2019
Certification Number:	190567-01
Serial Number:	501736
Model:	DS-2000
Temperature:	77
Relative Humidity:	38

This instrument was certified according to Olympus Scientific Solutions Americas calibration procedures. The calibration was verified using Certified Reference Materials produced by Analytical Reference Materials International (ARMI), NIST and/or other certified materials. The calibration materials are verified to be traceable and within their expiration date.

This instrument conforms to Olympus Scientific Solutions Americas Quality Assurance Standards.

Analyzer modes are tested to meet the criteria as listed on the associated certification page. OSSA does not require a specific certification interval, however the analyzer may be re-certified on a fixed schedule based on the end-user's requirements.

Joshua E Langstad

Calibration Technician Signature

Certificates for these materials can be made available upon request.

Certificate Number: 190567-01	Serial Number: 501736
Modes or Methods certified by this document	

Modes / Methods: Soil
Lead Paint

Mining, Mining Plus, Empirical , Fast ID and custom element addtions do not have specific quality control criteria. They have been verified to meet basic calibration standards. Empirial modes are customer configurable and may need reconfiguration after calibration.

Certificates for these materials can be made available upon request.

Soil Environmental/Exploration

Certificate: 190567-01 **Serial Number: 501736**

Standard	Description	Element	Requirement		Assay	±	Reported	P/F
			Min	Max				
RTC-408	Metals in Soil	Ag	400	650	500	15.1	510	Pass
		As	400	650	500	15.1	449	Pass
		Hg	400	600	500	15.1	497	Pass
		Pb	400	600	500	15.1	460	Pass
		Se	350	600	500	15.1	511	Pass
NIST MED 2711a	NIST SRM 2711a Montana Soil	As	50	200	107	5.0	92	Pass
		Cu	105	175	140	2.0	141	Pass
		Pb	1250	1550	1400	10.0	1356	Pass
		Zn	340	488	414	11.0	417	Pass
RTC-407	Metals in Clay	Cr	850	1150	1000	29.1	1035	Pass

Certificates for these materials can be made available upon request.

Lead Paint

Certificate Number: 190567-01 **Serial Number: 501736**

Lead Paint without Shield

Standard	Description	Element	Requirement		Assay	±	Reported	P/F
			Min	Max				
SRM 2575	Green Lead Paint Film SRM 2575	Pb	0.200	0.400	0.307	0.021	0.33	Pass
SRM 2573	Red Lead Paint Film SRM 2573	Pb	0.950	1.140	1.040	0.064	1.06	Pass
SRM 2572	Orange Lead Paint Film SRM 2572	Pb	1.400	1.650	1.527	0.091	1.61	Pass

Lead Paint with Shield

Standard	Description	Element	Requirement		Assay	±	Reported	P/F
			Min	Max				
SRM 2575	Green Lead Paint Film	Pb	0.200	0.400	0.307	0.021	0.35	Pass
SRM 2573	Red Lead Paint Film SRM 2573	Pb	0.950	1.140	1.040	0.064	1.08	Pass
SRM 2572	Orange Lead Paint Film	Pb	1.400	1.650	1.527	0.091	1.63	Pass

Certificates for these materials can be made available upon request.

APPENDIX E

LABORATORY ACCREDITATION AND INDIVIDUAL CERTIFICATIONS

Missouri Department of NATURAL RESOURCES
dnr.mo.gov

Michael L. Parson, Governor
Carol S. Comer, Director

March 17, 2020

CERTIFICATION NUMBER:
7118031320MOIR2164
THIS CERTIFIES
Robert H Hill II
HAS COMPLETED THE CERTIFICATION
REQUIREMENTS FOR
Inspector



APPROVED: **03/18/2020**
EXPIRES: **03/18/2021**
TRAINING DATE: **03/13/2020**
Director of Air Pollution Control Program

Robert H Hill II
608 N 43rd St
Belleville, IL 62226

RE: **Missouri Asbestos Occupation Certification C**

Enclosed is your certification card for Asbestos Inspector, as issued by the Asbestos Unit of the Missouri Department of Natural Resources' Air Pollution Control Program.

Missouri Certification Number: 7118031320MOIR2164
Course Training Date: March 13, 2020
Missouri Certification Approval Date: March 18, 2020
Missouri Certification Expiration Date: March 18, 2021

Note:

- All Missouri-certified asbestos personnel must comply with the following statutes and regulations:
  - Sections 643.225 to 643.250, RSMo;
  - 10 CSR 10-6.241 *Asbestos Projects-Registration, Abatement, Notification, Inspection, Demolition, and Performance Requirements; and*
  - 10 CSR 10-6.250 *Asbestos Projects-Certification, Accreditation and Business Exemption Requirements.*
- To keep your occupation certification up-to-date, you must complete an annual refresher course and submit a renewal application each year.
- In order to be eligible to renew your certification, you must successfully complete a refresher course with a Missouri-accredited training provider within 12 months of the expiration date of your current training certificate. If you exceed this grace period, you will be required to retake a Missouri-accredited initial course in order to be eligible for Missouri certification.

To obtain a copy of the certification renewal application, or review regulations and requirements, please visit our website at http://dnr.mo.gov/env/apcp/asbestos/index.htm.

If you have any questions please call the Air Pollution Control Program at 573-751-4817.

AIR POLLUTION CONTROL PROGRAM

Director of Air Pollution Control Program

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Missouri Department of NATURAL RESOURCES
dnr.mo.gov

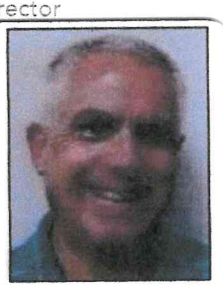
Michael L. Parson, Governor

Carol S. Comer, Director

CERTIFICATION NUMBER
7118060420MOSR2164

THIS CERTIFIES
Robert H Hill II

HAS COMPLETED THE CERTIFICATION REQUIREMENTS FOR
Supervisor



APPROVED: **06/15/2020**
EXPIRES: **06/15/2021**

TRAINING DATE: **06/04/2020**

Director of Air Pollution Control Program

June 15, 2020

Robert H Hill II
608 North 43rd Street
Belleville, IL 62226

RE: **Missouri Asbestos Occupation Certification Card**

Enclosed is your certification card for Asbestos Supervisor, as issued by the Asbestos Unit of the Missouri Department of Natural Resources' Air Pollution Control Program.

Missouri Certification Number: 7118060420MOSR2164
Course Training Date: June 04, 2020
Missouri Certification Approval Date: June 15, 2020
Missouri Certification Expiration Date: June 15, 2021

Note:

- All Missouri-certified asbestos personnel must comply with the following statutes and regulations:
  - Sections 643.225 to 643.250, RSMo;
  - 10 CSR 10-6.241 *Asbestos Projects-Registration, Abatement, Notification, Inspection, Demolition, and Performance Requirements; and*
  - 10 CSR 10-6.250 *Asbestos Projects-Certification, Accreditation and Business Exemption Requirements.*
- To keep your occupation certification up-to-date, you must complete an annual refresher course and submit a renewal application each year.
- In order to be eligible to renew your certification. you must successfully complete a refresher course with a Missouri-accredited training provider within 12 months of the expiration date of your current training certificate. If you exceed this grace period, you will be required to retake a Missouri-accredited initial course in order to be eligible for Missouri certification.

To obtain a copy of the certification renewal application, or review regulations and requirements, please visit our website at http://dnr.mo.gov/env/apcp/asbestos/index.htm.

If you have any questions please call the Air Pollution Control Program at 573-751-4817.

AIR POLLUTION CONTROL PROGRAM

Director of Air Pollution Control Program

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STC SAFETY TRAINING CENTER
safetytrainingcenter.org



2539 Vandalia Street, Collinsville, IL 62234 * Phone: 618-855-8764

Environmental and Occupational Safety & Health Training

Does hereby certify

Robert Hill II

1525 South Broadway, St. Louis, MO 63104

has successfully completed an 8 hour course of instruction for re-certification under 29 CFR 1910.120

Hazardous Waste Operations and Emergency Response Manager Supervisor

Class Date:	***03/20/2020***
Examination Date:	***03/20/2020***
STC Certificate Number:	***STC-20200320-000024HWRMS***
Certification Expiration:	***03/20/2021***

David M. Mendoza – President/Training Director
Certified Environmental Specialist
OSHA Authorized Instructor

STC SAFETY TRAINING CENTER
safetytrainingcenter.org



2539 Vandalia Street, Collinsville, IL 62234 * Phone: 618-855-8764

Environmental and Occupational Safety & Health Training

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1525 South Broadway, St. Louis, MO 63104

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Hazardous Waste Operations and Emergency Response Manager Supervisor

Class Date:	***03/20/2020***
Examination Date:	***03/20/2020***
STC Certificate Number:	***STC-20200320-000024HWRMS***
Certification Expiration:	***03/20/2021***

David M. Mendoza – President/Training Director
Certified Environmental Specialist
OSHA Authorized Instructor

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

LEAD OCCUPATION LICENSE REGISTRATION

Issued to:

Robert H. Hill, II

The person, firm or corporation whose name appears on this certificate has fulfilled the requirements for licensure as set forth in the Missouri Revised Statutes 701.300-701.338, as long as not suspended or revoked, and is hereby authorized to engage in the activity listed below.

Lead Risk Assessor
Category of License

Issuance Date:	**5/17/2019**
Expiration Date:	**5/17/2021**
License Number:	**010517-200133036**

Randall W. Williams, MD, FACOG
Director
Department of Health and Senior Services

Lead Licensing Program, PO Box 570, Jefferson City, MO 65102

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT

THIS CERTIFIES THAT

ROBERT H. HILL

HAS SUCCESSFULLY MET ALL THE REQUIREMENTS OF EDUCATION, EXPERIENCE AND EXAMINATION, AND IS HEREBY DESIGNATED A

CERTIFIED HAZARDOUS MATERIALS MANAGER
CHMM

January 31, 2007
DATE OF CERTIFICATION

14171
CREDENTIAL NUMBER

January 31, 2023
CERTIFICATION EXPIRES

EXECUTIVE DIRECTOR

VALID SO LONG AS THIS CREDENTIAL IS RENEWED ACCORDING TO SCHEDULE AND IS NOT OTHERWISE REVOKED.

ANSI Accredited Program PERSONNEL CERTIFICATION

Accredited by the American National Standards Institute and the Council of Engineering and Scientific Specialty Boards

McCRONE RESEARCH INSTITUTE

certifies that

Robert H. Hill, II

has successfully completed an intensive course of instruction in

"Microscopical Identification of Asbestos"

given by the McCrone Research Institute

Presented this 13th *day of* Jan. 1989

3.5 CEU's
4.5 ABIH CM

Robert D. McCrone

John G. Delly

McCRONE RESEARCH INSTITUTE



certifies that

Stuart S. Kinquist

has successfully completed an intensive course of instruction in

"Microscopical Identification of Asbestos"

given by the McCrone Research Institute

Presented this 19th day of February, 1988

3.5 CEU's

John G. Delly

Walter C. McCrone

Appendix I - Treatment Workshop Meeting Minutes

BEAUVAIS-AMOUREUX HOUSE TREATMENT WORKSHOP

IDIQ Contract No.: 140P6020D0002 **Task Order No.:** 140P6020F0146
Project: Beauvais-Amoureux House Historic Structures Report
RRJ Project No.: 19203.1
Date: June 3, 2021 – 8:00 AM to 12:30 PM

WORKSHOP ATTENDEES		
CONTACT	**FIRM AND ROLE**	**EMAIL**
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WORKSHOP MEETING MINUTES

The Workshop was held on June 3, 2021, from 8:00 AM – 12:30 PM CST via Microsoft Teams. In attendance were representatives of NPS representing multiple departments and areas of technical expertise, NPS park staff, the consultant team for the Beauvais-Amoureux House (B-A House), Missouri SHPO, and select community stakeholders. The following meeting minutes are provided to summarize discussions and decisions made during this meeting for the project record. Should there be any questions or additions to these minutes, RRJ would appreciate the opportunity to update this document, as appropriate.

A. Project Overview

1. Meeting attendees provided short introductions and are documented for the record in the table above. An overview of the workshop agenda, goals, and virtual meeting etiquette was given by Lurita Blank with RRJ.

2. Melissa Dirr-Gengler with HRG summarized the social history and changes over time as presented in 80% Historic Structure Report (HSR) and the Structural Assessment Report (SAR). Liz Sargent and Jane Jacobs of LSHLA summarized analysis of the historic landscape.

3. The working Period of Significance (POS) is stated to be 1792 – 1923, encompassing the ownership of both the Beauvais and Amoureux families and all major structural changes to the home. Further discussion on the POS and character-defining features was conducted later in the workshop agenda.

4. Discussion

    i. Multiple attendees asked questions regarding potential construction date of the galleries. Although materials for the galleries were purchased sometime around 1836 per estate inventory documents, the exact year of gallery construction is unknown and is estimated to have occurred between 1840-1852.

    ii. Jim Baker noted that a double-door is missing from the original (c.1792) B-A house model developed for the 80% HSR. He believes this door was located just west of the extant single doorway at the north gallery. The door's past presence is suggested by a header and log infill at the poteaux-en-terre construction at this location. This change was likely made when the interior hall was narrowed, and the interior reconfigured at an unknown date.

    iii. A 'road' located immediately south of the B-A house was discussed by the project team during the presentation. Liz Sargent with LSHLA discussed that this road appears on an 1825 plat map and an 1840s survey as "St. Gemme Street," but it is not clear if the road was ever paved or was simply a right-of-way.

        - Jim Baker pointed out that this road was used as the driveway providing access to the gift shop in the mid-late 20th century.

        - Melissa Dirr-Gengler with HRG added that "roads" are also mentioned in property descriptions to define the property boundaries. For example, the 1910 will of Felix Amoureux defines one of the property boundaries as Ste. Gemme Street or the alley to the south, which likely references the road or drive in question.

    iv. The project team hypothesizes that the original c. 1792 home had a thatch roof. Evidence for this hypothesis was requested. Lurita Blank with RRJ described that original strapping in the B-A House attic likely supported an original thatch roof and that there is not evidence that the extant straps ever had nails or pegs driven into them.

        - Historic documentation from the 1790s indicates thatch roofs were in sue in Ste. Genevieve, but typically for ancillary structures and outbuildings, not houses which were typically described as being shingled.

        - The questions regarding the B-A House's original roofing and the timeline for potential replacement with wood shingles remain open pending further historical documentation or physical evidence.

v. A question was raised regarding the unit system used in the site plans shown from the early 19th century. Discussion ensued with the conclusion that modern American units of

5. Action Items

i. BVH to review photos and documentation of the north gallery regarding the physical evidence for a double door at this location.

ii. Discussion of the 'road' immediately south of the home in the 80% HSR will be reviewed for clarity regarding a driveway versus a right-of-way.

iii. The project team is to form a recommendation for the spelling of the B-A house name, in particular the spelling of 'Beauvais,' for the final HSR.

iv. The project team may not have located information from previous investigations performed at the B-A House. RRJ will coordinate with NPS and the outside stakeholders regarding if additional information may be available for the team's review.

B. Physical Investigation Overview

1. The project team briefly summarized the findings of the recent physical investigation of the B-A House as discussed in the 80% HSR and SAR documents provided for this workshop. The following items were discussed:

i. Architectural features and interior finishes.

ii. Enclosure and structural systems.

iii. Site and landscape.

iv. Code, accessibility, and MEP systems

2. Questions and Discussion

i. The project team discussed that the information provided in the 80% HSR is based on the 2020 physical investigation and that no past investigations (other than HABS data) were reviewed by the project team.

ii. John Rosemurgy with NPS requested that all comments and questions related to these items be addressed to him via email by June 11, 2021. John provided attendees with a comment summary table.

3. Action Items

i. The project team requests access to review the results of any past investigations, especially any investigations related to the materiality or chronology of the building interior finishes, performed for the B-A House. RRJ will coordinate with NPS and the outside stakeholders on this item.

C. Treatment Alternates

1. Lurita Blank with RRJ and Julie Cawby with BVH provided an overview of the project goals.

    i. Treatment goals were discussed with the underlying understanding that foundational documents for the Ste Genevieve NHP are still underway.

    ii. Christopher Collins with NPS indicated that the park foundation documents are under development and are scheduled to be completed late in this calendar year.

    iii. Lurita Blank with RRJ further discussed the proposed POS dating from c. 1792 to 1923. Lurita described the POS as specific to the B-A House, supported by the importance of the two major family periods and to include the major alternations made under the Beauvais and Amoureux ownership.

    iv. The project team proposed a Rehabilitation approach with aspects of Preservation, Restoration, and Reconstruction as appropriate.

2. Landscape and accessibility recommendations were presented by Liz Sargent and Jane Jacobs of LSHLA.

    i. Three potential parking options were proposed by the project team. Christopher Collins with NPS described the current parking plans to be similar to Option 1 (parking at the Creole House to the southwest) with accessible parking at the parcel to the north of the B-A House.

    ii. Challenges regarding accessible access from St. Mary's Street were discussed due to the significant change in grade at the embankment and lack of dedicated parking on the road shoulder.

    iii. Opportunities to open the viewshed from the B-A House looking over the common field at east were discussed.

    iv. Potential locations for interpretive nodes for the site were presented.

    v. All recommendations were based on planned use of adjacent properties in the long-term interpretive plan for the B-A House.

    vi. Discussion

        - Tim Schilling with NPS recommended that the project team consider the language used for "un-evaluated" versus "undetermined" contributing features to align with Section 106 language.

3. Julie Cawby with BVH presented five architectural treatment concepts, which all included options for accessibility from the site to the building. All approaches included the accessible entrance on the west end of the structure.

    i. Concept 1 provided accessible access to the B-A House on the west side via a ramp and elevated deck. The deck is dimensioned to suggest the original footprint of the house before the original west elevation was demolished. Concept 1 retains

the north gallery as an enclosed space but reimagines the enclosure, potentially with glazing or another system to suggest an open gallery.

- Concept 1 was of interest the workshop attendees with recommendations for further consideration as discussed below to refine the preferred treatment approach.

- Reconfiguration of the ramp shown in Option 1 was discussed. The NPS team proposed that grading at the west end of the home be reconfigured to allow for elimination of the ramp switchback. A suggestion was made to place the ramp entirely within the 8'-10' footprint of the removed bay area at west.

ii. Concept 2 included reconstructing the missing west bay and constructing a new addition on the west elevation for a lift tower with massing to resemble the original masonry chimney. The north gallery would be restored to an open gallery. The NPS team expressed concerns with scaling for the lift tower as shown in Concept 2. Potential methods for minimizing the scale of the lift tower were discussed.

- Concept 2 was determined not to be the preferred approach and will not be developed further.

iii. Concept 3 proposed reconstruction of the missing west bay to provide interior space for mechanical and vertical circulation, including an accessible lift. In this concept, the north gallery would be reconstructed as an open gallery.

- Certain aspects of concept 3 were of interest the workshop attendees with recommendations for further consideration as discussed below to refine the preferred treatment approach.

iv. Concepts 4 and 5 proposed reconstruction of the missing west bay, extension of north and south galleries, and the addition of a r. Attendees expressed concerns with Concepts 4 and 5, regarding the inappropriate scaling. These options were presented in order to demonstrate the necessary massing for a potential lift tower and stair addition on the west side.

- Concepts 4 and 5 were determined not to be preferred approaches and will not be considered further.

v. Discussion:

- The NPS team expressed concern with providing a new deck at the west end of the home. The concern is that visitors may assume that the B-A home originally featured a deck or porch at this location.

- The NPS team requested for all concepts that additional options be provided for safety railing at galleries. A cable railing option was shown within all five options provided.

- The NPS team expressed a need for the project team to clearly defend the use of the west building end for building accessibility, and to clearly argue whether the west wall is a character-defining feature. Consensus was reached that the west wall is a contributing feature but not a character-

defining feature of the B-A house and appropriate for a rehabilitation treatment potentially to include the accessible entry.

- The NPS team requested that the project team consider additional concepts for infill of the north gallery. Setting the new enclosure behind posts at the north gallerie was suggested to highlight the gallery structure.

- Tim Schilling with NPS recommended that the project team consider and clarify the language used for “character-defining” versus “contributing” features to align with Section 106 language.

- An open discussion was held regarding the importance of visitors having physical access to the attic level, as is proposed in several of the architectural concepts. A general consensus was reached that alternate interpretive options will be explored for the attic framing and that direct visitor access is not the preferred approach.

- An open discussion was held regarding the general placement of the mechanical space at the northwest corner of the building, potentially within the footprint of the north gallery. Options and challenges for placing mechanical equipment within the attic and the cellar were discussed.

    a. Bob Mueller suggested that the project team research and consider an *appentis* (lean-to) structure if there is a desire to move the mechanical space outside the footprint of the B-A House.

4. Building enclosure recommendations were discussed by Lurita Blank with RRJ. The two major recommendations were the replacement of existing cedar shake roofing and cedar weatherboard siding, as these materials are not historic and are reaching the end of their service lives.

    i. Mark Buechel with NPS requested that the project team review and consider the use of roofing terminology, particularly ‘shake’ versus ‘shingle’ in the HSR document.

5. Three structural treatment concepts were presented by Lurita Blank with RRJ, including varying levels of alterations to existing historic structural fabric.

    i. Concept 1 proposed the least short-term intervention with stabilization and structural monitoring.

        - A consensus was made that this concept was not preferred as it did not provide a long-term solution for the house’s stability. Concept 1 will not be further developed.

    ii. Concept 2 proposed the partial in-kind replacement of vertical logs with other stabilization measures. Aspects of Concept 2 were of interest the workshop attendees, particularly that this concept preserves the poteaux-en-terre construction method. Recommendations were made by several attendees to the project team to consider whether alternate supports could be provided in addition to select log replacements.

iii. Concept 3 proposed to remove the failed vertical logs at grade and construct an alternate foundation system.

- A consensus was reached that Concept 3 is not the preferred approach since it removes the structural poteaux-en-terre system. This concept will not be further developed.

iv. Discussion

- Attendees expressed concern with Option 2, should all logs be cut at the same height this might not be desirable from a structural perspective and might unnecessarily remove serviceable log material. RRJ agrees and acknowledges the technical detailing of this approach is complex and requires detailed structural analysis.

- A question was raised about using GPR to determine extent of log deterioration below grade. RRJ responded that the low-tech data obtained during the physical assessment is believed to be reliable and that some deterioration is also visible to the naked eye. Further assessment of logs during the repair work is recommended and there may be valuable non-destructive methods that can be used at that time.

- Bob Mueller suggested that the project team consider options for introducing structural supports in the space between logs.

- Goals of the structural rehabilitation options were discussed.

- Laura Johnson with NPS mentioned that steel angles were installed under baseboards in 1994. The project team requested access to any information regarding this past rehabilitation project for further consideration.

- A question was raised whether a geotechnical soil investigation had been performed at the property. NPS did not believe that this had been performed.

6. Mick Gregory and Bob Foust with Alvine Engineering presented recommendations for HVAC, electrical, and fire suppression systems.

i. Part-way into the discussion, Christopher Collins with NPS needed to step away from the workshop, and the project team agreed that mechanical systems would be discussed further in a follow-up call with Chris to identify the preferred recommendation.

7. Discussion

i. Alvine recommended locating the equipment room at the west end of the north gallery, in approximately the same location as an existing bathroom. This is where the MEP services currently enter the building.

ii. Heating and cooling of the building was recommended. Options for use of electric versus natural gas heating were discussed. A general discussion was held regarding levels of heating and cooling to be provided, if tempering the interior was sufficient or if levels suitable for occupant comfort were desired. Christopher Collins

with NPS expressed a desire to meet occupant comfort levels, but potentially on an on-demand basis.

iii. Placement of MEP equipment in the attic was suggested. The project team discussed why this is not recommended including attic structural capacity, the need for the equipment to be within conditioned space, and the size of the equipment and the potential impact visitor experience or interpretation of the attic space.

iv. Placement of MEP equipment in an onsite shed was discussed. However, the B-A House has no existing shed onsite, and there is no documentation for ancillary structures on the property to provide guidance for integrating a new shed into the site.

v. Placement of MEP equipment below the north gallery was discussed. Bob Foust with Alvine expressed a potential concern with short-cycling air flow if this approach were implemented for the exterior condenser for an air conditioning unit. An option for a partially subgrade mechanical space was discussed but ultimately did not reach consensus as a preferred approach over locating the mechanical room in the northwest corner of the house.

vi. John Rosemurgy with NPS raised a question regarding the current water flow and pressure provided by the Ste Genevieve municipality and if it is sufficient for the proposed fire suppression system or if a fire pump would be required.

vii. Dan Worth with BVH and Lurita Blank with RRJ raised a question as to whether a geothermal system would eliminate the need for a condenser. Alvine responded affirmative, but that the cost for geothermal may outweigh the benefit.

viii. Alvine Engineering discussed the option of moving the electrical pole at the B-A House east elevation. This would also require moving fiber-optic cable.

ix. For fire suppression, Alvine recommended a dry pipe fire protection system in the cellar, main floor, and attic. Dry pipe systems are recommended for unconditioned spaces. The FP system can be fed from the mechanical room, and fire department connection would need to be located somewhere on the project site. Discussion was held regarding options for the fire suppression system, including a pre-action system or an early warning system; these systems are likely not needed but are options for consideration.

8. Consensus and Preferred Treatment Options

i. Landscape: Christopher Collins with NPS indicated a preference for the site access and parking locations presented in Option 1. This option is planned to be used this summer, and option 2 explored for potential ADA accessible parking.

- NPS requested that the project team further refine Option 1 to incorporate aspects of Option 2 for accessible parking.

ii. Architecture: Concept 1 was identified as the preferred treatment alternate, which provides an accessible ramp, deck, and entry at west. Of all options presented, this option entails the least amount of addition to the structure or alteration of the existing structure. The NPS team concluded that accessibility to the attic is not a

priority if modern technology can be used to provide visitor interaction with the space from the first floor.

- NPS requested that the project team further refine Concept 1 in an effort to minimize the footprint and bulk of the accessible ramp and deck and consider if minor grading changes can assist.

- There is a desire by NPS for this concept to involve a minimal impact to the log structure by using the west wall as rehabilitation zone for accessible entry.

iii. Structure: Concept 2, which involves replacement-in-kind of failed lower portions of the poteaux-en-terre logs, was identified as the preferred treatment alternate. Attendees preferred this option for its respect to the historic construction techniques, stability, protection of existing sound structural fabric, extension of the building's service life, and minimal visual impact to visitors. The team agreed that attempting to correct all building deflection was undesirable and a potential danger to the building's structure.

iv. MEP/FP: TBD following discussion with Park Superintendent.

9. Action Items

i. The project team will consider options for reducing the site impact of the accessible ramp on the west, options for a new enclosure system at the north porch, and options for safety railing systems.

ii. The project team will consider the recommendations for clarity on terminology and materials for various items as described above and make appropriate updates to the HSR document.

iii. The project team will coordinate with NPS and other stakeholders in an effort to track down other reports, studies, or information on repairs that may be available.

iv. The project team consider if a geotechnical soil investigation should be included in the recommendations for further investigation in the HSR.

v. Alvine Engineering to determine existing water flow and pressure from the local municipalities.

vi. Project team will further discuss MEP/FP options with Park Superintendent.

D. Summary and Closing

1. John Rosemurgy with NPS briefly reviewed the preferred treatment alternates with aspects for further consideration by the project team.

2. Lurita Blank with RRJ briefly reviewed the action items for the project team and thanked the workshop participants.

3. The workshop concluded at approximately 12:30 pm.

Supporting Documents Enclosed

1. Beauvais-Amoureux House Treatment Workshop Agenda
2. Beauvais-Amoureux House Pre-Workshop Treatment Approach Meeting Notes.
3. Beauvais-Amoureux House Post-Workshop HVAC Treatment Meeting Notes.

BEAUVAIS-AMOUREUX HOUSE PRE-WORKSHOP TREATMENT MEETING

IDIQ Contract No.: 140P6020D0002 **Task Order No.:** 140P6020F0146
Project: Beauvais-Amoureux House Historic Structures Report
RRJ Project No.: 19203.1
Date: April 5, 2021 – 12:30 AM to 2:30 PM

MEETING ATTENDEES		
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Timothy Schilling	NPS Midwest Archeological Center | Archeologist	tim_schilling@nps.gov

MEETING MINUTES

A treatment meeting was conducted on April 5, 2021, from 12:30 – 2:30 PM CDT virtually via Microsoft Teams. In attendance, were representatives of the NPS and consultant team for the Beauvais-Amoureux House (B-A House) Structural Assessment and Historic Structure Report (HSR). The following meeting minutes are provided to summarize discussions and decisions made during this meeting for the project record. Should there be any questions or additions to these minutes, RRJ would appreciate the opportunity to update this document, as appropriate.

A. Overview

1. Meeting attendees provided short introductions and are documented for the record in the table above. An overview of the meeting agenda and goals was given by Lurita Blank with RRJ.

2. Project Goals

   - Protect the historic resource.
   - Provide flexibility for future interpretive use.
   - Inform future planning for the site.

B. Structural Stabilization Discussion

1. Vertical Logs: Lurita Blank with RRJ provided a summary of the condition of the vertical log walls of the B-A House. The character-defining *poteaux-en-terre* logs are heavily deteriorated below grade. The house is currently stable but there are concerns for the long-term serviceability of the logs.

- Lurita presented several conceptual treatments for structural remediation for the vertical logs, each with a different impact on the historic fabric and future occupancy / live load capacity. A general discussion was held regarding the potential treatment options and a consensus was reached that replacement in kind of the original members is the preferred approach.

    - Partial replacement-in-kind of the vertical logs entails replacing approximately the lower third of the original vertical logs and splicing at a level just above ground. Since only the lower portions of the logs are known to be heavily deteriorated, this option allows for extended service life of the logs, the preservation of the unique structural system, and will be nearly invisible. The downside of this method is that it is invasive and irreversible.

    - Other options within the umbrella of a replace-in-kind approach were brought to discussion:

        - The possibility of replacing entire logs was discussed. This approach would extend the service life of the walls but would come at the undesired cost of losing a large portion of the original fabric of the structure. Lurita Blank with RRJ indicated that the logs were not deteriorated along their entire length like likely could be replaced in their entirety.

        - Laura Johnson with NPS raised the possibility of only replacing select logs. This approach would aim to preserve the maximum the amount of original structural fabric. Lurita Blank with RRJ responded that this is a potential option but would require detailed structural analysis, potentially finite element analysis.

    - John Rosemurgy with NPS asked if placing newly replaced logs next to deteriorated existing logs would allow for spread of termites. Lurita Blank with RRJ advised this possibility will need to be considered with any replace-in-kind strategy. It was noted that the cedar logs are generally observed to have resisted termite damage for over two hundred years.

2. First-Floor Framing: Lurita Blank with RRJ provided a summary of the condition of the first-floor framing system. The historic floor system has failed in place. Currently, the existing shoring provides structural support for the first floor.

    - A general consensus was reach that is the preferred approach to preserve as much of the existing fabric as possible, even if the members are in a failed condition. Mark Buechel with NPS recommended that new minimally invasive supplemental members be introduced as required between the existing logs.

    - Lurita Blank with RRJ raised concerns about the existing shoring. A redesign of the existing shoring was suggested, with the end goal of providing supports that are more concealed than the existing shoring. It would be visually ideal to remove the diagonal supports to improve the visual experience.

    - Julie Cawby noted that the existing shoring is readily recognizable as a modern intervention, and this is generally the preferred approach where repairs cannot be concealed. Multiple parties agreed that timber or steel supplemental framing should be considered in a way that is clearly distinct from the original structure but less intrusive than the existing shoring.

- John Rosemurgy with NPS raised a question regarding ventilation in the caveau (cellar). Lurita Blank with RRJ responded that this is a concern due to the humidity in the caveau and introducing winter heating. It is unclear how effective the opening on the south wall is for ventilation. Options for providing ventilation in the caveau were discussed.

- Considerations for proposed heating and year-round accessibility were discussed. Julie Cawby with BVH recommended that the north porch would be a suitable location for a "Rehabilitation Zone" for mechanical entrances and equipment since it is not original to the structure and no historic fabric remains. Large heating/cooling systems would negatively impact the existing fabric of the structure and can be concealed in this Rehabilitation zone.

3. Norman Trusses: Lurita Blank with RRJ provided a summary of the condition of the attic trusses, ceiling beams, and top plate. At several locations, the trusses have been impacted by insect or water damage and require stabilization.

    - Lurita recommended localized repairs or stabilization with steel and tie rods. Partial or full replacement of timbers is possible but not believed to be necessary. It would be ideal to keep stabilization concealed in the attic so as not to impact first floor visitor experience.

        - Tim Schilling with NPS recommended that the project team consider the need for the stabilization repairs to be discrete. Options and case studies where steel framing was introduced to historic structures were discussed such as the Grant Home and Pullman National Monument, which was damaged by fire.

    - Laura Johnson with NPS asked for interpretive options or potentially exposing the attic framing and trusses. Due to concerns regarding occupancy and structural capacity of the attic, direct access by visitors will likely not be possible.

        - Mark Buechel with NPS suggested the possibility of viewing windows or openings into the attic space.

        - Lurita Blank with RRJ suggested considering digital methods such as virtual or augmented reality. Concerns were raised about maintaining a technology-based interpretive tool.

        - Julie Cawby with BVH suggested viewing periscopes as a low maintenance and effective method for visitors to see the concealed structure, potentially for both the attic and the cellar. Most attendees supported a non-digital and low maintenance solution.

C. Site, Landscape, and Archaeology Discussion

1. Liz Sargent with LSHLA provided an overview of the changes over time of the site and discussed the available historical agricultural census data and land ownership documents. Photographs of the structure are available for the past hundred years of the structure's life.

2. Per Tim Schilling with NPS an archaeological survey is in progress for this property. It is possible that evidence of foundations for privies, outdoor ovens, and other outbuildings may be found during the survey.

3. Tim Schilling with NPS asked if there was evidence the galleries ever wrapped the east or west end walls. Lurita Blank with RRJ responded that there is currently no evidence to support galleries on the east end based on the existing framing. Based on the physical evidence, there is nothing that suggests previous or different gallery structures from those extant.

4. Tim Schilling with NPS asked regarding evidence that the house was thatched when wood singles were in common use at the time. Lurita Blank with RRJ described the existing straps that are partially still in place on the primary rafters under the roof line of the galleries. These straps are attached to the rafters for forged nails and do not have holes consistent with nails or wood pegs as would have been required for wood shingles. There is no physical evidence that can confirm the original roofing, but the straps appear original to the c. 1792 structure and do not suggest that they supported wood shingles.

5. Tim Schilling with NPS asked as to why the house faces south when the structure lies along St. Mary's Road at the east. Lurita Blank with RRJ described that a road immediately south of the property is shown on the early surveys and plat maps, which may explain the house's orientation. Tim recommended that the project team consider which elevation may have been primary.

6. Liz Sargent with LSHLA asked NPS for any updates or additional information regarding plans to acquire properties adjacent to the B-A House. John Rosemurgy with NPS believed that at least two homes near the site have been closed on recently, including the Creole (Wilhauk) House to the southwest and the parcel immediately to the north. John said he will discuss the park boundaries and property acquisition plans with Christopher Collins, the park superintendent.

7. Tim Schilling with NPS described that LiDAR scans have been taken at the B-A House for the purpose of creating a 3-D model of the home. The LiDAR scan was limited to the immediate parcel of the B-A House and did not include adjacent properties. This information can be made available to the project after the data is compiled.

8. Julie Cawby with BVH requested that NPS provide a list of studies that have been done and others that are in progress for this site for the project team's reference.

D. Accessibility Discussion

1. Liz Sargent with LSHLA provided an overview of the features and challenges for accessibility on the B-A House site. Potential options for parking, comfort facilities for visitors, and accessible paths were discussed. These options are impacted by NPS's acquisition plans for adjacent parcels.

2. Per John Rosemurgy with NPS, NPS has determined that restrooms for visitors will not be provided within the B-A House.

3. Lurita Blank with RRJ asked if NPS owns the empty parcel immediately to the south of the B-A House. John Rosemurgy with NPS indicated he would ask Christopher Collins about this parcel.

E. Context Discussion

1. John Rosemurgy raised a question regarding the ownership of the land between St. Mary's Road and the Mississippi River, the former Common Field. Per Mark Buechel with NPS the former Common Field land is owned by multiple entities and encompasses Native American sites and floodplain lands.

2. Tim Schilling with NPS shared that the Army Corps of Engineers may be planning to purchase more of this land and will need to address archaeological concerns with further work on levees.

3. Liz Sargent with LSHLA discussed the impact of the Roth Boatyard on the viewshed of the Common Field from the B-A House.

4. Liz Sargent with LSHLA discussed potential interpretation of previous site features such as fences and stone walls. Recommendations for these features can be refined when the period of significance is established.

F. Period of Significance (POS) Discussion

1. The project team has proposed a POS for the B-A House spanning c. 1792 to 1923. This period encompasses the ownership of both the Beauvais and Amoureux families and the major structural alterations made to the home during this time. The structure as it exists today remains largely unaltered since c. 1900, with the exception of the enclosure of the north gallery during the 1960s restoration.

    - Tim Schilling with NPS indicated that he would recommend a narrower POS of approximately 1750-1860 focused on the period of French Heritage. He suggested this would better align with Ste. Genevieve NHP's enabling legislation and the archeological resources.

    - Tim Schilling with NPS asked if 1890 was considered as a potential end date for the POS. Pelagie Vital, wife of Benjamin Amoureux, died that year. Lurita Blank with RRJ responded that ending the POS at this date would encompass the last major alterative of the house but would abbreviate the portion of the building's history when it was owned by the Amoureux family in a way that would be difficult to defend.

    - The 2016 Special Resource Study for Ste. Genevieve ended the POS in 1850.

    - The B-A House HSR team will carefully consider the POS for which recommendations will be made for all aspects of the property.

G. HVAC/MEP Discussion

1. Bob Foust with Alvine provided a summary of the options for introducing new mechanical systems to the building. Potential options include a traditional furnace/condensing unit system, a mini-split system, or a geothermal heat pump system.

2. Christopher Collins, park superintendent, has previously indicated that year-round use of the house is desired. Due to extreme seasonal temperatures in Missouri, air conditioning in the summer and modest heating in the winter will be necessary.

3. Lurita Blank raised concerns about creating microclimates within the exterior walls and for condensation potential in the attic. Mark Buechel asked about options to add insulation and a vapor retarder to the envelope. Laura Johnson with NPS also asked about the need for humidity control.

    - Tim Schilling with NPS recommended that NPS standards for housing exhibit materials be consulted for determining interior environmental conditions.

    - Bob Foust with Alvine suggested that an electrical furnace would introduce less moisture than a gas or propane-fueled system.

4. An open discussion on potential location of mechanical equipment was held. The west end of the north gallery (the existing lavatory) has been identified as a potential location for a new mechanical room. Bob Foust with Alvine proposed running HVAC ductwork from this space into the attic.

    - Laura Johnson with NPS suggested that the HVAC equipment visibility be considered and coordinated with potential interpretive viewing options for the attic.

    - John Rosemurgy with NPS asked about the ability to effectively heat the first floor. Bob Foust with Alvine suggested that providing insulation at the attic level would be beneficial for any heating system. The possibility of installing high r-value insulation at the attic floor was suggested. Mark Buechel with NPS suggested the project team carefully consider the insulation type to minimize visual impact.

    - Julie Cawby with BVH considered a concept to insulate the roof instead of the attic floor. Laura Johnson with NPS recommended to keep the roof as authentic as possible and that the undersides of the shingles should be visible from the attic. Laura recommended that the advantages and disadvantages of the various approaches be considered.

H. Summary and Next Steps

1. Lurita Blank with RRJ provided a summary of the preferred treatment approach for the structural systems as follows:

    - Vertical Logs: Replacement in kind and further study regarding the extents of replacement.

    - First-Floor Framing: Preserve existing failed members and introduce supplementary supports in a minimally invasive manner, potentially with re-design of shoring system.

    - Norman Trusses: Localized stabilization with consideration of the visual impact of repairs.

2. Action Items

    - The project team will consider open items suggested and discussed by attendees described above in further development of the 80% HSR document.

    - RRJ will coordinate with NPS to compile a list of studies in progress for the HSR team's consideration, including a list of adjacent parcels acquired by NPS.

    - The project team will further consider the proposed POS and review the information referenced by workshop attendees.

BEAUVAIS-AMOUREUX HOUSE POST-WORKSHOP HVAC MEETING

IDIQ Contract No.: 140P6020D0002 **Task Order No.:** 140P6020F0146
Project: Beauvais-Amoureux House Historic Structures Report
RRJ Project No.: 19203.1
Date: June 3, 2021 – 8:00 AM to 12:30 PM

MEETING ATTENDEES		
CONTACT	**FIRM AND ROLE**	**EMAIL**
Lurita Blank	Raths, Raths, and Johnson, Inc. (RRJ) Project Manager I Historical Architect	lmblank@rrj.com
Julie Cawby	BVH Architecture (BVH) | Historical Architect	jcawby@bvh.com
Mike Gregory	Alvine Engineering | Mechanical	mgregory@alvine.com
John Rosemurgy	NPS MWRO Cultural Resources | COR/Historical Architect	john_rosemurgy@nps.gov
Christopher Collins	NPS Ste. Geneviève NHP | Park Superintendent	christopher_collins@nps.gov

MEETING MINUTES

This post-workshop meeting was held on June 4, 2021, from 10:00 AM – 10:30 AM CST via Microsoft Teams. The following meeting minutes are provided to summarize discussions and decisions made during this meeting for the project record. Should there be any questions or additions to these minutes, RRJ would appreciate the opportunity to update this document, as appropriate.

A. Heating Discussion

1. Mike Gregory with Alvine Engineering (Alvine) summarized the recommendations heating included in the 80% Historic Structure Report (HSR) document. The conceptual heating treatment included interior tempering (maintaining interior temperatures above freezing through mechanical heating) and a possibility for on-demand heating to occupant comfort levels (about 68 degrees F).

2. An open discussion with Christopher Collins with NPS was held regarding occupancy needs in heating months and occupant comfort expectations. Chris agreed with the tempering concept during off-hours and expressed a need for heating to occupant comfort levels, potentially on an on-demand basis.

3. Mike Gregory with Alvine explained that the heating concept could be executed with either a natural gas or electric furnace.

B. Cooling Discussion

1. An open discussion with Christopher Collins with NPS was held regarding occupancy needs in cooling months and occupant comfort expectations. Chris expressed a need for integrated cooling (air conditioning) and the ability to control the house environmental systems with temperature programming.

2. Mike Gregory stated that air conditioning can be easily integrated into the proposed heating and ventilation system. The equipment for both heating and cooling would need to be sized to accommodate the “leaky envelope” of the house. An exterior condensing unit would be required for a traditional air conditioning system.

3. An open discussion was held regarding air infiltration and condensation potential in the house with the introduction of heating and cooling.

    i. Julie Cawby with BVH raised concerns about ventilation in the attic. Lurita Blank with RRJ concurred and recommended that ventilation be carefully considered in the roofing replacement project.

    ii. Lurita Blank with RRJ raised concerns that the existing ceiling will allow condition air, particularly in the winter, to infiltrate uncontrolled into the attic, which raises condensation potential. Lurita recommended further consideration of introducing an air barrier and potentially limited insulation at the attic floor.

    iii. Lurita Blank with RRJ and Mike Gregory discussed the lack of vapor control in the exterior wall system. Ste. Genevieve is a mixed climate, which impacts the proper location of a vapor retarder in the wall system. Lurita recommended that RRJ perform some hygrothermal analysis using WUFI to better understand condensation potential and the impact of a vapor retarder.

    iv. Mike Gregory with Alvine recommended considering air sealing measures to reduce air infiltration through doors and windows. John Rosemurgy with NPS agreed but cautioned that the visual impact of weather sealing would need to be carefully considered.

    v. Christopher Collins with NPS asked the project team to recommend data loggers for temperature and relative humidity and placement to better understand the current interior conditions.

C. North Porch Enclosure Discussion

1. John Rosemurgy with NPS revisited options for an open versus and enclosed north gallery. Julie Cawby with BVH replied that this is somewhat dependent on the interpretive plan for the house but that architectural concepts for an open gallery could be considered.

2. An open discussion was held on the location of the proposed mechanical room at the west end of the north gallery and other potential options such as within the footprint of the original house or as an addition to the west end. Per Julie Cawby with BVH, since the north gallery is not historic fabric, it was identified as a potential rehabilitation zone suitable for a new mechanical room. The discussion concluded with the proposed location for the new mechanical room to be the west end of the north gallery.

D. Preferred Treatment Options

1. **Heating:** Interior tempering with on-demand heating to occupant comfort capabilities.

2. **Cooling:** Air conditioning capabilities will be incorporated into the HVAC.

3. **Fire Suppression:** Dry-pipe system.

E. Action Items

1. The project team will include air conditioning treatment options in the 95% HSR document.

2. RRJ, BVH, and Alvine will explore options for introducing and air barrier and potentially insulation to the attic floor and will consider the impact to the historic fabric and aesthetics of the attic space.

3. RRJ will perform some hygrothermal analysis using WUFI in an attempt to better understand the condensation potential and the impact of a vapor retarder in the exterior walls.

4. RRJ will follow up with NPS regarding temperature and relative humidity data loggers for monitoring the existing conditions at the house.

Appendix J - Archeological Excavations Report

No author. "Preliminary Report on Excavations at the St. Gemme Beauvais/Amoureux House, Ste. Genevieve, Missouri." 1996.

PRELIMINARY REPORT ON EXCAVATIONS AT THE ST. GEMME BEAUVAIS/AMOUREUX HOUSE, STE. GENEVIEVE, MISSOURI

Excavations were conducted in selected areas adjacent to the St. Gemme Beauvais/Amoureux House in the town of Ste. Genevieve, Missouri, in the spring and early summer of 1996. These excavations were conducted in areas to potentially solve selected problems associated with the future restoration of the house.

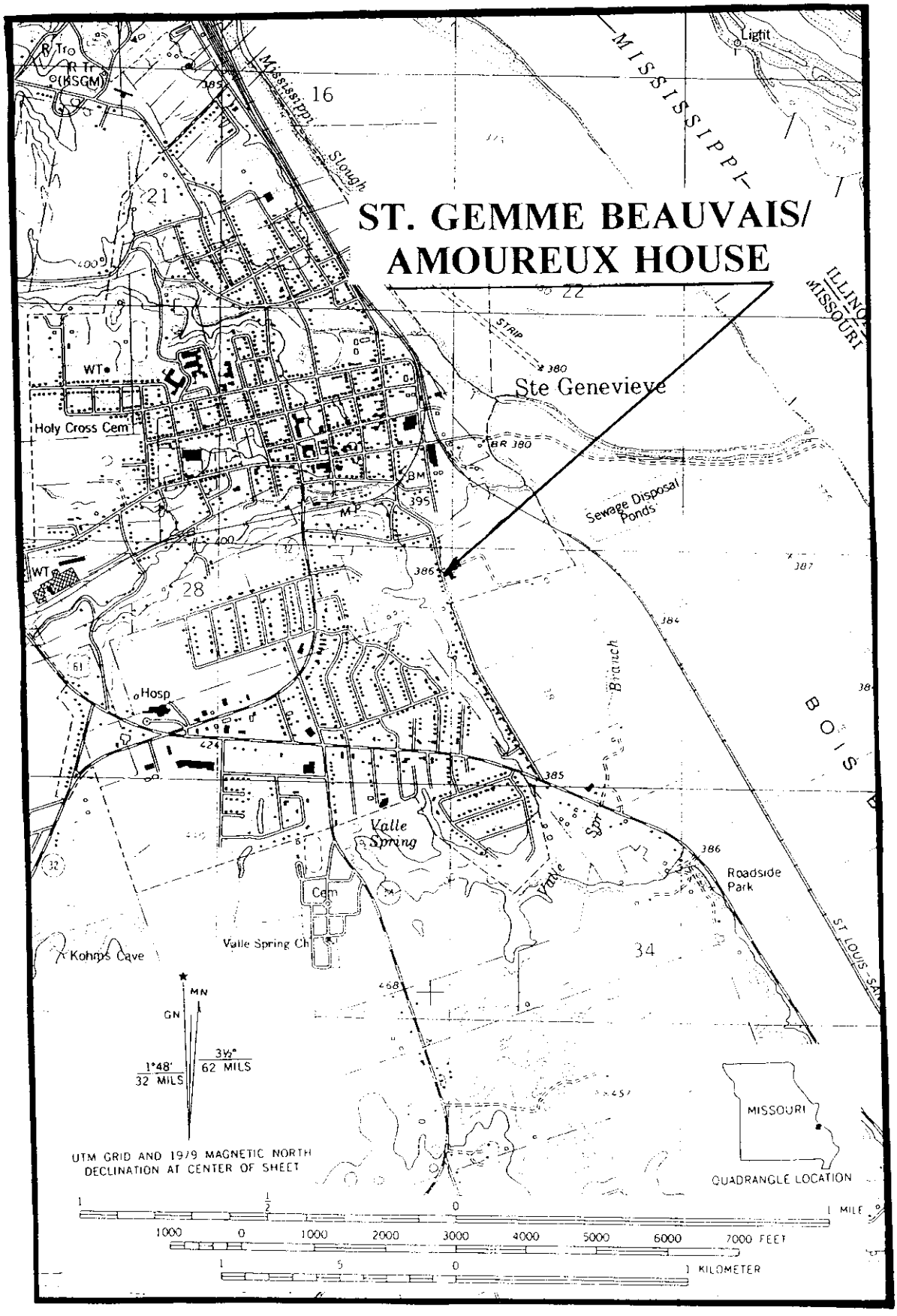
The St. Gemme Beauvais/Amoureux House located on St. Mary's Road in the south of portion of the town (Figure 1). The house was built ca. 1792 by Jean Baptiste St. Gemme Beauvais. The structure is a poteaux-en-terre building with vertical log wall construction. These vertical logs form the main load-bearing walls of the main portion of the structure. The roofing system is a massive Norman truss system. The porch roofs are lighter construction and hang from this truss system. The flooring system, rather than being supported from a sill on the walls, is supported from a sill laid on mortared stone piers, making the floor separate from the walls.

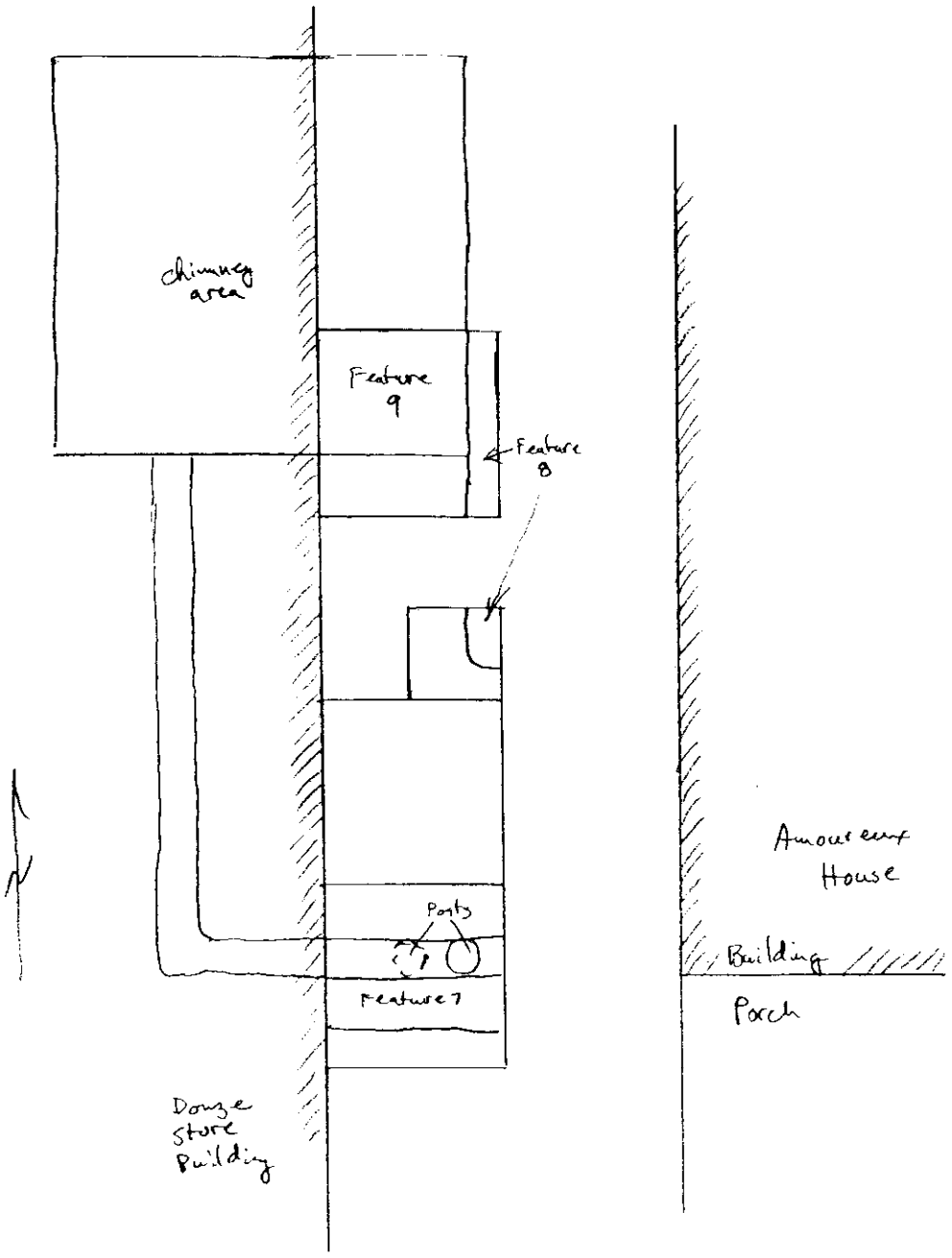
Numerous alterations have occurred to the structure through the years, probably masking its original configuration. A portion of the west side of the house had been removed, possibly the result of a fire. On the eastern side, the lower ends of the vertical logs had been sawn off, and a stone foundation put under them. The interior room configuration appears to have changed, probably after the removal of the western portion. In addition, the placement of the doorways has changed.

West Excavations

In order to answer questions about the original size of the structure, excavations were placed on the west side of the house. As a store building had been constructed only six feet west of the house, the space available for excavation was limited. It was not certain if the outside wall would fall within this space or if it would be under the store building.

Three, one meter units and one, one-half meter unit was excavated along the edge of the store building (Figure 2). One unit was laid out to cross the south wall of the house on its intercept with the store foundation. The builder's trench and portions of two vertical cedar posts were encountered in the excavation unit. These posts had rotted in place and only the


ST. GEMME BEAUVAIS/
AMOUREUX HOUSE
MISSISSIPPI
Ligtit
Mississippi
Slough
16
21
22
28
34
ILLINOIS
MISSOURI
STRIP
Ste Genevieve
WT
Holy Cross Cem
BR 380
BM
395
Sewage Disposal Ponds
386
387
384
Hosp
424
385
Valle Spring
Valle Spr
Branch
Roadside Park
Cem
Valle Spring Ch
Kohns Cave
468
BOIS
ST LOUIS-SA
MN
GN
1°48'
32 MILS
3½°
62 MILS
UTM GRID AND 1979 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET
MISSOURI
QUADRANGLE LOCATION
1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 5 0 1 KILOMETER


chimney area
Feature 9
Feature 8
Amusement House
Building
Porch
Posts
Feature 7
Dougs store Building

lower ends in the earth were present. The builders trench continued on under the store foundation. A slanting hole was excavated in the sterile soil in the northwest corner of the unit and a solid wire probe inserted to try to reach the outside wall. As the builders trench encountered in the excavation unit contain significant amounts of limestone and mortar, it was hoped that a solid wire probe might be able to detect the outside wall. No contact was made with any material indicative of the outside wall. As the length of the solid wire was only three feet, it could not be determined if the wall was further out than that or alternately, that we simply did not make contact with any stone, mortar or wood.

As preliminary solid wire probing had indicated the possible presence of a chimney base along the center of the west side of the structure, the next excavation unit was placed to intercept the south side of the probable chimney base. The south side of this unit was two meters north of the first excavation unit. While the unit was placed along the side of the store building, it coincidentally intercepted the south side of the chimney, the front (east side) of the chimney, and the basement excavation. The stratigraphy of the excavation unit indicated a shallow surface zone to a depth of 10-13 cm b.s. Below that was a solid zone of coal 8-10 cm. thick. This coal blankets the entire area from the south excavation over the chimney excavation and extends for an undetermined to the north and south. Below that is a thin deposit of cultural material. At that point the south edge of the excavation for the chimney and the basement appeared. South of these excavations was undisturbed yellow loess. The fill of the chimney area and the basement were undifferentiated fill containing large quantities of cultural debris. One item recovered in this fill was an 1862 penny providing us with a no-earlier-than date for the fill. The depth of the excavation for the basement and the chimney were nearly the same, totalling 110 cm. at the west side of the chimney excavation and 105 cm. at the east edge in the basement excavation.

In order to determine the size of the excavation for the chimney, a solid wire survey was conducted to the north. This produced an approximate length of 225 cm. A soil core was driven to the west under the store building foundation to locate the back (western) side of the chimney excavation. This produced a total width of 235 cm. for the chimney excavation. The other chimney in the house is approximately 210 cm. N-S x 220 cm. E-W, making both of these chimneys nearly the same dimensions.

As the front edge of the basement excavation appeared in this excavation unit, it was then decided to find the turn in the basement excavation to the south. At this point, it was believed that the basement excavation would fall approximately 1.25 to 1.5 meters to the north of the south wall of the house. Another one meter square was excavated north of the unit falling over the wall trench on the south side of the house. This however failed to find the turn in the basement excavation. At this point a

one-half meter square was excavated on the northeast corner of the last excavation unit. The vertical excavation for the basement was located in this small excavation unit. However, no pier supporting the flooring system was located anywhere in the excavations.

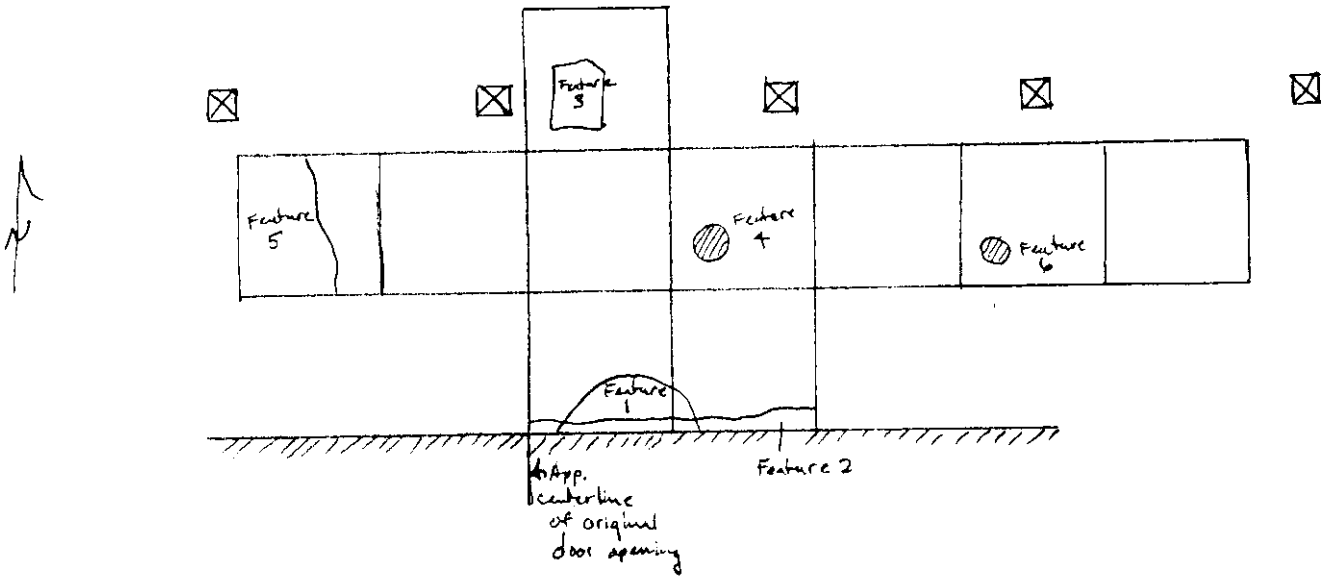
If we assume that the distance north of the south wall of the house where the basement excavation starts is approximately the same distance from the west wall, this would place the western wall approximately 65-70 cm. under the foundation of the store building. In order to determine how this would relate to the original interior room configurations, the ca. 22 feet length of the eastern room was replicated on the western side from the ceiling joist that contains the nail holes where the original partition was located. This places the western wall within one foot of the projected location on the basis of equal distance in for the basement wall excavation. Both of these would place the western wall near the center of the chimney portion of the chimney/hearth base. Naturally, without physically locating the western wall, this remains speculation.

North Excavations

The other major question to be answered was the original configuration of the porches (if any) and the original orientation of the house (front/back). As it was believed that the structure represented a French Canadian rather than a French Creole house, it was not believed that the large porches were original to the house. Excavations were conducted under the north and south porches in front of the original door openings to determine if there were other smaller porches or potentially simply steps up to the doorways.

Under the north porch, a total of 10, one meter units were excavated (Figure 3). Three units were excavated in a line north-south along the east side of the centerline of the original door opening. This line intersected the north side of the north porch. Then a crossline of seven units was placed across this line. It was anticipated that if there were a smaller porch, then the support structure would be located in this area. One probable posthole and one possible posthole were defined in this area. There is, however, no pattern to these posts, and they do not match with anything to the west side of the door opening. Both of these features were filled with plaster, coal, cinders, and wire nails, indicating that they were removed and backfilled approximately the turn of the 19th-20th centuries. It would appear that these features may well have more to do with scaffolding or support for remodeling than with the original structure or porches.

The most prominent series of features in the excavations was the excavation of one limestone pier and the probing out of a line of limestone piers all across the north side of the existing porch. These piers are rough fieldstone and do not appear to be


Feature 3
Feature 5
Feature 4
Feature 6
Feature 1
Feature 2
App. centerline of original door opening

formally dressed in any way.

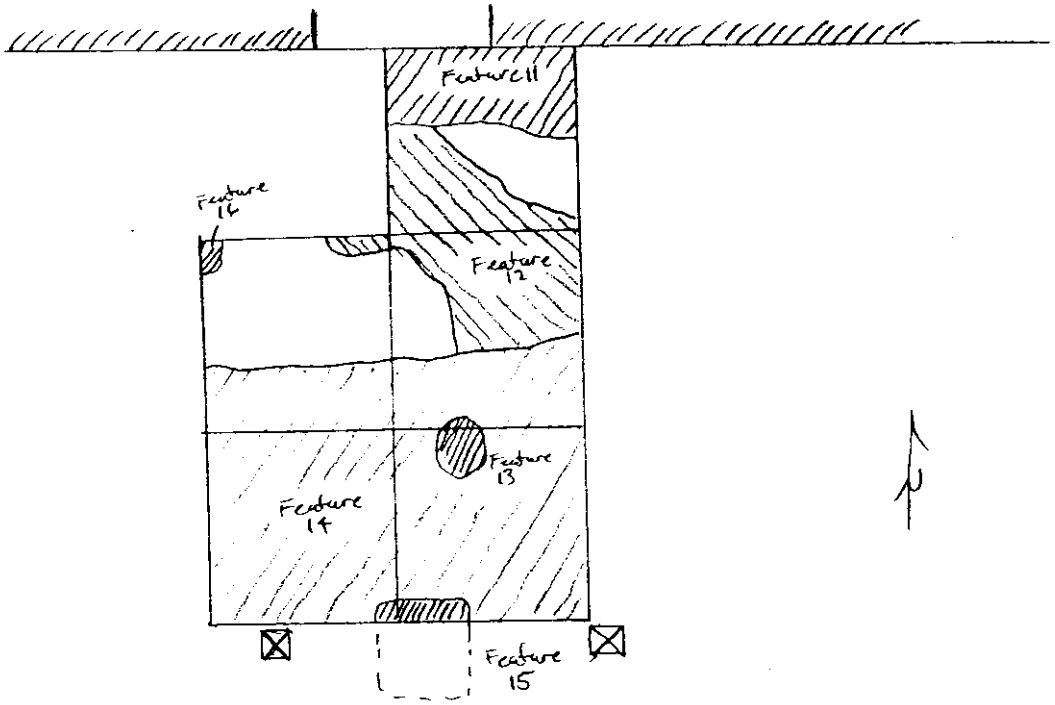
In examining the artifacts and their distribution, there are only two early period artifacts recovered in the excavated material. In addition, the distribution of artifacts indicates that almost all of the artifacts recovered in the excavations were post-1875. The distribution of artifacts shows a very low density under the porch with material density increasing very sharply to the north of the porch line. Based on the very low material density, particularly of early period artifacts, it would appear that the structure always had the large 8 foot porches it presently has and that the porch base was enclosed some way in its early history.

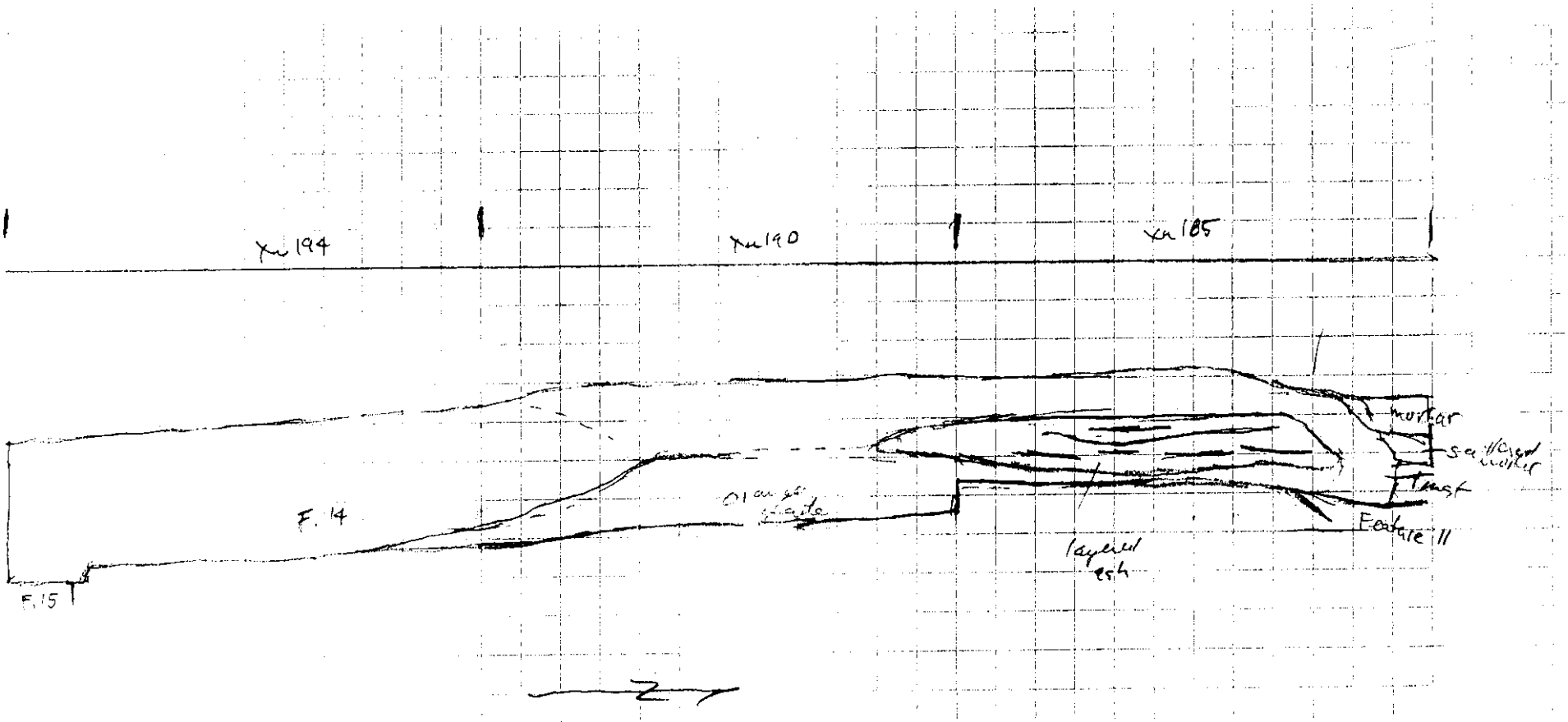
South Excavations

Excavations were also conducted under the south porch to try to determine if smaller porches were originally present. In addition, there was a small doorway under the original door opening into the house. It was believed that this might have been the original basement entryway. If there was a smaller porch, we wished to determine the configuration of these features. A total of 5, one-meter units were excavated under the north porch (Figure 4). These units were placed along the centerline of the original doorway opening, with three units north-south east of the centerline and two west of the centerline.

These units indicated a much more complex picture than those on the north side. On the north side, the builder's trench was narrow, only about ten cm. wider than the vertical wall posts. On the south side, the builder's trench was much wider, averaging ca. 35 cm from the south wall. There was no excavation below the small door opening into the basement. This small opening appears to have been not much larger than presently indicated. Sterile soil was reached only 15-17 cm below existing grade. There was a large, layered fan of ash coming from this opening and angling to the southeast. One possible posthole was encountered in the northwest corner of the excavation block. This extends all the way to the surface and is probably a late feature.

At approximately 1.6 meters south of the south wall of the house, there is a large, deep infilled feature. This feature appears to be an east-west trending feature which may run the full length of the front of the structure. While not certain what this feature represents, it looks like an infilled drainage channel. The infill of this feature is very late, i.e. post-dating 1950. A C-cell battery was recovered from -30 cm. near the front edge of the porch. A possible posthole was recorded in the base of this feature just east of the centerline. This possible posthole contained clay infill and contrasted sharply with the dark organic stained sterile soil. It could not be adequately determined if this was a rodent burrow or not.


Feature 11
Feature 16
Feature 12
Feature 13
Feature 14
Feature 15
N



Amoureux House
South Porch
N-S Profile P# 205
West Edge Xn's 185, 190, 194
13 June '96
LDG

As with the north porch, the most interesting aspect of the south porch is a line of deeply buried porch piers directly under the existing porch line. These piers are buried at approximately -33 cm to the tops of the piers in the single excavated pier. A solid wire probe of the front indicated a line of piers spaced approximately every eight feet. All are deeply buried. Unlike the north piers, these are dressed limestone and are much larger. The single excavated pier was 59 x 47 cm. They are similar to the northern piers in that their long axes are north-south. These piers begin just inside the existing eastern side of the porch (ca. 50 cm.). There is another possible pier ca. eight feet to the east, but time did not permit the excavation of this feature.

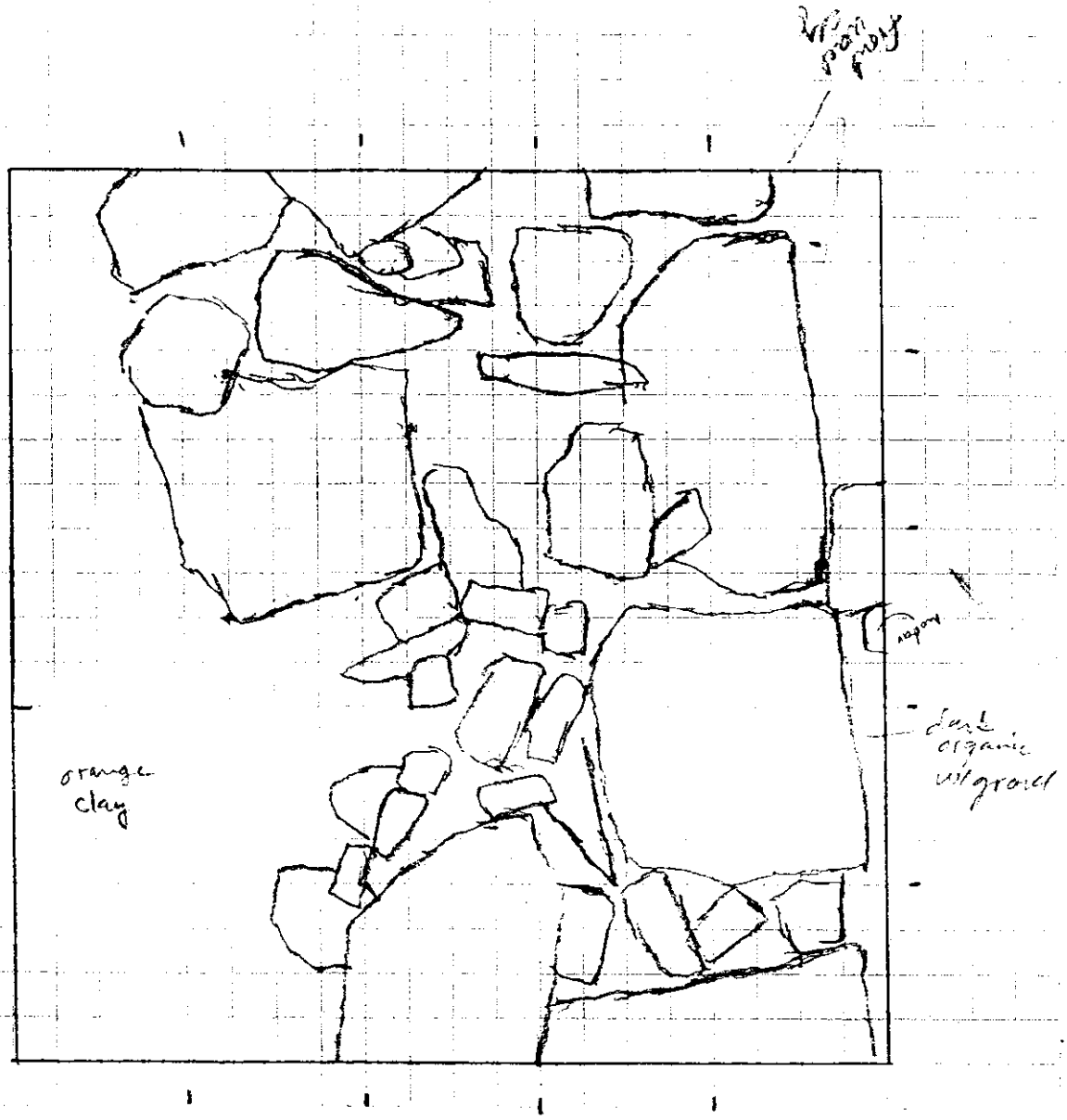
Eastern Excavations

Solid wire probing around the outside of the house yielded the presence of a large stone feature running along the eastern side of the house. As this feature was exactly eight feet from the northeastern corner of the house, we wondered what the nature of the feature was. It could not be determined from probing if this was a walkway or a retaining wall.

One, one-meter excavation unit was placed across this feature. Excavations indicated a broad (ca. 90 cm.) feature with the front (eastern) edge of the feature dressed (Figure 5). The upper portions of the feature had been robbed in the past and the eastern side infilled with dirt. The cultural material from the infill indicated a relatively recent (20th century) date for the infill. It was felt at this time that this feature might represent a support feature for a wraparound porch. However, the feature is oriented with the road and not with the house. There is a slight discrepancy in the angle of these two, with the road angling slightly to the southeast. As the southeastern corner of a possible wraparound porch would not fall on the stone feature, probing indicated a possible pier feature, but it has yet to be excavated.

Summary and Conclusions

In summary, the house appears to have extended to the west at least eight more feet. As the western wall trench was not physically located, it is impossible to determine yet how far to the west it was. Our best guess at this point is that the basement excavation is located 1.65 m. north of the south wall, and if we mirror this distance to the west, then the wall trench should be ca. 70 cm west of the eastern side of the store building. This falls within about one foot of the distance of mirroring the eastern interior room to the western room. The chimney located in the center of the western edge of the house is approximately 225 x 235 cm. and is thus within 15 cm in both dimensions of the other chimney in the house. As the eastern three feet of this dimension is the hearth, then the western four feet is chimney. This would place the projected intercept with



Amoureux House
Test Hearth Feature
R#184
X=180
Level II
3 June '96

the west wall in approximately the center of the chimney. Again, as the western wall has not been located, this is only conjecture. The store building will need to be removed before we can adequately locate the western wall and to determine if there was a porch on the western side of the house as well.

There is currently no evidence for smaller porches on either the north or the south side of the house. The almost total lack of early period artifacts on the north side of the house, and the relative abundance of post-1875 materials would indicate not only that the 8-feet wide porch has always been present, but additionally that the north porch was enclosed in some fashion so that accumulations or artifacts could not occur. The greater abundance of early period artifacts under the 10 feet south porch would argue against its being enclosed. The presence of the undressed stone piers on the north side and dressed piers on the front would indicate that the existing orientation was the orientation at the time of the porches.

It has not yet been decided if porches were present on the east and west sides. On the west side, this will need to await demolition of the store building. On the east side, the northern pier may fall on the retaining wall. If there was a porch pier on the southeast corner has not yet been determined.

preservation

Appendix K - Tree Ring Dating (Dendrochronology) Report

Guyette, Richard. “Tree Ring Dating of French Colonial Vertical Log Houses in St. Genevieve, Missouri.” University of Missouri – Columbia. 1986.

TREE RING DATING OF FRENCH COLONIAL VERTICAL LOG HOUSES IN ST. GENEVIEVE, MISSOURI

by

Richard Guyette ~~and Osmund R. Overby~~

University of Missouri, Columbia, Missouri

METHODS

Tree ring dating or dendrochronology was developed nearly 75 years ago in the American southwest by A. E. Douglass. He developled a method with which he could assign calendar year dates to the growth rings of wooden timbers of unknown age by comparing the patterns and features in the annual rings of trees. Douglass used the annual rings of many old living trees to make yearly records of past tree growth long enough to date timbers from peublo cliff dwellings. The annual growth rings of different trees in an area tend to have similar patterns since their growth is influenced by the common factor of climate. This is the crux of dendrochronology, that climate creates patterns in the annual rings of trees which can be compared and matched. The width of the annual ring and other climaticly induced features such as frost rings (rings with cambial damage from late spring frosts) can be compared between dated ring width series and those of undated timbers. Thus, tree rings of unknown age can be dated with precision to year of their growth-but only when their growth is sufficently infuenced by climate so as to create a distinctive sequential pattern.

Sampling

The historic houses of St. Genevieve presented some problems because of access, but the co-operation of the their owners was not one of them. Although many of the houses are lived in, on the National Register of Historic Places and a source of pride to both their owners and the community, we were afforded every courtesy (including iced lemonade and wild cherry wine) while drilling holes in their homes. Access to wall timbers was often difficult, however, because of layers of siding outside and plaster walls inside the houses which covered the vertical wall logs. This problem was overcome in many cases by owners who tore the horizontal strips of siding off their house walls to expose a small portion of many vertical logs for sampling.

Four species of trees comprised the majority of the wood sampled, white (leucobalanus) oak (Quercus spp.), red (erythrobalanus) oak (Quercus spp.), shortleaf pine (Pinus echinata) and eastern redcedar (Juniperus virginiana). White oak was the most common species sampled and used in the houses. Redcedar walls and posts were sampled in four houses. Other species of trees occasionaly used for timbers but not suitable for dendrochronology in St. Genevieve were willow (Salix spp.), black walnut (Juglans nigra), beech (Fagus grandfolia) and cottonwood (Populas deltoides).

Terminte damage to the sapwood of the timbers was the worst problem we encountered in sampling timbers. This type of damage was most prevalent in oak, seen occasionly in pine and not in redcedar. The sapwood in the oak timbers of many houses was over 95% powdered by termites from the basement timbers to the rafters.

In oak timbers, with an average of 20 sapwood rings, this presented a problem when attempting to date the time of felling of the tree to the year. This problem was overcome by taking a number of samples, testing the soundness of the wood before sampling and presistence. The outside ring of the tree or the trees last increment of growth before being felled was located on each timber (where present) in order to assign a date to its felling and to know where to sample the timber. Since most of the timbers were worked to some extent the last ring formed before the felling of the tree was not always present or obvious. It takes, however, only a small surface of the original outside of the tree to take a sample that will yield a felling date. The trees last year of growth was determined by the conformity of growth on the surface (both to the naked eye and under the microscope), the presence of bark and the absence of tyloses (cystlike structures) in the earlywood vessels of the last one or two growth rings in white oak. The conformity of the surface is seen under magnification as uninterupted tangential rows of cells.

Sampling was done with a 4.3 mm increment borer and a 12 mm increment drill. The increment borers were from 10 to 18 inches long and had shortened handles to allow turning at acute angles near wall timbers. The increment borer was used where the size of the hole was a problem (in someones living room) and because it was faster than a drill. Minor problems occured when the increment borer sometimes split the sample radially. This necessitated the realinment of the core and care in measurement. The drill was used in cramped areas and where the density of the wood made boring difficult. Samples were numbered and the location of the timber in the house was noted.

As many structual parts of a house were sampled as possible. Usually samples were taken from the wall logs, floor beams, sills, plates, trusses and rafters. This avoided problems of reused timbers, new roofs and provided informaton about room additions. Wall logs proved to be the most definitive in the dating of the houses because they were seldom replaced and had not had the sapwood removed. An attempt was made to get a least 20 samples per house. Samples were taken from the different kinds of wood in the houses. In large complex houses with probable additions more than 20 samples were taken. Lack of access to the timbers, termite damage, timber replacement and rotten timbers limited the samples which could be be taken from several of the houses. Samples were mounted, labeled and then surfaced with razor blades.

To summuarize, we took 375 samples from 24 houses in St. Genevieve County. Twenty of these houses were in the town of St. Genevieve. The majority of these were white oak, followed by redcedar and shortleaf pine.

Chronologies

In order to date the timbers from the houses of St. Genevieve ring width chronologies were needed which went back in time at least a hundered years (to approximately 1690) before the timbers in the houses were cut. This 100 year overlap was necessary in order to have a long enough ring sequence to obtain a definitive matching ring pattern. The chronologies needed to be constructed from species which had similar biological climatic responses to the species of tree being dated. Chronologies were also needed from sites where the year to year climatic variation was similar to that undergone by the trees from which the house timbers of St.

Genevieve came. This requirement was complicated by the probability that the timber for the houses of St. Genevieve was transported by river. Since is was much easier to transport logs by water (and St. Genevieve was founded by French "voyagers") than to drag them through the woods for miles it is difficult to say exactly where the logs came from. There are historical reports of loggers going more than a hunderd miles up river of St. Louis for cedar logs to use in the houses of St. Louis. In any case, the house timbers dated in this study may well have come from many kilometers up the Mississippi River or the Kaskaskia River in Illinois.

Fortunatly, this was not a problem because of the considerable number of tree ring chronolgies already completed b the author and others. There are 9 white oak and post oak chronologies within 150 km of St. Genevieve two of which are in St. Genevieve County. These chronologies cover almost every compass direction from St. Genevieve with the exception of the nrotheast. There are three eastern redcedar chronologies within 200 km of St. Genevieve which crossdate with each other. Two shortleaf pine chronolgies from less than 100 km in Illinois were used in dating. Of particular use in this reseach were the white oak chronologies from Ferne Clyffe, Illinois (Stockton et. al.); Giant City State Park, Illinois (Duvick and Blasing); Greasy Creek, St. Genevieve County (Duvick, Blasing and Guyette); and Babler State Park, Missouri, (Duvick and Blasing). Redcedar chronolgies of use where Jefferson County, Missoui (Bell, Magre and Senter); Boone County, Missouri (Guyette); Jack's Fork, Missouri (Guyette). Pine Chronologies used were Pine Hills, Illinois (Estes) and Piney Creek, Illinios (Estes). Several old

shortleaf pines from the St. Genevieve area were used in dating.

Some of the best crossdating was between chronologies derived from the houses themselves. After chronologies were derived and dated from the first sampled houses they were then very useful in crossdating other houses. House chronologies often provided the best tree ring cross matches with other houses. Figure 1 illustrates the crossdating between oak timbers in 4 St. genevieve houses. Most of the ring series from the houses dated spanned this period of time, between 1790 and 1690..

Crossdating

Crossdating is the matching of serial variations in the ring-widths and ring features of wood between trees in a climaticly homogeneous area. Crossdating works because climate is a common factor among trees in an area which limits and influences their growth. The matching or crossdating of ring patterns is a complex procedure-especilly in areas such a the mid-Mississippi valley where factors other than climate often dominate ring-width variablity. Several methods for crossdating have been developed based on human pattern matching abilities and statistical methods. Stokes and Smiley (1968) describe the traditional method of crossdating by skeleton plotting. This method, based on the intuitive matching of ring series and replication by trained individuals was developed in the southwestern United States. This method has several advantages. It is fast, can be done without expensive equipment, has stood the test of time and works well with trees in severly limiting climatic situations where false and missing rings are a problem and the year to year ring-width variation is large. Highly skilled individuals can crossdate the

much less variable rings of species often encountered in the eastern United States. Several European workers in the field have, however, found skeleton plotting inadaquate (Baillie 1982) when working with less variable ring series than those found in the American southwest. Micheal Baillie and other european workers have developed a crossdating method using visual matching of ring width plots with a statistical backup for use with oak. This method uses using correlation coefficents and a variation on the Student's t test to locate and estimate the probability of matching ring-width occuring by chance alone.

The following paragraphs outline the procedure used in crossdating the St. Genevieve material. It is a technique based on principles set down by Douglass, Baillie and others. It has been developed by the author over a period of some 7 years in working with tree rings in the state of Missouri. The crossdating technique used in this research utilized ring-width plots for pattern matching. These have been found useful because they contain all the ring width information in a growth radius of a tree's bole and do not require a judgement call for each ring as in skeleton plotting. Ring width plots are particularly useful when the ring width series do not contain large amounts of year to year variation making judgements difficult.

Ring-widths were measured with an electornic tree ring measuring device linked to a computerized data acquisition system. This enabled fast and accurate (to the .01 mm) measurement of the rings. Any distictive growth features such as frost rings, injuries, false rings or guestionable rings were entered into the computer along with the ring-width measurements. After the rings of the timbers in a house were measured the internal (within the

house) crossdating of the timbers in a house was begun. Ring-width plots were then made for all the most promising samples (i.e. those which had variable ring widths, intact outer growth rings and a sufficent number of rings) in a house. These plots, which usually numbered between 5 and 15 per house, were then compared on a light table by alining their most recent ring-width measurements (representing the last year of growth of the tree). This alinement is based on the assumption that most of the timbers in a house were cut in the same year, an assumption not valid in all cases. This assumption, however, has proven to be the case in St. Genevieve houses despite the fact that the town site was moved in the 1790's due to flooding. Based on this assumption a hypothesis testing situation can be used in comparing ring width series from timbers in the same house. The assumption allows the dating of ring series in which the climaticly induced ring width variation is weak making the dating of individual timbers with chronologies outside of those derived from the house difficult. Thus a group of house timbers which have ring-width variablilty in common but which individually have to little climaticly induced variablility for positive dating can be combined to produce a dateable series of ring widths. It is the serial ring-width variablitiy held in common between timbers in a house that indicates the timbers have a climatic signal (climaticly induced ring-width variation) which can be used in crossdating. The climatic signal present in the ring-widths of the timbers is improved by serially combining their ring-widths because individual differences in growth caused by non-climatic factors is averaged out.

Visual comparisons of this first group of ring-width plots

usually yeilded 5 to 10 sample plots which crossdated. These were then combined by graphically averaging the plots into a master chronology for the house. The residual samples from the house were then compared with this house master at all possible overlaps. The residual samples were then compared with each other as well as with chronologies from other houses and tree sites. Where there was crossdating between house timbers, plots were combined again to create a second master chronology. Note, it is important to examine the residaul samples left after the first comparisons are found because there is often more than one set of dates in a house or single, dateable, samples with relevent dates concerning timber reuse.

Visual comparisions of ring-width series were based on matching series with correlation coefficents of at least .4 for a 100 year period. Since yearly ring-widths are not statisticly independent in most of the St. Genevieve samples the sample size (number of years compared) needed to be adjusted to estimate the degrees of freedom. The degrees of freedom were calculated using the first order autocorrelation to estimate the independence of the series. For instance, a sample with 107 matching rings and an autocorrelation coeffient of .32 has approxamatly 55 degrees of freedom. A modified Student's t test was then used to test the significance of the correlation coeffient of two matching ring-width series. Thus, a 107 year ring-width series with a serial correlation coefficent of .56 and 55 degrees of freedom will occur less than a one in ten thousand times by chance. In practice this statistic was not run on every crossdating match but was used to estimate the amount of visual agreement needed between house timbers, test bordline cases and estimate the length of ring width

series neccesary for a significant match. It should be noted that statistics are only one facet of crossdating. Other ring features such as frost rings, latewood width and signiture years were often of equal importance. For instance, the frost rings of 1716, 1715 and to a lesser extent 1704 were very Helpful in dating oak, especially since they were the only ones in the 18th century-the time period used in the crossdating most of the houses. The 18th century climate around St. Genevieve also produced several distictive ring-width patterns or "signiture years". For example, the narrowest rings in many ring series were those of 1735 and 1736. No samples were dated which had wide rings in these years. For redcedar the period before and after 1784 was distictive with 1784 being nearly always narrow, 1783 being wide with alternating wide and narrow rings before. Several other ring width signitures are illustrated in Figure 1. Figure 1 shows the crossdating of timbers from 4 houses in St. Genevieve.

It should also be noted that there were several house in St. Genevieve that we could not date because of access problems and eratic or complacent ring-width series. Of the 24 houses we sampled there were only four from which we were not able to get any timber dates. In general we were able to date approxametly 50% of the samples we took from the houses and about 90% of the houses.

An independent verification of the dating of selected key samples was done by David Stahle at the University of Arkansas Tree Ring Laboratory using the Douglass method of crossdating. Key samples, that is, samples that were architectually and dendrochonologiclly important from 14 houses were sent. The dates which were verified by Stahle using the Douglass method of skelton

plotting are noted in the house date summaries.

There were several instances of tree ring date verification by historical documentation. The tree ring dating of the DeLasuss house was followed by historical documentation of the 1793 date from letters found in St. Louis by independent researchers ordering the house built before his arivial. The well documented Missouri State Historic Site, the Felix Valle House was sampled. Tree ring dates from pine and oak were found to be consistent with documentation of the building date, 1819. The Green Tree Inn, which proved to be the oldest house in St. Genevieve and probably the State of Missouri, dated at 1790, just what the sign in front of the house reads. It is also fair to state that there is documentation which does not confirm our tree ring dates. Confusing historical and often contradictory records were, in fact, one of the reasons we undertook this dating project.

Acknowledgements

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Footnotes

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6. M. Stokes and T. Smiley, An Introduction to Tree-Ring dating (1968), Univ. of Chicago Press, Chicago.

7. M. G. L. Baillie, Tree-Ring Dating and Archaeology (1982), Univ. of Chicago Press, Chicago.

8. The statistical hypothesis for this step is $H_0 : r=0$, $H_a : r=0$; respectively the null and alternative hypotheses where r is the correlation coeffient of two ring-width series.

The table summarizes the dateing of St. Genevieve houses. Dates which have been independently verified by David Stahle, University of Arkansas Ring Laboratory, are marked by an asterisk and a number representing the number of timbers dates verified. Dates followed by a plus sign have some rings missing. This is usuallu due to termite damage to the sapwood. After the plus sign is an estimate of the number of rings missing to the felling date. The mean number of rings for each group of sample cores is given along with the number of rings of the shortest core and longest core. The mean times the number of samples dated estimates the size of the dating base. Shortleaf pine is referred to simply as pine. Felling dates are thought to coinside with the initiation of a house's construction. In logs which lie on the ground for even short periods the sapwood deteriorates rapidly. The wood was easier to work when green and it would take many years for a log to dry out.

HOUSE DATING SUMMARY

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1808	floor beams	2	red oak	86 (74-99)

Old Academy

Most of the timbers in this stone structure were of cottonwood and not dateable. Tree dates confirm the building date engraved in stone on the front of building. Samples were from the southeast room and hallway.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1790	wall logs	2	redcedar	87 (83-91)
1792	wall logs	3	redcedar	?
1793	wall log	1	redcedar	73
1789+5	truss collar	1	white oak	127

Amoureaux House

A "poteaux en terre" house of redcedar. The 1792 dates best reflect the probable building date. Termite damage to the outer few rings of the truss collar caused felling date estimate.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1807	wall logs	11	redcedar	95 (60-138)
1808	floor beams	4	white oak	90 (83-111)
1808	truss member	1	white oak	111
1808	window sill	1	white oak	?
1808	floor beards	4	s. pine	?

Bequette-Ribault House

A "poteaux en terre" house of redcedar. This house was thoroughly sampled because of an expected earlier date, easy access during restoration and the cooperation of its owners. The

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FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1807	floor beam	2	white oak	156 (142-171)
1803??	wall log	1	white oak	118
1806	ceiling joist	3	s. pine	136 (121-147)

Pierre Dorlac??

Possible mineraliztion marks indicating water transport of timbers.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1806	wall log	1	white oak	130
1807	wall logs	5	white oak	112 (92-137)
1810	wall log	1	white oak	108
1814	wall logs	4	white oak	94 (76-123)

Durand House

House had two periods of construction one in 1807 and another in 1814. East room was built in 1807 and west room later in 1814.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1818	ceiling joist	2	s. pine	132 (124-140)
1818+1?	floor beam	1	white woak	71
1816	ceiling joist	1	s. pine	106

Felix Valle House

A two story stone house and Missouri State Historic site. The oak floor beam had an anomolis ring in 1811 which could be a double ring, thus the additional ring and question. The ring injury in 1811 was very unusual is coincident with the New Madrid earthquake.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1790	ceiling beam	1	red oak	78
1791	wall logs	4	white oak	82 (53-123)
1792	ceiling beam	1	red oak	71

Francis Valle House

Ceiling timbers could have been placed in house after it was built and occupied. Red oak timbers, side by side compose the whole of the ceiling in this house.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1790	floor beams	4	white oak	109 (95-117)
1791	floor beam	1	white oak	122
1808	truss collar	2	pine	144 (143-146)

Green Tree Inn (Nicolas Janis house).

Large post on sill creole house. The 1791 date for the floor beam (6th floor beam from the north wall) indicates a possible lag in construction. The 1790 dates make this the oldest house we dated in St. Genevieve and possibly the oldest structure in the State of Missouri. The 1808 truss collar may have been added to the original roof or be part of a replacement roof. The young pine pole rafters of this structure had to few rings for a definitive date of the roof structure. The gallery posts of this house are of redcedar. Crossdating of the posts was unsuccessfull, possibly because of the ring-width variation introduced by the many fire scars formed during the life of the tree.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1806	wall logs	5	white oak	114 (77-139)
1807	truss collar	1	white oak	135
1807	floor beam	2	white oak	141 (134-149)
1807	wall log	1	white oak	84

Guibord-Valle house

A vertical log house on stone foundation constructed mostly of white oak.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1832	wall stud	1	pine	148
1832	purlin support	1	pine	135
1833	floor beam	1	pine	138
1834	purlin support	2	pine	115 (110-120)
1834	corner brace	1	pine	152
1834	floor beam	1	pine	150

Joshoa Millard house

A large stone house with beautiful shortleaf pine woodwork. Wooden structure in the house is all shortleaf pine.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1830	wall log	1	white oak	101
1832	wall log	1	white oak	89
1833	wall logs	3	white oak	82 (72-92)

Josheph Thomure

Only part of this vertical log house remians.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1830	wall logs	4	white oak	101
1832	wall log	1	white oak	89
1833	wall logs	3	white oak	99 (71-119)

Jean Paul Roberts house

pine boards are possibly from one tree. The redcedar dated well with chronologies 230 km to northwest as well as with those closer.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1799	floor beams	3*(2)	red oak	108 (103-114)

Beauvais (II)

Floor beams proved the best bet for dating in this stone house although they had considerable termite damage. Norman truss and roof structure were of walnut, young pine and some oak without the last rings of growth.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1793	wall logs	4	2 red oak 2 white oak	100 (99-116)
1793	sill brace	1	white oak	106
1793	plate brace	1	white oak	136
1793	corner post	1	white oak	83
1793	truss chord	1	white oak	121
1792	wall log	1	white oak	115
1792	truss chord	1	white oak	110
1792+1	top plate	1	white oak	103
1786+5	top plate	1	white oak	99
1788	wall log	1	white oak	106
17??	ceiling timber	1	white oak	??

Bolduc House

Timbers from both sections of this house dated 1793 or 1792 despite their slighty different construction which suggests two buiding periods. The 1788 date for the wall log timber is the oldest timber dated in St. Genevieve. It is unusal in that it died 5 years earlier than most of the timbers, a spread of years not seen in most house walls. The ceiling of the south section of the house is composed solely of squared timbers with all the sapwood removed. The 17?? date indicates this ceiling was moved from the old town. The sapwood was probably removed because it was already powdered by termites. Ax marks and exposed termite tunnels indicate the sapwood was removed after the termite damage was done.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1801	wall log	1	white oak	215
1815	wall log	1	white oak	135
1816	wall log	2	white oak	101 (86-121)
1817	wall log	1	white oak	114
1818	wall log	1	white oak	134

Charles LaHaye House

East side of house may have been built as early as 1801. The west side was built later. Pegs joining the log walls indicate two building periods.

A horizontal log house with all access to the wall logs covered. Dates from one corner of house where owner kindly tore off the siding.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RAUGE OF RING SERIES
1785??	floor beam	1	white oak	55
1793	floor beams	2	white oak	135 (99-172)
1793	wall logs	3	white oak	78 (61-108)
1794	floor beam	1	white oak	61

DeLasuss house

Largest vertical log house we dated. Interior vertical log walls of cottonwood. Possible reused ceiling joists from old St. Genevieve in basement. Historical documentation ordering the house built found a posterori to house being tree ting dated.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1859+4	wine press	1	white oak	200

Kern wine Press

Wine press in the basement of the DeLasuss house was made from the bole of a large white oak. Ends of the press vat were crossections of the trees bole. These were sanded, photographed, and crossdated. Sapwood was present on corner of the vat and it appeared that very little sapwood was missing. Artical in 1865 local paper refers to press.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1794	floor beams	2	white oak	128 (101-156)
1794	floor beams	2	red oak	95 (90-100)

Jean Baptistie Valle house

Floor beams were the only exposed timbers in this post on sill vertical log house. Three of the dated timbers came from the main and largest room, the other timber date came from the wine cellar.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RAUGE OF RING SE
1785	wall log	1	redcedar	134
1789	wall log	1	redcedar	90
1792	wall logs	9	redcedar	74 (52-118)
1799	wall log	1	redcedar	113
1800	wall logs	3	redcedar	101 (93-108)
1801	wall log	1	redcedar	109

St. Gemme Vital Beauvais house

One of three post in the ground redcedar houses left in St. Genevieve. This house had two construction dates which are reflected in slightly different construction methods and different felling dates. The south half of this house was built first had the oldest dates and was probably built in 1792. The north half was built later around 1800. There is evidence of reuse of

timbers from the north wall of the original house in the addition. One timber from this section of the house dated 1792.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1872	wall log	1	pine	169
1873	wall logs	3	pine	107 (98-111)
1873	top plate	1	pine	100

Winegarten house

This vertical log house on a sandstone foundation is near the town of Wingarten in St. Genevieve County. Is is unique in being made of shortleaf pine, a most suitable and available species in this region. In is the most recently built of the houses we dated and represents a continuation of the French building tradition.

FELLING DATES	STRUCTUAL MEMBER	NUMBER OF DATES	SPECIES OF TREE	MEAN AND RANGE OF RING SERIES
1819	wall log	2	white oak	134 (123-145)

7th street house

This house is now dismanteled. It was a vertical log house on a stone foundation.