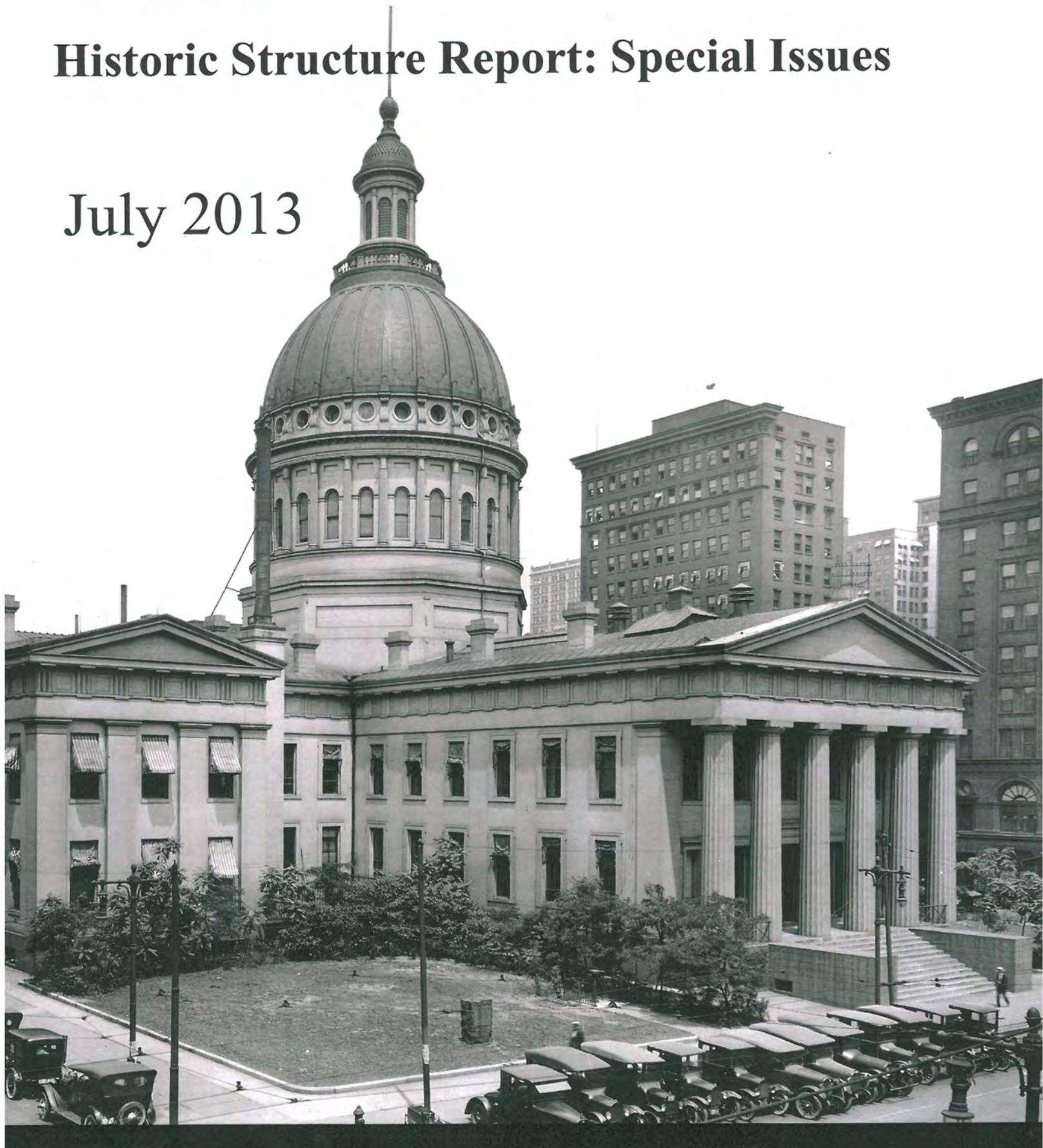




## Old Courthouse

# Historic Structure Report: Special Issues

July 2013





---

# **Jefferson National Expansion Memorial Old Courthouse**

St. Louis, Missouri

## **Historic Structure Report Special Issues**

July 2013

Prepared for:  
National Park Service  
Midwest Regional Office  
Omaha, Nebraska

Prepared by:  
Bahr Vermeer Haecker Architects  
Historic Resources Group, Inc.  
Wiss, Janney, Elstner Associates, Inc.  
John Milner Associates, Inc.  
Alvine and Associates, Inc.



**Midwest Regional Office  
National Park Service  
601 Riverfront Drive  
Omaha, Nebraska 68102  
(402) 661-1736**

About the front cover: The Old Courthouse, circa 1925. Source: Photograph by W. C. Persons. Missouri History Museum collection, reference n33957.

This manuscript has been authored by Bahr Vermeer Haecker Architects, Ltd., under Contract Number C6000090202 with the National Park Service. The United States Government retains and the publisher, by accepting the article for publication, acknowledges that the United States Government retains a non-exclusive, paid-up, irrevocable, world-wide license to publish or reproduce the published form of this manuscript, or allow others to do so, for United States Government purposes.

---

# Jefferson National Expansion Memorial Old Courthouse

St. Louis, Missouri

## Historic Structure Report Special Issues

Recommended: Tom Bradley Date: 6/5/13  
Superintendent, Jefferson National Expansion Memorial

Concurred: Jim A. Heenan Date: 4/19/13  
Associate Regional Director, Midwest Region

Approved: Michael Regold Date: 6/24/13  
Regional Director, Midwest Region



# Contents

Acknowledgements .....	vii
Executive Summary .....	viii
Introduction	
Administrative Data .....	1
Project Scope and Methodology .....	1
Overview Description of Site and Building .....	5
Recommendations for Further Research .....	6
Developmental History	
Historic Preservation Objectives .....	9
Requirements for Work .....	10
Recommended Treatment .....	11
Guidelines for Treatment .....	12
History .....	13
Historical Overview .....	13
Building Chronology .....	25
Historic Images .....	39
Significance and Integrity .....	71
Evaluation of Significance .....	71
Period of Significance .....	73
Character-Defining Features .....	77
Assessment of Integrity .....	89
Special Issue: Cast and Wrought Iron	
Historical Overview .....	97
Existing Conditions .....	106
Inspection Openings .....	122
Laboratory Studies .....	130
Discussion .....	132
Treatment Recommendations .....	136
Special Issue: Rotunda Cast Iron Capitals	
Historical Overview .....	137
Existing Conditions .....	138
Discussion .....	142
Treatment Recommendations .....	142
Cost Summary .....	143
Special Issue: Encaustic Floor Tile	
Historical Overview .....	145
Existing Conditions .....	147
Laboratory Studies .....	149
Discussion .....	151
Treatment Recommendations .....	152
Cost Summary .....	153
Special Issue: Dome Plaster and Lath	
Historical Overview .....	155
Existing Conditions .....	165
Treatment Recommendations .....	167

## Special Issue: Hazardous Materials

Asbestos-Containing Material .....	169
Lead-Based Paints .....	168

## Special Issue: Mechanical and Electrical Systems

Mechanical Systems .....	171
Historical Overview .....	171
Existing Conditions .....	172
Discussion and Recommendations .....	175
Cost Summary .....	180
Electrical Systems .....	181
Existing Conditions .....	181
Recommendations .....	182

## Special Issue: Landscape

Historical Overview .....	183
Landscape Chronology .....	195
Historic Significance .....	223
Summary of Conditions Issues and Concerns .....	226
Description of Existing Conditions .....	230
Landscape Analysis .....	256
Analysis of Impacts on the Cultural Landscape from the CityArchRiver 2015 Plan .....	261
Treatment .....	273
Cost Summary .....	279

Bibliography .....	281
--------------------	-----

## Appendices

Appendix A – Base Plans	
Appendix B – Wrought and Cast Iron Metallurgical Analysis	
Appendix C – Structural Inspection Opening Locations	
Appendix D – Mechanical Evaluations	
Appendix E – Cost Estimate	
Appendix F – Copies of Selected Archival Documentation	

# Acknowledgements

## National Park Service – Midwest Regional Office

George Sievers, Contracting Officer  
Al O’Bright, Historical Architect, Contracting Officer’s Technical Representative  
Marla McEnaney, Historical Landscape Architect

## National Park Service – Jefferson National Expansion Memorial

Tom Bradley, Superintendent  
Frank Mares, Assistant Superintendent  
Robert Moore, Park Historian  
Kathryn Thomas, Curator of Cultural Resources  
Ed Dodds, Chief of Facility Management  
Stephen Amancio, Buildings and Utilities Supervisor  
Dave Caselli, Park Engineer  
Jennifer Clark, Archivist  
Tom Dewey, Librarian  
Mike Hayden, Maintenance

## Bahr Vermeer Haecker Architects

Dan Worth, Historical Architect/BVH Project Manager  
Mike Gengler, Graduate Architect

## Historic Resources Group, Inc.

Melissa Dirr Gengler, Project Historian

## Wiss, Janney, Elstner Associates, Inc.

Stephen Kelley, Historical Architect/ Structural Engineer/WJE Project Manager  
Kenneth Itle, Historical Architect  
Rachel Will, Graduate Engineer  
Joshua Freedland, Architectural Conservator

## John Milner Associates, Inc.

Laura Knott, Principal Landscape Architect  
Liz Sargent, Historical Landscape Architect  
Christina Osborn, Landscape Designer

## Alvine Engineering

Steve Alvine, Mechanical Engineer/Alvine Project Manager  
Robert Foust, Electrical Engineer

# Executive Summary

At the request of the National Park Service (NPS), Bahr Vermeer Haecker Architects (BVH) with subconsultants Historic Resources Group, Inc. (HRG), Wiss, Janney, Elstner Associates, Inc. (WJE), John Milner and Associates, Inc. (JMA), and Alvine and Associates, Inc. (Alvine) have prepared this Historic Structure Report: Special Issues for the Old Courthouse in St. Louis, Missouri.

The goal of the Historic Structure Report process (HSR), as defined by the NPS, is to serve as a critical planning and design document preparatory to the eventual execution of the ultimate treatment for the structure. Completion of the Historic Structure Report: Special Issues is but one phase in this effort.

The goal of this HSR as stated in the Scope of Work is to: “better understand the significance of the design and construction history of the Old Courthouse, identify detectable deficiencies with various systems and explore and provide treatment recommendations for a number of contemporary issues.”

The purpose of this HSR is to provide a compilation of findings of research, investigation, analysis, and evaluation pertaining to special issues identified by the NPS for the historic structure. This study builds upon previous HSRs completed for the courthouse. Previous HSRs are listed as follows:

- John H. Lindenbusch, *Historic Structure Report: Historic Data Section - Part I and Historic Grounds Study* (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982).
- David G. Henderson, *Historic Structure Report: Architectural Data Section, Phase II: Exterior Preservation* (St. Louis: National Park Service, Jefferson National Expansion Memorial, September 1985).
- David G. Henderson, *Historic Structure Report: Architectural Data Section, Phase Three: Interior Preservation, Draft* (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982, rev. 1986).

The preservation objectives for the historic property are identified and treatment measures recommended addressing issues of importance. This special issues-focused HSR, while intended to be a stand-alone document, should be considered as part of the collective HSR effort, which includes the previous reports noted above. This HSR and the previous studies serve as a collective basis for decision-making for preservation of the building and its site. This report serves as a basis for planning future preservation and maintenance with specific regard to the contemporary issues of interest. The identified special issues that are the focus of this study include:

- Investigation of the broad history and use of structural cast and wrought iron and its specific application to the Old Courthouse.
- Investigation of the broad history and use of encaustic tile and its specific application to the Old Courthouse.

- Investigation and identification of remaining character defining features of both the building and the landscape, and a broader understanding of the period(s) of significance.
- An enhanced understanding of both the building and landscape chronologies.
- Investigation of the original first floor west wing courtroom where the Dred Scott cases were argued and identification of any remaining historic fabric of the original courtroom.
- Investigations related to replication of the missing Corinthian capitals of the drum and cupola of the Courthouse dome.
- Investigation of the condition of the lath and plaster of the rotunda.
- Research and recommendation of optimal mechanical HVAC systems to achieve proper collections storage environment as well as thermal comfort of the building occupants.
- Review and summation of previous hazardous material assessments conducted by others.
- Assessment of Old Courthouse landscape conditions and development of landscape treatment recommendations.
- Evaluation of accessibility alternatives, as presented in the CityArchRiver 2015 Design Decision Plan, in order to gain access to the building interior.

As an existing historic site, JNEM was included in the National Register of Historic Places in 1966 when the register was established. National Register documentation was prepared for the Old Courthouse and accepted on June 11, 1976. The National Register documentation notes that the Old Courthouse is significant under criteria A and C in the areas of architecture, engineering, art, and law. The nomination was written for Jefferson National Expansion Memorial (JNEM) and includes the Old Courthouse, the Gateway Arch, and the Old Cathedral. William Rumbold's courthouse dome, completed in 1862, is singled out for both its architectural and engineering merit, the decorative murals for their artistic merit, and the Dred Scott case for its importance in law.

Research conducted for this study strongly supports a period of significance from the beginning of construction in 1839 through the end of the building's use as a courthouse in 1930. Consideration may be given to extending the period of significance to include the change in use of the building from courthouse to museum and interpretive center, such as through 1960 or later. However, additional research is required to evaluate and build a historic context for museum and interpretive use, including research related to other NPS properties converted for use as a museum. Further analysis of historic integrity for this latter period would also be required.

The 2009 *General Management Plan (GMP)* for the JNEM site addresses the Gateway Arch and grounds, the Old Courthouse, and Luther Ely Smith Square. The GMP outlines intermediate and long-term management goals and provides guidance for the preservation of the site. Management goals and issues surrounding the preferred alternative include protecting the historic and cultural resources of the Memorial, increasing connectivity between the Old Courthouse and the Gateway Arch, increasing and improving connectivity between the districts surrounding the Memorial, increasing opportunities for

public engagement with Memorial themes, increasing opportunities for the public to feel more welcome, and providing for operational efficiency in a sustainable manner. All of these goals were identified in a design competition proposal issued in 2009 titled *The City+The Arch+The River 2015 (CAR)*, with the expressed goal of preserving and protecting the Old Courthouse. Other management goals are identified in the 2010 *Cultural Landscape Report for Jefferson National Expansion Memorial (CLR)*. Guidance for treatment offered in the CLR is based on The Secretary of the Interior's Standards for the Preservation of Historic Properties and the Guidelines for the Treatment of Cultural Landscapes.

This Historic Structure Report identifies a recommended treatment and scope of repair measures to address the special issues identified within this HSR. All of the recommendations have been developed in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. *Rehabilitation* is considered the appropriate overarching treatment for the Old Courthouse, given the historic significance of the building and its ongoing use as the NPS offices and a museum. **Rehabilitation** will accommodate future modifications to allow for mechanical, electrical, plumbing systems, and other code required work. Modifications to the building have already been made in many areas to accommodate administrative offices, museum functions, and public facilities.

Priorities for the treatments are as follows:

1. *Protection of Primary Structural Elements.* Studies and recommended further investigations and repairs related to the protection of the Old Courthouse from deterioration should be undertaken.
2. *Life Safety and Functionality Upgrades.* Designs for appropriate life safety and functionality upgrades to the Old Courthouse should be studied and developed, with due consideration of the effect of any changes on the historic character-defining features of the building and landscape. A project is currently underway by Trivers Associates to develop a design for improving accessible routes and disabled access for the courthouse.
3. *Restoration.* Where altered, original interior finish materials and surfaces should be restored as possible to reflect the original design intent including materials, textures, and color.
4. *Cyclical Inspection and Maintenance.* In addition to the specific repairs recommended, cyclical maintenance tasks such as inspection, repair and /or replacement of finishes in the primary public areas of the Old Courthouse, and other ongoing maintenance tasks should be continually implemented to avoid damage to the historic building fabric and to reduce the need for large scale repair projects in the future.

---

# Introduction

## Administrative Data

At the request of the National Park Service (NPS), Bahr Vermeer Haecker Architects (BVH) with sub-consultants Historic Resources Group, Inc. (HRG), Wiss, Janney, Elstner Associates, Inc. (WJE), John Milner Associates, Inc. (JMA), and Alvine and Associates, Inc. (Alvine) have developed this Historic Structure Report: Special Issues (HSR) for the Old Courthouse at Jefferson National Expansion Memorial (JNEM) in St. Louis, Missouri. The goal of the HSR is to develop planning information for use in the preservation and future maintenance of the Old Courthouse.

First developed by the National Park Service in the 1930s, HSRs are documents prepared for a building, structure, or group of buildings and structures of recognized significance to record and analyze the property's initial construction and subsequent alterations through historical, physical, and pictorial evidence; document the performance and condition of the structure's materials and overall physical stability; identify an appropriate course of treatment; and, following implementation of the recommended work, document alterations made through that treatment.

## Project Scope and Methodology

The purpose of this HSR is to provide a compilation of findings of research, investigation, analysis, and evaluation pertaining to special issues identified by the NPS for the historic structure. This study builds upon previous HSRs completed for the Old Courthouse. The preservation objectives for the historic property are identified and treatment measures recommended addressing issues of importance. This special issues-focused HSR, while intended to be a stand-alone document, should be considered as part of the collective HSR effort, which includes several previous reports listed below. This HSR and the previous studies serve as a collective basis for decision-making for preservation of the building. This report serves as a basis for planning future preservation and maintenance with specific regard to the contemporary issues of interest.

The previous HSRs commissioned by the NPS are generally well researched and prepared, and provide treatment recommendations that have been implemented or are in the process of implementation. However, the previous HSRs do not comprehensively address the select issues that are defined within the unique scope of work of this study. This HSR focuses therefore on key issues that are of immediate importance to the NPS.

The identified special issues that are the focus of this study include:

- Investigation of the broad history and use of structural cast and wrought iron and its specific application to the Old Courthouse.
- Investigation of the broad history and use of encaustic tile and its specific application to the Old Courthouse.
- Investigation and identification of remaining character defining features of both the building and the landscape, and a broader understanding of the period(s) of significance.
- An enhanced understanding of both the building and landscape chronologies.
- Investigation of the original first floor west wing courtroom where the Dred Scott cases were argued and identification of any remaining historic fabric of the original courtroom.
- Investigations related to replication of the missing Corinthian capitals of the drum and cupola of the courthouse dome.
- Investigation of the condition of the lath and plaster of the rotunda.
- Research and recommendation of optimal mechanical HVAC systems to achieve proper collections storage environment as well as thermal comfort of the building occupants.
- Review and summation of previous hazardous material assessments conducted by others.
- Assessment of Old Courthouse landscape conditions and development of landscape treatment recommendations.

Firm responsibilities for development of this HSR were as follows:

- Bahr Vermeer Haecker Architects (BVH) – lead firm, project administration, project architects
- Historic Resources Group (HRG) – project historians
- Wiss, Janney, Elstner Associates, Inc. (WJE) – structural engineers and architectural conservators
- John Milner Associates, Inc. (JMA) – historical landscape architects
- Alvine and Associates (Alvine) – project mechanical, electrical, and plumbing engineers

The following project methodology was used for this study.

### **Research and Document Review**

Archival research was performed to gather information about the original construction and past modifications and repairs to the Old Courthouse. Documents reviewed included drawings, specifications, historic photographs, and other written and illustrative documentation about the history, construction, alterations, and repairs to the subject building. The research for this study built upon the extensive historical and archival research performed by others, including Park Historian Robert Moore. Reference documents reviewed for this study include the following:

- John H. Lindenbusch, *Historic Structure Report: Historic Data Section - Part 1 and Historic Grounds Study* (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982).

- David G. Henderson, *Historic Structure Report: Architectural Data Section, Phase II: Exterior Preservation* (St. Louis: National Park Service, Jefferson National Expansion Memorial, September 1985).
- David G. Henderson, *Historic Structure Report: Architectural Data Section, Phase Three: Interior Preservation* (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982, rev. 1986).
- John A. Bryan, *Preliminary Draft, JNEM Administrative History: Jefferson National Expansion Memorial, Its Origin, Development, and Administration* (St. Louis: National Park Service, Jefferson National Expansion Memorial, n.d. [circa 1960]).
- John A. Bryan, *The Rotunda: 1839–1955, Its Changing Styles of Architecture, Its Historic Events and Mural Paintings, Its Restoration* (St. Louis: National Park Service, Jefferson National Expansion Memorial, February 28, 1956).

Other reference documents and archival material used in development of this report are listed in the Bibliography. Primary source research such as court records and newspapers was beyond the scope of this project.

The following archival repositories were visited or contacted in researching this study:

- NPS JNEM Archives, St. Louis, Missouri
- NPS Denver Service Center Technical Information Center (e-TIC)
- Missouri History Museum, St. Louis, Missouri
- St. Louis Mercantile Library, University of Missouri -St. Louis, St. Louis, Missouri

The goal of this research effort was to help determine if any of the construction techniques, materials, or methods utilized in the construction of the Old Courthouse contributes to the inherent significance of the character-defining features.

Base plans of the courthouse indicating room numbering and room name can be found in Appendix A. Copies of selected archival documentation can be found in Appendix F. A description of research materials and sources reviewed and discovered is provided in the bibliography within this report.

### Materials Studies

In addition to the limited visual condition assessment of selected areas, WJE performed laboratory finishes analysis and metallurgy of materials samples taken from selected interior spaces addressed in the HSR scope of work, including cast and wrought iron and encaustic tile. All samples were viewed under reflected light microscopy following the procedures of ASTM D 1729, *Standard Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials*. Finish colors were assigned a Munsell color number. Additionally, color measurements of exposed coatings of selected elements were made in the field using a spectrophotometer. A complete discussion of methodology and the findings of this analysis are documented in Appendix B.

### Development of History, Chronology of Construction, and Evaluation of Significance

Based on historical documentation and physical evidence gathered during the study, a contextual history, a brief history of the Old Courthouse, and a chronology of design and construction were developed to augment existing understanding of the evolution of the courthouse and its immediate environs. An evaluation of the

period of significance and character-defining features of the interior and exterior of the courthouse and its site was also prepared, taking into consideration previous historical assessments, including the National Register of Historic Places nomination documentation and other reference documents, as well as guidelines provided by the National Register Bulletin: *How to Apply the National Register Criteria for Evaluation*.<sup>1</sup> This evaluation of the history and period of significance as well as an assessment of integrity provided the basis for the development of recommended treatment alternatives for selected areas as described in the Project Scope and Methodology.

### **Development of Landscape Chronology, Documentation, and Treatment**

The HSR includes a chapter on the chronological development, documentation, and treatment of historic landscape resources associated with the Old Courthouse. This historic landscape information is intended to support management and maintenance of the building grounds to enhance the historic appearance and interpretive value of the building and its setting.

In support of the preparation of a chronology of development for the courthouse grounds, the project team historical landscape architects conducted research in the Jefferson National Expansion Memorial archives during the project initiation site visit. The researchers focused on a review of historic maps, plans, and photographs, as well as construction records relating to the courthouse grounds. Materials of interest to the project were flagged for scanning or copying by

the archivist, who later transmitted electronic and paper files to the team.

In addition to these primary source records, the secondary source documents identified above were combed for detail relating to the landscape.

To address more recent activities within the courthouse square, the historical landscape architects interviewed park maintenance personnel, who were able to trace physical changes and improvements within the grounds as far back as 1985. In addition to anecdotal information, park personnel provided the historical landscape architects with a summary of the maintenance projects recorded in the Project Management Information System (PMIS) since the early 1990s. These records proved invaluable for understanding changes to the landscape not recorded elsewhere.

At the Missouri History Museum, additional historic photographs and other graphics that support an understanding of the evolution of the courthouse landscape over time were acquired. Several additional photographs of interest were later located online at the Missouri History Museum website.

The information gleaned from the primary and secondary source material was used to create a chronology of development for the courthouse grounds and to identify the specific features present in the landscape between circa 1828 and the present. This information was subsequently augmented with information about other courthouse grounds within the United States to help place the Old Courthouse grounds within a broader, state and national context of similar typological features.

---

1. National Register Bulletin: *How to Apply the National Register Criteria for Evaluation* (Washington, D.C.: National Park Service, National Register of Historic Places, 1990, revised 1995).

## Development of Recommendations

Based on the evaluation of the historical and architectural significance as well as an assessment of integrity of the structure, guidelines were prepared to assist in the selection of preservation treatments.

*The Secretary of the Interior's Standards for the Treatment of Historic Properties* guided the development of treatment recommendations for the significant exterior and interior features of the Old Courthouse and its site. Following the overall treatment approach of *rehabilitation*, the specific recommendations addressed observed existing distress conditions as well as long-term treatment objectives.<sup>2</sup> Recommendations offered in this HSR are limited to identified issues of special concern to NPS.

## Preparation of Historic Structure Report

Following completion of research, site work, and analysis, a narrative report was prepared summarizing the results of the research and inspection and presenting recommendations for treatment. Because of the limited scope of the HSR, the document was compiled generally following the organizational guidelines of NPS *Preservation Brief 43: The Preparation and Use of Historic Structure Reports*, with modifications to organizational structure for purposes of this project.<sup>3</sup>

- 
2. Kay D. Weeks and 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.: National Park Service, Historic Preservation Services, 1995).
  3. Deborah Slaton, *Preservation Brief 43: The Preparation and Use of Historic Structure Reports* (Washington, D.C.: National Park Service, Technical Preservation Services, 2005).

## Overview Description of Site and Building

The Old Courthouse is located in the heart of historic downtown St. Louis, Missouri, on a block bounded by Fourth, Chestnut, Market, and Broadway streets. St. Louis is bordered by the Mississippi River on the east; this location made the city a focus for river and rail transportation since the early years of its development. The need for a public building or courthouse was recognized early in the history of the city's evolution. The square on which the Old Courthouse resides was donated by Auguste Chouteau and Judge John B.C. Lucas for use by the courts in 1823.

The first courthouse to be constructed on the site was completed in 1833. Within ten years this two-story brick courthouse was considered insufficient to serve the needs of the community. This resulted in Henry Singleton's design for a new, two-story cruciform plan courthouse with a central rotunda to replace the original building. Constructed in phases from 1839 to 1861, the resulting Greek Revival building occupies the entire city block. Its cruciform plan allows for strategic placement of four green spaces or courtyards, one at each corner of the site. These green spaces provide an open natural environment that is readily available for public use.<sup>4</sup>

The building has smooth stone and brick masonry walls and foundation, painted white, with entries on each primary facade. Formal colonnaded porticos are located at the north, east and west facades. These porticos are defined by monumental stairs leading from grade up to the first floor level, where massive paired entry

- 
4. John A. Bryan, *A Physical History of the Old Courthouse, 1826-1938*, Jefferson National Expansion Memorial, October 1938. NPS document D 50.

doors provide access to the interior. Fluted Doric columns support the Classical pediment. The tympanum is a simple unadorned recessed space while triglyphs, typical of a Doric frieze, adorn the cornice line. Although the south wing does not have an open portico, the facade retains the same roof and cornice details, while the main wall surface is defined by simple Doric pilasters.

The shallow pitched gable roofs intersect at the center of the building, where the multi-story dome rises. The dome is the creation of William Rumbold, who patented this design. Fenestration throughout the building generally consists of multi-light double-hung wood windows.

The interior of the building also retains a cross-shaped floor plan, with the open rotunda at the center. Two of the more significant interior spaces are the east and west courtrooms on the second floor. Both courtrooms have an oval floor plan and retain Classical decorative elements such as fluted Corinthian columns. Although substantially renovated in the period following NPS ownership, the second level courtrooms retain significance as the primary use and spatial quality of the spaces remained unchanged.

Overall, the building has a dominant presence in downtown St. Louis. Its setting on a square city block and its associated green space are unique to the downtown area. The building's setting and direct view to the arch and the Mississippi River are a reminder of its significance in St. Louis history.

As an existing historic site, JNEM was included in the National Register of Historic Places in 1966 when the register was established. National Register documentation was prepared for the Old Courthouse and accepted on June 11, 1976.

## Recommendations for Further Research

Based on the findings of this study, the following areas of further research are recommended.

Currently, research conducted for this study strongly supports a period of significance from the beginning of construction in 1839 through the end of the building's use as a courthouse in 1930. Consideration may be given to extending the period of significance to include the change in use of the building from courthouse to museum and interpretive center, such as through 1960 or later. However, additional research is required to evaluate and build a historic context for museum and interpretive use, including research related to other NPS properties converted for use as a museum. Further analysis of historic integrity for this latter period would also be required.

One of the primary recommendations for treatment of the courthouse landscapes included herein is repair of the areaway walls that were built as part of the courthouse expansion during the mid-nineteenth century. These walls, one of the very few landscape resources to survive from the early period of significance for the building, have already been repaired in several locations, but will require further repair in the future due to problems with leaning, hydrostatic pressure, and drainage. The limestone material used in the walls is characteristic of the region, and is consistent with the cheekwalls of the east and west stair entries leading to the building porticoes. Previous efforts to identify an appropriate source for replacement stone to be used in replacing broken, cracked, and missing blocks within the wall have been unsuccessful. Additional investigations are needed to locate an appropriate source of stone to ensure appropriate repair of the walls.

Further information related to possible original 1850-era finishes in the first floor of the west wing (the courtroom where the Dred Scott cases were argued) could be obtained with a comparative finishes analysis. Complete finish stratigraphies from window, door, and wall trim from various locations in the wing could be compared to determine if any physical fabric remains that dates to the original 1839–1843 construction of the wing.

Consideration should be given to additional structural loading investigations, especially of the first and second level floor systems, in light of the recently found information concerning floor construction of the Old Courthouse.



---

# Developmental History

## Historic Preservation Objectives

This section provides the background for the specific preservation treatment recommendations in each of the special issues sections of this report.

Jefferson National Expansion Memorial was authorized by Congress as “a permanent memorial to the men who made possible the territorial expansion of the United States, particularly President Thomas Jefferson and his aides, Livingston and Monroe, who negotiated the Louisiana Purchase, and the hardy hunters, trappers, frontiersmen, and pioneers and others who contributed to the territorial expansion and development of the United States of America.”<sup>5</sup>

The park was established by Executive Order 7253, signed by President Franklin D. Roosevelt on December 21, 1935.<sup>6</sup> The Historic Sites Act of 1935, signed into law in the same year, established a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States. The Jefferson National Expansion Memorial was the first designation under the Historic Sites Act of 1935. As part of JNEM, the Old Courthouse is also significant for its architecture and contributions to politics and law in St. Louis.

The federal government began the acquisition of property to develop the site along the riverfront

in St. Louis as part of the Memorial. Between 1939 and 1942, 40 square blocks of condemned buildings were razed to establish the new Memorial, with only the Old Rock House (a two-story stone building constructed in 1818 by Manuel Lisa as a fur warehouse and located at Chestnut and Wharf Streets), the Old Cathedral (a Classical Revival style Catholic church and basilica constructed in 1834 and located at 209 Walnut Street), and the Old Courthouse retained. The National Park Service did not acquire the Old Courthouse building until 1940, and at that time began a course of systematic renovations of the building for its new use as offices and a museum and to provide fire protection.

The 2009 *General Management Plan* (GMP) for the JNEM site includes the Gateway Arch and grounds, the Old Courthouse, and Luther Ely Smith Square. It outlines intermediate and long-term management goals and provides guidance for the preservation of the site. The GMP defines five management zones for the park and identifies a preferred alternative, program expansion, for future planning activities. The vision for the expansion involves a design competition, akin to the 1947 competition, to achieve the widest breadth of ideas for increasing interpretation, education opportunities, and visitor amenities.<sup>7</sup>

---

5. Executive Order 7253 (1935).

6. Ibid.

---

7. U. S. Department of the Interior, National Park Service, *Jefferson National Expansion Memorial General Management Plan/Environmental Impact Statement*, October 2009.

Management goals and issues surrounding the preferred alternative include protecting the historic and cultural resources of the Memorial, increasing connectivity between the Old Courthouse and the Gateway Arch, increasing and improving connectivity between the districts surrounding the Memorial, increasing opportunities for public engagement with Memorial themes, increasing opportunities for the public to feel more welcome, and providing for operational efficiency in a sustainable manner. All of these goals were identified in a design competition proposal issued in 2010, with the expressed goal of preserving and protecting the Old Courthouse. Other management goals are identified in the 2010 *Cultural Landscape Report for Jefferson National Expansion Memorial (CLR)*. Guidance for treatment is based on the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and the *Guidelines for the Treatment of Cultural Landscapes*.

The recommendations and options presented herein are mindful of and in keeping with the goals of the GMP and the CLR. In addition, in 2010 a team led by Michael Van Valkenburgh of MVVA was selected to execute the planning phase of The City + The Arch + The River 2015 (CityArchRiver 2015) International Design Competition, the competition phase of the program expansion as prescribed by the preferred alternative in the GMP. Although the CityArchRiver 2015 planning study is focused on “creating an iconic setting for the international icon of the Gateway Arch, honoring its immediate surroundings and weaving connections and transitions from the city and the Arch grounds to the Mississippi River, including the east bank in Illinois,” it also incorporates accessibility improvements for the

Old Courthouse as well as new exhibits.<sup>8</sup> The NPS intends to use the recommendations presented herein, and in the GMP and CLR, as a basis for providing guidance and technical assistance as projects are planned, programmed, and implemented. This activity is ongoing and four value analysis studies have been prepared to evaluate the Museum of Westward Expansion/Gateway Arch Visitor Center; Old Courthouse Accessibility; the Luther Ely Smith Square/Gateway Mall Connection, Processional Walks, and Historic Landscapes; and the alternatives for the Old Courthouse as a museum, and new exhibits at the Gateway Arch. These ongoing studies and vital community engagement activities identify as a goal for the park the establishment of full accessibility to the first and second floors of the Old Courthouse.

Of primary concern are the increased demands on the Old Courthouse for expanded uses such as additional office space as well as enhanced technological requirements. Changes to the cultural landscape for proposed program expansion and accessibility must also be carefully considered.

## Requirements for Work

**Secretary of the Interior's Standards.** The National Park Service has developed definitions for the four major treatments that may be applied to historic structures: preservation, rehabilitation, restoration, and reconstruction. The four definitions are as follows:

**Preservation** is defined as 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

---

8. River Arch Competition Press Release, September 21, 2010. Accessed at [www.cityarchriver.org](http://www.cityarchriver.org).

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** is defined as 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** is defined as 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** is defined as 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.<sup>9</sup>

## Recommended Treatment

Of the four treatment alternatives considered, the treatment **Rehabilitation** is most appropriate for the Old Courthouse, given the historic significance of the building and its ongoing use as the NPS offices and a museum.

---

9. Kay D. Weeks, and 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.: National Park Service, Historic Preservation Services, 1995).

**Rehabilitation** will accommodate future modifications to allow for mechanical, electrical, plumbing systems, and other code required work. Modifications to the building have already been made in many areas to accommodate administrative offices, museum functions, and public facilities. **Restoration** is inappropriate in that it would return the property to a lost historic condition and also would not accommodate continued use. **Reconstruction** is not relevant to the existing building.

**Preservation** is inappropriate as an overarching treatment in that as a treatment, it is overly restrictive and does not allow for the possible addition of new interpretive and universal access features, or other changes that may be warranted given the current management objectives of the National Park Service. For detailed discussion of the landscape treatment approach (*rehabilitation*), please refer to the Special Issue: Landscape chapter of this report.

The Secretary of the Interior's Standards for Rehabilitation are as follows:

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in a such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

### **Guidelines for Treatment**

Guidelines and requirements for treatment have been defined based on the preservation objectives outlined above for the Old Courthouse. All treatment guidelines and recommendations were developed in accordance with the Secretary of the Interior's Standards for Rehabilitation. As we understand that phasing

of work may be required for budget purposes, the basic requirements outlined below are presented in general order as outlined in the scope of work, and the following general conditions will be applied to all recommendations.

1. Undertake all work in compliance with the Secretary of the Interior's Standards for Rehabilitation.
2. Retain the character of the historic property by protecting the building and significant site features and landscaping.
3. Ensure that proposed new elements or construction are compatible with the historic character of the site and the Secretary of the Interior's Standards for Rehabilitation.
4. Document through detailed as-built drawings, photographs and written narrative all changes and treatments to the historic site and building. Retain features at both the exterior and interior of the buildings that date from the period of significance.

All work performed on the building should be documented through notes, photographs and measured drawings and/or sketches, or with as-built annotations to construction documents at project completion. These records should be permanently archived at JNEM as a record of the building for future reference, and to provide information for future maintenance of the building. In addition, these records will allow future observers to identify which materials have been treated.

## History

As part of the scope of work for this Special Issues HSR, the following history and background provide a general understanding of the historical context of the Old Courthouse. This brief historical overview is organized by periods of development and evolution to correspond to the Building Chronology and Landscape Chronology also included in this report. For more information regarding the full history and context of the Old Courthouse, refer to the following previous HSR installments:

- John H. Lindenbusch, *Historic Structure Report: Historic Data Section - Part 1 and Historic Grounds Study* (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982).
- David G. Henderson, *Historic Structure Report: Architectural Data Section, Phase II: Exterior Preservation* (St. Louis: National Park Service, Jefferson National Expansion Memorial, September 1985).
- David G. Henderson, *Historic Structure Report: Architectural Data Section, Phase Three: Interior Preservation* (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982, rev. 1986).

### Historical Overview

The old St. Louis Courthouse is located in the heart of downtown St. Louis near the riverfront on a city block bordered by Fourth, Chestnut, Market, and Broadway (formerly Fifth) streets. The Old Courthouse served as the center for political and social activity in mid-nineteenth century St. Louis. The building and grounds provided a public forum for gatherings and political speeches, while the courtrooms hosted significant trials in American history. Examples of those trials include the Dred Scott case, in

which Dred and his wife Harriet Scott sued for freedom from slavery, and the Virginia Minor case, in which Virginia Minor sued Registrar Reese Happersett for the right of women to vote in Missouri. The Courthouse grounds were used for political rallies and slave auctions as well as an area where troops gathered during the Mexican-American War and the Civil War. The Old Courthouse was completed in 1862, the product of years of additions and alterations beginning in 1839. The 1828 courthouse remained in place while the new building took shape around it as a money-saving measure and to disrupt the courts as little as possible during construction. The older building was demolished in 1852 as part of construction of the present east wing. When completed, the new building featured formal Greek Revival style elements with pedimented facades, fluted Doric columns, pilasters and elevated entrances which are all representative details of the style.

#### **The First St. Louis Courthouse, 1823–1838.**

Auguste Chouteau, a wealthy and influential early resident of the city, and Judge John B. C. Lucas donated the land for the courthouse in 1823 with the expressed intent that it be used for this purpose. Chouteau was one of the founders of St. Louis and ran a lucrative fur trade business. He also had ties to the court system as one of the first three territorial justices of the Louisiana Territory after its purchase in 1803. At the time of his death in 1829, Chouteau was considered the wealthiest resident of St. Louis as well as its largest landowner. Until 1828, courts in St. Louis were housed in a series of buildings at various locations. The construction of the first courthouse began in 1826 and was completed by 1833. In the decade following completion of the first courthouse, the population of St. Louis tripled. By 1838, the courthouse was considered inadequate to handle the required case load and in need of expansion.

**Construction of the Old Courthouse, 1838–1862.** The county of St. Louis administered a contest to solicit new designs for a larger courthouse to serve increased demands. The design competition was sponsored by the county, and two plans submitted by local residents were accepted. Peter Brooks, the superintendent of the city’s waterworks, won the first place award, and second place went to Henry Spence, a local carpenter. Almost immediately after the awards, the court found these two plans inadequate to address its future needs. At this time, local St. Louis architect Henry Singleton’s cruciform plan for a new courthouse with a central rotunda, which temporarily incorporated the first courthouse as one of its four wings, was selected. The building was designed in the Greek Revival style. The cornerstone, located in the northwest corner of the north transept, was laid on October 21, 1839. The public opening of the completed building took place in February 1845.

This courthouse served as a center for western migration. St. Louis was a gateway to the west for settlers traveling along the Oregon and California trails. The city was a major outfitting point for many of these emigrants and a meeting point for many on the trails. An 1843 advertisement requested that all persons emigrating to Oregon meet at the courthouse prior to their departure. The rotunda was one of the largest public spaces in St. Louis at the time and as a result hosted a multitude of public events. In 1847, the first of the Dred Scott trials was held in the first level courtroom in the west wing. Although the Scotts lost their first trial due to hearsay testimony, they were granted a second trial by the judge. When it was heard in 1850, the Scotts were granted their freedom by a jury. The case was appealed to the State Supreme Court, where the Scotts lost in 1852, and, after initiating a Federal case in 1854, lost that as well. The Federal case was appealed to the U.S. Supreme Court, which brought forth a

sweeping decision that stunned the nation. Not only were the Scotts denied their freedom, but all persons of color, free or enslaved, were declared not to be citizens, the Missouri Compromise was invalidated, and it was stated that slavery could not be prohibited in the western territories. Later in 1857 Scott was granted his freedom through a transfer of ownership. He died one year later.<sup>10</sup>

In 1849, a national railroad convention was held in the Old Courthouse, during which Senator Thomas Hart Benton delivered his famous “There lies the East” speech in the rotunda. This was a critical event in railroad history because it promoted the development of the transcontinental railroad from Missouri to California. While these important events were underway within the building, the plan to enlarge it to its current configuration was also being executed. The original courthouse was demolished in 1852 and construction of the new wings that form the full outline of today’s building was begun. The new dome was the final major component of the structure to be completed. To replace the existing smaller dome, William Rumbold designed a larger dome to be constructed of cast and wrought iron. Controversy erupted as to whether Rumbold’s design was structurally stable, resulting in testing of a scale model. This design for the dome was accepted and completed in 1861. Completion of Rumbold’s dome marked the final phase of construction, and the building entered into a long period of ongoing use serving the civic needs of St. Louis.

**Ongoing Courthouse Use, 1862–1895.** During this period the aesthetics of the courthouse interior were refined. Carl Wimar, a noted

---

10. “The Revised Dred Scott Case Collection,” Washington University in St. Louis, [www.digital.wustl.edu](http://www.digital.wustl.edu), accessed April 17, 2012, and October 28, 2012.

American painter of western and Native American scenes, was commissioned to paint the lunettes of four significant benchmarks in St. Louis history. In 1869, the architect of the courthouse, Thomas Walsh, initiated renovations to the oculus of the dome in order to improve the amount and quality of natural light in the rotunda. As an unintended consequence of this renovation, water infiltration through the oculus caused the original frescoes of the rotunda conceived by Wimar to deteriorate prompting the court to take corrective action. In 1880, the court commissioned noted artist Ettore Miragoli to affect repairs to some of the 1862 decorative scheme by Wimar and to design and implement further embellishments to the dome of the rotunda. At about this same time, circulation and communications within the building were improved through the addition of new stairs and telephone and telegraph connections in the building.

Due to a political split between the County of St. Louis and the City of St. Louis, ownership of the building was transferred to the city in 1876. After the aesthetic improvements to the interior, the courthouse remained relatively untouched until age and deterioration necessitated repairs.

#### **Decline of the Old Courthouse, 1895–1935.**

During this period the courthouse began to decline and was the subject of some controversy. When the city began to consider moving the court functions to another venue, the heirs of Auguste Chouteau and J.B.C. Lucas, who had donated the land for the courthouse construction in the 1820s, claimed a legal right to the square because of the condition in the original deed that it always be used for courthouse purposes. This claim was raised in 1904 and was not resolved until 1932, when the city was finally found to hold clear title to the property.

During the decades of the 1910s and 1920s, some changes to the building were implemented. Nearly all of the windows on the first and second floors were altered and replaced. Selected six-over-six original window sashes were replaced with two-over-one sashes in 1912 (the present-day six-over-six windows date to the NPS alterations conducted in 1954). Primary entrance doors were removed and replaced with revolving doors in 1911. The heating system dating from the 1870s was replaced, necessitating construction of a new boiler house in the courtyard between the south and east wings in 1907.

Of note is a 75 million dollar bond passed in 1923, of which 4 million dollars was to be used to acquire a building site on which to construct a new courthouse. The city at this time was struggling with declining property values in the downtown area. At the same time, new approaches to city planning and revitalizing urban areas were being explored.

In the latter half of the 1910s, the courthouse began to deteriorate, with roof leaks and a soiled exterior. The city saw no incentive to fix the building while discussion of a new building was underway. Modernization of the existing building was also being considered to provide amenities such as elevators. After stairs to the basement were constructed in the courtroom in the east side of the first floor of the north wing (present-day room 111) for use by the Office of the Sheriff, circuit court judges designated the southeast corners of the rooms on both levels of the west side of the north wing for construction of elevators. Municipal funds were appropriated for this improvement in the amount of \$9,300 in April 1922, but within a year of the

appropriation the money was transferred back to the municipal treasury.<sup>11</sup>

Knowledge that the building would soon be vacated, together with the perception that there was no future for the courts at this location, led to inability and unwillingness on the part of the municipality to appropriate funds for proper maintenance and deterioration continued. In response, judges and other influential tenants of the building pressured the city to begin construction of the new courts building posthaste. In 1924 the judges characterized the Old Courthouse as follows: “. . . poorly ventilated, ill-accommodating and noisy quarters, musty and antiquated rooms and conveniences, having long ago outlived its usefulness and being wholly inadequate to serve needs of the courts in a great city like St. Louis and it should be abandoned at as early a date as possible.” The groundbreaking for the new courts building at Tucker Boulevard and Market Street in 1926 was received with great fanfare. Virtually no work was done at the Old Courthouse between 1926 and 1930, when the courts vacated the property to occupy the new building. Because of its soiled exterior, a budget of \$8,300 for exterior painting was requested in 1930 but was denied because the courts would be leaving the building in mere months.<sup>12</sup>

Expenditures for repairs dropped further, precluding even the most basic maintenance. By 1932, only \$85 was allocated for work on the building and that amount dropped to \$48 in 1933, and increased slightly to \$149 in 1934, with no appropriations at all for the following five years.<sup>13</sup> In fact, alternate uses were being

invited for the courthouse when the judges meeting in general term in June 1929 granted permission for the St. Louis Art League to exhibit pieces from their membership in the rotunda.

**National Park Establishment, 1935–1940.** After the courts vacated the building in 1930, much discussion ensued regarding the disposition of the building. Many believed the building significant and worthy of preservation, and thought that the newly established federal programs such as the WPA (first established as the Works Progress Administration and later Works Projects Administration) might provide funding. However, no money was allocated by the WPA, likely because the building was vacant. However, at the local level, the St. Louis chapter of the American Institute of Architects (AIA) created a committee in 1933 to examine future uses of the building. John A. Bryan was a member of that committee and eventually became a significant figure as the historical architect for the National Park Service when it acquired the site. Bryan wrote some of the early histories of the building, documenting the condition of key features such as the dome, as well as the early National Park Service administrative history. As site historian for JNEM, Bryan also led much of the rehabilitation effort during the first twenty years of National Park Service ownership.

The AIA committee determined that \$50,000 would attend to urgently needed repairs. Concern was expressed about the state of the electrical wiring, which was considered to be a fire hazard. Documentation of the Old Courthouse was prepared for the Historic American Building Survey (HABS) in 1934.

Multiple uses followed after the building was vacated by the courts, including a commercial sewing enterprise, artists’ club, and storage. The nearly vacant building continued to deteriorate

---

11. John H. Lindenbusch, *Historic Structure Report: Historic Data Section - Part 1 and Historic Grounds Study* (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982).

12. Ibid.

13. Ibid.

with lack of maintenance. Concurrently, downtown St. Louis was also suffering from neglect. Declining property values and the downtown core's blighted status contributed to a heightened sense of need to take action by the citizens. As a result, a bond to acquire a portion of the old downtown for a new Jefferson National Expansion Memorial (JNEM) was approved by a two-thirds majority. Part of this acquisition identified the Old Courthouse as one of the buildings to save and include as part of the memorial. This bond issue passed in 1935, the same year that Jefferson National Expansion Memorial was designated by President Franklin Delano Roosevelt in executive order 7253. The executive order included the Old Courthouse within the memorial's boundaries.

In the following year, a fire broke out in the north transept of the building, causing significant water and smoke damage to the area. Major damage was not entirely the direct result of the fire, but was also related to the lack of repairs afterwards. The leaking roof was unattended for more than six months, resulting in significant damage to the plaster as well as additional water damage throughout the interior in the third floor of the west and north wings as well as the west wing courtroom, and staining on the murals in the dome.

On July 1, 1937, St. Louis Mayor Bernard Dickmann approved ordinance 41,142, authorizing the Mayor and the Comptroller to deed the Old Courthouse to the U.S. government. While the building stood mostly vacant after the fire in 1936, the decision to transfer ownership of the building was supported by months of work by the local office of the NPS, the Jefferson National Expansion Memorial Association, and the Missouri Historical Society. These entities worked to ensure that the Old Courthouse became part of the memorial by emphasizing the architectural importance of the building. Finally, in 1940,

President Franklin D. Roosevelt formally accepted the Old Courthouse as part of JNEM.<sup>14</sup> The NPS proceeded with an aggressive schedule to build interpretive displays and open the building to the public. The Old Courthouse Museum opened to visitors on January 30, 1943.

**Rehabilitation of the Old Courthouse, 1940–1965.** The preliminary studies of the Old Courthouse undertaken by John Bryan in the 1930s chronicled the history of the building as a precursor to any future preservation, stabilization, and restoration efforts that the National Park Service might undertake. These efforts provided the basis for some of the early decisions that shaped the initial work to be done on the Old Courthouse. Due to the information gathered in the 1930s, as well as the effects of the fire, the NPS took an active approach to addressing fire hazards. The first major project undertaken was to replace the roof and roof structure. By November of 1940 the drawings and specifications for the new roof were prepared and executed. The new installation resulted in a simpler roof pattern with the removal of many of the skylights and ventilators that had been added to the old roof.

The Secretary of the Interior accepted the Old Courthouse as a historic site on September 17, 1940, following the offer of the building as a gift to the Federal Government by the City of St. Louis. Shortly thereafter, the NPS began to rehabilitate and restore the structure, with particular emphasis on its protection from fire and repair of existing fire damage. Wood construction was removed and as part of the rehabilitation program, contracts were let and work performed for the following: a new roof,

---

14. John A. Bryan, *Preliminary Draft, JNEM Administrative History: Jefferson National Expansion Memorial, Its Origin, Development, and Administration* (St. Louis, National Park Service, Jefferson National Expansion Memorial, n.d. [circa 1960]).

December 1940, \$63,819; new heating, plumbing, electrical, and fire protection systems, February 1941, \$53,761; south wing restoration, July 1941, \$33,742; exterior painting, June 1942, \$9,088.<sup>15</sup>

The NPS began to systematically update the building to incorporate office space, address fire hazards, and build exhibits to establish the building as a museum. Julian Spotts, an engineer, was hired as Superintendent of JNEM in 1940. Spotts along with Bryan oversaw the construction activity undertaken by the NPS throughout the 1940s and 1950s. With plans for the NPS administrative offices to occupy space in the Old Courthouse, the entire second level of the south wing was gutted down to the brickwork with all interior partitions and plasterwork removed as a fire prevention measure. By 1941 office space was completed for the new NPS administration, and by December of that year the offices were occupied.<sup>16</sup> With the new roof nearing completion, the focus shifted to preparing exhibits for public view. The December 1942 monthly report by Ralph H. Lewis, Associate Historical Technician, noted that WPA carpenters continued working to make necessary equipment needed for the museum. This equipment included displays that would be open to the public, a stool for children at the drinking fountain, bulletin boards, and storage shelves. The first exhibits included a celebration of the seventy-fifth anniversary of the acquisition of Alaska and interpretation of the early fur trade. Other exhibits completed during the first years addressed the two hundredth anniversary of Thomas Jefferson's birth, French Colonial period furniture, and expansion of the fur trade. From various monthly reports it appears that the

museum was very active with exhibits rotating nearly every month. The exhibits were an important way to engage the community while renovations to the building were still underway.

In 1942, the Busch and Latta Painting Company requested approval of a new method to clean the copper cladding of the dome in their letter to Spotts in August 1942 requesting “. . . a change in the cleaning specifications pertaining to the copper dome of the Old Court House building.” The letter noted, “It is our recommendation that we use steel wool and sand paper with a volatile thinner for cleaning of copper areas of the dome in lieu of the soap and water preparation used on the masonry surfaces.”<sup>17</sup> Julian Spotts approved the method despite concerns that an odor related to the products used might be noticed by visitors.<sup>18</sup> Busch and Latta were also engaged to clean and paint the exterior of the building.

The progress of building improvements began to slow with the involvement of the United States in World War II. The first indication of this slowing occurred when an extension had to be given to the painting company for the gold leaf application on the lower ball of the flag pole due to the national emergency and the scarcity of skilled artisans capable of executing gold leafing work in accordance with the specifications.<sup>19</sup> Even though the implementation of improvements slowed, planning continued at breakneck speed. Building features identified as damaged or contributing to a fire hazard were designated for complete replacement. This included wood floors and plaster throughout the building. Superintendent Spotts described the building program in a letter to A. B. Ideson,

---

15. Julian Spotts, letter to War Production Board, December 9, 1942.

16. Julian Spotts, Superintendents Report, December 1941.

---

17. Busch and Latta Painting Company, letter to Julian C. Spotts, August 25, 1942.

18. Julian C., Spotts, memo to Busch and Latta painting Company approving cleaning methods for dome, August 26, 1942.

19. Julian Spotts, letter to Busch and Latta Painting Company, October 20, 1942.

Construction and Housing Specialist with the War Production Board, stating, “The work this office proposes to perform will . . . consist of the removal of all portions of the floors which are constructed of wood and replacing them with reinforced concrete. All materials are on hand for use in the work excepting Portland cement, sand and gravel.”

The War Production Board put the flooring project proposed by Superintendent Spotts on hold, and the project did not proceed until September 1945. Materials had been stored in the building since 1942 and the NPS was anxious to “. . . consume our stored materials and to remove the fire hazard from the stored lumber as soon as restrictions are lifted.”<sup>20</sup> Although the north wing second floor was replaced with concrete, physical evidence found during this investigation indicates that wood floors remain scattered throughout the building buried beneath contemporary flooring materials. Spotts continued letting contracts for removing and replacing all existing plaster with acoustical plaster. The acoustical plaster included asbestos fibers in keeping with an attempt to fireproof the building. This replacement included ceilings and walls, and replacing the existing materials with metal lath and plaster, refinishing and repainting wood throughout, and laying marbled linoleum floors on top of the cement floors. This work was delayed, but this time by the unprecedented volume of orders following the end of the war in August 1945.<sup>21</sup> Upon alleviation of this bottleneck, the NPS pressed vigorously to complete work on the walls, ceilings, and floors. Spotts wrote in his monthly report, “When completed the formerly existing

fire and failure hazards will have been removed, and the space prepared for final restorations.”<sup>22</sup>

The work undertaken did not address some of the common complaints voiced by the general public. Complaints noted in the Superintendent’s monthly report addressed the unimproved condition of the site and the lack of planting of the lawn around the Old Courthouse, but Spotts’s reports noted that little could be done until the work in the building was completed.

A new copper roof was completed on the dome in 1947. By the decade of the 1950s, Spotts had begun documenting the completed work. A work summary from 1953 noted that the following renovation items had been completed:

. . . removal of all white coat plaster in certain areas regardless of condition; removal of all loose, unsound and deteriorated brown and scratch coats; installation of new metal furring and metal lath; applying new plaster on walls and ceilings; reconditioning doors and frames, furnishing and installing new doors and frames; repairing and restoring of herringbone brick floor; painting walls and ceilings, windows, doors, and millwork. All this work has been completed in the south wing, east wing basement, west wing, rotunda first floor, second floor, and third floor.<sup>23</sup>

For Julian Spotts, it must have seemed that the work of ridding the building of its fire hazards was never-ending. In 1949, Spotts had the maintenance staff explore previously unexamined spaces in the building in connection with what he identified as “preparing estimates for a complete restoration of the historic structure.”<sup>24</sup> These newly explored spaces were

---

20. Julian Spotts. memo to the NPS Regional Director, September 7, 1945.

21. Smith-Cook contract extension, October 22, 1945.

22. Julian Spotts, monthly superintendent’s report February 12, 1946.

23. Julian Spotts, letter documenting restoration work by Continental Constructions, November 6, 1953.

24. Julian Spotts, Superintendent’s Report. July 14, 1949.

located behind the upper rotunda walls and were determined to present an extremely dangerous potential fire hazard. In his report of July 14, 1949, Spotts wrote that the

. . . ramifications of this old structure seem inexhaustible. Areas behind the interior rotunda walls on the upper levels are literally filled with highly inflammable wood construction. It comprises probably our most dangerous area from a fire standpoint and will be one of the most important jobs we will have to attend to when funds become available.<sup>25</sup>

In the following year, clean-up began in these spaces and the staff used new vacuum machines to clean out the great quantity of dirt that had accumulated over the years. Spotts speculated that much of the vast amount of refuse left by the builders in 1862 had been removed. During this process, a few interesting artifacts were discovered including a number of old liquor bottles, causing Spotts to conclude that there must have been “some heavy drinkers on the job.”<sup>26</sup>

In August of 1951 Spotts reflected on the status of the building restoration and the opinions of many visitors when he summarized the NPS activity in a report:

Ever since we moved into the OCH nearly ten years ago, visitors have inquired why the government has not restored the rotunda. To many it seems incomprehensible why this wealthy nation will permit such a decrepit condition with its continuing deterioration, to exist in the most beautiful portion of a nationally important structure that the government took possession of for the purpose of insuring its preservation. Our defense that the old building was in miserable condition when we accepted it from the city and that

funds have not been furnished for its restoration will not suffice. Typical remarks include it is a shame or a shameful condition . . . the shame of course in order resting upon this Memorial, our service, the Department and upon the Congress. While we deplore the appearance of the rotunda we are more apprehensive over its safety from a fire preservation standpoint and physical safety of our visitors. We have recently been forced to rope off the whole center section within the ring of columns. Kind providence thus far has prevented any accidents, but when a couple of square yards of plaster fell during July from the ceiling under the second floor balcony down to the rotunda floor, we decided we could take no further risks and closed off the rotunda and west wing to visitors. We then started the force account project of removing all ceiling plaster, wooden lath and wooden ceilings, furring, and loose sidewall plaster and all old whitecoat, both in the rotunda and the corridor leading from the south wing. Much of the wood framing erected by 1839 and 1845 remained in place, although it had been altered between 1860 and 1862 when the former low dome was replaced by the present high dome, and the earlier wide second floor balcony was cut back to its present width. Along with the wood of ages from 90 to 111 years in place, great amounts of wood fragments and chips to a depth of several inches were removed, exposing the wooden supports for the present balcony above. Ancient gas pipes and great amounts of early electric wiring also were taken out. After all unnecessary wood has been removed, we propose to thoroughly vacuum clean all remaining wood surfaces and then apply flame retardant chemicals before suspending a new metal lath ceiling, new wiring, plastering and painting also will be installed. Only then will the most dangerous fire condition have been corrected, and also the first steps taken toward restoring the rotunda toward its former glory.<sup>27</sup>

---

25. Julian Spotts, Superintendent's Report. July 14, 1949.

26. Julian Spotts, Superintendent's Report, April 14, 1950.

---

27. Julian Spotts, Superintendent's Monthly Report, August 14, 1951.

Now that the fire hazards had been removed from the building, the NPS could continue with the restoration of important spaces throughout the building. Throughout the 1950s, the focus of work on the building shifted to the restoration of the east and west courtrooms, as well as removal and replacement of plaster in the rooms off the main hallways.

Together Bryan and Spotts considered at length the aesthetic appeal of the interior of the building, particularly the rotunda. Bryan studied popular color schemes and conscientiously considered the impact the rotunda space would have on the public. As a result of these studies he chose the dusty rose and green color scheme present in the rotunda today. His color selection was so specific that the painting contractor had to request different paint for the rotunda than that specified by the government. A change order for special paint was approved at an additional cost of nearly three times the government specified paint. In addition to overall painting, the artistic murals in the dome were cleaned and restored as part of this program.

The NPS construction efforts finally received some positive press coverage from the *St. Louis Globe Democrat* when an article stated that the Old Courthouse was, “slowly regaining its magnificence and that the historic splendor of early St. Louis, much of which was lost in the shadows of time is being brought back to life at the Old Courthouse.”<sup>28</sup> Many newspapers had been highly critical of the appearance of the building before its transfer to the NPS, and this positive review showed a shift in the public perception of the building. Before the restoration work, the Old Courthouse was described as:

... [having a dome that was] weathered with the sun and the rain and history and that had grown old and tired and grimy and antiquated. The worn flagstone corridors were medieval, and its courtrooms and facilities were out of step with modern times. The building and its surroundings were rotting with decay, and the historic old structure seemed doomed together with its scorbatic neighborhood. Where now the building is destined to become a focal point of the 40 acre memorial development second only to the great Gateway Arch. The dome and building were once the pride of St. Louis and was considered one of the finest in America.”<sup>29</sup>

All efforts by the NPS to address fire hazards, build exhibits for interpreting area history, and restore the artistic murals were recognized when, in 1957, a final fire inspection was made by the captain of the St. Louis Fire Department. In his report Spotts stated that, “we were commended on the conditions of the building both as to our housekeeping and fire prevention activities. The Captain expressed the wish that all structures in his district were as well equipped and cared for as ours.”<sup>30</sup> At this time not only was the Old Courthouse viewed as a significant restored historic property in St. Louis, but also one that was retrofitted with all the modern necessities for current fire safety.

Following the extensive fire safety construction effort at the Old Courthouse and the NPS’s positive fire inspection in 1957, the focus of construction activities shifted to the larger site and the completion of the Gateway Arch.

NPS director Conrad Wirth developed a new program, Mission 66, that supported a comprehensive nationwide effort to improve the National Park system. Wirth developed the

---

28. “Old Courthouse Slowly Regaining its Magnificence,” *St. Louis Globe Democrat*, February 6, 1955.

---

29. “Courthouse Dome,” *St. Louis Globe Democrat*, November 29, 1964.

30. Julian Spotts, Superintendent’s Report, October 14, 1957.

program in response to the deteriorated condition of many of the nation's parks, and the program was adopted by President Dwight Eisenhower in 1956.<sup>31</sup> Mission 66 supported improvements to the Courthouse square including a reconstruction of a granite wall, wrought iron fence, and a copper fountain, and repairs to the historic sundial. Additional information regarding these features is found in the Special Issue: Landscape chapter of this report.

Although Eero Saarinen's winning plan for the Gateway Arch was accepted in 1948, construction was not begun for many years as result of a lack of funding, and complications with the site that involved relocating the railroad trestle on the riverfront. Funding was secured in 1957, and in 1959 a master plan for JNEM was prepared to direct development of the site under the Mission 66 program.

As a result of the railroad relocation in 1959, the Old Rock House was dismantled and some of the stones, beams, and window work that remained of the building were stored in the Old Courthouse basement. The material stored in the Old Courthouse is a small fraction of the total building material, and the location of the remaining material is unknown. Because of the significant loss of material and resulting loss of integrity, the NPS chose not to reconstruct the building.

In 1960 the city of St. Louis began to implement zoning changes and a plan for urban improvements in its downtown core in response to the anticipated construction of the interstate system as well as the construction activities at JNEM. However, it was not until 1963 that

construction began on the Arch due to the lack of sufficient funding. The Arch eventually opened to the public in 1967. This opening saw a renewed focus on the Old Courthouse. The building view was framed by the Arch when looking from the east, and it became a significant element in the viewsheds between the downtown and the river. This significant symbol of the history of St. Louis now contributed to the greater completed JNEM site.<sup>32</sup>

**Maintenance and Management of the Old Courthouse, 1965 to Present.** Completion of the Arch in 1965 gave St. Louis a world class icon that attracted millions of visitors each year. The maintenance and management of JNEM resources became the focus of the NPS at this time. The Old Courthouse also continued in its role as a community center and gathering place.

As an existing historic site, JNEM was included in the National Register of Historic Places in 1966 when the register was established. The National Register nomination with its documentation materials was completed in 1976. The nomination listed the Gateway Arch, the Old Cathedral, and the Old Courthouse as contributing resources within the district nomination. The Old Courthouse was listed for its significance in architecture, art, engineering and law. These areas represent the design of the building itself and its Greek Revival style (architecture), the artistic murals and lunettes in the rotunda (art), the design of the dome with its significant construction and engineering methods (engineering), and the important legal cases tried in the building (law).<sup>33</sup>

---

31. Sarah Allaback, *Mission 66 Visitor Centers: The History of a Building Type*, (Washington: National Park Service, 2000), [http://www.nps.gov/history/history/online\\_books/allaback/](http://www.nps.gov/history/history/online_books/allaback/) (accessed October 30, 2012)

---

32. Brown, *Administrative History*, 167.

33. Richard I. Ortega, National Register nomination for Jefferson National Expansion Memorial (Omaha, Nebraska: National Park Service, March 3, 1976), 3.

In 1986 the first accessibility lift was added to the west portico along with portable ramps on the building interior for ease of access to the museum galleries on the first floor. A new lift was added in the southwest courtyard in 2007 and replaced with the present lift in 2012.

Renewed focus at JNEM in the twenty-first century revolves around a new international competition, much like the first design competition for the Arch itself. The 2009 competition was held to enhance connectivity among the resources within JNEM. This competition was called CityArchRiver 2015. One of the several design competition goals identified increasing connectivity between the Old Courthouse and the Arch. A team led by Michael Van Valkenburgh Associates, Inc., won the competition. Through additional study and public engagement, a preferred alternative for enhanced accessibility to the Old Courthouse interior was identified.<sup>34</sup>

---

34. AECOM, Inc., *Jefferson National Expansion Memorial Cultural Landscape Report* (Omaha, Nebraska: Department of the Interior, National Park Service, May 2010), 1-8.



## Building Chronology

### The First St. Louis Courthouse, 1823–1838

1823	Courthouse Square	Auguste Chouteau and John B.C. Lucas donated land to the county with the expressed intent that it be the site of a new courthouse. (Lindenbusch, 2)
1826–1833	Federal Courthouse	The first county courthouse was built on this site, designed by St. Louis architects Laveille and Morton in the Federal style. (Lindenbusch, 1)

### Construction of the Old Courthouse, 1838–1862

1838	Courthouse Replacement	In the decade following completion of the first courthouse, the population of St. Louis tripled and the original courthouse was no longer large enough to handle the case load. By 1838, the courthouse was considered inadequate and in need of replacement. (Henderson, 2)
1839	Enabling Legislation	Creation of a criminal court by act of the state legislature necessitated additional court room space. (Lindenbusch, 1)
	New Courthouse	Henry Singleton's cruciform plan for a new courthouse with a central rotunda, which temporarily incorporated the first courthouse as one of its four wings, was selected after the winners of a design competition were rejected. The new courthouse was designed in the Greek Revival style. The cornerstone, located in the northwest corner of the north transept, was laid on 21 October. (Lindenbusch, 3)
1842	Enabling Legislation	The Court of Common Appeals was created by act of the state legislature to hear civil and probate cases. (Lindenbusch, 14)
	Construction	The exterior of the west wing was completed. Interior work commenced in March 1842. (Lindenbusch, 14)
	Appointment	William Twombly was appointed superintendent of construction. (Lindenbusch, 15)
	Occupancy	The first office, located in the new south transept, was occupied in April; construction of the north transept and west wing was still underway. (Lindenbusch, 17) The courthouse was heated using coal stoves.
1843	Construction	Beams supporting the second level of the west wing (present-day room 207) were found to be insufficient to support loading. Second level floor beams were connected to the rafters above with ironwork, necessitating redesign and

		resulting in delay of construction of the second level court room. (Lindenbusch, 18)
	Occupancy	The courtroom located on the first level of the new west wing was substantially complete in March and was occupied by the Circuit Court. The Law Library occupied the second level of the new north transept (present-day rooms 212 and 215). (Lindenbusch, 17)
	Dome	Plans for the original rotunda were ordered by the court on June 1, to be designed by noted local architect George I. Barnett. (Lindenbusch, 22)
	Construction	Exterior steps were installed leading to the north and south transepts. (Lindenbusch, 20)
1844	Occupancy	The courtroom on the second level of the west wing (S207) was substantially complete and occupied by the Court of Common Pleas in September. The second level courtroom was soundly criticized for its lack of grandeur and the odd plan necessitated by the ironwork to support the second level floor. (Lindenbusch, 19)
	Construction	The rostrum (the speaker's podium located in the center of the rotunda on the first level from which orators addressed the assembled spectators) was completed by the end of the year. (Lindenbusch, 36)
1845	Dedication	The original rotunda and dome were substantially complete and opened to the public on 22 February. (Lindenbusch, 36)
	Construction	The first stage of construction encompassing the north and south transept and west wing was substantially complete. (Lindenbusch, 39)
	Demolition	Two temporary outbuildings used as clerk's offices, located at the northwest and southwest corners of the courthouse site, were removed. (Lindenbusch, 37)
1847	Dred Scott	The first of the Dred Scott trials was heard in the first level courtroom in the west wing on June 30. The decision went against Scott. (Dosch, 117)
1849	Community	The "Great Fire" of St. Louis occurred on May 17 but the courthouse escaped damage. Mass meetings were held in the courthouse shortly after the fire. A cholera epidemic broke out following the fire, on June 25. The National Railroad

		Convention was held in the courthouse on October 16; Senator Thomas Hart Benton made his famous, “There lies the East,” speech. (Dosch, 29, 34)
1850	Dred Scott	The second Dred Scott trial was held in the building on January 20; Scott won but the case was appealed in the Missouri Supreme Court. (Dosch, 117)
1851	Demolition	The County Court ordered that the original Courthouse, which had served as the east wing of the enlarged Courthouse, be demolished. (Lindenbusch, 41)
	Annex Buildings	The County Court ordered that two, two-story brick annex buildings be erected on the north and south sides of the Courthouse grounds to house the Office of the Sheriff (north building) and the Probate Court (south building). (Lindenbusch, 41)
1852	Demolition	Demolition of the original Courthouse was completed by March. (Lindenbusch, 41)
	Construction	Construction of the new east wing was begun, based on designs by architect Robert S. Mitchell. (Lindenbusch, 41)
1853	Occupancy	The new, temporary, two-story brick annex structures erected on the Courthouse grounds to house the Office of the Sheriff and the Probate Courts were completed in June and ready for occupancy. (Lindenbusch, 42)
	Construction	Construction of the south and east wings began. (Lindenbusch, 42)
	Utilities	Gas lighting was installed. (Lindenbusch, 44)
	Enabling Legislation	The Land Court was created by an act of the state legislature. (Lindenbusch, 44)
1855	Construction	Bearing walls were installed on the first floor of the west wing to shore up the sagging second floor. The installation of the walls divided the large, square-plan courtroom that was the site of the Dred Scott Case into two long, rectangular rooms with a corridor between (present-day rooms 102 and 104). The Circuit Court occupied the room on one side of the newly installed corridor and the Criminal Court occupied the room on the other side. (Lindenbusch, 46)

## Developmental History

1856	Demolition	The north brick annex building housing the Office of the Sheriff was razed to make way for construction of the new north wing. (Lindenbusch, 52)
	Construction	The east wing was completed and construction of the north wing construction began. (Lindenbusch, 53)
	Renovation	Major renovations began to the Court of Common Pleas on the second level of the west wing (present-day room 207). Marble floor tiles were installed as part of the renovation. The roof structure over this courtroom was repaired by removal of the timber truss members and replacement with cast iron members. The ironwork connections that tied the sagging second floor to the roof trusses were no longer necessary and were removed. (Lindenbusch, 46)
	Occupancy	The new south wing was completed and the Missouri State Supreme Court took up residence in the west half of the second level of the south wing. The Law Library moved from the second level of the north wing to the east half of the newly completed second level of the south wing. The Criminal Court moved from the first level of the west wing to the east half of the first level of the south wing (room 122). (Lindenbusch, 47)
	Utilities	Permanent sanitary sewer connections were extended to the Courthouse. (Lindenbusch, 50)
1857	Fire	Fire broke out in the basement of the east wing. No serious damage occurred. (Lindenbusch, 51)
	Appointment	Thomas Lanham replaced Robert S. Mitchell as Architect of the Courthouse. (Lindenbusch, 53)
	Demolition	The original dome of the Courthouse was removed and the rotunda space was left open to the elements. (Lindenbusch, 53)
	Construction	Two flights of stairs were installed in the transverse hall in the south wing, connecting the first level with the second level. Stairs were also installed in the west wing, connecting the first, second, and third levels. (Lindenbusch, 53)
1858	Occupancy	The Fire and Police Telegraph, an agency of the City of St. Louis, occupied space on the third level of the north transept (305). (Lindenbusch, 55)

1859	Appointment	Thomas Lanham was dismissed as Architect of the Courthouse and replaced by William Rumbold. (Lindenbusch, 55, 57)
	Dome	At the request of the St. Louis County Commission, William Rumbold submitted plans for a new, lighter weight dome for the Courthouse. Along with written plans, Rumbold fabricated a scale model of the dome and applied a 13,000 pound load to demonstrate its strength. (Lindenbusch, 56)
1860	Construction	Construction began on the new Rumbold-designed dome. (Lindenbusch, 59)
	Construction	The Criminal Court located on the first level on the east side of the south wing was completed, including installation of marble tile flooring (present-day room 122). (Lindenbusch, 69)
1861	Construction	Construction of Rumbold's wrought and cast iron dome was completed. (Lindenbusch, 79)
	Occupancy	The north wing was completed. The County Court entered into an agreement with the City of St. Louis to lease the new north wing in its entirety to the City for municipal office space. The north wing served as the St. Louis City Hall. (Lindenbusch, 57, 75)

#### **Ongoing Courthouse Use, 1862–1895**

1862	Demolition	The rostrum was removed from the rotunda. (Lindenbusch, 81)
	Frescoes	The Court commissioned Carl Wimar and August Becker to paint the rotunda frescoes. (Lindenbusch, 82)
	Renovations	Interior renovation of the rotunda from the first level to third level continued, including removal of two original circular stairs in the rotunda space that connected the first level to the second level. In addition, the third level gallery was cut back to afford the rotunda a larger diameter for unobstructed views of the volume of the new dome. Cast iron columns were added to the third level gallery to support the galleries above. (Lindenbusch, 80–81)
	Dome	William Rumbold received a patent for his dome design. (U.S. Patent No. 35,630 dated June 17, 1862)

## Developmental History

1865	Enabling Legislation	The state legislature determined that the division of jurisdictions that included the Circuit Court, Court of Common Pleas, Land Court, and Office of the Law Commission should be abandoned and only the Circuit Court be retained. (Lindenbusch, 103)
1866	Enabling Legislation	The state legislature added the Court of Criminal Corrections as a distinct jurisdiction. (Lindenbusch, 103)
1867	Appointment	William Rumbold died. The County Court appointed Thomas Walsh as Rumbold's replacement as architect of the Courthouse. (Lindenbusch, 104)
1869	Renovations	In response to criticism regarding the dearth of natural light in the rotunda, Thomas Walsh initiated further renovations in the rotunda by cutting back the second level gallery to align with the third level gallery. In addition, Walsh improved the amount and quality of natural light entering the rotunda by removing the enameled and stained glass installed in the oculus of the dome and removing the stairway to the lantern and associated circular platform, thereby increasing the diameter of the oculus. The lantern openings were infilled with clear glazing. (Lindenbusch, 105–107)
	Renovations	Skylights with light wells were installed above the corridors to improve natural lighting. (Lindenbusch, 109)
1870	Renovations	Extensive renovations were initiated to Circuit Court No. 1 (second level, east wing, present-day room 220) and Circuit Court No. 3 (second level, west wing, present-day room 207), improving the natural light and ventilation in these courtrooms. (Lindenbusch, 111–114)
	Utilities	Walsh introduced steam heat to the Courthouse and the old coal stoves were removed. The furnace and boiler were located in the east end of the basement of the south wing. (Lindenbusch, 114)
1873	Occupancy	St. Louis Municipal offices, including St. Louis City Hall, that had been housed in the north wing were relocated off-site. The County Court took possession of the north wing. (Lindenbusch, 121)
1874	Flagpole	The flagpole on top of the cupola broke off and crashed through a skylight. (Lindenbusch, 126)

1876	Ownership	Ownership of the Courthouse was transferred from the County of St. Louis to the City of St. Louis. The city of St. Louis had recently seceded from the county of St. Louis in what came to be known as the “Great Divorce.” (Lindenbusch, 128)
	Occupancy	The Missouri State Supreme Court moved out of the building. (Lindenbusch, 128)
	Renovations	The space once occupied by the Missouri State Supreme Court was altered to be a more conventional courtroom and the Court of Appeals took occupancy of the space. (Lindenbusch 128-129)
1878	Occupancy	The Missouri Historical Society occupied the basement of the east wing for a short time, moving out of the building in 1886. (Lindenbusch, 130–131)
1880	Renovations	Deterioration of the frescoes in the rotunda dome due to infiltration of moisture through the oculus was observed. The Court commissioned Ettore Miragoli to restore and in some cases re-design the dome frescoes. (Lindenbusch, 133–135)
	Utilities	Telephones and telegraphic connections were installed in the Courthouse to provide communication between the courtrooms and the jury rooms. (Lindenbusch, 145)
1883	Wire station, lightning rods	A wire station was installed on the roof of the north wing to improve the service of the fire and police telegraph system. Lightning rods were installed on the Courthouse. (Lindenbusch, 146)
1884	Flagpole	The Courthouse flagpole was replaced. (Lindenbusch, 146)
1887	Renovations	One set of iron staircases located in the south transverse hall was removed to create a judge’s reading room on the east side of the south transverse hall. The south transverse hall was enclosed. (Lindenbusch, 150–152)
1888	Renovations	The north transverse hall was enclosed. (Lindenbusch, 152)
1891	Utilities	Electric lighting was installed in the Courthouse for the first time, supplementing the existing gas lighting. (Lindenbusch, 154)

1894          Renovations          Stairs installed in the west wing in 1857 were removed and the floors infilled to create restrooms on each level, with the third level restroom set aside as the women's restroom. (Lindenbusch, 158)

**Decline of the Old Courthouse, 1895–1935**

1904          Law suit          The heirs of the two men who had donated the public square for use in establishing a courthouse—Auguste Chouteau and John B. C. Lucas—claimed a legal right to the square when the city began to look for a new site for courthouse functions. In 1932, the city was found to hold clear title to the property. (Lindenbusch, 211)

1905          Frescoes          Edmund Wuerpel was commissioned to restore and preserve the lunette frescoes painted by Carl Wimar in 1862. (Lindenbusch, 188)

1907          Systems          The heating system installed in 1870 and long since incapable of properly heating the building was replaced with a new boiler. The new system necessitated the erection of a boiler house in the southeast courtyard. (Lindenbusch, 191)

1908          Occupancy          The Law Library and the Court of Appeals, which occupied the east and west half of the second level of the south wing respectively, vacated to the newly completed Pierce Building located on the northeast corner of Fourth and Chestnut. The entire second level of the south wing was turned over to the Circuit Court. (Lindenbusch 191)

Renovations          The space once occupied by the Law Library underwent major renovations and altered to a conventional courtroom. The courtroom subsequently was occupied by Circuit Court No. 6. (Lindenbusch 191)

1910          Renovations          The basement of the west wing was renovated in order to accommodate an improved public comfort station. (Lindenbusch, 198)

Renovations          The large wood doors at the four main entrances to the Courthouse were removed and replaced with revolving doors. (Lindenbusch, 199)

1911          Renovations          Courtrooms located on the second level of the north wing were renovated and the ceilings were greatly modified by the removal of the floor joists supporting the third level of this wing. The ceilings of these courtrooms were vaulted and the

		third level of the north wing ceased to exist. (Lindenbusch, 200)
1912	Renovations	Nearly all of the original six-over-six window sashes on the first and second levels of the Courthouse were replaced with two-over-one double-hung windows (the present-day six-over-six windows date to the NPS alterations conducted in 1954). In addition, the jambs that originally extended to the floor with raised wood paneling between the jambs were modified and new sills raised above the floor level, greatly altering the appearance of the interior of the rooms of the Courthouse, while leaving the exterior appearance intact. (Lindenbusch, 199, NPS drawing set 366/41912)
1913	Renovations	An opening was created in the stone floor on the west side of the south transverse hall and a new stair was installed for access to the south wing basement. (Lindenbusch, 207)
1906–1916	Dome	Acanthus leaf capitals of the Corinthian columns of the dome were likely removed.
1921	Frescoes	Frescoes in the rotunda originally painted by Carl Wimar in 1862 were painted over by James Lyons. (Lindenbusch, 215-216)
1922	Renovations	A stairway was installed in the north wing for access to the north wing basement. (Lindenbusch, 218)
1930	Occupancy	The new Civil Courts Building at Tucker Boulevard and Market Street was completed and all courts that had occupied the Old Courthouse were relocated. (Lindenbusch, 220)
1932	Law suit concluded	The lawsuit filed by the descendants of Auguste Chouteau and Judge John B.C. Lucas to reclaim ownership of the courthouse square was decided by the Missouri Supreme Court in favor of the city. (Lindenbusch, 224–225)
<b>National Park Establishment, 1935–1940</b>		
1934	Courthouse Survey	Historic American Buildings Survey (HABS) documentation was prepared for the Old Courthouse (Survey 31-8). The survey team was led by Wilbur Trueblood. Revisions and additional HABS drawings were conducted until 1941. The survey provided the working drawings on which the first preservation efforts were based and initiated in 1941. (Henderson, 19)

## Developmental History

1935	JNEM	Jefferson National Expansion Memorial was designated by President Franklin D. Roosevelt in Executive Order 7253 and included the Old Courthouse within its boundaries. (Brown, 61)
1936	Fire	Fire broke out on the third level of the north transept (305). The fire damaged the roof, and because repairs were not promptly initiated, severe moisture damage to interior plaster occurred. (Lindenbusch, 222)
1937	Courthouse Survey	John A. Bryan of the National Park Service chronicled the history of the Courthouse as a precursor to any future preservation, stabilization, and restoration efforts undertaken by the NPS. The effort provided the basis for some of the early decisions that shaped the initial preservation work on the Courthouse. (Lindenbusch, 227)

### Restoration of the Old Courthouse, 1940–1965

1940	Ownership	Ownership of the Courthouse was transferred from the City of St. Louis to the United States Government. (Lindenbusch, 225)
	Restoration	With ownership transfer complete, the National Park Service began the preservation, stabilization, and restoration campaign for the Courthouse. The period of significance was identified as 1871. (Lindenbusch, 227)
1941	Restoration	The Courthouse was completely re-roofed; many of the skylights and ventilators installed by Lanham were removed, with the exception of the skylights above the north and south transepts. The work entailed full scale removal of the original wood and iron roof structure of all wings and replacement with steel beams. The original wrought iron trusses and lattice beams were removed, except for the roofs of the porticoes on the east, north and west sides.
	Systems	New electrical and plumbing systems were installed. A new steam line was installed, connecting the Courthouse to municipal heating utilities. The steam line entered the building in the southwest corner of the basement. (Lindenbusch, 227)
	Demolition	With the new steam connections made, the 1907 boiler house and its associated smokestack and chimney were demolished. (Lindenbusch, 229)

	Restoration	The revolving doors installed at the four main entrances to the Courthouse in 1910 were removed and new recreated doors and hardware matching the originals were installed. (Lindenbusch, 228)
	Renovations	The entire second level of the south wing was gutted down to the brickwork, with all interior partitions removed, to clear the way for the addition of NPS offices. Interior plaster work, extent unknown, was removed as a fire prevention measure. (Henderson, 20)
	World War II	United States involvement in World War II halted most work on the Courthouse. (Lindenbusch, 230)
1943	Exhibits	Exhibits in the first level courtrooms of the south wing were open to the public. (Bob Moore, Oral History Interview with Ralph Lewis, NPS Exhibit Planner and Historian, October 23, 1994, JNEM Oral History Collection.)
1945	Renovations	The vaulted ceilings in the courtrooms of the second level of the north wing installed in 1911 were removed and the third level floors were reinstalled with reinforced concrete. (Lindenbusch, 231)
1947	Restoration	New 16-ounce copper cladding was installed over the original 1861 copper of the dome. (Henderson, 12)
1953	Renovations	Work on the restoration of the east wing commenced. (Lindenbusch, 232)
1954	Restoration	The two-over-one double-hung wood replacement windows installed in 1912 were replaced with new six-over-six wood double-hung windows. (Lindenbusch, 233)
1955	Rotunda	Research and investigation of the rotunda paint schemes applied in 1880, 1905, and 1921 was conducted by Walter Nitkiewicz. Upon determination that little of Rumbold's original scheme for the rotunda remained, an arbitrary color scheme for the rotunda was proffered by John Bryan based on speculation of American color tastes during Rumbold's time as superintendent. (Lindenbusch, 234)
	Frescoes	Meanwhile, Nitkiewicz's research provided guidance on the restoration of the Wimar and Miragoli murals. The frescoes of the portraits and allegorical paintings were reproduced on canvas and applied over the plasterwork of the rotunda. (Lindenbusch, 235)

## Developmental History

1956	Renovations	A concrete floor was installed on the first level of the east wing, on the south side of the corridor. (Henderson, 22)
1957	Renovations	Work on the rehabilitation of the east wing was completed. (Henderson, 22)
1961	Restoration	Work commenced on selective repair/replacement of chimneys, parapets, and cornices. (Cornice Stone Replacement/Repair – Old Courthouse, NPS drawing 366-60043)

## Maintenance and Management of the Old Courthouse, 1965–present

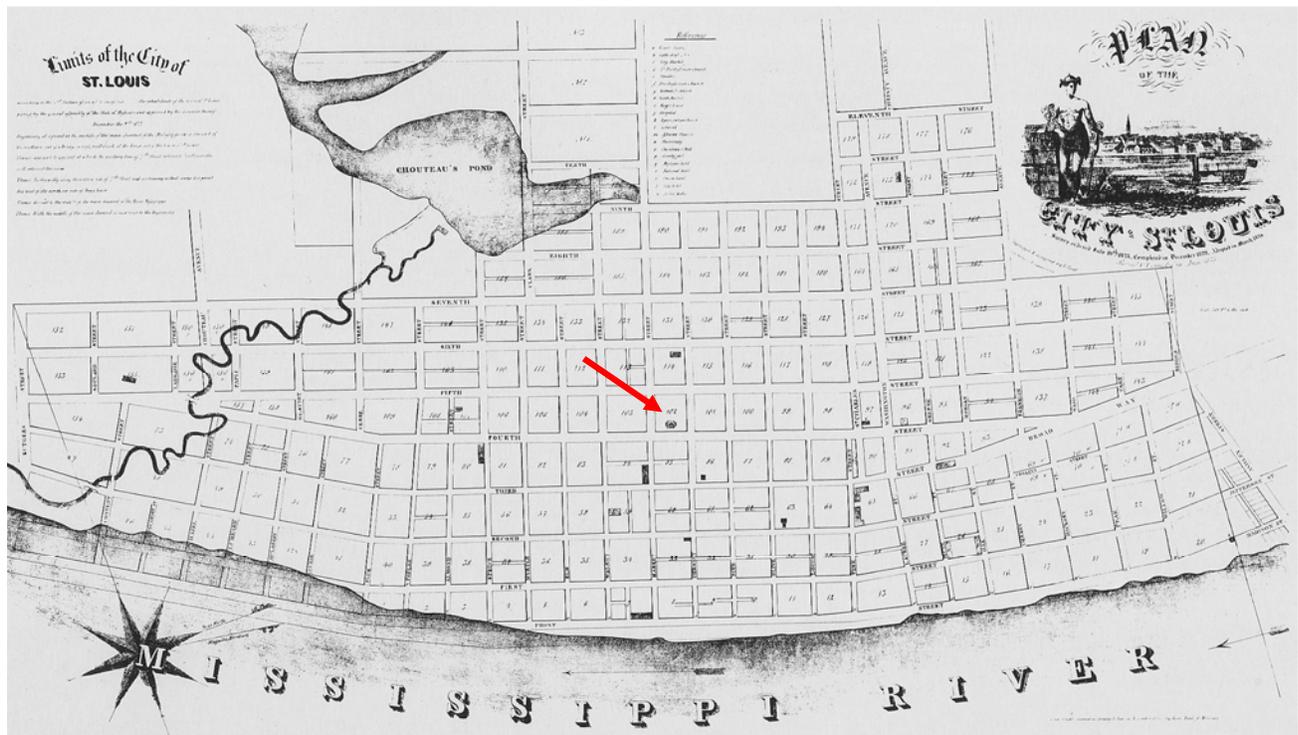
1966		Window air conditioning units first installed in the building.
1975	Restoration	Parapets and the tops of the horizontal cornice section were sandblasted, sealed, and treated with a water-repellent.
1978	Restoration	NPS initiated an extensive restoration of the drum and upper exterior of the dome and lantern, including replacement of the flagpole. (Exterior Rehabilitation and Partial Restoration-Phase I, NPS drawing 366-25001)
1983	Restoration	NPS initiated further restoration work on the Old Courthouse, including repair of masonry below the cornice line and exterior window replacement.. (Exterior Rehabilitation and Partial Restoration-Phase III, NPS drawing 366-25005)
1984	Restoration	NPS initiated work on the interior of the rotunda. A contract was let to re-plaster and paint the interior of the dome. (Interior Dome Repairs – Old Courthouse, NPS drawing 366-25008)
1986	Accessibility	A wheelchair lift was installed for barrier-free access to the first level of the Courthouse. (Moore, 178)
1980s		Small, split-system cooling-only units installed in the building.
1998	Maintenance	The chimneys of the Old Courthouse were repaired and restored. (Chimney Repairs – Old Courthouse, NPS drawing 366-20011)
2008	Renovations	Extensive renovations of the basement level of the north wing were initiated to create the Dispatch Center for security of the Gateway Arch, including HVAC alterations

2010	Maintenance	Roof sheathing and copper roof replacement was completed at the gable roofs.
2011	Maintenance	The roof cladding installed in 1941 was removed and replaced with new copper standing seam roofing. Catwalks were installed in attic areas within the interior.
2012	Maintenance	Exterior repairs to the cornices were performed. The work entailed replacement of approximately 600 original cornice stones that were cracked or deteriorated.

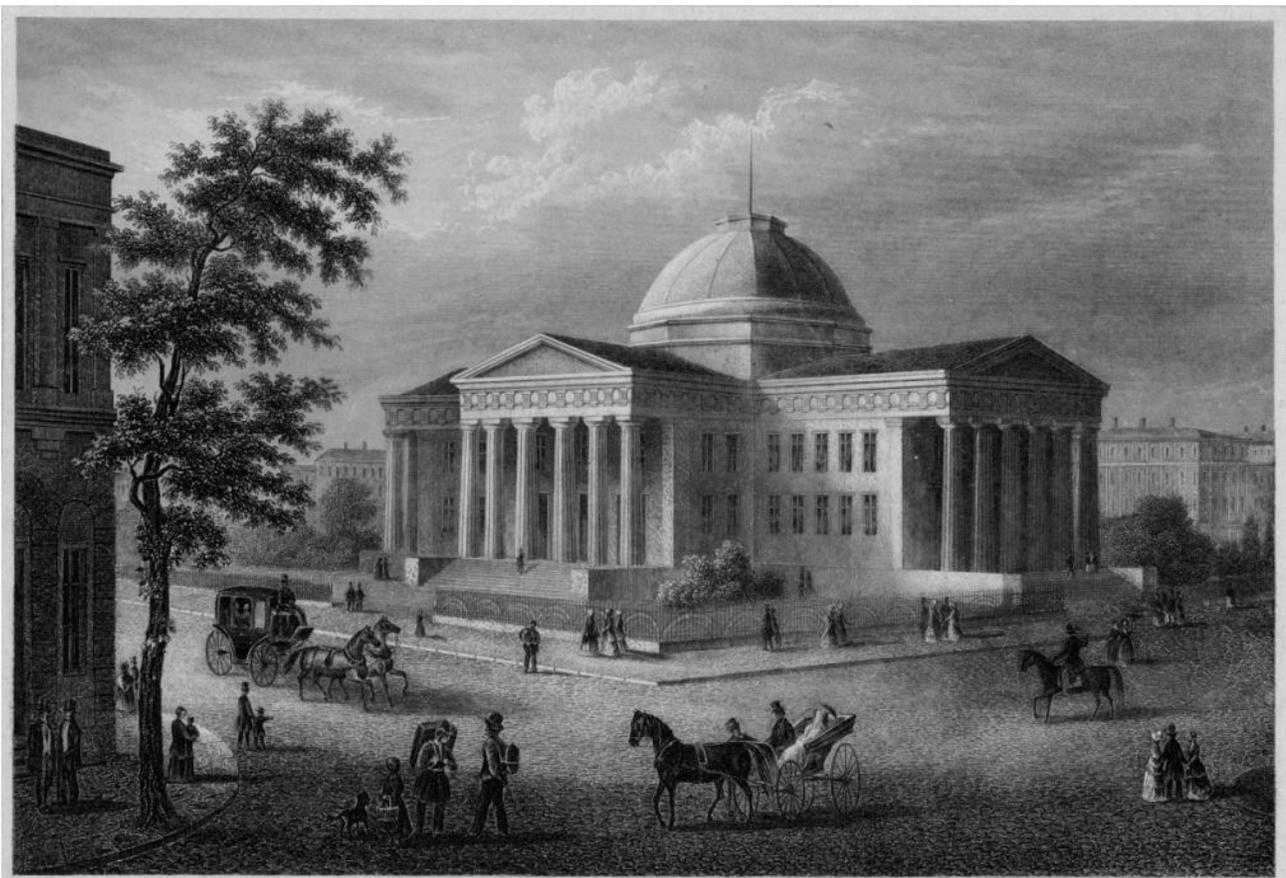


## Historic Images

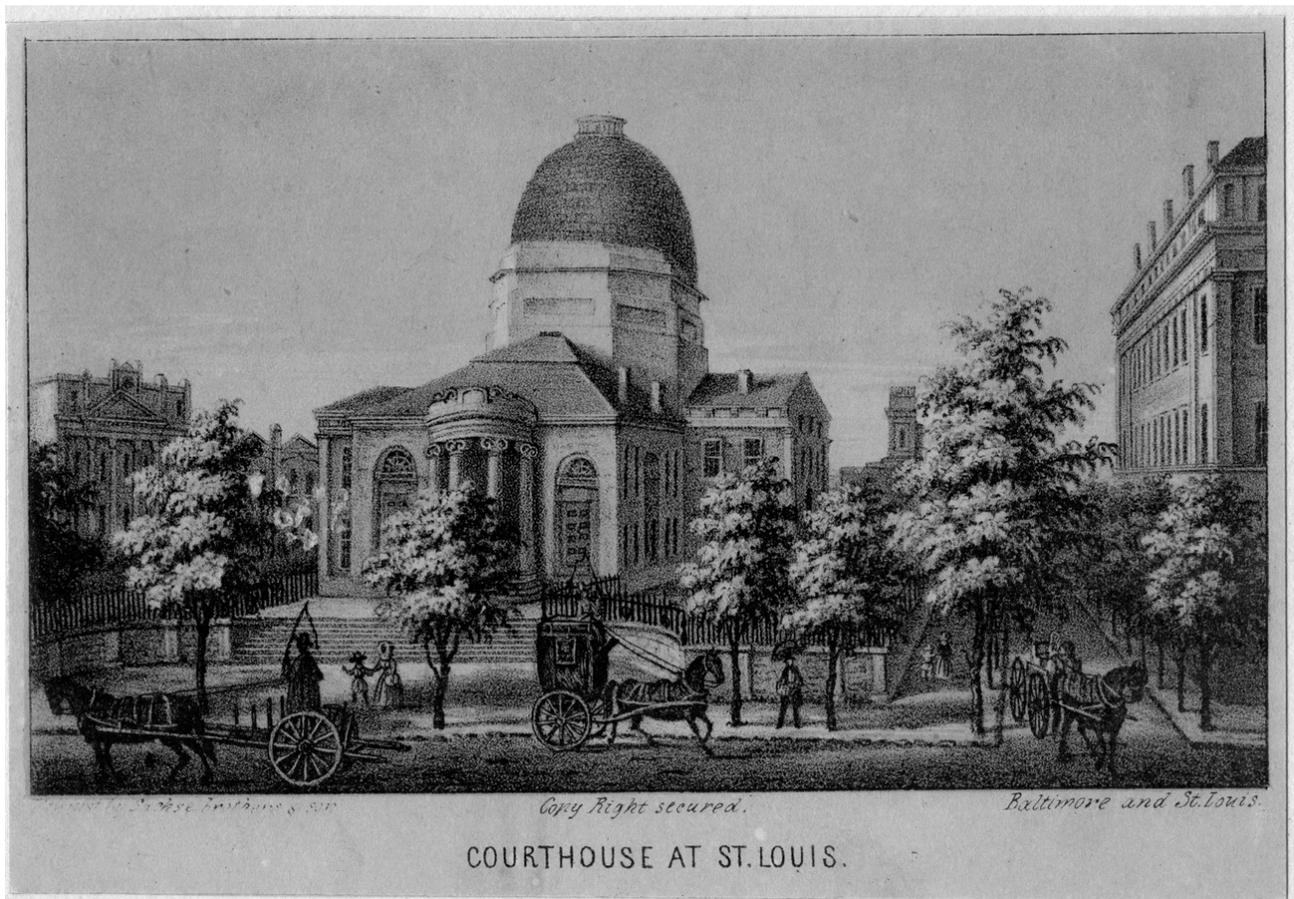
The images included in this section were obtained from the Jefferson National Expansion Memorial (JNEM) Archives at the Old Courthouse, the JNEM Visual Reference Collection, the Missouri History Museum (formerly Missouri Historical Society), the Library of Congress, National Park Service files, and *Saint Louis Illustrated*. For many of the images, no additional source information is available other than the reference numbers. For the images provided by the JNEM Archives, the information provided below is all that is currently available. Scans of images and any information on the back of the images were conveyed to the team based on the material flagged during the October 2011 site and research visit. The collection these images came from is called the Visual Reference Collection. It is not an archival collection nor is it cataloged as one. The box number is 18 and the title of the box is ‘OCH Exterior.’ These images are a grouping of exterior images of the courthouse that are just grouped by like subject matter. There is no provenance. In some cases, the photographer is listed on the back of the image.



**FIGURE 1.** 1835 map of St. Louis, Missouri, showing the courthouse site. View of the city block system associated with downtown St. Louis in 1835. The courthouse is sketched in within the block bounded by Fourth, Fifth, Market, and Chestnut streets, block 102 (indicated by the arrow). Source: Geography and Map Division, Library of Congress. “Plan of St. Louis in 1835, surveyed by R. Paul, drawn by G. Kramin, and printed in Philadelphia by Lehman & Duval.”



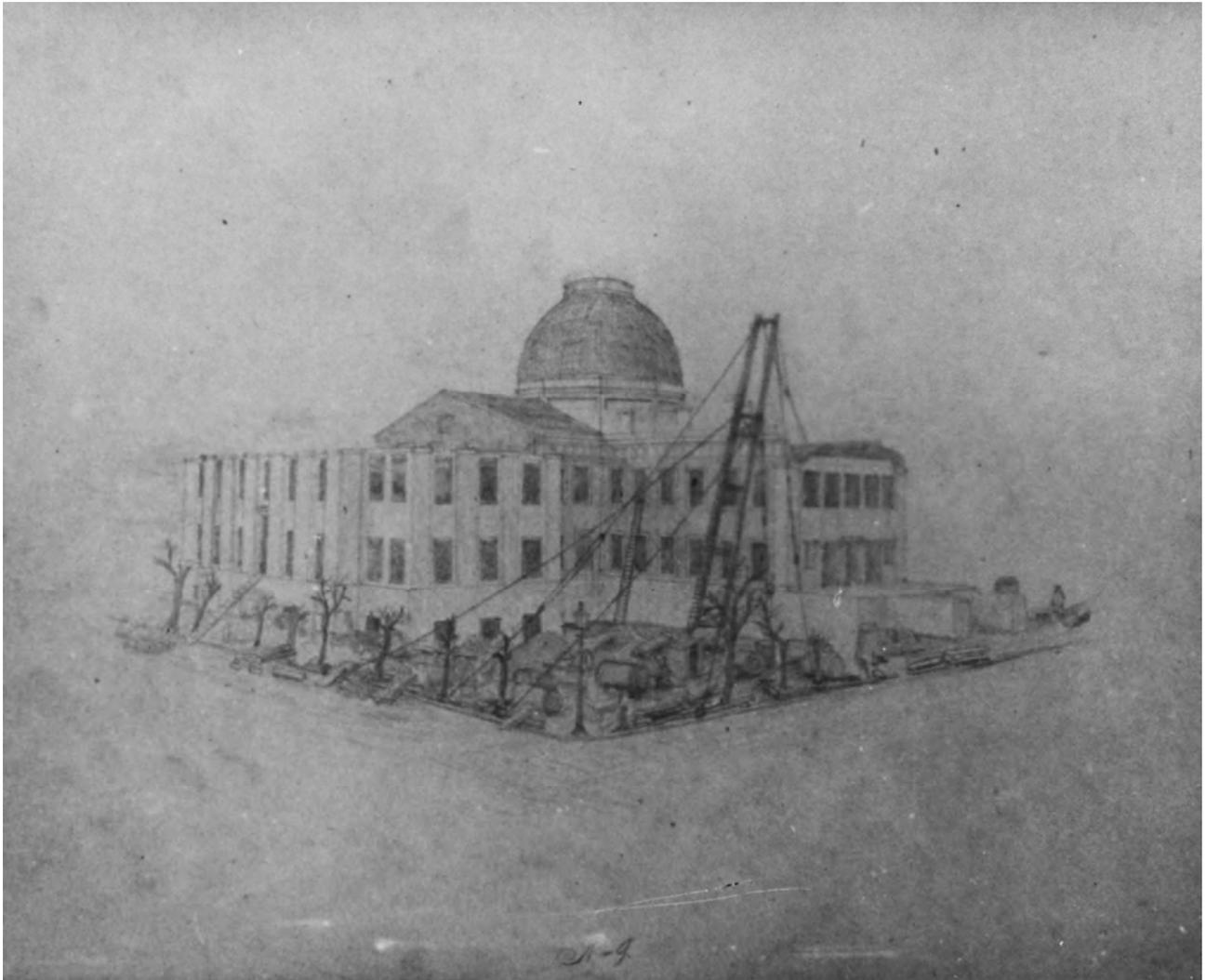
**FIGURE 2.** Artist rendering representing Henry Singleton's 1839 cruciform plan courthouse with the original concept for the dome and porticos at all four elevations. View of the courthouse from the northwest. Source: Missouri History Museum collection.



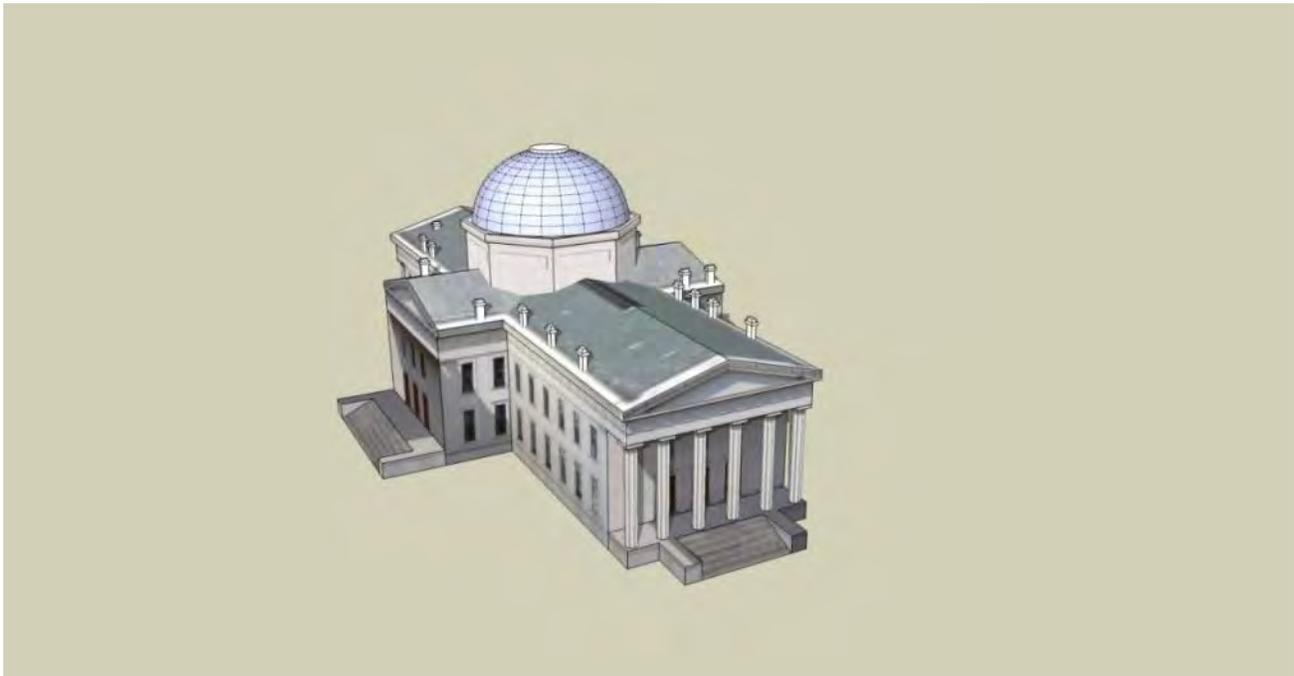
**FIGURE 3.** View of the courthouse from the northeast, circa 1850. By 1850, the original courthouse served as the east wing of a larger cross axial structure in plan as shown in this view of the building. The cupola of the 1828 courthouse was removed in 1845. A new dome connected wing extensions to the west, north, and south. This lithograph illustrates several aspects of the courthouse square at this time, including the perimeter wall and fence, the sidewalk that edged the city streets, and the locust trees planted along the perimeter of the square. Source: Missouri History Museum collection, reference n29037.



**FIGURE 4.** View of the courthouse in 1851, just before demolition of the previous courthouse and construction of the east wing. This view from the southeast illustrates the courthouse part-way through its expansion to accommodate the growing needs of the court. The courthouse completed in 1828 is visible at right, with the south transept and west wing visible at left. The construction process left the landscape of the square in a state of disrepair, as shown, with stored materials, and temporary access stairs and shed structures. Street trees remain visible along the perimeter of the courtyard in this view. Source: Half plate daguerreotype by Thomas Easterly taken in 1851. Missouri History Museum collection, reference n17030.



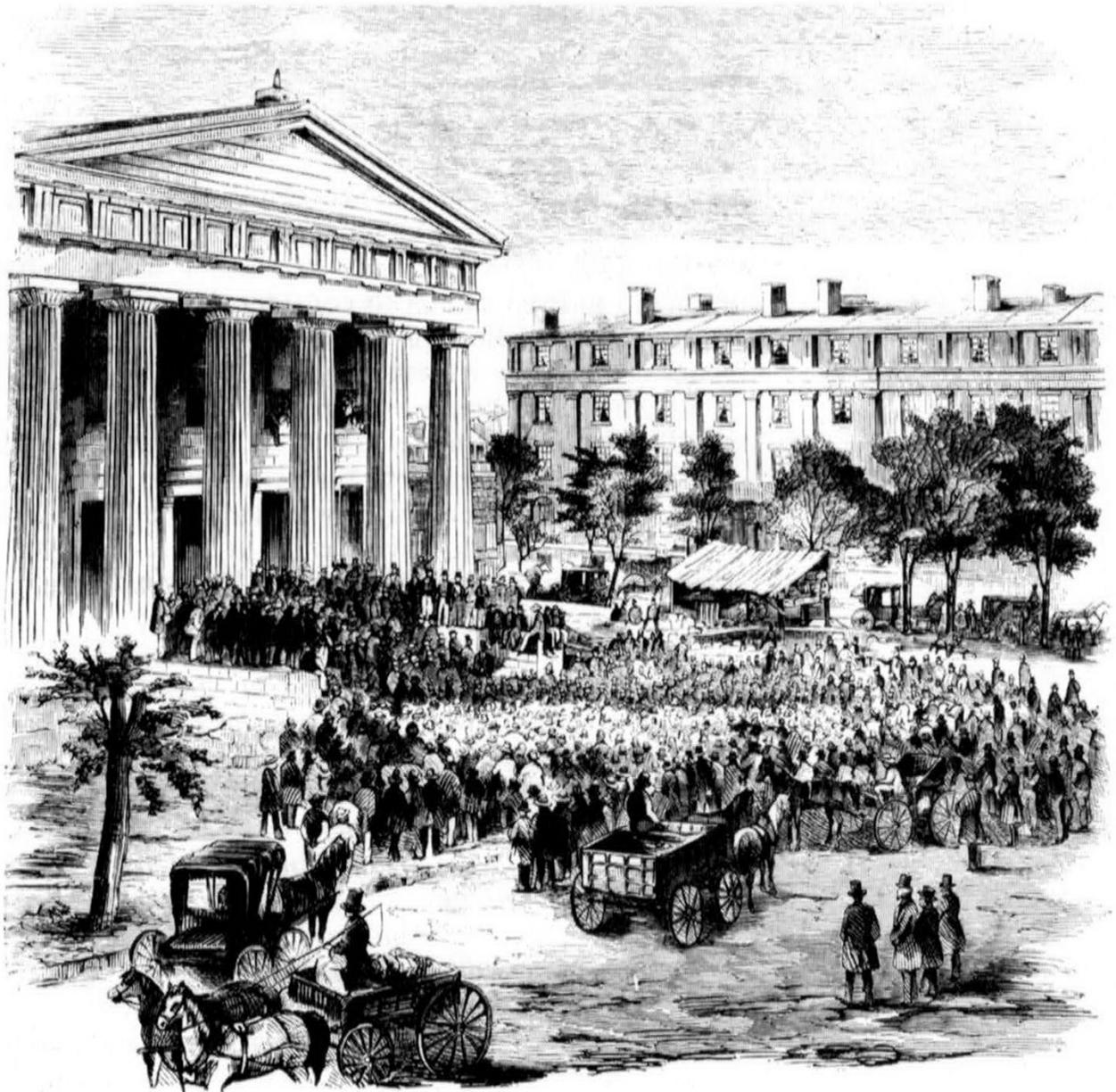
**FIGURE 5.** A sketch of the ongoing construction process dated 1855 illustrates the street tree and lighting elements that continued to edge the courthouse square. View looking northwest from Fourth and Market streets of east wing construction. Source: JNEM Visual Reference Collection, reference HSR3865. “Contemporary drawing of the construction of the east wing about 1855. Artist unknown.”



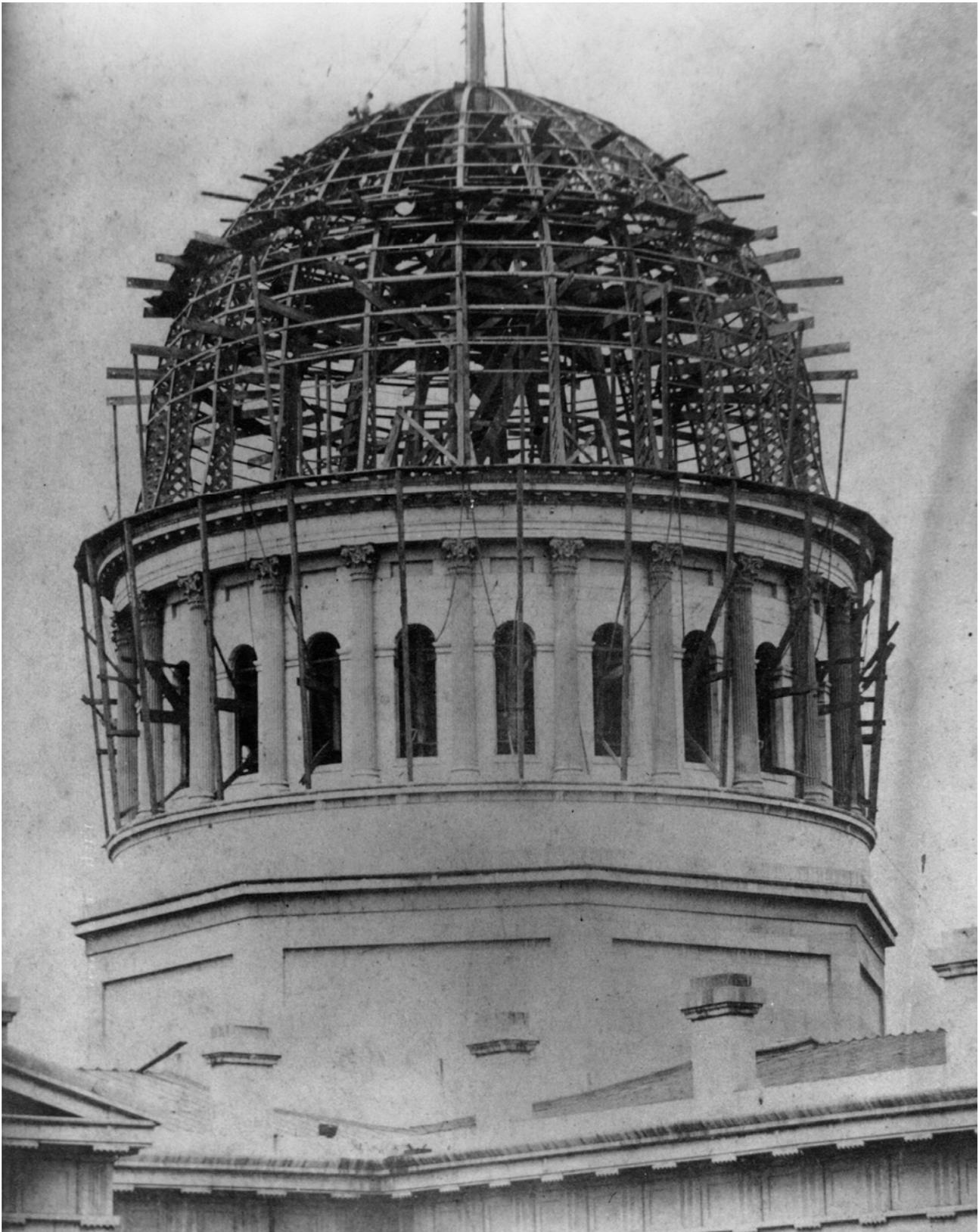
**FIGURE 6.** Computer-generated model representing Henry Singleton's cruciform plan with original dome construction. The view is looking at the courthouse from the southeast and is representative of the courthouse circa 1856. Source: BVH Architects.



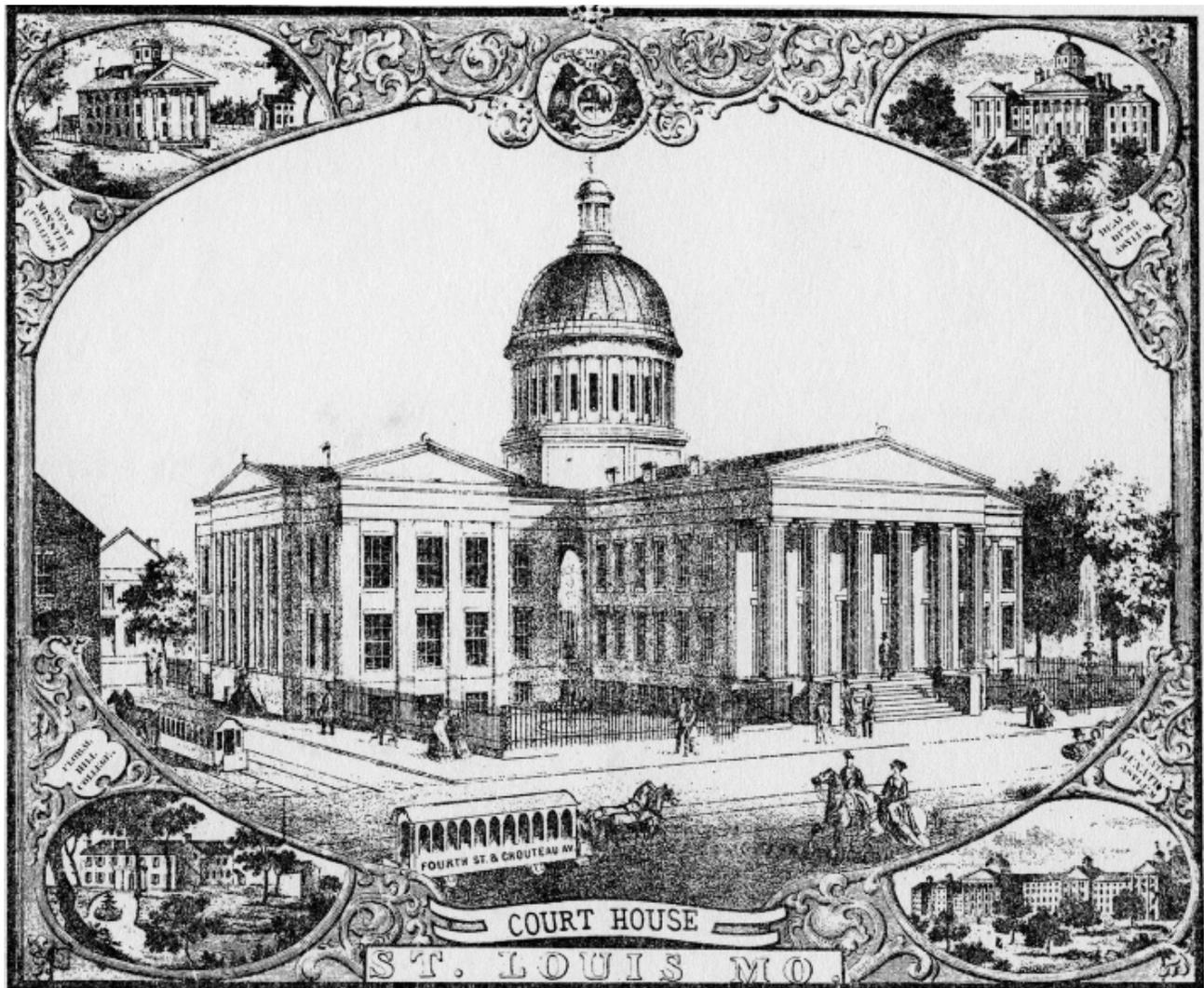
**FIGURE 7.** Computer generated model representing north and south wing additions with original dome. The view is looking at the courthouse from the southeast and is representative of the courthouse circa 1860 prior to construction of the Rumbold-designed dome. Source: BVH Architects.



**FIGURE 8.** Role of the courthouse as public forum. The steps of the east wing of the courthouse were used to hold property settlement auctions, slave sales, and to debate political issues. This 1856 sketch illustrates a crowd gathered to debate whether Kansas would be admitted into the Union as a slave or a free state. Source: Missouri History Museum. From a photo by John H. Fitzgibbon engraved in *Leslie's Illustrated Newspaper*, September 13, 1856. "When Kansas gained territorial status in 1854, the issue of whether it would be slave or free was left open, which led to an acrimonious and sometimes bloody national debate. The Old Courthouse was the natural place for St. Louisans to meet, so in August 1856 this meeting took place, which started in the rotunda, but soon spilled outside." *Leslie's Illustrated Newspaper*, September 13, 1856.



**FIGURE 9.** Rumbold-designed dome under construction, circa 1861. Source: Missouri History Museum collection, reference n10665. Photograph by unknown photographer.



**FIGURE 10.** Sketch of the courthouse, 1860s. The final element completed on the courthouse expansion was the dome, as illustrated in this 1860 sketch drawn from the corner of Fourth and Market streets looking toward the eastern portico, which also indicates the character of the square. Visible in the drawing is the perimeter wrought iron fence, the fountain in the southeast courtyard, a second fountain and shade trees in the northeast courtyard that may represent artistic license, and the completed east portico and stairs edged by cheekwalls. Source: Missouri History Museum collection, reference n29036. From a view published by Janicke & Robyn, Lithographers, in the early 1860s.



**FIGURE 11.** This 1866 view of the southeast courtyard includes the fountain surrounded by a wrought iron fence, perimeter fence and wall, walk leading to the south wing areaway, and street trees set within the sidewalks edging the city streets. Source: JNEM Archives. The view from the southeast in 1866, shortly after completion of the dome. The building has almost assumed its final exterior appearance although the cupola is not yet glassed in.



**FIGURE 12.** The northeast courtyard, 1868. This view of the northeast courtyard in 1868 illustrates the character of the public space, including turf lawn, inset with a central circular walk connected to additional sidewalks, and the walk leading to the north wing areaway. Street trees set within wrought iron or wood tree boxes and the sidewalks around the courthouse square are also evident. Source: JNEM Visual Reference Collection, reference HSR3877.



**FIGURE 13.** Old Courthouse as viewed from the northeast circa 1868. Rumbold dome is complete and the Old Courthouse is seen as it exists today. Photograph by unknown photographer. Source: Missouri History Museum collection.



**FIGURE 14.** The southeast courtyard looking northwest, circa 1895. By the 1880s, maintenance of the courthouse square had been curtailed due to funding limitations. In 1884, the perimeter wrought iron fence was removed, although the stone base was left in place. The turf became ragged with social trails compacting the soil. Several tiers of the fountain cascade were also removed by this time. Source: Photograph by Emil Boehl. Missouri History Museum collection, reference n10378.



**FIGURE 15.** The courthouse, 1904. Improvements were made to the courthouse square in anticipation of the throngs of visitors who would travel to the city for the World's Fair held in 1904. This parade of elephants may have been associated with the fair activities. Source: JNEM Visual Reference Collection, reference (VPRI-003840) HSR3840. Data sheet Todd Studios, Inc. #72680 5#.



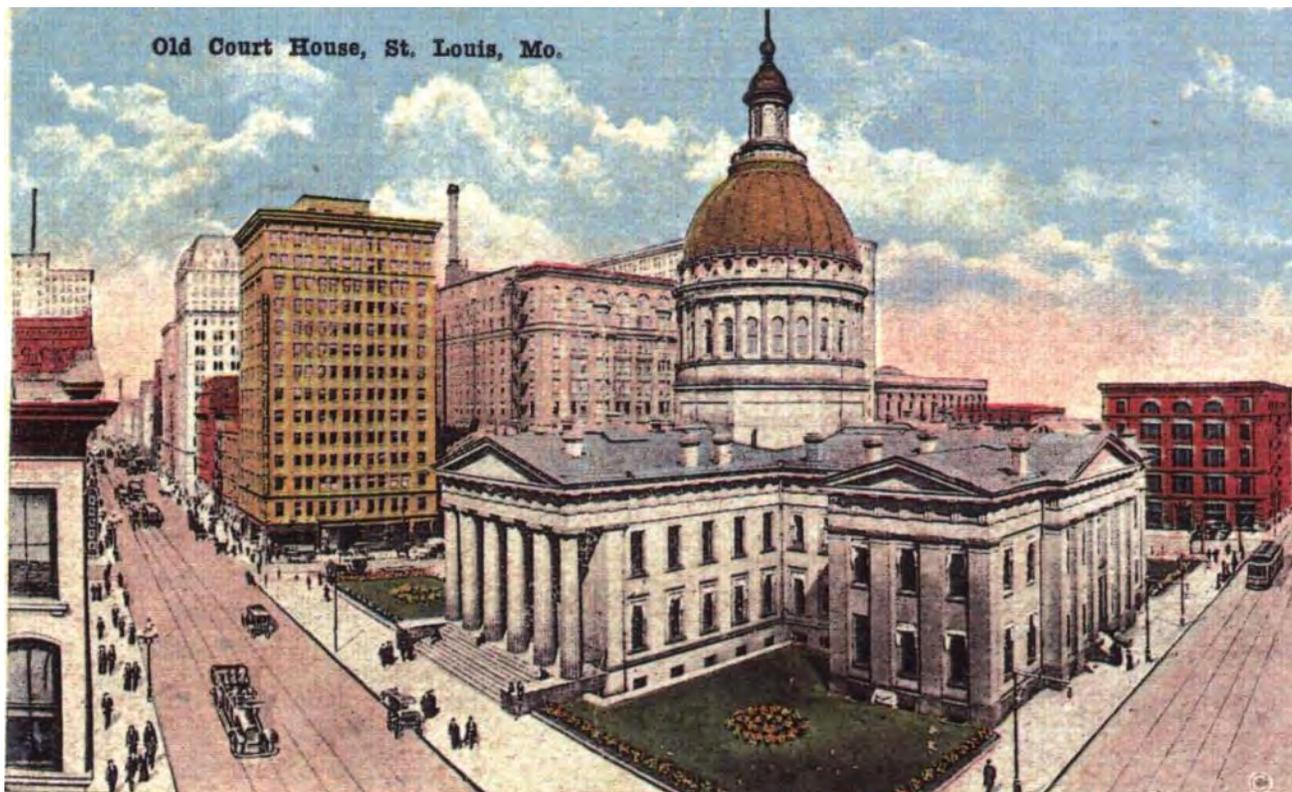
**FIGURE 16.** The Courthouse as viewed from the northeast circa 1906. The aesthetic proposed improvements to the building for the 1904 fair included repainting the entire exterior that was not carried out til 1906. Source: Photograph by Emil Boehl. Missouri History Museum collection, reference n11207.



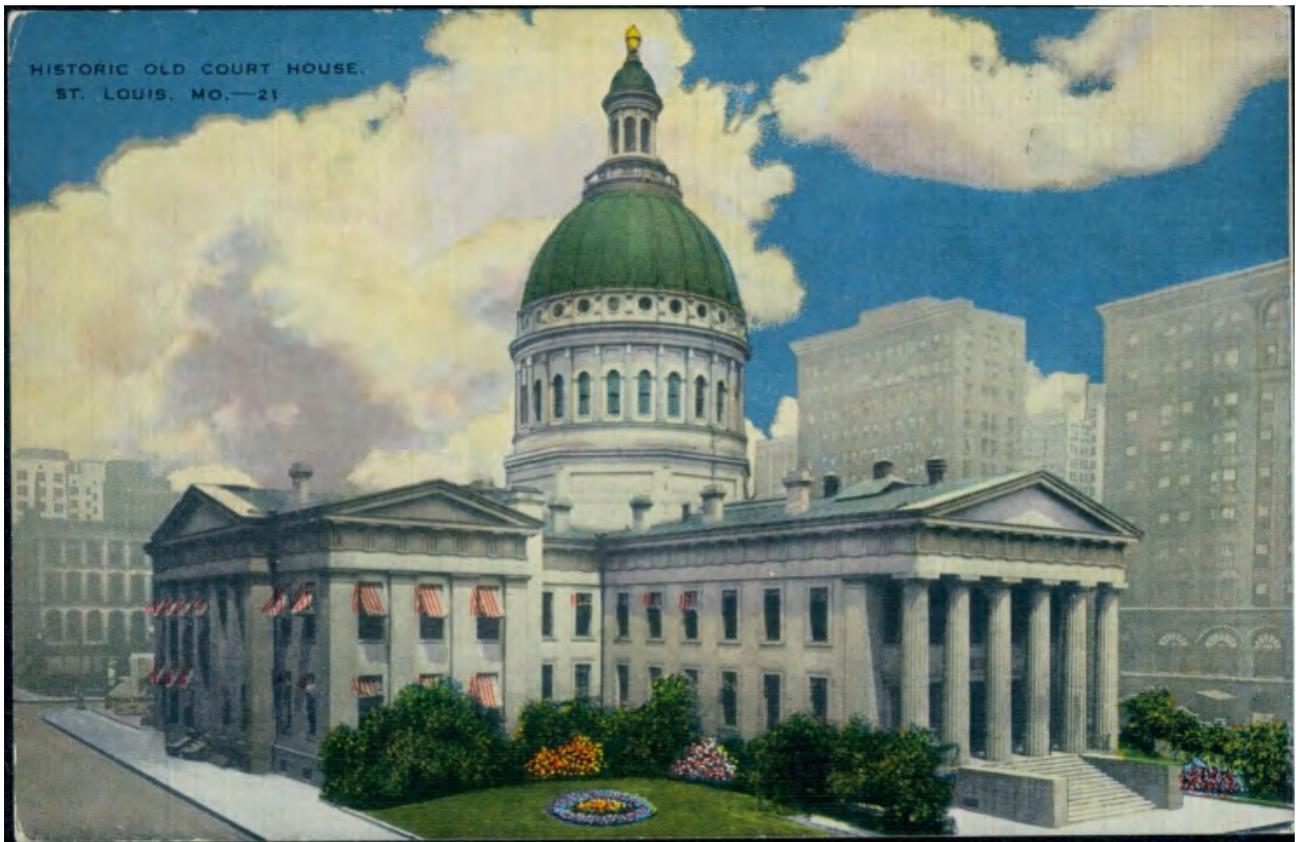
**FIGURE 17.** The northeast courtyard, circa 1906. In 1904, privet hedges were planted to replace the perimeter fences around each of the courtyards as shown in this photograph. A circular central planting bed featured seasonal floral displays. Source: JNEM Visual Reference Collection, reference HSR3901.



**FIGURE 18.** The Courthouse as viewed from the southwest, circa 1909. Source: Photograph by R. W. Saunders. Missouri History Museum collection, reference n10530 .



**FIGURE 19.** The southwest courtyard, circa 1910. In 1908, the city of St. Louis Park Department took over responsibility for maintaining the courthouse square. The department rehabilitated the privet hedge, improved the flower beds, and rejuvenated the turf. This postcard, undated, of the southwest courtyard likely conveys the appearance of the courtyard square around 1910. Source: JNEM Visual Reference Collection, reference HSR3847.



**FIGURE 20.** The southeast courtyard, circa 1912. Circa 1912, the St. Louis Park Department removed the hedges due to the challenges associated with maintaining them. Shrub borders began to replace flower beds in another attempt to limit maintenance. Around the same time, the St. Louis Chapter of the Daughters of the American Revolution placed a stone monument honoring the location of a historic road corridor in the southeast courtyard in 1913 that remained present until the 1940s, not shown in this view of the southeast courtyard. Source: Missouri History Museum collection, reference n02700.



**FIGURE 21.** The Courthouse east portico as viewed from the northeast, circa 1916. Note that the dome column capitals have been removed. Source: Missouri History Museum collection, reference n02711 . Photograph by W.C. Persons,.



**FIGURE 22.** The southeast courtyard circa 1925. During the 1920s and 1930s, maintenance of the courtyards continued to decline. Shrub and tree borders grew up in some of the spaces, while the turf declined. The historic sundial and stone DAR monument remained, as seen in this view of the southeast courtyard, but there were few other features located within the courtyards. A boilerhouse and a prominent chimney installed adjacent to the south wing in 1907 is also visible in this photograph. Source: Photograph by W. C. Persons. Missouri History Museum collection, reference n33957.



**FIGURE 23.** HABS documentation of the courthouse, April 9, 1934. Photographs taken in 1934 as part of one of the first Historic American Buildings Survey projects illustrate the character of the courthouse at this time. The view shows the eastern portico, with a portion of the southeast courtyard shown as a grass panel edged by stone curbing, and a row of trees along the south side of the east portico. Source: Library of Congress. HABS No. MO-96-SALU-8-2. Alexander Piaget, photographer.



**FIGURE 24.** HABS documentation of the courthouse, 1934. This view shows the northwest courtyard, with a row of trees, grass panel, and a stone monument describing the Dred Scott Case (the monument is in NPS storage). Grass panels are edged by low stone curbs and concrete city sidewalks. Light poles stand along the street margins. Trees edge the building in lines. Source: Library of Congress. HABS No. MO-96-SALU-8-10. From copy negative, photographer not identified.



**FIGURE 25.** Old Courthouse as viewed from the northwest, circa mid-1930s. Photograph by unknown photographer. Source: Missouri History Museum collection, reference n41277 .



**FIGURE 26.** The Old Courthouse at the start of NPS exterior repair work, July 15, 1942. Ownership of the courthouse was finally transferred from the city of St. Louis to the federal government in 1940. Photographs taken prior to National Park Service restoration of the building indicate the character of the courtyards at the time, including unkempt turf, social trails, refuse, and groves of trees along the building margins within the courtyards. Source: JNEM Visual Reference Collection. Reference (VPRI-003883) HSR3883. Data sheet indicates Runder-Markham Photo Co., Inc. "Contract #1-IP-17968, for painting the exterior of the Old Court House, Saint Louis, Mo. Busch & Latta Painting Co. Contractor. Photograph made July 15, 1942. Camera looking southwest from inside corner of fence."



**FIGURE 27.** Repair of the Old Courthouse, October 16, 1942. By the end of 1942, the National Park Service had cleaned, painted, and repaired the exterior of the courthouse. Note the new roofs at the gabled wings of the building, the removal of skylights at the wings, and the wooden construction fence around the site, indicating that this photograph may have been taken just as the Old Courthouse exterior work was being completed. The landscape of the courtyards would not be extensively renovated for another decade. Source: JNEM Visual Reference Collection, reference (VPRI-003863) HSR3863. Data sheet indicates “1942 painting, Old Courthouse, St. Louis. Looking NW from 7th floor of Fur Exchange Building. October 16, 1942.”



**FIGURE 28.** Jefferson National Expansion Memorial development, 1940s. As part of the establishment of the Jefferson National Expansion Memorial, a unit of the National Park System designated in 1935, a large part of the urban area east of the courthouse was demolished as seen in the foreground of this 1940s image. Source: JNEM Visual Reference Collection, reference (VPRI-003845d) HSR3845d. Data sheet indicates “1940s” and “East portico.”



**FIGURE 29.** Old Courthouse as viewed from the east circa 1950. Source: Photograph attributed to Massie. Missouri History Museum collection, reference n41280 .



**FIGURE 30.** The completed restoration of the courthouse square, July 1957. The National Park Service, using historic sketches and plans, developed a restoration plan for the courthouse courtyards that included replacement of the perimeter fence and wall, the fountain, repair of the sundial, rehabilitation of the turf panels, and planting beds. This image of the southeast courtyard precedes replacement of the fountain later in 1957. Source: JNEM Visual Reference Collection, reference (VPRI-00385) HSR3825. Data sheet indicates "Old Courthouse July 1957."



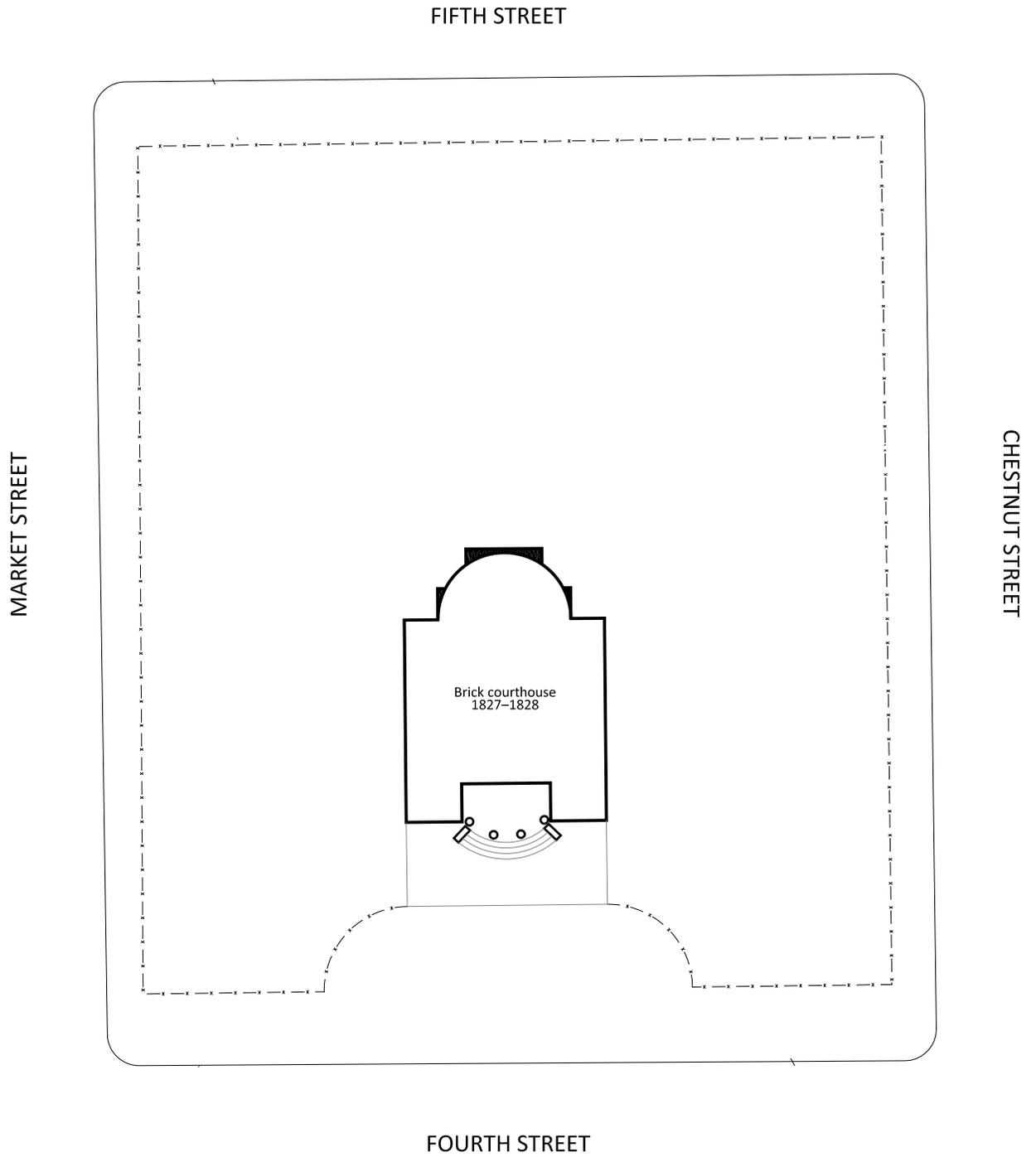
**FIGURE 31.** Completed restoration, after 1957. Once completed, the restoration included a fountain within the southeast courtyard, the repaired sundial set within a wrought iron fence, and a stone capital in the northeast courtyard salvaged from one of the buildings that had been razed to establish the park. Source: JNEM Visual Reference Collection, reference HSR3920.



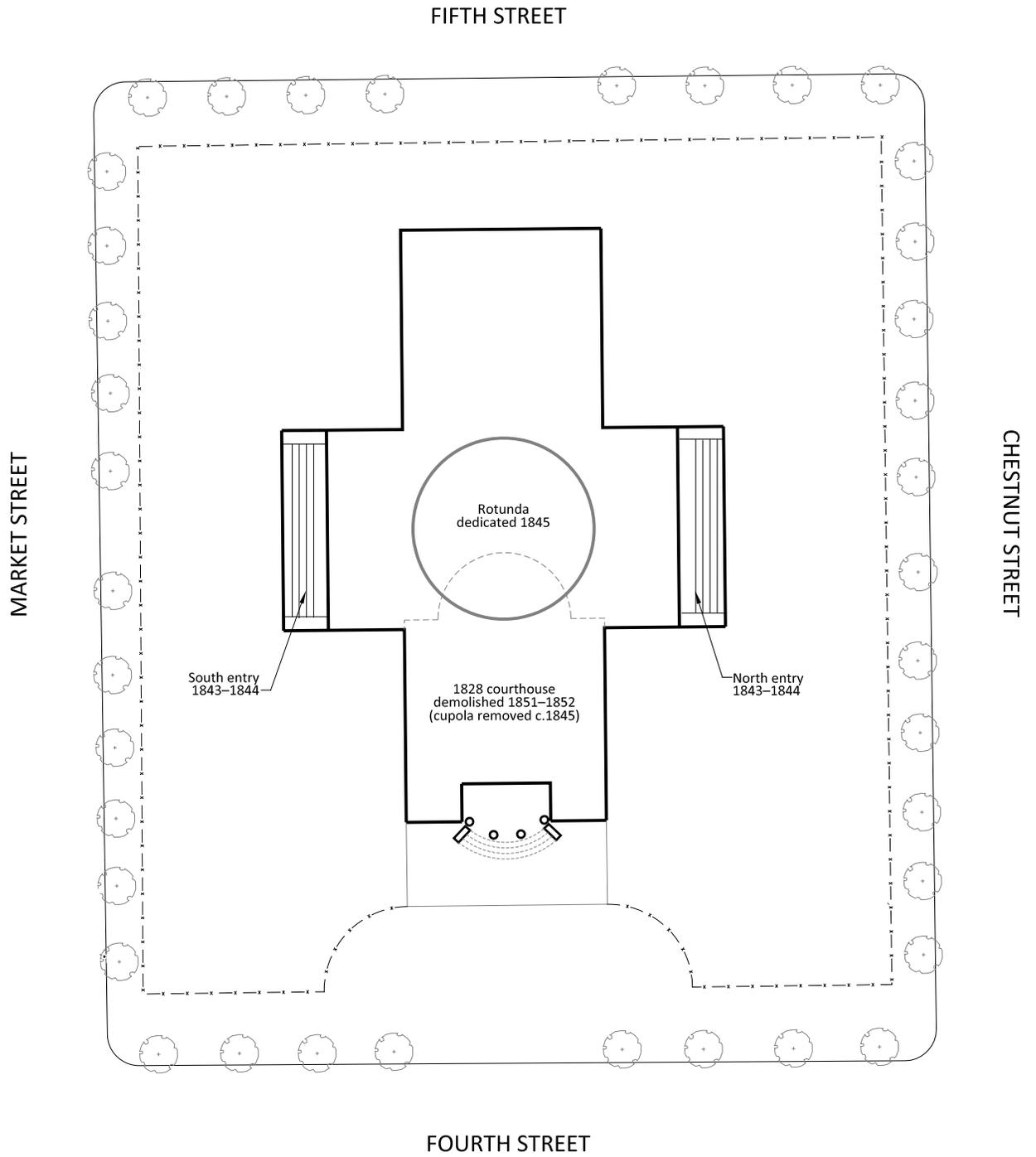
**FIGURE 32.** Political rally, 1976. The courthouse continues to serve as an important political symbol today. In 1976, a political rally was held in conjunction with the Presidential election outside the courthouse. Source: JNEM Visual Reference Collection, reference HSR4017.



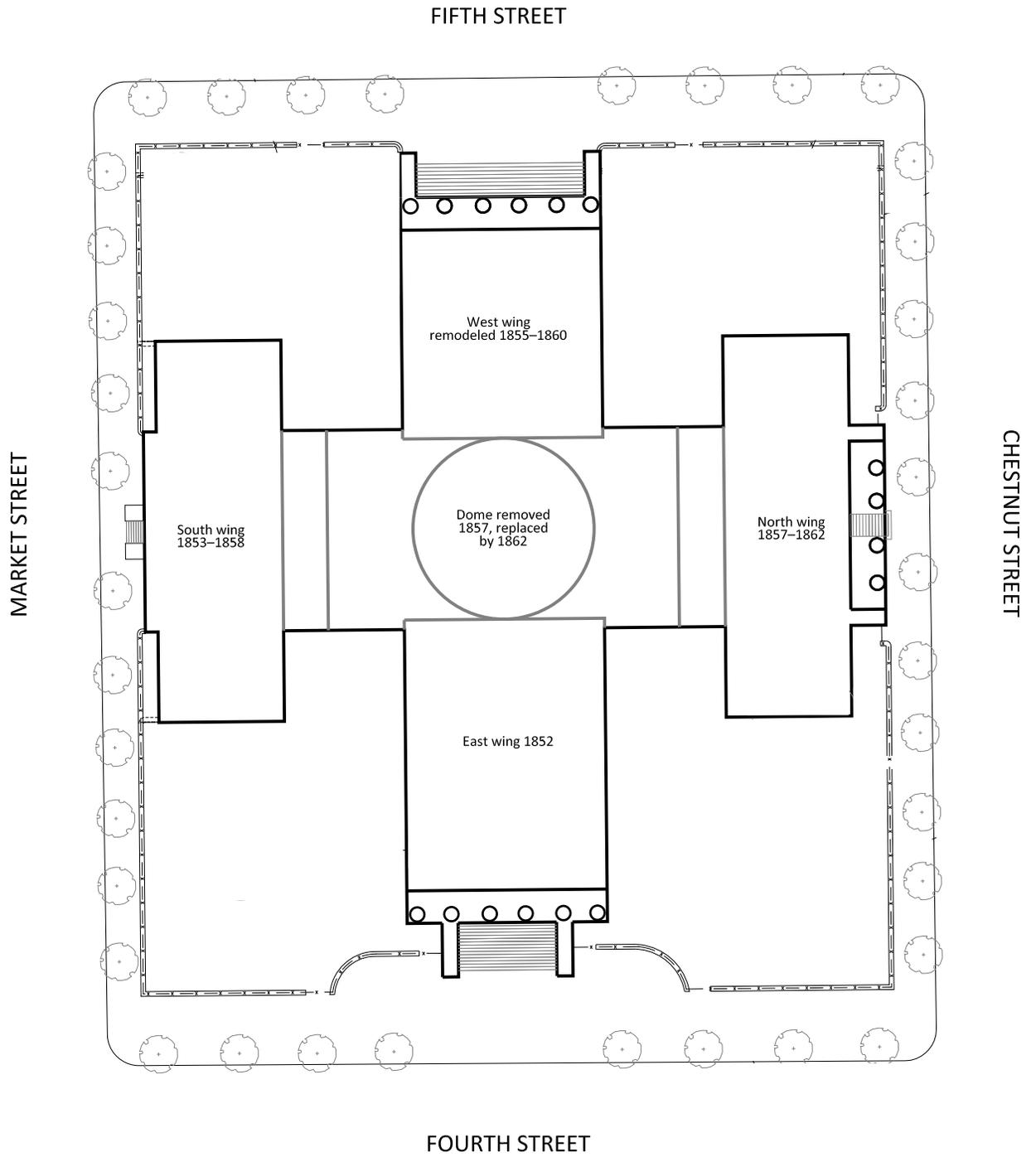
**FIGURE 33.** Bird's eye view looking west through the Gateway Arch toward the Old Courthouse, 1987. The Old Courthouse and the Gateway Arch continue to serve as the city's monumental core today. Source: Photograph by Alex MacLean, 1987. Reprinted in John W. Reps, *Saint Louis Illustrated; Nineteenth century Engravings and Lithographs of a Mississippi River Metropolis* (Columbia: University of Missouri Press, 1989), 179.



Old Courthouse  
Initial Courthouse Development 1823-1838  
Figure 34.



Old Courthouse  
 Courthouse Expansion 1838-1852  
 Figure 35.



Old Courthouse  
 Courthouse Expansion 1852-1862  
 Figure 36.



## Significance and Integrity

The National Park Service (NPS) through the National Register of Historic Places program identifies significance through the following criteria.

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That has yielded, or may be likely to yield, information important in prehistory or history.<sup>35</sup>

The period of significance is the time during which a property was associated with important events, activities, or persons, or attained the characteristics that qualify it for National Register listing. It usually begins with the date when significant activities or events began or occurred that give the property its historic significance; this is often a date of construction.

---

35. *National Register Bulletin: How to Complete the National Register Registration Form* (Washington, D.C.: National Park Service, National Register of Historic Places, 1977, revised 1997).

## Evaluation of Significance

As an existing historic site, JNEM was included in the National Register of Historic Places in 1966 when the register was established.

National Register documentation was prepared for the Old Courthouse and accepted on June 11, 1976. The documentation states that the courthouse is significant under criteria A and C in the areas of architecture, engineering, art, and law. The nomination was written for the Jefferson National Expansion Memorial and includes the Old Courthouse, the Gateway Arch, and the Old Cathedral. William Rumbold's courthouse dome, completed in 1862, is singled out for both its architectural and engineering merit, the decorative murals for their artistic merit, and the Dred Scott case for its importance in law.<sup>36</sup>

Under criterion A of the National Register, the Old Courthouse is significant at the state level for its role in the history of law in Missouri. The history of law is represented through the historic cases argued within the walls of the building. Dred Scott's landmark case against his owner drew national attention and was considered a catalyst of the Civil War. The Dred Scott courtroom is no longer present in the building due to extensive structural alterations in 1855. The Virginia Minor case was a landmark in the history of women's suffrage. These cases drew national attention, while the everyday functions of the courthouse as a place for the public to gather and a significant landmark in the city for travelers west support its significance under criterion A for its contribution to law and the legal system.

Under criterion C the Old Courthouse is significant for its architecture, art, and

---

36. Richard I. Ortega, *Jefferson National Expansion Memorial National Register Nomination*, March 3, 1976.

engineering. It is a significant example at the state level of Greek Revival architecture, retains important engineering features significant at the national level in the cast and wrought iron technology utilized in the dome, and contains frescoes of artistic merit at the state level in the rotunda.

The Greek Revival style was adopted for many public buildings of this era. During the period between the 1820s and 1860s, Americans became nostalgic for cultures far removed in history, and it was at this time that classical revival styles became firmly linked with specific building types and functions. Americans admired the Greek culture for their advancement in the arts and because they invented democracy. The symbolism of Greek and Roman architecture resonated with Americans as being a manifestation of their own democratic ideals. Practicing architects of the time were often the first generation formally educated in the practice, and studied the Greek Revival style with exacting detail. Significant buildings in America such as Thomas Jefferson's Virginia State Capitol (1787-1790), the United States Capitol and the White House (both dating to the 1790s), and Benjamin Henry Latrobe's Bank of Pennsylvania (1798) adopted both Greek and Roman styles. The Second National Bank of the United States in Philadelphia, constructed between 1818 and 1824 and designed by William Strickland in a formal and literal temple design, is often credited as one of the buildings linking the Greek Revival temple style with important public and commercial buildings. This building, and many others of its time, had sponsors that required that the buildings be Greek in design, often even as exact replicas of ancient temples. Many newly constructed state capitols after the turn of the nineteenth century adopted the style, thus linking it in history to public buildings. According to historian Leland M. Roth, the symbolism and power represented by the ancient Greek culture and the "massive

assertiveness of the style" were "appealing to the self-conscious nation."<sup>37</sup>

Henry Singleton, the architect for the Old Courthouse, designed its Doric columns and temple front to convey the formality and authority of the Greek Revival style. The Old Courthouse was built as the premier public building for the city of St. Louis, and served as a visual landmark for the city immediately following its construction and throughout its history. The Old Courthouse remains the earliest extant public building in St. Louis and manifests the details of this architectural style, as seen in other state and federal public buildings. It remains singular as a local courthouse in the city in the Greek Revival style.

Characteristic architectural details of this style include the symmetrical facades, pediments, and columns, which are excellent examples of the period. Facades were meant to mimic those of ancient Greek temples. The fluted Doric columns supporting the pediment at the east and west entrances of the building exemplify this expression. The details present in the two oval courtrooms with their fluted columns, the west wing coffered ceilings, and ornamental features extend the expression of the style to the interior spaces.

The artistic elements present in the dome are important examples of allegorical painting. Carl Wimar was a well-known western American painter at the time of this commission. He was born in Germany and came to St. Louis at the age of 15, where he studied painting. Wimar's subject matter focused primarily on the American West and on Native Americans. Wimar was commissioned to paint the lunettes in 1862, with August Becker, also a noted fresco

---

37. Leland M. Roth, *A Concise History of American Architecture* (New York, Harper and Row, 1979), 86–90.

artist specializing in landscape depiction, commissioned to paint the frescoes.<sup>38</sup> Wimar's four lunettes in the rotunda document significant events in St. Louis history: DeSoto discovering the Mississippi, Laclède landing at the site of St. Louis, the British-Indian assault on Spanish-held St. Louis in 1780, and a sunset view of Cochetopa Pass in the Rocky Mountains, representing migration to the West from St. Louis. Both Wimar and Becker were well-known artists, with paintings on display in museums across the country. The paintings in the Old Courthouse represent significant examples of their representational work located in a public building.

William Rumbold designed and engineered the Old Courthouse dome. His patented, innovative construction method for the dome as well as the early and extensive use of cast and wrought iron at the Old Courthouse is nationally significant. Doubts about the ability of the dome to support the structural space it created resulted in Rumbold constructing a model of the dome to illustrate his new design. Based on the success of this model and its implementation at the Old Courthouse, Rumbold patented the design. Research reveals that all of the cast and wrought iron that was used in the extant Old Courthouse, excluding portions of the dome, was probably smelted close to St. Louis and was fabricated within the limits of St. Louis' mid-nineteenth century commercial area. Furthermore, it is revealed that St. Louis was on the frontier of architectural cast iron development in the United States.<sup>39</sup>

Use of cast and wrought iron was central to the construction of the east, south and north wings and the reconfiguration of the west wing, beginning in 1852. This sophisticated and utilitarian use of cast iron in particular is comparable to east coast structures of the era such as the Cooper Union Building (1853–1859) and the Harper and Brothers Building (1854, demolished), both located in New York City. Iron at the Old Courthouse preceded both of these buildings.

It is apparent that its location on the Mississippi River and the role in river commerce, along with the great fire of 1849, provided a catalyst for the use and development of cast iron in building construction that placed St. Louis on the forefront of architectural cast iron production in the United States. Of the wealth of architectural cast iron buildings that were constructed following the fire, the majority of which were demolished circa 1940, the Old Courthouse remains as the earliest known example of the use of this new technology in the United States.

### Period of Significance

The existing National Register nomination identifies the period of significance for the Old Courthouse as 1800–1899 and 1900–, as given in the selection of dates provided in the nomination form. In the form, the period of 1900– does not include a concluding date.

The period of significance for this property begins in 1839, representing the beginning of the first phase of construction of the Old Courthouse, and extends to 1930, the date at which the courts moved from the building and it ceased to function as an operating courthouse.

Before the construction of the current Old Courthouse, the same site was occupied by a small Federal Style brick building constructed in 1828. The burgeoning court system soon required additional space, and the city

---

38. David Wishart, *Encyclopedia of the Great Plains*, [www.plainshumanities.unl.edu](http://www.plainshumanities.unl.edu), accessed October 30, 2012.

39. Additional information and context is provided in the section titled Special Issue: Cast and Wrought Iron, documenting the history of cast and wrought iron found within this document

proceeded with the construction of a new courthouse on the site. Although the cornerstone for the first portion of the new building was laid in 1839, the west wing and rotunda of the Old Courthouse was not completed and officially put in use until 1845. The period of significance for the Old Courthouse begins with the earliest use of the building in 1839. Over the course of the next seventeen years, various phases of additional construction resulted in the building as it appears today. William Rumbold's innovative dome was completed in 1862, drawing to a conclusion the more than two decades of construction of the imposing Greek Revival building that occupies the site today. After completion of the building's form in 1862, the details of its exterior appearance, decorative interior, and setting continued to evolve as items such as decorative ironwork, stone, murals, and landscaping continued to be introduced.<sup>40</sup>

From the beginning of the building's construction and throughout the remainder of the nineteenth century, the Old Courthouse was the site of significant legal activity including the Dred Scott Case and the Virginia Minor women's suffrage trial. The Old Courthouse also greatly contributed to the area's political environment as an open public forum. Events such as slave and property auctions, political rallies, and use of the site as a gathering place for settlers emigrating westward were held there.

During the early 20<sup>th</sup> Century many citizens, spurred by local newspapers, began a dialogue about what to do with their deteriorating waterfront, dropping real estate values, and a difficult downtown transportation system. These

ongoing discussions led to a desire among the citizens of St. Louis to improve the waterfront and downtown area. The Old Courthouse was not immune to these criticisms when it was vacated in 1930 so that all civil courts could be relocated to a new building. The courts vacating the building led to a change in its use, and a new chapter for the Old Courthouse, thus terminating the period of significance for the building.

**Post-1930 Activity.** The building stood semi-vacant and underutilized for ten years supporting multiple occupancies, including a commercial sewing enterprise, artists' club, and storage facility. The building continued to deteriorate. However, St. Louis residents, motivated to improve their city, passed a bond issue in 1935 to acquire a portion of the old downtown for the new Jefferson National Expansion Memorial (JNEM). The acquisition identified the Old Courthouse as a property worthy of preservation and as a result it was eventually transferred to the National Park Service (NPS). The following year (1936) a fire broke out in the north transept of the building, resulting in significant damage to the roof of the north wing and the adjacent rotunda.

St. Louis Mayor Bernard Dickmann approved ordinance 41,142, which authorized the Mayor and the Comptroller to deed the Old Courthouse to the U.S. government, on July 1, 1937. While the building stood mostly vacant after the fire in 1936, the action to deed the building was supported by months of work by the local office of the NPS, the Jefferson National Expansion Memorial Association, and the Missouri Historical Society to ensure that the Old Courthouse became part of the park by emphasizing the architectural importance of the building.<sup>41</sup> Finally in 1940 President Franklin D. Roosevelt formally accepted the Old Courthouse

---

40. John H. Lindenbusch, *Historic Structure Report: Historic Data Section - Part 1 and Historic Grounds Study* (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982).

---

41. Bryan, 13.

as part of JNEM.<sup>42</sup> The NPS followed with an aggressive schedule to build interpretive displays and open the building to the public. Exhibits in the Old Courthouse were open and ready for visitors on January 30, 1943.

After the exhibits were opened to the public, routine criticism was leveled at the NPS regarding the condition of the building. It was dirty, still retained evidence of fire and water damage, and needed a significant amount of updating.<sup>43</sup> The NPS embarked on planning for a major renovation of the building. In its deteriorated condition, the building, though architecturally and historically important, posed a serious fire hazard. Architectural Historian John Bryan and Park Superintendent Julian Spotts created a construction agenda to address all the fire hazards identified throughout the building. This activity was approved and funding appropriated to implement the proposed modernization. Throughout the remainder of the 1940s and into the 1950s, the NPS replaced much of the wood flooring throughout the building with concrete floors; however the findings of this investigation indicate that only the north wing floors were replaced with concrete. They replaced the copper roof on the dome, removed and replaced plaster, reconditioned and replaced windows and doors, and painted interior spaces throughout the building. The landscaping was updated, the nineteenth-century style fencing was reconstructed, sidewalks were added, and new exterior steps were installed. This project was a systematic and wholesale renovation that was completed wing by wing. Some of the replacement materials were in kind, such as removing all plaster regardless of condition and replacing with new asbestos plaster for better

fire protection.<sup>44</sup> Some wood floors were covered with linoleum or asphalt tiles, which were commonly used materials in the 1940s and 1950s. The west courtroom underwent a major renovation in 1955, while the east courtroom was cleaned and renovated.<sup>45</sup>

Julian Spotts and John Bryan created the aesthetic appearance of the public spaces that exists within the courthouse today. The character of the interior was established primarily through their selection of finishes for the exhibit rooms and their desire to retain and maintain the artistic murals in the dome despite their damaged condition from the fire. Bryan selected the dusty pink or rose and light green paint colors that are present in the rotunda today. He deliberated greatly over public access to the building, the response of the public to the renovated spaces, and the need to convey a pleasant and updated color scheme that would be inviting to the public. He chose very specific colors that required custom paints; in fact, the Busch and Latta paint company wrote the Lecoutour Construction Company of St. Louis, which was awarded the paint contract in 1955, requesting “. . . use of a different paint for the rotunda because the paint colors requested by Mr. Bryan, Supervising Architect and Mr. Spotts will be hard to tint in the government specification paint.” The colors in a new paint formula were approved and additional cost (nearly three times the government’s initial paint cost) was absorbed by the contractor.<sup>46</sup> This

---

42. Executive Order 7253, December 21, 1935.

43. Julian Spotts, *Monthly Report to the Department of the Interior*, April, 12, 1946.

---

44. Asbestos increased the tensile strength of plaster, thereby improving its flexibility and heat resistance, both desirable qualities in the fireproofing effort. Asbestos was used in plaster from the 1940s through the 1980s. Products containing asbestos were not made after 1978 although existing products were still available for use.

45. Julian Spotts, *Monthly Reports to the Department of the Interior, multiple reports*, 1946–1955.

46. Letter from Busch and Latta Paint Company to Lecoutour Construction Company, May 12, 1955.

color scheme was implemented, although it had no basis in the historic appearance of the rotunda.

From the time the NPS acquired the Old Courthouse in 1940, the agency spent more than \$603,395.78 on renovations to the building and landscape. It is notable that the cumulative construction cost of the building was \$1,199,871 by 1862. By the late 1950s the NPS had completed major renovations to the building. It was not until the mid-1970s, when the work began to appear to have aged, that another major effort was undertaken to update the building.

Currently, research conducted for this study strongly supports a period of significance from the beginning of construction in 1839 through the end of the building's use as a courthouse in 1930. Consideration may be given to extending the period of significance to include the change in use of the building from courthouse to museum and interpretive center, such as through 1960 or later. However, additional research is required to evaluate and build a historic context for museum and interpretive use, including research related to other NPS properties converted for use as a museum. Further analysis of historic integrity for this latter period would also be required.

## Character-Defining Features

One of the keys to establishing a valid preservation plan for any building is to identify the character-defining features that contribute to the building's significance. Identifying these features will support future work plans and preservation efforts.

The character defining features of the Old Courthouse identified below are based on historical research, development of the building chronology, technical evaluations of specific features (such as encaustic tile and cast and wrought iron), and visual documentation of the existing conditions. The illustrations of character defining features presented below include exterior features, interior spaces and features, and structural elements. All of the features identified below contribute to the proposed 1839–1930 period of significance. The fold-out figures that follow illustrate the location and appearance of these character defining features.<sup>47</sup>

### Exterior.

- The Old Courthouse exterior walls and plan as a prominent, civic structure occupying the center of a dedicated city block (completed approximately 1862).
- The materials and smooth texture of the exterior walls. The smooth-finished large limestone blocks that make up the exterior walls contribute to the character of the formal Greek Revival style (completed approximately 1839–1859).
- Broad stone exterior steps, edged by limestone block cheek walls, that lead to

prominent porticoes located along the east and west facades of the courthouse. These steps provide elevated access to the main public entrances to the building along with the portico cast iron railings and areaways (completed approximately 1839–1859).

- Columned porticoes elevated above the surrounding grade of the sidewalk and building courtyards. The Greek Revival style is also exemplified by the fluted Doric columns and pedimented facades and illustrates the civic importance of the building (completed approximately 1839–1859).
- The dome designed and patented by William Rumbold. The dome represents Rumbold's technological achievements and was used to identify the building from differing points throughout the city, particularly as a guide along the Mississippi River, as the building and the dome were visible from significant distances (completed 1862).
- The cupola and lantern on top of the dome, with the prominent flagpole and oculus windows (completed 1862).
- Greek Revival styling represented in the friezes, entablature, fluted columns, and pilasters throughout the exterior building facade (completed between 1839 and 1859).
- Window and door penetrations, sizes, and configuration throughout the building. (Completed between 1839 and 1862 with most altered internally c. 1912)
- The size, shape, materials, and configuration of existing roof and chimneys (chimneys date to 1839-1859)

---

47. Lee Nelson, *Preservation Brief 17: Architectural Character Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character* (Washington, D.C.: National Park Service, 1988).

with selective repair/replacement in 1961 and again in 1998; current configuration of roof dates to the NPS remodeling of 1940).

### Interior.

- The rotunda volume and vertical space expressed by the dome, which defines the main public forum on the interior main floor. The rotunda space is defined by the pilasters and columns on multiple floors, the projecting and stepped round landings at each upper level, the low railing and balusters on each upper floor, and the fenestration patterns including the oculus windows (completed 1862).
- Masonry vaults and cast iron and brick masonry arch floors at the first level of the east, south, west, and north wings, which are all (except the West Wing) from original construction of these wings (completed between 1852 and 1859).
- Cast iron and brick masonry arches at the second and third levels of the east, south, west, and north wings, which are all from original construction or alterations during the early evolution of these wings (completed between 1839 and 1859).
- The interior of the dome designed and patented by William Rumbold. The dome caps the interior volume and is a significant structural element as well (completed 1862).
- Artistic paintings present throughout the rotunda. These include the lunettes and the large allegorical figures located in the dome (completed 1862).
- Cast iron stairs connecting the main floors to upper levels. Three significant stair towers are located in the transverse east hallway and the north and south transepts. These cast iron stairs are integrated into the walls of the building and rise without visible supports to the floors above, providing a unique floating appearance. The cast iron stairs between the first and second, and second and third levels in the North Wing, and the second and third levels in the east and west wings show extraordinary detail, with fluted cross bars forming the balusters and detailed florettes at each intersecting bar on the stairs between the first and second floors. The circular stairs from first to third level in the east wing, as well as the first to second level stairway in the south wing, have straight post balusters. (completed approximately 1857).
- Faux painted wood doors and trim. Wood doors and trim throughout the building are faux painted in a faux bois pattern. This pattern is replicated throughout much of the trim and doors in the building and remains a significant feature. The majority of faux graining in the building dates to a 1976 campaign by the Ticholec firm to repaint the trim. However, surviving earlier campaigns of faux bois graining are extent within the building from the historic period. Surviving window casings in the first floor, north wall, West Wing reveals hidden signature blocks for artisans who painted the graining on this window casework. The first reads “T.K. Lutz” with a number “81”, the second window has name “Mohr”, the third window has the inscription “Woods 81”. The “81” reference is understood to indicate 1881 as the date the work was done. The NPS staff also strongly suspect that the graining of the casework around the

doors and the inner side of the doors leading to the corridor and also to the building exterior in Room 104 survives to the suspected 1881 campaign of painting because this work does not bear a resemblance to the 1976 repainting campaign. Additionally doorways in the north cross hall on the second and first floors have been identified by graining experts as dating to c. 1900-1910. Other areas such as the interiors of the vestibules at the west, north, east and south entrances to the building on the first floor seem to have an older graining campaign than the 1976 application. The earlier graining tends to be darker from actual choice of pigment, the painted grain is finer than the 1976 application, the variation between the base coat and the graining coat is less dramatic than the 1976 application, and the use of smudging technique to replicate the cross-grained areas of quarter-sawn oak panels is significantly more subtle in the early work.

- Restored second floor courtrooms, both east and west. Each courtroom's character is defined by its oval shape, flooring pattern, ceiling configuration, columns, and furniture configuration, namely the relationship of the judge's bench to the seating areas (completed approximately 1845–1860, remodeled c. 1870 and 1903, with extensive renovations 1954–1955).
- Encaustic floor tiles present in various areas throughout the building. The tiles retain a three color scheme with a red, buff, and blue tile making up the floor pattern (installed circa 1860-1870).
- Stone floor in the rotunda and hallways. The large stones present in the main floor of the rotunda and transept halls vary in size and contribute to the character of the significant public spaces (completed 1859).
- Marble tile floor in the southeast gallery, room 122 (1860).
- Tapered wood strip floor at the second floor rotunda gallery (completed approximately 1862 and rehabilitated 1869).
- Wall, floor, and ceiling finishes from the former public restrooms in the basement of the west wing, and the vaulted brick structure visible in the basement (completed 1910, vaulted brick c. 1841-1842).
- Open sequence of spaces between rotunda, wings and staircases.
- Window casework and hidden blinds in rooms S104, S114 and S115. The casework and blinds are believed to date to the construction of the wings and were left in place during extensive 1912 window work that removed blinds from all other windows. The S104 window casework may be left over from the Dred Scott courtroom.



## Character-defining Features of the Old Courthouse Building

- Prominent flagpole atop dome.
- Cupola, lantern and railing on top of dome.
- Oculus Windows
- Dome, designed and patented by William Rumbold.
- Window/door penetrations, size, proportions and configuration throughout the building.
- Window surrounds and sills.
- Materials and smooth texture of the exterior walls.



- Scroll work
- Chimneys
- Standing seam copper roof
- Greek Revival style represented in the friezes, entablature, cornice, fluted columns and pilasters.
- Entry doors
- Columned porticos elevated above the surrounding grade of the sidewalk and building courtyards
- Granite stone steps, edged by limestone block cheekwalls that lead to a prominent portico.

Exterior Viewed from the Southeast  
Figure 37.



# Character-defining Features of the Old Courthouse Building

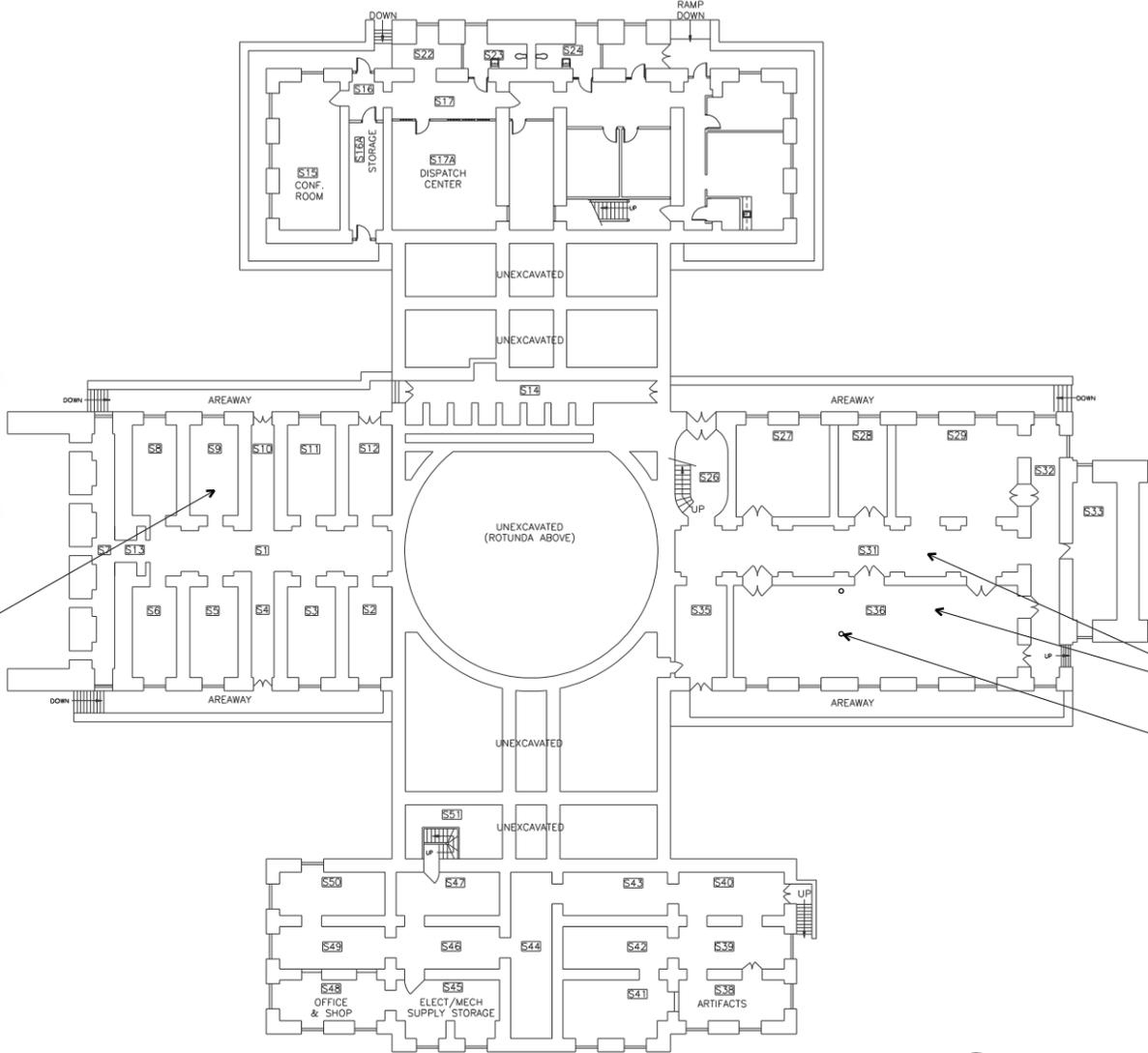


A1



A2

- Comfort Station stalls (A1, A2)



Basement Level Floor Plan



Figure 38.



A3



A4

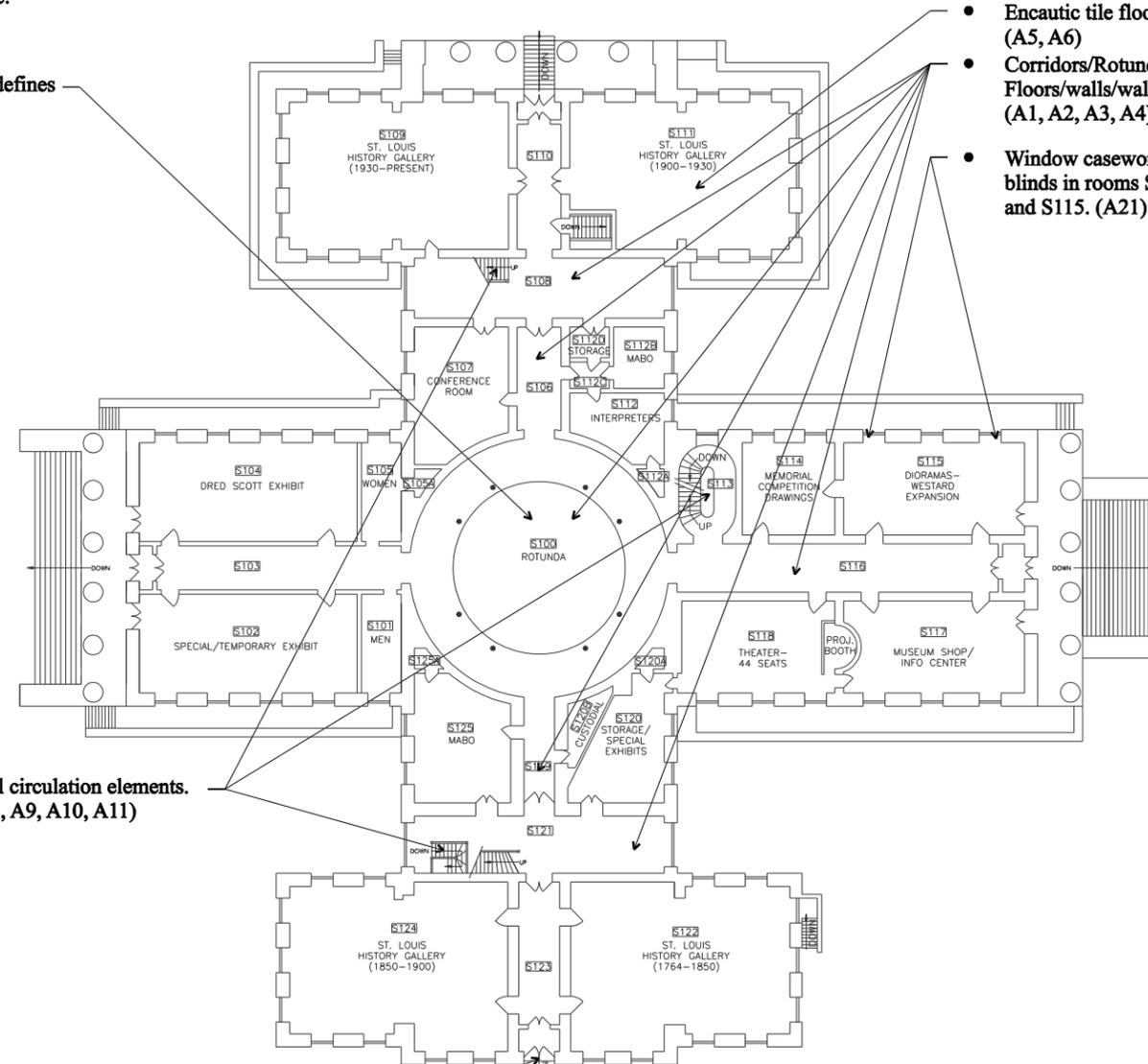
- Masonry arches in basement. (A3, A4)
- Cast iron corinthian columns in basement. (A3)



# Character-defining Features of the Old Courthouse Building

- Open sequence of spaces between rotunda, wings and staircases. (A15)
- Interior spaces -height of windows/fenestrations and volume. throughout building. (A12)
- Rotunda volume and vertical space expressed by the dome defines the main public forum on the interior of the main level. (A15, A16)

- Faux painted wood doors and trim. throughout building. (A17, A18, A19, A20)
- Encaustic tile floor located in room S111. (A5, A6)
- Corridors/Rotunda Floors/walls/wall base/mouldings/doors/surrounds (A1, A2, A3, A4)
- Window casework and hidden blinds in rooms S104, S105 and S115. (A21)



First Level Floor Plan  
Figure 39.

- Vertical circulation elements. (A7, A8, A9, A10, A11)

- Entrance doors (A13, A14)

## STONE FLOORS



A1



A2

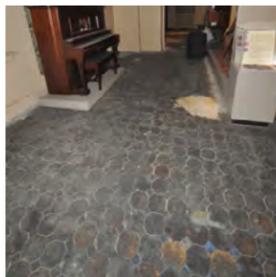


A3



A4

## ENCAUSTIC FLOOR TILE

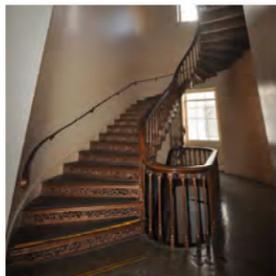


A5

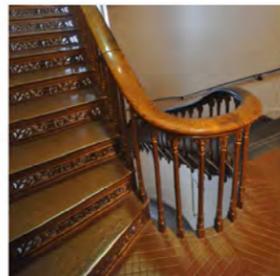


A6

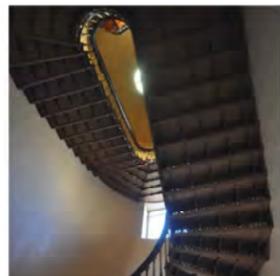
## VERTICAL CIRCULATION ELEMENTS



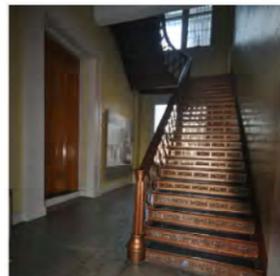
A7



A8



A9



A10

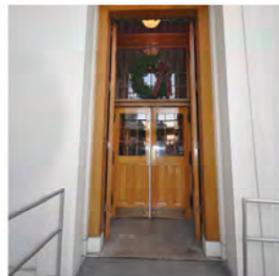


A11

## VOLUME OF INTERIOR ROOMS/HEIGHT OF WINDOWS



A12



A13



A14



A21

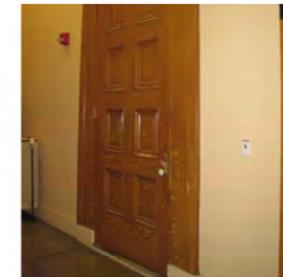
## FAUX PAINTED FINISH



A19



A20

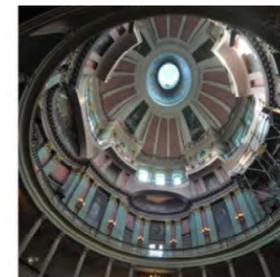


A17



A18

## ROTUNDA SPATIAL VOLUME



A16



A15



# Character-defining Features of the Old Courthouse Building

CIRCUIT COURT #4 (ROOM S207)  
(A1, A2, A3)



A1



A2



A3

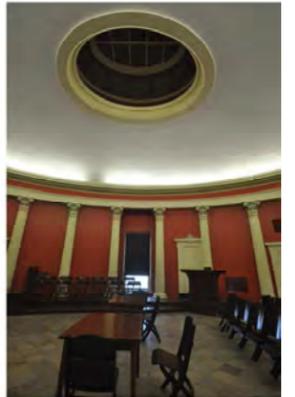
CIRCUIT COURT #13 (ROOM S220)  
(A8, A9, A10)



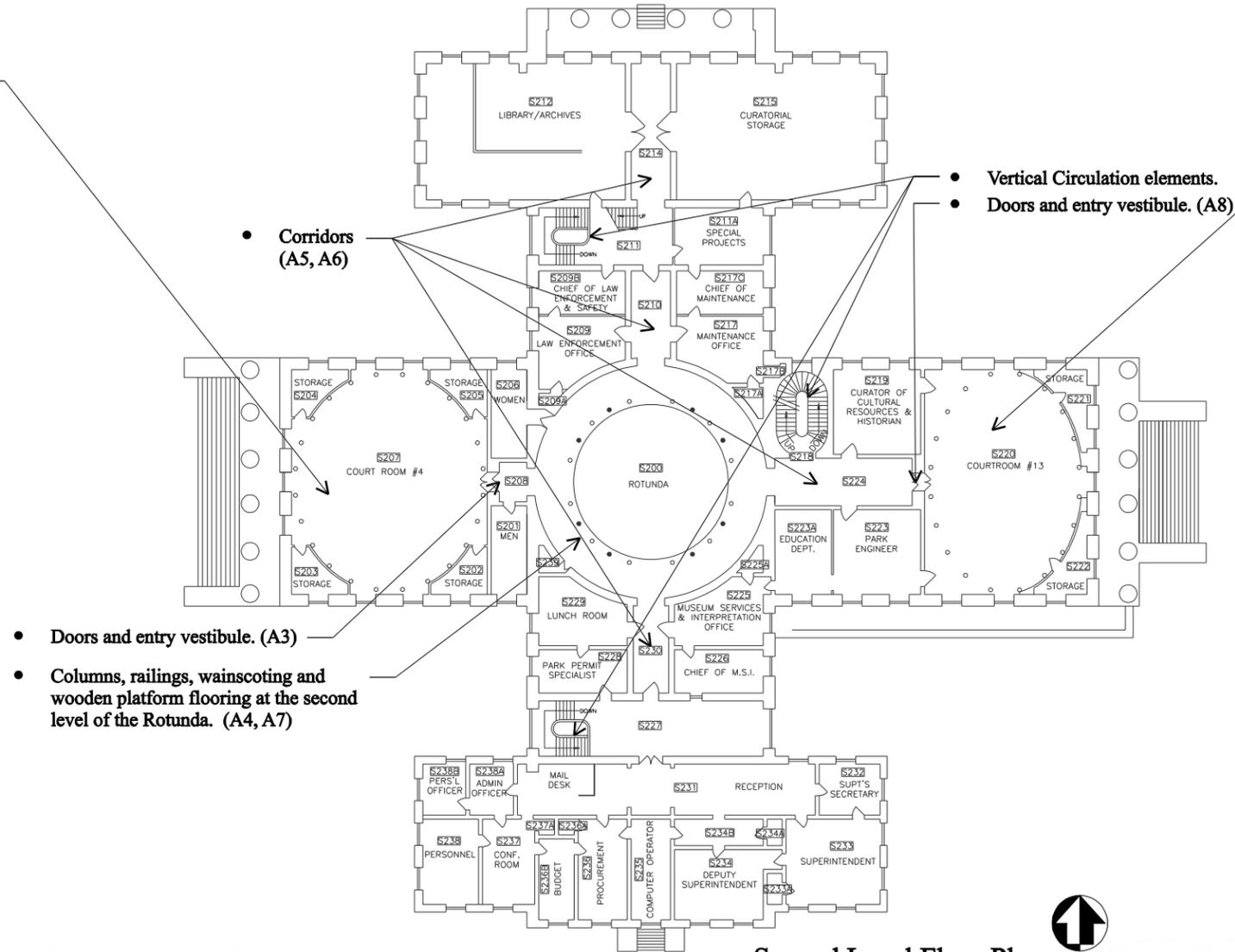
A10



A8



A9



Second Level Floor Plan  
Figure 40.



A4



A5



A6



A7







## Assessment of Integrity

Assessment of integrity is based on an evaluation of the existence and condition of the physical features that 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 the National Register Bulletin: *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.<sup>48</sup>

Even if a building is significant for its relationship to historic events, the materials and features of the space that define its physical character and embody its significance must be present for the building to be significant. The tangible features of both the interior and exterior should be preserved to express the building's significance. The integrity of the Old Courthouse is evaluated below in terms of the

most important physical aspects of the building that convey its historic character.

**Integrity of Location.** The Old Courthouse retains a high degree of integrity of location in relationship to its site. The building location and the boundaries of the site are unchanged since its construction, beginning in 1839.

**Integrity of Design.** The Old Courthouse retains a high degree of integrity of design. The exterior of the building remains primarily the same, with no additions or significant alterations from its date of completion in 1862. No exterior additions to the building have been added, thus retaining the original cruciform footprint of the building. The dome, which caps the building and because of its height dominates the sight lines to the river, retains both structural interest and significance in its construction method and aesthetic, and is also important as the location for paintings in the rotunda. The Greek Revival style, as represented in this building through applied ornament and structure in the columns, pilasters, and pedimented entrances with grand stairs, has not been altered since its completion. The overall aesthetic and siting on the block remain intact. The position of the building in the center of the block with landscape features at each corner continues to reflect the plans and intent of the original designers. Some features, such as a heating plant located in one of the courtyards, have been removed, and the roof has been restructured and replaced. However, the rebuilt structural features match the original exterior profile and appearance of the building and therefore do not significantly affect the building's integrity of design.

**Integrity of Setting.** The Old Courthouse retains a moderate degree of integrity of setting. The building's setting on a dedicated city block has been retained from its original period of construction. This block, despite some minor alterations such as the construction and eventual

---

48. *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*, 44–45.

removal of a heating plant, has remained a green space. However, beyond the immediate setting of the block, the downtown and waterfront areas of St. Louis have changed significantly from the context of urban commercial and warehouse buildings that were present during the nineteenth century. When the planning for JNEM began these buildings were removed to accommodate construction of the Memorial. The Old Courthouse has had a clear view to the river since these buildings were removed.

**Integrity of Materials and Workmanship.** The Old Courthouse retains a moderate degree of integrity of materials and workmanship. The dome, with its cast and wrought iron construction, retains the features of William Rumbold's innovative and patented design. The original cast and wrought iron structure remains intact since the building's completion in 1862; however, the roof structures over the four wings were replaced during NPS ownership of the building in the 1941. Interior spaces and their materials and workmanship have been altered in many areas of the building, with walls, flooring, some wall plaster, large numbers of door and window casings, some original glass (in the rotunda and on the third floor levels), original structural iron, brick and stone work, ceilings, and finishes replaced under National Park Service ownership. Certain historic materials remain, such as stone and tile flooring, and decorative plaster finishes and paintings in the rotunda. The basement, with its brick vaulted ceilings and former public restroom area, retain intact features of historic materials and workmanship.

**Integrity of Feeling.** The Old Courthouse retains a high degree of integrity of feeling. The siting of the building, the formal character of the exterior facades, and the spatial arrangement of the interior volumes including the massive dome space are intact. Upon entering the building the visitor is immediately aware of the nineteenth-

century character of the space. Courtrooms with spectator chairs, the bench, and witness stands identify the use of the space, and their interpretation allows the visitor to feel the sense of legal proceedings during the historic period. Other characteristics such as the volume of the rotunda, vertical space, and open areas both in and around the building express the feeling of the important public building the courthouse was and remains.

**Integrity of Association.** The Old Courthouse retains moderate integrity of association. Although it is still recognized as a courthouse and for its association with the important events that occurred there, it has not served as a courthouse for many years. However, the building retains its visual dominance and iconic stature as an important civic structure on a dedicated city block, which has been constant since its construction.

**Historic Fabric of the Original First Floor West Wing Courtroom.** Because of the significant Dred Scott trials held in the first floor west wing courtroom in 1847 and 1850, the NPS has requested a specific integrity assessment of this area. Construction of the west wing began in July 1839, and the first floor courtroom was completed and occupied by March 1843.<sup>49</sup>

At the time of the trials, the first floor of the west wing consisted of a large, rectangular courtroom with fluted decorative columns arranged in an oval. Possibly, some corners of the room were partitioned off as jury rooms.<sup>50</sup>

This courtroom was subdivided by two new bearing walls in 1855, creating a central corridor (present-day room 103) and two smaller, rectangular courtrooms (present-day rooms 102 and 104) for the Circuit Court and the Criminal Court. As part of the 1855 work, smaller jury rooms were partitioned from the west end of each space.<sup>51</sup> The partitions defining these rooms no longer exist. The 1855 work also apparently included complete replacement of the second floor structure above the courtroom, resulting in removal of the original wood second floor framing and the installation of iron beams supported by the corridor walls. One possibility is that the large decorative columns that defined the interior of the first floor courtroom from 1843 to 1855 were reinstalled within the new

second floor courtroom above, in an arrangement similar to the original courtroom.

The following integrity assessment discusses the investigation of possible remnants of the 1847–1850 courtroom that are present and evaluates their level of integrity. Selected inspection openings were made during this study to determine if interior finishes dating to the pre-1855 appearance of the courtroom remain intact in the spaces.

**Ceiling.** The existing ceilings in all three spaces are suspended plaster ceilings installed circa 1955–1959 during the NPS renovation of the building.<sup>52</sup> An access hatch was opened in room 104 to inspect the space above the suspended ceiling. The 1855 structure, consisting of brick vaulting supported by iron beams, is exposed in this area; no evidence of pre-1950s ceiling finishes were apparent (Figure 42). Access was not available for inspection above the suspended ceilings in rooms 102 or 103.



**FIGURE 42.** Above the suspended plaster ceiling in room 104, remnant wall plaster is visible at the corridor; however, no pre-1940s ceiling finishes are present. Photograph by WJE, January 11, 2012.

**Walls.** The corridor (room 103) walls were added in 1855, so none of these walls contain finishes that were present in the Dred Scott era.

- 
49. David G. Henderson, *Historic Structure Report: Architectural Data Section, Phase Three: Interior Preservation*. (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982, rev. 1986), 3.
50. St. Louis *Daily People's Organ*, January 25, 1843, p. 2, col. 1; St. Louis *Daily Evening News*, March 13, 1855, as transcribed in Charles E. Peterson "Memorandum for the Files," May 28, 1946, Bryan Papers, Box 1, Missouri History Museum.
51. John H. Lindenbusch, *Historic Structure Report: Historic Data Section - Part 1 and Historic Grounds Study* (St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982), 44–45.

- 
52. Henderson, *Historic Structure Report: Phase Three*, 23, 51.

In room 104, the existing structural west, north, and east walls were present as part of the pre-1855 courtroom. When viewed through the ceiling access hatch in room 104, flat wall plaster with several layers of wallpaper was visible above the 1950s suspended ceiling on the corridor facing wall (refer to Figure 42). In room 102, only the existing structural west and south walls were present as part of the pre-1855 courtroom; the north wall is the corridor, and the east wall is a partition for a bathroom added circa 1950s. No wall finishes which may date to the Dred Scott era were observed above the suspended ceiling from the access hatch.

During the 1980 interior renovation of this wing, a decorative marbled paint scheme was revealed on the north wall of room 102 (Figure 43). This scheme may date to the 1860s.<sup>53</sup> The decorative scheme was not restored as part of the 1980 work, and the walls were painted a solid color.



**FIGURE 43.** The north (corridor) wall of room 102 in the west wing. A circa 1860s decorative scheme was exposed during the 1980 interior renovation when a built-in display case was removed. Source: Park Ranger Nancy Hoppe.

**Flooring.** The *Historic Structure Report: Phase Three* states that the original flooring in the west wing, installed in 1842, was brick paving laid on edge in a herringbone pattern.<sup>54</sup> Similar flooring exists in room 120 on the east side of the south wing (Figure 44). The flooring in the first floor west wing courtroom was covered with carpeting in March 1853.<sup>55</sup>

The corridor (room 103) presently contains exposed limestone flooring. It is assumed that this flooring was installed as part of the 1855 construction of the corridor, since the flooring pattern at the perimeter relates to the corridor walls. In room 102, existing carpeting was pulled back at the northeast corner of the room, revealing an underlying wood strip floor with the boards running north-south (Figure 45 and Figure 46). In room 104, existing carpeting was pulled back at the southwest corner, revealing linoleum, 1/4-inch-thick plywood underlayment, composition tile, an underlying fill material up

---

53. Compare Henderson, *Historic Structure Report: Phase Three*, 10, with Lindenbusch, *Historic Structure Report: Part 1*, 45. Lindenbusch cites an NPS field report and notes that this decorative scheme was discovered in 1940. It was apparently covered up by 1940s display cases and rediscovered in 1980 when the exhibits were changed. Lindenbusch on page 92 also mentions frescoing in the south half of the first floor of the west wing (room 102) as occurring in 1864 and the matching room on the north half (room 104) in 1865.

---

54. Henderson, *Historic Structure Report: Phase Three*, 3.

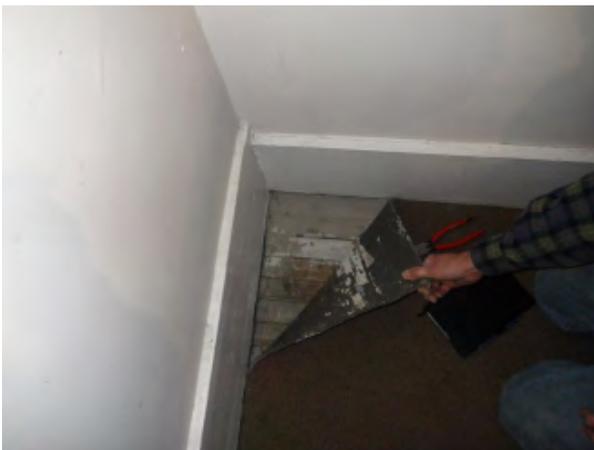
55. Lindenbusch, *Historic Structure Report: Part 1*, 42–44, citing Court Records, vol. VII, 286, 450, and vol. VIII, 25, 72.

to 3/4 inch thick, and finally a wood strip floor with the boards running east-west (Figure 47).

The wood flooring in at least the western portion of room 104 may date to 1860. In that year, new wood sleepers and tongue-and-groove boards were installed in the former jury room space, then used by the clerk of the Land Court.<sup>56</sup>



**FIGURE 44.** In room 120 in the south wing, brick flooring remains intact. This floor was first installed in March 1842. It was heavily restored in 1953, incorporating brick pavers salvaged from the matching room in the north wing. Photograph by WJE, October 19, 2011.



**FIGURE 45.** In room 102, wood strip flooring is present beneath the existing carpeting. Photograph by WJE, January 11, 2012.



**FIGURE 46.** Room 102 as it appeared in 1980, during renovation of the exhibit space. The wood strip flooring was exposed during the project but was not restored. Source: Park Ranger Nancy Hoppe.



**FIGURE 47.** In room 104, wood strip flooring is present beneath later flooring finishes, consisting of carpeting; linoleum, 1/4 inch thick plywood underlayment, composition tile, and an underlying fill material up to 3/4 inch thick. Photograph by WJE, January 11, 2012.

Because the wood flooring that exists underneath later floor finishes has an opposing orientation in each of the two courtrooms, and because brick flooring is cited as the original floor material in the west wing, it is likely that the wood flooring in both courtrooms dates to at least 1855 if not later. Since the flooring in the rotunda, west wing corridor, and the two courtrooms is at a continuous level, it seems unlikely that the floor finish of the Dred Scott era courtroom is present below the wood strip flooring. However, when replacement of the existing carpeting in either room is implemented, it may be desirable to selectively dismantle a portion of the wood strip flooring to

56. *Ibid.*, 67–68, citing Edward N. Tracy to Board of County Commissioners, January 23, 1860; Court Records, vol. X, 91.

see if evidence of the original brick flooring system can be observed.

**Window and Door Trim.** As noted, the existing corridor walls were added in 1855; these walls include door openings with wood trim into each courtroom. The trim on the corridor side of each door is similar to the trim on the courtroom side of each door and has a Classical pilaster and cornice design with vertical side pieces. All of these materials date to after 1855 and are painted with a decorative finish imitative of wood graining. The existing finishes and door locksets date to renovation or restoration work performed in the twentieth century. According to the Phase 3 HSR, the existing decorative wood grain finish was first executed circa the mid-1950s, with occasional subsequent touch-up or recoating. The existing decorative wood grain treatment is a restoration of a scheme likely applied when the corridor was built in 1855, or at latest within a few years after its completion.<sup>57</sup> Based on photographs in the collection of the park, it appears that the existing decorative wood graining on the west wall exterior doors was reapplied in 1980 (Figure 48).

The window openings in room 104 have trim with a Classical ancon design with tapering side pieces, matching trim in rooms 114 and 115 of the east wing. The window openings in room 102 lack their original wood trim; the trim in this room was removed by the City of St. Louis in 1912. The Phase 3 HSR states that the room 104 window trim is original, but does not cite a source for this information other than to note that the design is identical to the east wing

window trim.<sup>58</sup> The decorative graining on the window trim includes motifs that can be read as “1881,” indicating that the existing finish on this trim dates to that year.

There are also three exterior doors at the west wall, one in each courtroom and one in the corridor. These door openings also have wood trim, but the design matches neither the corridor door openings nor the room 104 window trim (Figure 49). Prior to the 1855 interior changes and the 1859 completion of the west portico, these openings held windows.

**Columns.** As mentioned above, it is possible that when the west wing was renovated in 1855, the decorative columns in the first floor courtroom were salvaged and reinstalled in the new second floor courtroom. Thus, the existing columns in the west wing second floor courtroom (room 207) may be surviving fragments of the Dred Scott courtroom interior.



**FIGURE 48.** Room 102 during renovation of the exhibits in 1980. Note that the west wall exterior door and trim is painted a solid cream color, likely a primer or undercoat during re-application of the decorative graining, while the corridor door and trim appears to have a decorative wood grain finish. Source: Park Ranger Nancy Hoppe.

57. Original painting contracts from 1855 through 1864 describe similar wood graining treatment for doors and trim throughout the building.

58. Henderson, *Historic Structure Report: Phase Three*, 56. The City of St. Louis window drawings from 1912 also assumed that this trim was original.



**FIGURE 49.** The exterior doors (at left in this view) have a different trim design; these doors and trim likely date to a different time than the window trim at right in this view. Photograph by WJE, October 19, 2011.

Based on the above observations, several different possibilities for the historic evolution of the space can be surmised. The most likely possibility is that the existing window trim in room 104 is indeed original to the 1842 courtroom. In this case, the corridor door trim was made in a compatible but slightly different design when installed in 1855, and the west side exterior doors received new trim in a different style circa late 1859 when the portico was completed. As an alternate possibility, the existing window trim in room 104 and the corridor door trim may both date to the 1855 renovation, although it would be somewhat surprising that two slightly different designs were installed during the same project. In this case, the west exterior door trim could either be original window trim, altered in 1859 to accommodate the portico doors, or may be new trim installed in 1859. Regardless, sufficient archival documentation or physical evidence were not available for purposes of this study to confirm that either the room 104 window trim or the west exterior door trim remain from the 1842 courtroom design. It may be possible to further assess the possible dates of the various styles of wood trim through finishes analysis. The stratigraphy of paint coatings from multiple samples removed from all three types of

elements in the wing (room 104 window trim, corridor door trim, and west wall exterior door trim) could be compared. The analysis could determine if more or earlier layers, perhaps dating to 1842, are present on the window trim and/or exterior door trim, since the corridor door trim definitely cannot be older than 1855. Similarly, stratigraphy from the columns in the second floor courtroom could be analyzed to see if a possible 1842 finish campaign exists on these columns.

All three spaces have painted rectangular wood trim at the base of the walls. The corridor base is on the 1855 walls and therefore post-dates the Dred Scott courtroom. In rooms 102 and 104, the base is identical on the corridor and non-corridor walls and is therefore assumed to date to after 1855. At the east wall of room 102 (the partition added circa 1950s), the wood base is a different height than the base at the other three walls of the room (Figure 50).



**FIGURE 50.** In room 102, the wood base at the east wall is a different height than the base at the other three walls. Photograph by WJE, October 19, 2011.

**Summary.** Based on this investigation, it appears that little physical material remains in the building from the original first floor west wing courtroom where the trials involving Dred Scott took place. In addition to the subdivision of the original space into two smaller courtrooms and a corridor, no original floor, baseboard, wall, or ceiling finish materials exist. There is a possibility that some of the window and door trim on the west or north exterior walls dates to the 1839–1843 construction of this wing; detailed finishes analysis may be helpful in exploring this possibility. Also, the columns at the second floor courtroom may have been salvaged from the original first floor courtroom. The modifications made to the courtroom beginning in 1855 substantially altered the integrity of the original courtroom as it existed at the time of the historic trials.

# Special Issue: Cast and Wrought Iron

---

Previous Historic Structure Reports on the Old Courthouse have discussed the significance of the dome's design and the unique employment of cast and wrought iron in its construction. However, prior reports have not addressed the use of cast and wrought iron construction as it pertains to the rest of the building structure or how the use of cast and wrought iron employed in the general structure of the Old Courthouse compares to the early structural use of cast and wrought iron in buildings in other American urban centers. Research reveals that all of the cast and wrought iron that was used in the extant Old Courthouse, excluding portions of the dome, was probably smelted close to St. Louis and was fabricated within the limits of St. Louis' mid-nineteenth century commercial area. Furthermore, it is revealed that St. Louis was on the frontier of architectural cast iron development in the United States.

## Historical Overview

Iron is the workhorse of metals due to its great strength, and was used extensively for building structure in the United States during the nineteenth and early twentieth centuries. Because it oxidizes rapidly when exposed to the elements, iron is rarely used today for architectural ornament that is exposed to humidity. Wrought and cast irons are both ferrous metals but are different in composition, methods of fabrication, and physical characteristics.

In the United States, wrought iron was used for minor structural members such as lintels and decorative elements beginning in the eighteenth century, while cast iron was a major nineteenth-century building material of the Industrial Revolution.<sup>59</sup>

Pig iron, which contains approximately 4 percent carbon along with other impurities, is the initial source used in developing wrought iron, cast iron, and steel (Figure 51).<sup>60</sup> Metallurgically, pig iron is identical to cast iron, but it is cast into unfinished bars (pigs) for shipping.<sup>61</sup> The easy handling of pig iron allowed the smelting process to be freed from the founding (casting) process.<sup>62</sup> Iron smelting

59. Margot Gayle, David W. Look, and John G. Waite, *Metals in America's Historic Buildings: Uses and Preservation Treatments* (Washington: U.S. Department of the Interior, Heritage Conservation and Recreation Service, Technical Preservation Services Division, 1980), 42.
60. L. William Zahner, *Architectural Metals: A Guide to Selection, Specification, and Performance* (New York: Wiley, 1995), 186.
61. Antoinette J. Lee, "Cast Iron in American Architecture: A Synoptic View," *The Technology of Historic American Buildings: Studies of the Materials, Craft Processes, and Mechanization of Building Construction*, H. Ward Jandl, ed. (Washington, D.C.: Foundation for Preservation Technology, 1983), 99.
62. *Smelting* is producing metal from its ore. Smelting uses heat and a chemical reducing agent to decompose the ore and expel gasses and slag to leave a relatively pure metal behind. The reducing agent, typically charcoal or coal, when burned creates carbon monoxide, thus removing oxygen from the ore and leaving behind the elemental iron.

operations needed to be located close to iron and coal sources. By the 1850s foundries that produced architectural cast iron were located in cities to provide ready access to waterways and railroads for shipping of raw materials and fabricated products.<sup>63</sup>



**FIGURE 51.** Ingots of pig iron smelted near the mine were easily handled and transported to the foundry, where it could be cast or wrought. Source: <http://equatorline.indonetwork.co.id/2279287/pig-iron-iron-scrap-roll-coil.htm>, accessed November 2012.

## Definition and Manufacture

**Wrought Iron.** As suggested by its name, wrought iron can be heated to a temperature at which it becomes soft and can be wrought (shaped by hammering) on a forge or rolled under great pressure. Wrought iron consists of iron with slag fibers entrained in a ferrite matrix.<sup>64</sup> It is almost pure iron with less than 1 percent carbon. Slag exists in wrought iron in a purely physical association rather than as an alloy, giving the wrought iron a characteristic laminated structure. Wrought iron has good

tensile strength and can be shaped into many intricate forms because of its high elasticity.<sup>65</sup>

Wrought iron manufacture required machine forges, anvils, and hammers. The melting temperature of wrought iron, 1,534 degrees Celsius (2,793 degrees Fahrenheit), could not be achieved with machine forges of the time; however, the iron could be made hot enough to be worked. Iron manufacturers could also make the metal in wrought iron pure by controlling the temperatures in their furnaces. By the 1840s it was understood that wrought iron should be free of sulfur, which made the iron brittle at high temperatures (“hot short”); should not have excessive phosphorus, which made the iron brittle at room temperature (“cold short”); and should not contain excess or poorly distributed slag, which would reduce its ductility.<sup>66</sup> It was also understood that phosphorus hardened otherwise pure iron more than any other alloying element. If the carbon content of the iron was less than 0.1 percent, it would remain ductile with the addition of phosphorus.<sup>67</sup>

Wrought iron provides strength in tension, making it appropriate for tension members such as truss elements and flexural members such as beams and girders.

**Cast Iron.** Cast Iron is an iron-carbon alloy with a higher carbon content than wrought iron, usually averaging 3.0 to 3.7 percent, and varying amounts of silicon, sulfur, manganese, and phosphorus. Cast iron has enough carbon to lower its melting temperature so that it can be put into a molten state and cast into decorative or structural shapes.<sup>68</sup> However, cast iron is too hard and brittle to be shaped by hammering,

---

63. Lee, 99.

64. Slag, also known as cinder, is fused and vitrified matter separated during the reduction of a metal from its ore. In iron production the slag, rich in silicon, rises to the surface when the iron is molten and can be easily removed.

65. Zahner, 187.

66. Robert B. Gordon, *American Iron: 1607–1900* (Baltimore: Johns Hopkins University, 1996), 7.

67. *Ibid.*, 13.

68. Daniel D. Badger, *Badger's Illustrated Catalogue of Cast-iron Architecture* (New York: Dover Publications, 1981), reprint, 5.

rolling, or pressing.<sup>69</sup> Cast iron is very brittle and inelastic. It is strong in compression but weak in tension; therefore, it cannot effectively take bending stresses as a beam.<sup>70</sup>

Cast iron, with carbon content of 2 percent to 4 percent by volume, is highly fluid and can be cast into intricate shapes. The melting temperature of cast iron is approximately 1,150 degrees Celsius (2,102 degrees Fahrenheit). Such a temperature was easily attained in a small blast furnace.<sup>71</sup> The previously described metallurgical understanding of wrought iron by the mid-nineteenth century is also applicable to cast iron.

**Development.** By the turn of the nineteenth century, blacksmiths were ubiquitous and working iron into horse shoes, iron straps, tie rods, and nails for builders.<sup>72</sup> Wrought-iron rods were universally used in the mid-nineteenth century in wood and iron trusses for buildings and bridges where the structural member was put in tension.<sup>73</sup> By the 1840s some foundries had developed their technology to fabricate larger elements that could be used in building construction. The “bulb-tee,” with a flat flange on the bottom and a convex bulb on the top, could be used either as a railroad rail or as a beam for buildings.<sup>74</sup>

Prior to 1850 there were small foundries scattered throughout the country producing cast iron items such as stoves, fireplace equipment, wash tubs, and cookware. Foundries at the time were located near the mines, as the items

produced were easily transportable. In building construction, by the 1820s builders had adopted the British practice of using interior cast iron columns. By the early 1830s, cast iron columns were occasionally being adopted for shop fronts in American cities.<sup>75</sup> Foundries that produced architectural cast iron sprang up in nearly every major American city of the nineteenth century, as shown by the city directories of the period.<sup>76</sup>

By the time iron ore was being profitably exploited and adequate transportation was becoming available in America, Europeans were already benefiting from the advantages of cast iron over wood and masonry in building construction.<sup>77</sup> American foundries producing architectural cast iron borrowed from British and French developments in this field, thus the advanced research and development in Europe were put to practical application in the United States.<sup>78</sup>

Despite these developments and the use of both wrought and cast iron in construction, the varying physical qualities between these materials were not fully understood in America until well into the 1870s. This is exemplified by the fact that many buildings were being constructed with cast iron beams (used in flexure) and wrought iron columns (used in compression), which was not the best use of these materials.<sup>79</sup> Cast iron was used for both columns and beams through the first seven decades of the nineteenth century. In the 1860s wrought iron became competitive with cast iron and more widely produced as improved

---

69. Gayle, Look, and Waite, 130.

70. Zahner, 185.

71. Gordon, 10.

72. Margot Gayle and Carol Gayle, *Cast-iron Architecture in America: The Significance of James Bogardus* (New York, New York: W.W Norton Company, Inc., 1998), 34.

73. Gayle, Look, and Waite, 48.

74. Gayle and Gayle, 141.

---

75. Gayle and Gayle, 35.

76. Lee, 109.

77. *Ibid.*, 100, 101.

78. Cast iron for non-architectural purposes had been well developed in England, France, the Germanic states, and Sweden. Gayle and Gayle, 34.

79. Lee, 99.

industrialized processes for rolling were developed to meet the railroad demand.<sup>80</sup>

Cast iron beams were capable of carrying light loads at shorter spans. Cast iron beam sections were unsymmetrical about their horizontal axis in profile, with the larger areas being in the tension zone at the bottom, revealing an understanding of the tension-carrying shortcomings of this material.<sup>81</sup> Larger areas for tension meant that the tensile force per area was less.

The Bessemer converter process, developed in England in 1857, was the first industrial process for the mass-production of steel from pig iron. Steel had physical properties that were superior to both wrought and cast iron, and, when it was introduced to the American market as an inexpensive alternative in the 1880s, cast and wrought iron quickly fell from favor for structural applications. By 1889 the United States was the largest fabricator of steel in the world.

### Architectural Wrought and Cast Iron at the Old Courthouse

On May 7, 1849, a fire began aboard the steamboat *White Cloud* while it was moored on the St. Louis levee at Cherry Street. The boat, engulfed in flame, broke free from its moorings, drifted downstream, and set twenty-two other steamboats ablaze. Whipped by unusual northeasterly winds, the fire jumped over the levee from the boats to the warehouses and stores along Wharf Street, burning its way inland to destroy 418 buildings situated in fifteen blocks of the riverfront district

(Figure 52). Through the efforts of the St. Louis volunteer fire departments, the blaze was stopped before it consumed the Old Cathedral or the Old Courthouse.<sup>82</sup>



**FIGURE 52.** Artist's illustration representing the Great Fire of 1849 in the commercial district of St. Louis. The dome of the Old Courthouse can be seen in the depiction. The Old Courthouse was not damaged during the fire. Source: Missouri History Museum collection, reference n15350.

The process of rebuilding the commercial heart of the city began immediately. Financed by insurance claim settlements, nearly all of the burned area was rebuilt within a calendar year. New construction reflected the latest building trends and materials in America: cast iron, plate glass, shutters of iron, and roofs of sheet metal. Thus St. Louis after the fire became a crucible for the development and use of architectural cast iron. Not only did architectural cast iron create aesthetically pleasing storefronts much to the taste of contemporary business owners, but it was also fireproof as mandated by the city to prevent a recurrence of the 1849 conflagration.<sup>83</sup>

---

80. Lee, 99.

81. J. Stanley Rabun, *Structural Analysis of Historic Buildings: Restoration, Preservation, and Adaptive Reuse Applications for Architects and Engineers* (New York, New York: Wiley, 2000), 317.

82. Laura Wilson, "The Great Fire of St. Louis in 1849," research report, Jefferson National Expansion Memorial, September 1938, 1–35.

83. John Albury Bryan, "Iron in St. Louis Architecture, 1800–1900," National Park Service research report, Jefferson National Expansion Memorial, August 1961, 23–28; Wilson, 23–34; Betsy Hunter Bradley, *The Works: The Industrial Architecture of the United States* (New York and Oxford: Oxford University Press, 1999), 3–53.

The era of cast iron architecture in America has been defined by some architectural historians as lasting from approximately 1850 to 1880, although structural and decorative iron elements were used in the 1840s in Boston and New York, and, largely uncredited, in St. Louis.<sup>84</sup>

Wrought iron, ironsmiths, and the foundries that fed the St. Louis architectural cast iron industry were located within the city and were an important factor in the swift recovery of the commercial district. Established fur trading families turned their investments to iron mining acquisitions to support this need.

The largest source of iron ore for St. Louis was the Precambrian core area of the Ozark Uplift in Iron County located about 80 miles south of St. Louis, which began producing iron ore at the beginning of the nineteenth century (Figure 53). There were other iron mines and forges to the southwest of St. Louis in the Rolla area. In 1843 the American Iron Mountain Company near Pilot Knob was incorporated by the Missouri legislature. Ore was transported eastward to smelting furnaces in the Farmington area. Pig iron was then transported to the Mississippi River for shipment. In 1855 the St. Louis and Iron Mountain Railroad Company's line was constructed with its terminus in Pilot Knob, Missouri, running directly into the heart of St.

Louis.<sup>85</sup> The rail line had a terminal at Plum Street and the river, one block south of the current southern boundary of Jefferson National Expansion Memorial.<sup>86</sup>



**FIGURE 53.** Iron ore mine in Pilot Knob, Missouri, circa 1919. Source: Iron County, Missouri Genealogical Society, photo courtesy of Marcine Lohman. <http://www.rootsweb.ancestry.com/~moicgs/photos1.html>, accessed November 2012.

In 1840 the St. Louis foundry of Gaty, Coonce & Belzhoover was given a contract to fabricate six “Greek Doric” cast iron columns for the southern entry to the Courthouse.<sup>87</sup> Fabrication of these columns proceeded in July 1842. In 1843 this contract was cancelled following an examination of the columns by an appointed commission of Meriwether Lewis Clark and John Martin.<sup>88</sup> It is not known whether the contract was annulled due to the poor quality of

84. Bryan, “Iron in St. Louis Architecture between 1800 and 1900”; Lee, 97–116; Betsy Hunter Bradley, *The Works: The Industrial Architecture of the United States*, (New York and Oxford: Oxford University Press, 1999), 3–53; Gayle and Gayle; Charles E. Peterson, “Inventing the I-Beam, Part I: Richard Turner, Cooper Hewitt and Others,” *Bulletin of the Association for Preservation Technology* 12, no. 4, 1980, 3–28; “Inventing the I-Beam, Part II: William Borrow at Trenton and John Griffen of Phoenixville,” *Bulletin of the Association for Preservation Technology* 25, no. 3/4, 1993, 17–25.

85. “Missouri Mines.” <http://www.miningartifacts.org/Missouri-Mines.html>, accessed November 2012.

86. See Pictorial St. Louis: the Great Metropolis of the Mississippi Valley, a Topographical Survey Drawn in Perspective by Camille N. Dry, designed and edited by Richard Compton, St. Louis, 1875, Plate 4, for an illustration of the station and its proximity to the Old Courthouse.

87. *1841 St. Louis City Directory*, Gaty Coonce & Glasby, foundry and steam engine manufactory, located at 210 North First Street, 1840–1841.

88. Clark was the son of William Clark and named after his father's fellow explorer, Meriwether Lewis. He was an architect, engineer, politician, and a general in the Confederate army during the Civil War.

the cast iron or a change in the design at the Old Courthouse. However, documentation related to the contract reveals that architectural cast iron was available in St. Louis as early as 1840.

Construction had begun on the west wing of the Old Courthouse in 1842. The second floor is believed to have been composed of wood framing though there is no conclusive archival data. In January of 1843 the contractor, John Foster, was asked to make structural changes to the second level of the west wing, which was noticeably settling, although the wing was not yet completed. Foster was directed to procure iron of the best quality for this work by connecting the second floor to the timber framing of the roof above according to a scheme of his own design.<sup>89</sup>

On August 27, 1852, John T. Dowdall was awarded a contract to supply cast iron girders for the east wing and by 1853 their fabrication had been completed. On June 21, 1853, Dowdall was also awarded a contract for the cast iron girders for the south wing.<sup>90</sup>

Dowdall had established the Washington Foundry, J. T. Dowdall Proprietors, at the corner of Second and Morgan Streets by 1852. He was the only permanent partner of the Washington Foundry, which advertised the manufacture of “steam engines and boilers; saw and grist mill machinery; tobacco, lard and oil press screws; lard kettles, building castings; wool carding

machines, etc.”<sup>91</sup> The Washington Foundry was closed and demolished in 1870.<sup>92</sup>

On December 10, 1853, McMurray & Pauley was awarded a contract for the wrought iron work at the east wing roof, and by the following March the roof was under construction.<sup>93</sup> In May 1854, the firm of Dowdall Carr & Co. furnished the iron work for the south wing in accordance with their 1853 contract.<sup>94</sup> It can be assumed that the wrought iron roof was also installed during this time period.

In May 1856 the roof of the west wing was found to be unsafe and was ordered to be remodeled. The weight of the sagging floor had initially been sustained by heavy iron rods attached to the roof. Partition walls had been added on the first floor in 1855. The new roof was to be of wrought iron with cast iron fittings.<sup>95</sup> The west wing roof framing was to match that of the east wing. The work was performed by McMurray Winklemaier.<sup>96</sup> The second floor was most likely replaced at this time with the cast iron beams still in place today, but the manufacturer has not been identified.

---

89. JNEM Archives, Records of St. Louis County Courts, Vol. III, page 285.

90. JNEM Archives, County Court Records, Book 7, Page 358, June 21, 1853.

---

91. Cara Jensen, *The History of 712 North 2nd Street, City Block 26, Laclede's Landing, St. Louis, Missouri* (St. Louis: Sherlock Homes, n.d.) 3, <http://www.sherlock-homes.us/712.pdf>, accessed November 2012, citing 1855 *Missouri Democrat* Advertisement.

92. *Ibid.*, citing Sanborn Fire Insurance maps from 1872 and 1874; JNEM Archives, County Court Records, Book 7, Page 451, December 10, 1853; Mechanics' Institute of St. Louis Records, 1816–1894, RU 113.

93. John D. McMurray, Iron Railing Manufacturer, was established by 1841 at 6 North 2nd Street. By 1860 the McMurray, Winklemaier Co. had relocated to Chestnut Street between Ninth and Tenth Streets. JNEM Archives. St. Louis City Directories for 1841 and 1860.

94. JNEM Archives, County Court Records, Book 8, Page 62, May 4, 1854.

95. *Daily St. Louis Intelligencer*, July 3, 1856.

96. *Ibid.*, July 8, 1856.

J. G. McPheeters, owner of the Excelsior Works at Clark Avenue and Eighth Avenue (established in 1840 and expanded in 1849), was awarded the contract for the north wing roof framing, which was to be composed of wrought iron with cast iron fittings at the rafters. The contract also included the ironwork for the stairs from the first to third floors in both the north and south wings, the columns within the north wing, and all cast and wrought iron work for the dome.

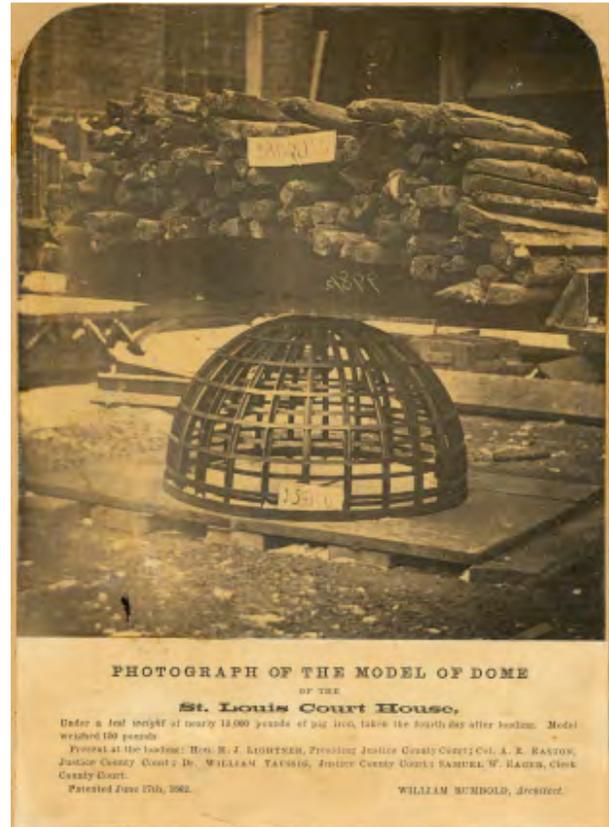
The dome was originally designed by County Architect T. D. P. Lanham and included twenty-four decorative cast iron columns at the drum.<sup>97</sup> The hoisting of the twenty-four iron columns that would support the stone cornice of the dome commenced in June and the installation was completed by September 1858.<sup>98</sup> However, according to St. Louis County Court Records, this contract had been at least partially rescinded with the removal of the cast iron girders from the dome.<sup>99</sup>

In February 1858 McPheeters was also awarded a contract to cast, install, and furnish all the cast iron floor beams and girders required for the north wing.<sup>100</sup>

Controversy over the stability of the dome as designed caused the work to be stopped so that the structural capacity of the dome could be evaluated (Figure 54) and the McPheeter contract was rescinded, as previously mentioned. After analysis it was determined that the dome would be composed of wrought rather than cast iron and would be constructed in accordance with the design of County Architect William Rumbold. McPheeter & Pauley was

awarded the contract for the work, which was to be completed by May 1860 (Figure 55).<sup>101</sup>

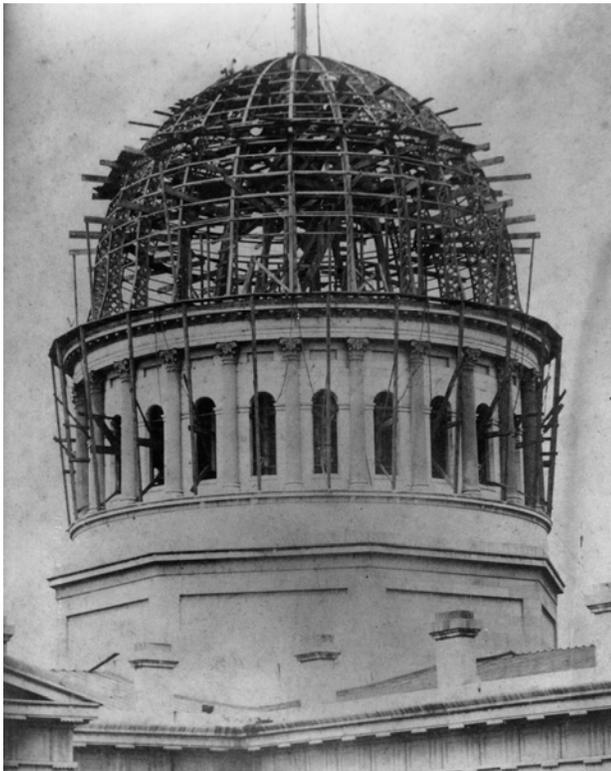
The wrought iron ribs of the outer dome were fabricated by the Phoenix Iron Company of Phoenixville, Pennsylvania, near Philadelphia (Figure 56). This seems to be the lone example of ironwork at the Old Courthouse that was fabricated outside of St. Louis.<sup>102</sup>



**FIGURE 54.** Controversy surrounded the Old Courthouse dome design by William Rumbold. Construction was delayed until confidence could be established regarding the strength of the dome structure. A test loading of a model of the dome during this period of uncertainty illustrates a prolonged loading that is many times beyond that which would have been required in construction. Source: Missouri History Museum collection, reference n11209.

97. *St. Louis Missouri Republican*, June 17, 1858.  
98. *Ibid.*, JNEM Archives, contract for four flights of stairs in the courthouse, September 25, 1857.  
99. JNEM Archives, County Commissioner Report, 89.  
100. JNEM Archives. Contract between J. G. McPheeters and Thos. D. P. Lanham.

101. *St. Louis Democrat*, June 2, 1860.  
102. Fabrication markings of the Phoenix Iron Company were observed on the wrought iron ribs of the outer dome during the investigation performed for this study.



**FIGURE 55.** Photograph of the Rumbold-designed dome with twenty-four radially oriented wrought iron ribs set in place. The cast iron Corinthian columns below had been previously set for the Lanham-designed dome, which had been abandoned. Source: Missouri History Museum collection, reference n10665. Photograph by unknown photographer.



**FIGURE 56.** Marking on a beam within the dome of the Old Courthouse which reads, "PHOENIX IRON Co. PHILAD PATENTED DEC. 1st 1857." (photo by R. Will, 2011).

Presently all of the cast and wrought iron of the Old Courthouse described in this chapter remains in place except for the roofs of the wings. The wrought iron trusses with cast iron fittings, wrought iron lattice beams, and iron

purlins in the wings were removed circa 1941 and replaced with a system of steel beams. Wrought iron roofing materials remain in place in the roof structure above the north, east and west porticos (Figure 57) and vestiges remain throughout the attic space (Figure 58 and Figure 59).



**FIGURE 57.** Remaining wrought iron framing within the attic of the east gabled entrance. The bar stock, which supports a contemporary metal decking, was rolled and the connections were wrought by hammer (photo by S. Kelley, 2011).



**FIGURE 58.** Remaining connection of a wrought iron truss panel point in the attic above the south wing showing the lower chord and diagonal and vertical members that have all been cut off by torch circa 1941. The bar stock for all elements was rolled and the connections were wrought by hammer (photo by S. Kelley, 2011).



**FIGURE 59.** Remaining portion of wrought iron lattice beam in the attic of the south wing. The lattice beam was cut where it bears on the masonry wall. The bar stock for all elements was rolled and the connections are riveted (photo by S. Kelley, 2011).

Review of archival records for the Old Courthouse reveals that the cast and wrought iron below the dome level was fabricated exclusively in St. Louis at foundries that were only blocks from the building. Of these iron structural elements, those which support the floors in the wings and those in the dome are still in place and serviceable.

The first known attempt to utilize architectural cast iron at the Old Courthouse, though unsuccessful, was the fabrication of cast iron columns for the south entry in 1840.

Full scale use of cast and wrought iron was introduced into the construction of all wings by 1852 and thereafter. This sophisticated and utilitarian use of cast iron in particular is comparable to East Coast structures of the era such as the Harper and Brothers building (1854,

demolished), designed in part by James Bogardus and located in New York City and the Cooper Union Building (1853–1859) (Figure 60) which was the work of ironmasters Edward Cooper and Abram Hewitt.

It is apparent that its location on the Mississippi River and the role in river commerce, along with the great fire of 1849, provided a catalyst for the use and development of cast iron in building construction that placed St. Louis on the forefront of architectural cast iron production in the United States. Of the wealth of architectural cast iron buildings that were constructed following the fire, the majority of which were demolished circa 1940, the Old Courthouse remains as one of the earliest known examples of the use of this new technology in the United States.



**FIGURE 60.** View of the Cooper Union building in New York City, which used cast iron construction developed by Edward Cooper and Abram Hewitt at the Trenton Iron Company, as illustrated in the March 30, 1861, edition of *Harper's Weekly*.

## Existing Conditions

As part of a limited structural investigation of the Old Courthouse, the current condition of the existing structural system and remnants of original roof structure was examined. This examination included all visible structural system elements, inspection openings at isolated locations within each of the four wings to gain a better understanding of concealed components of the structural system, and laboratory analysis of iron samples removed at the inspection openings.

The structural system is a combination of load bearing masonry walls; brick vault and ferrous metal flooring systems; and wrought iron, cast iron and steel roof framing. The structure of the Old Courthouse has been altered and retrofitted through various rebuilding campaigns as described elsewhere in this report. The most extensive alterations occurred circa 1941, when the wrought and cast iron roof structure was replaced in all wings with steel beams and corrugated metal deck spanning between the beams.

### Foundations and Foundation Walls

Exposed portions of the foundation walls can be seen beneath the portico steps. The foundation walls consist of rubble stone laid in mortar (Figure 61). At the previous coal storage bin in the basement of the south wing, the foundation walls are stone masonry supporting brick masonry vaults (Figure 62 and Figure 63). The interior foundation walls are exposed brick in some locations (Figure 64) and have been covered by finishes including plaster and marble cladding in other locations (Figure 65 through Figure 67).



**FIGURE 61.** Stone masonry foundation walls and brick masonry vaulting beneath the west wing portico stairs. These are the oldest foundations at the Old Courthouse, circa 1842 (photo by S. Kelley, 2011).



**FIGURE 62.** Brick masonry barrel vaults and stone foundation walls in the south wing basement room S41 (photo by S. Kelley, 2011).



**FIGURE 63.** Brick masonry barrel vault and stone masonry foundation walls in the south wing basement room S42 (photo by S. Kelley, 2011).



**FIGURE 64.** The painted brick masonry foundation walls supporting the corridor walls of the east wing above. The structure of the first floor of the corridor above is a series of brick masonry groin vaults (photo by S. Kelley, 2011).



**FIGURE 65.** The vaulted space in the south wing room S44, with brick masonry foundation walls covered with plaster (photo by S. Kelley, 2011).



**FIGURE 66.** The brick masonry vaults that span between iron beams in the east wing room S36 and the foundation walls are coated in plaster (photo by S. Kelley, 2011).



**FIGURE 67.** Vaulted space in the west wing room S13, with marble clad brick foundation walls (photo by S. Kelley, 2011).

## Floor Framing

### West Wing

The first level is supported entirely by the groined vaulted masonry construction circa 1842 (Figures 61 and 67). The second level framing that was constructed circa 1842 is assumed to have been composed of wood but was removed more than a decade later due to structural problems. The replacement second level structural system, circa 1856, is supported with cast iron beams oriented north-south, spaced at six feet on center, supported on the exterior and interior corridor masonry bearing walls, and supporting brick arches. The primarily wood-framed ceiling structure above the Courtroom (S207) is supported by the roof truss system. A stairway once ran up through rooms S105, S206, and S304 but was removed in the late 19th century. Apparently iron beams that support brick vaulting were added to these spaces. The bottom flanges of the beams and the vaulting can be seen in Room 206.

### East Wing

There are masonry vaults that support the first level corridor of the East Wing (Figure 64). To the north and south of the corridor are cast iron beams set six feet on center and oriented north-south, with brick vaulting spanning between each beam. This crude, early application of iron beams in concert with masonry vaulting, circa

1852, may be the reason that the first level rooms are 18 inches higher than the corridor and may warrant further investigation. Basement room S38 also includes a pair of cast iron Corinthian columns (Figure 66) that support a wider beam, running in the same direction (north and south) as the other beams in the room. This beam is probably in place to support masonry partition walls above it on the first and second floors. For some reason, at the time of construction or perhaps later, it was deemed necessary to create a large open space on this side of the corridor, so the floors above were supported with this heavier beam and column arrangement.

The second level rooms and central corridor are spanned by cast iron beams oriented north-south, spaced at six feet on center, and supporting brick vaulting. The primarily wood-framed ceiling structure above the Courtroom (room S220) is supported by the roof truss system. Beams underlie the floor of the central corridor on the third level, which is primarily a stair hall. It appears that a number of beams in this stair hall were cut or removed circa 1869 to allow for the inclusion of a large light well. Since the roof trusses above this area are also not whole there may be structural weakness in this area that may require further investigation.

### **South Wing**

The South (as well as the North) Wing as configured is composed of a connector that is integral with the rotunda, the stair cross hall and the Wing itself.

The connector was constructed circa 1840, has no basement below and is therefore set on masonry laid on ground. The second level of the connector, according to HABS documentation, is supported on wooden trusses that span in the east west direction. The third level is supported by brick masonry barrel vaults. Some of the beams between the second and third levels may

have been cut where they cross the light wells that were added circa 1869.

The stair cross hall which was originally in an open breezeway was constructed at the same time as the wing and does not have a basement level. The second floor level of the stair cross hall is spanned in a north-south direction by cast iron beams and interrupted by the penetrations of the stairway. When the stair on the east side of the hall was removed the area was infilled with a wooden beam floor structure, later removed by the NPS and replaced with a concrete beam and floor structure. The stair hall is topped with a masonry barrel vault.

The Wing itself has a full basement, and the first level constructed circa 1853 is supported on barrel vaults oriented east - west (Figures 62, 63, and 65). The first and second levels originally contained two large courtroom spaces each separated by a corridor running from the stair cross halls. The structural framing allowed for these spaces to be among the largest in the Old Courthouse (Figure 70). Structurally the second level is carried on a line of three heavy cast iron girders oriented north-south that bear on the exterior masonry wall and interior cast iron columns at third points in the span (Figure 71). Cast iron beams oriented east - west and spaced at six feet on center span from the exterior masonry wall to the line of girders in an east-west direction, and the space between them are brick vaulted. The span of each of these beams from wall to girder is roughly 25 feet.

The second level of The South wing originally contained the Missouri Supreme Court Chamber and the Law Library Association of St. Louis. Both spaces encompassed a space that extended up to suspended ceilings hung directly from the underside of the wrought iron roof trusses.

### North Wing

The North (as well as South) Wing as configured is composed of a connector that is integral with the rotunda, the stair cross hall and the wing itself.

The connector was constructed circa 1840, has no basement below and is therefore set on masonry laid on ground. The second level of the connector, according to HABS documentation, is supported on wooden trusses that span in the east west direction. The third level is supported by brick masonry barrel vaults. Some of the beams between the second and third levels may have been cut where they cross the light wells that were added c. 1869.

The stair cross hall which was originally in an open breezeway was constructed at the same time as the Wing and does not have a basement level. The second level of the stair cross hall is spanned in a north-south direction by cast iron beams, interrupted by the penetration of the stairway. When the stair on the east side of the halls was removed the area was infilled with a wooden beam floor structure, later removed by the NPS and replaced with a concrete beam and floor structure. This wing has a full third floor supported on cast iron beams and brick vaults.

The Wing itself has a full basement, and the first level constructed circa 1856 is supported on cast iron beams oriented east - west supporting brick vaulting. The first and second levels originally contained two large courtroom spaces each separated by a corridor running from the stair cross hall. As structurally framed these are among the largest spaces in the Old Courthouse (Figure 68). The second level is supported on a line of three heavy cast iron girders oriented north-south that bear on the exterior masonry wall (Figure 69) and interior cast iron columns at third points in the span. Cast iron beams oriented east - west and spaced at six feet on center span from the exterior masonry wall to

the line of girders in an east-west direction, and the space between them are brick vaulted. The span of each of these beams from wall to girder is roughly 25 feet. The North Wing third floor on either side of the corridor has been reconfigured several times, and changes have been made to it that makes it difficult to understand how it was originally constructed.



**FIGURE 68.** Room S111 in the north wing, below the courtroom on the second floor. The second floor structure (hidden above the dropped ceiling) is supported on a cast iron girder, which is partially supported on the cast iron columns shown (photo by S. Kelley, 2011).



**FIGURE 69.** The second floor framing above the first floor ceiling of room S111. Masonry vaults span between iron beams, which are supported by an iron girder (seen clearly on the right hand side of the photo) that is carried on cast iron columns and the masonry bearing walls (photo by S. Kelley, 2011).



**FIGURE 70.** Room S124 in the south wing below the courtroom on the second floor. The second floor structure (hidden above the dropped ceiling) is supported on a cast iron girder, which is partially supported on the cast iron columns shown (photo by S. Kelley, 2011).



**FIGURE 71.** The second floor framing above room S124 of the south wing. Masonry vaults span between cast iron beams, which are supported by a compound cast iron girder that is carried on cast iron columns and the masonry bearing walls (photo by S. Kelley, 2011).

## Roof Structure

The roof structure, as of the re-roofing in 2011, consists of corrugated metal deck spanning between sloped steel beams. The wide steel flange beams, installed by the NPS in 1941, are approximately 10 inches deep with a flange width of six inches (Figure 72). All ceilings that had been suspended from the previous roof structure were re-suspended from the 1941 roof structure. A flat seam copper roof was installed over this roof structure in 2011 using the existing beams which are still sound. The 1941

roof consisted of gypsum infill panels with sheathing of standing seam leaded copper.

Remnants of many of the wrought iron elements of the original roof trusses and lattice beams remain embedded in the brick masonry at the north, south, west, and east wings (Figure 73). Portions of trusses also remain attached to transverse stiffeners that were left in place at the attic floor level (Figure 74). The geometry of these trusses is illustrated in the notes compiled by Charles Peterson of the NPS in 1937 as part of the documentation of the existing structure at the time of the circa 1941 renovation. The plan layout of the west wing trusses as well as elevation drawings of the trusses from the west and east wings are included in the Peterson notes, pages 38 thru 43 (Figure 75 through Figure 79).

Noticeable deflection has occurred at the remnants of the lattice beams based on the angle of the remaining top and bottom chord elements, which were originally set level. At some locations, the slope of the top and bottom chords was as much as 4 degrees. The slope suggests that these lattice beams had deflected significantly due to the long spans, overloading, lack of adequate lateral bracing to help prevent rotation of the bottom chords, or a combination of these factors.



**FIGURE 72.** The roof structure consists of corrugated metal deck spanning between sloped steel beams, as viewed in the attic above the north wing (photo by S. Kelley, 2011).



**FIGURE 73.** A remnant of a lattice beam that was cut almost flush with the bearing wall. Lattice beams were fabricated with a series of 1/2 inch thick by 1-1/2 inch wide plates for the web members sloped at approximately 30 degrees from vertical, with 3 inch deep by 3/4 inch thick plates for the top and bottom chords (photo by S. Kelley, 2011).



**FIGURE 74.** View of a truss panel point that is still attached to a horizontal transverse bar. The bottom chord and diagonal and vertical members were all torch cut and removed as part of the 1941 NPS re-roofing project (photo by S. Kelley, 2011).



**FIGURE 74A.** View of workmen removing the original wrought iron roof trusswork of the southwest corner of the south wing. Note the acetylene tanks used for cutting. Source: JNEM Archives. Photograph is dated March 4, 1941 by Runder-Markham Photo Company, St. Louis, Missouri.

Roof Trusses of West Wing

PLAN OF WEST COURT ROOM SHOWING TRUSSES.

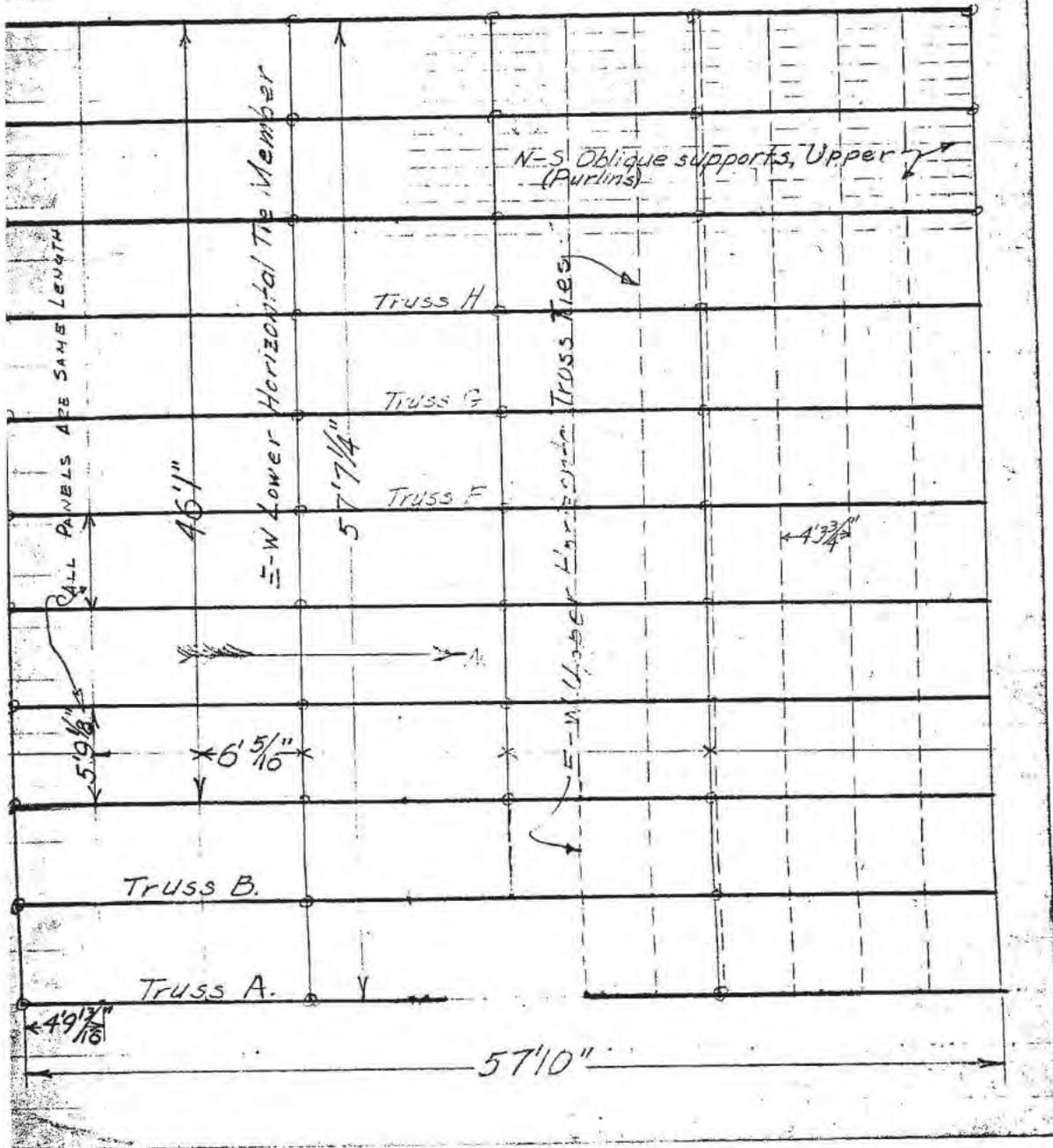


FIGURE 75. Plan of the original truss layout above the courtroom in the west wing, from the Charles Peterson notes.

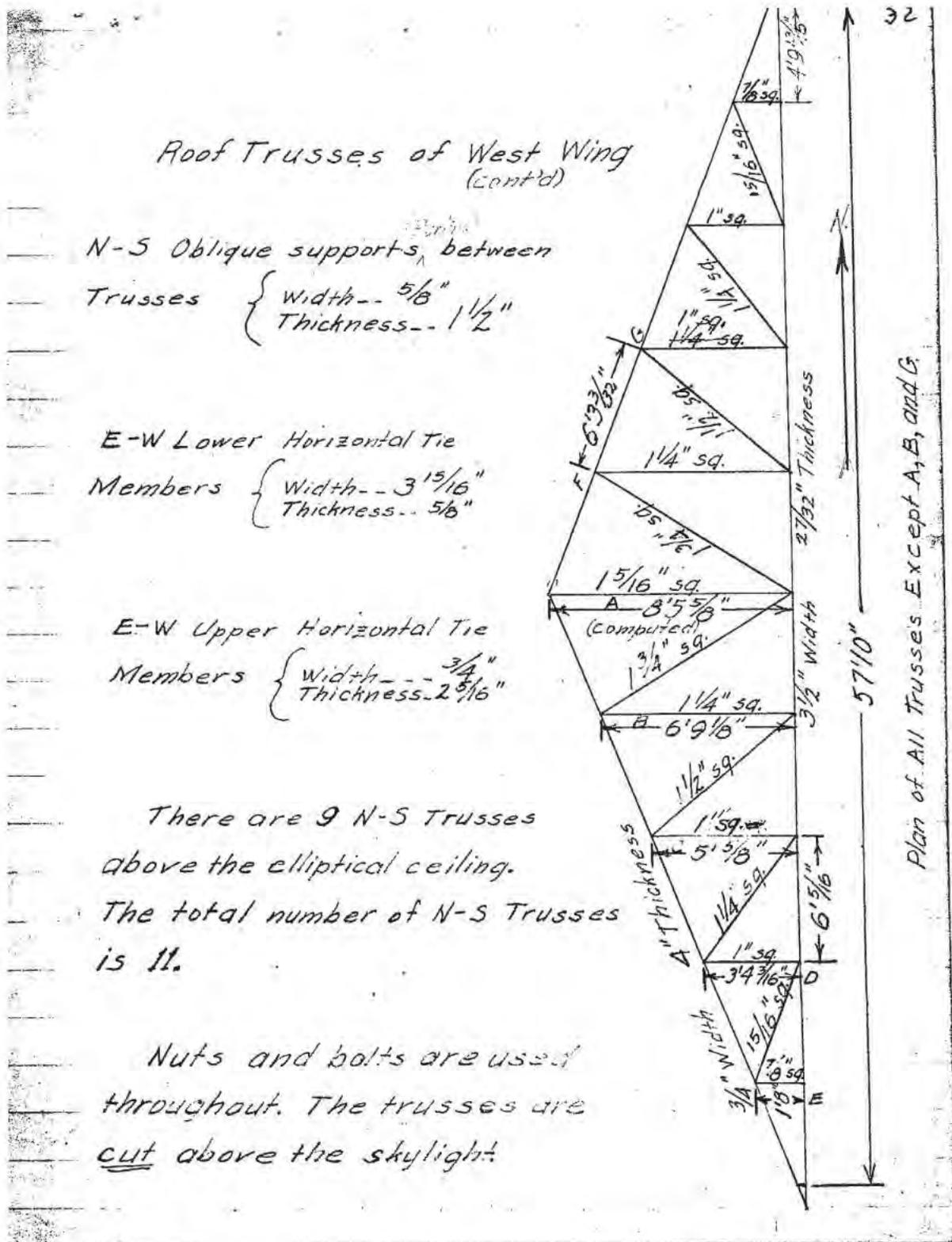


FIGURE 76. Sketch of the west wing roof truss elevation, from the Peterson notes.

Roof Trusses of West Wing (cont'd)

Truss A

See Plans of Roof Trusses

All panels are the same width,  $6\frac{5}{16}$ ", except the end panels which are  $4\frac{9}{16}$ ".

Truss G

Truss G is the same as Truss A. There are no brick walls at Truss G.

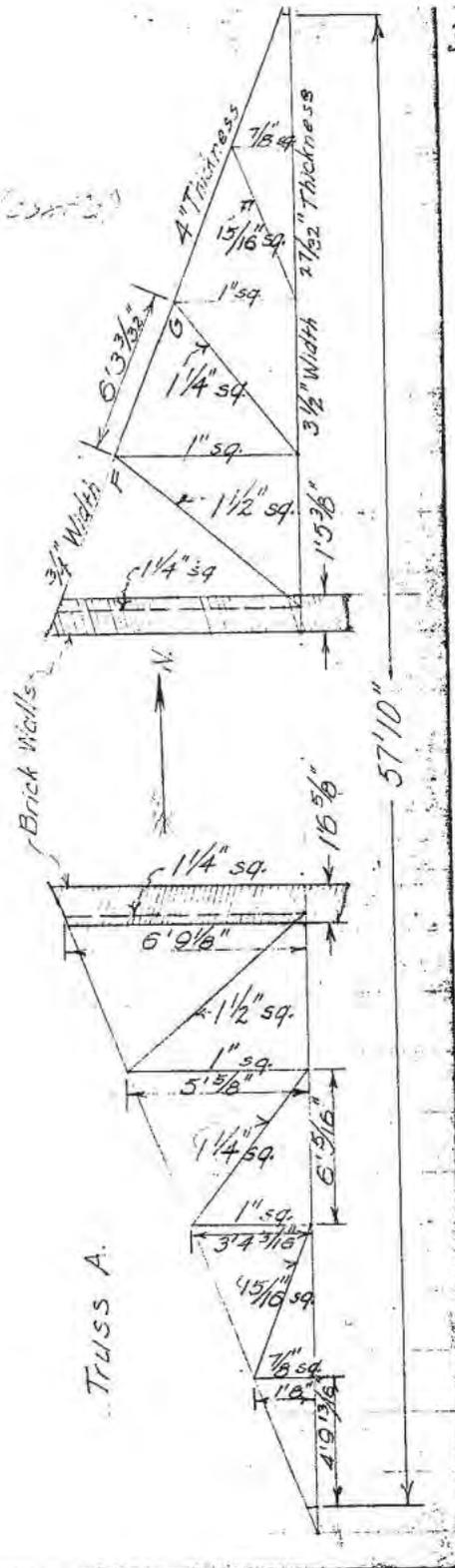


FIGURE 77. Sketch of west wing roof truss elevation, from the Peterson notes.

Roof Trusses of West Wing (cont'd)

Truss B.

Dimensions of Truss B are the same as those of Truss A with the exceptions noted in the plan of Truss B

Note: The steel roof truss structure is supported at various points, including several near the skylight, by the ceiling structure of the West Courtroom below.

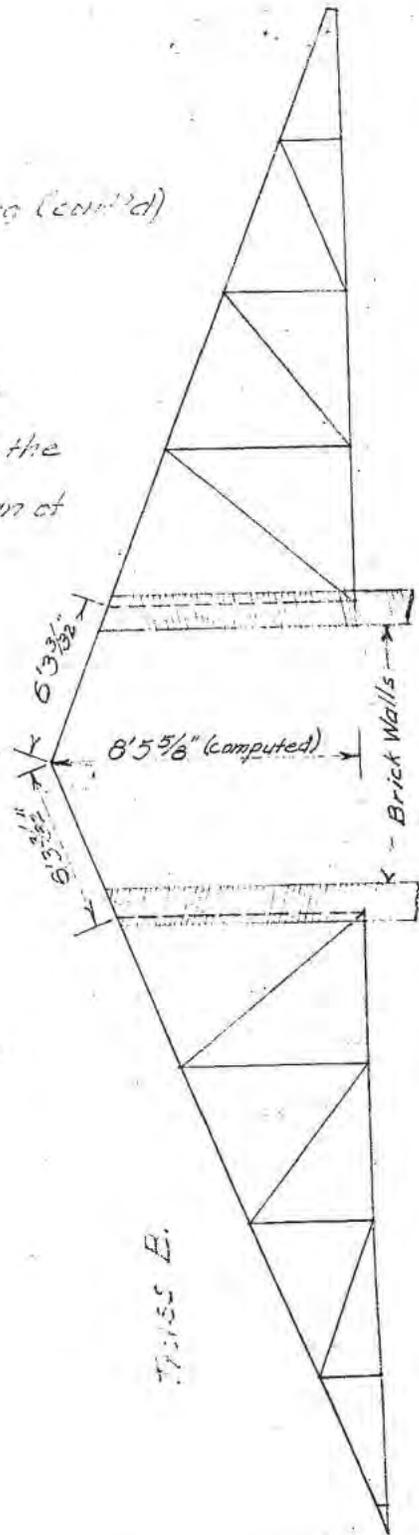


FIGURE 78. Sketch of the west wing roof truss elevation, from the Peterson notes.

*Roof Trusses of East Wing*

- $4'5\frac{1}{4}"$  between upper E-W truss ties.
- East truss is  $3'7\frac{1}{16}"$  from East wall.
- Sixth truss is  $3'1\frac{1}{8}"$  East of brick wall.
- There are a total of 12 trusses.
- Distance between 1st and 7th truss is  $36'3\frac{1}{2}"$ .
- Distance between consecutive trusses is  $6'2\frac{1}{16}"$ .
- Purlins are  $1\frac{1}{2}"$  thick and  $5\frac{1}{8}"$  wide.
- Upper truss ties are  $2\frac{1}{2}"$  thick and  $5\frac{1}{8}"$  wide.
- Truss Ridge tie is  $1\frac{1}{2}"$  thick by  $3\frac{1}{4}"$  wide.
- Lower truss ties are  $1"$  wide by  $5\frac{1}{8}"$  thick.
- The trusses are similar to those of the West Wing.

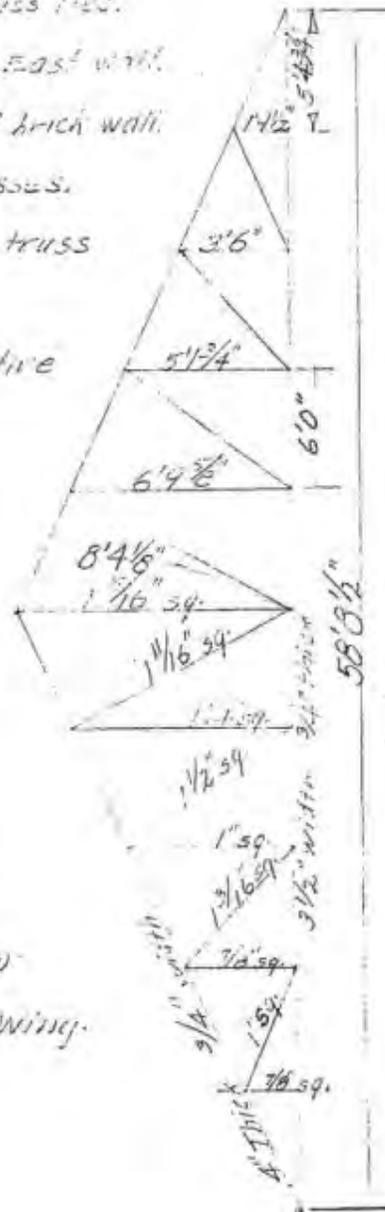


FIGURE 79. Sketch of east wing roof truss elevation, from the Peterson notes.

**North and South Wings.** Lattice beams spanning in the north-south direction were observed at the north portion of the attic in the north wing as well as the south portion of the attic in the south wing (Figure 80 and Figure 81). The lattice beams are approximately 40 inches deep and are constructed with 3 inch by 3/4 inch plates for the top and bottom chords, and a series of 1/2-inch by 1-1/2-inch plates sloped at approximately 30 degrees for the web members. Portions of the wrought iron trusses remain in the north section of the south attic above the main corridor (Figure 82 and Figure 83). The brick masonry barrel vault over the south cross hall is exposed and accessible from the attic (Figure 84).

Remnants of heavy timber trusses with iron tie rods spanning in the east-west direction were observed in the north attic. Portions of the furthest north truss remain in situ and evidence of the other timber trusses is limited to the bearing pocket locations. Timber trusses in rooms S305 and S315 were probably in service up until 1941 when they were partially cut away to install the new steel beam roof system. There is no evidence of wrought iron trusses poking out of the walls in these rooms, and sections of the remaining timbers are charred from the 1936 fire (see Figures 85 through 87).



**FIGURE 80.** Remnants of lattice beam at south attic. The member is approximately 40 inches deep and was constructed from a series of rectangular plates (photo by S. Kelley, 2011).



**FIGURE 81.** Remnant of a lattice beam in the attic of the south wing. Note the metal bearing plate beneath the beam that was also set in brick wall. These lattice beams were roughly cut away during the 1941 renovation (photo by S. Kelley, 2011).



**FIGURE 82.** Wrought iron truss elements in the south wing above the main corridor. Protected by the brick walls on either side, they were left in place during the 1941 renovation but were cut away on the outer side of each wall (photo by S. Kelley, 2011).



**FIGURE 84.** The brick masonry vault in the south attic above the original breezeway location between the south wing and central section of the Old Courthouse (photo by S. Kelley, 2011).



**FIGURE 83.** Another view of wrought iron truss elements above the main corridor in the south wing. The red beams are from the existing roof structure (photo by S. Kelley, 2011).



**FIGURE 85.** Remnants of heavy timber trusses with iron tie rods spanning in the east-west direction in the north attic. Note that one of the diagonal members is charred, indicating a fire in this area in the past (photo by S. Kelley, 2011).



**FIGURE 86.** Remnants of the heavy timber truss in the north attic. In this image the wrought iron rod can be seen, as well as the cast iron fitting for the upper chord members that have been removed (photo by S. Kelley, 2011).



**FIGURE 87.** Evidence of heavy timber trusses in the north attic that were cut flush with the brick masonry wall (photo by S. Kelley, 2011).

**East and West Wings.** The original portico roof framing can be seen in the east and west wings (Figure 88 and Figure 89). This is the wrought iron work installed by McMurray & Pauley (east wing, 1854) and McMurray Winklemaier (west wing, 1856). The hanger and cross purlin elements have a profile of 1-1/2 inches by 3/4 inch

and the purlins have a profile of three inches by 3/4 inches. Remnants of the original roof trusses over the main portion of the east and west wings are spaced at approximately six feet on center. These trusses once spanned in the east-west direction over the main portion of the wings and in the north-south direction over the corridor near the rotunda (Figure 90).



**FIGURE 88.** Original portico framing observed in the east and west wings. The original wrought iron roofing elements were removed in all other locations and replaced with steel beams and gypsum panels in 1941. The present corrugated metal decking was installed in 2010 (photo by S. Kelley, 2011).



**FIGURE 89.** Original portico framing observed in the east and west wings (photo by S. Kelley, 2011).



**FIGURE 90.** View of a wrought iron truss remnant above the staircase in the east wing (photo by S. Kelley, 2011).

## Dome Structure

The existing dome structure was completed in 1861. The twenty-four outer dome ribs are radially laid members constructed of structural T-shapes for the inner and outer flanges (three inches in depth with a 5-1/2 inch flange width) and five inch by 1/4-inch plates installed as a lattice and riveted to the stems of the T-sections and to each other where they intersect (Figure 91). The ribs are set on metalwork above the rotunda columns (Figure 92) at the base of the dome and are affixed to a compression ring at the top of the dome just below the lantern. Circumferential straps approximately 2-1/2 inches wide by 1/4 inch thick are fastened to the inner flange of the ribs and are spaced at approximately three feet eight inches on the ribs on the lower part of the dome (Figure 93). The rolled “I-beam” members are part of the inner dome rotunda supports.

The 2x6 wood purlins are fastened to the outer T-sections with metal joist hangers to provide a nailable surface for the wood plank sheathing below the sheet metal copper roofing. Cast iron x-bracing was installed between ribs near the top of the dome (Figure 94). One of these x-braces was observed to be broken (Figure 95); the break appears to be old and not causing any structural destabilization. Iron castings also form a level surface for a platform below and at the

cupola (Figure 96). Fabrication stamps of the original manufacturing plants were observed at the iron rib members. The ribs are stamped with “Phoenix Iron Company, Philadelphia, Pennsylvania” (Figure 97).



**FIGURE 91.** The dome ribs are lattice work, radially laid members constructed of structural T-shapes for the inner and outer flanges, with plates riveted to the stems of the T-sections and at the intersection of the plates. The 2x6 wood purlins are fastened to the outer T-section with metal joist hangers to provide a nailable surface for the wood plank sheathing below the sheet metal copper roofing (photo by S. Kelley, 2011).



**FIGURE 92.** The wrought iron rib at the base of the dome (photo by S. Kelley, 2011).



**FIGURE 93.** View of the dome ribs and radial straps. The straps are located only in the lower portion of the dome, where the outward thrust would be greatest (photo by S. Kelley, 2011).



**FIGURE 94.** Cast iron x-bracing installed between the ribs near the top of the dome (photo by S. Kelley, 2011).



**FIGURE 95.** Damage observed at one of the cast iron X-braces between the ribs. This location was selected for cast iron sample removal for metallurgical testing (photo by S. Kelley, 2011).



**FIGURE 96.** Cast iron framing supports resting on top of the dome ribs that support the platform of the lantern (photo by S. Kelley, 2011).



**FIGURE 97.** The ribs are stamped with the wording, "PHOENIX IRON Co. PHILAD PATENTED DEC. 1st 1857." (photo by R. Will, 2011)

## Inspection Openings

With the assistance of JNEM maintenance staff, several structural inspection openings were made in the existing floor structures to evaluate concealed conditions as well as the interfaces with adjacent construction. The following is a summary of observations for each opening and discussion of the conditions observed.

Floor plans indicating inspection opening locations are included in Appendix C.

### Inspection Opening no. 1 (north wing, circa 1858 – first floor beams)

Inspection opening no. 1 was made in the ceiling of the basement of the north wing room S18 to assess the first floor framing structure above. It consisted of an opening in the existing plaster and masonry vault alongside an iron beam that spans in the east-west direction. These iron beams were likely cast and installed by J. G. McPheeters. See Figure 98 through Figure 100 for conditions observed at this inspection opening.

The profile of this beam is shown in Figure 101. The bottom flange slope was utilized to form a spring point for the masonry floor arches between beams, as well as to provide the appropriate tensile section required to carry the loads. Levelness measurements taken below the top flange indicated that the top flange is not level. It is not known whether the top flange curves with the high point at the beam midpoint or tapers from the midpoint. A speculative sketch of the beam in elevation is shown in Figure 102. This sketch compares with cast iron beams that were depicted by architectural cast iron manufacturer Daniel D. Badger in his 1865 publication, *Illustrations of Iron Architecture made by the Architectural Iron Works of the City of New York* (Figure 103).



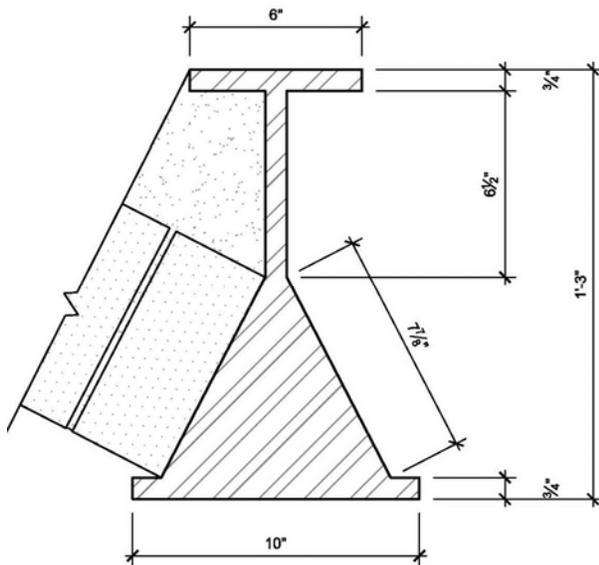
**FIGURE 98.** View from below of cast iron beam section at inspection opening no. 1 (north wing - first floor) (photo by S. Kelley, 2011).



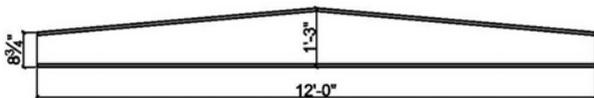
**FIGURE 99.** Close up view of cast iron beam section at inspection opening no. 1 (north wing - first floor) (photo by S. Kelley, 2011).



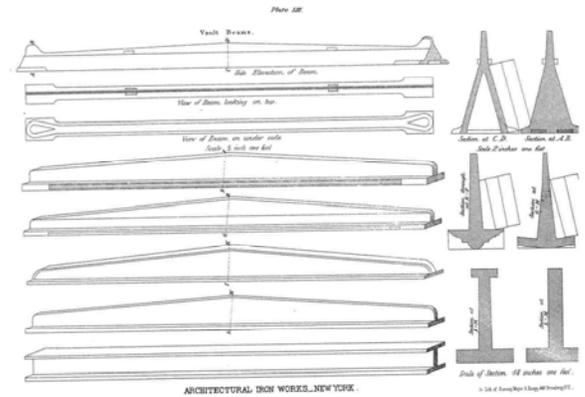
**FIGURE 100.** Close up view of cast iron beam section at inspection opening no. 1 (north wing - first floor). As shown here, a triangular shaped sample (sample no. 10) was removed at this location for metallurgical testing (photo by S. Kelley, 2011).



**FIGURE 101.** Sketch of the profile of cast iron beam at opening no. 1 (north wing - first floor). This beam was likely fabricated and installed by J. G. McPheeters circa 1858. The large triangular mass of iron at the bottom increases strength of this shape in tension, as cast iron has low tensile strength. It also forms a bearing surface for the spring point of the brick floor vault.



**FIGURE 102.** Speculative sketch in elevation of cast iron beam viewed at inspection opening no. 1.



**FIGURE 103.** Plate LIII from *Illustrations of Iron Architecture Made by the Architectural Iron Works of the City of New York*, written by Daniel Badger in 1865. These beams are similar to beam shapes thought to have been used at the Old Courthouse.

### Inspection Opening no. 2 (east wing, circa 1852 – first floor beams)

Inspection opening no. 2 was made in the basement ceiling in the east wing room S36 to assess the first floor framing structure above. It consisted of an opening in the existing plaster and masonry vault alongside an iron beam that spans in the north-south direction. In addition, numerous drill probes were made along the length of beam to determine the orientation of the top flange from its underside. These iron beams were likely cast and installed by J. T. Dowdall. This is the oldest cast iron beam seen at the Old Courthouse and is shaped like a railroad rail. See Figure 104 and Figure 105 for conditions observed at this inspection opening.

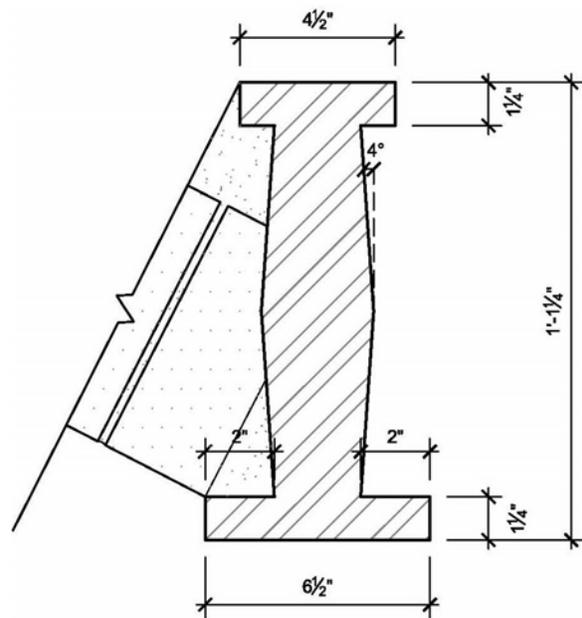
The profile of this beam is shown in Figure 106. Levelness measurements and drill probes taken below the top flange indicated that the top flange is not level. Also noted was the bulge in the web. Based on findings at inspection opening no. 6, the top flange may curve with the high point at the middle of the beam. A sketch of the beam in elevation is shown in Figure 107.



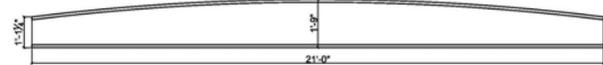
**FIGURE 104.** Creation of inspection opening no. 2 (east wing - first floor beams) at the face of a cast iron beam (photo by S. Kelley, 2011).



**FIGURE 105.** Close up view of inspection opening no. 2 (east wing - first floor beams) (photo by S. Kelley, 2011).



**FIGURE 106.** Sketch of the profile of the cast iron beam at inspection opening no. 2 (east wing - first floor). This beam was likely fabricated and installed by J. T. Dowdall circa 1852.



**FIGURE 107.** Sketch in elevation of cast iron beam viewed at inspection opening no. 2. Based on findings at inspection opening no. 6, the top flange may be curved.

### Inspection Opening no. 3 (north wing, circa 1858 – second floor beams)

Inspection opening no. 3 was made at the first floor access hatch in the gallery space S103 of the north wing to assess the second floor framing structure. It consisted of an opening in the existing plaster and masonry vault alongside an iron beam. These iron beams were likely cast and installed by J. G. McPheeters. See Figure 108 through Figure 111 for conditions observed at this inspection opening.

The profile of this beam is shown in Figure 112. The bottom flange slope was utilized to form a spring point for the masonry floor arches between beams as well as to provide the appropriate tensile section required to carry the loads. Levelness measurements taken below the

top flange indicated that the top flange is not level. It is not known whether the top flange curves with the high point at the beam midpoint or tapers from the midpoint. A speculative sketch of the beam in elevation is shown in Figure 113. This sketch compares with cast iron beams that were depicted by architectural cast iron manufacturer Daniel D. Badger in his 1865 publication; *Illustrations of Iron Architecture made by the Architectural Iron Works of the City of New York* (refer to Figure 103). A portion of the large cast iron girder supporting the cast iron beams, as described above, was also observed at this location.



**FIGURE 110.** Cast iron girder on the right in this photograph spans between cast iron columns at inspection opening no. 3 (north wing - second floor) (photo by S. Kelley, 2011).



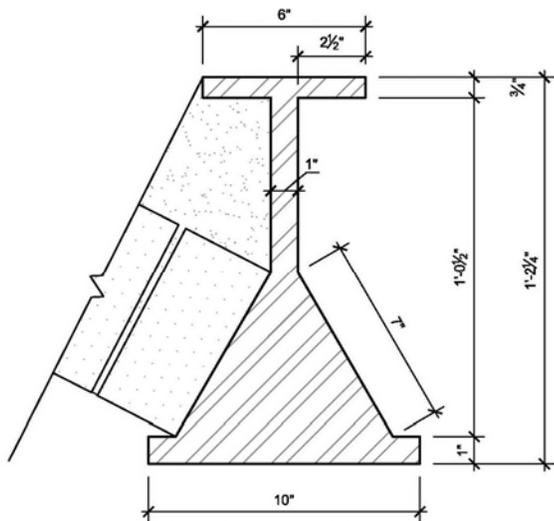
**FIGURE 108.** Overall view of location of inspection opening no. 3, located above the suspended ceiling hatch above the gallery space in the north wing (photo by R. Will, 2011).



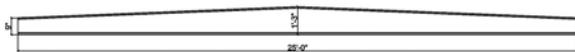
**FIGURE 111.** View of bottom flange and opening at side of cast iron beam at inspection opening location no. 3 (north wing - second floor) (photo by S. Kelley, 2011).



**FIGURE 109.** View of masonry arches spanning between cast iron beams at inspection opening location no. 3 (north wing - second floor) (photo by S. Kelley, 2011).



**FIGURE 112.** Sketch of the profile of cast iron beam at opening no. 3 (north wing - second floor). This beam was likely fabricated and installed by J. G. McPheeters circa 1858. The large triangular mass of iron at the bottom increases strength of this shape in tension, as cast iron has low tensile strength. It also forms a bearing surface for the spring point of the brick floor vault.



**FIGURE 113.** Speculative sketch in elevation of the cast iron beam viewed at inspection opening no. 3 (north wing - second floor).

### Inspection Opening no. 4 (west wing, circa 1855 – second floor beams)

Inspection opening no. 4 was made above the ceiling access hatch at the first floor Dred Scott Courtroom space S104 to assess the second floor framing structure above. It consisted of an opening in the existing plaster and masonry vault alongside a double iron beam that spans in the north-south direction. The fabricator of these beams is thus far unattributed. See Figure 114 through Figure 118 for conditions observed at this inspection opening.

The profile of these iron beams is depicted in Figure 119. The beam is similar in section to iron railroad tracks of the time leading to speculation that the profile shape used for train

rails influenced cast iron beam shapes for a period of time. To install a masonry arch springing from this beam a custom-made brick was installed. Levelness measurements taken below the top flange indicated that the top flange is not level. It is not known whether the top flange curves with the high point at the beam midpoint or tapers from the midpoint. A speculative sketch of the beam in elevation is shown in Figure 120.



**FIGURE 114.** Overall view of the location of inspection opening location no. 4 above the ceiling hatch in the first floor north courtroom in the west wing (photo by S. Kelley, 2011).



**FIGURE 115.** View of cast iron double beams where they bear on the interior bearing walls in the west wing. The bearing walls were added in 1855 and the beams likely date from this period as well (photo by S. Kelley, 2011).



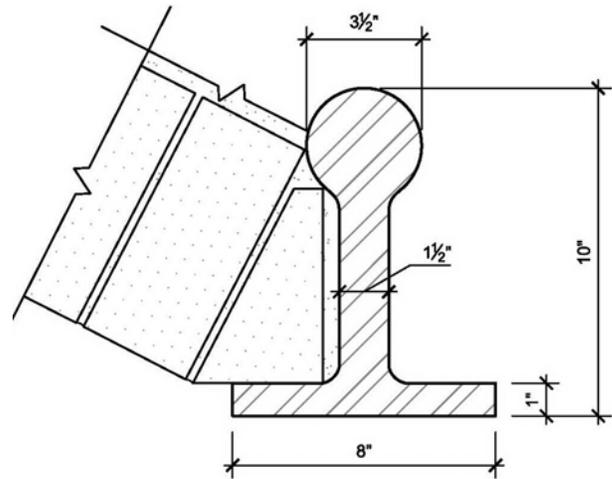
**FIGURE 116.** Close-up view of the web and bottom flange of the cast iron beam at inspection opening no. 4 (west wing - second floor). Note that a specially fabricated brick was utilized to form a spring point for the brick vault (photo by S. Kelley, 2011).



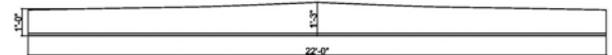
**FIGURE 117.** One of the specially fabricated brick, shown in situ in the previous figure, at inspection opening no. 4 (west wing - second floor) (photo by S. Kelley, 2011).



**FIGURE 118.** Close up view of the web and bottom flange of the cast iron beam at inspection opening no. 4 (west wing - second floor). A triangular shaped sample (no. 8), indicated by the dashed oval, was removed for metallurgical testing (photo by S. Kelley, 2011).



**FIGURE 119.** Sketch of the profile of the cast iron beam at inspection opening no. 4 (west wing - second floor). This beam was likely installed circa 1855 and the fabricator is not attributed. The custom-made brick that forms a spring point is depicted. In this area there are two beams running side by side.



**FIGURE 120.** Speculative sketch in elevation of the cast iron beam viewed at inspection opening no. 4 (west wing - second floor).

### Inspection Opening no. 5 (south wing, circa 1853 – second floor beams)

Inspection opening no. 5 was made at the first floor access hatch in the gallery space S124 to

assess the second floor framing structure above. It consisted of an opening in the existing plaster and masonry vault alongside an iron double beam that spans in the east-west direction and is supported by a cast iron triple girder spanning between cast iron columns and the masonry walls. These iron beams were likely fabricated and installed by J. T. Dowdall. A portion of the large cast iron girder supporting the cast iron beams, as described above, was also observed at this location. See Figure 121 through Figure 124 for conditions observed at this inspection opening.

The profile of these cast iron beams is shown in Figure 125. The beam is similar in section to iron railroad tracks of the time. Levelness measurements taken below the top flange indicated that the top flange is not level. It is not known whether the top flange curves with the high point at the beam midpoint or tapers from the midpoint. A speculative sketch of the beam in elevation is shown in Figure 126.



**FIGURE 121.** Overall view of location of inspection opening no. 5 above the ceiling hatch in the south wing, above the first floor gallery space (photo by S. Kelley, 2011).



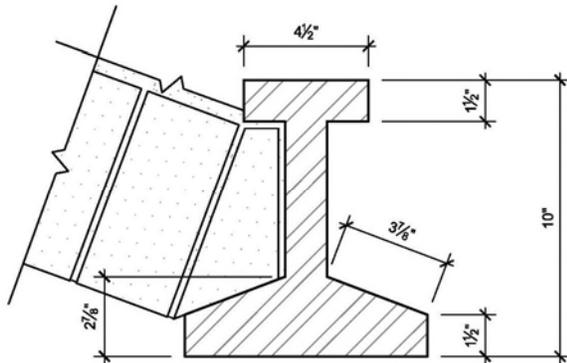
**FIGURE 122.** Close up view of the cast iron girder where it bears on a cast iron column at inspection opening no. 5 (south wing - second floor) (photo by S. Kelley, 2011).



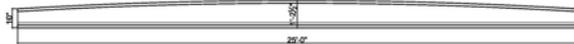
**FIGURE 123.** Web of cast iron beam exposed where masonry was removed at inspection opening no. 5 (south wing - second floor) (photo by S. Kelley, 2011).



**FIGURE 124.** Cast iron sample (sample no. 1) removed for metallurgical testing at inspection opening no. 5 (south wing - second floor) (photo by S. Kelley, 2011).



**FIGURE 125.** Sketch of the profile of the cast iron beam section viewed at inspection opening no. 5 (south wing - second floor). This beam was likely fabricated and installed by J. T. Dowdall circa 1853. The large triangular mass of iron at the bottom increases strength of this shape in tension as cast iron has low tensile strength.



**FIGURE 126.** Sketch of elevation of cast iron beam elevation viewed at inspection opening no. 5. We speculate that the top flange is curved based on our findings at inspection opening no. 6.

### Inspection Opening no. 6 (east wing, circa 1852 – third floor beams)

Inspection opening no. 6 was made in the floor on the third floor to assess the top of the beams at the second floor framing structure. These iron beams were probably cast and installed by J. T. Dowdall and are the earliest cast iron beams in the Old Courthouse. The beams span in the north-south direction and are spaced approximately 60 inches on center. The beams were located using a metal detector, after which stone pavers were removed to expose the upper portion of one of the beams at three locations. Excavation was performed downward through the loose fill until the top flange of the beam was visible. This process was conducted at three locations spaced at approximately 16 inches apart and the distance was measured from the top of the floor to the top of the beam. See Figure 127 through Figure 129 for conditions observed at this inspection opening.

Measurements indicated that the top of the beam is curved, with the greatest beam depth at the midpoint of the span. The width of the top flange is two inches. See Figure 130 for a sketch of the elevation of this beam.



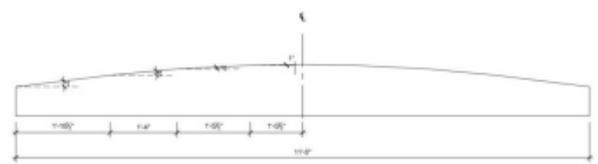
**FIGURE 127.** Making inspection opening no. 6 from the third floor of the east wing near the stairway (photo by S. Kelley, 2011).



**FIGURE 128.** The top of the cast iron beam was exposed in three locations at inspection opening no. 6 (east wing - third floor) so that the camber of the top flange could be determined (photo by S. Kelley, 2011).



**FIGURE 129.** View into one of the three openings, showing the top flange of the cast iron beam at inspection opening no. 6 (east wing - third floor) (photo by S. Kelley, 2011).



**FIGURE 130.** Sketch of the cast iron beam elevation at the east wing third floor as determined from measurements taken at inspection opening no. 6.

## Laboratory Studies

Cast and wrought iron samples were removed at many of the inspection openings as well as at locations in the attic and dome. Locations were chosen in order to obtain samples from floor beams from each of the four wings, from the original roof framing remnants, and from the dome. All metal sample removal was completed by NPS staff in January 2012 using a reciprocating saw with a blade specifically designed for cutting iron. Floor plans indicating sample removal locations are included in Appendix C.

Metallurgical analysis was conducted on the samples to assess whether the iron was cast or wrought and to determine the chemical makeup of the samples. The laboratory testing was performed by Exova. The complete test reports are included in Appendix B.

The material sampling was limited due to the difficulty in removing samples and the precious nature of the resource. Therefore, any conclusions to be drawn from these results must also be limited.

The following is a description of the metal samples that were removed and the results of testing:

- **Sample 1.** South wing, second floor beam at inspection opening no. 5. The beam was likely fabricated by John T. Dowdall circa 1853. The sample was prism shaped with the governing dimensions of approximately 1 inch. The laboratory compositional and microstructure analyses indicate that the beam is fabricated from grey cast iron. Excessive porosity was observed in this sample (Figure 131).
- **Sample 2.** North wing, attic truss remnant embedded in masonry wall. The sample was four inches by 1-1/2 inch by 1/2 inch thick.

The truss was likely fabricated by J. G. McPheeters circa 1858. The laboratory compositional and microstructure analyses indicate that this truss element is fabricated from wrought iron.



**FIGURE 131.** Excessive porosity observed in sample 1 was caused by either air captured in the mold during casting or gas in the molten material that became less soluble during solidification of the iron.

- **Sample 3.** East wing, attic truss remnant. The sample was six inches by 1-1/2 inch by 3/4 inch thick. The truss was likely fabricated by McMurray & Pauley circa 1853. The laboratory compositional and microstructure analyses indicate that this truss element is fabricated from wrought iron.
- **Sample 4.** East wing, east portico roof framing member cross bracing between portico roof purlins. The sample was 18 inches by 1-1/2 inch by 3/4 inch thick. This remnant was no longer connected to the original structure, so was easily removed during the structural investigation in October 2011. The beam was likely fabricated by McMurray & Pauley circa 1853. The laboratory compositional and microstructure analyses indicate that this roof framing element is fabricated from wrought iron.
- **Sample 5.** South wing, attic truss remnant. The sample was five inches by three inches by 3/4 inch thick. The manufacturer was not determined but the fabrication date is circa 1854. The laboratory compositional and microstructure analyses indicate that this truss element is fabricated from wrought iron.
- **Sample 6.** South wing, attic truss remnant. The manufacturer was not determined but the fabrication date is circa 1854. The sample was six inches by 1-1/2 inch by 1/2 inch thick. The lab analysis (inclusive of composition and microstructure analyses) indicates this truss element is fabricated from wrought iron.
- **Sample 7A.** Dome, radial band of metal strap spanning between iron ribs. The sample was 2-1/2 inches by 1 inch by 1/4 inch thick. The band was likely fabricated by either Phoenix Iron Company or McPheeter & Pauley circa 1860. The laboratory compositional and microstructure analyses indicate that this radial band element is fabricated from wrought iron.
- **Sample 7B.** Dome, bracing element, metal strap bracing between iron ribs and radial bands. The sample was cross shaped and is approximately 2-1/2 inches by 2-1/2 inches by 1/2 inch thick. The bracing was likely fabricated by either Phoenix Iron Company or McPheeter & Pauley circa 1860. The laboratory compositional and microstructure analyses indicate that this dome bracing element is fabricated from gray cast iron.
- **Sample 8.** West wing, underside of second floor at inspection opening no. 4. The sample was prism shaped with the governing dimensions of approximately 1 inch. The beam was most likely fabricated circa 1855. The laboratory compositional and microstructure analyses indicate that this beam is fabricated from gray cast iron.

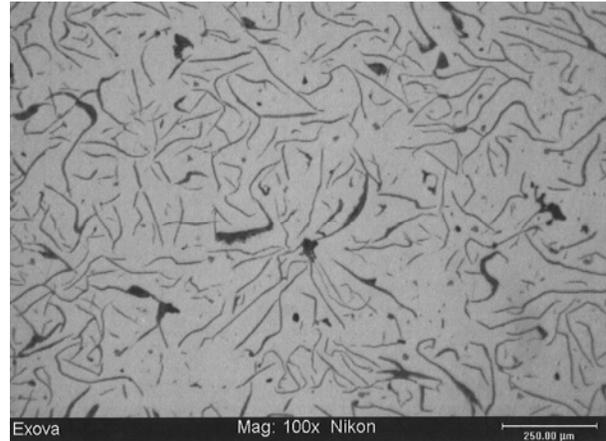
- **Sample 9.** East wing, underside of first floor at inspection opening no. 2. The sample was prism shaped with the governing dimensions of approximately 1 inch. The beam was likely fabricated by John T. Dowdall circa 1853. The laboratory compositional and microstructure analyses indicate that this beam is fabricated from gray cast iron.
- **Sample 10.** North wing, underside of first floor at inspection opening no. 1. The sample was prism shaped with the governing dimensions of approximately 1 inch. The truss was likely fabricated by J. G. McPheeters circa 1858. The lab analysis (inclusive of composition and microstructure analyses) indicates this beam is constructed from gray cast iron.

## Discussion

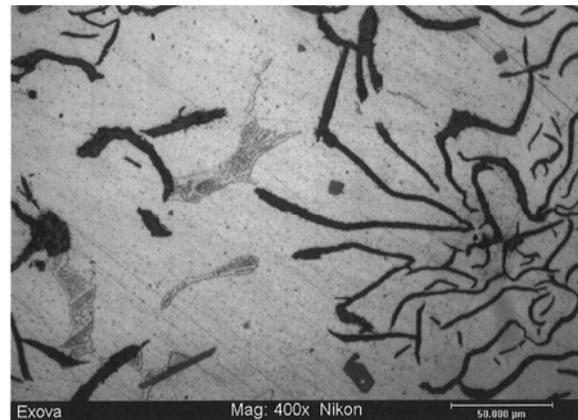
The difference between wrought and cast iron components can, in most cases, be readily seen by the experienced eye. Cast iron can be fabricated in numerous utilitarian and decorative shapes that cannot be obtained by working iron. Cast iron beams also typically have cast lines. Microscopically, cast iron is described in the laboratory analysis report as “flake graphite in an essentially ferritic matrix” (Figure 132 and Figure 133).

Wrought iron is seen in the building structure as bars that are rectangular in profile and are worked at their ends to form connection points. These bars are geometrically very precise, indicating that they were formed using an industrialized (rolling) process. Prefabricated bar stock was likely used to form trusses, lattice beams, hangers and the like, with the connections for these elements formed by hammer forging. The hammer forging was done in the shop, on site, or most likely both. Microscopically, the wrought iron is described in the laboratory analysis report as “ferrite

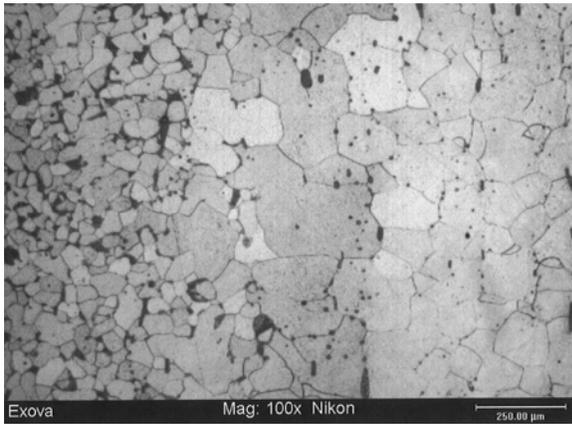
interspersed with iron silicate slag” (Figure 134 and Figure 135).



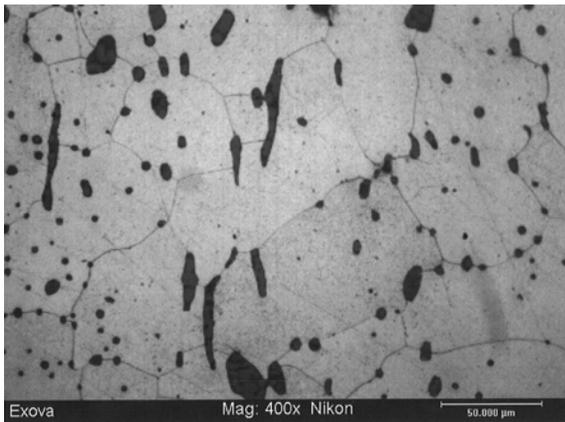
**FIGURE 132.** A microsection of cast iron as seen at 100x magnification. This is sample 7B taken from the dome S-bracing element. The dark tendrils are slag inclusions. Source: Exova report, refer to Appendix B.



**FIGURE 133.** A microsection of cast iron as seen at 400x magnification. This is sample 1 taken from a south wing floor beam. The dark tendrils are slag inclusions. Source: Exova report, refer to Appendix B.



**FIGURE 134.** A microsection of wrought iron as seen at 100x magnification. This is sample 7A taken from a radial band in the dome. The dark webbing and spots are slag inclusions. Source: Exova report, refer to Appendix B.



**FIGURE 135.** A microsection of wrought iron as seen at 400x magnification. This is sample 4 taken from a member in the east wing portico roof. The dark webbing and spots are slag inclusions. Source: Exova report, refer to Appendix B.

Key findings of the chemical analysis are summarized in the following Metallurgical Table of Cast and Wrought Iron at the Old Courthouse.

**Metallurgical Table of Cast and Wrought Iron at the Old Courthouse**

	<b>Description</b>	<b>Fabricator</b>	<b>Vintage circa</b>	<b>Iron Type</b>	<b>Total Carbon</b>	<b>Sulfur</b>	<b>Manganese</b>	<b>Phosphorus</b>	<b>Silicon</b>
<b>Sample 1</b>	South wing 2nd floor beam	J. T. Dowdall	1853	gray cast	3.340	0.325	0.390	0.528	2.320
<b>Sample 7B</b>	Dome bracing element	McPheeter & Pauley	1860	gray cast	3.960	0.087	0.320	0.219	1.110
<b>Sample 8</b>	West wing, 2nd floor beam	unknown	1855	gray cast	3.550	0.123	0.160	0.469	1.850
<b>Sample 9</b>	East wing, 1st floor beam	J T Dowdall	1852	gray cast	3.460	0.129	0.120	0.543	1.270
<b>Sample 10</b>	North wing, 1st floor beam	J G McPheeters	1858	gray cast	3.700	0.063	0.730	0.533	2.440
<b>Typical range for cast</b>					3.5- 4.5	.018- 0.1	0.5- 2.5	.03- 0.1	0.25- 3.5
<b>Sample 2</b>	North wing, attic truss	J G McPheeters	1858	wrought	0.017	0.019	0.010	0.365	0.250
<b>Sample 3</b>	East wing, attic truss	McMurray & Pauley	1853	wrought	0.004	0.010	0.040	0.195	0.180
<b>Sample 4</b>	East wing, portico roof	McMurray & Pauley	1853	wrought	0.006	0.016	0.040	0.351	0.210
<b>Sample 5</b>	South wing, attic truss	unknown	1854	wrought	0.019	0.020	0.010	0.366	0.070
<b>Sample 6</b>	South wing, attic truss	unknown	1853	wrought	0.003	0.097	0.010	0.363	0.100
<b>Sample 7A</b>	Dome, radial band	McPheeter & Pauley	1860	wrought	0.018	0.023	0.020	0.216	0.260
<b>Typical range for wrought</b>					0.05- 0.25	0.02- 0.1	0.01- 0.1	0.05- 0.2	0.02- 0.2

Based on the results of the laboratory analysis, the original floor beams and girders are fabricated from gray cast iron, while the roof truss elements removed circa 1941 are

fabricated from wrought iron. From visual inspection, the framing for the dome is composed primarily of wrought iron, with wrought iron banding and cast iron bracing.

Iron production at the time was an art as well as an evolving science, and it is noteworthy that the chemical composition of the samples fabricated in different factories over a period of time are comparable to one another.

### Cast Iron

It is significant that the cast iron samples from a two decade period and three to four different fabricators are chemically very similar to one another. This suggests that acceptable cast iron composition was well understood in the St. Louis community of cast iron fabricators. A discussion of the findings of the chemical analysis conducted for this study is provided below.

- **Iron content** from the samples ranges from 93 percent to 94.5 percent and is within the typical range expected for cast iron of this era.
- **Carbon content** ranges from 3.34 percent to 4.90 percent, which is within the typical range. Carbon content lowers the melting point of the alloy, making the molten material conducive to casting.
- **Sulfur content** of sample no. 1 is 0.325 percent, which is more than double the sulfur content of any of the other cast iron samples. Excluding sample no. 1, the sulfur content ranges from 0.06 percent to 0.13 percent, which is at the high end of the typical range. High sulfur contents will make alloy brittle at high temperatures.
- **Manganese content** ranges from 0.12 percent to 0.73 percent, which is well below the typical range. Manganese was typically added to cast iron to counter the effects of sulfur, and contributes to the strength and hardness of the iron. Like carbon, manganese also lowers the melting

point of the alloy and increases its fluidity in the molten state.

- **Phosphorus content** ranges from 0.200 percent to 0.543 percent, which is above the typical range. Phosphorus was important as an alloying agent and for hardening of the iron, Excessive phosphorus content, around 0.900 percent, makes iron brittle at room temperature.
- **Silicon content**, an indication of slag content, ranges from 1.10 percent to 2.44 percent and is within the typical range. Slag inclusions are a result of the manufacturing process in irons made by rolling or forging rather than an intentionally added ingredient.

### Wrought Iron

It is significant that the wrought iron samples from an eight-year period and from at least two different fabricators are chemically very similar to each other. This suggests that the wrought iron composition was well understood in the St. Louis community of wrought iron fabricators. In addition, the consistency of the wrought iron material suggests industrialization in its manufacture. A discussion of the chemical compositions is provided below.

- **Iron content** from the samples average at 99.4 percent, which is very pure.
- **Carbon content** ranges from 0.003 percent to 0.019 percent, which is below the typical range. This percentage is also well below the 0.100 percent carbon content limit required for the iron to remain ductile.
- **Sulfur content** ranges from 0.019 percent to 0.097 percent, which is within the typical range. High sulfur contents make wrought iron brittle at high temperatures.

- **Manganese content** ranges from 0.01 percent to 0.04 percent, which is within the typical range. Manganese was typically added to counter the effects of sulfur and contributes to the strength and hardness of the iron.
- **Phosphorus content** ranges from 0.195 percent to 0.366 percent which is above the typical range. Phosphorus is important as an alloying agent and for hardening of the iron. Excessive phosphorus content, around 0.900 percent, makes iron brittle at room temperature.
- **Silicon content**, an indication of slag content, ranges from 1.10 percent to 2.44 percent and is within the typical range. Slag inclusions are the result of the manufacturing process in irons made by rolling or forging rather than an intentionally added ingredient. For the iron to be ductile the slag needs to be uniformly dispersed, a characteristic that cannot be evaluated by limited sampling.

Trace amounts of nickel, copper, and vanadium were also found in the wrought iron samples. It could not be determined whether nickel and copper were added or were naturally occurring as impurities though the latter is suspected. Vanadium, which can occur naturally in iron deposits, had only been categorized as an element in the early 19th Century, therefore it is assumed to be an impurity.

## Treatment Recommendations

The cast and wrought iron elements of the structure that remain are a significant feature of the building. Preservation of the existing historic fabric is recommended, including the following specific treatment recommendations:

- The existing live and dead loading requirements on the floors should not be increased. All new uses for any space should have loading requirements that are less than or equal to the current loading conditions of the existing floor structures. If a change of use is proposed with greater loading requirements than the current floor loadings, a structural analysis of that floor should be implemented.
- All cast iron floor beams and masonry vaulting should remain intact and be preserved to greatest extent possible. If penetrations in these floor systems are required for future modifications, such penetrations should be designed by a structural engineer who is experienced with cast iron beams and masonry vaulting systems.
- No holes or fasteners should be installed in the cast iron beams as such intrusions can weaken the capacity of these beams.
- Iron samples removed as a result of this investigation should be catalogued as part of the NPS JNEM archival collection for future reference.

---

# Special Issue: Rotunda Cast Iron Capitals

## Historical Overview

Twenty-four cast iron columns surround the rotunda beneath the dome of the Old Courthouse and are seen as part of the exterior expression of the Rumbold-designed dome but are not a part of his design. According to archival documentation, these columns were fabricated and installed by J. G. McPheeters of St. Louis. His contract called for twenty-four cast iron columns that would support the stone cornice of the dome. The columns were erected in the late summer of 1858 for the Lanham-designed dome, which was soon abandoned. These columns remained in place until the controversy over the dome construction was resolved in 1860, and were then utilized with the Rumbold dome. The columns erected for the proposed Lanham design remained structural in the Rumbold designed dome.

According to the 1906 photograph (Figure 136), these columns appeared to be of the Corinthian order. At some time between 1906 and 1916 the leaf appliques were removed from the column capitals, as evidenced by their disappearance in the photograph of 1916 (Figure 137). A 1936 report states that “the Corinthian leaves of cast iron that formerly were in place on the capitals of the columns encircling the exterior of the dome’s base have all rusted off.”<sup>103</sup> It is

speculated that the bolt connections that held the appliques to the column as well as the leaf appliques had become compromised due to corrosion, leading to the decision to remove all of the appliques.



**FIGURE 136.** The Old Courthouse circa 1906, with the Corinthian column capitals visible. Source: Photograph by Emil Boehl. Missouri History Museum collection, reference n11207.

---

103. John A. Bryan, James B. Rasbach, and Walter V. Kerlin, *Preliminary Report and Estimate for the Repair and Restoration of the Old Courthouse*, December 16, 1936.



**FIGURE 137.** The Old Courthouse circa 1916; the Corinthian column capitals of the rotunda were no longer present by this time. Source: Missouri History Museum collection, reference n02711. Photographer unknown.

## Existing Conditions

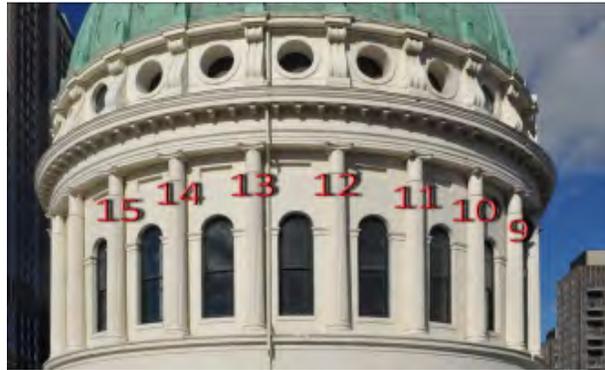
A visual inspection was performed on the cast iron capitals that surround the rotunda in February of 2012. This inspection was limited to visual access from the roof below using binoculars and a 200mm telephoto lens with high resolution digital photography. For purposes of this discussion, each of the twenty-four columns has been given a column number oriented in clockwise order starting to the left of center of the north elevation. These column designations are shown on photographs of the rotunda elevations (Figure 138 through Figure 141).



**FIGURE 138.** North elevation of the rotunda of the Old Courthouse. Photograph by S. Kelley, 2011.



**FIGURE 139.** East elevation of the rotunda of the Old Courthouse. Photograph by S. Kelley, 2011.



**FIGURE 140.** South elevation of the rotunda of the Old Courthouse. Photograph by S. Kelley, 2011.



**FIGURE 141.** West elevation of the rotunda of the Old Courthouse. Photograph by S. Kelley, 2011.

The following conditions were noted during the visual investigation.

- All of the capitals have been removed except for the abacus at the top of these capitals, which have remained in place.
- Each abacus remains bolted to a tube below (Figure 142). The clips and bolts are likely original. The missing capital leaves were

probably composed of cast iron and were applied ornament.

- At rotunda column 23, the tube has a space at the bottom indicating that the tube was slipped over the structural column beneath. As the abacus may have been part of the support mechanism for the stone above, it would have been extremely difficult to remove the abacus along with the capital.



**FIGURE 142.** At rotunda column 23, the abacus at the top of the capital is still in place and bolted to a tube. The tube is separate from the structural columns, as evidenced by the void space seen at the top of the column flutes. Photograph by S. Kelley, 2011.

- At rotunda column 1 on the north elevation, there is a reveal between the abacus and stone wall behind (Figure 143). At column 18 on the west elevation, the stone has been cut to fit around the abacus (Figure 144). This indicates that the ironwork was erected prior to laying the stonework.



**FIGURE 143.** Rotunda column 01, showing the space between the abacus and stonework. Photograph by S. Kelley, 2011.



**FIGURE 144.** Rotunda column 18, showing that the stone work was cut to fit around the capital abacus that was already in place. Photograph by S. Kelley, 2011.

- At several rotunda columns, the tube to which the abacus is attached has been repaired in the past with sheet metal that has been mechanically fastened to the tube, with its joints waterproofed with sealant in some

cases. This can be seen at rotunda columns 4, 7, 11, 12, 16, and 17 (Figure 145 through Figure 150). These patches have been obscured by paint to make them blend in with the column. All of the patches are similar except for that on rotunda column 16, which is much larger and appears to have an open cavity at the back. In addition, rotunda column 11 is missing part of the underside of the abacus.

- Rotunda column 3 has some cracking evident at the base of the tube (Figure 151). The cracking appears to have occurred not in the cast iron but in a patching material that is starting to fail.



**FIGURE 145.** Rotunda column 04. Sheet metal has been installed on the lower portion of the capital area directly above the column flutes. Photograph by S. Kelley, 2011.



**FIGURE 146.** Rotunda column 07. Sheet metal has been installed on the lower portion of the capital area directly above the column flutes. Photograph by S. Kelley, 2011.



**FIGURE 147.** Rotunda column 11. Sheet metal has been installed on the lower portion of the capital area directly above the column flutes. Note that the underside of the abacus is missing at this location. Photograph by S. Kelley, 2011.



**FIGURE 148.** Rotunda column 12. Sheet metal has been installed on the lower portion of the capital area directly above the column flutes. Photograph by S. Kelley, 2011.



**FIGURE 150.** Rotunda column 17. Sheet metal has been installed on the lower portion of the capital area directly above the column flutes. Photograph by S. Kelley, 2011.



**FIGURE 149.** Rotunda column 16. Sheet metal has been installed on the lower two-thirds of the capital area directly above the column flutes. In this image the vertical overlap joint is clearly seen. Photograph by S. Kelley, 2011.



**FIGURE 151.** Rotunda column 03. The evident cracking appears to be within a patching material that has begun to fail. Photograph by S. Kelley, 2011.

## Discussion

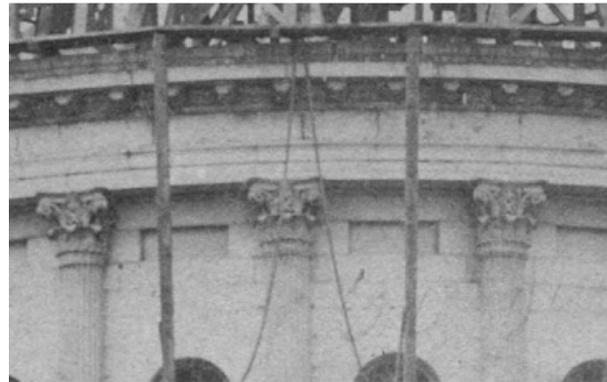
The cast iron capital elements that were removed appear to have been a decorative appliqué rather than part of the structure of the cast iron columns that remain. Their removal between 1906 and 1916 was probably due to corrosion and the concern that any that had not fallen from the building might fall in the future. After removal, patching was implemented, possibly to waterproof bolt holes left in the structural column beneath. This patching was performed using at least two different methods, which may indicate more than one patching campaign. Cracks and failures in this patching as well as bolt holes left unsealed can lead to water infiltration and corrosion over the long term.

## Treatment Recommendations

- Columns 11, 16, 17 and 23 provide opportunities for further close-up study because they have cavities that can be accessed. These features could be inspected close-up using industrial rope access.
- The column capitals should be inspected in general to verify that they are water tight. Water collecting within the hollow columns would contribute to corrosion and could become a major concern over a period of time.
- Replacing the column capitals should be relatively straightforward, as the original elements were ornamental appliqués and new appliqués could be fabricated. Close up inspection would reveal how the originals were attached, but replacement would not necessarily need to follow the original connection scheme. It will be important to field measure prior to design and fabrication. One difficulty is that only photos remain to document how the capitals

originally appeared, and the photos that are presently available provide limited detail (Figure 152 and Figure 153).

- Although it would be possible to replicate the original capitals in cast iron, the replacement capitals would not need to be composed of the original material. Instead, consideration could be given to fabricating the new capitals from materials such as cast aluminum, glass fiber reinforced concrete, and fiberglass reinforced plastic. All of the materials are relatively light and would therefore require less robust connections. Cast aluminum could readily replicate the appearance of the original features, with greater corrosion resistance. Future close up examination would reveal that these elements are replacements rather than original.



**FIGURE 152.** Close up view of rotunda capitals as seen in an 1862 photograph taken during the construction of the Rumbold dome. Source: Missouri History Museum collection, reference n10665. Photograph by unknown photographer.



**FIGURE 153.** Close up view of rotunda columns from a 1906 photograph. Source: Photograph by Emil Boehl. Missouri History Museum collection, reference n11207.

## **Cost Summary**

A preliminary construction cost estimate was developed for the scope of work as indicated in this section. Assuming cast aluminum or GFRC is used, replica capitals could be fabricated to approximate the original design of the capitals. See Appendix E for additional cost breakout information.



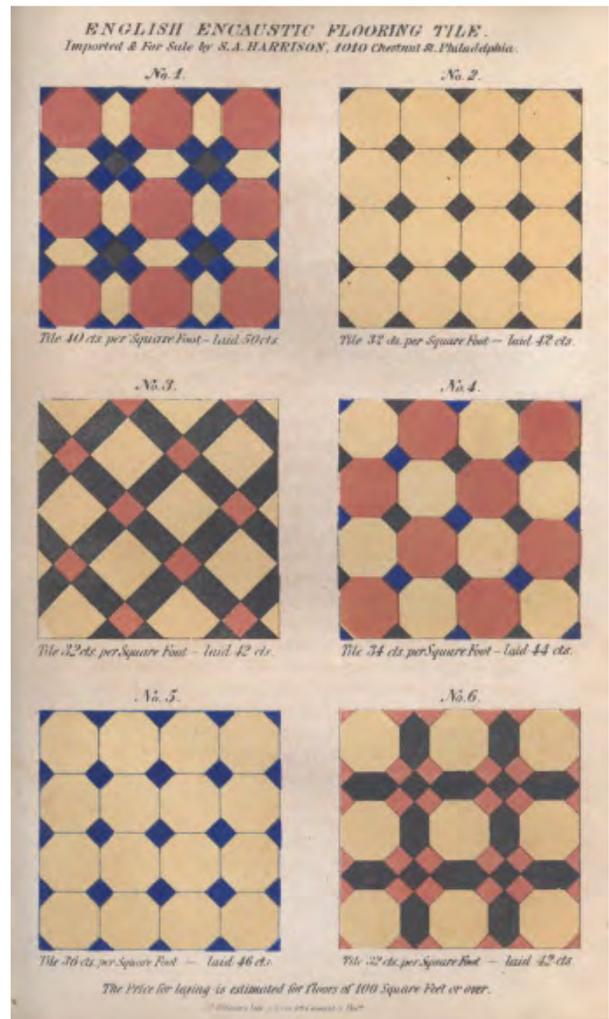
# Special Issue: Encaustic Floor Tile

## Historical Overview

### Encaustic Tiles

Encaustic tiles are an unglazed decorative ceramic floor tile. Encaustic tiles are distinct from glazed ceramic tile products in that their color and decorative designs are not on the surface, but are integral patterns created by the use of different color clays during the manufacturing process. Encaustic tiles may also be solid color, with one color integral throughout the tile. Historically, solid-colored encaustic tiles were often installed using different shapes and colors of tiles to create geometric patterns.

Modern encaustic tile production began in England in 1843, when Herbert Minton revived a practice that had existed in the Middle Ages. Tile production was mechanized in the 1840s with development of the “dust-pressing” method, which involved compressing nearly dry clay between two metal dies. By 1860, encaustic tiles imported from England were readily available in the United States (Figure 154).



**FIGURE 154.** A plate from the book by Samuel Sloan, *Sloan's Homestead Architecture, Containing Forty Designs for Villas, Cottages, and Farm Houses, with Essays on Style, Construction, Landscape Gardening, Furniture, Etc., Etc.*, first edition (Philadelphia: J.B. Lippincott & Co., 1861). As noted in this plate, encaustic tile imported from England was available at the time of publication. The four-color pattern shown in No. 4 of this plate is very similar to the three-color pattern present in the Old Courthouse, room S124.

By the latter part of the nineteenth century, encaustic tiles had become a popular floor material in many public buildings in the United States. The production of decorative tiles in this country began around 1870 and flourished until about 1930. At least twenty-five ceramic tile companies were founded in the United States between 1876 and 1894. As a result, encaustic tile floors in the United States may have been manufactured domestically or imported, typically from England. After 1930, the use of encaustic floor tiles declined.<sup>104</sup>

### Flooring in the South Wing

Excavation for construction of the south wing of the Old Courthouse began in April 1853. Interior finishing of the wing was underway by 1855.<sup>105</sup> The south wing was completed by August 1856, when the State Supreme Court took up occupancy of the second floor. It appears that some of the floor finishes installed during original construction of the south wing were temporary in nature. For example, the courtroom on the east side of the first floor (room S122) initially had a floor of “rough undressed plank” that was replaced by the existing black and white marble tile in 1860.<sup>106</sup>

Although the flooring in the courtroom on the west side of the first floor (room S124) is not mentioned in the court records cited by Lindenbusch, it may also have been “rough

undressed plank” when the south wing interior was first finished in 1855–1856 and occupied by the County Recorder of Deeds. As noted above, encaustic tile imported from England would have been available in the 1850s, so the existing floor in room S124 may date to original construction. However, available reference documents refer only to stone or marble flooring for work implemented in the courthouse in the 1850s and 1860s.

In 1860, the use of the west side first floor space changed use and became the offices of the County Treasurer and Assessor. In 1871, the use of the first floor of the south wing changed again. The east side first floor courtroom (room S122) was vacated when the criminal courts moved to the new Four Courts Building (on the south side of Clark Street between 11th and 12th streets). The Clerk of the Circuit Court joined the County Treasurer and Assessor in the west side first floor space (room S124). In 1876, these two occupants vacated the space, which became the office of the City Treasurer.

In response to these changes of use, the room on the west side (room S124) was remodeled. Although the replacement of flooring is not specifically mentioned as part of the remodeling work, it is possible that the encaustic tile flooring was installed in the room at this time, if not already present in the space.<sup>107</sup> Since domestically produced encaustic tile was available in the 1870s, this flooring material would have been an economical choice either in 1871 or 1876. Regardless of whether the encaustic tile in room 124 dates to the initial finishing of the space in 1855–1856 or to subsequent remodeling in 1860, 1871, or 1876, the tile is a historically significant finish material.

- 
104. Anne E. Grimmer and Kimberly A. Konrad, *Preservation Brief 40: Preserving Historic Ceramic Tile Floors* (Washington, D.C.: National Park Service, Technical Preservation Services, 1996).
105. Lindenbusch, *Historic Structure Report: Part 1*, 42, citing St. Louis County Court Records, vol. VII, 311, and vol. VIII, 279, 340, and 391.
106. *Ibid.*, 69, quoting H. A. Clover to Board of County Commissioners, May 14, 1860, and St. Louis County Court Records, vol. X, 156–157. National Park Service, Jefferson National Expansion Memorial Archives, Record Unit 144, Box 1, Folder 38.

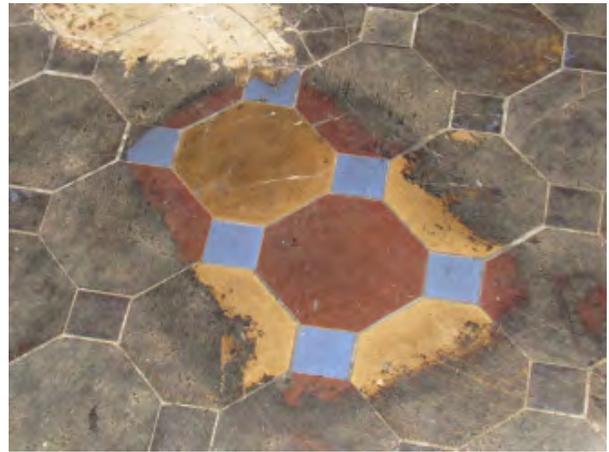
- 
107. *Ibid.*, 119, citing St. Louis County Court Records, vol. XVI, 349.

## Existing Conditions

### Floor in Room S124

The former courtroom at the west side of the south wing, currently used as exhibit space, has a historic encaustic tile floor. The tile floor is now exposed, following the removal of carpeting and other non-historic floor finishes in 2004.

The tile floor has a simple geometric pattern using three types of solid-color tiles. The primary tiles are 6-1/4-inch by 6-1/4-inch octagonal tiles laid in a checkerboard pattern, half red and half buff colored. At the intersections of the octagonal tiles, smaller 2-1/8-inch square blue tiles are laid on the diagonal (Figure 155 and Figure 156). The encaustic tile floor exhibits a variety of distress conditions including cracked, broken, or loose tiles, as well as significant areas of missing tile. The entire floor surface has a black mastic residue that was used to adhere non-historic floor finish materials, now removed. There is an 11 foot 6 inch wide strip of gray cementitious leveling or fill material along the center of the room running east-west. Limited inspection openings performed did not reveal encaustic tile below this fill material. Throughout the remainder of the floor, intermittent sunken or missing areas of tile have been filled with white leveling compound or other similar fill material (Figure 157). There are numerous cracked or otherwise damaged tiles, including damage related to fastening of contemporary wood carpet stretching strips to the floor. Additionally, isolated individual tiles are missing, up to approximately five percent of the total floor area. In total, approximately half of the original quantity of encaustic tiles appears to be intact and present in the room, beneath the mastic residue and white leveling compounds.



**FIGURE 155.** View of a portion of the encaustic tile floor cleaned in October 2004, showing original colors and pattern. Photograph by WJE, October 19, 2011.



**FIGURE 156.** A portion of the encaustic tile floor near one of the cast iron columns was cleaned as part of the 1980 interior renovation of the space. Source: Park Ranger Nancy Hoppe.



**FIGURE 157.** Portions of the floor are filled with a white leveling compound. Photograph by WJE, October 19, 2011.

## Locations of Other Encaustic Tile Flooring

Encaustic tile was observed during a previous bathroom remodeling project in room S233A (Figure 158 through Figure 160).

Room S125 on the first floor of the south wing also previously contained an encaustic tile floor of a similar design (Figure 161). The tiles in this room have been removed (Figure 162).



**FIGURE 158.** Encaustic floor tiles were observed below later floor finishes in room S233A during replacement of a toilet. Source: Park Historian Bob Moore, JNEM.



**FIGURE 159.** The color and pattern of the tile flooring in room S233A is identical to the encaustic tile floor in room S124. Source: Park Historian Bob Moore, JNEM.



**FIGURE 160.** The tiles in room S233A match the color and size of the tiles in room S124. Source: Park Historian Bob Moore, JNEM.



**FIGURE 161.** Old Courthouse, room 125, April 1938, view looking northwest. (Photo dated by calendar on the wall.) Note tile flooring, likely the same three-color pattern as the existing floor in room S124 and the floor tiles observed in room S233A. Source: JEFF Visual Image Reference Collection, Box 19, Folder Old Courthouse Offices (2), photo ID VPRI-004109.



**FIGURE 162.** View of the floor in room S125. Below existing carpeting, a cementitious tile setting bed remains in place, but no encaustic tiles were observed. Photograph by WJE, January 11, 2012.

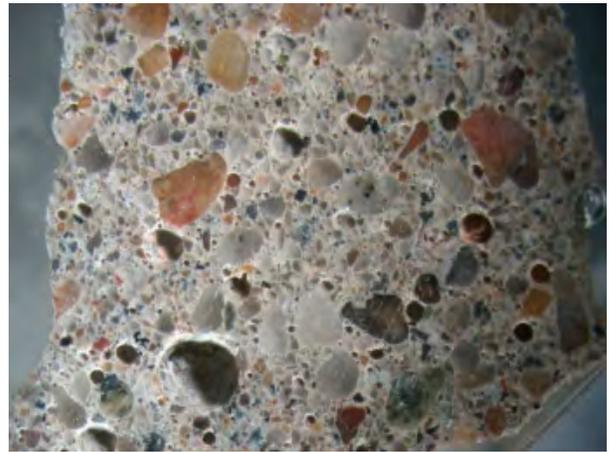
## Laboratory Studies

### Methodology

Microscopic examination was performed of select samples extracted from room 124 to assess the relative age and properties of the white fill material in order to aid in the restoration of the encaustic tile flooring. The composition of the fill material was compared to the tile setting bed in order to understand any characteristics that may provide clues as to their relative ages. Examinations were performed on thin sections, cross sectioned surfaces, lapped surfaces of selected specimens, and fractured surfaces of specimens to conduct a limited characterization of the materials using light microscopy.

### Observations

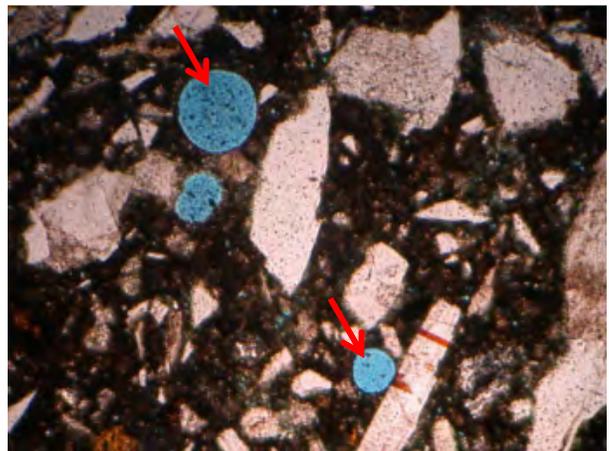
Sample 1 was removed from the mortar fill at locations where the encaustic tile is missing from room S124. The sample was removed using a 1/2 inch barrel diamond core drill to a depth of approximately 3/4 inch. There was a thin dark resinous material on the exposed surface of the sample. The mortar material was firm and well compacted and could not be crushed using hand pressure. The mortar had a light gray matrix that could not be scratched using a copper probe. When viewed microscopically, the aggregate was observed to consist primarily of silicates, including crushed pink granite with particles up to 4mm in diameter. There were small and microscopic spherical voids within the matrix, indicative of an air entraining admixture.



**FIGURE 163.** Overall view of polished section of Sample 1. Note spherical air voids. Laboratory photograph by WJE.



**FIGURE 164.** Overall view of thin section of Sample 1. Blue areas represent air voids filled with blue dyed epoxy as part of sample preparation. Laboratory photograph by WJE.

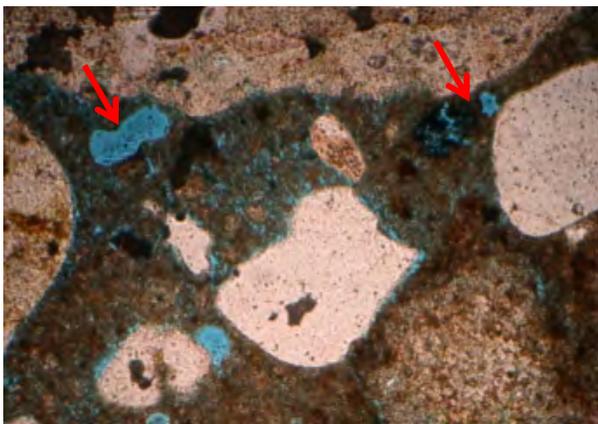


**FIGURE 165.** Thin section of Sample 1 as viewed using plane polarized transmitted light. Note angular aggregate and spherical air voids (red arrows). Laboratory photograph by WJE.

Sample 2 was the setting bed from below the encaustic tile in room S124. The sample was removed from the setting bed that remained attached to a tile which had been removed previously by maintenance staff at the Old Courthouse. The matrix was firm and well compacted and could not be crushed using hand pressure. The matrix was light buff in color. The matrix could be scratched with a copper probe. When viewed microscopically, small white lumps, presumed to be hydrated lime (now carbonated), were observed. The aggregate consisted predominantly of subrounded to rounded quartz aggregate with some aggregate up to 0.5 cm in diameter. There were irregular as well as spherical voids indicative of entrapped air.

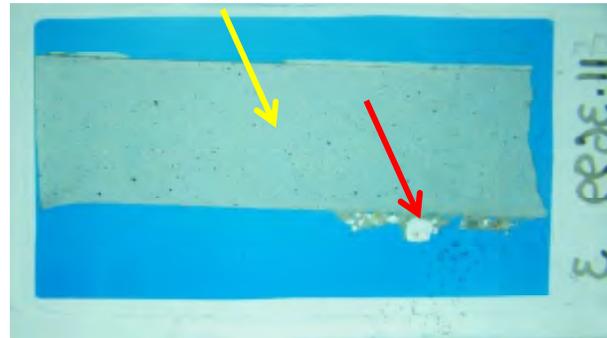


**FIGURE 166.** Overall view of thin section of Sample 2. Blue areas represent air voids currently filled with blue dyed epoxy. Note irregularly shaped air voids, in contrast to Sample 1. Laboratory photograph by WJE.

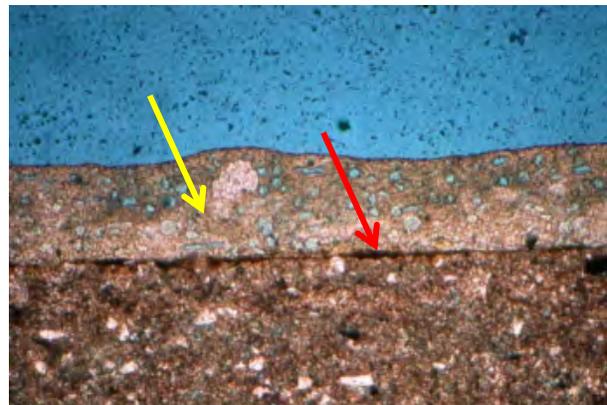


**FIGURE 167.** Thin section of Sample 2 as viewed using plane polarized transmitted light. Note sub-rounded aggregate. Irregularly shaped air voids (red arrows), and porous nature of matrix, in contrast to Sample 1. Laboratory photograph by WJE.

Sample 3 was a portion of one encaustic tile from room 124. The encaustic tile was sound and intact, with relatively low porosity. There was a thin dark black layer of mastic on the exposed surface, as well as a thin white leveling compound that measured approximately 0.25 mm thick. The white leveling compound was relatively porous and could be removed from the surface mechanically.



**FIGURE 168.** Overall view of thin section of Sample 3. Yellow arrow indicates ceramic body. Red arrow indicates adhered mortar, which matches Sample 2. Laboratory photograph by WJE.



**FIGURE 169.** Thin section of encaustic tile. Yellow arrow indicates white leveling compound. Red arrow indicates black mastic layer. Laboratory photograph by WJE.

## Discussion

Sample 1 represents the fill material at locations where the encaustic tile floor is missing. The fill material is hard and contains spherical pores, which indicates that the material is likely air entrained. Air entraining agents were commonly used as admixtures in cementitious materials starting in the 1950s. The setting bed beneath in-place encaustic tile represented in Sample 2 is much softer and predominantly contains irregular shaped air voids. The differences between the two samples confirm that the fill material likely does not date to the same era as the installation of the encaustic tile, and that the fill was likely added as a repair material after 1950. Based on the material characteristics and the architectural configuration of the room, it is very likely that the encaustic tile installation was originally one consistent pattern across the entire room, matching the three-color design still existing in portions of the room. A large area of missing tiles was filled in with a cementitious leveling compound as a repair sometime after 1950 to create a level substrate for new floor finish materials.

The analysis of the encaustic tile reveals a relatively porous leveling material on the originally exposed surface. The leveling material can be mechanically removed from the tiles or can be removed using chemical strippers. The black mastic is well adhered and will likely require chemical procedures for removal.

In October 2004, a trial procedure to remove the existing mastic was performed by others using Prosoco SureKlean Asphalt and Tar Remover, a methylene chloride, xylene, and ethyl benzene based gel paint stripper. This trial was successful in partially removing the mastic from the encaustic tile (refer to Figure 155). Either chemical or water based systems may be considered for removing the mastic from the encaustic tiles. For any residue removal project,

the gentlest cleaning method that is effective should be selected, in keeping with the Secretary of Interior's Standards for the Treatment of Historic Buildings.

The residue removal system or systems to be used must be appropriate for the substrate and conditions to be addressed. Improper treatment can damage materials by causing staining, etching, or discoloration. In our experience, a range of chemical treatments and steam systems should be tested to remove the mastic from the tiles. Numerous proprietary chemical cleaners are available for trials and may be considered based on their relative effectiveness at removing the residues.

For any proprietary chemical cleaning product, it is important to review the manufacturer's literature and the material safety data sheet (MSDS). The latter should be read carefully to determine the active ingredients in the chemical treatment. Caution should be used in reviewing MSDS, as manufacturers are only required to list certain ingredients, so the actual composition may be undisclosed.

The existing grout joints between tiles are typically in fair to poor condition. The grout may be degraded further by the procedures needed to remove the mastic residue and leveling compound.

## Treatment Recommendations

The existing encaustic tiles are a significant feature of the building interior but contain areas of extensive damage. Preservation of the existing historic encaustic tile fabric in this room is recommended, coupled with the restoration of the areas containing missing or severely damaged encaustic tile floor. Due to the extent of damage and since a large portion of the floor surface is concealed by a display platform as well as filler and mastic, a sequential approach to restoring the floor is recommended:

1. Remove the display platform and other floor-mounted appurtenances.
2. Conduct further trials to evaluate different chemical paint strippers for removal of the black mastic residue. Following the trials, field microscopy should be performed to assess the impact of the chemical strippers on the historic tiles. The various mastic removal techniques should be evaluated, and the gentlest effective method should be selected in accordance with the Secretary of the Interior's Standards.
3. Conduct trials to evaluate chemical or mechanical removal of the white leveling compound. Following the trials, field microscopy should be performed to assess the impact of the removal techniques on the historic tiles. The various removal techniques should be evaluated, and the gentlest effective method should be selected in accordance with the Secretary of the Interior's Standards.
4. Implement removal of mastic residue and leveling compound from tiles based upon trial results.
5. Remove non-historic fill materials at locations of missing individual tiles and larger areas of tile, taking care not to damage intact adjacent tiles.
6. Evaluate the condition of the existing tiles and identify cracked or damaged tiles for replacement. Also, tiles that are poorly bonded or out-of-level and may create a tripping hazard should be identified for resetting.
7. Reinstall salvaged original tiles and new tiles to match original in design, texture, color, and pattern. Grout all tile joints in new and repaired floor areas. Depending upon the proposed future use of the room, it may be cost effective to omit the installation of new tiles from areas that will be covered by large floor-mounted display platforms.
8. Perform cleaning trials of the completed tile floor if required to remove grout haze or similar construction residue. Evaluate techniques and select the gentlest effective method in accordance with the Secretary of Interior's Standards.
9. Consider applying an appropriate clear sealer and/or protective wax coating to the tile floor. If applied, periodic maintenance including removal and replacement of the coating will be required. While use of a coating may improve wear resistance of the surface and simplify housekeeping, it may not be necessary for long term preservation of the floor.
10. Install floor-mounted displays and vitrines using methods that do not damage the tile floor.

## Cost Summary

The construction cost estimate developed for the scope of work as indicated in this section was produced by BVH with the assistance of Pishney Restoration Services of Lenexa, Kansas. The estimated labor costs reflect prevailing labor rates of the St. Louis area and are calibrated to reflect inflation to 2013. A representative of Pishney Restoration Services visited the Old Courthouse and assessed the encaustic tile floor in order to provide accurate assessment of the existing conditions. Encaustic replacement tiles and material costs were investigated with the assistance of Tile Source, Inc., of Hilton Head, South Carolina. The replacement encaustic tiles investigated are 3/8 inch thick to match the existing historic encaustic tile. The replacement tiles can be specially produced to match existing encaustic tile colors and geometry. Based on site observation, it is assumed that the replacement tile work will encompass 60 percent of the scope of work and 40 percent restoration and cleaning of existing tiles. The cost estimate identifies a lump sum cost for trial cleaning techniques of the existing tiles. The gentlest, most effective means for cleaning the tile will be implemented. The approximate estimated cost to fully restore the encaustic tile floor in room 124 is \$300,000. Refer to Appendix E for more detailed cost breakdowns.



---

# Special Issue: Dome Lath and Plaster

## Historical Overview

The existing dome at the Old Courthouse was constructed in 1860–1861. The interior dome was plastered in 1861 by William C. Smith & Company. This initial plastering campaign included four sculptural groups representing the seal of the State of Missouri around the base of the main dome (Figure 170).<sup>108</sup>

The first decorative painting campaign in the dome was undertaken in 1862 during the Civil War, with patriotic themes influencing the design. The contractor engaged for this work was August H. Becker; Becker engaged his half-brother Carl Wimar to design and execute (with Leon Pomarede) the four large figures in the dome panels above the state seals, depicting Liberty, Justice, Law, and Commerce. Wimar painted three of the four historically themed lunettes at the top of the fourth level (Figure 171).<sup>109</sup> The fourth lunette, at the west side of the drum, was not completed until after

Wimar's death in November 1862.<sup>110</sup> Other aspects of this first decorative scheme included an oak wreath, an olive wreath, ivy ornament on the moldings, a running scroll on the frieze, and an eagle and stars representing the states of the Union.<sup>111</sup>



**FIGURE 170.** One of four sculptural groups representing the state seal of Missouri at the base of the dome, originally fabricated and installed in 1861. Photograph by WJE, October 20, 2011.

---

108. John A. Bryan, *The Rotunda: 1839–1955, Its Changing Styles of Architecture, Its Historic Events and Mural Paintings, Its Restoration* (St. Louis: National Park Service, Jefferson National Expansion Memorial, February 28, 1956), 28, citing St. Louis County Court Records, vol. X, 309.

109. *Ibid.*, 29, citing St. Louis County Court Records, vol. XI, 76, 91, 148, 158, 182–189, and 202. The lunettes depict the discovery of the Mississippi River by DeSoto (south), the landing of Laclède at the site of St. Louis (east), and the attack on the village of St. Louis in 1780 by the Indians and the British (north).

---

110. *Ibid.*, 32. The west lunette depicts the western approach to Cochetopa Pass in the Rocky Mountains.

111. Lindenbusch, *Historic Structure Report: Part 1*, 85, quoting *St. Louis Daily Democrat*, July 4, 1864.



**FIGURE 171.** One of four lunettes and oval portraits at the top of the fourth level, originally designed by Wimar and painted in 1862. Photograph by WJE, October 20, 2011.

In 1869, the original 12 foot 6 inch diameter oculus at the top of the dome was removed, and the smaller plaster upper dome was created.<sup>112</sup> Pomarede was engaged to paint new decoration at the new upper dome and the interior of the lantern, which was now exposed to the interior of the rotunda. This work was completed by the end of 1869.<sup>113</sup>

In 1880, the city authorities then in charge of the courthouse decided to re-decorate the dome in response to changing tastes as well as to address water leakage and deterioration of the plaster.<sup>114</sup> The work began with one month of plaster repairs, including complete removal and replacement of the 1869 upper dome.<sup>115</sup> Italian artist Ettore S. Miragoli was engaged to develop a new decorative scheme. The large figures in the dome were overpainted with new figures representing Law, Knowledge, History, and Instruction (Figure 172). Directly below, between pilasters at the fourth level, four additional figures were painted, representing

Diligence, Constancy, Republic, and Administration (Figure 173).<sup>116</sup> Just below the lantern on the upper dome, portraits of Columbus, Lincoln, Adams, and Grant were painted, interspersed with emblems representing agriculture, commerce, administration, and the United States. Four additional portraits were painted at the fifth level, just above the arched openings. Directly below the fifth level balconies were paintings representing St. Louis. Finally, four oval portraits in color were added to the fourth level below the lunettes (refer to Figure 171). The cornices, columns, dome ribs, and pilasters were painted in imitation of marble, with shades of green and pink predominating. Miragoli also re-touched Wimar's lunette paintings at the fourth level.<sup>117</sup> The work was completed by the beginning of December 1880.<sup>118</sup>

112. Lindenbusch, *Historic Structure Report: Part 1*, 59–66; 106.

113. *Ibid.*, 107.

114. *Ibid.*, 133–134, citing *St. Louis Globe Democrat*, July 2, 1880.

115. *Ibid.*

116. Bryan, *The Rotunda*, 41–42, citing *St. Louis Globe Democrat*, July 3, 1880, and August 14, 1880.

117. *Ibid.*, 42–43, citing *Missouri Republican*, November 28, 1880. See also Lindenbusch, *Historic Structure Report: Part 1*, 137–142.

118. Lindenbusch, *Historic Structure Report: Part 1*, 142.



**FIGURE 172.** One of four large figures originally designed by Miragoli and painted in 1880. This figure, at the southwest side of the dome, represents Instruction. Photograph by WJE, October 20, 2011.



**FIGURE 173.** One of four large figures at the fourth floor, originally designed by Miragoli and painted in 1880. Photograph by WJE, October 20, 2011.

August H. Becker, who had worked with Wimar on the 1862 decorative campaign, was engaged to repair and re-touch the lunettes in 1888.<sup>119</sup> Further repairs undertaken in 1905 by Professor Edmund Wuerpel of Washington University focused on Wimar's lunette paintings.<sup>120</sup> Although not as well documented, it appeared that the 1905 campaign also included painting over much of Miragoli's marbleizing of the architectural elements of the upper rotunda and dome. Bands of leaves and cherries, and stenciled rectangular panels with borders consisting of circles, were likely added to the rotunda walls at this time.<sup>121</sup>

Additional re-touching and possible over-painting of some of the murals occurred in 1921–1922, when a commercial painter was engaged to repair the interior of the dome. The work apparently included painting over some of Miragoli's portraits at the upper dome. Although not specifically documented, it appears likely that other areas of the dome, such as the coffers, ribs, and other architectural elements, were also repainted as part of the 1921–1922 project, based on the appearance of the rotunda documented in the 1934 HABS photographs. The work performed in 1921–1922 included some stenciling.<sup>122</sup>

119. Bryan, *The Rotunda*, 45, citing *St. Louis Globe Democrat*, November 20, 1887.

120. *Ibid.*, 48; Lindenbusch, *Historic Structure Report: Part 1*, 187–188.

121. Lindenbusch, *Historic Structure Report: Part 1*, 188. These decorative elements were revealed during the 1955–1956 investigation.

122. Bryan, *The Rotunda*, 48–52; Lindenbusch, *Historic Structure Report: Part 1*, 215–218.



**FIGURE 174.** View of the dome, 1934 HABS photograph. Note the monochromatic treatment of most of the architectural detail in the dome, including the framing around the portraits in the upper dome (at the top of this view). Library of Congress, HABS No. MO-96-SALU-8-7. Alexander Piaget, photographer.



**FIGURE 175.** View of the fourth level, 1934 HABS photograph. Note the monochromatic treatment of the architectural detail, failing paint, and lunette painting and portraits remaining from the Wimar and Miragoli decorative schemes. Library of Congress, HABS No. MO-96-SALU-8-6. Alexander Piaget, photographer.

A fire in May 1936 affected the lunette at the west side. More serious damage occurred from water infiltration that resulted when the fire-damaged roof at this area was not repaired promptly.<sup>123</sup>



**FIGURE 176.** View of the fourth level, undated photograph. Given the darkening of the plaster surfaces in this view as compared to the HABS photography, it was likely taken after the 1936 fire. The damage to paint finishes appears more extensive than in the pre-fire HABS photography, and damage has spread to the decorative paintings. Source: JNEM Archive, reference V106-000307.

The National Park Service implemented a repair campaign at the dome in 1955–1956, from the fourth level upward to the lantern. The restoration work was performed under the direction of Walter J. Nitkiewicz, an NPS Museum Preservation Specialist based in Washington, D.C., assisted by local artists and graduate students from Washington University. The 1955–1956 restorers judged that the south lunette retained more of Wimar’s work than the others. Significant portions of the east lunette

---

123. Bryan, *The Rotunda*, 55–56; Lindenbusch, *Historic Structure Report: Part 1*, 222–223.

were intact, while the west had been damaged in the 1936 fire and the north had been almost entirely over-painted in the 1921–1922 work.<sup>124</sup> Based on observations made of the lunettes during the 2011–2012 restoration (discussed further below), the 1955 treatment likely included consolidation using Japanese paper facings attached with a wax-based adhesive and tacking iron. The lunettes were likely cleaned of some previous layers of over-painting to the extent that the previous repair coating was ethanol- or acetone-soluble, but much previous overpainting was left in place. The extensive areas of paint loss were in-painted by the Nitkiewicz team using encaustic (wax-based) coatings. In order to limit future moisture damage to the lunettes, the double-hung windows at the fifth level were to be sealed shut.<sup>125</sup>

It was also noted during the 1955–1956 work that extensive plaster patching and replacement apparently occurred as part of the 1880 work, and that only fragments of Wimar’s decorations remained under the later Miragoli paintings.<sup>126</sup>

At the upper dome, the surviving portions of Miragoli’s portraits were studied by Nitkiewicz and copied onto new canvas. The reproduction paintings were installed on new plaster on metal

lath at the upper dome and were considered an accurate reproduction of the 1880 decoration.<sup>127</sup>

At the undecorated panels and ribs of the main dome, Nitkiewicz discovered evidence of three decorative layers: a pink marble treatment (dating to 1880), a layer featuring red cherries and green leaves (dating to 1905), and a third layer featuring a simple stencil design (dating to 1921). Since no evidence of the earliest 1862 treatment was discovered, the 1950s restorers elected to use a “dusty pink” color as the predominant shade in the upper dome.<sup>128</sup> A cocoa brown was chosen for the tall cornice at the top of the fourth level, so as to not distract from the Wimar lunette murals directly above. The fourth level Corinthian pilaster capitals were gilded, as were the cast iron capitals at the fifth level and the cornice dentils. For the fifth level outer walls, a soft green was used adjacent to the window openings. The lower levels had been painted off-white after being replastered in 1953, but were judged to be too plain compared to the varied 1955–1956 decorative color scheme at the fourth level and above.<sup>129</sup>

The dome plaster experienced minor damage during the November 9, 1968, earthquake

---

124. This analysis by Bryan in 1956 is contradicted by assessments in the 1970s, which judged the north lunette as retaining the most integrity to its 1862 appearance. See Lindenbusch, *Historic Structure Report: Part 1*, 92, citing his interview with Lincoln Spiess in St. Louis, 1979. Based on observations during the 2011–2012 conservation work, the west mural has the greatest extent of original paint fragments, small fragments survive at the north and east murals, while the south mural has almost no original work remaining.

125. Bryan, *The Rotunda*, 59–60.

126. Lindenbusch, *Historic Structure Report: Part 1*, 138.

127. *Ibid.*, 138. Conrad Schmitt identifies the 1955 colors as 2.5Y 7/2 at the ribs (a medium beige color), and 7.5R 5.25/4 (the “dusty pink” described in the correspondence) on the coffers. See Conrad Schmitt Studios, Inc., 116.

128. *Ibid.*, 233–234, citing memorandum written by Walter Nitkiewicz, October 6, 1977, and Bryan, *Administrative History*, 26.

129. Bob Moore, *Urban Innovation and Practical Partnerships: An Administrative History of Jefferson National Expansion Memorial, 1980–1991* (St. Louis, Missouri: National Park Service, 1994), citing Bryan, *Preliminary Draft, JNEM Administrative History*, 26–28; Lindenbusch, *Historic Structure Report: Part 1*, 232–235; and two important files of memorandums from Walter Nitkiewicz to Chief, Museum Services, JEFF, October 20, 1977, and March 23, 1978, copies in the JEFF Library Vertical File, VF-JNE-079 and 080.

centered in Hamilton County, Illinois, 120 miles east of St. Louis. Isolated fragments of plaster fell from the dome, and a 1-foot square section fell from a major rib adjacent to the northwest figure, “History.”<sup>130</sup> Other fragments of plaster fell from the dome in 1975 and 1977.

During exterior repairs in 1975–1977, it was determined that the flagpole atop the dome needed structural repairs. Therefore, NPS decided to undertake a major, phased restoration project of the Old Courthouse. Beginning in February 1978, interior scaffolding was erected in the rotunda to the top of the lantern. The first phase of restoration, for which work began in March 1979, focused on the lantern at the top of the dome. During the project, the plaster on the inside of the lantern was removed to inspect the flagpole base. Work was disrupted by a fire in the dome caused by a lightning strike in June 1979. Following structural repairs to the flagpole and repair of fire damage to the dome structure, plaster was reinstalled at the lantern’s ceiling, and the lantern interior was repainted a pale aqua color. The plaster was decorated with gold stars to re-create the 1880 Miragoli decorative scheme. The work was completed by April 1980.<sup>131</sup> Although no repairs were implemented at the time, staff took advantage of the presence of the scaffolding to inspect the dome plaster close-up in 1978 and 1979. Industrial rope techniques were used to inspect the plaster in 1981 and again in 1982.<sup>132</sup>

The most recent major restoration of the dome plaster occurred beginning in November 1984 with erection of scaffolding in the rotunda. As part of this work, a detailed investigation of the

dome plaster and its previous decorative schemes was carried out by Conrad Schmitt Studios.<sup>133</sup> Although a description of all three major decorative campaigns (1862, 1880, and 1905) was developed for the upper rotunda levels and dome, during the 1985 repair work the decision was made to use a light pink at the dome coffers. The dome ribs, which were entirely new plaster installed during the 1985 work, were painted off-white. The pale green color at the fifth level walls and the cocoa brown color at the fourth level cornice were maintained from the 1955–1956 decorative scheme, as was the gilded treatment of the fourth and fifth level capitals.<sup>134</sup>

As depicted in photographs of the work, the 1985 repair campaign included removal of all original plaster from the ribs and frame of the dome (Figure 177). A limited number of photographs are available to document earlier decorative schemes that were uncovered by selective stripping of overlying paint layers during the project (Figure 178 through Figure 188). The upper dome, which had been completely replaced in 1955, was apparently not included in the 1985 project; also, the recently restored lantern was not included in the 1985 project. The Conrad Schmitt Studios analysis also identifies the primary colors used in each of the 1862, 1880, 1905, 1920s, and 1950s decorative schemes using the Munsell color system. Measured drawings were prepared to

---

130. David G. Henderson, *Briefing Paper for Corrective Treatment of Defective Rotunda Dome Plaster, Old Courthouse* (Denver Service Center, National Park Service, July 1982), 4.

131. Moore, *Administrative History, 1980–1991*, 159–163.

132. Henderson, *Briefing Paper*, 5–6.

---

133. Conrad Schmitt Studios, Inc., *Decorative and Paint Color Analysis, 1862–1955, Investigation and Documentation* (New Berlin, Wisconsin: Conrad Schmitt Studios, Inc., spring 1985). Report and forty-two drawing sheets depicting decorative elements of the 1862, 1880, and 1905 campaigns, NPS drawing no. 366-25013.

134. Also as part of the project, NPS staff completed plaster repair and repainting in the rotunda from the fourth level down to the first floor, completed in 1986. See Moore, *Administrative History, 1980–1991*.

document major decorative elements and stencil designs.



**FIGURE 177.** The upper portion of the main dome, January 1985, with all plaster removed from the ribs and frame, and earlier decorative treatments exposed at the recessed panels. Source: Office of Park Engineer.



**FIGURE 178.** Bundled reed and egg-and-dart detail at the ring at the top of the main dome, part of the 1862 decorative scheme, as exposed in 1985. The egg-and-dart detail continued down the edges of the major dome ribs. Source: Office of Park Engineer.



**FIGURE 179.** Star set askew within an egg-and-dart frame, the decoration used in the main dome coffers as part of the 1862 scheme, as exposed in 1985. Seven similar star in frames were arranged vertically in each of the twelve dome coffers. Source: Office of Park Engineer.



**FIGURE 180.** Bundled reed detail at the rib bases at the bottom of the dome, part of the 1862 decorative scheme, as exposed in 1985. Source: Office of Park Engineer.



**FIGURE 181.** Garland of fruit, leaves, and pine cones at the fifth level balcony support rib, part of the 1862 scheme, as exposed in 1985. Source: Office of Park Engineer.



**FIGURE 184.** Stencil of leaves and berries at the dome ribs, part of the 1880 scheme, as exposed in 1985. Source: Office of Park Engineer.



**FIGURE 182.** A star set vertically within an architectural frame, the decoration used in the main dome coffers as part of the 1880 scheme, as exposed in 1985. Source: Office of Park Engineer.



**FIGURE 185.** Stenciled flower pattern on the ribs of the balcony supports below the fifth level, part of the 1880 scheme, as exposed in 1985. Source: Office of Park Engineer.



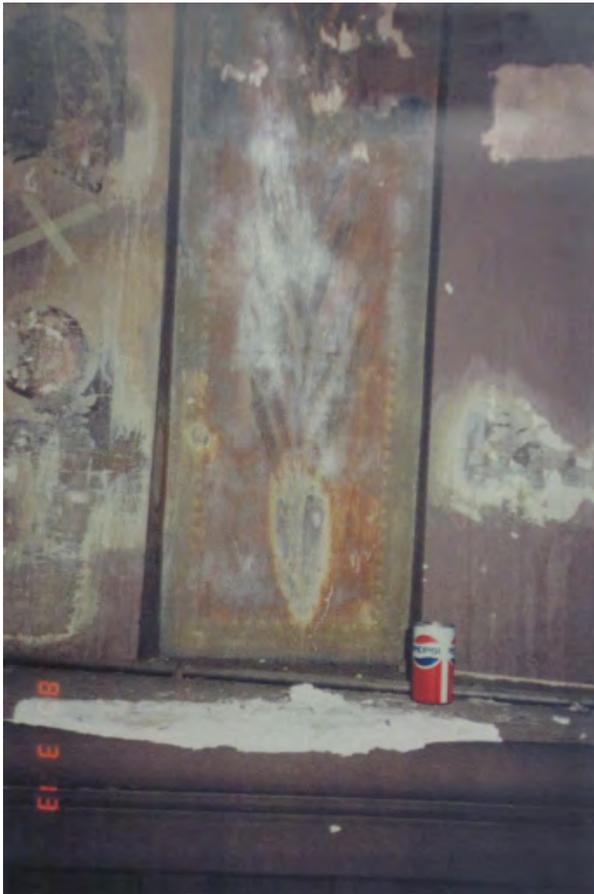
**FIGURE 183.** Detail of one of the stars used in the 1880 scheme, as exposed in 1985. Source: Office of Park Engineer.



**FIGURE 186.** Architectural frame pattern at the dome base panels between the piers, part of the 1905 scheme, as exposed in 1985. Source: Office of Park Engineer.



**FIGURE 188.** Stencil detail at the fifth level, part of the 1905 scheme, as exposed in 1985. Source: Office of Park Engineer.



**FIGURE 187.** Leafy stalk detail at the lunette level, part of the 1905 scheme, as exposed in 1985. Source: Office of Park Engineer.

Conservation of the four Wimar lunette paintings was performed between mid-October 2011 and mid-April 2012.<sup>135</sup> The Page Conservation team began by assessing the condition of the murals, noting that the existing conditions were poor, with extensive heavily flaking paint. Most of the wax-based in-painting implemented in 1955–1956 had failed and was removed. The conservation treatment was summarized as follows:

Consolidation. All areas of raised and flaking paint were consolidated with BEVA 371 [an adhesive consisting of ethylene vinyl acetate copolymer, cyclohexanone resin, ethylene vinyl acetate copolymer, phthalate ester of hydroabietyl alcohol, and petrolatum (paraffin)] in naphtha liberally applied over Japanese paper and manipulated with a gloved finger. Flakes could be un-curling and pressed down. At about 95 percent solvent evaporation, the flakes were additionally set down with tacking irons. We felt the consolidation was very effective. The plaster

---

135. Arthur H. Page, "Treatment Record Submittal: Conservation of Four Lunette Frescoes by Charles Wimar, Rotunda Dome, Old Courthouse, St. Louis, MO," Contract No. P11PC00082 (Washington, D.C.: Page Conservation, Inc., July 26, 2012).

substrate appeared to be in sound condition on all the murals.

Cleaning. We performed a thorough overall cleaning with xylene on swabs. This effectively removed surface grease/grime, the 1955 encaustic inpainting/repainting, and our excess BEVA 371 consolidants. Where necessary, we re-consolidated with BEVA. In most areas, we repeated the overall xylene cleaning a second time.

We experimented with possible further cleaning in multiple areas. We confirmed Mr. Nitkiewicz had removed basically everything soluble in alcohol or acetone and concluded further cleaning with stronger solvents was producing no usable or original image.

Varnish. We applied multiple brush coats of Acryloid B-72 (non-yellowing, permanently soluble) resin in xylene to saturate and unify the desiccated mural surfaces. We achieved some success in unifying gloss, but the mural surfaces are a myriad of different textures and overpaints with different reflectivity and gloss.

We applied some varnish locally during inpainting, but concluded it was not feasible to spray varnish the murals overall after inpainting within the large rotunda setting. We avoided wax and matting agents in our B-72 varnish to maintain clarity in the coating.

- Inpainting. We utilized two different conservation inpainting mediums. First, all losses, abrasions, and major anomalies were inpainted with Golden's PVA Colors (polyvinyl acetate medium) in ethanol. This was done to provide base tone inpainting which would not be readily solubilized during application of our final layers which involved toning and glazing techniques in some areas. Our second complete pass of inpainting was performed with Golden's MSA (solvent acrylic medium) in xylene. Local areas of extremely matte inpainting were brush varnished with Acryloid B-72.<sup>136</sup>

As determined by the Page Conservation team, approximately 90 percent of the east mural, *Landing of Laclède*, consists of non-original overpainting. Original paint was observed at the rocks and stream at the right and on a few details of the Indians. For the new inpainting work, the team was guided by the oil painting of the scene by August Becker in the collection of the Missouri History Museum and a preliminary drawing from the St. Louis Art Museum.

The north mural, *The Year of the Blow*, was also approximately 90 percent overpainted. Original paint was observed on some foliage at the left side and on a few details of the Indians. However, the conservation team believed that this mural as restored is the most accurate and original of the four in terms of its composition and figure grouping.

The south mural, *De Soto Discovering the Mississippi*, was determined to be approximately 95 percent overpainted, with no significant original details remaining intact. A similar depiction of the De Soto party by William Powell dated 1853 from the United States Capitol was used to guide the new inpainting work.

The west mural, *Westward the Star of Empire*, was determined to be approximately 80 percent overpainted. Although less detailed than the other murals, the composition was considered to be fairly accurate. A preliminary sketch of *Buffalo Stampede (Study for Old Courthouse Murals)* by Wimar in the collection of the St. Louis Art Museum was reviewed but was considered to be too undeveloped and lacking sufficient detail to guide the new inpainting work.<sup>137</sup>

---

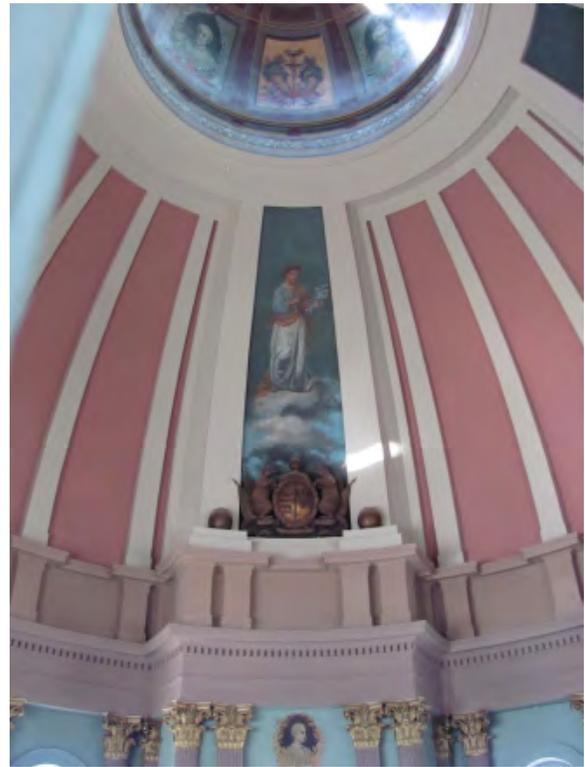
136. Ibid.

---

137. Ibid.

## Existing Conditions

A limited visual assessment of the plaster ceiling in the rotunda was performed from the interior of the dome and attic above the dome. No scaffolding or lifts were available during the inspection. The upper drum walls, currently painted green, and entablature, currently painted mauve, are plaster on wood lath likely dating to the period of original construction in 1861. The dome ribs, currently painted off-white, are plaster on expanded metal lath and were replaced in 1985 during restoration of the dome plaster. The coffers of the dome, currently painted pink, are plaster on wood lath and likely date to the period of original construction in 1861. The allegorical figures at the four quadrants of the dome are plaster on wood lath. The existing plaster and lath likely date to the period of construction in 1861, while the allegorical figures are part of the 1880 decorative scheme (Figure 189). The upper dome plaster is currently decoratively painted on canvas, which is installed on plaster applied to metal lath. The canvas was installed during the 1955–1956 restoration and is decoratively painted as a re-creation of the 1880 decorative scheme (Figure 190). The plaster of the upper dome was completely replaced as part of the 1950s work, so no physical evidence of the original painted decoration survives. The plaster at the lantern was most recently repaired and partially replaced in 1979–1980 and is painted in a re-creation of the 1880 decorative scheme.



**FIGURE 189.** Overview of the dome interior. Photograph by WJE, October 20, 2011.



**FIGURE 190.** Overview of the upper dome below the oculus and lantern. Photograph by WJE, October 20, 2011.

Typically, all plaster was well adhered to either wood or expanded metal lath. The metal lath exhibited light surface corrosion at the upper dome but no significant corrosion was observed in the main dome lath. At the wood lath areas there were relatively few broken keys. (Figure 191 through Figure 193)



**FIGURE 191.** View above the dome showing non-original area of plaster on metal lath. Photograph by WJE, October 19, 2011.



**FIGURE 192.** View above the dome showing non-original plaster on metal applied to a location where original wood lath and plaster keys were abandoned in place. Photograph by WJE, October 19, 2011.



**FIGURE 193.** View above the dome showing area of original plaster on wood lath. Photograph by WJE, October 19, 2011.

There was no significant cracking observed of the plaster when viewed from the fifth level gallery. There were a few isolated areas of flaking paint, peeling canvas, and water damage, likely as a result of water leakage from the lantern or dome roofing (Figure 194 through Figure 196).



**FIGURE 194.** Peeling canvas at the upper dome. Photograph by WJE, October 20, 2011.



**FIGURE 195.** Loss of paint at one of the Miragoli figures in the dome. Photograph by WJE, October 20, 2011.



**FIGURE 196.** Flaking paint in the rotunda. Photograph by WJE, October 20, 2011.

## Treatment Recommendations

At this time, there are no observed conditions from the limited survey that suggest repairs to the plaster are urgently required. The lantern and exterior balcony should be repaired to improve the water tightness of the assembly. As part of a long term restoration, repainting the plaster surfaces in a historic decorative painting scheme can be considered. Detailed documentation of historic decorative treatment of plaster surfaces is available from reports, drawings, and photographs prepared during the 1985 restoration. This documentation would be particularly important for re-creation of the decorative painting of the dome ribs, which were entirely replaced with new plaster in 1985.

Aside from the preserved decorative paintings (refer to Figure 171 through Figure 173) and restored upper dome (refer to Figure 190), the existing color scheme in the dome and rotunda dates to 1985 and is not considered to be historically significant. As an interim solution, or if overall restoration of a historic decorative scheme is considered to be impractical, consideration could be given to repainting the drum and dome details in the background colors of the 1862 decorative scheme. In this approach, the ribs would be repainted the major background color used in the 1862 scheme, a light brownish pink matching Munsell 5YR 7.5/3, and the coffers would be painted the panel

background color used in the 1862 scheme, a light reddish brown matching Munsell 2.5YR 6/4.<sup>138</sup> The Conrad Schmitt Studios 1985 report should be referenced in selecting paint colors for the dome and rotunda interior. Note that the upper dome and lantern were not part of the rotunda interior until 1869 and therefore were not included in the 1862 decorative scheme. The existing painted canvas at the upper dome and painted plaster at the lantern, although dating to twentieth century restoration efforts re-create the 1880 scheme at these locations.

---

138. Conrad Schmitt Studios, Inc. For rib background color, see "MD-3" as described on page 23, Munsell reference on page 12. For coffer background color, see "MD-4," Munsell reference on page 12.



---

# Special Issue: Hazardous Materials

## Asbestos-Containing Material

In 2010, the National Park Service initiated an Asbestos Assessment Program (AAP) for the NPS properties in order to comply with regulations and guidelines as set forth by the United States Environmental Protection Agency (U.S. EPA), Occupational Safety and Health Administration (OSHA) and state and local regulations. The AAP was intended to:

- Provide objective data on the impact of identified asbestos containing materials (ACM) on future maintenance, renovation, and construction/demolition decisions.
- Form the basis for future asbestos operation and maintenance programs.
- Support the data collection activity under the Washington Area Support Office (WASO) Environmental Cleanup Liability Program in accordance with the Federal Accounting Standard Advisory Board Technical Bulletin 2006-1, *Recognition and Measurement of Asbestos-Related Clean-up Costs*.

The NPS contracted Prizim, Inc., of Gaithersburg, Maryland, for support in meeting these objectives at the Old Courthouse. The scope of the work conducted by Prizim included obtaining available asbestos-related information from JNEM maintenance files and coordinating field investigations in order to inventory confirmed or assumed ACM within the courthouse. Prizim subcontracted to Professional Environmental Engineers, Inc., of

St. Louis, Missouri, to conduct the on-site investigations and the extraction of bulk samples of suspected ACM for subsequent laboratory analysis. The results of the ACM studies is summarized in the document titled *Asbestos-Containing Materials Survey, Jefferson National Expansion Memorial*, prepared for the NPS by Prizim, Inc., and Professional Environmental Engineers, Inc.<sup>139</sup>

According to the report prepared by Prizim and Professional Environmental Engineers, samples of Presumed Asbestos Containing Materials (PACM) were not taken due to one or more of the following conditions:

- Observations and historic information provided by previous ACM investigations revealed these materials to contain greater than 1 percent asbestos. (Previous ACM inventories were incorporated into the 2010 AAP report).
- Bulk sampling of a suspect roofing system could potentially void a warranty or otherwise damage the integrity of the roofing system.
- Bulk sampling of other suspected materials would create undue damage to historically significant building elements or otherwise

---

139. Prizim, Inc., and Professional Environmental Engineers, Inc., *Asbestos-Containing Materials Survey, Jefferson National Expansion Memorial* (Gaithersburg, Maryland, and St. Louis, Missouri, 2010).

adversely affect the integrity of the system in which the material resides (e.g., window sealants).

- Bulk sampling would create an unsafe and/or dangerous worksite condition for the investigators.

The primary categories of ACMs found in the building survey consisted of surfacing materials (e.g., wall and ceiling plaster), thermal system insulation (e.g., pipe insulation and fittings), and miscellaneous materials (e.g., floor tile, mastic, window glazing and caulking, joint compound and floor tile grout).

The AAP report contains the following recommendations for treatment of identified and assumed ACM:

- Should future renovation activities result in the discovery of additional suspect ACM and/or PACM, all work activities should be immediately halted. Bulk sample collection and analysis of suspect materials should be conducted to determine if they contain greater than 1 percent asbestos.
- In accordance with federal and Missouri law, a licensed asbestos abatement contractor is required to conduct the removal of any and all ACM located within the building proceeded by a comprehensive work plan to govern the removal of ACM and PACM materials.
- Building construction materials identified as PACM should be tested prior to removal or any activity that may disturb or otherwise impact the material to determine whether the material contains asbestos

## Lead-Based Paints

No reports were provided to the project team for review that systematically inventoried the

presence of lead paint in the Old Courthouse. JNEM personnel indicate that there is lead paint within the interior of the courthouse and that all paint is assumed to contain lead. Paint samples are analyzed on an as-needed basis prior to any work that involves preparation and repainting of surfaces suspected of containing lead. If the analysis indicates the presence of lead in the existing paint coatings, appropriate abatement procedures are initiated.

---

# Special Issue: Mechanical and Electrical Systems

## Mechanical Systems

### Historical Overview

Historical records of the Old Courthouse mention the heating and ventilation systems that served the building during its development. The following is a brief summary of the history of the heating, ventilation, and air conditioning systems serving the Old Courthouse, with references made to dates when major changes or alterations were made to the systems.

The Courthouse was originally heated by coal-burning stoves. This is known by a June 14, 1842, notation that stoves were purchased for the heating of the Courthouse.<sup>140</sup> In 1856 and 1859, additional stoves were purchased to supplement those already in place. In 1870, the heating system was converted from coal stoves to steam heating by the installation of steam boilers. On June 9, 1870, a contract for steam heating of the building was awarded to the firm of Siegel and Bobb. The conversion of the building to steam heating is a significant change, as it led to the removal of the coal stoves and the disuse and blocking up of chimney flues, and to the installation of a boiler system, piping, and steam radiators. The North Wing was not included in the 1870 campaign of steam heating conversion, because it was still occupied by the City of St. Louis government functions, while the remainder of the building was occupied by

the county courts. The boiler for this steam system, along with the coal bins, was located in the basement South Wing. In the same year, improvements were made to the ventilation systems serving the second floor of the east and west wings.

In 1907, a boiler replacement project occurred that appears to be the first upgrade to the steam heating system since it was installed in 1870. At the time of this boiler replacement, it was noted that the 1870 system had been incapable of properly heating the building. To facilitate the installation of the new boiler, a boiler house was constructed in the courtyard, between the south and east wings. The new system heated the entire building, including the North Wing.

In 1941, the boiler house was demolished and the boiler removed. Heating of the Courthouse was then provided by a new district heating plant, which serviced the building with steam. The Union Electric Company, which provided this district of downtown buildings with steam, was the operator of this heating plant, which was at a remote location on the Mississippi River, north of downtown. Along with the demolition of the old boiler house, the smoke stack and chimney were also removed from the southeast courtyard and the courtyard restored. The building is still heated by steam from this district energy plant; the current owner of the plant is Trigen, the successor to the Union Electric Company.

Window unit air conditioners were first installed in the Old Courthouse in 1966. Since then there

---

140. Lindenbusch, *Historic Structure Report: Part I*, 42, citing Court Records vol. VII, 311, and vol. VIII, 279, 340, and 391.

have been many replacements, relocations, and additional window air conditioning units installed. The building also contains small split-system cooling-only units, which were installed in the late 1980s.

In 2006 the north wing basement was extensively rehabilitated for use as the JNEM Dispatch Center. This area contains its own separate heating, ventilating, and air conditioning (HVAC) systems, which are all electric and do not use steam from the district energy source.

### Existing Conditions

**Heating System.** The existing mechanical (HVAC) system for the 68,000 square foot Old Courthouse was observed during HSR investigations conducted in October 2011. The building is currently connected to the downtown St. Louis district energy network operated by Trigen. Only steam is provided to the facility and no chilled water is available at the building. The condensate from the steam heating system is gathered and disposed of in the city sanitary sewer system. This lack of condensate return is common across the Trigen district energy customers. Not having condensate return as part of the district energy system is a very costly and inefficient approach to a steam based heating system.

Energy costs for the downtown St Louis area were also investigated to assist in system evaluation. Steam has an average cost of \$1.85 per therm of energy. Electricity as provided by Ameren averages \$.0559/kWH. A copy of a Jefferson National Expansion Memorial (JNEM) utility analysis, contained in the March 2010 ASHRAE Level II Energy Audit, is included in Appendix D. This analysis gives a full summary of energy costs and usage at the Courthouse.

The Trigen steam line enters the basement level of the Old Courthouse; from there steam is distributed throughout the building by steel piping connected to iron radiators and unit heaters for space heating. The steam line entrance consists of a high pressure, 3 inch steam service that enters the south basement near the southwest corner. A steam pressure regulator valve with a pilot positioner reduces the steam pressure to maintain low distribution pressure for use inside the building. An automatic valve on the steam service energizes steam when the temperature drops below 55 degrees Fahrenheit and turns it off when the outdoor air temperature rises above 65 degrees Fahrenheit. Steam service pressure is reported to be provided at 120 lbs. pressure. At the time of the site visit, at the steam service entrance, a recording chart meter showed steam pressure of approximately 160 lbs. Steam distributed inside the building for the heating use is approximately 4 lbs. pressure. The steam distribution system is in fair to poor condition. While the piping was not disassembled or scoped as part of this study, due to its age it is assumed that there is considerable degradation.

There are numerous radiators on the first and second floors, with none on the partial third floor or in the basement. Radiators are typically located in front of and below windows along the exterior walls of the building (Figure ). Each radiator has a thermostatic control valve that was retrofitted in the early 1990s. The radiators are of various dimensions but all are typically heavy cast iron style units of simple design, lacking the ornamentation seen in systems of late nineteenth century buildings. This may indicate that the existing radiators were retrofitted during the early 1940s, when the building was converted to district energy source. The radiators and associated controls appear to be in fair condition. The piping generally is in poor condition, with deteriorated insulation in places. All of the steam piping is expected to

have some wall thickness deterioration due to corrosion and age.

Only the second floor east and west courtrooms are without radiators. These courtrooms have ducted unit heaters with steam heating coils serving these spaces for heating only.



**FIGURE 197.** Cast iron radiator with thermostatic control valve. Source: Alvine and Associates, 2011

**Cooling Systems.** The first floor conference room –S107, north of the rotunda has a split air conditioning system installed in 2009. The indoor fan coil section is located high on the west wall. The outdoor air cooled condensing unit is in an area well outside, just west of the conference room (Figure 198). This air conditioning system is in good condition.



**FIGURE 198.** Outdoor part of typical split cooling system. Source: Alvine and Associates, 2011

Most of the first and second floors of the Old Courthouse are directly cooled except for public corridors, the rotunda, and a few minor areas. There is no cooling on the partial third floor, except for a self-contained “Bally” chamber for archive storage. This Bally chamber was first installed in the early 1980s and the HVAC equipment serving the Bally structure was replaced in approximately 2000. For the basement level, only the north basement is cooled, consisting of an area that was converted for use as the JNEM Dispatch Center in 2008. The rest of the basement is not cooled.

The most common form of cooling in the Old Courthouse is individual window air conditioning units. There are approximately forty-one window air conditioners in the Old Courthouse; thirty of these are located on the second floor, eight on the first floor, and three in the basement. There are eleven two ton window units. The remaining units are all 1-1/2-ton capacity. The window air conditioning units are of a various ages and are typically in fair to poor condition (Figure 199 and Figure 200).



**FIGURE 199.** Exterior view showing various window air conditioning units. Source: Alvine and Associates, 2011



**FIGURE 200.** Typical window air conditioning unit.  
Source: Alvine and Associates, 2011

Split, cooling only, air conditioning systems serve the exhibit/interpretive areas on the first floor north wing, south wing, and east wing as well as the east wing's museum shop and theater (Figure 201). These split-systems were replaced with R-410A units in 2010. These systems are in good to fair condition. On the second floor there are no split cooling systems, as the air conditioned spaces are only served by window air conditioning units.



**FIGURE 201.** Indoor part of typical gallery split cooling system. Source: Alvine and Associates, 2011

Located in the northeast attic storage room of the third floor north wing is a Bally environmental storage unit, which has fully conditioned air. This storage unit is served by a two ton Liebert Mini-Mate 2 and an Auto-Flo steam humidifier. The Bally unit's associated air cooled condensing unit is located in the same northeast storage room as the Bally chamber, mounted on a steel stand, and rejects its heat to the attic space. Condensate from the cooling unit is routed to a 5 gallon bucket. An exhaust fan and damper are located in one of the windows. This exhaust system is controlled by a thermostat and is used to relieve hot air out of this attic space during the summer months. There are no other cooling systems present on the third floor. The Bally unit is in fair condition. The exhaust fan system is in fair to poor condition.

On the second floor north wing, the library and archives and the collections storage room have additional mechanical systems in the form of packaged air cleaners (AFS model 1000), which are hung high in spaces. There are two air cleaning units serving each room. An April-Aire model 330 humidifier located in each room uses filtered de-ionized water and adds wintertime humidity to these two spaces. The humidifiers were installed in 1982 and are in fair to poor condition.

The north basement Dispatch Center's mechanical system includes two computer room air conditioning units, and two additional small air handling units with electric heat. One air handling unit is a constant volume single zone; the other is variable air volume system with three air boxes. In addition, there are two electric unit heaters. A toilet exhaust fan serves the Dispatch Center restroom area as well. The Dispatch Center has its own emergency power generator. These systems are in good to fair condition.

There are a number of exhaust fans that provide ventilation in the building. The restrooms of the building typically have small window mounted propeller-type exhaust fans. Additionally, in the top of the dome above the rotunda are four similar small exhaust fans that relieve heat from the dome through louvers with shut-off dampers. All exhaust fans appear to be more than 25 years old and are in poor condition.

## Discussion and Recommendations

The existing heating and cooling systems at the Old Courthouse are outmoded, inefficient and wasteful. The systems do not provide the proper environmental conditions needed to support the conservation of collections/artifacts, as well as comfort and air quality for visitors and building occupants. Therefore, a new HVAC system is recommended for the building that will accommodate these essential goals.

The Old Courthouse was constructed before the existence of mechanically/electrically driven air conditioning systems. The building, with its heavy masonry wall/floor construction and unique cast iron framing systems, makes the introduction of modern air conditioning equipment and ductwork a significant challenge. Further, the historic significance and integrity of the structure also complicates introduction of large chases to support new HVAC and cooling systems. The overall treatment approach of *rehabilitation*, together with considerations of good building stewardship, energy conservation, and an environmentally sustainable approach, led to the following HVAC recommendations.

It is recommended that the facility be provided with a geothermal heat pump system to serve the future HVAC needs of the Old Courthouse. Several other more traditional HVAC systems were reviewed, including those typically found in museums such as variable air volume and four-pipe fan coil systems, but based on the above-stated considerations were judged not to be appropriate for the facility. Utilizing a geothermal-based system requires less mechanical equipment spaces, as there are no boilers, chillers, or cooling towers. The heat-sink of the earth provides the primary energy source for cooling and heating, supplemented by the electrically driven heat pumps. Numerous small heat pumps can be located discretely around the building to minimize visual intrusiveness as well as impact on historic fabric. Small piping runs will supply these heat pump units with water for heating and cooling. This piping network can be routed, for example, in the location of the existing steam lines or easily hidden. This piping network requires a minimum of holes to be cut in the structure, minimizing the effect on historic fabric. Other equipment such as fresh air intakes and energy recovery units will need to be located within and around the building, but these can all be accommodated in a sensitive manner. (See

possible HVAC equipment location plans for the first, second, and third floors in Appendix D.)

**Analysis and Alternatives Considered.** As noted above, several HVAC treatment alternatives were evaluated for the Old Courthouse. Centralized air systems that would require large supply and return air duct work to be installed would severely compromise the historic fabric by necessitating the cutting of large sections of walls and floor structure for duct networks. The routing of chilled water and heating water in piping systems to smaller air handling equipment with only small localized ductwork would be more appropriate to the building configuration, while causing much less damage to the historic fabric and character of the structure. This consideration decidedly favors using many small air handling units, fan coils, or heat pumps with much smaller, localized ducts.

Analyzing the options for small air handling units, fan coil units, and heat pump space requirements led to the realization that minimizing the dimensions of the mechanical units would allow the maximum flexibility to locate them within existing closets and small chases or in newly constructed closets within finished rooms. Air handling units are consistently larger in size than equal capacity fan coil units and heat pumps, primarily because they are manufactured in modules to mix-and-match air handling unit components as an application needs; air handling units therefore typically have significantly greater length dimensions. Thus, striving to minimize the equipment size criteria led to two appropriate HVAC alternatives: fan coil systems and heat pump systems.

While there are many factors to consider, a major goal of the HSR is to prescribe appropriate holistic treatments that satisfy as many building environmental goals as possible

while preserving the historic structure's significant features. With this in mind, consideration of the landscape treatment of the grounds of the Courthouse suggests HVAC treatment alternatives that eliminate condensing equipment mounted in the Courthouse grounds, courtyards, or the basement exterior area wells. The only option that eliminates equipment visible within the landscape is the geothermal heat pump option. Furthermore, the geothermal heat pump system helps accomplish the NPS goal of using less energy and promoting sustainable systems.

#### **Geothermal Heat Pump Design**

**Considerations.** During the final design phases of devising the new HVAC system, acceptable locations for the many heat pump units must be found throughout the building. It is envisioned that much equipment will be located in the basement and ducted up to first floor. Some equipment will be in the attic spaces and third floor storage rooms and ducted to second and third floors. Other equipment will be located in new mechanical closets in the interiors of existing office/support spaces. Mechanical equipment placement and duct/pipe routing will endeavor to involve the least disruption of historic fabric to the least extent possible at the areas of the Old Courthouse with the highest significance and integrity, such as the rotunda, main corridors, stairs, courtrooms, etc.

In public areas of the Courthouse that retain significant integrity, if desired the existing steam radiators could be retained and abandoned in place. In office, storage, and spaces with limited historic features, the radiators can be removed to free up space for heat pump closets or other uses in this active building.

When feeding conditioned air via ducts from the basement, attic, or a storage room is not possible, the spaces will most likely have new heat pump located in a closet constructed on an

interior wall. Such closets can be of frame construction, fitted with solid doors to attenuate sound and finished to blend/complement the adjacent finishes and trim. Closet size can be minimized by using the door, or double doors, to gain service and replacement access to heat pumps.

One potential location for heat pump units might be the four irregular-shaped storage rooms on the first and second floor, located adjacent to the rotunda's perimeter wall. These spaces appear to be viable locations for vertically running water piping and power conduits that will be part of the heat pump system. Other locations that are candidates for the energy recovery units, might include the basement, to serve not only the basement Dispatch Center but also the first floor and possibly second floor of the Courthouse. There are some potential locations on the third floor north wing, in rooms on either side of the center corridor, for energy recovery unit and heat pump equipment locations. These locations afford some opportunity to provide conditioned air to the third floor north wing areas and drop down and serve portions of the second floor. There are large volume attic spaces above the second floor south wing that could be considered for equipment locations as well. These would most likely be difficult and expensive to use, as the equipment sizes may require a larger opening in the roof for equipment introduction, possible reinforcement of the structure, and construction of an equipment platform and service pathway above the second floor ceiling. Routing of ductwork, heat pump loop piping, and conduits will likely require new soffits and chases to be integrated into the building in a sensitive manner. Ductwork distribution can most likely be located between the existing plaster ceilings and original floor structure.

The HVAC system's impact on the exterior facade will be limited to louvers and area wells

for intake of outdoor air and relief of exhaust air. These locations and quantities will be determined during design of the system, but will likely occur at high and low locations in each wing.

It is recommended that infiltration at the dome and cupola be addressed in the HVAC replacement project. Four existing propeller style exhaust fans in the cupola are operated in the summer months to relieve hot and humid air that gathers in the attic and cupola. These fans should be removed and a window matching the other existing cupola windows can be installed. As further discussed below, the entire cupola should be weatherized and sealed to the greatest extent possible to reduce year-round infiltration and lessen the stack effect in wintertime. Stack effect is tendency of more warm air to rise to the highest point possible in a building and exit the building through chimney "stacks" or other cracks or openings high in a building. This then causes infiltration of cold air low in the building, and results in energy loss and sometimes strong vertical airflow in stairs and elevator shafts. The finished interior of the cupola is visible from the attic of the rotunda through horizontal gaps in the cupola's construction. These openings are an avenue for air leakage and will continue to allow conditioned air to infiltrate the attic, and unconditioned air to enter the rest of the building from the attic, if not addressed. During the HVAC project, consideration should be given to sealing the attic off from the conditioned space and providing a means for ventilating excess heat and humidity build-up to the outside. Conceptually, it may be possible to provide cooling supply air to the rotunda and first and second floor public corridors from this high attic space. Cold supply air, if provided from registers high up, will fall down to the target occupied zone near floor levels. This concept will not work for the warm heating air,

which would rise through the space, and would need much further analysis in design phase .

During the investigation conducted for this study in mild fall weather, it was observed that the exterior doors of the Old Courthouse were propped open during public hours. It is not understood how often this practice of fixing open the exterior doors is utilized during the year. The building's significant infiltration is considered an important HVAC issue and this is exacerbated with exterior doors propped open, exterior windows that are not weather-stripped, and the many window air conditioning units that are left in place throughout the winter months. The new HVAC system will positively pressurize the building relative to outside air pressure, to control the amount of infiltration of untreated outdoor air into the building. It is recommended that exterior doors be kept closed when the new HVAC system is in service. A new HVAC system will allow the removal of the window air conditioners, which will also greatly help reduce infiltration and enhance the building's historic appearance.

With the installation of a new HVAC system, it is recommended that all restrooms be provided with new exhaust air systems. Janitorial closets will also require new dedicated exhaust air in the new HVAC project. As part of the geothermal system recommendation, dedicated energy recovery units would be utilized to collect exhaust air not only from restrooms, janitorial spaces and shops, but also from other occupied rooms, to meet ASHRAE Standard 62, *Ventilation for Acceptable Indoor Air Quality*. This exhaust air would be gathered for the area served by each energy recovery units, and its heat recovered to efficiently pre-condition a similar flow rate of incoming outdoor air to serve the occupied spaces. A heat pump integral with the energy recovery units and connected to the geothermal system would condition the outdoor air to be approximately

thermodynamically neutral as compared to the occupied spaces. The details of the design and the development of construction documents would determine the best way to introduce the conditioned outdoor air: directly to occupied spaces, or to the return air of individual heat pumps. This conditioned, neutral outdoor air would provide significant help in controlling humidity in the space, maintain the building in a positively pressurized condition, and would not represent new heating or cooling loads to the individual heat pumps. Due to physical space availability to locate energy recovery units and the obvious challenges of large ductwork runs, it is anticipated that many energy recovery units would be necessary to properly serve the entire Old Courthouse facility.

**Special Systems Considerations.** With a few exceptions, the proposed system for cooling of the Old Courthouse is recommended generally for “human comfort cooling” only. But rooms such as the collections storage and library areas are the exceptions, as they need tighter performance from the environmental conditioning systems to preserve the collections they house. The study entitled *Mechanical Evaluation, Collection Storage Areas, Old Courthouse JNEM*, dated April 29, 2005, includes recommendations and details for these critical environment rooms—both for envelope and environmental systems. Since the exact use, size and location of spaces have not been fully determined, the exact environmental recommendations and associated HVAC treatment recommendations to serve these special rooms cannot be specifically determined at this time. As these programmatic decisions are made, reference should be made to the treatment recommendations from the April 2005 study, as it covers in detail the requirements for these critical environment rooms. The target criteria for these sensitive rooms, per the April 2005 report, are as follows: relative humidity, 45 percent +/- 5 percent; temperature, 68

degrees Fahrenheit +/- 2 degrees Fahrenheit. The above envelope improvement recommendation is a generic initial treatment recommendation for such critical environment rooms. The report also recommends developing dedicated spaces for Library, Archives, Artifact Storage, other Storage, and their associated Circulation/Vestibule supporting spaces. The report identifies the level of environment for these spaces according to ASHRAE's defined environment classes. Such critical environment rooms are either Class A or Class AA spaces. (See Appendix D to review second and third floor plans from this previous report of two options for layout of these spaces and the recommended class of environmental control)

The collection report recommends packaged computer room air conditioning units, CRAC, as the best fit to serve critical environment rooms in the Courthouse. The treatment recommendations of this HSR agrees with this recommendation in general, but proposes adaptations to be compatible with the overall geothermal HVAC system and supportive of other treatment plans within this HSR. It is recommended that the CRAC units shall be chilled water and heating water style of equipment. The generation of chilled water and heating water will be accomplished by redundant water to water heat pumps connected to the house geothermal system. This eliminates any heat rejection equipment sitting outside and requires no boiler or flue. This approach to hydronic CRAC unit type also advances the overall the NPS objective of energy efficiency and sustainability.

**Exterior Envelope Considerations.** Insulation in the exterior walls of the Old Courthouse is essentially non-existent, and the thermal resistivity is provided by the massive masonry and plaster walls themselves. Designated rooms, such as archival storage and the library areas are the exceptions as they need tighter performance

from the environmental conditioning systems. For such environment critical rooms, improvement of the envelope is highly recommended to avoid degradation of the wall systems. Exterior walls should be insulated and a vapor barrier installed with new finishes for the conditioned space. For the remainder of the Old Courthouse, it is anticipated that no envelope improvements be made such as the addition of insulation and air barriers/vapor retarders as the HVAC systems will be designed for "human comfort cooling" only. The addition of insulation on mass masonry walls has been the effort of many studies including cost benefit analysis. Rarely does this effort show a reasonable payback and typically will compromise a great deal of historic fabric.

Another critical envelope issue that is recommended to be addressed in the future HVAC project is the rehabilitation of the existing exterior windows. The Old Courthouse has significant amounts of fenestration. Window rehabilitation and associated thermal improvement would provide lower infiltration, better insulating and shading performance factors and would a significant effect on HVAC loads and equipment sizing. A complete window investigation and inspection was beyond the scope of this HSR effort, but it is assumed that the windows for the entire Courthouse would be retained and be rehabilitated according to the NPS standards. This effort would include the complete weather stripping of the existing window frames and sashes, reglazing as necessary, the installation of interior thermal sashes and perhaps the installation of window film treatment and window coverings as appropriate. The removal of the window air conditioning units would allow for reduction of actual infiltration. Windows at the areas containing critical or special environments should also be completely rehabilitated with an interior storm added for these spaces needing critical environmental control. All rehabilitated

windows should strive to be low infiltration, non-operable (as determined), with high performance characteristics.

**Occupancy Considerations.** As part of the final design and construction document phases, the basis of occupancy (people count) will need to be agreed upon by JNEM, the design team and the NPS. Comparing normal public occupancy of the Old Courthouse with the few extraordinary large occupancy at events such as Martin Luther King Day and #231 Fair St. Louis, presents a wide range of occupancy counts that design of systems is based upon. The occupancy count greatly affects HVAC loads, size of equipment, and outdoor air requirements. For the Old Courthouse it is recommended that the HVAC loads, equipment, and well field based on a design summer and winter day, with normal public occupancy counts. The building can be proactively sub-cooled ahead of an extraordinary event as the dates of these events are typically known in advance.

**Geothermal Well Field.** The block just east of the Old Courthouse, Luther Ely Smith Square, is a large city green space that is part of the NPS JNEM site (Figure 202). It is understood at this time that the design for improvements to this space are in progress. It is understood that the CityArchRiver 2015 project will potentially link the Old Courthouse with the Gateway Arch. As a result, this space will undergo a total rehabilitation including new landscaping, circulation, and utility renovation. This block is a prime candidate to house a geothermal field to serve the Old Courthouse heat pump systems. (See Appendix D for a site plan of the area proposed for the geothermal well field.) Coordination between well field layout and the final design plans will be needed immediately if this system recommendation is accepted, so that the addition of trees or other improvements are designed to be compatible with geothermal wells.

It is recommended that the geothermal wells be manifolded together in approximately twelve pairs of three inch pipes and routed to the Courthouse basement. Boring to place the pipes under Fourth Street between the Courthouse and the well field is recommended. A header manifold for the piping would be –mounted on a wall in the basement. Redundant circulation pumps with speed drives and all related accessories would also be located in the basement. The well field can be located 5 feet below finished grade to allow for the new landscaping, though not trees, above the field.



**FIGURE 202.** Luther Ely Smith Square, proposed geothermal well field. Source: Alvine and Associates, 2011.

## Cost Summary

The estimated order-of-magnitude cost of the proposed geothermal HVAC system is \$7,000,000. As future study, pre-design, and design work proceeds, the cost estimate should be refined.

Qualifiers for this cost estimate are as follows:

1. Well field landscaping is assumed to be flat grade, rebuilt and seeded grass.
2. Plumbing scope is assumed to include only plumbing work in support of HVAC system: only makeup water and floor drains are included.

3. Existing power service to the building is assumed to be adequate, without changes.
4. Lighting work is assumed to be very limited and includes only such lighting as must be demolished to allow for HVAC installation.
5. The project will be open bid to the public and not a targeted set-aside.
6. Construction will be continuous, with the NPS turning over a quarter or more of the building at a time to the Contractor.
7. No occupant moving costs or other soft costs are included in the estimate.
8. No utilities relocation costs are included at well field site or to bore HP headers under street between well field and Old Courthouse.
9. No fire sprinklers are included.
10. No window or roof replacement or other major envelope improvement is included.
11. Assume that the whole building is served by geothermal HP system with dedicated outside air system (ERUs). No special HVAC systems or room envelope improvements for archived or critical environment space is included.

## Electrical Systems

### Existing Conditions

The electrical system in the Old Courthouse was upgraded in 2007. The power system is in good condition. The building has a 208Y/120-volt, 3-phase, 4-wire, 1600 amp electrical service.

The main switchboard is a Square D, QED style board with three sections. Section one contains the incoming conductors; section two contains the Power Company current transformers; and section three contains the 1,600-amp, 3-pole main breaker, owner metering, and surge suppressor.

The main switchboard powers a distribution switchboard labeled "MSB." MSB is a Square D, QED, Powerstyle switchboard, 1600-amp, main lug only, with breaker distribution. MSB has four 400-amp distribution panels located in the basement, and a 100-amp, 3-pole breaker that serves the life safety transfer switch. A 225-amp, 3-pole breaker services the emergency transfer switch. There are also a 225-amp, 3-pole spare breaker and five 225-amp, 3-pole spaces.

The four 400-amp basement distribution panels are labeled "DPW," "DPS," "DPE," and "DPN." The four distribution panels are Cutler Hammer with breaker distribution.

The building has one emergency generator. The generator is located in the basement and is an Olympian, natural gas-powered, 93.8 kVA/75KW, 208Y/120-volt, 3-phase, 4-wire unit, installed in 2007. This generator serves life safety and emergency loads of the whole building and the entire dispatch center's electrical.

## **Recommendations**

The existing electrical service including the switchboard MSB and the four 400-amp distribution panels in the basement have adequate capacity to serve new mechanical equipment, as described in the treatment recommendations for mechanical systems, above.

---

# Special Issue: Landscape

## Historical Overview

### City of St. Louis and Initial Courthouse Development, 1822–1838

St. Louis was first established in 1764 as a French fur-trading post. The post was sited along the shores of the Mississippi River near its confluence with the Missouri to take advantage of the travel routes used by trappers, and to establish trade routes with Native Americans to the west. The village form followed French precedent and was similar to that of New Orleans, consisting of a grid of streets focusing around a central public marketplace located along the riverfront. After the Upper Louisiana territory was transferred to the United States from the French in 1804, St. Louis was designated the capital of the new American territory. In addition to its strategic location for trade, St. Louis soon became the central point of departure for those traveling west. As western lands opened and trade opportunities expanded, St. Louis became a hub of commercial activity.

Prior to the 1820s, local courts had been housed in several places, including the commandant's house of the old Spanish fort near Fourth and Walnut, James Baird's former blacksmith shop on Third Street between Almond and Spruce, and the Baptist church at the southwest corner of Third and Market. By 1822, the courts were meeting in a two story frame dwelling built in 1817 by James Sawyer located at the southwest corner of Market and Fourth Streets. The 1821 City Directory stated that the courts met on the

first floor, while the second floor was occupied by an office or offices for the clerks of the court.

With the formation of a city government and the delineation of St. Louis County in 1822, a single structure in which to consolidate court functions, on a permanent basis, was deemed necessary. To address the need for a courthouse, the county appointed a commission in 1822 to select an appropriate site within the city limits. The obvious choice was a then-empty lot—Block 102—already known as the “Public Square” that was bounded by the streets referred to today as Market, Fourth, Chestnut, and Broadway. An 1821 city directory, although published before the committee or the site were chosen, and before the land was deeded to the county, anticipated the decision to place the new courthouse on the public square, described the site:

Eight streets run parallel with the river, and are intersected by twenty-three others at right angles, three of the preceding are in the lower part of the town, and the five others in the upper part. The streets . . . on “the Hill” or upper part are much wider. “The Hill” is much the most pleasant and salubrious, and will no doubt, become the most improved . . . . On the Hill in the center of the town is a public square 240 feet by 300 feet [bounded by Fourth, Fifth,

Market, and Chestnut streets] on which is intended to build an elegant Court-House.<sup>139</sup>

Figuring into the decision were likely the facts that the nearby Sawyer House was already being used as the courthouse, and the site occupied a central location on the hill overlooking the growing town on the lower river terrace to the east. At the time, the city's western boundary only extended to Seventh Street. The streets that ran along the upper terrace overlooking the site of the original town were still relatively open and undeveloped. Despite this lack of development, the public square was located at the geographic center of St. Louis when measured from north to south or east to west; placing the courthouse on the square anticipated that future development would occur in the area between Fourth and Seventh streets and eventually surround the courthouse with homes and businesses.

By September 1823 the Public Square was deeded by Auguste Chouteau and John B.C. Lucas, who each owned a portion of the block, to the county for the purpose of erecting a courthouse.<sup>140</sup> The proposed new building was planned to serve city residents in the same manner that county courthouses were already functioning elsewhere around the country: as a site of civic importance that offered a heart or center of community life. To reinforce the importance of this civic structure, the courthouse was planned to occupy the entire city block comprising the public square, following a precedent set in Philadelphia during the eighteenth century for civic architecture. Construction of the new building, designed by

St. Louis's first architectural firm, Morton and Laveille, began in 1826. Although scheduled for completion by 1828, the building remained under construction until 1833. When completed, the two-story brick courthouse was considered one of the most elegant buildings in the state. The courthouse was sited adjacent to and faced Fourth Street within the eastern half of the block. Other buildings were located in the western half of the square to support court functions. These included a clerk's office building by 1826. The square also contained a public well, a privy, meridian stones, sidewalks, a perimeter wall, and hitching posts. Over the next five years, the courthouse square was slowly improved to include grass lawns, an iron fence, and street trees, establishing it as a focal point of the community, a public forum, a seat of justice, and the symbolic center of the city. As is typical of American county courthouse sites, community functions and property sales, often held to settle estates, were regularly conducted from the east Courthouse steps after the probate court had moved into the courthouse. These public events were often well attended.

### **Development of a New Courthouse, 1838–1862**

In the decade following completion of the first courthouse, St. Louis tripled in size, reaching a population of more than 16,500 by 1840. Lithographs of the middle to late 1830s show St. Louis transformed from a small town to a true city, "emerging from its pioneer garb and beginning to take its place in urban society."<sup>141</sup> Along with the increase in the number of residents came an associated rise in court cases and related document processing needs. By 1838, the original courthouse was determined inadequate to handle the growing case load.

---

139. In John Reps, *Saint Louis Illustrated* (Columbia, Missouri: University of Missouri Press, 1989), 19, citing John A. Paxton, *The St. Louis Directory and Register Containing the Name, Professions, and Residence of all the Heads of Families and Persons in Business . . .*, 262.

140. Book H, Office of the Recorder of Deeds, St. Louis, pp. 421-422; St. Louis County Court Record Books.

---

141. Reps, 20, 25.

By this time, the county courthouse as a civic work of architecture was recognized throughout the nation as a primary expression of American self-government and pride. During the nineteenth century, the county courthouse, along with its associated square, became one of the most recognizable building typologies in American towns and cities, and a focal point of community life. It is likely due to this national trend that St. Louis County decided to hold an architectural competition for the design of a new courthouse that would express the growing importance and sophistication of its populace. Although the competition resulted in the awarding of first and second prizes to architects Peter Brooks and Henry Spence, respectively, none of the designs was considered consistent with the county's goals for the project. The county instead elected to engage architect Henry Singleton to provide an additional design for the new courthouse. Singleton's design featured a four-wing Greek Revival porticoed structure, unified by a Roman dome at the center. Singleton's use of the Greek Revival style was consistent with the popular architecture of the mid-nineteenth century that reflected the classical education of the time and the kinship Americans felt for the Greek people, who had recently won their independence from the Turks. The design for the new courthouse was also generally consistent with similar civic structures in terms of architectural finishes, classical references, and scale, providing an impressive facade and sense of pride for the community. The physical prominence and visibility of the courthouse site contributed to its civic importance. By this time, the original site selected for the courthouse square had also become the true geographic heart of the city, as the commercial district had grown slowly westward.<sup>142</sup>

142. Robert E. Veselka, *The Courthouse Square in Texas* (Austin, Texas: University of Texas Press,

By 1838, several of St. Louis's streets had been paved with brick or stone or had been macadamized in accordance with a new process of road surfacing introduced from England during the eighteenth century. That year, Henry B. Miller reported that "Market, Main, Second, Third, Chestnut, Pine, Olive, and Locust are paved as well as Walnut, Elm, and Myrtle; the cross streets are paved back as far as Fourth Street with the exception of Market which is paved back as far as Sixth or Seventh street."<sup>143</sup> Thus the roads around the courthouse were marked as important by the city. Although the pavement offered advantages, it remained far from ideal. The surface material used to pave Fourth Street and others nearby was a soft limestone that was slowly crushed into dust by the traffic. When dry, the dust was blown in clouds over the city, while rainstorms resulted in muddy and dirty conditions.<sup>144</sup> One resident described the streets after a rain:

The cross ways had vanished, or made their appearance here and there through the half-liquefied roads in the shape of an isolated block or two of stone. Some few, indeed, of the streets were closed against all but pedestrianism of the most daring class.<sup>145</sup>

The tall buildings that dominated the skyline at the time included the courthouse, as well as churches, such as Christ Church on Fifth Street across from the courthouse.<sup>146</sup> A visitor to the city at this time described the cityscape:

The compact portion of the city . . . presents a beautiful view, when beheld from the opposite shore . . . The fleet of steam boats . . . lining the landing for a mile—the white fronted warehouses extending for equal length—the dense mass of buildings in the rear seemingly mingling with the horizon in the distance, with

2000), 4.

143. Reys, 25.

144. *Ibid.*, 83.

145. *Ibid.*

146. *Ibid.*, 28.

here and there a church tower, a belfry, or a steeple looming to the skies, exhibit a panorama of exceeding beauty, that bursts upon the vision of the delighted beholder.<sup>147</sup>

The new courthouse building slowly emerged between 1838 and 1862. During this time, the role of St. Louis as the gateway to the west grew in importance and the number of emigrants passing through the city increased as well. Many pioneers began their journey at the courthouse, where they met guides offering to help with their travels. The courthouse was also used as a gathering place for events and meetings, including slavery debates, barracks for enlistees during the Mexican-American war, and as a staging area for parades. The eastern steps and portico also continued to serve as a public auction site.

Development of the new courthouse was complemented by changes to the square. Some of the buildings that had previously supported the original courthouse were removed, including two stone office buildings and a privy. In 1844, the square was covered in tanbark to hide the debris and disturbed earth associated with the construction. An iron fence was erected around the perimeter of the courthouse square at the edge of the public sidewalk in 1845–1846, and street trees were planted along Market, Fifth, and Chestnut streets. Tree boxes, likely constructed of wood, were added to protect the trees from damage. Views of the square that date to the 1860s indicate that metal tree guards were later replaced the wood tree boxes.

An article published in the *New Era* noted:

We see that the work of enclosing the Court House grounds with iron railing has been commenced and is progressing rapidly. New and substantial sidewalks of brick are to extend around the whole enclosure, and

on the outer edge a regular row of white locust trees are being planted. If they arrive at maturity and the yard is graded and covered with greensward, the gates erected, mounds and gravel walks made, and everything else that is in contemplation about the premises for use or ornament completed, it will be one of the handsomest and most magnificent squares in the land. The work is to be finished in the most elegant and substantial manner, at a total cost of between six and seven thousand dollars. The railing, which was going up yesterday, is of a beautiful pattern, and all wrought iron. It was manufactured in this city by Messrs. McMurray & Dorman, at a cost of three thousand dollars. It is but reasonable that a building of the magnificence and cost of our County Court should have an enclosed yard and ornaments to correspond with its own magnificence. St. Louis cannot, and but few other cities can, boast of a more commanding or valuable structure.<sup>148</sup>

In 1849, the city suffered two disasters—a cholera epidemic and a great fire that almost reached the courthouse. The cholera epidemic led to changes in public infrastructure, while the fire required the rebuilding of several blocks of commercial structures in the riverfront district.<sup>149</sup>

Work continued on the courthouse and square despite the upheaval caused by these disasters. By 1852, two new brick buildings had been built on the square to support the office needs of the sheriff and the judge of the probate court; one of these later received a second story addition to house the office of the architect of the courthouse. These buildings were demolished once the east and south wings of the courthouse were added. As each wing was completed, the

---

<sup>148</sup> Quoted in Lindenbusch, *Historic Structure Report: Part 1*, 38–39, citing Bryan, *Physical History*, 14–15.

<sup>149</sup> *Ibid.*, 156, footnote 5.

---

147. *Ibid.*, 38.

surrounding squares were regraded and improved. Improvements included the placement of ornamental features such as a fountain and sundial added to the southeast courtyard between 1855 and 1858. In 1861, the brick sidewalks surrounding the square were replaced, and a cistern and a pump were installed that provided water for the courthouse but was also available for public use.

### **Ongoing Courthouse Use, 1862–1895**

The Old Courthouse was finally completed in 1862, during the opening years of the Civil War, when the central dome was built, unifying the wings and extending the height of the building above much of the existing skyline.

Following the Civil War, several important innovations influenced transportation and urban development within St. Louis. The Eads Bridge, completed in 1874, provided the first river crossing of the lower Mississippi River at St. Louis, and led to a reconfiguration of the downtown area. Driving changes in the city's urban form was the increasing importance of the railroad, and the slow decline of river transportation.

By 1870, St. Louis had grown to include 300,000 residents and was the fourth largest city in the country. Growth and prosperity led to another important change in the city's urban development—the rise of the skyscraper and other large buildings in the city's downtown core. These would eventually diminish the prominence of the courthouse within the skyline and as the center of civic life.

Within the courthouse square, several improvements were made to the building and grounds that enhanced its appearance and accessibility during the 1860s and 1870s. Steps and iron railings were added to render the north wing more accessible in 1863. A new pump and a second sundial were added circa 1870. In

1872, the courtyards were sodded, the brick sidewalks were repaired, and flower beds were added.

During the 1880s, new tree boxes were added to protect the square's street trees. In 1884, the iron perimeter fence was removed, while in 1885, the brick sidewalks, again in a state of disrepair, were replaced with a granitoid material. In 1895, the granite base of the perimeter wall was removed and replaced with a granitoid curb, while limestone curbs were installed along the walkways. At this time, the grounds were regraded to render the courtyards level. A six-inch layer of burnt clay ballast and cinders of burnt brick were applied in the northeast and southeast yards, replacing the granitoid walks that had followed the walls of the north and south wings. Also in 1895, the fountain set within the southeast courtyard was removed. These changes diminished the beauty and civic character of the space.

### **Decline of the Role of the Old Courthouse, 1895–1935**

As the centennial of the Louisiana Purchase approached, the city began to consider improvements to accommodate the throngs of visitors expected to attend the celebration known as 1904 World's Fair and the Louisiana Purchase Exposition. As part of these improvements, the city paved all of its downtown streets with granite and developed a new organized system of street and railway transportation.

Improvements were also made to the St. Louis Courthouse in anticipation of the crowds expected to attend the 1904 World's Fair. Access to the courthouse was altered in 1904 through modifications to the areaways that edged the building in several locations and permitted access to the basement level of the building. These were modified to allow for the addition of new steps that facilitated entry into

the building at the main floor. Also in 1904, the city reconsidered its earlier decision to fill the courthouse courtyards with ballast, electing to remove the material and replace it with soil and sod. These changes were implemented by the St. Louis Park Commission, which also planted privet hedges around the perimeter of the square where the fence and wall had once stood, and created new circular beds for foliage plants.<sup>150</sup> Although the hedges survived, the grass did not, and the park commission was forced to reinstall sod in 1906.

Another major change to the courthouse grounds occurred in 1907, when a new boiler house was built in the southeast courtyard between the south and east wings. This also led to changes in the steps leading to the basement of the south wing and removal of the west end of the east wing areaway. The boiler house featured a tall iron stack that became part of the primary views of the courthouse looking toward the east portico.<sup>151</sup>

The landscape of the courtyards continued to require extensive maintenance. Due to decline and damage from weather, part of the privet hedge that had been planted in 1904 had to be replaced in 1908. At the same time, the city improved the flower bed plantings and installed a kiosk with a U.S. Weather indicator in the southwest corner of the square.<sup>152</sup> In 1909, a sleet storm destroyed the privet hedge for a second time, after which the city again replaced the hedge. The city also began to treat the square like a small public park at this time, continuing

to develop the plantings.<sup>153</sup> In 1912, the flower beds were replaced with shrub plantings.<sup>154</sup>

In 1909, the city also installed new streetlights around the courthouse. Fourteen of the new lamps were in place by April 1910.<sup>155</sup>

In 1913, the city allowed the Daughters of the American Revolution, a patriotic women's group involved in recognizing historic sites of Revolutionary War era importance around the country, to place two monuments in the courthouse square that commemorated the origination point of the eighteenth century Boonslick Road. Like markers placed on the grounds of many courthouses around the country, these monuments commemorated an important element of the community's past.

By 1920, the city had reached the zenith of its influence and population. Beginning in 1930, the population began to decline. At the same time, the courthouse was found to be antiquated and inefficient for the needs of the courts. The city moved court functions out of the Old Courthouse to a new building at Market and 12th Streets in 1930. Although the Old Courthouse continued to be occupied for various uses, it began a slow decline due to an overall lack of maintenance.

It was also during the 1930s that a local organization—the Jefferson National Expansion Memorial Association—was formed based on the efforts of lawyer Luther Ely Smith. The organization helped city residents envision the possible revitalization of their riverfront and the establishment of a commemorative gesture that might highlight the history of the city and its role in American westward expansion.

---

150. Lindenbusch, *Historic Structure Report: Part 1*, 171.

151. *Ibid.*, 189–191.

152. *Ibid.*, 197–198, from the Annual Report of the Park Department, 1909, 8–9. No additional information regarding the weather indicator was available in the report.

---

153. *Ibid.*

154. *Ibid.*, 208.

155. *Ibid.*, 198.

In 1935, these efforts resulted in the establishment of a new unit of the National Park System known as Jefferson National Expansion Memorial by President Franklin Delano Roosevelt. Although the memorial would primarily occupy the riverfront, park planners involved in determining the configuration of the new memorial would later recommend that the composition might center on the east-west axis of the Old St. Louis Courthouse.<sup>156</sup>

### **National Park Service Rehabilitation of the Old Courthouse, 1935–1953**

In 1940, the city deeded the Old Courthouse to the National Park Service for inclusion in the new park unit. Initial building restoration efforts made by the National Park Service occurred between 1940 and 1942. These primarily entailed reroofing the entire structure, replacement of the revolving doors with the original exterior door configuration on all four wings, and some internal improvements in the south wing. The 1907 boiler house was demolished, and the heating system connected to a steam line from the Union Electric Company's plant on the north riverfront.

In 1942, work ceased on the building repairs due to the lack of funding and manpower resulting from American involvement in World War II. As the country emerged from war in 1945 and 1946, work began in earnest on the development of the new park along the riverfront. In 1947, the National Park Service organized a two-stage design competition for a memorial to be sited within the park. The first stage of the competition narrowed the competition from 172 entries to five finalists. Of the five, Eero Saarinen's design was chosen unanimously in 1948. The design featured a soaring catenary arch near the riverfront that was intended to mark St. Louis as the gateway to the west.

Little work was done on the Old Courthouse grounds during this period. In 1947, however, a bronze plaque commemorating the location where Joseph Pulitzer bought the *St. Louis Dispatch* on December 9, 1878, was placed within the brick sidewalk in front of the east wing entrance steps by Sigma Delta Chi, the National Professional Journalistic Fraternity.

### **Rehabilitation of the Old Courthouse Grounds and Construction of the Gateway Arch, 1953–1965**

Although plans were prepared for rehabilitating the Old Courthouse grounds as part of the building improvement projects conducted between 1940 and 1942, funding remained limited and was not sufficient to complete the proposed work. During the 1940s, little occurred beyond the repair of existing sidewalks, plantings, and lawn areas. It is likely that removal of the trees visible in photographs of the early 1940s occurred during this period, although documentary evidence has not been identified for this activity.

Across Fourth Street, the landscape of the block bounded by Fourth, Chestnut, Third, and Market Streets, just east of the Old Courthouse, finally began to take shape as well. The buildings that once occupied this square and the remainder of the riverfront had been demolished between 1940 and 1942 as part of park development. The demolitions established a clear and unobstructed view between the Old Courthouse and the Mississippi River. Developed as the "Riverfront Garden" in 1951 as a result of an agreement between the federal government and the City of St. Louis, the block was designed by landscape architects employed by the city's parks department. Plans called for a sunken garden with flower beds in the middle and rows of trees on each side. Concrete steps were designed to connect the garden with Fourth Street, while the landscape was to meet grade at Third Street.

---

156. Brown, *Administrative History*, 61.

In 1953, mindful of the coming Sesquicentennial of the Louisiana Purchase, the National Park Service began to address the deteriorating conditions inside and outside the Old Courthouse. In 1954, the building received a new exterior coat of white paint, which gave the structure added visual prominence in the city. Similarly, the Old Courthouse square took on new life when the National Park Service installed brick sidewalks in 1954 to replace the existing granitoid slabs, which had been described as hazardous as early as 1941. Installation of the brick sidewalks reestablished a feature of the nineteenth century landscape that imbued a unique character to the grounds within the context of the surrounding urban landscape. To ensure visitor safety and increase the useful life of the sidewalk, while limiting the need for future repairs, the National Park Service elected to set the bricks of the sidewalk in sand atop a concrete slab that was not a component of the original sidewalk. Initial proposals had recommended that the brick pavers be set in a sand bed to match the historic condition, but this was later changed to address safety and durability concerns. The brick was laid in a herringbone pattern to match what was visible in an 1868 photograph.<sup>157</sup>

Although it is likely that park personnel were already considering plans for how to rehabilitate the remainder of the Old Courthouse grounds at the time, no additional work occurred until 1957, when the majority of the remaining features present today, designed to recall the landscape of the 1870s, were completed. Given the time frame of these efforts, the work to reestablish historic features and rehabilitate the landscape in the late 1950s was likely funded by the National Park Service's Mission 66 program.

In 1957, the National Park Service constructed a perimeter granite wall and wrought iron fence on the location of historic perimeter wall and fencing features of the 1870s, added a copper fountain that replicated a feature present in the southeast courtyard during the same period, and repaired the historic sundial that was one of the only nineteenth century features to survive on the Old Courthouse grounds. The replacement fountain was designed based on careful investigation of historic photographs and sited using archeological excavation of the lawn. Nonetheless, the existing fountain is considered not to be a faithful replica and smaller than the original shown in period photographs. While the historic sundial survived, it was in poor condition. The National Park Service repaired it using replacement parts fashioned in a city foundry based on a similar device located on the grounds of the St. Louis Arsenal. The second sundial, originally located within the northeast courtyard, was omitted from the redesign.<sup>158</sup>

The wrought iron fence and stone base were restored using an available photograph taken circa 1870 as the basis for the design. The new stone base for the fence was built from granite rather than the original limestone to address durability concerns. None of the existing photographs available to the National Park Service for the redesign provided information about the design of the fence gates, however. With no information to guide their efforts, National Park Service designers determined to introduce a whimsical and decorative element into the gates. Their designs included wrought iron turtles set between the pickets to reflect the legend of building caretaker James Quigley's turtles, which had been housed in the original fountain.

---

157. Lindenbusch, *Historic Structure Report: Part 1*, 231–232.

---

158. Lindenbusch, *Historic Structure Report: Part 1*, 236–237.

Construction of the Gateway Arch and work on Jefferson National Expansion Memorial site design began in earnest during the 1960s. Fortuitously, most of the major decisions on development of the park had been made by 1961, as Saarinen died unexpectedly that year. Construction of the Arch finally began in 1963 and continued until 1965.

In 1963, column capitals salvaged from buildings demolished near the riverfront to create the park were moved to the northeast and northwest courtyards of the Old Courthouse grounds for public display and became focal points of these spaces.

The Gateway Arch opened to the public in 1967 and was dedicated in 1968. Completion of the Arch enhanced the prominence of the Old Courthouse by framing it within the curved form of the memorial. The Old Courthouse was in fact integrated into the design composition of the memorial as a symbol of the city of St. Louis. It formed an anchor for the eastern terminus of the primary axis devised by Saarinen and Kiley in their site plan for the park. The linear connection between the Old Courthouse, the Arch, and the river had been a primary organizing element of the Saarinen/Kiley concept from the beginning, and reinforced Saarinen's intention for the Memorial to connect to the city and the river. The axis between the elements was left as open space, with the Arch centrally located within it, creating a strong visual and physical connection between the city and the river and allowing visitors to occupy and appreciate Saarinen's intent.

### **Maintenance and Management of the Old Courthouse and Grounds, 1965 to present**

Since completion of the Gateway Arch, Jefferson National Expansion Memorial has become an international icon visited by millions

of people each year. At the same time, throughout the 1960s and 1970s, the Old Courthouse continued to serve as a focus of community events and gatherings, such as a rally for the Presidential election held in front of the courthouse in 1976.

During this period, few physical changes were made to the Old Courthouse landscape. In 1969, the National Park Service began to light the building exterior. As part of the project, concrete pads were built at the corners of the courtyards and used to mount floodlights directed at the building facade.<sup>159</sup>

In 1976, National Register nomination documentation materials were completed for Jefferson National Expansion Memorial, which had been listed in the National Register in October 1966 based on the National Historic Preservation Act. The Old Courthouse was listed as a contributing resource of the historic district in the 1976 nomination.

By 1982, the brick sidewalk installed in 1953 had begun to exhibit wear and required repair. The National Park Service repaired the sidewalk by re-leveling portions of the treadway, removing and replacing approximately 436 square feet of brick, constructing 88 linear feet of concrete curb, and replacing 1,866 square feet of deteriorated sidewalk joints. Curb cuts were also installed at crosswalk locations to enhance accessibility. By this time, a small number of areas began to be mortared in place. These areas, such as around fire hydrants, signal poles, and other upright utility and sign features, were the focus of repairs and replacements made by the city. After removing bricks to make the change or repair, the city typically put them back in place using mortar. The majority of the bricks otherwise remained dry-laid until 2006 when the National Park Service engaged a

---

159. Brown, 224.

contractor to mortar the rest of the bricks in place.

In 1986, the St. Louis Garden Club funded the installation of new 6-foot-wide planting beds along the perimeter of the courtyards as well as central display beds. The beds featured annuals and bulbs, while the fountain and the center of the southwestern courtyard were planted with roses. Most of the original annuals, bulbs, and roses have since been replaced with perennials to diminish maintenance requirements.

It was also in 1986 that the first accessibility lift, a Garaventa product, was added at the west portico to facilitate entry into the building for those with mobility impairments. In 2007, a new lift was installed in the southwest courtyard to enhance universal accessibility to the building. This feature was again replaced in 2012 with the mechanical lift present today.

In 1997, the exterior lighting system installed in 1969 was replaced with new floodlights positioned near the center of each perimeter wall of the four courtyards rather than in the corners as established previously.

Between 2009 and 2010, the roof of the Old Courthouse, installed by the National Park Service in 1941, was replaced with approximately 20,000 square feet of lead-coated, standing seam copper to address problems associated with several leaks.

This project was followed in 2011–2012 by replacement or repair of approximately one-third of the Old Courthouse cornice stones. Fragments of cornice stone had periodically fallen from the building onto public and employee areas, suggesting the need for repair. These two projects required access to the building exterior through the courtyards. In the process of conducting the repairs, heavy equipment, materials storage, and other construction-related activities caused in

extensive damage to the turf lawn and other features of the courtyards.

Future changes to the Old Courthouse grounds may result from CityArchRiver 2015, an initiative that aims to improve the condition and role of Jefferson National Expansion Memorial within the urban fabric of downtown St. Louis. Over the years, deferred maintenance, changes to the urban landscape, and increased interest on the part of the National Park Service and city leaders to enhance accessibility and interpretation of the park's features led to the organization of an international design competition for Jefferson National Expansion Memorial to address goals and concerns for the park. The competition was conducted in 2009. The competition is referred to as CityArchRiver 2015.<sup>160</sup> The goals of the CityArchRiver 2015 design competition were to:

1. Create an iconic place for the international icon, the Gateway Arch
2. Catalyze increased vitality in the St. Louis region
3. Honor the character defining elements of the National Historic Landmark
4. Weave connections and transitions from the City and the Arch grounds to the River
5. Mitigate the impact of transportation systems
6. Embrace the Mississippi River and the east bank in Illinois as an integral part of the Park

---

160. National Park Service, *Value Analysis for Westward Expansion Museum and Old Courthouse Accessibility, Final Report #1, Rev 3*, January 18, 2012, 4.

7. Reinvigorate the mission to tell the story of St. Louis as the gateway to national expansion
8. Create attractors to promote extended visitation to the Arch, the City, and the River
9. Develop a sustainable future
10. Enhance the visitor experience and create a welcoming and accessible environment

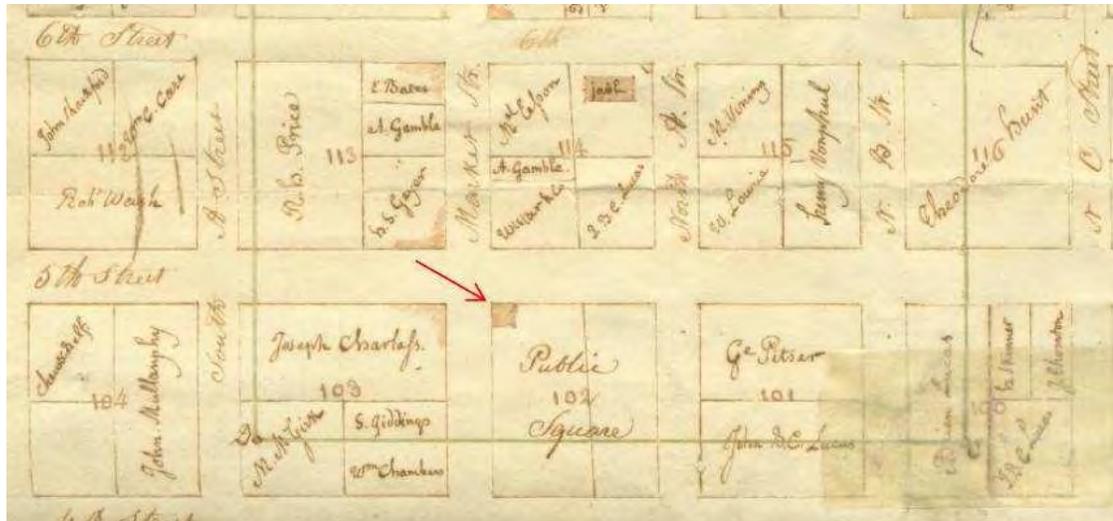
The winning team, headed by the firm of Michael Van Valkenburgh Associates, continues to work with the National Park Service to refine the elements of the winning design through value analysis workshops and public meetings. Enhancing the accessibility of the Old Courthouse from the remainder of the park, as well as the surrounding urban area, is a key component of the plan. Implementation of the plan is anticipated to enhance the experience of the iconic park for visitors and to reinforce the historic role of the Old Courthouse as a site of civic importance and engagement. Proposals for enhancing the connections between the Old Courthouse and the Gateway Arch continue to be refined.



## Landscape Chronology

### City of St. Louis and Initial Courthouse Development, 1822–1838.

- 1822      St. Louis was incorporated as a city and the seat of St. Louis County.
- On December 14, 1822, a commission was appointed by the county to select the site for a new county courthouse.
- 1823      On August 25, 1823, the commission selected the Public Square, located along the western edge of the city (Henderson, 1), as the site for the proposed county courthouse. Auguste Chouteau, one of the city’s founders, and Judge John B.C. Lucas, one of the original officials appointed by President Thomas Jefferson to administer the Louisiana Territory, donated the block to the county to be used for courthouse development. (Lindenbusch, 2)
- Prior to construction of the courthouse, the only object described in accounts of the square was a pillory that had been there for many years. (Lindenbusch, 2)
- Court functions prior to this time had been performed in several existing buildings around the city.
- Joseph Laveille, who served as street commissioner until 1826, devised names for the grid of city streets, suggesting that north-south streets be numbered and east-west streets be given the names of trees. Market Street was the only exception, named for the market area located along the river where it initiated.
- 1824      On August 24, 1824, the county court appropriated \$1,531 for a clerk’s building to be built on the Public Square.
- 1826      The site proposed for construction of the new courthouse was surveyed by Rene Paul. (St. Louis County Courthouse Chronology)
- The clerk’s building appears to have been constructed by this time, as it appears on Paul’s survey conducted on July 11, 1826. The survey suggested that the building measured 32 by 32 feet in plan and stood in the southwest corner of the square (Figure 203).



**FIGURE 203.** 1825 Rene Paul survey including Block 102 (courthouse block). The existing clerk's office is indicated by the red arrow. Source: National Park Service, Jefferson National Expansion Memorial Archives, Record Unit 144, JEFF-10536.

1827–1828 Construction of the new county courthouse, based on the design of architects Joseph Laveille and George Morton, began. Although the scheduled completion date of December 1, 1828, was not met, court functions moved into the building as work continued.

The Courthouse and its environs, which included an entire city block, immediately became a focal point of the community, serving as a public forum as well as a seat of justice and the symbolic center of the city. (Henderson, 1)

1828–1830 A wooden privy, approximately 8 feet long and 12 feet wide, and set on a stone foundation, was built within the northwest portion of the courthouse square for use by the public. (Lindenbusch, 2)

1828–1865 Slave auctions and property sales, often held to settle estates, were regularly conducted from the east Courthouse steps once the probate court moved into the courthouse. These public events were popular and attracted much attention. (Dosch, 100) African Americans were also auctioned off as unclaimed fugitive slaves. The county jail located at Sixth and Chestnut streets was used to retain slaves when necessary.

1830 Meridian stones were set within the courthouse square to establish a meridian station. Meridian stones were traditionally placed on the sites of many nineteenth century courthouses to establish north-south lines that could be used by surveyors as a reference point. (St. Louis County Courthouse Chronology)

Circa 1831 The county government ordered a well to be built on the Market Street corner of the square along the east lot line to serve public and court water needs. (Lindenbusch, 2; St. Louis County Courthouse Chronology)

1831–1834 The sidewalk in front of the courthouse on Fourth Street was paved with bricks. (St. Louis County Courthouse Chronology) Soon thereafter, the sidewalk along Fifth Street west of

the courthouse was also paved, as were walks within the square. (St. Louis County Courthouse Chronology)

Circa 1832 A wall was constructed to enclose the courthouse square. The commissioners responsible for enhancing the square intended for the wall to convey a sense of “beauty, permanency and usefulness.” The wall was described as brick with a stone cap and a stone base. A large gate was identified as having been located on the east side. Original plans had suggested that the grounds be enclosed by a fence composed of cedar posts and wood planks. (Lindenbusch, 2–3)

The circa 1830 privy was replaced with a new privy structure. (Lindenbusch, 2; St. Louis County Courthouse Chronology)

The pillory described as present within the courthouse square prior to construction of the building was removed. (Lindenbusch, 2)

The courthouse was able to purchase water from a new public system that provided water from outdoor hydrants. (Dosch, 29)

1833 On August 10, 1833, the courthouse building was finally completed to the satisfaction of the county court.

The perimeter wall, which was built to curve back toward the front of the courthouse building along Fourth Street, formed an opening where cedar posts and wood rails were used to build a hitching post. The post was set into the brick sidewalks being completed around and within the square. (Lindenbusch, 3, St. Louis County Courthouse Chronology)

1834 The grounds of the courthouse square were slowly improved. Open areas of the square were seeded to establish a grass lawn. (St. Louis County Courthouse Chronology)

A coping layer and an iron railing were added along the top of the existing brick perimeter wall around the courthouse square. (St. Louis County Courthouse Chronology)

Several of the brick sidewalks around the courthouse were repaired. (St. Louis County Courthouse Chronology)

1835 The stone and brick perimeter wall and privy were described as requiring regular maintenance to keep them in good working order. (St. Louis County Courthouse Chronology)

1837–1838 White locust (*Robinia pseudoacacia*) trees were planted within the courthouse square. (St. Louis County Courthouse Chronology)

### **Development of a New Courthouse, 1838–1862**

Refer to Analytical Diagram, Courthouse and Grounds, 1832–1852, following this chronology.

- 1838 In the decade following completion of the first courthouse, the population of St. Louis tripled. By 1838, the courthouse was considered inadequate in size to handle the case load and in need of replacement. (Henderson, 2) The county court held an architectural competition for the design of a new courthouse. Architect Peter Brooks won first prize, while Henry Spence was awarded second prize.
- The county hired architect Henry Singleton to provide an additional design for a new courthouse. Singleton's design featured a four-wing Greek Revival porticoed structure, unified by a Roman dome at the center. (Dosch, 18)
- 1839 The cornerstone of the new courthouse based on Singleton's design was laid. (St. Louis County Courthouse Chronology)
- 1843 The county constructed a cistern within the courthouse square to support water needs of those employed in the building. (Lindenbusch, 20)
- 1843 The pump used to draw supplemental water from the courthouse well was repaired. The pump continued to be used, despite the availability of city hydrants. (Lindenbusch, 20)
- 1843–1844 The entrances into the north and south extensions of the courthouse building were completed. Referred to as "buttresses," the entrances were shaped like the present-day cheekwalls at the west, east, and north entries. The north side required more stairs for entry than the south side due to differences in grade. (Lindenbusch, 20)
- 1844 Maintenance of the buildings and grounds was the responsibility of the caretaker of the courthouse. James Quigley held this position for several decades, beginning in 1844. (Lindenbusch, 116)
- 1844–1845 The two small stone buildings that housed offices and a privy, located in the southwest and northwest corners of the square respectively, were removed. (St. Louis County Courthouse Chronology)
- Efforts to improve the appearance of the courthouse square, which was filled with debris and subject to disturbance during construction of the new courthouse building, included covering the site with tanbark, a shredded tree bark from which the tannins have been removed. (Lindenbusch, 37)
- The county ordered a coal vault to be built beneath the sidewalk near the west entrance into the courthouse at Fifth Street. It was likely added in 1845. (St. Louis County Courthouse Chronology)
- A new well was also proposed for construction within the southwest corner of the square. (St. Louis County Courthouse Chronology). Refer to Figure 2.
- The existing cistern on the west side of the courthouse was altered to facilitate use by fire engines in response to a court order that it be altered in such a manner that city fire engines could draw water from it. (Lindenbusch, 38)

- 1845–1846 A new iron fence with a cut and hammered stone base was constructed around the courthouse square. The fence was manufactured by McMurray and Dorman of St. Louis. (St. Louis County Courthouse Chronology)
- Curbs and gutters were added along Market Street in front of the courthouse. (St. Louis County Courthouse Chronology)
- Thirty-eight white locust trees were planted along Market, Fifth, and Chestnut streets to replace those that had not survived. Tree guard boxes were added to protect the trees. These were likely built of wood during the mid-nineteenth century. Later tree guards were fashioned of wrought cast iron. (St. Louis County Courthouse Chronology)
- The St. Louis *New Era* commented that the locust trees, sturdy brick sidewalks, and beautiful wrought iron fence surrounding the courthouse corresponded well with the building's own magnificence. (Lindenbusch, 38–39, from the St. Louis *New Era*, early 1846)
- 1846 On January 29, the St. Louis *New Era* reports that a row of white locust trees had been planted along the courthouse square.
- A large gathering of slave holders met in the courthouse rotunda to address the need for “protection of slave property against the evil designs of abolitionists and others.” (Dosch, 78–80)
- Henry Clay unsuccessfully attempted to sell some of his locally owned acreage from the east portico but became discouraged and complained that the large crowd had only come to see him and not to buy his land. (Dosch, 102)
- Brick paving was added around the water pump. (St. Louis County Courthouse Chronology)
- 1846–1848 During the Mexican-American War, the rotunda served as a temporary barracks. (Dosch, 69) After the United States won the war, citizens gathered in the rotunda to plan an event to honor the returning soldiers. Citizens initiated a huge procession on Fourth Street in front of the courthouse and the Planters Hotel that continued to Camp Lucas on the western edge of the city (now Twelfth and Olive), where Senator Thomas Hart Benton presented a speech honoring the soldiers. (Dosch, 69)
- 1847 Dred Scott, an African-American slave, initiated *Dred Scott v. Sanford*, a lawsuit in which Scott sought to gain status as a free man within the slave state of Missouri. Scott had relocated to Missouri from the free states of Illinois and Wisconsin. The case was tried in the courthouse. The decision was not rendered in Scott's favor. (Dosch, 117)
- 1848 A large procession supporting the forces of liberalism in the German revolution of 1848 formed at the courthouse. Hundreds of participants filled the courthouse yard and adjacent streets. (Dosch, 71)

1849–1850 The City of St. Louis experienced a devastating cholera epidemic that killed 6 percent of the population. A deadly fire also consumed portions of the riverside commercial district. The cholera epidemic led the city to initiate work on a sewer system, which began to serve the courthouse in 1851. (Reps, 63–64)

1850 The Dred Scott case appeal was tried within the courthouse. (Dosch, 117). Refer to Figure 4.

1851–1852 The 1828 courthouse, which had served as the east wing of the 1838 structure, was demolished and a new east wing constructed. (Dosch, 32; St. Louis County Courthouse Chronology)

The east portico quickly became a popular gathering place for public speeches. (Dosch, 66)

1851–1852 Two new, six-bay, two-story brick buildings were constructed to provide the office space needed by the court. (Lindenbusch, 41) The buildings housed the Sheriff's Office and the Judge of Probate Court's Office. The Sheriff's Office building was constructed on Chestnut Street near Fourth Street in the north part of the public square. (St. Louis County Courthouse Chronology) The Judge's Office was constructed on the south side of the courthouse square. (St. Louis County Courthouse Chronology) Statutory law required that the office for the Probate Court be located within 200 yards of the courthouse. (Lindenbusch, 42)

Buildings within the courthouse square were described as whitewashed rather than painted. (Lindenbusch, 42)

1852 The east portion of the courthouse square was regraded as part of the new east wing construction project. (St. Louis County Courthouse Chronology). Refer to Figure 5.

An office was built for the architect of the new courthouse, and a second story was added to the Sheriff's Office building. (St. Louis County Courthouse Chronology)

Refer to Analytical Diagram, Courthouse and Grounds, 1852–1862, following this chronology.

1855 On August 11, 1855, the city of St. Louis granted the county "the free use of water from the Waterworks . . . for a fountain to be erected by the County Court in the courthouse yard." Construction of the fountain was completed prior to 1861. (Lindenbusch, 47)

Period accounts suggest that caretaker James Quigley kept a turtle in the courthouse fountain. Quigley's turtle became a popular curiosity. Quigley likely placed a different turtle in the fountain each year "as soon as the frost [was] out of the ground." In 1869, workmen engaged in repairing the fountain in the courthouse yard erroneously suggested that the turtles had damaged the cement at the bottom of the fountain by their scratching. The report was most likely a jovial fabrication as the fountain had an iron bottom. (Lindenbusch, 118) Turtles incorporated into the design of the fence built in 1956 around the courthouse square make reference to Quigley's turtles.

A large number of citizens gathered in the rotunda to consider the slavery debate as Kansas sought statehood. Both pro- and anti-slavery supporters attended, although the majority of those gathered were Southern sympathizers who passed resolutions supporting slavery in Kansas. Toward the end of the meeting, the crowd grew so large that it had to move outside. (Dosch, 80) Refer to Figure 8.

The Sherriff's Office building was ordered demolished to make way for construction of the new north wing of the courthouse. (Lindenbusch, 45)

City sewer improvements allowed for the establishment of restrooms in the basement of the courthouse, reducing the need for privies. (Lindenbusch, 50)

1857 At least one of the brick buildings constructed to house court offices was demolished. (Henderson, 4)

1857 The fence along Chestnut Street was taken down. (Lindenbusch, 52)

1858 The court ordered a "suitable dial or plate to show the hour by sun and shadow" to be manufactured for placement within the courthouse square. Major W. H. Bell, stationed at the United States Arsenal in St. Louis, was engaged to supervise the erection of the device in the southeast courtyard. Later, Benjamin F. Crain was appointed Superintendent of the County Sundial. (Lindenbusch, 56; St. Louis County Courthouse Chronology)

The courthouse of this period was described as edged by elm trees along the curbs, although the trees most likely remained locusts. (Dosch, 54)

Two open-work wrought iron doors and five open-work window guards were ordered for the courthouse exterior. (St. Louis County Courthouse Chronology)

1860 Proposals were made by local residents and politicians to erect a statue of George Washington within the courthouse square. A casting of Jean Antoine Houdon's statue of Washington, previously offered to the city but declined, sat in the southwest corner of the square while funds were raised to purchase it for some other purpose. The statue was eventually erected in Lafayette Park in 1869. (Lindenbusch, 74) Refer to Figure 11.

1861 The brick pavements and sidewalks around the courthouse square were replaced. New paving was to consist of "hard Paving Brick, laid in sand," a common construction practice in St. Louis. (Lindenbusch, 74)

1862 By 1862, the courthouse utility systems had been greatly improved. Water was now piped directly into the building, although the courtyard pump was still in use as late as 1872. (Dosch, 54) Refer to Figure 11.

#### **Ongoing Courthouse Use, 1862–1895.**

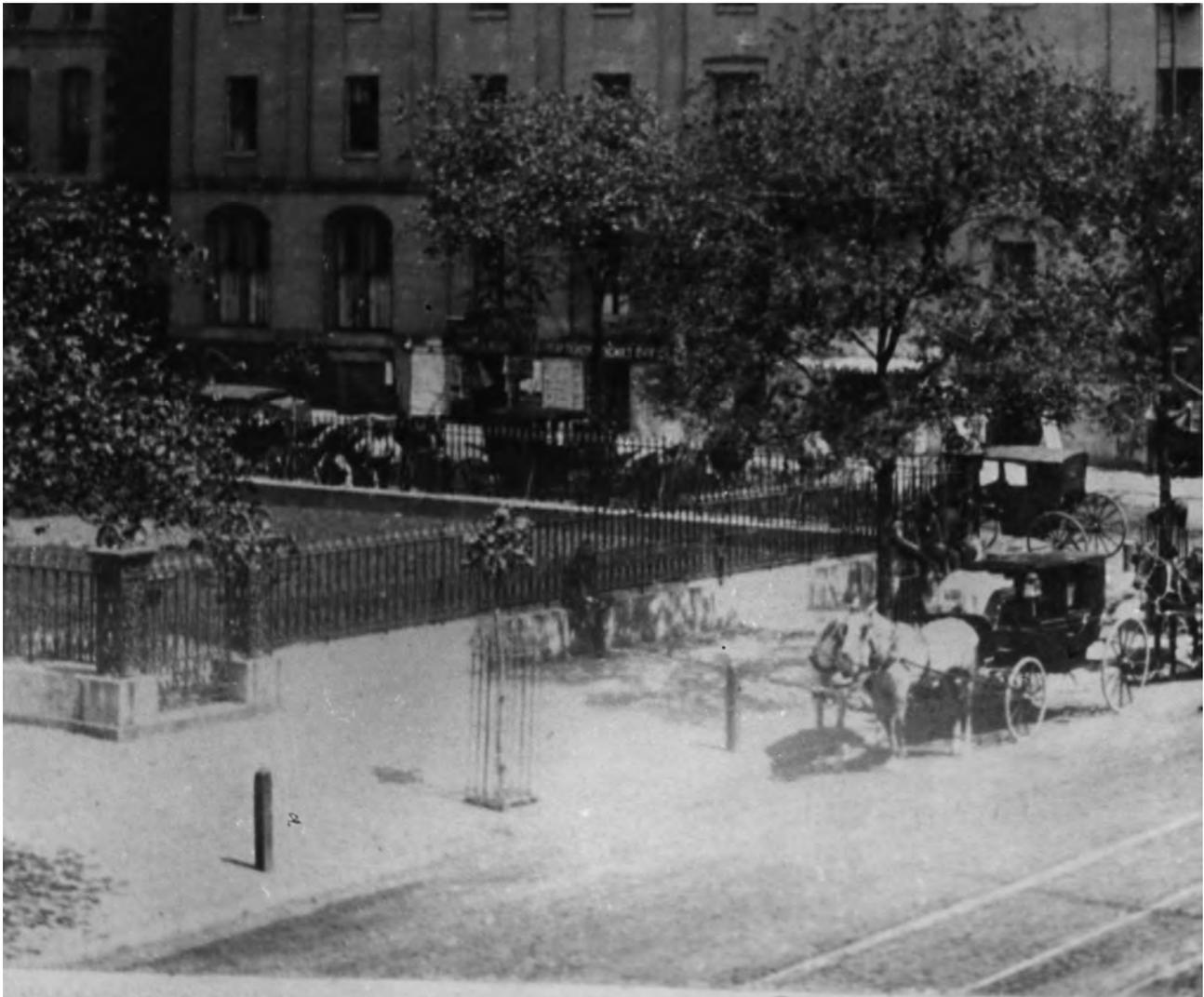
Refer to Analytical Diagram, Courthouse and Grounds, 1862–1895, following this chronology.

1863 Stone steps were built to provide access to the north cross hall or transept entrance of the courthouse. The steps were added to the east and west sides of the porch, at the northern end. The steps were relatively narrow—4 feet in width—due to the presence of an adjacent basement access areaway. (Lindenbusch, 77)

The transverse hall of the south wing also had stone steps leading to it that were wider than those built on the north wing. This was possible because there was no basement entrance at the south wing to interfere with their placement. The steps on the west side of the south transverse hall remained in place until 1904. (Lindenbusch, 77-79)

1865 After the Civil War ended, anti-Southern politicians sought retributions against Confederate sympathizers. Court records indicating the sympathies of local citizens were ordered reviewed. Six hundred soldiers were stationed outside the building to prevent rioting and other disturbances. Crowds gathered to protest the proceedings. (Dosch, 99)

1867 The County Auditor and Treasurer were granted space in one of the small office buildings on the square, replacing the courthouse Architect and Sheriff. (St. Louis County Courthouse Chronology)



**FIGURE 204.** Courthouse square, northeast courtyard, circa 1860s. By the 1860s, improvements to the landscape of the courthouse square were also completed. As shown in this photograph, the original 1845 wrought iron fence and cut stone base framed the courtyards. Gates marked entrances into the courtyards and provided access to walks leading to the areaways connecting the north and south wings. Street trees set in wrought iron tree boxes and hitching posts lined the perimeter of the square. Source: JNEM Visual Reference collection, reference (VPRI-003898) HSR3898. Reverse of image notes originates from Missouri History Museum.

- 1869      In 1869, caretaker James Quigley was offered the opportunity to test a new patented lawn mowing machine on the courthouse grounds. The lawn mowing machine quickly and efficiently completed a job that usually took Quigley several days to perform by hand. The court commissioners refused to purchase a lawn mower for Quigley to use in maintaining the grounds, however. (Lindenbusch, 119) Refer to Figure 12.
- 1870      Central steam heating replaced the coal burning stoves in use within the courthouse. The new heating system immediately drew complaints. The *St. Louis Daily Democrat* of January 8, 1871, noted that neighbors of the courthouse were enveloped by foul smelling clouds of thick, black smoke emitted by the building's furnace. The noxious smoke was caused by the burning of soft coal, which was widely used for heating in St. Louis and other American cities. This remained a problem in St. Louis until the 1930s, when environmental laws finally put an end to that form of pollution. (Dosch, 54)

The water pump located at the southwest corner of the courthouse square was ordered repaired. (St. Louis County Courthouse Chronology)

The wrought iron fence around the courthouse was painted. A report prepared by Thomas Walsh indicated that the cut stone base was also maintained through painting at the time. (Lindenbusch, 116)

A second sundial was placed within the northeast courtyard circa 1870. It is visible in a photo dated circa 1884–1895. A plan of the grounds shows the sundial to be located approximately 6 feet from the perimeter enclosure wall and fence. (Lindenbusch, 159)

1871 The sidewalks around the courthouse were described as in a state of disrepair. (St. Louis County Courthouse Chronology)

1872 The four corner yards around the courthouse were sodded. Reports suggest that they were resodded each year through 1876. (St. Louis County Courthouse Chronology)

Changes were made in the brick sidewalks in 1872 (St. Louis County Courthouse Chronology)

The chains, railings, and posts used to enclose the fountain and atop the walls of the areaways were removed and sold to the Commissioners of Lafayette Park. A new nozzle was purchased for the fountain to conserve water. (St. Louis County Courthouse Chronology)

The gates used to control access to the courthouse through the perimeter fence required repair and new locks and keys. (St. Louis County Courthouse Chronology)

James Quigley's turtle is described in a poem in the *Daily Democrat*: "When Spring with dewy fingers cold/Returns to deck the courthouse mould/She there shall find the fountain sealed/and Quigley's turtle 'ausgespealed.'" (Dosch, 55)

1874 Proposals were made to remove the iron fence and stone base and move them to the County Poorhouse and replace the fence and base with flagging.



1 FIGURE 205. Engraving of the courthouse square circa 1876 indicating the character of the wrought iron fence and one of  
2 the gates providing access to walks leading to the wing areaways. Source: JNEM Visual Reference collection, reference  
3 (VPRI-003916) HSR03916. Note on reverse: "Front of courthouse 1876, showing iron fence from Conklin's St. Louis  
4 Illustrated. Fifth Street (illegible), east side. Scanned for collection."

5 1876 The St. Louis city and county governments separated. The city assumed ownership of the  
6 courthouse, including responsibility for its maintenance.

- 1878 During an auction held on the east steps of the courthouse, Joseph Pulitzer purchased the bankrupt *St. Louis Dispatch*. He later merged the paper with the *St. Louis Post* and created the *St. Louis Post-Dispatch*, widely considered to be one of the nation's great newspapers. (Dosch, 102)
- 1878 Flower beds were present around the courthouse grounds, as evidenced in photographs taken during the late 1870s. (Lindenbusch, 145)
- 1880 The courthouse grounds featured lawns at this time. The composition of the lawns deliberately included both grass and clover to help maintain a living groundcover. (Lindenbusch, 145)
- 1881 The tree guards enclosing trees planted along the curbs were replaced. Installation of the new tree boxes was accompanied by the placement of iron railings along the tops of the walls of the recessed areaways. (Lindenbusch, 145)
- Repairs were made to the hitching posts, although nothing specific is known about the work or the location or number of posts. (Lindenbusch, 145)
- The Grand Army of the Republic held a reunion in part of the northwest courtyard. A photograph of the event indicates there were tents set up in the courtyard for the participants. The photograph shows the steps leading into the north cross hall from the exterior, the original low base wall for the iron fence, which had been removed by the time the photograph was taken (see discrepancy with the 1884 date below), and the character of the sidewalk, which appears to be composed of large squares of paving stone. (Bob Moore, personal communication)
- 1883 Fifth Street was renamed Broadway. It was described as paved with wood blocks at this time. (Lindenbusch, 147)
- 1884 The perimeter iron fence was removed. (Lindenbusch, 146) Refer to Figure 14.
- 1885 The brick sidewalks were in poor condition and in need of repair. They were taken up and the perimeter of the courthouse was repaved with a granitoid material that would prove very durable. (Lindenbusch, 149)
- 1888–1889 The transverse hall of the north wing appears to have been enclosed at this time, altering circulation patterns associated with entering the building. (Lindenbusch, 152)
- 1892 The entrance steps leading into the building at Chestnut and Market streets were described as “so worn that they are unsafe to use in wet weather.” (Lindenbusch, 156)
- 1895 The stone base that enclosed the perimeter of the courthouse square was removed. (Lindenbusch, 147) Its condition was described in 1892 as poor due to the fact that the coping surrounding the yard had “become unsightly and affords a comfortable place for loafers to congregate, making it impossible to keep the sidewalks clean.” The commissioner of public buildings recommended “that the coping be removed and that the

courtyard be paved with granitoid from the building to the sidewalk.” (Lindenbusch, 156)  
A low granitoid curb was installed to replace the stone base. Limestone curbs were also installed along all of the walkways. Iron railings installed in 1881 remained in place atop the walls of the north wing areaways. (Lindenbusch, 159)

The grounds were regraded, including the removal of any raised mounds, and the yard made as level as possible. A six-inch layer of burnt clay ballast and cinders of burnt brick were applied to much of the ground within the northeast and southeast yards where granitoid walks had edged the walls of the north and south wings. In the other yards, the ballast was applied to the rectangular areas flanking the sides of the east and west wings and over the existing granitoid walks. (Lindenbusch, 158-59)

The original sundial remained in place during the regrading of the yards. The second sundial, located in the northeast yard, was removed. (Lindenbusch, 159)

The fountain located in the southeast courtyard was removed. (Lindenbusch, 159)

Iron grilles were present in all of the windows of the ground floor, as indicated in period photographs. (Lindenbusch, 165)

#### **Decline of the Role of the Old Courthouse, 1895–1935.**

Refer to Analytical Diagram, Courthouse and Grounds, 1895–1907, following this chronology.

1904 The heirs of the two men who had donated the public square for use in establishing a courthouse—Auguste Chouteau and John B.C. Lucas—claimed a legal right to the square when the city begins to look for a new home for the courthouse uses. The city was finally found to hold clear title to the property in 1932. (Lindenbusch, 211)

Improvements were made to the St. Louis Courthouse in anticipation of the crowds expected to attend the Louisiana Purchase Exposition, also known as the 1904 World’s Fair. (Lindenbusch, 172–173)

1904–1907 The courthouse wings were accessed from areaways that ran parallel to exterior walls and sunken basement areaways. Stairs led up to the first floor elevation near the building. The areaways were updated. Prior to 1904, the west wing areaways, which paralleled walls on the south and the north, were accessible only by descending steps placed at its eastern ends. The steps were constructed against the walls of the extensions between the rotunda and the north and south wings. As part of the renovation, both flights of steps were removed and new stone was used to extend the walls of the areaways across the former opening. Steps at the western ends of both areaways that led to the portico were also removed, opening up space to construct steps leading down into the areaways. Installation of the steps required partial filling of the former door openings at the western end of the areaways. This was resolved by converting these openings into windows.

The north wing areaways were accessible via four sets of steps set at each corner. As part of the renovation, all of these steps were removed, and the steps at the east side of the cheekwall of the Chestnut Street entry were widened. (This set of steps was later replaced by a concrete ramp). The old stone stair and its iron balustrade, which extended to the floor of the transverse hall at the west side of the north wing, were left in place. (The stair was later demolished.)

The east wing also contained steps leading down to the areaways at the western ends of its north and south sides. The steps on the north side were removed in 1904, while the steps on the south side were removed in 1907. At the east end of the areaways, additional steps paralleled the walls of the wing. Steps on the south side were removed in 1904, while those on the north side were left during the initial phase of the renovation. Later, these steps were removed along with steps flanking the cheekwalls of the eastern entry. The doors at the base of the steps by the cheekwalls were converted into windows by bricking up the area below the new sills.

The south wing did not contain areaways. The two sets of steps leading to the basement entries were removed. The steps on the northwest wall were removed in 1904, and those on the northeast wall were removed in 1907. (Lindenbusch, 172–173)

1904–1906 The city regretted filling the courtyards with ballast and decided to remove the material and replace it with soil and sod. The plans were implemented by the St. Louis Park Commission, which also planted privet hedges around the perimeter of the square and created new circular beds for foliage plants. (Lindenbusch, 171) Refer to Figures 15 through 18.

1906 Although the hedges survived, the grass did not, and the St. Louis Park Commission reinstalled sod. (Lindenbusch, 172)

Refer to Analytical Diagram, Courthouse and Grounds, 1907–1935, following this chronology.

1907 A new boiler house was built in the southeast courtyard between the south and east wings. This led to changes in the steps leading to the basement of the south wing and to removal of the west end of the east wing areaway. (Lindenbusch, 189) The boiler house featured a tall iron stack that became part of one of the principal views of the courthouse. (Lindenbusch, 191)

1908 Maintenance of the courthouse square was made the responsibility of the Park Department of the City of St. Louis. (Lindenbusch, 197)

Part of the privet hedge that had been planted in 1904 was replaced, the flower beds were improved, and a kiosk “containing the U.S. Weather indicator” was constructed, possibly in the southwest corner of the square. (Lindenbusch, 197–198) Refer to Figure 19.

1909 New streetlights were installed around the courthouse. Some of the fixtures featured three light clusters, with two of the lamps hanging from cross arms and a third lamp supported

from a bracket set approximately 5 feet higher on the 18-foot-high pole. Other fixtures included single-arm versions of the lampstands. Fourteen of these streetlights were in place by April 1910. (Lindenbusch, 198)

- 1909–1910 A sleet storm destroyed the privet hedge, which was subsequently replaced. The square was now treated like a small public park by the city. (Lindenbusch, 208)
- 1912 The flower beds were removed and replaced with shrub plantings. (Lindenbusch, 208) Refer to Figure 20.
- 1913 The Daughters of the American Revolution placed granite markers with a polished surface within the southeast and northwest courtyards to commemorate the origination of the eighteenth century Boonslick Road. (Lindenbusch, 208) The DAR markers were later moved to Kiener Plaza on Broadway, directly across from the west entrance of the courthouse.
- 1930s Until the city of St. Louis began to address air pollution problems in the 1930s, black coal smoke often enveloped the urban area. Many city buildings were smoke-blackened, including the Old Courthouse, as evidenced in the photographs taken of the building as part of the Historic American Buildings Survey in 1934. (Dosch, 54)
- 1930 In 1930, the city courts moved to larger, better appointed quarters in the new Civil Courts Building located at Twelfth and Market streets. Refer to Figures 23 and 24.

#### **National Park Service Rehabilitation of the Old Courthouse, 1935–1953.**

Refer to Analytical Diagram, Courthouse and Grounds, 1935–1942, following this chronology.

- 1935 President Franklin Delano Roosevelt established a new unit of the National Park System known as Jefferson National Expansion Memorial. Planners involved in determining the configuration of the new memorial later recommended that the composition of its elements center along the east-west axis of the courthouse. (Brown, 61)
- 1936 The city continued to maintain the courtyard grounds. (Lindenbusch, 222)
- National Park Service architect Charles Peterson proposed saving structural and ornamental fragments from the 400 buildings in the riverfront area slated for demolition. Many of these fragments would later be stored in the basement of the Old Courthouse, and two column capitals displayed in its courtyards. (Brown, 40)
- 1938 Within the area proposed for inclusion in the new national park unit, only the Old Courthouse, Old Rock House, and Cathedral were considered worthy of preservation based on the evaluation of architect Thomas E. Tallmadge and other studies commissioned and conducted by the National Park Service. (Brown, 41–42) Much of the riverfront to the east of the courthouse was proposed for demolition, while the Old Courthouse, Old Rock

House, and Cathedral were recommended for restoration. (CLR, 2010, 2-7) Refer to Figure 28.

- 1940 The courthouse property was transferred from the City of St. Louis to the federal government for inclusion within Jefferson National Expansion Memorial. (Lindenbusch, 225) The block to the east of the Old Courthouse was also acquired in 1940. (Brown, 82) Refer to Figure 26.
- 1940–1942 The National Park Service began restoration efforts of the Old Courthouse, including reroofing the structure, internal improvements to the south wing, and replacement of the revolving doors installed in 1910 with the original exterior doors on all four wings. Appropriate locks were not completed by the time the doors were installed and the doors had to be braced from within until the locks were fabricated. (Lindenbusch, 228) During this period, the building remained open to the public as a temporary museum and to house the National Park Service offices in St. Louis. (CLR, 2010, 2–7)
- 1941 The boiler house was demolished and the chimney and smoke stack removed from the southeast courtyard. (Lindenbusch, 191) Heating was subsequently provided using a steam line from the Union Electric Company. (Henderson, 20) Refer to Figure 27.
- 1943 The Old Courthouse, including a museum on the first floor, was opened to visitors on a regular basis. (Brown, 53)
- 1947 A bronze plaque commemorating the location where Joseph Pulitzer bought the *St. Louis Dispatch* on December 9, 1878, was placed within the brick sidewalk in front of the east wing entrance steps by Sigma Delta Chi, the National Professional Journalistic Fraternity (LCS)

#### **Rehabilitation of the Old Courthouse Grounds and Construction of the Gateway Arch, 1953–1965.**

Refer to Analytical Diagram, Courthouse and Grounds, 1943–1969, following this chronology.

- 1954–1958 The National Park Service undertook a series of restoration efforts within the courtyards of the Old Courthouse. These included replacement of the historic brick sidewalks along the city streets, and construction of a perimeter stone wall, wrought iron fence, and fountain based on documentation of missing historic features, and repair of the historic sundial. Refer to Figures 29 through 31.



**FIGURE 206.** The sundial, circa 1955. At the time of the restoration, the sundial, the only element to survive from the original courthouse square design, was in poor condition and in need of repair. Replacement parts were manufactured at a local foundry. Source: JNEM Visual Reference collection, reference (VPRI-003925) HSR3925. Data sheet indicates “Sundial prior to restoration, looking northeast.”

Circa 1963 The column capitals in the northeast and northwest yards, which were salvaged from buildings demolished to create Jefferson National Expansion Memorial, were moved to the Old Courthouse for public display. (Dosch, 113)

1963–1965 The Gateway Arch was constructed based on the design of architect Eero Saarinen.

#### **Maintenance and Management of the Old Courthouse and Grounds, 1965 to present.**

1969 The Secretary of the Interior, Walter Hickel, established new boundaries for Jefferson National Expansion Memorial to conform to the park’s actual dimensions, ensuring that the Old Courthouse and other areas were included. (Brown, 224)

Floodlights were installed to light the exterior of the building. (Brown, 224)

1975–1977 The National Park Service repaired and replaced deteriorated basement windows and doors. (Moore, 159)

1976 A political rally was held in front of the Old Courthouse in support of the presidential campaign. (Dosch, 115). Refer to Figure 32.

- 1982 The brick sidewalks were repaired and re-leveled and five curb cuts were installed to enhance accessibility. (Moore, 170)
- 1984–1985 Concrete forms were installed around the lawn irrigation heads to protect them from mowers. (National Park Service, personal communication, Jim Jacobs, October 2011)
- 1986 The St. Louis Garden Club funded the installation of new 6-foot-wide planting beds along the perimeter of the courtyards and central display beds. The beds featured annuals and bulbs. Roses were planted around the fountain and in the other southern courtyard. Over time, perennials have replaced the annuals to diminish maintenance requirements. (National Park Service, personal communication, Jim Jacobs, October 2011)
- A Garaventa wheelchair lift was installed at the west entrance to allow access into the building. (Moore, 178) Refer to Figure 33.
- 1987 Areas of the brick sidewalk that had been mortared in place by the city when installing fire hydrants, signal poles, and other features were “retuckpointed” as part of a cyclical maintenance program. To help with the time-consuming project, the National Park Service engaged Youth Conservation Corps workers. (Moore, 84)
- 1987–1998 The irrigation system used to water the courtyard lawns was replaced. (National Park Service, personal communication, Jim Jacobs, October 2011)
- 1997 New exterior floodlights were installed in the courtyards to illuminate the Old Courthouse. (National Park Service PMIS 25809)
- 1999 The planting beds were renovated through regrading to promote better drainage. (National Park Service, personal communication, Jim Jacobs; National Park Service PMIS 25809)
- 2000s The City of St. Louis, responsible for fire protection, repaired several fire hydrants around the courthouse square. Replacement of brick sidewalks left gaps and uneven sections that have caused drainage problems and created trip hazards. (National Park Service, personal communication, Jim Jacobs, October 2011)
- 2001 The perimeter wall was cleaned, the mortar joints repointed and sealed, and the wrought iron fence repainted. (National Park Service PMIS 51339A)
- 2003–2004 A vehicular accident at the intersection of Market and Fourth streets destroyed a street light and damaged the perimeter courtyard fence. Six granite stones were knocked out of alignment and 45 linear feet of wrought iron fencing was affected. The National Park Service subsequently repaired the damage. (National Park Service PMIS 105909A)
- 2004 An accident involving a city bus and a school bus at the northwest corner of the courthouse square resulted in extensive damage to the perimeter wall and fence that was subsequently repaired by the National Park Service. (National Park Service, personal communication, Jim Jacobs, October 2011. Figure 207)



**FIGURE 207.** View of bus accident resulting in damage to the courthouse wall and fence, 2004. The perimeter fence and wall has been damaged several times by vehicles, including the damage shown in this image. Source: National Park Service files. Bus accident.

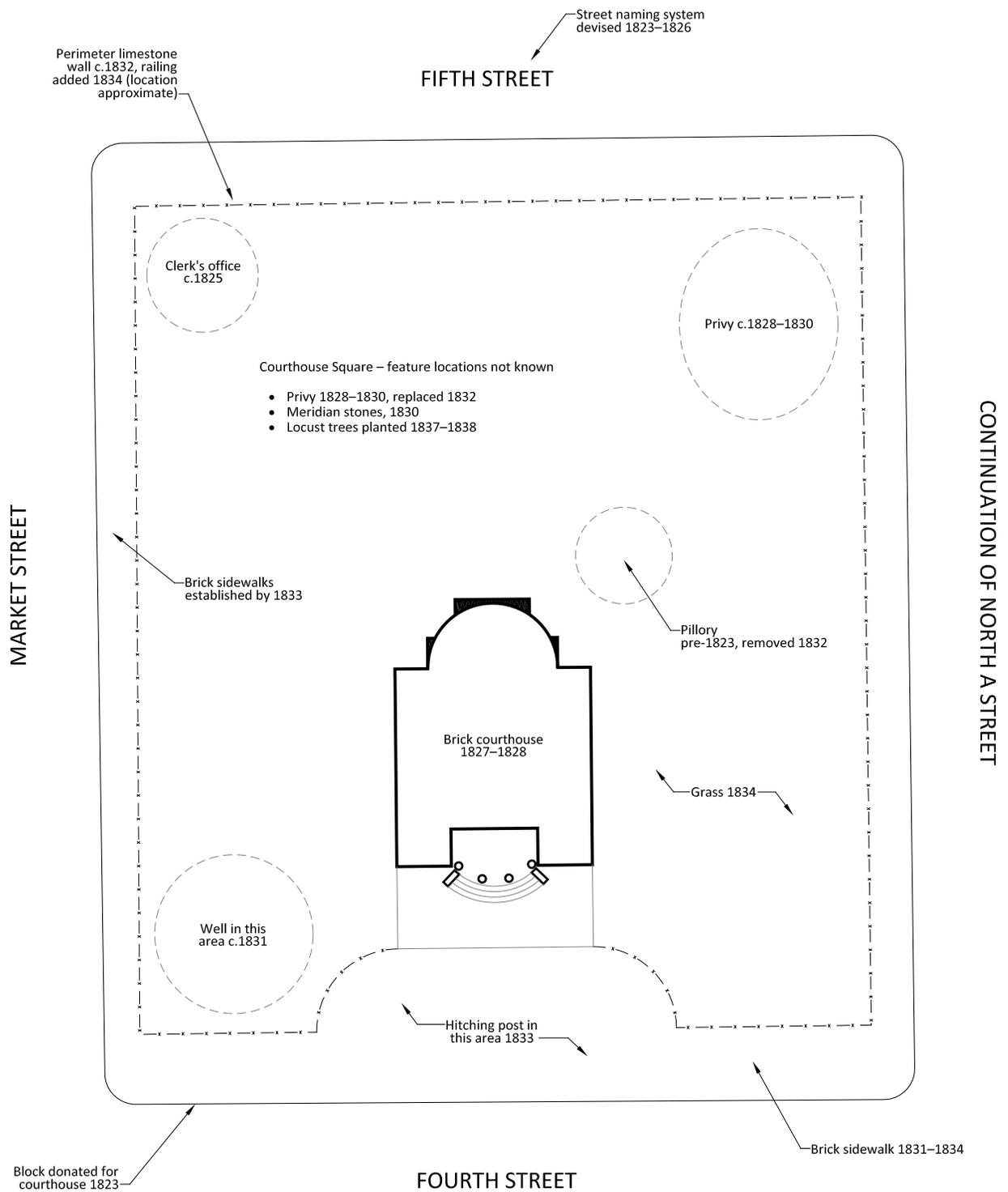
- 2005–2008 Brick sidewalks around the courthouse, totaling approximately 300 square feet, were reset and repointed to eliminate trip hazards and to replace deteriorated, missing, or defective grout. (National Park Service PMIS 93701)
- 2006 The sundial was repaired. Lead paint was removed, and primer and new paint applied. The fence surrounding the sundial was similarly repainted. The granite base was also cleaned. (National Park Service PMIS 93857)
- 2006 The brick sidewalks associated with the Old Courthouse block were mortared in place, replacing the sand that had been used since the 1950s to lay the bricks. (National Park Service, personal communication, Bob Moore, February 2013)
- 2007–2008 Archeological investigations were conducted in the northwest courtyard to mitigate proposed utility upgrades for the installation of a dispatch center. (National Park Service, personal communication, Jim Jacobs, October 2011)
- 2007 A vertical universal accessibility lift was installed in the southwest courtyard to facilitate access to the Old Courthouse. The lift replaced the earlier Garaventa lift. (National Park Service PMIS 165288; 96532B)

- 2008 The courthouse was washed and painted, the roof and windows were repaired, and bird netting was installed. Access to the exterior of the building for these improvements occurred through the courtyards. Heavy equipment and staged materials occupied the lawn of the courtyards, with the exception of the southwest yard. (National Park Service, personal communication, Jim Jacobs, October 2011)
- 2008 Aging and deteriorated components of the courtyard irrigation system were replaced. (National Park Service PMIS 132532A)
- 2009–2010 The southeast courtyard fence was struck by a vehicle. The damage extended over approximately 18 feet of wall and fencing. The National Park Service subsequently repaired the damage. (National Park Service PMIS 156617A)
- 2010–2012 Repairs to the Old Courthouse and installation of a new roof to replace the roof installed in 1941 by the National Park Service with approximately 20,000 square feet of lead-coated, standing seam copper. The roofing project required removal of sections of the perimeter fence and wall, use of the courtyards for storage, the placement of gravel over top of existing turf, and access by heavy equipment. The roof repairs were followed by a cornice repair and replacement project involving approximately one-third of the Old Courthouse cornice stones. These two projects required access to the building exterior through the courtyards. In the process of conducting the repairs, heavy equipment, materials storage, and other construction-related activities resulted in extensive damage to the turf lawn and other features of the courtyards. (National Park Service, personal communication, Bob Moore, February 2013) (Figure 208)

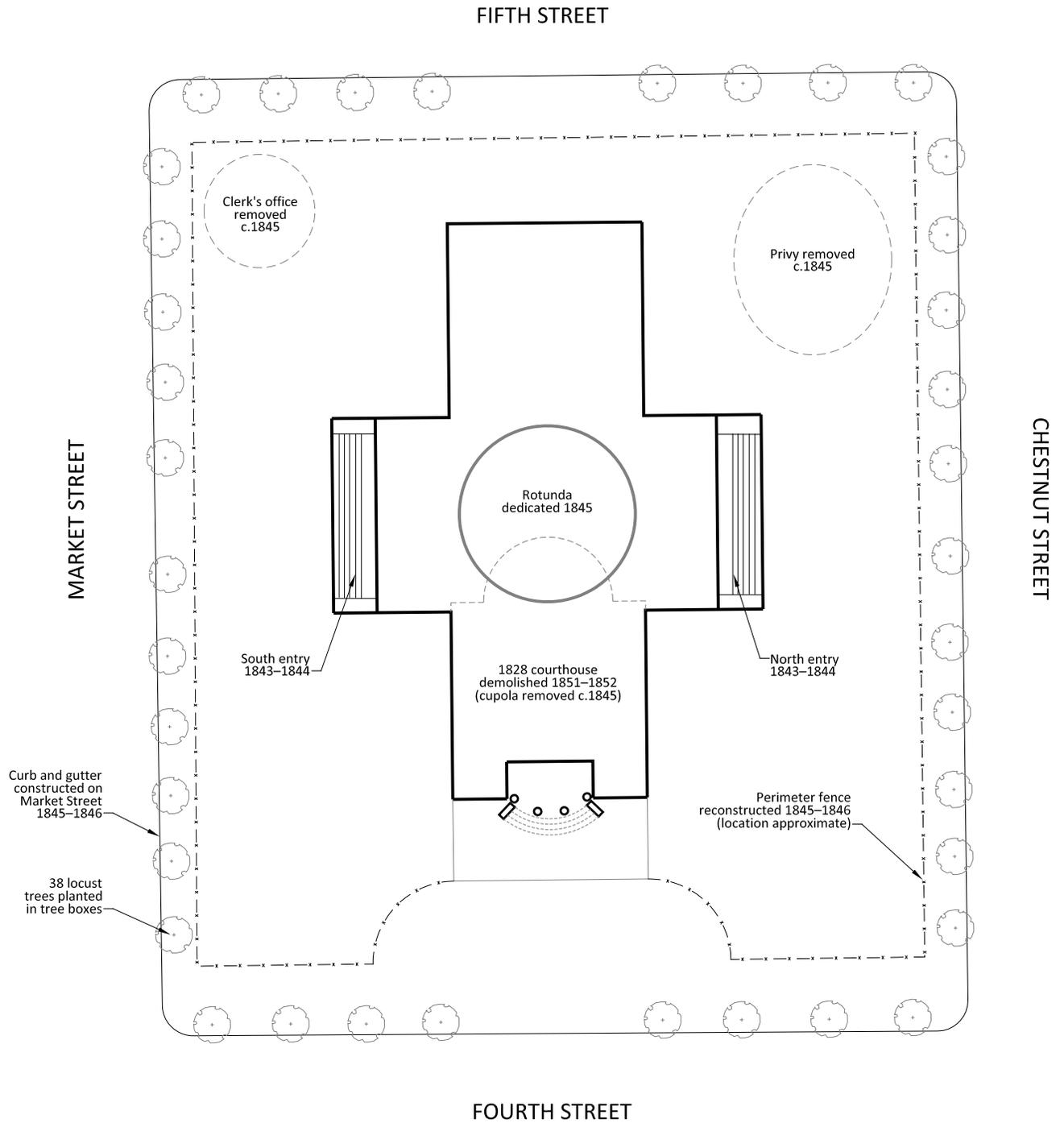


**FIGURE 208.** View southeast courtyard showing extensive damage to the turf lawn during the 2010–2012 cornice repair project. Source: Bob Moore, 2013.

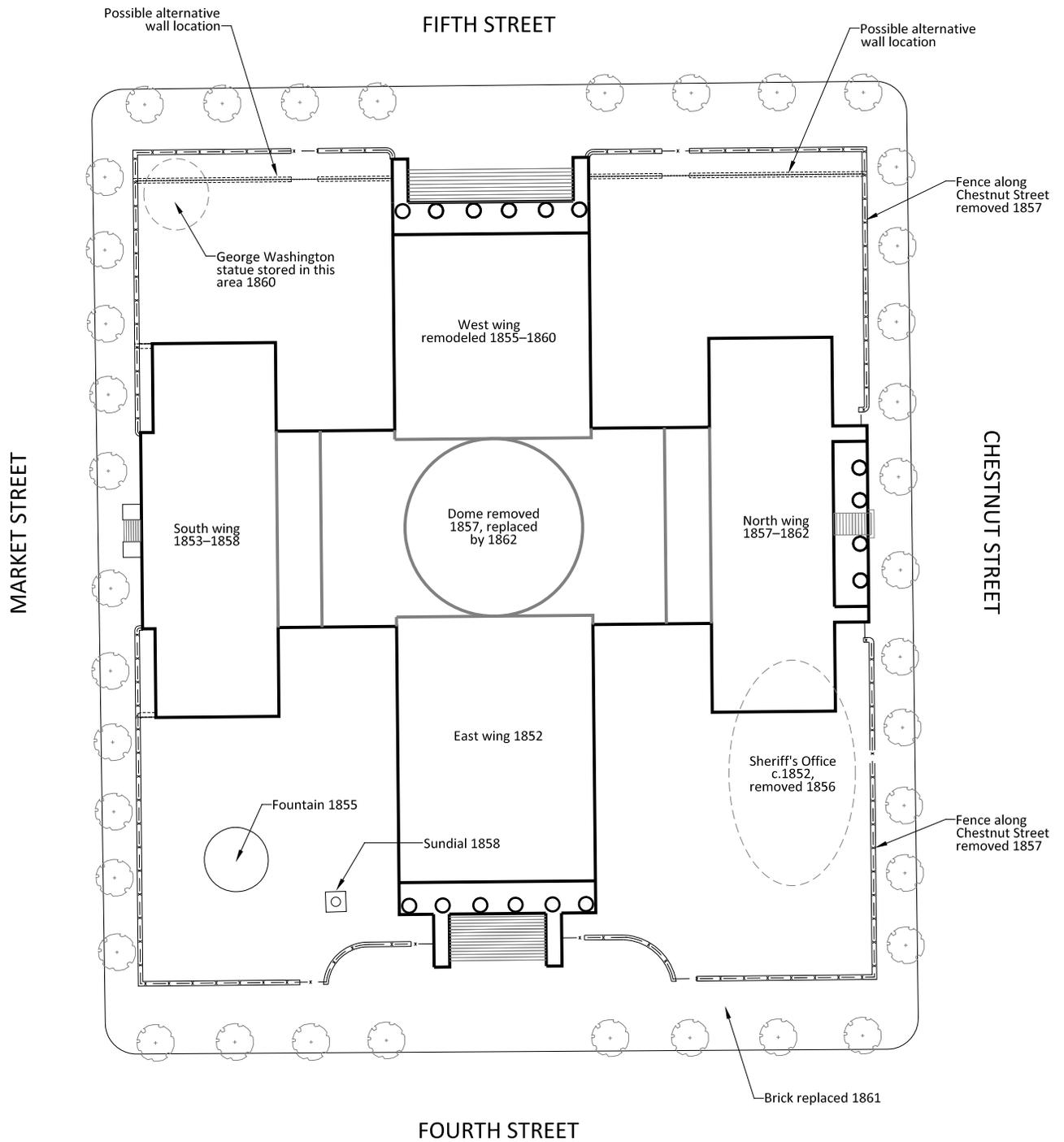
- 2010–2013 An international competition, sponsored by the CityArchRiver 2015 Foundation, was held in 2010 to solicit designs to revitalize the grounds of the Gateway Arch and Jefferson Expansion National Memorial. The winning design team was headed by landscape architectural firm Michael Van Valkenburgh Associates of Cambridge, Massachusetts, and Brooklyn, New York. Implementation of design solutions to improve accessibility and physical and visual connections between downtown and the Gateway Arch are expected to involve the Old Courthouse grounds.
- 2012 The west accessibility lift was replaced. (National Park Service PMIS 165288B)



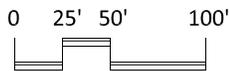
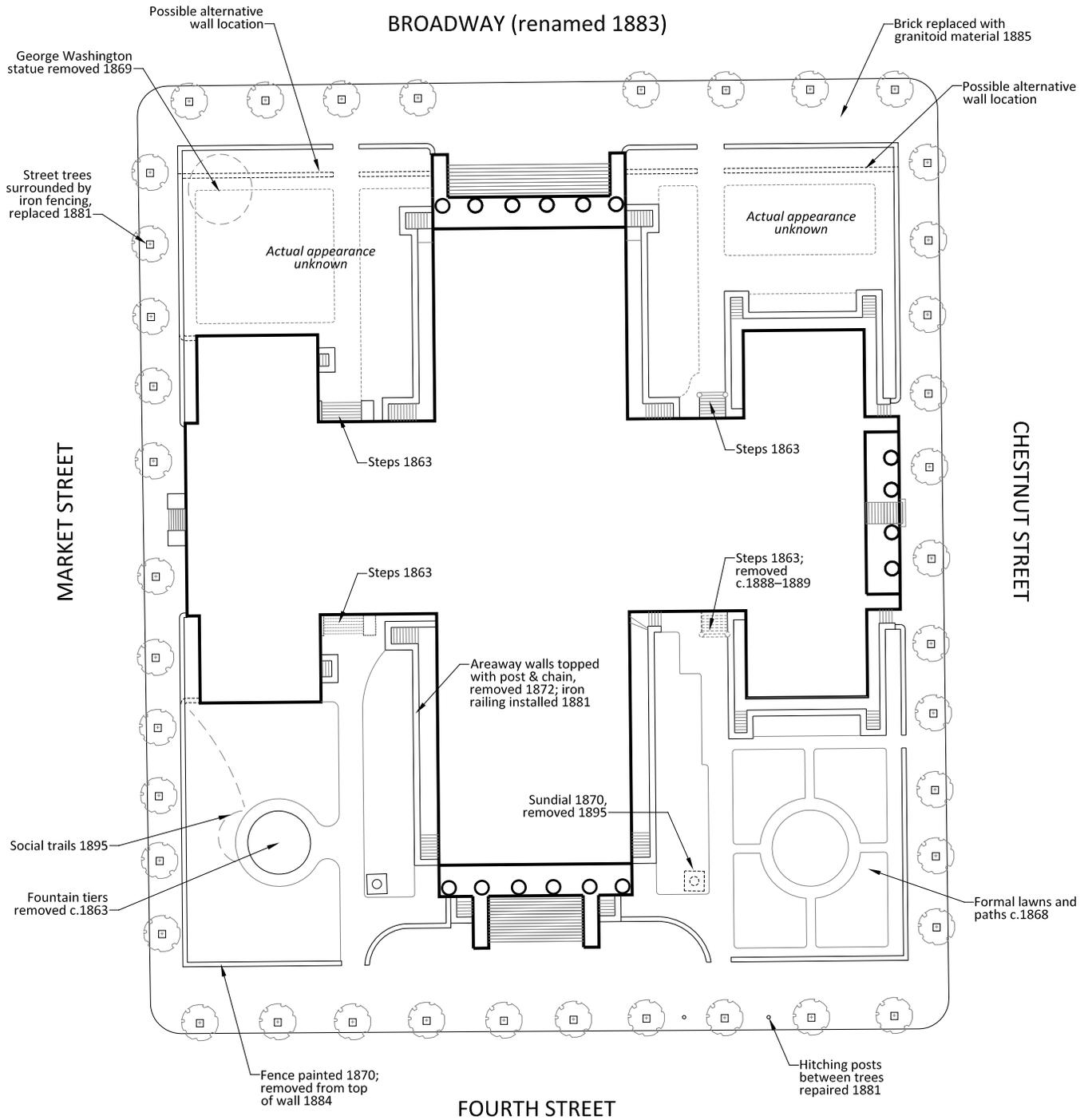
Courthouse and Grounds  
1823-1838  
**Figure 209.**



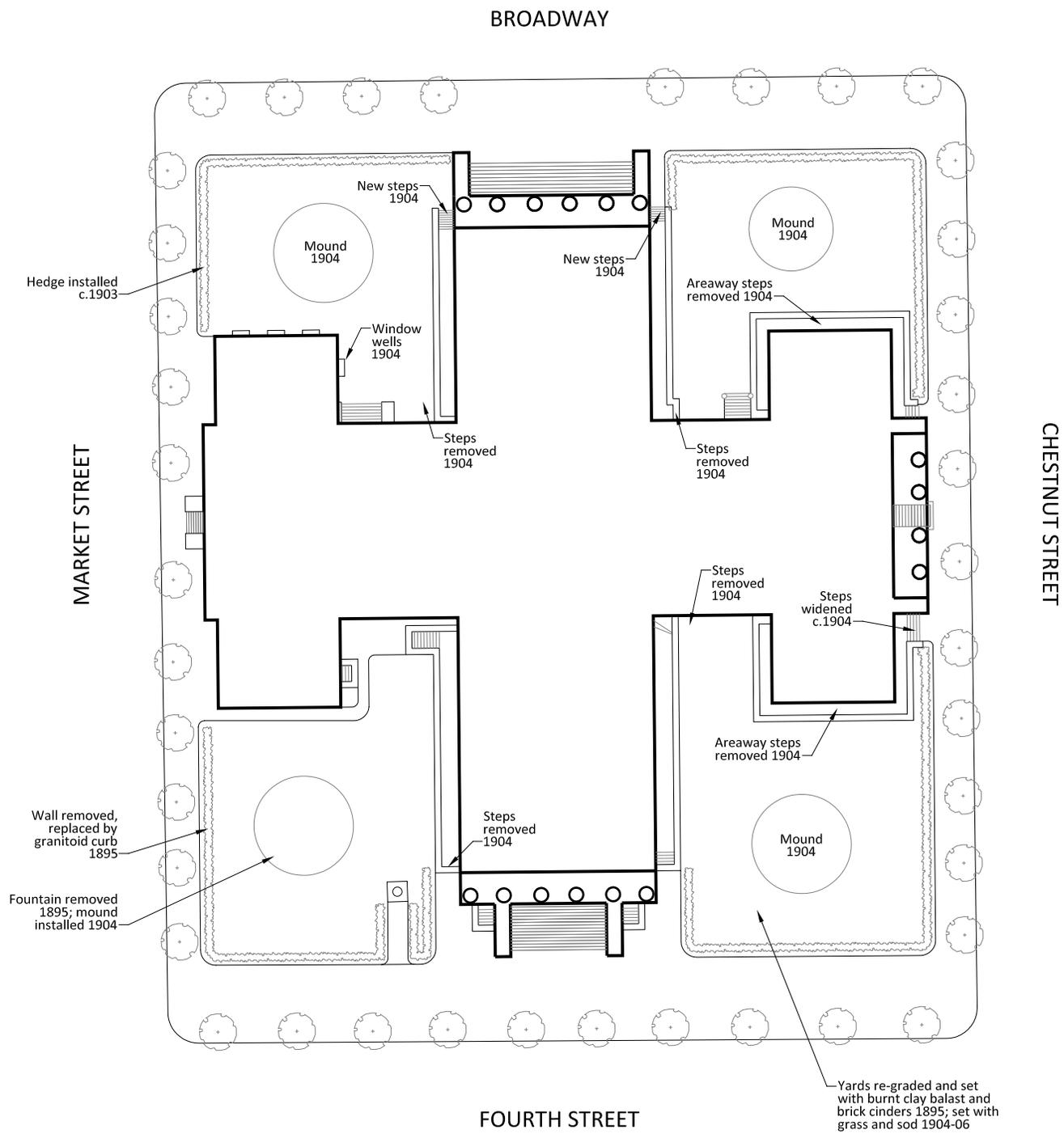
Courthouse and Grounds  
1838-1852  
**Figure 210.**



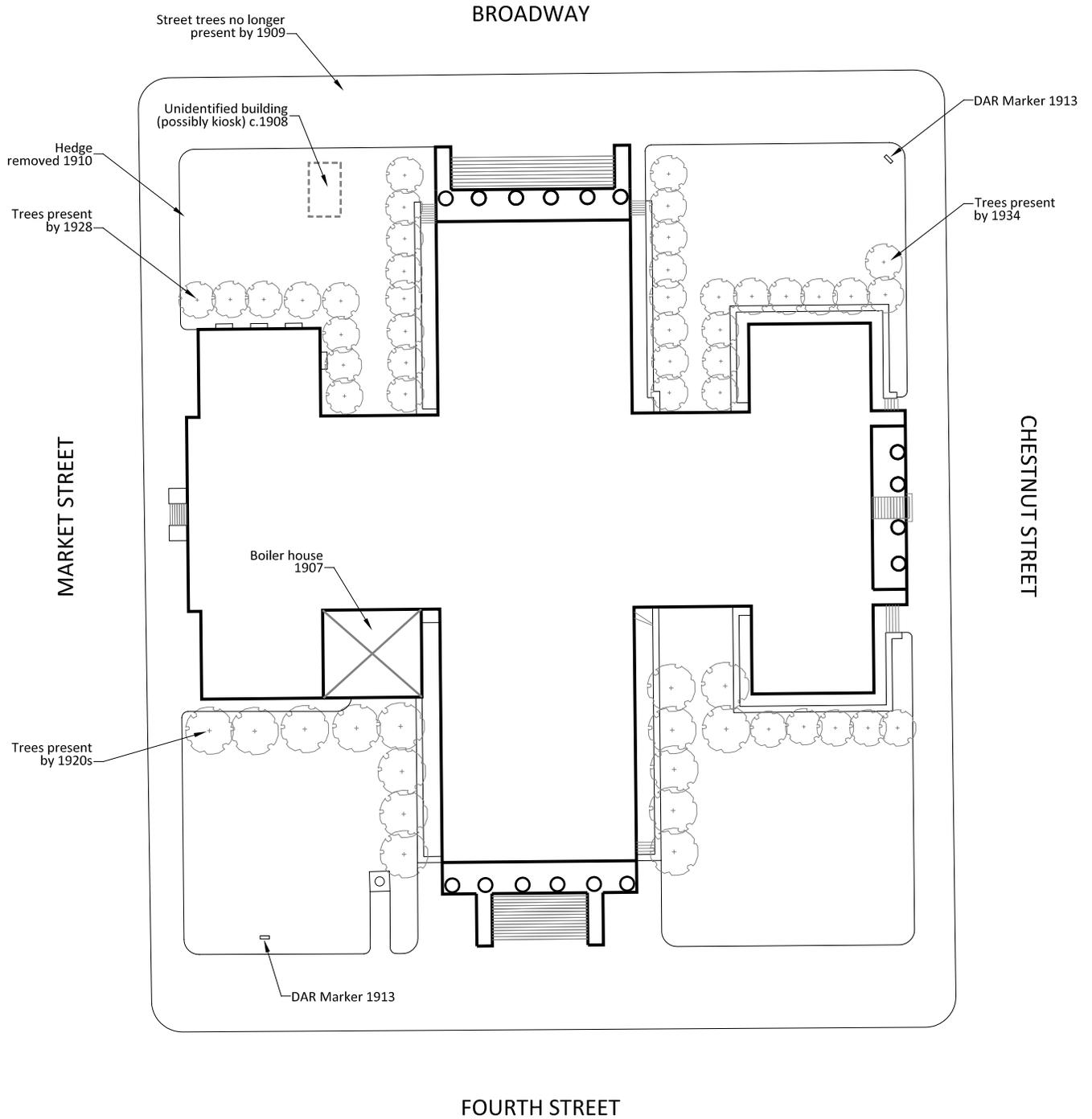
Courthouse and Grounds  
1852-1862  
**Figure 211.**



Courthouse and Grounds  
1862–1895  
**Figure 212.**



Courthouse and Grounds  
1895–1907  
**Figure 213.**



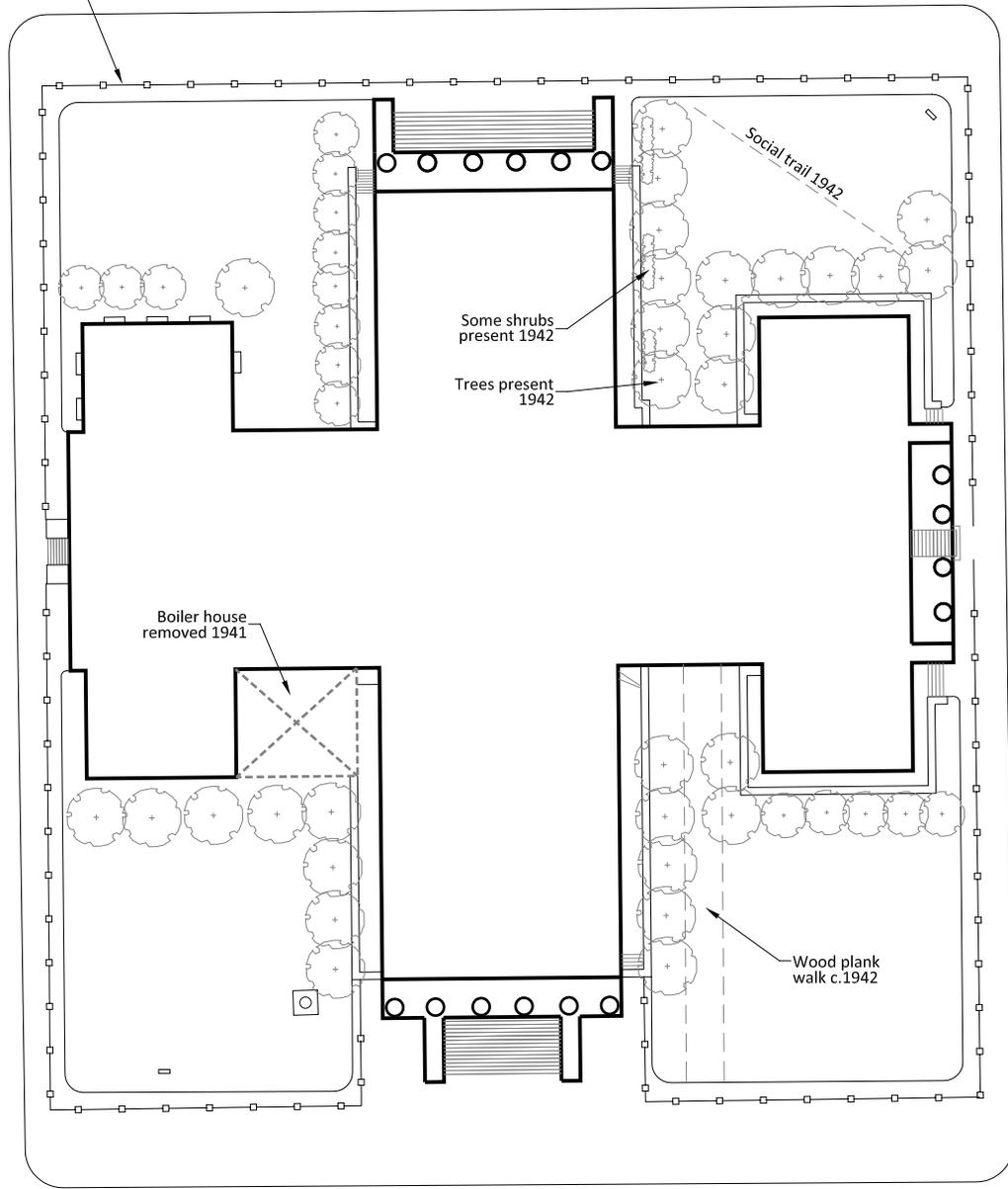
Courthouse and Grounds  
1907–1935  
**Figure 214.**

Wood fence in place during 1940-1943 restoration

BROADWAY

MARKET STREET

CHESTNUT STREET



Some shrubs present 1942  
Trees present 1942

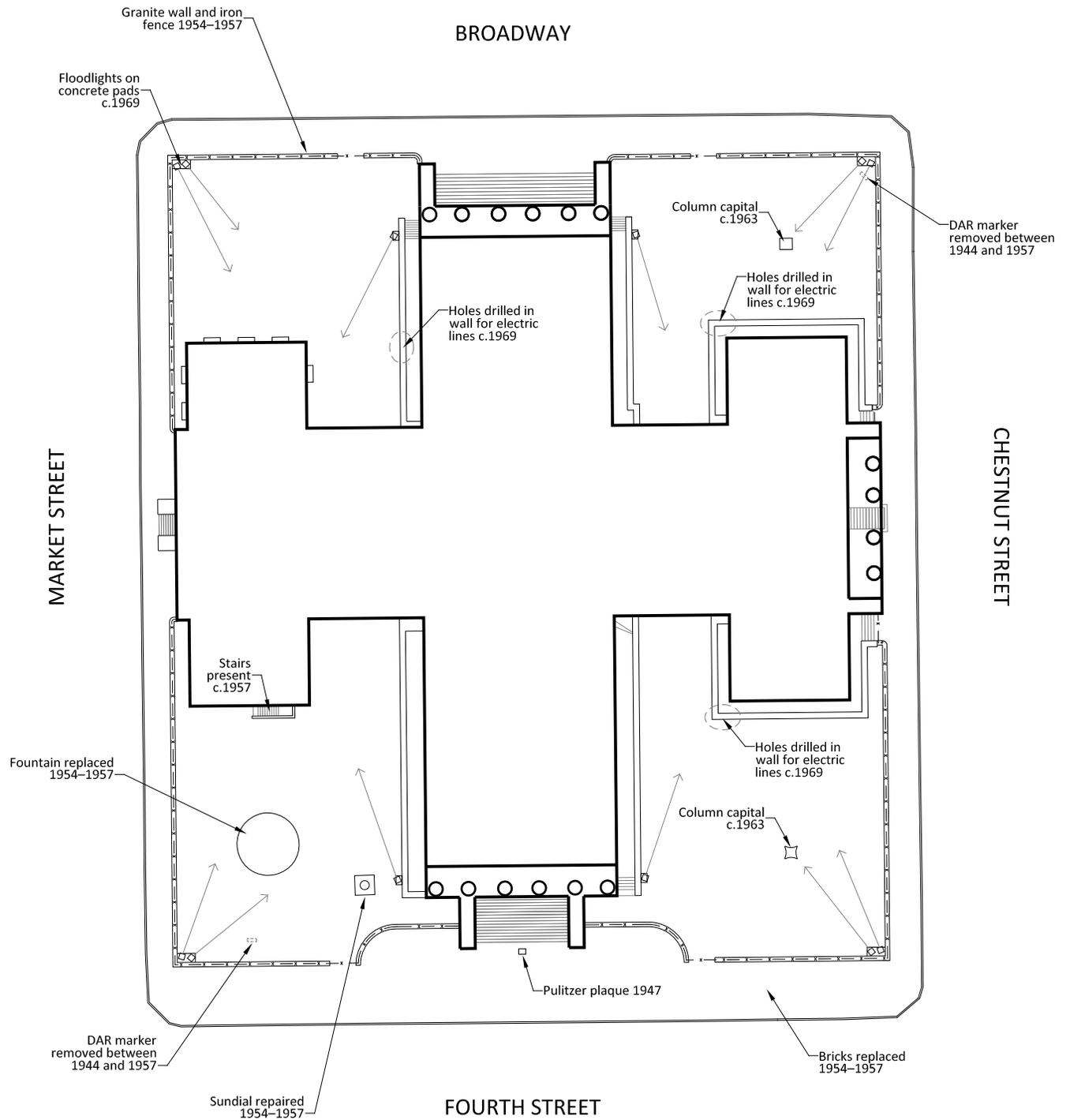
Boiler house removed 1941

Wood plank walk c.1942

FOURTH STREET



Courthouse and Grounds  
1935-1942  
Figure 215.



Courthouse and Grounds  
1943-1969  
**Figure 216.**

## Historic Significance

The Old St. Louis Courthouse building, which presides over the city block edged by Fourth, Chestnut, Market, and Broadway streets, played a key role in community life between the 1820s and the 1930s. The Old Courthouse served as a physical and symbolic center for St. Louis's political, cultural, and societal events and activities, acting as both a public forum and center for justice. The prominent profile of the building offered a navigational aid for boat pilots on the Mississippi River, while the public square around the building offered refuge and gardenesque beauty within the urban hardscape. Throughout the nineteenth and twentieth centuries, the Old Courthouse grounds evolved to include ornamental features such as a perimeter wall and fence, street trees, turf lawn, walks, planting beds, a fountain, sundial, historical markers, and focal points in the form of column capitals rescued from demolished buildings. The building's courtrooms witnessed arguments aimed at determining the future of slavery within the state and Missouri's influence on other states joining the union in the 1850s. The courthouse steps were used for political rallies and organizational meetings, as well as the sale or auction of slaves, land, and businesses. Soldiers were mustered on the courthouse grounds, including the establishment of temporary barracks during the Mexican-American War and the enrollment of troops for the Civil War. The Old Courthouse is thus a significant site of community importance and symbolic value in addition to its National Register significance as a historic resource.

### Historic Context: The Role of the County Courthouse and Square in American City Planning

The civic role of courthouses and their settings has been a key part of American urban planning since the nineteenth century:

The county seat exemplifies one of the more self-conscious expressions of American urban design, both spatially and symbolically. The courthouse square was designed explicitly to express community values and to serve as a focal point of community life. Through time, the square often assumed even greater importance as a symbol of a town's social, political, and economic prosperity. For these reasons, the courthouse square offers an interesting window on American town planning traditions and the relationship between these traditions and the social meaning of civic space. Town planning, land use, social activity, and architectural symbolism are interwoven at the square in ways matched by few other elements of American urban design.<sup>161</sup>

St. Louis's Old Courthouse and courthouse square are representative of a broader, national trend in architecture, landscape architecture, urban planning, and civic engagement that emerged during the nineteenth century and remains in evidence throughout the country today. These trends were reflected in the design of the original courthouse building, but strengthened and expanded as part of the design of the second courthouse and the treatment of the landscape of the courthouse square as it emerged during the mid-nineteenth century. Character-defining elements of the Old Courthouse—the classically-derived Greek Revival architecture; the monumental and cruciform plan of the building; prominent stairs leading to the entrances; the availability of entrances on all four sides to promote accessibility; the siting of the building at the center of a dedicated square surrounded by the city's commercial district, the axial views reflected in the monumental porticos at the east and west entrances; and the pastoral treatment of the grounds—are all representative of this national trend in the design of county courthouses of the period.

---

161. Veselka, 1.

The county courthouse and its associated square is a uniquely American building typology and landscape form that emerged during the nineteenth century to reflect the institutionalization of the county as the primary arm of local government.<sup>162</sup> As such, the county seat exhibits a recognizable form within the context of national urban design trends that was repeated nearly universally throughout nineteenth-century America. The architecture of the county courthouse in the nineteenth century symbolized the way in which a community wished to be judged, and served as a focal point for social, political, and economic activities.<sup>163</sup> As well, county courthouses symbolized long-held beliefs and traditions about the relationship between the individual and the community, and became a manifestation of desired connections within the urban landscape.<sup>164</sup>

Historically the Old Courthouse was built with four entrances positioned at the cardinal directions of the compass. Once the cruciform building was in place, circa 1850s, all entrances were open and all directions considered primary ones for approaching the building. Studies of courthouses built during this period across the country specify that they were built in the cruciform style on purpose to afford and invite approach from any of the cardinal directions. The entrances to courthouses were often “given a grand, monumental treatment that calls attention to them and makes access easy to find.”<sup>165</sup>

The importance of county government during the nineteenth century led to the construction of many elegant and architecturally symbolic courthouse buildings within dedicated squares in towns and cities across the country. The architectural styles used to design the courthouse often reflected a desire to present a

community’s stature. In many cases, the county courthouse became the most significant and recognizable landmark in the county seat and the county as a whole. Courthouses were often physical embodiments of the “patriotism and optimism of local citizens, reflecting confidence in a more prosperous and satisfying future.”<sup>166</sup>

The monumental size of many courthouses and the

... careful proportions of their details, fine decorative features, and lavish use of costly building materials conveyed that the citizens of each county aspired to the best . . . Murals, sculptures, paintings, and stained glass communicated the ideals of the American system of self-government and justice and often depicted scenes in American, state, and local history.<sup>167</sup>

The architecture of the county courthouse exhibited a monumental size and scale and a style intended to explicitly express community aspirations.

A clear connection exists between the architecture of the American courthouse, a city’s urban morphology, and the central focus on the square. The American courthouse square was typically designed to inspire and reinforce traditions that reflected a common bond of the community.<sup>168</sup> In most towns and cities, there is a direct connection between civic space and a community’s sense of identity. Urban design is used to represent, reinforce, and sustain the ideals and identity of a community.<sup>169</sup> The courthouse square was generally designed to sit

---

162. Ibid., 3.  
163. Ibid., 194.  
164. Ibid., 197.  
165. Ibid., 20.

---

166. Ratio Architects, *Indiana’s Historic Courthouses; Re-Investing in Community Treasures*, “The Importance of Preserving Historic Courthouses to the History and Identity of County Seats and Counties (Indianapolis, Indiana: Indiana Courthouse Preservation Advisory Commission, August 2011), 16.  
167. Ibid., 17.  
168. Veselka, 205.  
169. Ibid., 5.

at the geographic center of the town to afford all citizens equal access. The central courthouse square assumed economic and symbolic importance and became the focus of the daily conduct of business and government and the preferred scene for special events and celebrations.<sup>170</sup> The county courthouse often dominated the central townscape and offered a principal focus for the community it served, including the business district.

The courthouse was typically surrounded by the town or city's most vibrant commercial district, further emphasizing its relevance and connection to everyday life. With its location at the center of the community:

... the courthouse square attracted the leading retail stores and professional services businesses, such as attorneys and title companies. The retailers benefitted from the square's central location, while the attorneys and title companies found it convenient to be near the courthouse itself.<sup>171</sup>

Within many communities, linkages formed between built form and social meaning due to the various uses, activities, civic functions, and placement of symbolic features that eventually concentrated within the courthouse square. The courthouse square became the focus of a wide range of community activities and a gathering place for public and ceremonial events, and rituals that were important to the community as a whole and expressed shared values.<sup>172</sup> The courthouse square has been described as taking on the role of a community's front yard.<sup>173</sup>

In contrast with the dense urban morphology of the surrounding district, the courthouse often

occupied the center of a larger open space, which further indicated its importance as a civic structure. The placement of the courthouse at the center of an open space, surrounded by grass and shade trees, and often adorned with monuments to people and events important to the community, offered a clear indication of the civic significance of the building type.

One of the values integrally linked to the American county courthouse and its square became the opportunity to debate issues important to the community and its society and to redress inequalities.<sup>174</sup> As such, the courthouse was seen as a place to represent self-interest as well as the ideals of self-government.

All of these trends and traditions are clearly reflected in the history of the Old Courthouse in St. Louis. Efforts to recognize the historic significance of the Old Courthouse and grounds to the citizens of the city and to better integrate the building and its accessibility into the urban fabric through the CityArchRiver 2015 design will help to perpetuate the role of the building and associated landscape in civic life.

---

170. Veselka, 19.

171. *Ibid.*, 19.

172. *Ibid.*, 144.

173. *Ibid.*, 178.

---

174. *Ibid.*, 194.

## Summary of Conditions Issues and Concerns

In October 2011, the HSR project team visited the site and conducted field investigations and a condition inspection of the Old Courthouse grounds. The inspection revealed several condition problems. The goal of the inspection was to identify features that could be classified as in fair to poor condition, or that were incompatible in character with the historic landscape, and to describe specific problems to be addressed in the treatment plan. The section that follows summarizes the condition issues and concerns identified during the inspection.

### Issues and Concerns

**Porticos.** The east and west porticos of the courthouse are reached via broad flights of granite steps edged by limestone block cheekwalls. Condition issues noted in association with the stairs and portico landing include heavy wear of some of the stair treads and thick applications of sealant in many stair joints. Some of the stones used in the construction of the cheekwalls are cracked or broken, and there are cored holes in the cheekwall of the west portico indicating the former placement of handrails. Some of the stones are stained from the corrosion of the metal handrails, while others exhibit biological growth (Figure 217).



**FIGURE 217.** The stone cheekwalls of the western portico exhibit cracks, biological growth, and cored holes from previous handrail attachments. Photograph by JMA, 2011.

**Brick sidewalks.** Brick sidewalks form a continuous edge around the perimeter of the Old Courthouse building and courtyard areas. The sidewalks exhibit several condition issues. There are areas where the bricks have subsided, forming low spots that tend to hold water. There are also places where the bricks are dislodged, creating an uneven surface that may constitute a potential trip hazard. The brick paving is typically damaged and broken where features such as light poles and fire hydrants have been installed. The edge courses along the street and courtyard wall margins are frequently broken and uneven. Repair work is easy to recognize where incompatible mortar and replacement brick that does not match the original has been used (Figure 218).



**FIGURE 218.** View of ponding and dislodged bricks associated with the perimeter brick sidewalk around the Old Courthouse grounds. Photograph by JMA, 2011.

**Perimeter wall and fence.** The granite wall, wrought iron fence, and concrete curbing that form the perimeter of each courtyard are generally in good condition. Problems associated with these features include evidence of repairs made to the damage caused by traffic accidents, corrosion of the wrought-iron fence that has resulted in the staining of the granite wall, several damaged sections of the concrete curbing, and weedy growth at the base of the wall (Figure 219).



**FIGURE 219.** Example of staining caused by corrosion of the wrought-iron fence. Photograph by JMA, 2011.

**Courtyards.** The four courtyards that edge the courthouse to its northwest, northeast, southeast, and southwest are frequently used as staging areas for construction and maintenance projects associated with the building exterior that requires heavy equipment and stockpiled materials. Aerial lifts used to wash the windows are also brought into the courtyards on a regular basis. The double-gate entrances are sometimes too narrow to allow passage of the necessary machinery and equipment, leading the National Park Service on occasion to dismantle fence sections to create a larger opening. The heavy equipment has the potential to compact the soil and damage the turf and other features, such as the gates, perimeter wall and fence, planting beds and other features that serve as focal points, and ornamental plantings. Evidence of soil compaction is present where ponding occurs, particularly near the base of the building. Erosion and gouging of the turf is present around most of the gates. In general the

turf is patchy and there are bare spots that may be the result of building maintenance efforts. The disturbance associated with these activities limits the nature of possible future changes to the courtyards. In addition, air conditioning units housed in the courtyards are visually incompatible with the historic character of the courtyards (Figure 220).



**FIGURE 220.** Evidence of compaction and damaged turf within the northwest courtyard. Photograph by JMA, 2011.

**Areaways.** Each of the courtyards contains retaining walls that parallel the Old Courthouse exterior to establish walkways and lightwells relating to the basement level of the building. The limestone block walls are one of the few nineteenth-century features to survive on the Old Courthouse grounds. These walls exhibit several condition issues and concerns. Many sections of the wall are leaning due to hydrostatic pressure that has built up behind the structures. Some of the blocks are cracked or displaced. Many of the repairs made to these walls and the coping stones have been made using incompatible materials such as brick and concrete. Other condition issues include biological and weedy growth along the base of the wall, cracked and broken marble and concrete stairs, cracked and spalling concrete walks, and the clogging of drains with vegetation (Figure 221).



**FIGURE 221.** An example of a broken coping stone and incompatible repair associated with one of the areaway walls. Photograph by JMA, 2011.

**Turf.** The turf that serves as a groundcover treatment over the majority of the courtyards is composed of the tall fescue variety *Festuca* “Winning Colors.” This variety works well in the courtyards for several reasons. It is well suited to the climate and will grow within a wide range of sun and partial sun conditions. ‘Winning Colors’ fescue can also be overseeded to rejuvenate thin patches as needed. It is able to be maintained through mowing at a height of 3 inches, which is consistent with the park’s maintenance schedule and also works with the undulating surface of the courtyards, while a lower mowing height might lead to an uneven cut. The park considers the soil present within the courtyards to be relatively fertile, although a soil test has never been conducted. Except for a few specific locations, the soil is not currently considered to be too compacted. As noted above, the turf is gouged near the gates and patchy with bare spots elsewhere. Weeds, including Bermuda grass, are present, but have not displaced the fescue to any great degree (Figure 222). A cornice repair project conducted during 2011 and 2012, after fieldwork for this project had been completed, heavily damaged the turf in all of the courtyards.



**FIGURE 222.** View of the turf within the northeast courtyard. Note the patchiness, bare spots, and gouging and erosion at the gate. Photograph by JMA, 2011.

**Mowing.** The courtyard turf is maintained with large riding mowers, 126 inches in width. Riding mowers are used because it is challenging to transport walk-behind mowers to the site. The mowers currently being used are generally too large and cumbersome for the space, and cannot reach the narrow courtyard extensions that edge the north and south wings of the building. The grass in these extensions has been replaced with pecan shell mulch. To facilitate mowing, the planting beds in the center of each courtyard have been converted from square or rectangular forms to circular shapes. Earthen strips have been established along the outer edge of each courtyard to create a margin of error for the mowers and protect perimeter and building walls from damage. Aluminum edging is used to contain mulch and flower beds. The mowers have damaged the edging. They have also dislodged at least one of the air conditioning units set on concrete pads in the courtyards (Figure 223).

**Irrigation.** The National Park Service uses a mechanical irrigation system as part of the courtyard turf maintenance program. Pop-up irrigation heads are present in two lines. One includes irrigation heads protected from mower damage within concrete sleeves. The other is comprised of pop-up irrigation heads set within

the lawn. Some of these exhibit mower damage. In general, both lines are located too close to the building, causing water to spray the base of the building and to splash mud onto the stone. The water is contributing to development of biological growth and staining. Water is also wasted with the existing system. The current system was installed within the top 6 inches of soil to avoid disturbing potential archeological resources. As such it does not include an underdrain system. Because the courtyards have very little topographic change, underdrains would facilitate removing excess water to prevent some of the ponding that kills the turf (refer to Figure 223).



**FIGURE 223.** View of ponding at the base of the courthouse and staining from splashing. Photograph by JMA, 2011.

**Planting beds.** Planting beds surround or form the focal point in each of the courtyards. The planting beds are surrounded by aluminum landscape edging material. The edging is a residential grade material that has not held up well against the weight of the large riding mowers and is damaged in several places. Historically, the planting beds were maintained by a local garden club, which planted bulbs and annuals and seasonal displays such as red flowers in the fall to honor the Cardinals baseball team. Today the beds feature primarily perennials and shrubs. There is a significant

amount of weedy growth that requires removal (Figure 224).



**FIGURE 224.** View of weeds and damaged edging associated with one of the courtyard planting beds. Photograph by JMA, 2011.

**Universal accessibility.** The mechanical lift that provides universal access to the west portico is accessed via a stamped and colorized concrete sidewalk edged by a berm. The sidewalk is visually incompatible with the historic character of the courtyards (Figure 225).



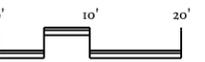
**FIGURE 225.** View of the access walk and berm. Photograph by JMA, 2011.

**Other general condition issues.** The identity signs affixed to the perimeter fence of the northwest and southeast courtyards exhibit evidence of damage, including gouging of the wood. Marble surrounds associated with the window wells in the southwest courtyard are cracked and damaged in several places. The top of the Ionic capital in the northwest courtyard is relatively level and water ponds on its surface, which is cracked and broken.

## Description of Existing Conditions

Refer to Figure 226 and Figure 227, plans of existing conditions of the courtyards.

St. Louis's Old Courthouse building and grounds occupy a city block framed by Fourth Street to the southeast, Market Street to the southwest, Broadway to the northwest, and Chestnut Street to the northeast. The monumental neo-classical building, which features columned porticos and a tall central dome, is a landmark and the symbolic heart of civic life in St. Louis (Figure 228). Although it no longer serves as an active courthouse, the Old Courthouse remains an important icon and a focal point of Jefferson National Expansion Memorial, a unit of the National Park System. The park is best known for the Gateway Arch, a dramatic sculptural structure designed by architect Eero Saarinen that symbolizes the city's role as gateway to the west. Although it generally follows the river, the park includes a linear extension westward to encompass the Old Courthouse. The Gateway Arch was purposefully sited to frame views of the Old Courthouse, where many pioneers began their journey west. From the eastern portico of the Old Courthouse, views extend across Luther Ely Smith Square and through the arch to the Mississippi River.



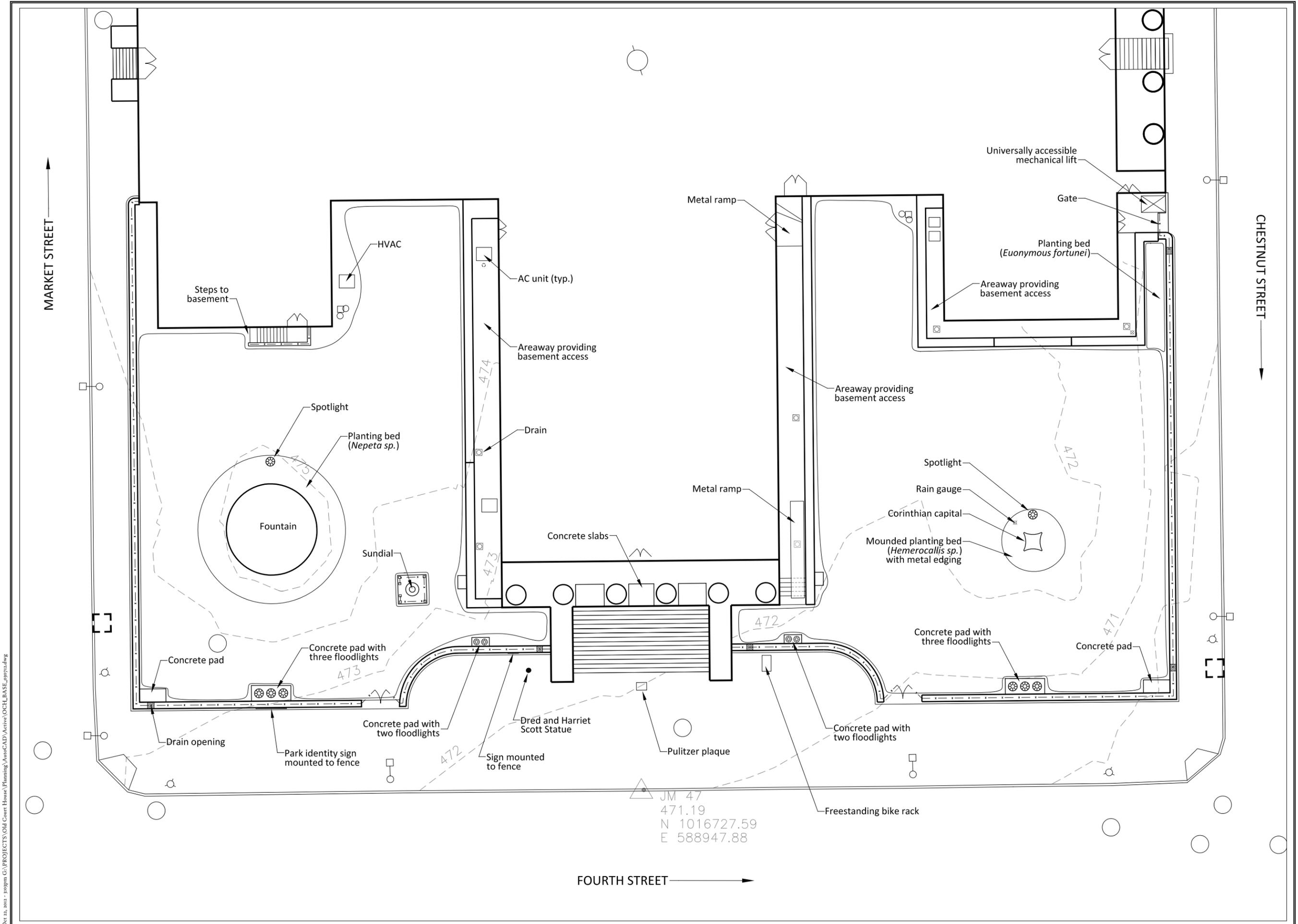
SCALE: 1" = 20'

FOR PLANNING  
PURPOSES ONLY

NOT FOR  
CONSTRUCTION

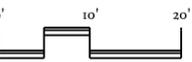
project: OLD COURTHS  
drawn: CMO  
checked: LS, LK  
phase: 75% DRAFT  
date: 1 May 2012  
revised:

Existing Conditions:  
East Courtyards  
Figure 226



Oct 22, 2012 - 3:03pm G:\PROJECTS\Old Court House\Planning\AutoCAD\Active\OCHL\_BASE\_090712.dwg





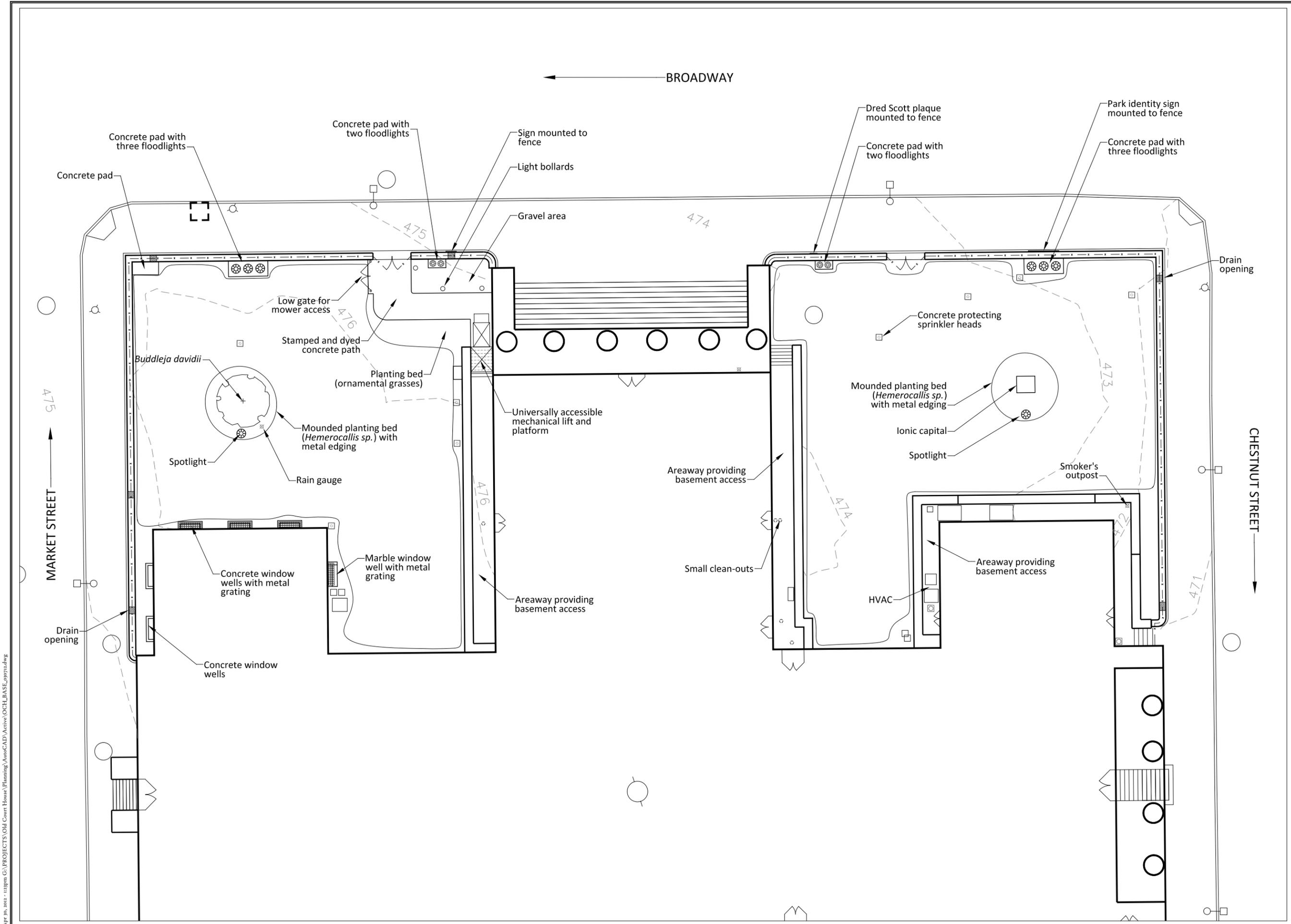
SCALE: 1" = 20'

FOR PLANNING  
PURPOSES ONLY

NOT FOR  
CONSTRUCTION

project: OLDCOURTHS  
drawn: CMO  
checked: LS, LK  
phase: 75% DRAFT  
date: 1 May 2012  
revised:

Existing Conditions:  
West Courtyards  
Figure 227



Apr 30, 2012 - 12:39pm G:\PROJECTS\Old Courthouse\Planning\AutoCAD\Active\OCHL\_BASE\_090712.dwg





**FIGURE 228.** View of the Old Courthouse grounds and Luther Ely Smith Square from the Gateway Arch. Photograph by JMA, 2011.

Linking the Old Courthouse grounds with the rest of the park is Luther Ely Smith Square. Located across Fourth Street from the courthouse, the square was named in 1970 for the St. Louis lawyer who advocated for establishment of a park in the early 1930s to honor the city's role as the gateway to the west. Located within the square is the Luther Ely Smith Memorial (LCS 070138), a polished granite marker with an angled face set on a stone base, erected in 1986–1987. The plaque notes:

The park commemorates Luther Ely Smith whose vision, dedication, energy and love of his city and country brought into being the great Arch that symbolizes the nation's expansion west of the Mississippi River.

The pages that follow describe the current character and configuration of the Old Courthouse grounds and composition of each individual courtyard. Photographs and plans that illustrate points discussed in the narrative are referenced in the text.

### The Old Courthouse grounds

The Old Courthouse is a three-story, brick and stone Greek Revival structure designed by several architects between the 1830s through the 1850s, including Henry Singleton, William Twombly, George I. Barnett, Robert S. Mitchell, Thomas D.F. Lanham, and William Rumbold. The building forms a Greek cross in plan. At the junction of its four wings is a central rotunda surmounted by a Renaissance-style wrought and cast-iron dome and lantern. The eastern and western wings extend partway to the street and terminate in 60-foot-wide columned porticos accessed via wide stone steps from the surrounding sidewalk (Figure 229 and Figure 230). The north and south wings arise from the central core of the building as corridors. These are in turn terminated by rectangular structures set perpendicular to the corridors. The north and south wings closely edge the city sidewalks at Market and Chestnut streets, with entrance doors set above narrow stone steps.

The east portico entrance into the Old Courthouse is accessed via a 30-foot-wide granite stair, edged by 5-foot wide and 17-foot-long limestone cheekwalls. Iron fencing set within a granite base edges the portico to either side of the stairs, and extends north and south to form perimeter enclosures around courtyards to the north and south. At the east portico, the perimeter fence curves inward to meet the center of each cheekwall. The curved wall and a narrower stair distinguish the east portico from the west. From the portico, views toward the Mississippi River to the east are framed by the Gateway Arch.



**FIGURE 229.** View of the east portico and steps leading to the building entrance. Photograph by JMA, 2011.



**FIGURE 230.** View of the west portico and steps leading to the building entrance. Photograph by JMA, 2011.

The elevation of the city block within which the Old Courthouse stands is not entirely level, but slopes downward to the east. Fourteen steps lead to the east portico, while there are only ten steps leading to the west portico. The stairs leading to the porticos are flanked by 63-inch-wide cheekwalls, fashioned from large blocks of local limestone with a sawn finish that have been painted cream. The porticos are each supported by six fluted limestone columns with Doric capitals. Between the four central columns, the limestone block floors of the porticos have been replaced with 5- by 6-foot concrete panels that enhance the durability of the walking surface in this high traffic area. Metal railings edge the northern and southern ends of the portico, anchored into the portico floor between the

columns. Metal handrails, composed of square tubular steel painted black, are bolted into the cheekwalls to either side of the stairs (Figure 231). A freestanding metal bicycle rack sits near the east portico steps.



**FIGURE 231.** View southwest of the east portico steps, cheekwall, and handrail. Photograph by JMA, 2011.

The west portico is similarly configured, although the stair extends the full width of the portico—approximately 51 feet. The cheekwalls are 14 feet long and 5 feet wide. The west portico has been adapted for universal accessibility through the placement of a mechanical lift adjacent to the south end, and a temporary ramp edged by handrails that mediates the single step at the entrance.

Several condition issues and problems were observed in association with the porticos during field investigations conducted for this project in October 2011, including:

- Stair treads. Some of the stair treads are heavily worn. Rainwater collects in these low points and contributes to ponding, which can create slip hazards for pedestrians using the stairs.
- Sealant. Sealant used at the base of each riser is in some areas heavily applied, becoming visually intrusive.

- Cheekwalls. Past repairs have left incongruous seams and evidence of former handrail placement. Staining and biological growth are also evident in association with the cheekwalls in several locations.

In addition to the porticos, entrances into the building also occur along Market and Chestnut streets. These are no longer used as public entrances due to security issues. The entrance at Chestnut Street is set above a flight of granite stairs that extend beyond the plane of the building to meet the sidewalk. Access into the building is controlled by a wrought iron gate set near the top of the stairs. The Market Street entrance is accessible from a narrow stair edged by cheekwalls 6 feet long and 5 feet wide that extend from the building facade (Figure 232 and Figure 233).



**FIGURE 232.** View northwest of the courthouse entrance along Market Street. Photograph by JMA, 2011.



**FIGURE 233.** View southeast of the entrance along Chestnut Street. Photograph by JMA, 2011.

Unifying the Old Courthouse grounds is a system of brick sidewalks that edges the building along each perimeter city street. The Old Courthouse sidewalks (LCS No. 070126) are surfaced in red brick laid in a herringbone pattern. The sidewalks measure between 15 and 18 feet wide, but expand to 30 feet to meet the steps of the east portico. The brick is laid atop a concrete slab, and is set in mortar with grouted joints. Edge courses frame the herringbone pattern where it meets the curbing of the street and the courtyard perimeter wall and fence. Curbing associated with the streets around the courthouse is 6-inch-high granite. At the courtyard wall, a 1-inch-high bullnose concrete curb contains the sidewalk. The street corners are marked by universally-accessible curb cuts formed from concrete inset with red rumble strips (Figure 234). Features such as light poles, trash receptacles, bicycle racks, electrical junction boxes, a commemorative plaque, and signage are set within the sidewalk.



**FIGURE 234.** View south of the brick sidewalk edging Broadway. Photograph by JMA, 2011.

The sidewalks were installed by the National Park Service in 1954 to replicate paving installed on the courthouse grounds in the 1860s, and visible in an 1868 photograph. The brick sidewalks of the mid-nineteenth century were replaced with granitoid walks in 1894. Concrete walks were present at the time the National Park Service acquired the Old Courthouse in 1940. Although originally laid in sand atop a concrete base, the National Park Service relaid the sidewalks with a cool gray mortar to enhance the stability and durability of the public walkway in 2006. The accessible curb cuts were first added in 1982.

The paving was assessed in fair condition in 2011 by the National Park Service. Condition issues and problems observed in association with the sidewalk in October 2011 include (Figure 235):

- Low spots. Locations where the pavers have subsided or been dislodged to form low spots tend to hold water and exhibit problems with ponding. One of these is located along Chestnut Street near the corner with Broadway.
- Broken and uneven pavement. The paving has been damaged in several locations. Where features such as light poles and fire hydrants have been installed, there is often a

great deal of broken brick. These broken pavers may constitute trip hazards. The edge courses are also frequently broken and uneven.

- Evidence of previous repairs. Where attempts have been made to repair the pavement, incompatible mortar and brick have sometimes been used.



**FIGURE 235.** View of condition issues associated with the brick sidewalk. Photograph by JMA, 2011.

Set within the sidewalk near the east portico stair is the Joseph Pulitzer Memorial Plaque (LCS No. 070137). The plaque commemorates the location where Joseph Pulitzer bought the *St. Louis Dispatch* at auction on December 9, 1878. Pulitzer would later merge the paper with the *Evening Post*, forming one of the most highly regarded newspapers in the United States. The plaque was placed in the sidewalk on April 10, 1947, by Sigma Delta Chi, the National Professional Journalistic Fraternity.

The plaque is set flush with the surface of the sidewalk, 2 feet 3 inches from the east portico steps (Figure 237). The plaque measures 21 by 28 inches and is fashioned from bronze with raised letters. It was assessed in good condition by the National Park Service in 2011. The plaque reads:

Joseph Pulitzer/April 10, 1847–October 29,  
1911/Founder of the *St. Louis Post-Dispatch*,

publisher/of the *New York World*, donor of the School of Journalism, Columbia University, New York, and the Pulitzer prizes for the advancement of American journalism and letters. Passionate devotee of the cause of liberty-/-liberty of action, of opinion, of government. Placed April 10, 1947 by Sigma Delta Chi/National professional journalistic fraternity/at the site where Joseph Pulitzer/bought the *St. Louis Dispatch*/ December 9, 1878 at public auction.

Also located nearby alongside the fence to the south of the east portico is a bronze sculpture of Dred and Harriet Scott installed in 2012. (Figure 236)



**FIGURE 236.** Bronze sculpture of Dred and Harriet Scott located south of the east portico. Source: Bob Moore, 2013.



**FIGURE 237.** The Pulitzer plaque set within the brick sidewalk in front of the east portico. Photograph by JMA, 2011.

As noted above, each corner of the building is edged by a courtyard framed by a wrought iron and stone fence that is in turn edged by the sidewalk. The courtyards are relatively level grassy plinths, each with a different central focal point composed of plantings and other features, such as a fountain and column capitals. Signs identifying the Old Courthouse grounds as part of Jefferson National Expansion Memorial, administered by the National Park Service, are mounted on the fences enclosing the courtyards.

The Old Courthouse lawn fence and gates (LCS 070127) that edge each of the courtyards on its street side is a reproduction of the fencing installed around the courthouse grounds in 1845–1850 and removed circa 1884. The existing fence, designed in 1955 and installed by 1957, is not a faithful reproduction of the nineteenth century feature in two ways. First, the original fence was set on a limestone base, while the contemporary fence is supported by a

low granite wall. The National Park Service selected granite over the original limestone for its enhanced durability. The gates, which were not clearly visible in historic photographs, were reinterpreted to include a whimsical element that recalls one of the traditional stories about the Old Courthouse. The gates feature wrought iron turtles that make reference to turtles placed in the southeast courtyard fountain each summer for the enjoyment of visitors by long-time nineteenth century caretaker James Quigley.

The existing wrought iron fence was fabricated by Kupferer Brothers, a local ornamental iron works company. The fence is composed of 3/4-inch-square pickets, 50 inches high, set at 5-1/4 inches on center between posts anchored in the granite wall at 4 foot 2-1/2 inch intervals. A decorative flared triangular finial sits atop each picket and extends 5-1/8 inch above a 1 inch top rail. A bottom rail is set 3-1/2 inches above the wall. Decorative scrollwork is set between each pair of pickets along the lower half of the fence. The entire fence is painted black.

The granite base, which measures 17 inches in height and is 18 inches wide at the bottom, is constructed of two sections and set atop a concrete slab that extends 4 to 5 inches beyond the width of the wall, forming a low curb with a rounded edge that extends 1 inch above the adjacent sidewalk. The granite wall is a mottled gray and pink color with a polished finish. The lower section is approximately 9 inches thick and 1 foot 9 inches wide. Set atop the base is a second section, 1 foot 7 inches in width and 16-1/2 inches in height, leaving a 1-1/2 inch reveal. In several locations, there are openings in the base of the wall that allow storm water to pass beneath the wall for drainage. The openings range in width from 12 to 19 inches. The concrete slab forms the base of the openings (Figure 238). The top of the second section tapers to a high point in the center that helps to

shed water. The fence and gate posts are set within cores in the top of the wall. The fence extends as a single line along the top of the wall, while the gate posts are formed of four pickets arranged in a square.



**FIGURE 238.** View of the wrought iron fence edging the northeast courtyard along Chestnut Street. Photograph by JMA, 2011.

The wrought iron gates that lead into each of the courtyards are hung from square posts set within the wall to either side. They are typically double-leaf structures that measure 8 feet 9 inches in width. There are also single arm gates that provide access into the northeast and northwest courtyards at the edge of the north wing (Figure 239 and Figure 240). The gate doors open inward. Except for the southwest courtyard, where universal access to the Old Courthouse is afforded, the gates are typically locked and visitors are not invited into the courtyards except on special occasions.

The fence was assessed in good condition in 2011. Problems identified during fieldwork conducted in October 2011 include:

- **Staining.** The metal fence set into the granite base wall contributed to some limited staining of the stonework from iron corrosion.



**FIGURE 239.** View of the double-door gate leading into the northeast courtyard along Fourth Street. Photograph by JMA, 2011.



**FIGURE 240.** View of the single-door gate leading into the northwest courtyard along Chestnut Street. Photograph by JMA, 2011.

## Southeast Courtyard



**FIGURE 241.** Panoramic view of the southeast courtyard. Photograph by JMA, 2011.

The southeast courtyard fronts Fourth and Market streets (Figure 241). It features a central fountain, a sundial, a flight of stairs that leads to the basement level of the building along the eastern side of the southern wing, and limestone retaining walls that form an areaway leading to doors along the southern edge of the eastern wing. Iron grilles protect the first floor windows of the south wing. A/C units and valve boxes are housed in the courtyard along the margins of the south wing. Floodlights that illuminate the Old Courthouse at night are set along the fence margins. A National Park Service identity sign is bolted to the eastern facing fence section near the Fourth Street gate.

The courtyard is accessed via a double-door wrought iron gate set within the fence on the Fourth Street, and a single-door gate located near the junction of the fence with the east portico.

The majority of the courtyard is maintained in turf. Two objects are placed within the courtyard. The focal point of the courtyard is a replica of the nineteenth century fountain that stood in the space between the 1850s and 1895. A wrought iron sundial set on a concrete base within a wrought iron fence is also a prominent

feature of the courtyard. Along with the limestone areaway walls, the sundial represents the only nineteenth century features to survive on the Old Courthouse grounds today.

The fountain (LCS 070125) is a replica of a mid-nineteenth century fountain indicated in historic photographs and lithographs. The contemporary fountain, constructed in 1958 by the National Park Service, was sited based on excavation of the southeast courtyard. It is 20 feet 9 inches in diameter, and sits 27 feet 6 inches from the fence and 30 feet 7 inches from the stairs at the edge of the south wing. The replica fountain is smaller and includes fewer vertical tiers than its nineteenth century counterpart. The metal fence that encircled the original fountain has not been restored. Instead, the fountain is encircled by a 6 foot 6 inch wide garden bed planted with catmint (*Nepeta cataria*). An uplight is set in the turf to the west of the bed that illuminates the fountain at night.

The 7 foot 9 inch tall metal fountain structure is composed of a circular basin topped by three successively smaller tiers of curved bowls set in its center. These range in size from 1 foot 5-1/2 inches diameter at the top to 2 feet 11-1/4 inches at the bottom. Water is pumped

from a mechanical system housed in the basement of the south wing to a spout above the top tier. The water cascades down into each succeeding bowl and returns to the pump from the circular basin at the bottom. The fountain has a green patina (Figure 242). It was assessed in fair condition in 2011 due to staining and biological growth.



**FIGURE 242.** View west of the replica fountain, the focal point of the southeast courtyard. Photograph by JMA, 2011.

The sundial (LCS 070124) was originally ordered by St. Louis County authorities to decorate the grounds in 1858. It survived the many changes that occurred within the courtyards during the late nineteenth and early twentieth centuries, but was in poor condition when the National Park Service acquired the Old Courthouse grounds. The sundial was restored in 1958 using parts fabricated in a local foundry.

Located 10 feet from the edge of the east portico stair cheekwall, the sundial is a circular bronze

plate inset with Roman numerals, protected by a hinged copper cover, and mounted on a cast-iron pedestal set above a 6 feet 6 inch square granite base that ranges from 6 to 8 inches in height. The sundial and base reach a height of 60 inches. The sundial itself is 18 inches in diameter. A wrought iron fence encircles the sundial. The fence is composed of 46-inch-high corner posts with finial tops and a pair of posts at an opening set within the center of the southern line of the fence. Between the posts are 13 pickets that stand 35 inches above the concrete base. The pickets and the posts are tapered at the top. They are framed by flat rails along the top and round rails along the bottom (Figure 243).



**FIGURE 243.** View southwest of the sundial located within the southeast courtyard. Photograph by JMA, 2011.

The sundial was assessed in good condition in 2011. Condition problems observed in association with the sundial in 2011 included:

- Several of the post finials are loose and could be removed.
- The iron base is rusted.

The areaway is a recessed space that edges the east wing of the Old Courthouse to its south. It provides access to the basement level of the building, and allows light to reach the basement windows. The areaway is formed from a

retaining wall constructed of cut limestone blocks located 5 feet 10 inches from the building that parallels the south wing for much of its length, turning to form an L at the end of the wing. The wall is 2 feet 2 inches wide and is topped by a 3-1/2-inch thick coping along its length that overhangs the wall slightly for drainage. The wall is level at the top, but steps up by 11 inches approximately half way along its length. At the base of the wall, approximately 8 feet below the coping stone, is a concrete walkway, accessed via a marble threshold and concrete steps set in the eastern end of the wall. A basement entrance door is located at the western end of the areaway, while several basement-level windows edge the walkway. Air conditioning units are housed within the areaway, set atop blocks to elevate them above rainwater that might collect on the concrete walk. Iron pipes extend from the wall in several locations to drain water as it collects behind the wall. Drains set within the concrete walk carry away storm water and any effluent from the weepholes (Figure 244).



**FIGURE 244.** View southwest of the southeast courtyard, with the areaway (right) and concrete stair (middle left). Photograph by JMA, 2011.

Condition problems observed in association with the areaway in 2011 include:

- **Structural problems.** The limestone block wall is leaning in several locations, likely due to hydrostatic pressure.

- **Vegetative growth.** Vegetative growth is present along the base of the wall between the wall and the concrete walk.
- **Repairs.** A large section of the coping and other sections of the wall have been inappropriately replaced with non-original materials including concrete and brick.
- **Concrete.** The concrete exhibits problems with cracking and spalling.
- **Marble.** The marble threshold is worn, cracked, and broken in places.

Concrete stairs lead to the basement level along the eastern side of the courthouse's south wing. The stairs arise near the center of the wing at the Market Street end from a concrete landing. A decorative tubular metal railing and handrail, 36 inches tall, edges the stairs. It is set within a 20-inch-wide concrete retaining wall that edges the stairs. This stair is a later addition, not consistent in age with the areaway walls (Figure 245).

Condition problems observed in association with the concrete stairs in October 2011 include:

- **Concrete.** The concrete retaining wall is spalling and cracking, and a portion of the wall requires replacement.



**FIGURE 245.** View north of the concrete stair edging the south wing of the Old Courthouse. Photograph by JMA, 2011.

The majority of the courtyard is maintained in fescue turf. Exceptions include a narrow earthen band between the south wing and Market Street.

Condition issues associated with the turf observed in October 2011 include:

- Ponding. There is a low point in the corner of the courtyard along the south wing of the courthouse where water ponds.
- Erosion. The exposed soil of the narrow extension along the south wing is subject to erosion.

The turf is maintained using an irrigation system. Evidence of the irrigation system includes plastic pop-up irrigation heads along the edge of the lawn and other heads protected from mower damage within 12-inch-square concrete forms set flush with the ground.

Condition issues associated with the irrigation system observed in October 2011 include:

- Spray. Some of the irrigation heads appear to be set too close to the building so that the spray hits the structure, potentially leading to staining, water damage, and biological growth.

Two sets of floodlights are mounted on concrete slabs along the perimeter fence at Fourth Street. Installed in 1997, these are used to illuminate the Old Courthouse at night. The first group sits on a slab 9 feet long and 42 inches wide that is located 19 feet 6 inches from the Market Street end of the fence. It supports three metal floodlights. The second is set opposite the areaway south of the portico cheekwall. It is 4 feet long and 2 feet wide and supports two lights.

A third concrete slab is located in the corner of the fence near the intersection of Fourth and Market streets. There are no features associated

with the slab that was once associated with floodlights used to light the building exterior.

Mounted along the eastern section of the fence is a park identity sign (Figure 246). The sign is 7 feet wide and 3 feet tall, and attached to the fence with metal brackets and bolts. The sign is composed of wood boards, 1-1/2 inches wide, with routed letter text. A National Park Service arrowhead is applied to the sign. The sign is painted gray-green.

Condition issues associated with these features observed in October 2011 include:

- Damage. Some of the wood of the sign has been gouged.



**FIGURE 246.** View northwest of the identity sign mounted on the Fourth Street fence that frames the southeast courtyard. Photograph by JMA, 2011.

## Northeast Courtyard



**FIGURE 247.** Panoramic view of the northeast courtyard. Photograph by JMA, 2011.

The northeast courtyard faces Chestnut and Fourth streets (Figure 247). It features a Corinthian column capital as a focal point edged by a planting bed, two areaways edged by limestone retaining walls, and turf lawn. The basement windows are protected by iron grilles. A double-leaf gate provides access into the courtyard from Fourth Street. It is placed at the end of the curved section north of the portico cheekwall. A secondary entrance gate leads into the courtyard from Chestnut Street. This gate has been modified to include a mechanical lift for universal accessibility into the building. The lift blocks the entrance into the courtyard.

A Corinthian capital forms a focal point for the northeast courtyard. The Corinthian capital measures 4 feet 4 inches square in plan and is approximately 4 feet tall. It is located 47 feet 8 inches north of the north east wing areaway wall, and 42 feet 3 inches from the north wing areaway wall. The capital was rescued from one of the historic buildings demolished to establish Jefferson National Expansion Memorial. A garden bed encircles the capital. A rain gauge and a floodlight edge the planting bed surrounding the capital (Figure 248).



**FIGURE 248.** View northeast of the Corinthian capital that serves as a focal point of the northeast courtyard. Photograph by JMA, 2011.

Two areaways are present within the northeast courtyard. One lies to the north of the east wing, while the other edges the eastern side of the north wing. Both are formed by limestone block retaining walls that parallel the exterior of the building and form a linear space used as a walkway to access doors at the basement level.

The areaway retaining wall that parallels the eastern wing for much of its length is located 5 feet 10-1/2 inches from the edge of the Old Courthouse. The wall is approximately 2 feet 3 inches thick. At the base of the wall there is a concrete walk set at the basement level that runs

alongside the courthouse. A flight of five marble steps leads to the concrete walk from the Fourth Street end of the wall. A metal ramp has been temporarily placed over the northern half of the stairs to enhance accessibility. The walk leads to a door into the basement level of the building on the north edge of the east wing. A second metal ramp placed on top of the concrete walk provides access to the door opening. Beyond the ramp is a short flight of marble steps that lead to a second door opening at the corner of the north and east wings. Iron drainage pipes extend through the wall to relieve hydrostatic pressure. There are drains set in the concrete walk to collect rainwater and any effluent from these pipes (Figure 249).



**FIGURE 249.** View west of the areaway that edges the east wing within the northeast courtyard. Photograph by JMA, 2011.

The areaway retaining wall that edges the northern half of the north wing is also constructed of limestone blocks. The wall follows the U-shaped form of the wing and its connecting hall. It is set approximately 3 feet 8-1/2 inches from the edge of the building, leaving a narrow walkway at the basement level. The wall itself is 2 feet 3 inches thick.

Condition issues and problems identified with the areaways and retaining walls during fieldwork conducted in October 2011 include:

- Structural problems. The limestone block wall is leaning in several locations, likely due to hydrostatic pressure.
- Vegetative growth. Vegetative growth is present along the base of the wall between the wall and the concrete walk.
- Repairs. Some of the limestone blocks in the wall are cracked, or displaced. Others have been replaced with non-original materials, such as brick and concrete.
- Concrete. The concrete exhibits problems with cracking, breakage, and spalling.
- Marble. The marble steps are cracked, broken, and exhibit biological growth.

A 5-foot-wide planting bed encircles the Corinthian capital. The bed is planted with Stella d'Oro daylilies (*Hemerocallis 'Stella d'Oro'*) and roses (*Rosa sp.*). The plantings and the capital are set atop a mound to enhance their visibility.

Much of the courtyard is maintained in mown fescue turf, with the exception of a narrow extension along Chestnut Street that is composed of earth and some creeping euonymus (*Euonymus fortunei*) vines.

Condition issues and problems identified during fieldwork conducted in October 2011:

- Erosion. Inside the gate at Fourth Street, the ground is rutted and much of the grass has been lost.

The turf is maintained using an irrigation system. Evidence of the irrigation system includes plastic pop-up irrigation heads along the edge of the lawn and other heads protected from mower damage within 12-inch-square concrete forms set flush with the ground.

Condition issues associated with the irrigation system observed in October 2011 include:

- **Spray.** Some of the irrigation heads appear to be set too close to the building so that the spray hits the structure, potentially leading to staining, water damage, and biological growth.

Two sets of floodlights are mounted on concrete slabs along the perimeter fence at Fourth Street. Installed in 1997, these are used to illuminate the Old Courthouse at night. The first is located 12 feet from the east portico cheekwall. It is 4 feet long and 2 feet wide and supports two lights. The second is located north of the gate, 22 feet 6 inches from the fence along Chestnut Street. This pad is 9 feet long and 42 inches wide and supports three lights (Figure 250).

A third concrete slab is located in the corner of the fence near the intersection of Fourth and Chestnut streets. There are no features associated with the slab that was once associated with floodlights used to light the building exterior.



**FIGURE 250.** View of the trio of floodlights along the fence edging Fourth Street in the northeast courtyard. Photograph by JMA, 2011.

## Southwest Courtyard



**FIGURE 251.** Panoramic view of the southwest courtyard. Photograph by JMA, 2011.

The southwest courtyard edges Market Street and Broadway (Figure 251). It features a wrought iron gate, stamped concrete walkway, mechanical lift, ornamental plantings, a circular garden bed planted with shrubs and perennials, turf, an areaway, and window wells covered with wrought iron grilles.

The oldest feature of the southeast courtyard is the areaway that edges the west wing to its south. The areaway is formed by a limestone block retaining wall 2 feet 3 inches wide set 4 feet 9 inches from the building wall. At the base of the wall is a concrete walkway that provides access the basement level of the building and allows light to reach the lower windows. Several pipes extend through the wall to drain water that might build up behind it. Drains are set into the concrete walkway to clear storm water and effluent from the pipes. A flight of concrete steps at the western end of the wall, edged by a marble threshold at the top, provide access to the lower concrete walkway. The steps are currently blocked by the mechanical lift installed to provide universal access to the main floor of the courthouse.

Condition issues and problems identified with the areaway and retaining wall during fieldwork conducted in October 2011 include:

- Structural problems. The limestone block wall is leaning in several locations likely due to hydrostatic pressure.
- Vegetative growth. Vegetative growth is present between the base of the wall and the concrete walk.
- Repairs. Some of the limestone blocks in the wall are cracked or displaced. Others have been replaced with other materials, such as brick and concrete.
- Concrete. The concrete exhibits problems with cracking, breakage, and spalling.

A 6-foot-wide, red, colorized-concrete walk stamped with a brick pattern leads from the gate at the Broadway sidewalk to the mechanical lift. The walk forms an L shape between the sidewalk and the lift. The walk is contained by metal garden edging. The walk was added to provide access to the mechanical lift.

Low light bollards edge the walk along its western margin. The bollards are set in a mulch bed located between the walk and the perimeter fence. They measure 5-1/2 inches in diameter and are 18 inches tall, and are set in concrete bases 1 foot in diameter.

The mechanical lift is a prefabricated structure anchored at the west end of the areaway that parallels the west wing. The lift blocks access to the steps leading to the basement level associated with the areaway. It is composed of aluminum square tubing inset with acrylic glass panels. A door in the western end opens outward. A small metal ramp is set at the base of the door for wheelchair access across the jamb. Inside, the steel floor can be raised mechanically to the level of the portico porch above. A door controls access at the upper level as well. A ramp spans the single stair associated with the portico above to allow universal access into the building from the street level (Figure 252).



**FIGURE 252.** View northeast of the walk leading to the lift, with the areaway wall visible behind. Photograph by JMA, 2011.

There are two gates associated with the southwest courtyard. The original double-leaf gate has been modified to accommodate the new walkway. The second gate is a new addition, which has been placed perpendicular to the original gate to limit access to the remainder of the courtyard. A low earth berm edges the walkway between the gate and the lift, to further

limit visitor access to the courtyard. Portions of the perimeter wall and gate appear to have been damaged as part of the modifications. The original double leaf gate is anchored into an open position with metal poles. The second gate is a low, wrought iron structure similar in appearance to the older gate, but with a portion of the top missing, that is supported by posts set to either side (Figure 253).



**FIGURE 253.** View northwest of the two gates and the berm that limits access to portions of the southwest courtyard. Photograph by JMA, 2011.

Plantings composed of ornamental grasses and perennials edge the walk in a 6-foot-wide bermed bed contained by steel garden edging. These plantings were added as part of the installation of the concrete walk and mechanical lift.

Another planting bed is located within the center of the courtyard and serves as a focal point. This large circular mound is planted with a butterfly bush (*Buddleia* sp.) shrub and Stella d'Oro daylilies (*Hemerocallis* 'Stella d'Oro'). Associated with the planting bed are a single upright and a rain gauge set on a 45-inch high 1x3 post. Metal garden edging forms a border around the planting bed (Figure 254).

Condition issues and problems identified with the planting beds during fieldwork conducted in October 2011 include:

- Metal edging. The metal edging that contains the central planting bed is not a heavy enough grade for the size of mowers used to maintain the courtyard turf. It has been damaged in several places by the mowers.
- Weeds. The planting bed is filled with weeds.



**FIGURE 254.** View northeast of the butterfly bush and daylily planting that forms a focal point within the southwest courtyard. A rain gauge and uplight are positioned behind the shrub. Photograph by JMA, 2011.

The majority of the courtyard is maintained in fescue turf. Air conditioning equipment is housed in the courtyard against the northern edge of the Old Courthouse's south wing. Pop-up irrigation heads are in evidence in linear arrangements along the margins of the lawn. A second set of irrigation heads, protected from mower damage within 12-inch-square concrete forms set flush with the ground, is also present within the courtyard (Figure 255).

Condition issues and problems identified with the turf and irrigation system during fieldwork conducted in October 2011 include:

- Turf damage. The turf is gouged in places.

- Weeds. There are several areas of weedy growth.
- Irrigation system. Several irrigation heads appear to have been damaged by mowers.



**FIGURE 255.** View west of one of the concrete slabs used to protect irrigation heads within the southwest courtyard. The irrigation head sits adjacent to the areaway retaining wall. The back of the mechanical lift is visible behind. Photograph by JMA, 2011.

Several window wells edge the south wing of the courthouse along its north, west, and south margins. The northern edge of the wing contains a single 67-inch-long window well surrounded by a band of dressed marble. An iron grille covers the well to protect the window. The western edge of the wing features three individual window wells edged by concrete surrounds. Two additional window wells are located along the southern margin of the south wing facing Market Street. These are also edged by a concrete surround. Metal grilles placed between the concrete surrounds and the building wall or over the windows protect the openings from falling material and birds (Figure 256).

Condition issues and problems identified with the widow wells during fieldwork conducted in October 2011 include:

- Damage. The marble surround is cracked and damaged in several places.



**FIGURE 256.** View east of three of the concrete-edged window wells along the south wing of the Old Courthouse within the southwest courtyard. Photograph by JMA, 2011.

Along Broadway there are three concrete slabs that serve as a base for floodlights installed to illuminate the Old Courthouse in 1997. The first is located 15 feet 11 inches from the perimeter wall along Market Street. It is 9 feet long and 42 inches wide and also supports three lights. The second is located north of the double-door gate. It is 48 inches long and 24-1/2 inches wide and supports two floodlights. The lights are 32 inches tall and 16 inches square. The third concrete slab is located in the corner of the fence near the intersection of Broadway and Market streets. There are no features associated with the slab that was once associated with floodlights used to light the building exterior.

Air conditioning units are currently housed in the courtyard along the northern margin of the south wing. They are placed on concrete pads.

Condition issues and problems observed in association with the air conditioning units in October 2011 include:

- Dislodged. One of the air conditioning units located in the courtyard has been knocked off of its concrete base by a mower.

## Northwest Courtyard



**FIGURE 257.** Panoramic view of the northwest courtyard. Photograph by JMA, 2011.

The northwest courtyard is edged by Broadway and Chestnut streets (Figure 257). It features an Ionic column edged by ornamental plantings as a focal point, as well as areaways, turf, an irrigation system, an identity sign and plaque, and floodlights. Ornate double-door wrought iron gates provide access into the courtyard from Broadway, while a single gate set within the fence along Chestnut Street offers a secondary entrance into the courtyard.

The Ionic capital that sits in the center of the courtyard was rescued from one of the buildings demolished to create Jefferson National Expansion Memorial. The carved stone object measures 3 feet 9 inches by 4 feet 4 inches in plan, and stands approximately 4 feet tall. The column is set 27 feet 10 inches from the fence along Chestnut Street, and 26 feet 9 inches from the fence along Broadway. It is set within a circular planting bed (Figure 258).

Condition issues and problems observed in association with this courtyard in October 2011 include:

- Ponding. The top of the Ionic capital is relatively level and water tends to pond on

the top, which may lead to freeze-thaw and water penetration problems.



**FIGURE 258.** View southeast of the Ionic capital in the northwest courtyard. Also visible are the daylily plantings associated with the column. Photograph by JMA, 2011.

The planting bed that surrounds the Ionic column is composed of slightly mounded earth contained by a circular application of steel garden edging. Stella d'Oro daylilies (*Hemerocallis 'Stella d'Oro'*) and rose (*Rosa* sp.) shrubs are planted in the bed. An upright is set within the planting bed (refer to Figure 258).

Condition issues and problems observed in association with the plantings in October 2011 include:

- **Metal edging.** The metal edging that contains the central planting bed is not a heavy enough grade for the size of mowers used to maintain the courtyard turf. It has been damaged in several places by the mowers.
- **Weeds.** The planting bed is filled with weeds.

There are two areaways associated with the northwest courtyard. Like the areaways described previously, these sunken walks are formed by limestone block retaining walls that parallel the building exterior. The space is paved with concrete and provides access to basement doors and provides light for the basement windows. The two areaways follow the northern edge of the west wing and the eastern side of the north wing. The walls are constructed of limestone blocks topped with a thinner coping stone that overhangs the wall slightly to prevent water infiltration.

The wall that parallels the west wing is approximately 2 feet 10 inches wide. A flight of concrete steps, edged by a marble threshold at the top, provides access to the 4 foot 10 inch wide concrete walk below. Pipes extend through the wall that serve as weepholes to relieve hydrostatic pressure behind the wall. There are drainage structures set within the concrete walkway to convey rain- and storm water. A door opens into the building midway along the walk. A metal grate covers the door opening, and the landing is edged by galvanized steel flashing. Stored near the corner of the west and north wings is a utility box or air conditioning unit.

The second areaway edges the north wing to its west. A flight of marble steps extends between the street level and the areaway. A 45-inch-tall wrought iron gate restricts access to the courtyard and the basement-level walkway. The

2 foot 3 inch wide wall forms a U shape that follows the outline of the wing. Between the base of the wall and the building is a concrete walkway that varies from 3 feet 8 inches to 4 feet 4 inches in width. Two air conditioning units are stored within the areaway at the far southeastern corner of the wall. Nearby there is a door with an upper light. A window covered with a grille is also set within this wall of the Old Courthouse. Additional equipment and air conditioning units, as well as a smoker's outpost, are stored around the corner to the east. Three grated windows are located along the western facade of this wing of the building. The perimeter wall steps up approximately 9 inches height several times along its length (Figure 259).



**FIGURE 259.** View east along the areaway that parallels the north wing of the Old Courthouse in the northwest courtyard. Photograph by JMA, 2011.

Condition issues and problems observed in association with the areaways in October 2011 include:

- **Structural problems.** The limestone block wall is leaning in several locations, likely due to hydrostatic pressure.
- **Vegetative growth.** Vegetative growth is present along the base of the wall between the wall and the concrete walk. Biological growth is evident around the window openings.

- Repairs. Some of the limestone blocks in the wall are cracked, or displaced. Others have been replaced with other materials, such as brick and concrete.
- Concrete. The concrete exhibits problems with cracking, breakage, and spalling. The stairs that lead down to the concrete basement-level walkway are spalled and cracked.
- Marble. The marble steps that lead down into the basement-level concrete walkway from Chestnut Street are worn and cracked.

The northwest courtyard is maintained in mown fescue turf. Pop-up irrigation heads are in evidence in linear arrangements along the margins of the lawn. A second set of irrigation heads protected within 12-inch-square concrete forms set flush with the ground protects the system from mower damage.

Condition issues and problems observed in association with the turf in October 2011 include:

- Gouged turf. In front of the gates into the courtyard, the grass is worn and there is an irregular oval of exposed earth.

Two gates provide access into the northwest courtyard. A double-leaf wrought iron gate similar to those described in association with the other courtyards is positioned within the fence along Broadway. The paired gates provide an opening 8 feet 9 inches wide. The gates are hung from ornate square wrought iron posts anchored in the wall to either side (Figure 260). A single-door wrought iron gate provides access into the courtyard from Chestnut Street. It is also supported by ornate square wrought iron posts.



**FIGURE 260.** View of the double-leaf gate along Broadway associated with the northwest courtyard. Photograph by JMA, 2011.

Condition issues and problems observed in association with the gates in October 2011 include:

- Evidence of repair. The concrete curbing that edges the granite base of the fence has been obviously repaired near the corner at Broadway and Chestnut streets, but remains damaged.

Floodlights that illuminate the courtyard are set on concrete pads along the interior of the fence that edges Broadway. The first concrete pad is located 12 feet 5 inches from the portico cheekwall. It is 4 feet 10 inches long. Two metal floodlights are mounted on the concrete pad. The second set of lights is located 21 feet 1 inch from the fence edging Chestnut Street. The pad is 9 feet long and 42-1/2 inches wide. There are three metal floodlights mounted on the pad. A third concrete pad is located in the corner of the fence near the intersection of Broadway and Chestnut streets. There are no features associated with the pad that was once associated with floodlights used to light the building exterior.

Signage and a plaque are mounted on the exterior of the fence that surrounds the northwest courtyard. An identity sign is mounted on the fence above the two-light

concrete pad near the intersection of Broadway and Chestnut streets (Figure 261). The plaque, which recognizes the Dred Scott case that occurred within the Old Courthouse, is cast bronze, 20 by 16-1/2 inches in size, and mounted approximately 10 feet from the portico cheek wall (Figure 262).



**FIGURE 261.** View of the identity sign mounted on the fence of the northwest courtyard. Photograph by JMA, 2011.



**FIGURE 262.** View of the plaque mounted on the fence of the northwest courtyard along Broadway. Photograph by JMA, 2011.

There is a metal manhole cover set within the lawn of the northwest courtyard. It is located near the western end of the cheekwall that follows the western portico of the courthouse.

## Landscape Analysis

### Introduction

One of the keys to safeguarding the integrity of significant historic landscapes is identifying the character-defining features that, individually or collectively, contribute to its sense of time and place. Character-defining features often convey historic, architectural, or cultural values that can be attributed to a significant period or individual. They also may contribute to the significance of a property in accordance with the National Register of Historic Places.

The pages that follow identify the character-defining and contributing features of the Old Courthouse landscape based on historical research, landscape chronology and period plan development, and documentation of existing landscape conditions. The resulting understanding of how landscape features have defined and characterized the historic Old Courthouse grounds over time provides a foundation for the *Historic Structure Report: Special Issues* study cultural landscape treatment recommendations.

It is important to note that the majority of the features present on the Old Courthouse grounds are representative of a mid-twentieth century effort conducted by the National Park Service to partially restore the landscape as it appeared during the middle to late nineteenth century. Very little of the original nineteenth century landscape survives today due to an extensive period of decline that occurred between the 1880s and National Park Service acquisition of the property in 1940. The National Park Service used historic photographs, maps, and plans as the basis for restoration plans to reestablish missing features. Some, but not all, of the historic features visible in historic photographs were replaced, and non-historic materials were used in the construction of several restored resources. Thus, while the restored landscape

may possess most of the character-defining elements of the nineteenth century historic landscape at a macro level, several differences distinguish the twentieth century landscape from its historic counterpart.

The first section of the narrative below provides an illustrated inventory of the character-defining features and qualities of the Old Courthouse grounds. The second section identifies the features that contribute to the significance of the historic landscape. Contributing features are defined as those extant landscape resources that survive with integrity from the proposed 1845–1930 period of significance. The third section identifies those features that have been added to or substantially changed since the period of significance. For the most part, these changes can be attributed to efforts conducted by the National Park Service in the late 1950s to rehabilitate the landscape of the Old Courthouse grounds to more accurately reflect historic conditions, and to accommodate contemporary needs, including the provision of universal accessibility and grounds maintenance.

### **Character-defining Features of the Old Courthouse Grounds**

The physical characteristics and qualities that have defined the character of the Old Courthouse grounds throughout its history are listed below and illustrated on the map with keyed photographs that follows (Figure 263).

- The Old Courthouse as a prominent, civic, monumental structure that occupies the center of a dedicated city block
- Wide (brick) sidewalks that line each of the perimeter streets
- A stone and wrought-iron fence, connected to extensions of the cruciform building, that forms a continuous edge to the city sidewalks and contains an open courtyard space at each corner of the building
- The use of a curved form for the stone and wrought iron fence as it meets the cheekwalls of the entrance into the Old Courthouse along Fourth Street
- Broad stone steps, edged by local limestone block cheekwalls, that lead to prominent porticos located along the eastern and western facades of the Old Courthouse
- Columned porticos elevated above the surrounding grade of the sidewalk and building courtyards, suggesting the civic importance of the building
- Views afforded from the porticos to the Mississippi River to the east and the city of St. Louis to the west
- An iconic reciprocal view between the Old Courthouse and the Mississippi River, later emphasized through the placement of the Gateway Arch
- Prominent views of the courthouse as part of the city skyline
- Courtyard spaces characterized by low planar treatments featuring grass turf, plantings, and a central focal point
- Ornamental objects, including a sundial and fountain, featured as focal points in the courtyards
- Local limestone retaining walls that establish areaways providing access to the building's basement level, generally hidden from public view
- Iron grilles that decorate and protect the windows of the lower floors

**Features that contribute to the significance of the Old Courthouse property.**

The features listed below were established during the 1845–1930 period of significance and survive with integrity. As such, they are assessed as contributing to the National Register-level significance of the Old Courthouse grounds.

- The Old Courthouse (survives from the historic period of courthouse use)
- Porticos accessed via stairs edged by cheekwalls (survive from the historic period of courthouse use). The original limestone stairs were replaced with granite by the National Park Service in the 1950s (rehabilitated by the National Park Service)
- Areaway walls and access stairs (survive from the historic period of courthouse use)
- Wrought iron sundial (survives from the historic period of courthouse use)
- Marble-edged window wells (survive from the historic period of courthouse use)
- Street system with numbered streets in north/south direction and streets with tree names running in east/west direction (survive from the historic period of courthouse use)
- Fountain (rehabilitated by the National Park Service to reflect historic conditions)
- Turf panels (rehabilitated by the National Park Service to reflect historic conditions)
- Iron window grilles (rehabilitated by the National Park Service to reflect historic conditions)
- Joseph Pulitzer plaque (1947)
- Column capitals rescued from demolished structures are placed in the northeast and northwest courtyards as focal points (1963)
- Flower beds established by a local garden club (1986)
- Irrigation systems installed in the courtyards (1985, 1988)
- Floodlights installed to illuminate the courtyards (1997)
- Mechanical lift installed, and later replaced, in the southwest courtyard to accommodate universal accessibility (2007, 2011)
- Dred/Harriet Scott commemorative statue installed along the Fourth Street walk (2012)

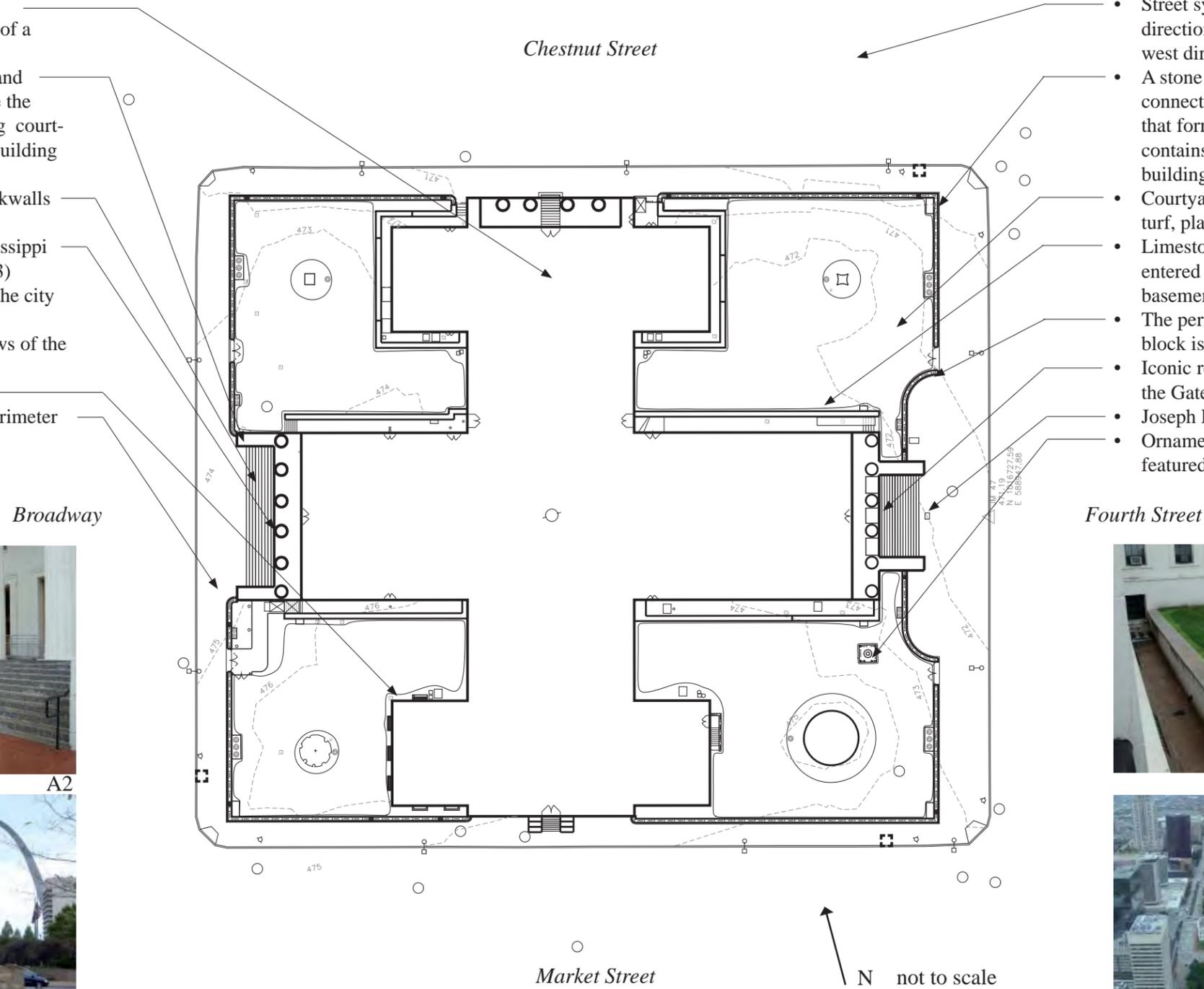
**Features that post-date the 1845–1930 period of significance.**

- Brick sidewalks (rehabilitated by the National Park Service to reflect historic paving patterns)
- Perimeter granite wall and wrought iron fence with gates (rehabilitated by the National Park Service to reflect historic conditions)

## Character-defining Features of the Old Courthouse Grounds

- The Old Courthouse, as a prominent, civic, monumental structure that occupies the center of a dedicated city block (A1)
- Prominent columned porticoes on the eastern and western facades of the building elevated above the surrounding grade of the sidewalk and building courtyards, suggesting the civic importance of the building (A2)
- Broad granite stairs with limestone block cheekwalls lead to the porticoes. (A2)
- Views afforded from the porticoes to the Mississippi River to the east and to the city to the west (A3)
- Prominent views of the Courthouse as part of the city skyline (A4)
- Iron grills that decorate and protect the windows of the lower floors (A5)
- Marble-edged window wells (A5)
- Wide (brick) sidewalks that line each of the perimeter streets (A6)

- Street system with numbered streets in north/south direction and streets with tree names running in east/west direction (A7)
- A stone and wrought-iron perimeter fence with gates, connected to extensions of the cruciform building, that forms a continuous edge to the city sidewalks and contains an open courtyard space at each corner of the building (A8)
- Courtyards characterized by low planar treatment, grass turf, planted borders, and a central focal point (A9, 14)
- Limestone retaining walls that establish areaways entered by stairways that provide access to the building basement and generally hidden from public view (A10)
- The perimeter fence along the center of the Fourth Street block is recurved to meet the cheekwalls (A11)
- Iconic reciprocal view between the Old Courthouse and the Gateway Arch (A12)
- Joseph Pulitzer plaque (A13)
- Ornamental objects, including a sundial and fountain, featured in the courtyards (A14)



A1



A2



A3



A4



A5



A6



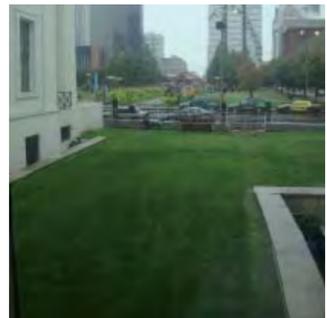
A7



A8



A8



A9



A10



A11



A12



A13



A14



A14



## Analysis of Impacts on the Cultural Landscape from the CityArchRiver 2015 Plan

This section is intended to consider the potential impacts of proposed design concepts included in the winning design prepared by Michael Van Valkenburgh Associates (MVVA) for *CityArchRiver 2015* (CAR) on the Old Courthouse cultural landscape. The CAR plan, as well as several related documents, formed the basis for evaluating the proposed design concepts. These documents include:

- *CityArchRiver 2015 Design Decision Map*, Michael Van Valkenburgh Associates, Inc., Landscape Architects, PC, May 17, 2011.
- *Value Analysis Study, CityArchRiver 2015, Museum of Westward Expansion/Gateway Arch Visitor Center and The Old Courthouse Accessibility, Value Analysis Final Report #1 Rev 3*, prepared by Kirk Associates for the National Park Service, January 18, 2012.
- *Value Analysis Study, CityArchRiver 2015, Luther Ely Smith Square/Gateway Mall Connection, Processional Walks, and Historic Landscape, Value Analysis Draft Report #3*, prepared by Kirk Associates for the National Park Service, September 18, 2011.
- “Circulator Memo,” CAR 2015, Michael Van Valkenburgh Associates, Inc., Landscape Architects, PC; Arup USA, Inc.; Draft, May 2011.
- “Arch Parking Garage” memorandum, CityArchRiver 2015, URS, May 16, 2011.
- “Development of a Conceptual Storm water Master Plan and Pond Water Quality Assessment for the JNEM Grounds” memorandum, LimnoTech, May 13, 2011.
- “Hydraulic Evaluation of Multiple Grading Scenarios along Leonor K. Sullivan Boulevard” memorandum, LimnoTech, May 16, 2011.

Review of the documents listed above was conducted to determine potential impacts on the significant character-defining features of the Old Courthouse cultural landscape. The evaluation that follows focuses primarily on the first three items indicated above: the Design Decision Map and the value analysis reports. The remainder of the documents made available for review address conditions that are not anticipated to have an impact on the cultural landscape of the Old Courthouse.

### Considerations

As noted in the 1996 Cultural Landscape Report for the Gateway Arch, the characteristics considered essential to conveying the importance of the landscape shared by the Arch and the Old Courthouse include:

- Spatial organization, which includes the axial relationship between the Arch and the Old Courthouse;
- The buildings and structures, which include the Arch and the Old Courthouse;
- The views connecting the Arch and the Old Courthouse; and
- Circulation networks, such as the sidewalks connecting the Arch to the city.

These conditions were primary considerations in the evaluation of the proposed design and value analysis documentation provided to the HSR team by the National Park Service.

## Evaluation of CityArchRiver 2015 Design Decision Map and CityArchRiver 2015 Value Analysis Reports

The CAR Design Decision Map document includes three elements with the potential to impact the cultural landscape. These elements are:

- Park-wide circulation proposals;
- The tree plantings proposed for Luther Ely Smith Square, which have the potential to affect views and viewsheds; and
- Accessibility improvements to the Old Courthouse grounds.

Each of these elements is considered individually below based on review of the CAR Design Decision Map and the alternatives presented in the value analysis reports. The alternatives explored during value analysis workshops suggest different ways to modify the original MVVA design to meet evolving needs and were based on charrettes conducted in support of the process.

Included in the value analysis reports are details of the original design concept for CityArchRiver 2015 (Figure 264), which shows proposed treatments for the square and the Old Courthouse grounds.



**FIGURE 264.** CityArchRiver 2015 winning design competition concept, MVVA, 2011. Source: National Park Service, value analysis reports for CityArchRiver 2015.

## Park-wide Circulation Proposals

The CityArchRiver 2015 plan suggests three alternatives for Park-wide Circulation. They include:

1. Do nothing, use existing processional walks
2. Use existing processional walks and add paved and mown secondary paths
3. Use existing processional walks and add paved and mown secondary paths, and a bikeway

The report suggests the factors to be considered in developing the alternatives:

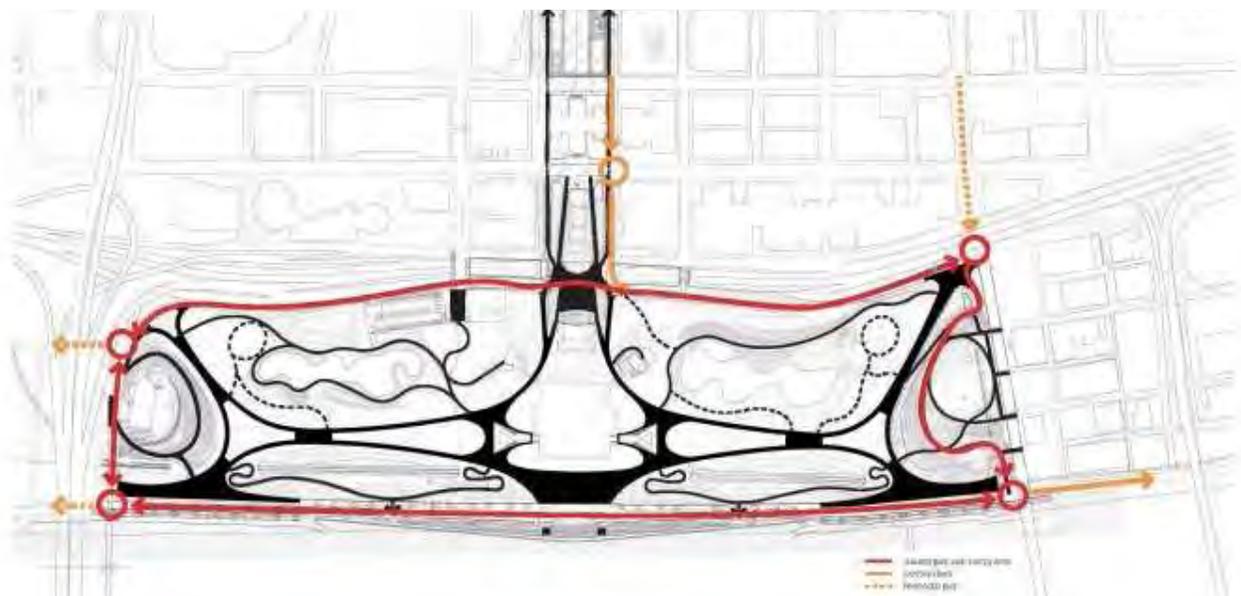
- Accessibility and seating improvements
- Impact on historic landscape
- Access to existing and proposed program
- Connection to existing and future bike networks
- Accommodation of a proposed circulator

### Evaluation.

**Brick sidewalks.** All three of the proposals suggest maintaining and incorporating the

park's existing "processional" walks, which include the city sidewalks that extend east-west between the Arch and the Old Courthouse. These proposals are therefore not anticipated to diminish the integrity of the Old Courthouse historic landscape. Consideration should be paid in all future plans to maintaining the existing wide brick sidewalks of the Old Courthouse grounds to ensure perpetuation of this character-defining feature.

**Luther Ely Smith Square paths.** Two of the options suggest adding a secondary path system to Luther Ely Smith Square (Figure 265) that would lead through the interior of the park and provide two parallel connections to Fourth Street that would align with the edges of the Old Courthouse portico. This option provides visitors with an opportunity to experience the gardens and other elements of the square, while continuing to defer to the regulating lines of the Old Courthouse building. This option does not detract from the cultural landscape of the Old Courthouse, and may encourage visitors to engage the building more fully than if they were simply traveling east-west along the urban sidewalk.



**FIGURE 265.** CityArchRiver 2015 Design Decision Map illustration of proposed park-wide circulation, including bike paths and circulator, MVVA, 2011.

Work on this project has suggested that consideration be paid to coordinating design decisions within the Luther Ely Smith Square with HSR proposals to use geothermal heat sources potentially tapped from the square.

Review of the *Value Analysis Draft Report #3 for the Luther Ely Smith Square/Gateway Mall Connection, Processional Walks, and Historic Landscape* indicates that the design has been refined further since the original plan was prepared. Figure 266 illustrates the present design for Luther Ely Smith Square, which resulted from the August 2011 value analysis workshop. The configuration of paths and planting beds appears to support access to the Old Courthouse grounds, while also maintaining open views toward the Mississippi River and the Arch, helping to perpetuate key character-defining features of the Old Courthouse cultural landscape.



**FIGURE 266.** Preferred alternative for Luther Ely Smith Square site layout, *Value Analysis Report #3*, National Park Service, 2011.

***Bikeway/Circulator.*** One of the options included in the circulation system design is the establishment of a bikeway and circulator along Chestnut Street (refer to Figure 265). It is not clear from review of the document draft “Circulator Memo,” CAR 2015, MVVA, Arup USA, Inc., May 2011, what improvements to the Old Courthouse cultural landscape would be required to implement these proposed elements. The memo describes implementation of a circulator (public transportation system to convey visitors around the park) that would primarily traverse the eastern part of the park along the river margin.

Should the circulator be included in the final design, gestures intended to protect the cultural landscape of the Old Courthouse should include limiting the number of signs, and avoiding physical changes to or deterioration of character-defining features, such as the brick sidewalk.

## Luther Ely Smith Square/Gateway Mall Connection Proposals

The value analysis report for the Luther Ely Smith Square/Gateway Mall Connection indicates the following regarding the MVVA team's design of this area:

A significant element of the winning MVVA team completion scheme was the conceptual design for the Luther Ely Smith Square/Gateway Mall Connection. The dramatic approach into the Arch grounds along the Gateway Mall is an essential part of the JNEM experience. To strengthen this connection, the CAR 2015 design includes a four block long pedestrian priority corridor with narrowed streets, widened sidewalks, and a greener, shadier streetscape. Subtle modifications to the landscapes flanking the old Courthouse will attract activity to this landmark; this reinforced relationship with downtown will allow the monument to "borrow" amenities, in effect supplementing and diversifying on-site programming.

The renovations of Luther Ely Smith Square and Kiener Plaza are essential to promoting greater connectivity. The Luther Ely Smith Square will be a core civic space connecting two of the city's most important cultural institutions without the current obstruction of Memorial Drive and noise from the I-70 trench.<sup>175</sup>

The original plan was further refined through a value analysis workshop. As part of the process, factors to be considered in the development of alternatives included:

- Effect on viewshed along the Saarinen-Kiley axis
- Relationship to existing allée-walks

---

175. National Park Service, *Value Analysis Study CityArchRiver 2015, Luther Ely Smith Square/Gateway Mall Connection, Processional Walks, and Historic Landscape*, Draft Report #3, September 18, 2011, 5.

- Relationship to original design intent
- Accommodation of comfortable seating

Four alternatives resulted for the design of Luther Ely Smith Square. The alternatives presented in the Design Decision document for reinforcing the connections between the riverfront and the Old Courthouse are shown in Figure 267. They include:

1. Build pathways that lead toward the courthouse steps. Edge them with an interior row of trees, and connect the new tree rows with the existing allée-framed walks
2. Build pathways that lead toward the courthouse steps. Edge them with an interior row of trees, but do not connect the new tree rows with the existing allée-framed walks
3. Build pathways that lead toward the courthouse steps. Do not add an interior row of trees, but extend the existing allée-framed walks to the new walks
4. Build pathways that lead toward the courthouse steps. Do not add an interior row of trees, or extend the existing allée-framed walks to the new walks.

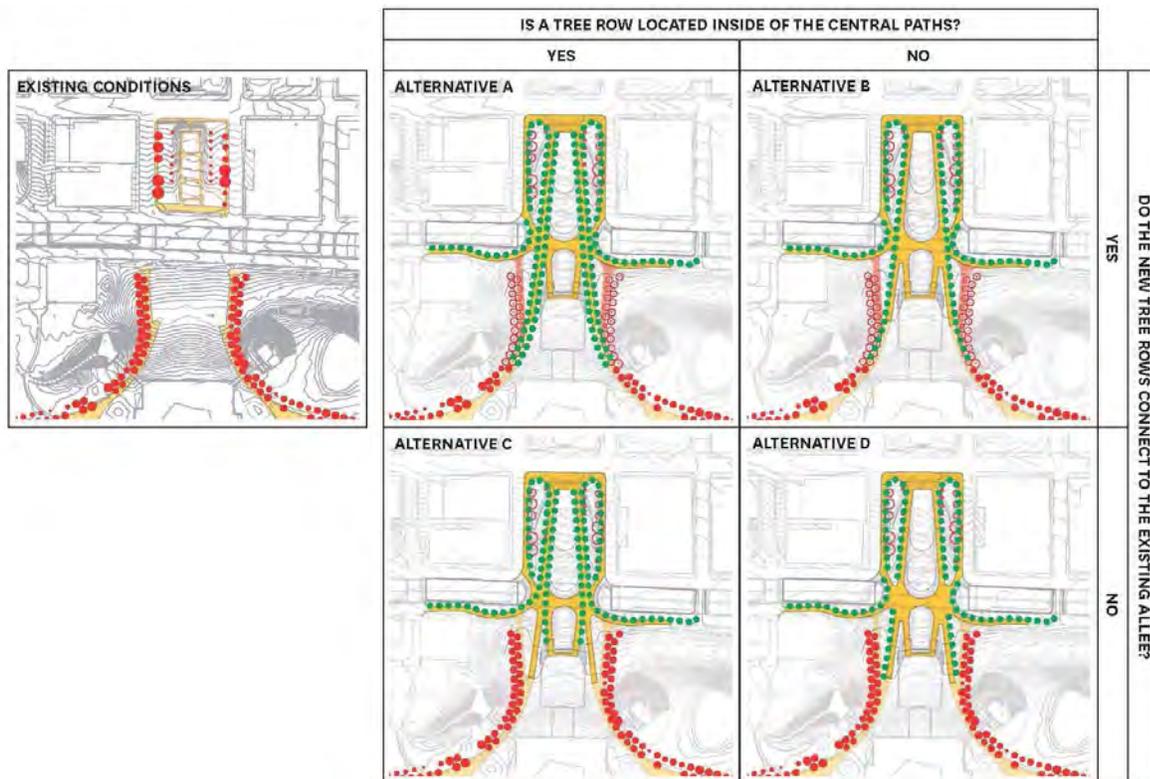
The value analysis report relating to the Old Courthouse accessibility improvements is also important to the evaluation of these proposed alternatives. It suggests that a goal for this area is also to enhance the view to the Old Courthouse from the Arch (see *Value Analysis Study CityArchRiver 2015, Museum of Westward Expansion/Gateway Arch Visitor Center and The Old Courthouse Accessibility*, Final Report #1 Rev 3, January 18, 2012, page 9).

**Evaluation.** Review of the plan view and sketch up drawings of proposed visual and physical alternatives for enhancing the Gateway Mall Connection provided in the Design Decision Map report suggests that new rows of trees be

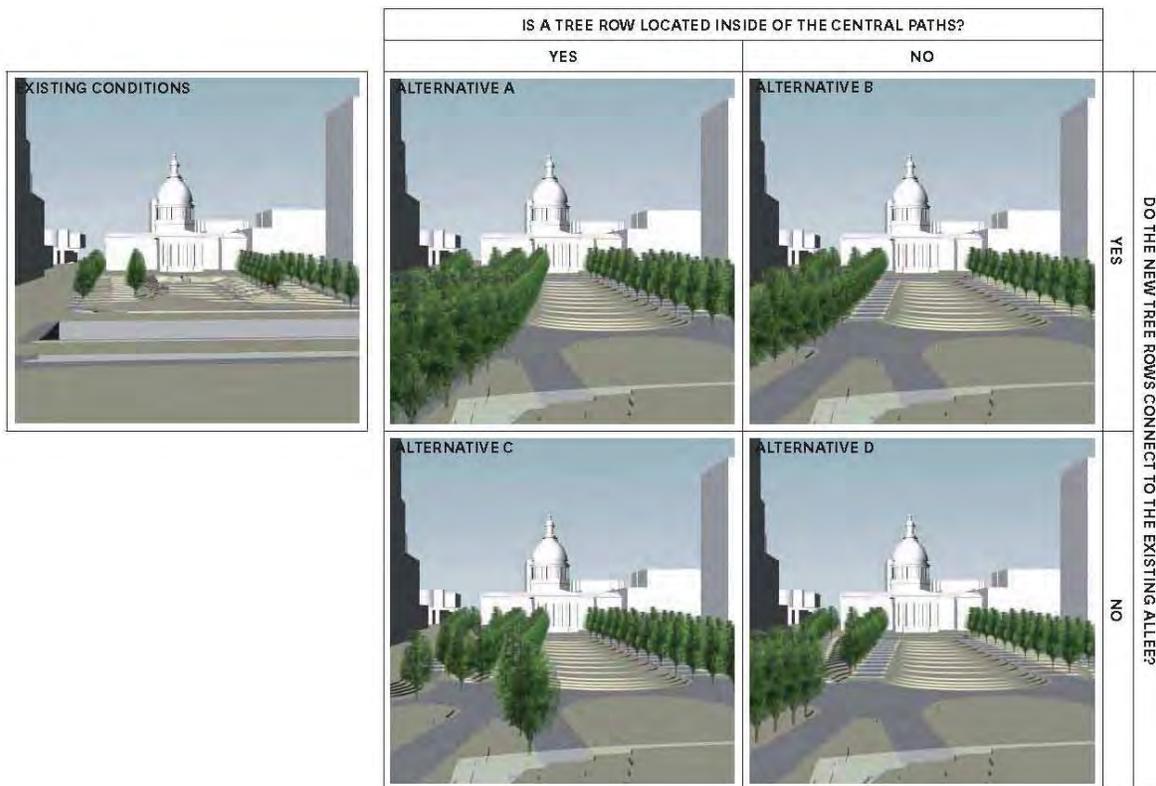
planted within Luther Ely Smith Square in a variety of possible locations and configurations (Figure 267 and Figure 268).

Review of the alternatives suggests that planting rows of trees in the interior of the Luther Ely Smith Square will diminish the availability of views between the Old Courthouse and the Gateway Arch, and of the Old Courthouse from city blocks to the east. The view of current conditions suggests that the use of taller or larger trees along the north-south sidewalk margins and smaller flowering trees in the central portion of the park affords the best visibility of the Old Courthouse building. Given

the role of the building historically in the city’s skyline and as a point of reference, as well as the desired direct axial relationship between the Gateway Arch and the Old Courthouse, the alternative best suited to protecting the cultural landscape of the Old Courthouse is Alternative D, which suggests the construction of pathways to the Old Courthouse steps without planting an interior row of trees, and avoiding the connection of new tree rows and existing allée-walks. Maintaining existing conditions is also a viable option.



**FIGURE 267.** Options for the Gateway Mall Connection involving tree plantings and paths, Red dots represent existing trees. Open red circles represent existing trees proposed for removal. Green dots are proposed new tree plantings. Design Decision Map, MVVA, 2011.



**FIGURE 268.** Options for the Gateway Mall Connection involving tree plantings and paths, Design Decision Map, MVVA, 2011.

**Accessibility Improvements that broaden interpretive programming**

The CityArchRiver 2015 Design Decision Plan suggests four alternatives for ensuring enhanced Old Courthouse Accessibility. They include:

1. Replacing the existing lift with an improved mechanical lift at the west entry
2. Installing masonry ramps that will provide access to the east and west porticoes and main entries (including two new limited use, limited application (LULA) elevators)
3. Installing a masonry ramp at the west portico and entry and a ramp to a new entry at the northeast hyphen (and two new LULA elevators)
4. Installing a masonry ramp at the west portico and entry and a lightweight ramp at the southeast courtyard that provides access to the east portico and entry (and two new LULA elevators)

Factors to be considered in the alternatives include:

- Impact to historic resources of the building
- Safety and egress
- Engagement of interpretive programming/universal design principles
- Potential for improved access to retail/exhibit program
- Alignment with the tenets of universal design

Points of interest included in the plan include the fact that the southern half of the block is higher in elevation than the northern half. Affording entry through the southern courtyards (southeast and southwest) would offer an advantage due to the need for a shorter run of ramp to access the building entrance.

Also noted in the plan is the proposed hallway concept from the 2009 Gateway Mall Master

Plan that suggests widening the sidewalk on the north side of Market Street.<sup>176</sup>

The use of ramps to reach the east and west porticoes would also have to be accompanied by the establishment of new platforms at the building entries to afford access to the building's finished floor elevation. In the design alternatives, these platforms are shown extending the length and width of the portico floor between the columns and the entrances, which will have a modest visual impact on the historic building, or as shorter segments placed near the doorways. The material to be used to establish these platforms is not indicated, rendering further evaluation of these features difficult.

**Evaluation.** The four alternatives presented were evaluated in more detail as part of the value analysis for Old Courthouse accessibility conducted as part of the CityRiverArch 2015 design process.<sup>177</sup> Review of the various alternatives suggested a fifth solution, a modification of the second alternative that replaces the masonry ramps with lightweight metal structures (Figure 269).

This alternative is by far the most appropriate solution to protect the cultural landscape of the Old Courthouse. The use of lightweight, removable (and thus reversible), metal ramps located along the southern margins of the Old Courthouse's east and west wings is by far the least intrusive approach relative to the character-defining resources of the cultural landscape that still provides barrier-free access to the portico

level. These ramps would either meet the elevation of proposed new platforms, or the existing portico elevation. This alternative shows the portico-length platforms replaced with smaller ramp features placed at the east and west building entrances to afford universal access to the finished floor elevation from the portico (Figure 269).

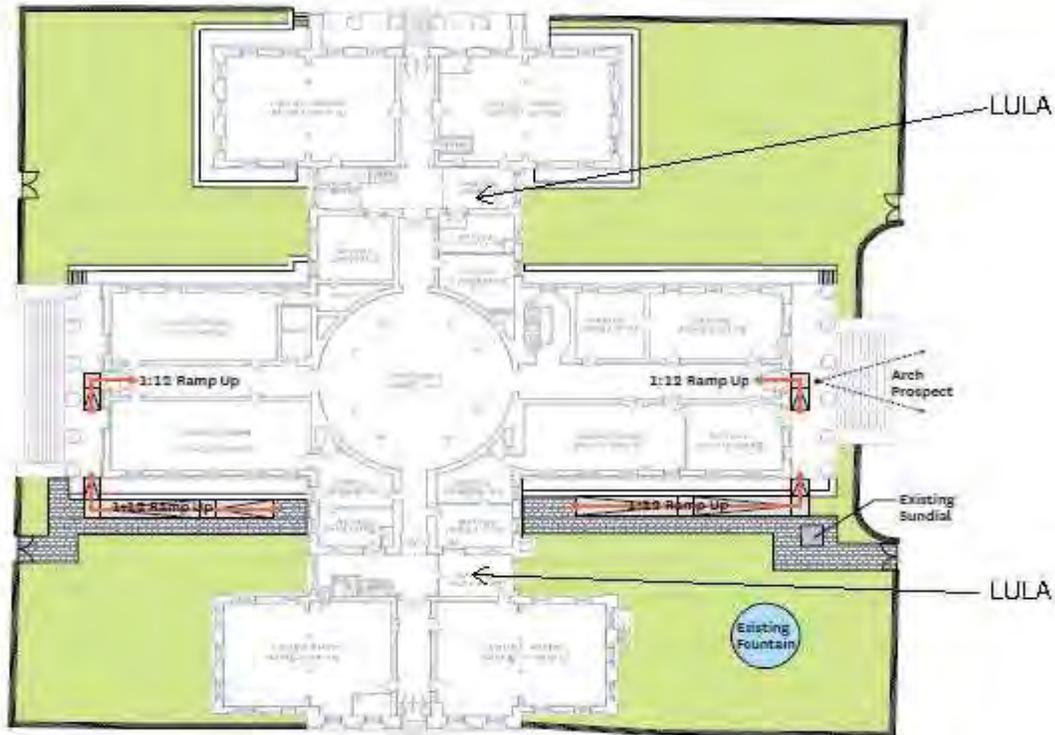
---

<sup>176</sup> City of St. Louis Planning and Urban Design Agency, "2009 Gateway Mall Master Plan" (St. Louis, Missouri: City of St. Louis, July 2007.) Available online at [http://stlouis-mo.gov/government/departments/planning/documents/upload/mp\\_gwmall\\_20091215.pdf](http://stlouis-mo.gov/government/departments/planning/documents/upload/mp_gwmall_20091215.pdf)

<sup>177</sup> National Park Service, *Value Analysis Study CityArchRiver 2015, Museum of Westward Expansion/Gateway Arch Visitor Center and The Old Courthouse Accessibility*, Final Report #1 Rev 3, January 18, 2012.

Original Design Proposed Design Alt. 2A

Alternative 2 & 2A



Note: Include small infill platforms to allow access to rooms from corridor

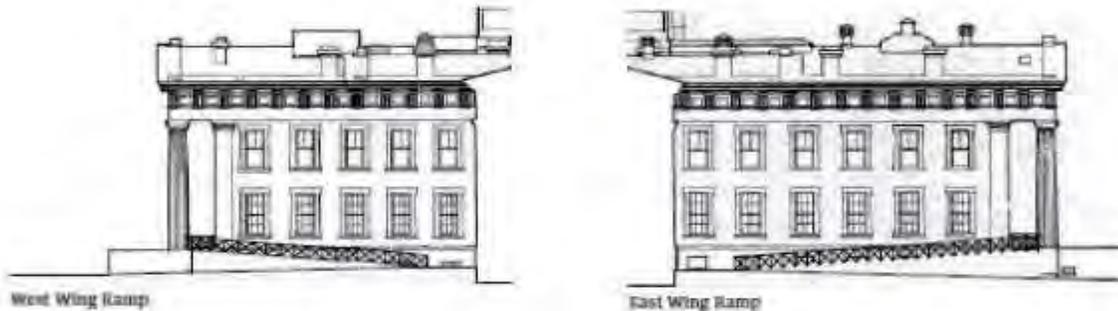


FIGURE 269. Plan and elevation views of Accessibility Alternative 2A, value analysis report, National Park Service, 2011.

This option maintains as much of the courtyard space intact as possible, is consistent with the building and grounds *parti* in terms of orientation and alignment, is reversible, and leaves a light visual imprint that is confined to the southern edges of the east and west wings, which are less conspicuous given their location at the edge of the building where they can only be seen from the perimeter fence, or by visitors

accessing the courtyard to use the ramp. This option also allows visitors to enjoy the significant view to and through the Gateway Arch from the east portico and toward the city to the west.

This option is also supported by the value analysis report as the preferred alternative.

The goals for selecting a preferred alternative for Old Courthouse accessibility indicated in the *Value Analysis Final Report #1* included:

1. Create public and staff access;
2. Meet legal requirements for liability;
3. Be least impactful to the historic courthouse;
4. Maintain views for east and west porticos;
5. Minimize impact to courthouse historic fabric.<sup>178</sup>

The value analysis indicates the advantages of the preferred alternative as selected (Alternative 2A) as follows:

- Much better universal accessibility (both east and west entries)
- Better at protecting courthouse fabric
- Much better at preserving visual appearance of the historic courthouse
- Much better reversibility
- Much better respect for cultural landscape
- Much better visitor acceptance and use of ramps<sup>179</sup>

Review of the other options suggests that they are less viable due to their intrusiveness on the historic landscape, and because they meet the accessibility objective of offering a more inviting approach to the building than a lift or elevator. Alternative 2 features the use of masonry ramps. The heaviness and lack of reversibility of masonry ramps is far more intrusive to the historic southern courtyards than the metal ramps suggested in Alternative 2A.

Alternative 3 suggests the inclusion of two masonry ramps, one in the southwest courtyard and the other in the northeast courtyard. The

ramp in the southwest corner is similar in location to the one indicated in Alternative 2A above, although it is proposed to be of masonry construction and is therefore more intrusive and less reversible. The ramp in the northeast courtyard would lead to a new entrance into the northeast hyphen (Figure 270). Also proposed to be of masonry construction, the ramp in this alternative is moderately obtrusive due to its location along the northern edge of the east wing. It also does not provide access to the primary entrance and desired viewshed. It is therefore less desirable than Alternative 2A.

Alternative 4 includes two ramps, a masonry ramp in the southwest courtyard and a V-shaped metal ramp in the southeast courtyard. The same concerns raised above for the masonry ramp in the southwest courtyard apply to this alternative. The lightweight form of the ramp in the southeast corner is preferable to a masonry ramp. However, its location, which extends over a large portion of the courtyard, is very intrusive, disrupts the historic patterns of spatial organization, and interferes with views of the historic sundial and fountain features (Figure 271).

Both Alternatives 5 and 6 require the construction of elevators and lead to loss of historic building fabric associated with the Old Courthouse. Because they do not support the goals of the project that include protecting the historic resource, they have not been considered further herein.

---

178. Ibid. 79.

179. Ibid., 78.

Alternative 3



West Wing Ramp

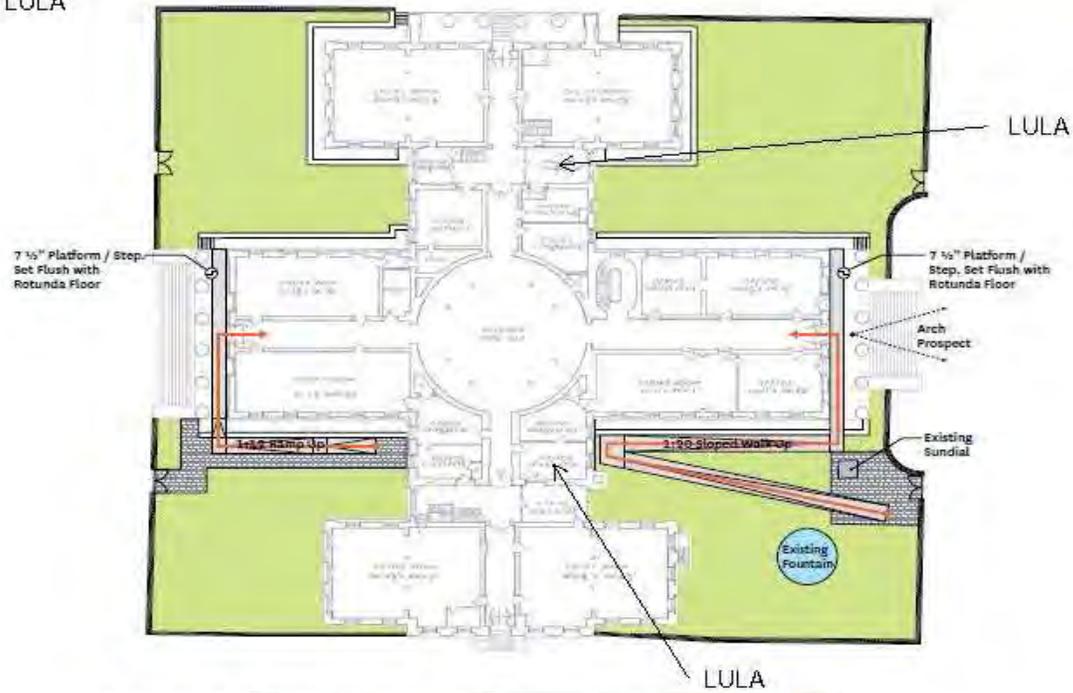


East Wing Ramp

**FIGURE 270.** Alternative 3 suggests the establishment of a new ramp in the northeast courtyard that provides access to the north wing hyphen. National Park Service, *Value Analysis Report, Museum of Westward Expansion/Gateway Arch Visitor Center and The Old Courthouse Accessibility, Final Report Rev 3*, January 18, 2012

Alternative 4

LULA



West Wing Ramp



East Wing Sloped Metal Walkway

**FIGURE 271.** Alternative 4 for enhancing universal access to the Old Courthouse includes a V-shaped ramp in the southeast courtyard. National Park Service, *Value Analysis Report, Museum of Westward Expansion/Gateway Arch Visitor Center and The Old Courthouse Accessibility, Final Report Rev 3*, January 18, 2012.

## Treatment

### Recommended Treatment Approach

The four treatment approaches recognized by the Secretary of the Interior for historic properties—preservation, rehabilitation, restoration, and reconstruction—were considered in conjunction with the National Park Service’s management objectives to determine the treatment approach best suited for the Old Courthouse grounds landscape. Described in *The Secretary of the Interior’s Standards for Historic Properties* as forming the philosophical basis for responsible preservation practices that enable long-term preservation of a landscape’s historic features, qualities, and materials, these approaches are defined as:

**Preservation:** the act or process of applying measures necessary to sustain the existing form, integrity, and material of a historic property. Preservation includes stabilization work, where necessary, as well as ongoing preservation maintenance and repair of historic materials and features.

**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 removing features from other periods in its history and reconstructing missing features from the restoration period.

**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.<sup>180</sup>

Given the park’s objectives in managing the Old Courthouse grounds, which include addressing additional universal accessibility needs, maintaining a physical connection with Jefferson National Expansion Memorial as it evolves to reflect proposed design changes, and meeting current and projected future interpretive, functional, and maintenance and management goals, *rehabilitation* is recommended as the most appropriate overarching treatment approach for the Old Courthouse grounds landscape. Because rehabilitation is defined as the act or process of making possible a compatible use for a property, this approach allows for protection and enhancement of the site’s historic character and resources while carefully addressing the need for limited enhancement of interpretive opportunities, universal accessibility systems, maintenance, potential additional historic feature restoration, and enhanced visitor amenities.

Stabilization, protection, and preservation of historic resources are assumed under rehabilitation even when new uses are accommodated. Thus it will be important to respect and protect those features and qualities that have been identified as character-defining and contributing to the significance of the historic landscape. Additionally, areas of the landscape that are particularly sensitive to change and disturbance, such as sites of known and potential archeological resources, should be treated with great care. Any changes proposed for the historic courtyard areas should be preceded by archeological mitigation, and

---

180. Robert R. Page, Cathy A. Gilbert, and Susan A. Dolan, *A Guide to Cultural Landscape Reports: Contents, Processes, and Techniques* (Washington, D.C.: Department of the Interior, 1998), 82.

archeological resources should be preserved in situ unless proposed alterations and enhancement suggest excavation and associated mitigation.

The other treatment alternatives recognized by the Secretary of the Interior for the Old Courthouse grounds landscape were determined to be inappropriate for the following reasons:

**Preservation** is overly restrictive because it does not allow for the possible addition of new interpretive and universal access features, or other changes that may be warranted given the current management objectives of the National Park Service.

**Restoration** and **reconstruction** are not considered feasible approaches to be applied to the Old Courthouse grounds because they assume that sufficient documentation exists to accurately portray a lost historic condition. At this time, it does not appear that there are documentary sources detailed enough to support comprehensive restoration or reconstruction of the Old Courthouse grounds to a specific date or historic period, while removal of some features that post-date the period of significance is not recommended, particularly as they pertain to the provision of universal accessibility to the building interior.

### **Secretary of the Interior's Standards for Rehabilitation**

The following section summarizes the standards for rehabilitation espoused by the Secretary of the Interior for historic properties. The ten basic principles that comprise the standards are intended to help preserve the distinctive character of a site while allowing for reasonable change to meet new needs. The standards (36 CFR Part 67) apply to historic properties of all periods, locations, sizes, conditions, and uses. These standards create a baseline of guidance to which intended changes to the historic landscape

must be compared. These standards are neither technical nor prescriptive, but promote responsible preservation practices as follows:

- A property will be used as it was historically, or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
- The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
- Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
- Changes to a property that have acquired historic significance in their own right will be retained and preserved.
- Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
- Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
- Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that

cause damage to historic materials will not be used.

- Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
- New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
- New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

### Treatment Concept

The section that follows conveys an overarching vision or concept for landscape treatment at the Old Courthouse intended to address the management objectives identified as part of this project, while protecting and preserving significant historic resources. The treatment recommendations that follow this section convey the specifics of how to achieve the vision.

Through preparation of this *Historic Structure Report: Special Issues* study, the National Park Service hopes to advance two parallel and complementary resource management goals. The first is to manage the landscape to more closely approximate its historic character in a manner that is consistent with the portrayal of the building, and the second is to facilitate

visitor understanding and enjoyment of the resource by providing unrestricted universal access and enhanced interpretation. Also of importance is enhancing the sustainability of maintenance practices, while ensuring that resources are maintained in good condition. Because the Old Courthouse continues to play an important role in the civic life of the city of St. Louis, the HSR focuses on treatment actions that help to maintain the grounds with pride and care.

To meet these goals, the overarching approach to treatment of the Old Courthouse grounds landscape suggests promoting a balance between protection of the site's historic integrity and accommodation of contemporary visitor access and interpretation needs as well as sustainable land maintenance and management practices. The landscape treatments recommended herein are designed to improve the functionality, appearance, and visitor appreciation of previous periods of the site's history. The provision of suitable universal access systems that offer visitors an enjoyable experience, such as taking in the important views from the porticos, is one of the most important changes to the grounds currently under consideration. However, the provision of universal accessibility also has the potential to impact historic resources. Consideration of alternatives has been undertaken by the National Park Service as part of a value analysis conducted in July 2011. A preferred alternative has been selected that is considered the least visually intrusive and destructive to historic fabric, and also the most reversible. The treatment recommendations provided herein are intended to guide implementation of the preferred alternative in a way that is sensitive to the historic courthouse grounds and respectful of the site's character-defining features.

Interpretation is also considered. The treatment recommendations suggest that interpretation

should relate a broad story that includes an overview of courthouse and grounds use between 1826 and 1930, as well as National Park Service administration as part of Jefferson National Expansion Memorial.

Treatment recommendations also focus on the identification of maintenance and repair practices intended to enhance the appearance and cohesion of the designed historic landscape while promoting environmental stewardship. Over the past seventy years, evolving maintenance practices and the challenges of the urban environment have taken their toll on the character and condition of many landscape features. Minor adjustments, including changing the size of mowers used to maintain the turf, carefully rehabilitating or repairing features such as the brick sidewalk segments that are in degraded condition with in-kind materials, updating the irrigation system, improving the soil tilth and fertility, and revegetating unplanted and eroded areas will help return the courthouse grounds to a character that is consistent with the symbolic importance of the building. Additional protection, repair, and replacement in kind of historic features will also ensure that the grounds survive to delight future generations.

### **Treatment Recommendations**

- Repair features identified in fair to poor condition, including:
  - Brick sidewalk segments that are broken, cracked, and uneven. Use stockpiled original brick to repair the sidewalk in kind.
  - Areaway walls and coping stones that are leaning, cracked, and broken. Reset the walls so that they no longer lean, and address engineering needs to diminish hydrostatic pressure and prevent future problems. Ensure that area drains and

weepholes are clear and functioning. Identify a source to replace missing and broken stones in kind. Also replace repairs that have been made previously with incompatible materials. This project has already been identified by the park in a PMIS project statement (PMIS 25809).

- The marble steps leading to the areaways that are worn, cracked, and broken.
- The concrete retaining wall and stairs in the southeast courtyard.
- Segments of the perimeter fence, wall, and concrete curb that have been damaged.
- Rehabilitate the turf and address drainage concerns within the courtyards.
  - Prepare a grading and drainage plan that establishes positive drainage throughout each courtyard. Ensure that the grades at the gate entrances allow the gates to be opened without gouging the turf. Also consider the treatment of storm water conveyed in the building's downspouts in the design of the drainage plan. Consider incorporating an improved irrigation system that can be controlled with more precision, does not spray the building, and includes an underdrain system. This project has already been identified by the park in a PMIS project statement (PMIS 25809).
  - Conduct archeological investigation to serve as a mitigation measure for any soil disturbance associated with regrading and the establishment of irrigation and underdrain improvements within the courtyards.

- Conduct a soil test to determine the composition of courtyard soils and the need for amendments.
- Evaluate available turf varieties and blends for their appropriateness for use in the courtyards. Determine the best turf variety or blend to be used within each courtyard based on the light and soil conditions present. Locate sources for sod that match the requirements of each courtyard.
- Work to eradicate Bermuda grass and other invasive exotic species from the courtyards.
- Implement proposed grading, irrigation, and underdrain system. Follow with soil amendment and seeding or sodding the courtyards using the selected turf mix. This project has already been identified by the park in a PMIS project statement (PMIS 25809).
- Consider options for storing walk-behind lawn mowing equipment on site to avoid the use of wide riding mowers within the small spaces.
- Remove creeping euonymus from the planting beds in the northeast courtyard.
- Establish a groundcover, mulch, or new plantings to fill or cover the exposed earth strips that edge the perimeter wall and are associated with the narrow extensions of the courtyards along the north and south wings of the Old Courthouse.
- Consider working with a Friends group, such as the St. Louis Garden Club, to update and maintain the plantings within the courtyards. Expand and develop the plantings to reflect the civic spirit reflected by the Old Courthouse building, and the historic design of the courtyards. In particular, consider the perennial and shrub plantings that encircle each of the focal points within the courtyards as part of an overall planting scheme that provides an aesthetically pleasing foreground to the objects, seasonal interest, and a respectful and tidy appearance.
- Replace residential grade planting bed edging with an industrial quality material. Select a color for the edging material that blends with the adjacent planting bed.
- Consider updating the building's HVAC system in such a way that the equipment stored in the courtyards and areaways can be relocated. (Refer to the chapter on Mechanical and Electrical Issues herein for further discussion.)
- Consider implementing the preferred alternative for universal accessibility proposed in the July 12–14, 2011, *Value Analysis Study for the Museum of Westward Expansion/Gateway Arch Visitor Center & Old Courthouse Accessibility*. Ensure the protection of the historic areaways when establishing the new universal accessibility ramp structures. As part of this effort, replace the existing brick-stamped concrete walk with a simple concrete walk that leads through the courtyard to the proposed lightweight metal ramps. Integrate the design of the walk into the grading plan proposed for the courtyards. Consider setting the walk slightly below the grade of the turf that will edge it to the side opposite the courthouse building to diminish the visual impact of the walk. Incorporate simple black pole-mounted lighting into the design of the walks and ramps leading to the east and west porticos from the southeast and southwest courtyards to ensure visitor safety. In the southwest courtyard, remove

the planted berm, residential grade edging material, colored gravel, low bollard lighting, and dual gate feature that are not consistent in character with the historic landscape. Establish a low black wrought iron barrier along the edge of the walk to remind visitors to remain on the path and avoid walking in the courtyard.

- Remove the concrete pads in the corners of the courtyards that do not appear to support any current use.
- Retain and maintain the historic fountain in the center of the southeast courtyard, and keep it in good working order.
- Repair the two salvaged columns in the northeast and northwest courtyards that have been damaged by water penetrating the masonry. Correct the problem by covering the top of the column with a barrier material designed to shed water but not visible from the perimeter sidewalks.
- Repair the perimeter wall drain openings to their original condition and replace missing components, including screen covers. Maintain the openings clear and free of debris and trash.
- Evaluate the possibility of reintroducing street trees and wood or wrought iron tree guards along the perimeter of the courthouse square consistent with those present during the mid- to late nineteenth century.
- Enhance interpretive opportunities for visitors to understand the historic character and use of the Old Courthouse grounds, particularly during the nineteenth century. Provide removable interpretive signage in proximity to high-use areas, such as along the fence near the east and west porticos and inside the fence along Fourth Street, using historic images of the courtyards and

narrative text to illustrate the various public gathering activities that historically characterized the Old Courthouse grounds. Also illustrate the evolution of the landscape features over the course of the nineteenth century.

- Consider restoring the second sundial to the northeast courtyard.

## Cost Summary

The treatment recommendations provided above have been organized into four implementation projects. Estimates of probable costs for these projects are included herein.

For two of the projects, Class C (planning level) estimates of probable costs have been developed. Detailed breakdowns of the anticipated costs associated with the components of the projects are included in an appendix to this report. The other two projects have been considered by the National Park Service and entered into Project Management Information System, or have had their costs estimated as part of the CityArchRiver 2015 value analysis process. These are referenced herein, and the estimated costs indicated below for planning purposes.

The paragraphs that follow indicate the four proposed projects recommended for the Old Courthouse cultural landscape, and the associated summary costs.

### **Project 1: Rehabilitate the Old Courthouse courtyards**

This project entails removal of unused concrete pads, repair of concrete stairs in the southeast courtyard, soil testing, soil amendments, grading, installation of an underdrain and irrigation system, and planting, mulching, and sodding to improve the health and appearance of the four courtyards.

Detailed estimates of probable costs associated with these efforts are included in Appendix E. The total anticipated cost of this project is \$263,552 (direct construction costs).

### **Project 2: Replace deteriorating brick sidewalks**

This project entails replacement in kind of the existing brick sidewalk to address numerous

repair needs. It involves removal of existing brick, leveling and packing of the base course, and re-installation of the brick surfacing.

Detailed estimates of probable costs associated with these efforts are included in Appendix E. The total anticipated cost of this project is \$676,163 (direct construction costs).

Previous work conducted on the sidewalks has included repointing and replacement of a small damaged area. Information regarding these efforts is included in PMIS 93701A.

### **Project 3: Implement Universal Accessibility Improvements**

In 2011, the National Park Service conducted a value analysis workshop to consider alternatives for improved universal access to the Old Courthouse. The preferred alternative includes the establishment of lightweight metal ramps to provide access to the east and west porticos, and associated walks leading to the ramps from the sidewalks along Fourth and Fifth streets. Estimates of probable costs associated with this alternative were provided as part of the CityArchRiver 2015 value analysis study relating to Old Courthouse accessibility<sup>181</sup>. Implementation of this project is currently estimated to cost \$2,906,000.

### **Project 4. Reset areaway walls and replace missing or damaged sections in kind**

This project has been identified by the National Park Service in the Project Management Information System (see PMIS 25809). Work involved in implementing this project includes removing existing limestone walls, establishing

---

181. National Park Service, Value Analysis Report, Museum of Westward Expansion/Gateway Arch Visitor Center and The Old Courthouse Accessibility, Final Report Rev 3, January 18, 2012, 92.

drainage improvements as needed based on engineering analysis, replacement of floor drains, cleaning of pipes designed to convey water through the walls, repair of marble thresholds and concrete stairs, acquisition of stone to match the historic masonry for replacement of broken or missing blocks, and resetting of the stone masonry to restore the wall.

As estimated in the PMIS statement for this project (originally developed July 8, 1998, and updated January 13, 2010), this project will cost \$269,280.

### **Other projects**

**Repair damaged sections of the wrought iron fencing and granite perimeter wall.** The perimeter wall and fence feature has been damaged in several locations over the years by equipment and vehicles running off of the road. Quantifying the area of the fence and/or wall requiring repair is beyond the scope of the current study. Further inspection is needed to determine specific needs in this area.

Previous work conducted on the sidewalks has included repair, repointing, and replacement of joint sealants. Information regarding these efforts is included in PMIS 156617A and 105909A.

# Bibliography

- AECOM, Inc. *Jefferson National Expansion Memorial Cultural Landscape Report*. Omaha, Nebraska: National Park Service, May 2010.
- Allaback, Sarah. *Mission 66 Visitor Centers: The History of a Building Type*. Washington, D.C.: National Park Service, 2000.
- “Arch Parking Garage” memorandum, CityArchRiver 2015, URS, May 16, 2011.
- Brown, Sharon A. *Administrative History: Jefferson National Expansion Memorial National Historic Site*. St. Louis, Missouri: National Park Service, June 1984.
- Bryan, John A. *A Physical History of the Old Courthouse*. St. Louis: National Park Service, Jefferson National Expansion Memorial, October 1938. NPS document D-297.
- . Preliminary Draft, JNEM Administrative History: Jefferson National Expansion Memorial, Its Origin, Development, and Administration. St. Louis, National Park Service, Jefferson National Expansion Memorial, n.d. [circa 1960]. NPS document D 50.
- . The Rotunda: 1839–1955, Its Changing Styles of Architecture, Its Historic Events and Mural Paintings, Its Restoration. St. Louis: National Park Service, Jefferson National Expansion Memorial, February 28, 1956.
- Busch and Latta Painting. Letter to Julian C. Spotts, JNEM Superintendent, August 25, 1942. (Source: contract documents files at JNEM archive.)
- . Letter to LeCoutour Construction Company, May 12, 1955.
- Carr, Ethan. *Mission 66: Modernism and the National Park Dilemma*. Amherst: University of Massachusetts Press, 2007.
- “Circulator Memo,” CAR 2015, Michael Van Valkenburgh Associates, Inc., Landscape Architects, PC; Arup USA, Inc.; Draft, May 2011.
- CityArchRiver 2015 Design Decision Map*, Michael Van Valkenburgh Associates, Inc., Landscape Architects, PC, May 17, 2011.
- City of St. Louis Planning and Urban Design Agency. “2009 Gateway Mall Master Plan.” St. Louis, Missouri: City of St. Louis, July 2007. Available online at [http://stlouis-mo.gov/government/departments/planning/documents/upload/mp\\_gwmall\\_20091215.pdf](http://stlouis-mo.gov/government/departments/planning/documents/upload/mp_gwmall_20091215.pdf)
- Conrad Schmitt Studios, Inc. *Decorative and Paint Color Analysis, 1862–1955, Investigation and Documentation*. New Berlin, Wisconsin: Conrad Schmitt Studios, Inc., spring 1985. NPS document D-25.
- “Courthouse Dome.” *St. Louis Globe Democrat*, November 29, 1964.

- “Development of a Conceptual Stormwater Master Plan and Pond Water Quality Assessment for the JNEM Grounds” memorandum, LimnoTech, May 13, 2011.
- Dosch, Donald F. *The Old Courthouse: Americans Build a Forum on the Frontier*. St. Louis, Missouri: Jefferson National Expansion Historical Association, Inc., 1979.
- Executive Order 7253, December 21, 1935.
- Gayle, Margot, David W. Look, and John G. Waite. *Metals in America's Historic Buildings: Uses and Preservation Treatments*. Washington, D.C.: U.S. Department of the Interior, 1980.
- Gayle, Margot, and Carol Gayle. *Cast-Iron Architecture in America: The Significance of James Bogardus*. New York: W.W. Norton & Company, 1998.
- Giedion, Sigfried. *Space, Time and Architecture: The Growth of a New Tradition*. Cambridge, Massachusetts: Harvard University Press, 1967.
- Gloag, John, and Derek Bridgwater. *A History of Cast Iron in Architecture*. London: George Allen and Unwin, Ltd., 1948.
- Gordon, Robert B. *American Iron: 1607–1900*. Baltimore: The Johns Hopkins University Press, 1996.
- Henderson, David G. *Historic Structure Report: Architectural Data Section, Phase II: Exterior Preservation*. St. Louis: National Park Service, Jefferson National Expansion Memorial, September 1985. NPS document D 24.
- . *Historic Structure Report: Architectural Data Section, Phase Three: Interior Preservation*. St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982. With handwritten corrections dated 1986. NPS document D-49.
- Historic American Buildings Survey. Old Courthouse. HABS MO-31-8. 1934.
- “Hydraulic Evaluation of Multiple Grading Scenarios along Leonor K. Sullivan Boulevard” memorandum, LimnoTech, May 16, 2011.
- Jandl, H. Ward, ed. *The Technology of Historic American Buildings: Studies of Materials, Craft Processes, and the Mechanization of Building Construction*. Washington, DC: The Foundation for Preservation Technology, 1983.
- Lester, Curtis. *Historic Structure Report (Portion): St. Louis Courthouse: Architectural Data (Phase IIA-1: Water Intrusions)*. St. Louis: National Park Service, Jefferson National Expansion Memorial, March 1977. NPS document D-1150.
- Lindenbusch, John H. *Historic Structure Report: Historic Data Section - Part 1 and Historic Grounds Study*. St. Louis: National Park Service, Jefferson National Expansion Memorial, January 1982. NPS document D 1835.

- Moore, Bob. Jefferson National Expansion Memorial Administrative History; 1980–1991. St. Louis, Missouri: National Park Service, 1994.
- National Park Service. *Cultural Landscape Report for Jefferson National Expansion Memorial, St. Louis, Missouri*. Omaha, Nebraska: Midwest Field Area, Great Plains Systems Support Office, 1996.
- . *General Management Plan*, 2009,
- . List of Classified Structures, JNEM.
- , personal communication, Jim Jacobs, October 2011. JNEM.
- . PMIS statements, JNEM.
- . *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*. Washington, D.C.: National Park Service, National Register of Historic Places, 1990, revised 1995.
- . *National Register Bulletin: How to Complete the National Register Registration Form*. Washington, D.C.: National Park Service, National Register of Historic Places, 1977, revised National Park Service, 1997.
- “Old Courthouse Slowly Regaining its Magnificence,” *St. Louis Globe Democrat*, February 6, 1955.
- Ortega, Richard I. Jefferson National Expansion Memorial National Register nomination, March 3, 1976.
- Price, Edward T. “The Central Courthouse Square in the American County Seat.” In *Common Places: Readings in the American Vernacular Architecture*. Dell Upton and John Michael Vlach, eds. Athens, Georgia: University of Georgia Press, 1986.
- Prizim, Inc., and Professional Environmental Engineers, Inc. *Asbestos-Containing Materials Survey, Jefferson National Expansion Memorial*. Gaithersburg, Maryland, and St. Louis, Missouri, 2010.
- Rabun, J. Stanley. *Structural Analysis of Historic Buildings: Restoration, Preservation, and Adaptive Reuse Applications for Architects and Engineers*. New York: John Wiley & Sons, 2000.
- Ratio Architects. *Indiana’s Historic Courthouses; Re-Investing in Community Treasures*, “The Importance of Preserving Historic Courthouses to the History and Identity of County Seats and Counties. Indianapolis, Indiana: Indiana Courthouse Preservation Advisory Commission, August 2011.
- Reps, John W. *Saint Louis Illustrated; Nineteenth Century Engravings and Lithographs of a Mississippi River Metropolis*. Columbia, Missouri: University of Missouri Press, 1989.
- River Arch Competition Press Release, September 21, 2010. Accessed at [www.cityarchriver.org](http://www.cityarchriver.org),
- Smith-Cook contract extension, October 22, 1945.

## Bibliography

Spotts, Julian. Memo to Busch and Latta Painting Company approving cleaning methods for dome, August 26, 1942.

———. Letter to Busch and Latta Painting Company, October 20, 1942.

———. Letter to War Production Board, December 9, 1942.

———. Memo to the Regional Director, September 7, 1945.

———. Superintendent's Report, July 14, 1949.

———. Superintendent's Report, April 14, 1950.

———. Superintendent's Monthly Report, August 14, 1951.

———. Monthly Report to the Department of the Interior, April 12, 1946.

———. Superintendent's Report, December 1941. Source: Superintendent's Report Files at JNEM Archives.

———. Monthly Superintendent Report February 12, 1946.

———. Letter documenting restoration work by Continental Constructions, November 6, 1953.

———. Superintendent's Report, October 14, 1957.

———. Monthly reports to the Department of the Interior, multiple reports, 1946–1955.

“St. Louis County Courthouse Chronology.” Transcript, unattributed, undated, JNEM Archives.

Weeks, Kay D., and 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.: National Park Service, Historic Preservation Services, 1995.

“What Regional Planners Have Done in Chicago,” *St. Louis Post-Dispatch*. October 7, 1929.

Value Analysis Study, CityArchRiver 2015, Luther Ely Smith Square/Gateway Mall Connection, Processional Walks, and Historic Landscape, Value Analysis Draft Report #3, prepared by Kirk Associates for the National Park Service, September 18, 2011.

Value Analysis Study, CityArchRiver 2015, Museum of Westward Expansion/Gateway Arch Visitor Center and The Old Courthouse Accessibility, Value Analysis Final Report #1 Rev 3, prepared by Kirk Associates for the National Park Service, January 18, 2012.

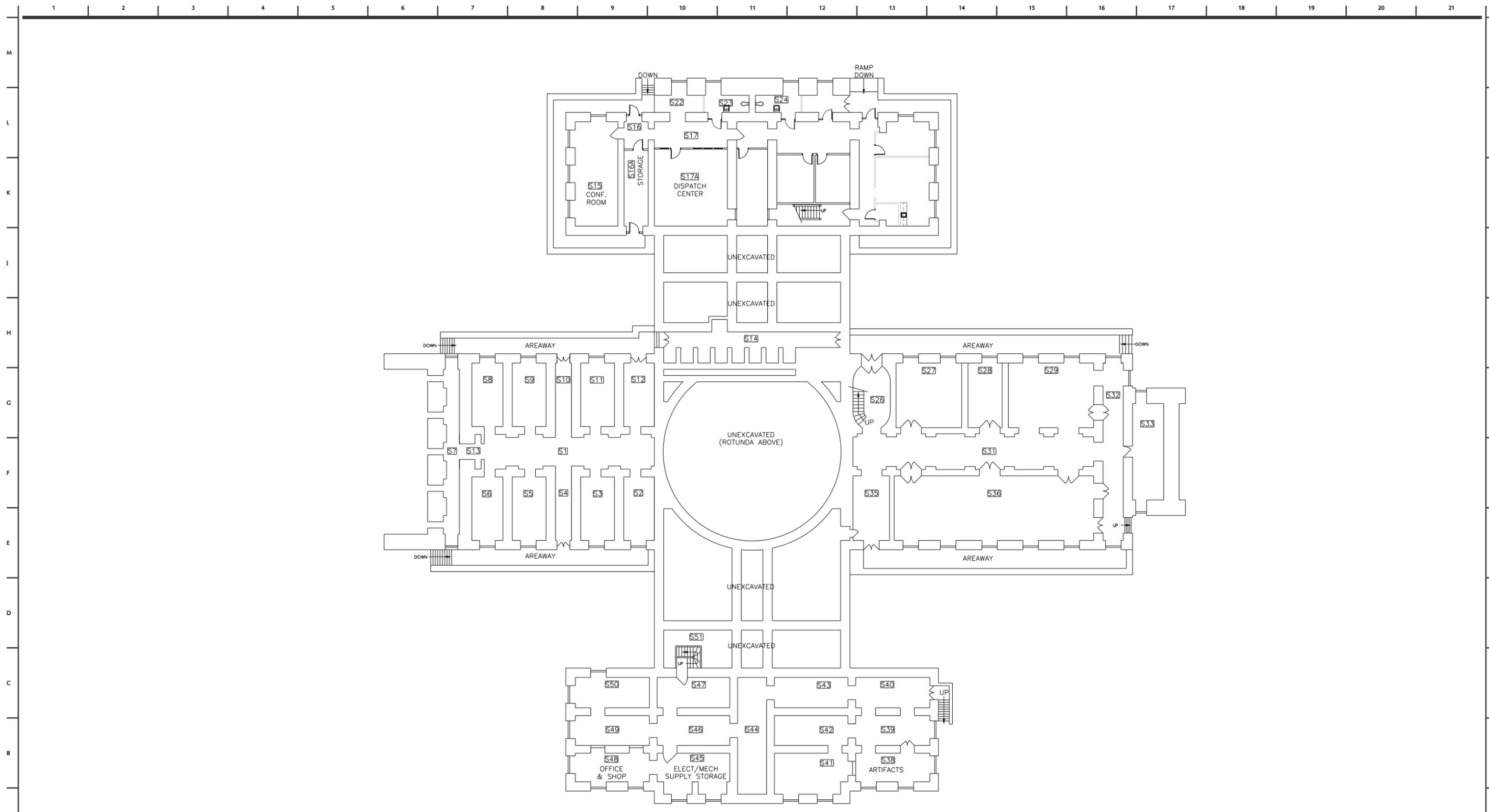
Veselka, Robert E. *The Courthouse Square in Texas*. Austin, Texas: University of Texas Press, 2000.

Zahner, L. William. *Architectural Metals: A Guide to Selection, Specification, and Performance*. New York: John Wiley & Sons, 1995.

## **Appendix A**

### **Base Plans**





**BASEMENT LEVEL FLOOR PLAN**

Scale: 1" = 30'



**ARCHITECTURAL CONSERVATOR**  
 WISS JANNEY ELSTNER ASSOCIATES, INC.  
 10 SOUTH LASALLE STREET, SUITE 2800  
 CHICAGO, IL 60603  
 (312) 372-0555

**ARCHITECT**  
 BAHR VERMEER HAECKER ARCHITECTS  
 440 N 8TH STREET STE 100  
 LINCOLN, NE 68508  
 (402) 475-4551

MARK	DATE	REVISION	BY	CHKD	DATE	APPROVED

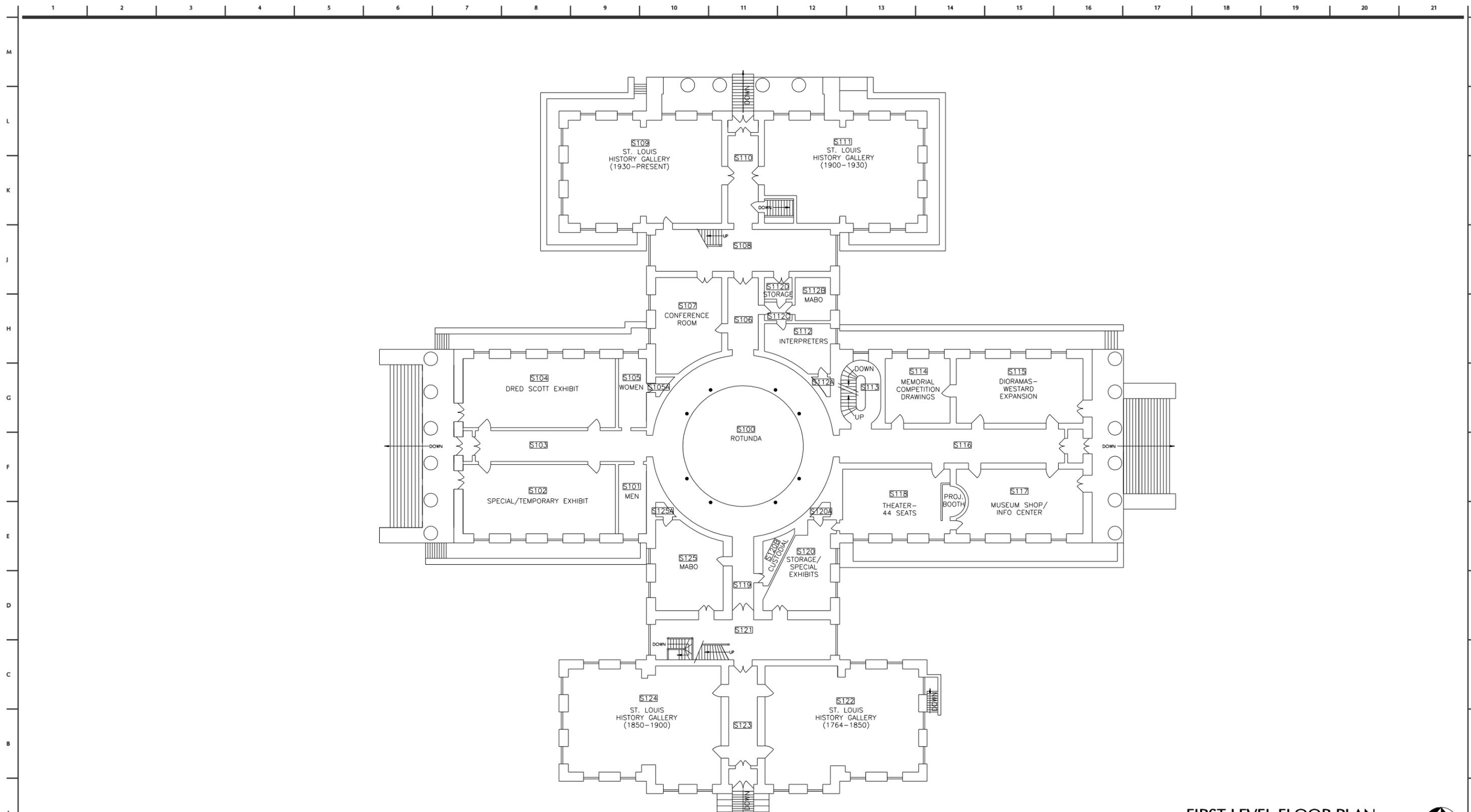


UNITED STATES  
 DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE  
 Omaha Regional Center

**Old Courthouse**  
 St. Louis, MO  
 Historic Structures Report

DRAWING NO.	
PKG NO.	
SHEET	
OF	





**FIRST LEVEL FLOOR PLAN**

Scale: 1' = 30'



**ARCHITECTURAL CONSERVATOR**  
 WISS JANNEY ELSTNER ASSOCIATES, INC.  
 10 SOUTH LASALLE STREET, SUITE 2800  
 CHICAGO, IL 60603  
 (312) 372-0555

**ARCHITECT**  
 BAHR VERMEER HAECKER ARCHITECTS  
 440 N 8TH STREET STE 100  
 LINCOLN, NE 68508  
 (402) 475-4551

MARK	REVISION	DATE	APPROVED
	REVISED		
			REVIEWED _____ DATE _____
			REVIEWED _____ DATE _____
			REVIEWED _____ DATE _____
			REVIEWED _____ DATE _____



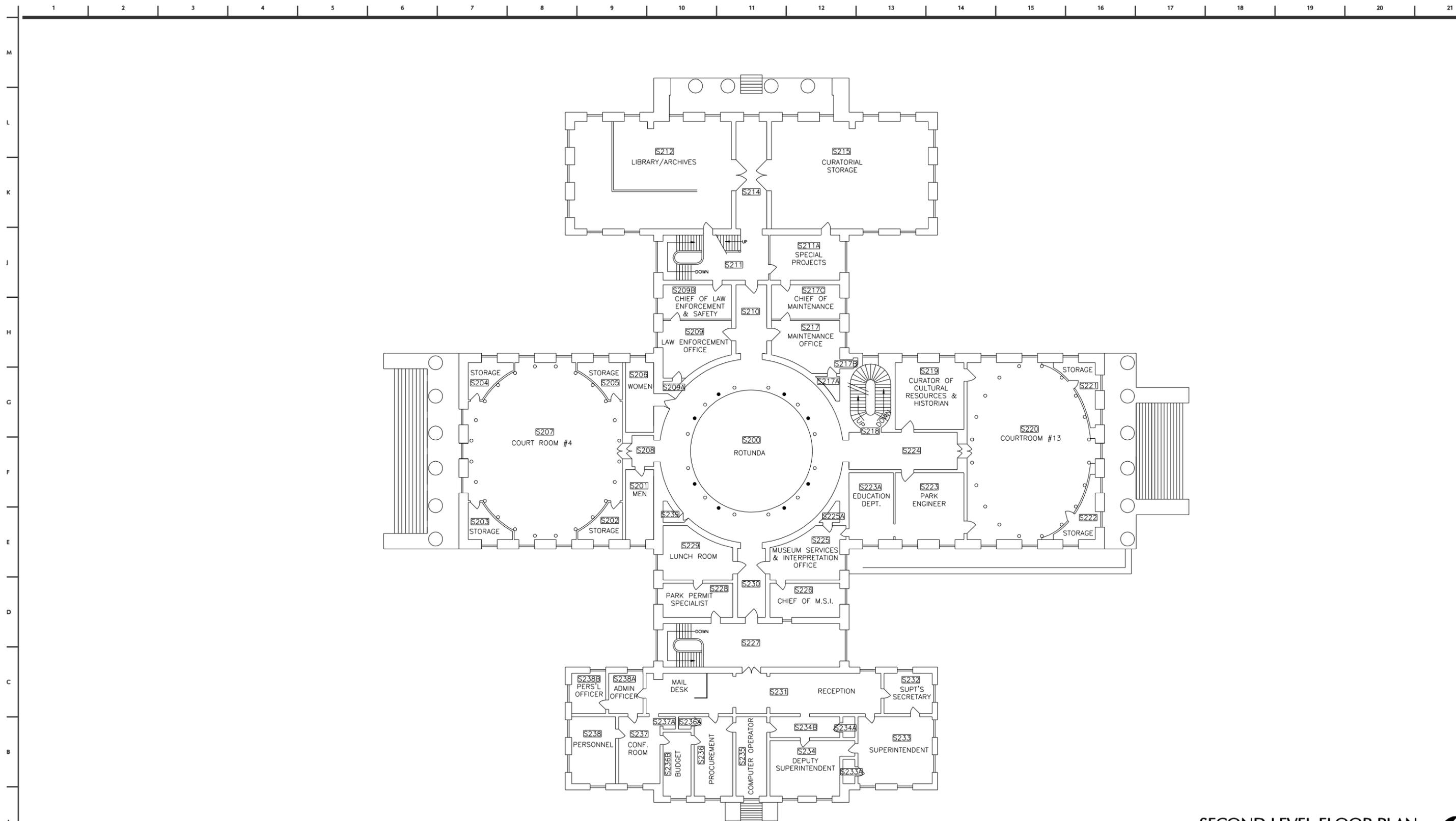
UNITED STATES  
 DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE  
 Omaha Regional Center

**Old Courthouse**  
 St. Louis, MO

Historic Structures Report

DRAWING NO.	_____
PKG. NO.	_____
SHEET	_____
OF	_____





**SECOND LEVEL FLOOR PLAN**

Scale: 1' = 30'



**ARCHITECTURAL CONSERVATOR**  
 WISS JANNEY ELSTNER ASSOCIATES, INC.  
 10 SOUTH LASALLE STREET, SUITE 2800  
 CHICAGO, IL 60603  
 (312) 372-0555

**ARCHITECT**  
 BAHR VERMEER HAECKER ARCHITECTS  
 440 N 8TH STREET STE 100  
 LINCOLN, NE 68508  
 (402) 475-4551

MARK	REVISION	DATE	APPROVED



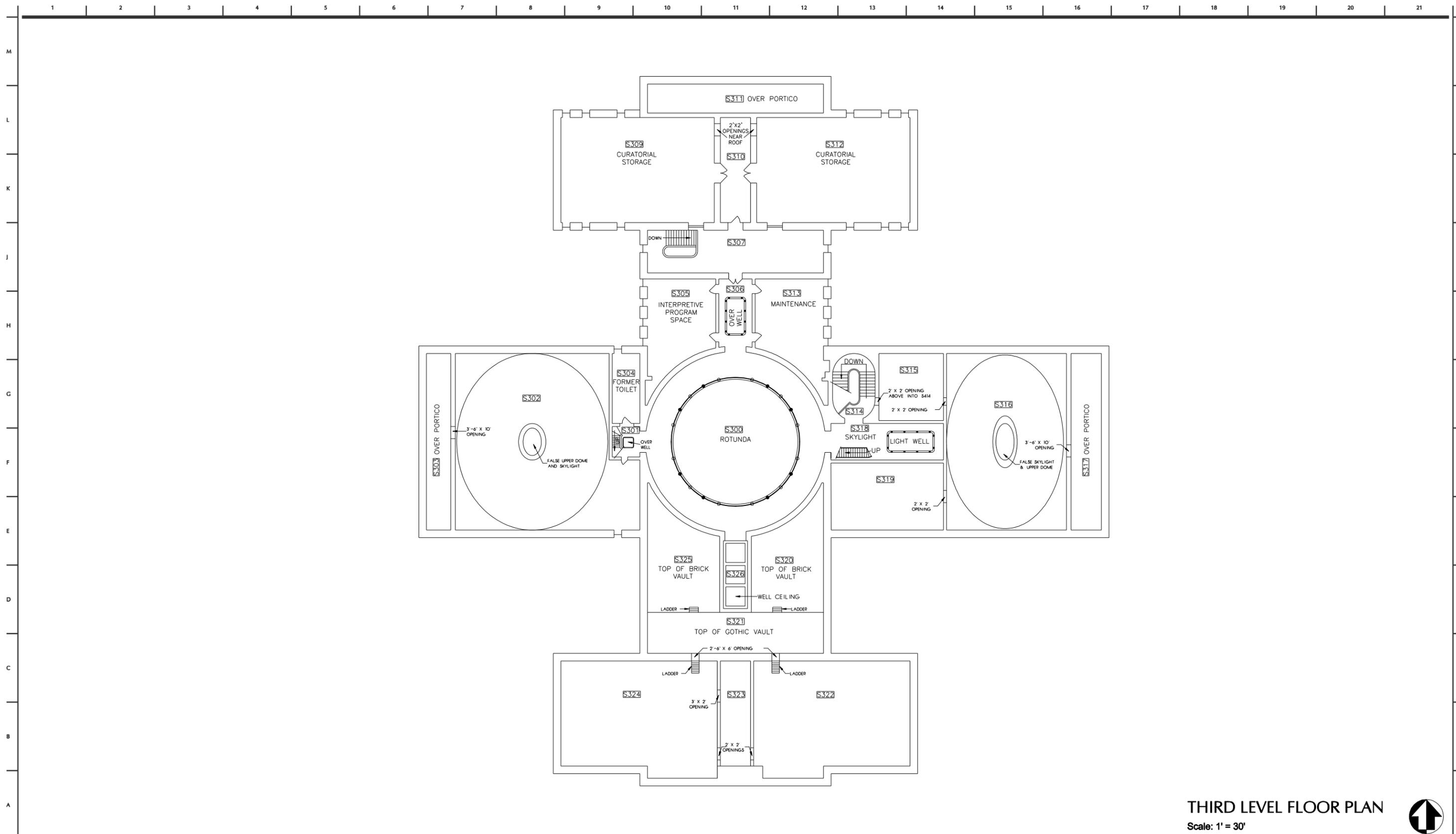
UNITED STATES  
 DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE  
 Omaha Regional Center

**Old Courthouse**  
 St. Louis, MO

Historic Structures Report

DRAWING NO.	
PKG NO.	
SHEET	
OF	





**THIRD LEVEL FLOOR PLAN**

Scale: 1" = 30'



**ARCHITECTURAL CONSERVATOR**  
 WISS JANNEY ELSTNER ASSOCIATES, INC.  
 10 SOUTH LASALLE STREET, SUITE 2800  
 CHICAGO, IL 60603  
 (312) 372-0555

**ARCHITECT**  
 BAHR VERMEER HAECKER ARCHITECTS  
 440 N 8TH STREET STE 100  
 LINCOLN, NE 68508  
 (402) 475-4551

MARK	REVISION	DATE	APPROVED



UNITED STATES  
 DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE  
 Omaha Regional Center

Old Courthouse  
 St. Louis, MO  
 Historic Structures Report

DRAWING NO.	
PKG. NO.	
SHEET	
OF	



**Appendix B**  
**Wrought and Cast Iron Laboratory Analysis**



## Metallurgical Table of Cast and Wrought Iron at the Old Courthouse

	Description	Fabricator	Vintage	Iron Type	Total Carbon	Manganese	Phosphorus	Sulfur	Silicon	Nickel
<b>Sample 1</b>	South wing 2nd floor beam	Dowdall and Carr	1852-53	gray cast	3.340	0.390	0.528	0.325	2.320	
<b>Sample 2</b>	North wing, attic truss	J G McPheeters	1857-60	wrought	0.017	0.010	0.365	0.019	0.250	0.020
<b>Sample 3</b>	East wing, attic truss	McMurray & Pauley	1851-56	wrought	0.004	0.040	0.195	0.010	0.180	0.060
<b>Sample 4</b>	East wing, portico roof	McMurray & Pauley	1851-56	wrought	0.006	0.040	0.351	0.016	0.210	0.030
<b>Sample 5</b>	South wing, attic truss		1853-54	wrought	0.019	0.010	0.366	0.020	0.070	0.030
<b>Sample 6</b>	South wing, attic truss		1853-54	wrought	0.003	0.010	0.363	0.097	0.100	0.030
<b>Sample 7A</b>	Dome, radial band	McPheete & Pauley	1857-61	wrought	0.018	0.020	0.216	0.023	0.260	0.020
<b>Sample 7B</b>	Dome bracing element	McPheete & Pauley	1857-61	gray cast	3.960	0.320	0.219	0.087	1.110	
<b>Sample 8</b>	West Wing, 2nd floor beam		1850-60	gray cast	3.550	0.160	0.469	0.123	1.850	
<b>Sample 9</b>	East wing, 1st floor beam	J T Dowdall	1851-56	gray cast	3.460	0.120	0.543	0.129	1.270	
<b>Sample 10</b>	North wing, 1st floor beam	J G McPheeters	1857-60	gray cast	3.700	0.730	0.533	0.063	2.440	0.020



## Test Certificate

Wiss, Janney, Elstner Assoc.  
 10 South LaSalle  
 Suite 2600  
 Chicago, IL  
 60603

REF No  
 Page  
 Ord No  
 Date Tested  
 Date Printed  
 Date Received

T 201306 : Issue 1  
 1 of 4  
 WJE 2011.3699  
 01/30/12  
 01/31/12  
 01/20/12

Attn: Stephen J. Kelley

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 1-SOUTH WING, SECOND FLOOR BEAM, REMOVED 1/10/12

Specification - Not Applicable

Chemical Analysis													
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]	Comments	
001:	3.34	.39	.528	.325	2.32	.01	.01	<.01	<.01	<.01	.01	None	
	Mg [%]											Comments	
001:	<.01											None	
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.													

Micro Examination - Acme 11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below
Item 02: Gray iron microstructure observed-flake graphite in an essentially ferritic matrix with slag, pearlite, carbide and steadite; gross porosity also observed			

### Certificate Comments

The composition and microstructure of the section are indicative of gray cast iron. Note that excessive porosity was observed in this sample.

  
 .....  
 Tamir M Tonon  
 Section Manager/Sr Metallurgist  
 For and on behalf of  
 Exova Inc.

Wiss, Janney, Elstner Assoc.  
10 South LaSalle

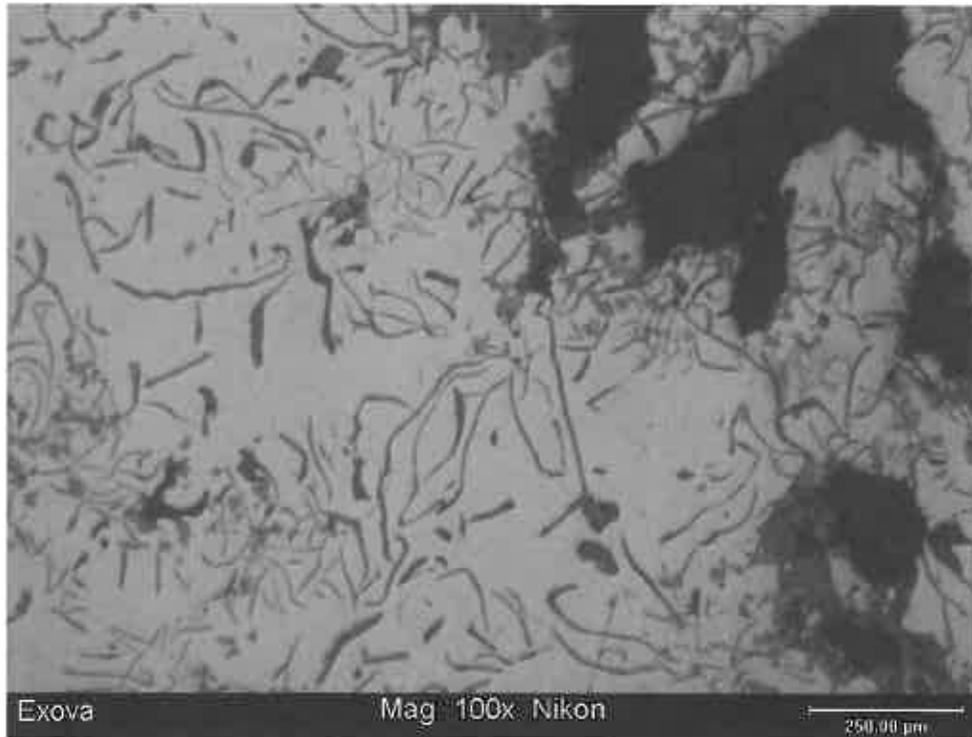
CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN  
ST. LOUIS, SAMPLE 1-SOUTH WING, SECOND FLOOR BEAM, REMOVED

REF No  
Page

T 201306 : Issue 1  
2 of 4

**Photographs - In House Procedure**

	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	

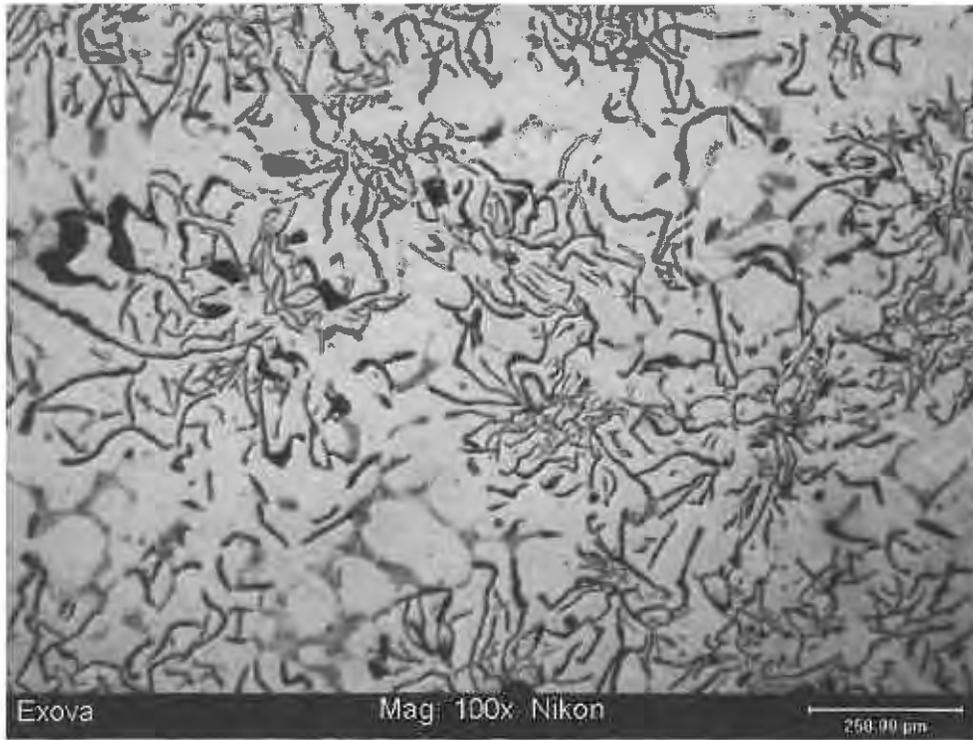


Stated magnification refers to original capture condition.

The recording of false, fictitious or fraudulent statements or entries may be punished as a felony under federal law.  
This certificate should not be reproduced other than in full, without the written approval of Exova, 194 Internationale Blvd, Glendale Heights, IL, USA, 00139  
These results pertain only to the item(s) tested as sampled by the client unless otherwise indicated.  
Testing has been conducted to specification revision levels as described in the laboratory's document control procedure.  
Information regarding estimate of measurement uncertainty (where appropriate) available upon request.

Photographs - In House Procedure

	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	



Stated magnification refers to original capture condition.



## Test Certificate

Wiss, Janney, Elstner Assoc.  
 10 South LaSalle  
 Suite 2600  
 Chicago, IL  
 60603

Attn: Stephen J. Kelley

REF No T 201307 : Issue 1  
 Page 1 of 4  
 Ord No WJE 2011.3699  
 Date Tested 01/26/12  
 Date Printed 01/31/12  
 Date Received 01/20/12

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN  
 ST. LOUIS, SAMPLE 2-NORTH WING, ATTIC TRUSS REMNANT, REMOVED  
 BY NPS 1/2012

Specification - Not Applicable

Chemical Analysis													
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]	Comments	
001:	.017	.01	.365	.019	.25	.02	<.01	<.01	.02	<.01	<.01	None	
	Mg [%]											Comments	
001:	<.01											None	
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.													

Micro Examination - ASTM F3 -11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below
Item 02: Wrought iron microstructure observed; ferrite with iron-silicate slag and possibly trace amounts of grain boundary pearlite			

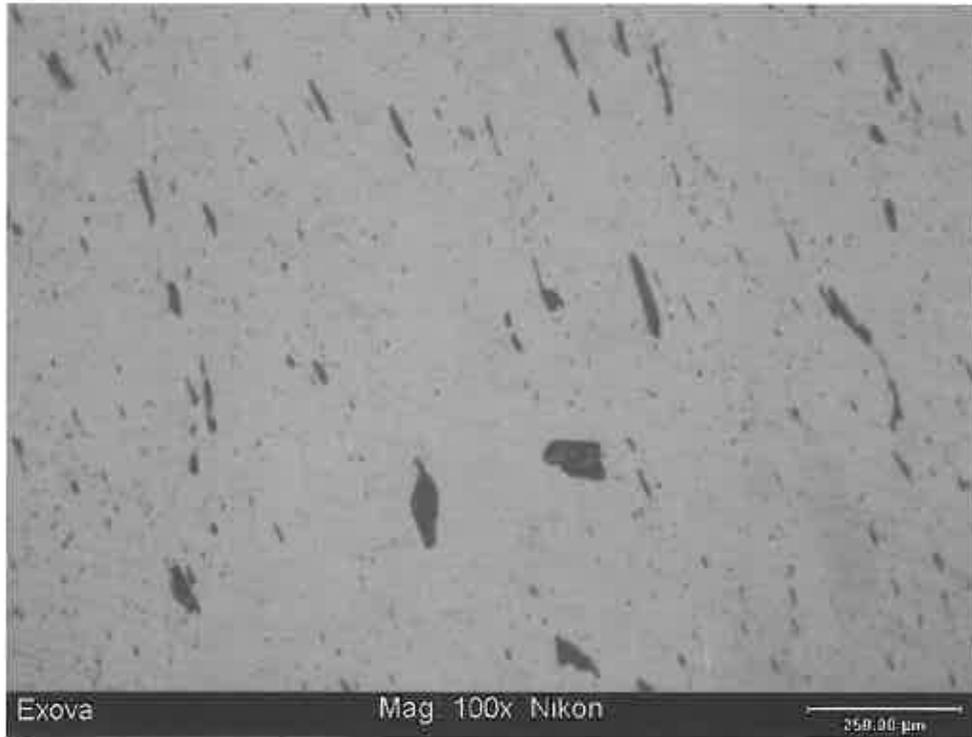
### Certificate Comments

The composition and microstructure of the section are indicative of wrought iron.

  
 Tami M Tonon  
 Section Manager/SrMetallurgist  
 For and on behalf of  
 Exova Inc.

**Photographs - In House Procedure**

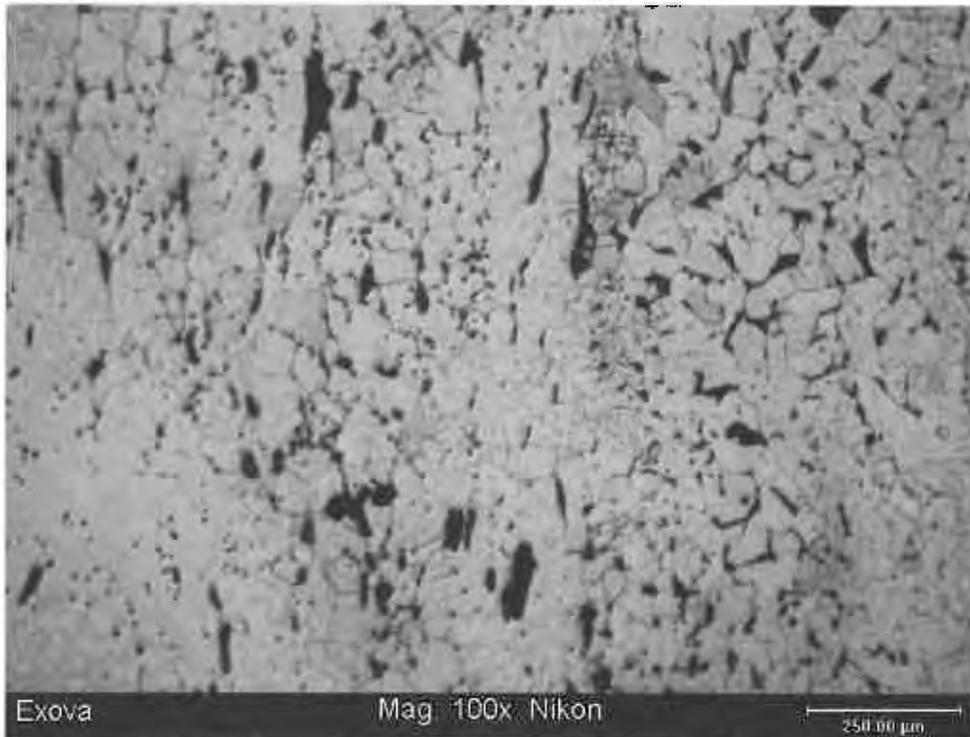
	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

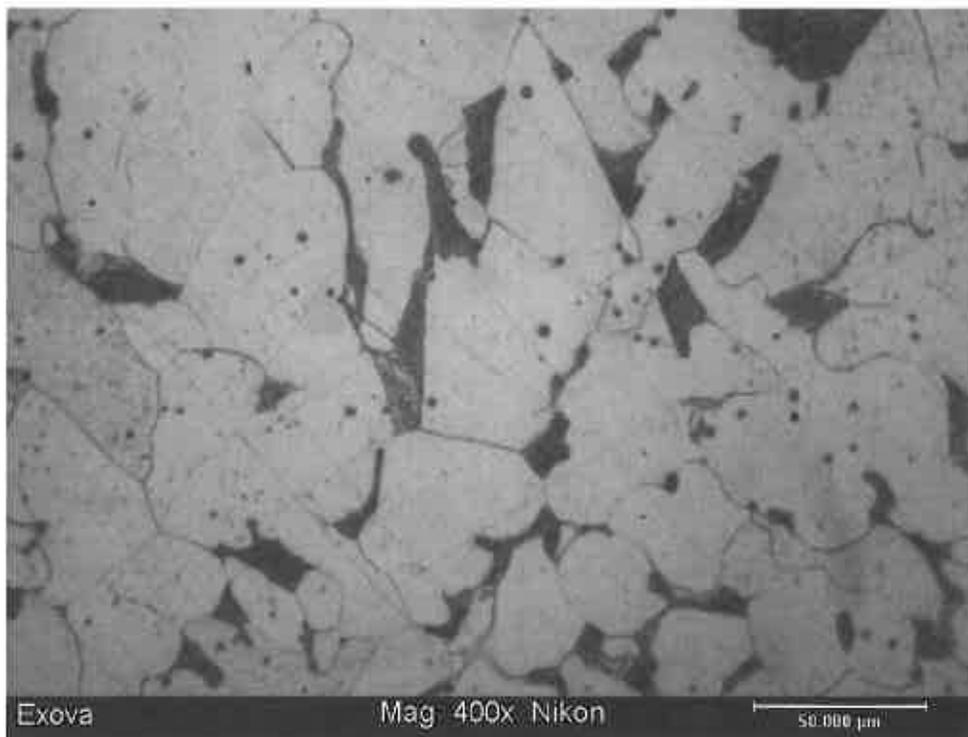
	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	



Stated magnification refers to original capture condition.



## Test Certificate

Wiss, Janney, Elstner Assoc.  
10 South LaSalle  
Suite 2600  
Chicago, IL  
60603

REF No  
Page  
Ord No  
Date Tested  
Date Printed  
Date Received

T 201308 : Issue 1  
1 of 4  
WJE 2011.3699  
01/26/12  
01/31/12  
01/20/12

Attn: Stephen J. Kelley

- Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 3-EAST WING, ATTIC TRUSS REMNANT, REMOVED BY NPS 1/2012
- Specification - Not Applicable

Chemical Analysis													
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]	Comments	
001:	.004	.04	.195	.010	.18	.06	<.01	<.01	.01	<.01	<.01	None	
	Mg [%]											Comments	
001:	<.01											None	
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.													

Micro Examination - ASTM E3 - 11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below
Item 02: Wrought iron microstructure observed: ferrite with iron-silicate slag and possibly trace amounts of grain boundary pearlite			

### Certificate Comments

The composition and microstructure of the sample are indicative of wrought iron.

  
Tami M Tonon  
Section Manager/Sr Metallurgist  
For and on behalf of  
Exova Inc.

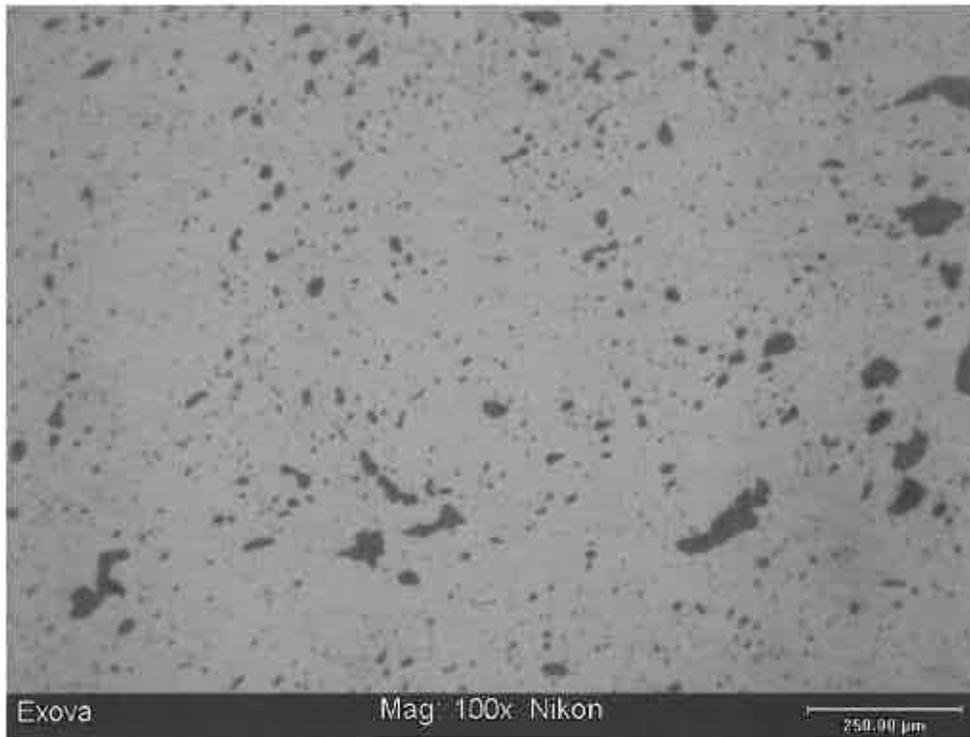
Wiss, Janney, Elstner Assoc.  
 10 South LaSalle  
 CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN  
 ST. LOUIS, SAMPLE 3-EAST WING, ATTIC TRUSS REMNANT, REMOVED

REF No  
 Page

T 201308 : Issue 1  
 2 of 4

**Photographs - In House Procedure**

	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	



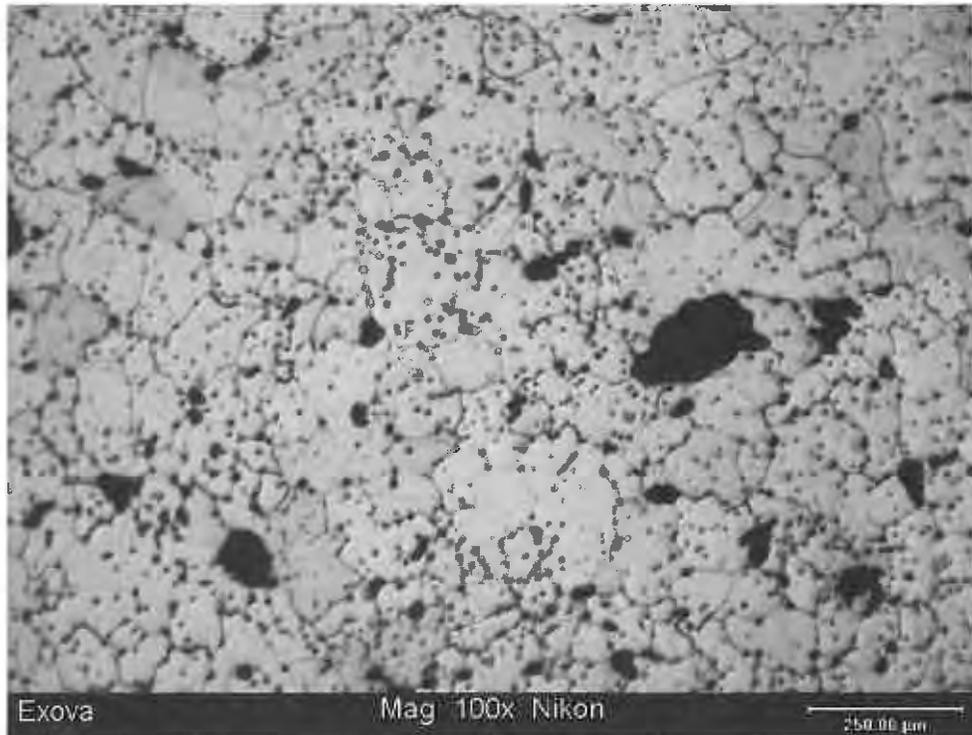
Stated magnification refers to original capture condition.

The recording of false, fictitious or fraudulent statements or entries may be punished as a felony under federal law  
 This certificate should not be reproduced other than in full, without the written approval of Exova, 194 Internationale Blvd, Glendale Heights, IL, USA, 60139  
 These results pertain only to the item(s) tested as sampled by the client unless otherwise indicated.  
 Testing has been conducted to specification revision levels as described in the laboratory's document control procedure.  
 Information regarding estimate of measurement uncertainty (where appropriate) available upon request.



**Photographs - In House Procedure**

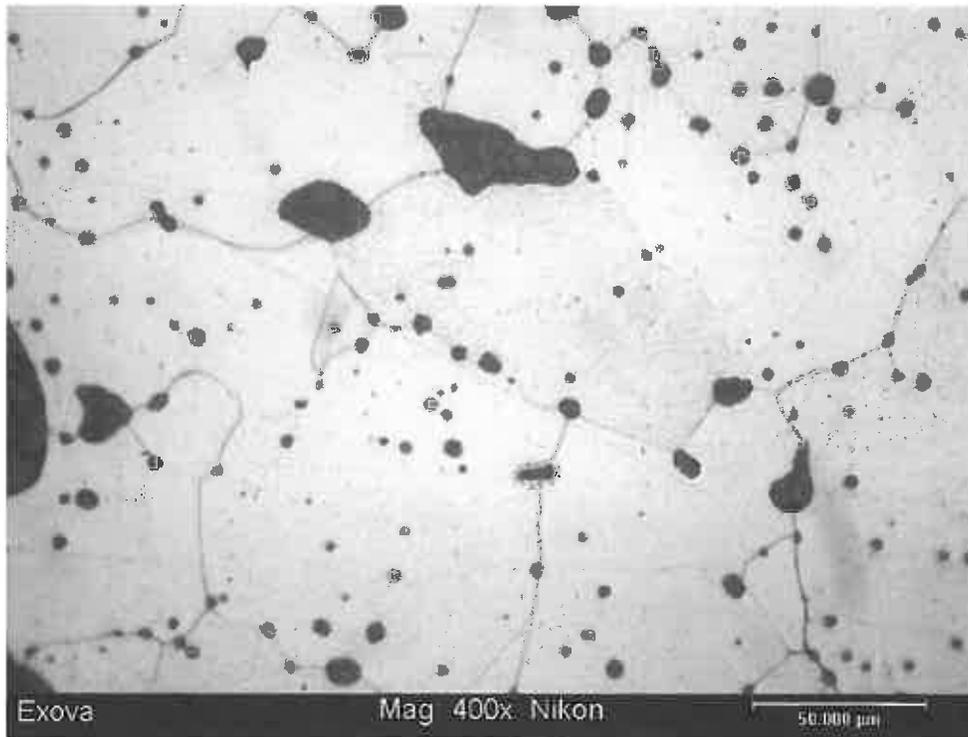
	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Deta11	x400	



Stated magnification refers to original capture condition.



## Test Certificate

Wiss, Janney, Elstner Assoc.  
10 South LaSalle  
Suite 2600  
Chicago, IL  
60603

Attn: Stephen J. Kelley

REF No  
Page  
Ord No  
Date Tested  
Date Printed  
Date Received

T 201309 : Issue 1  
1 of 4  
WJE 2011.3699  
01/26/12  
01/31/12  
01/20/12

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 4-EAST WING, EAST PORTICO ROOF FRAMING MEMBER. REMOVED 10/19/2011

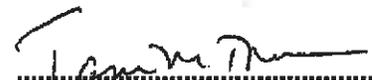
Specification - Not Applicable

Chemical Analysis													
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]	Comments	
001:	.006	.04	.351	.016	.21	.03	<.01	<.01	.01	<.01	<.01	None	
	Mg [%]											Comments	
001:	<.01											None	
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.													

Micro Structure Exam - ASTM E3-11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below
Item 02: Wrought iron microstructure observed: ferrite with iron-silicate slag and possibly traces of grain boundary pearlite			

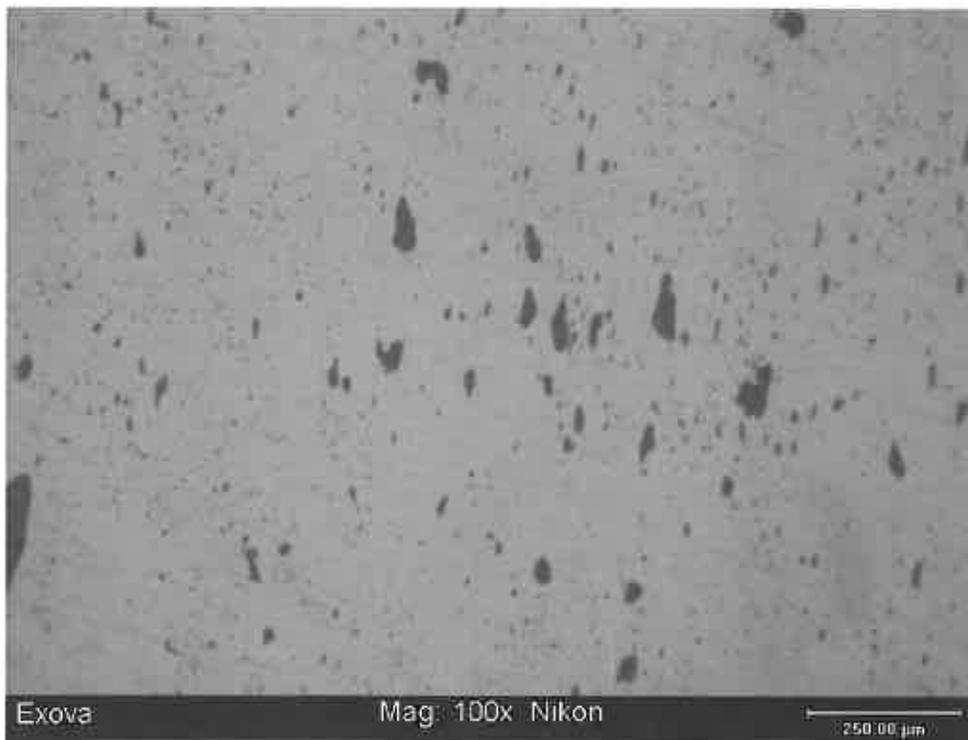
### Certificate Comments

The composition and microstructure of the section are indicative of wrought iron.

  
.....  
**Tami M Tonon**  
Section Manager/Sr Metallurgist  
For and on behalf of  
Exova Inc.

**Photographs - In House Procedure**

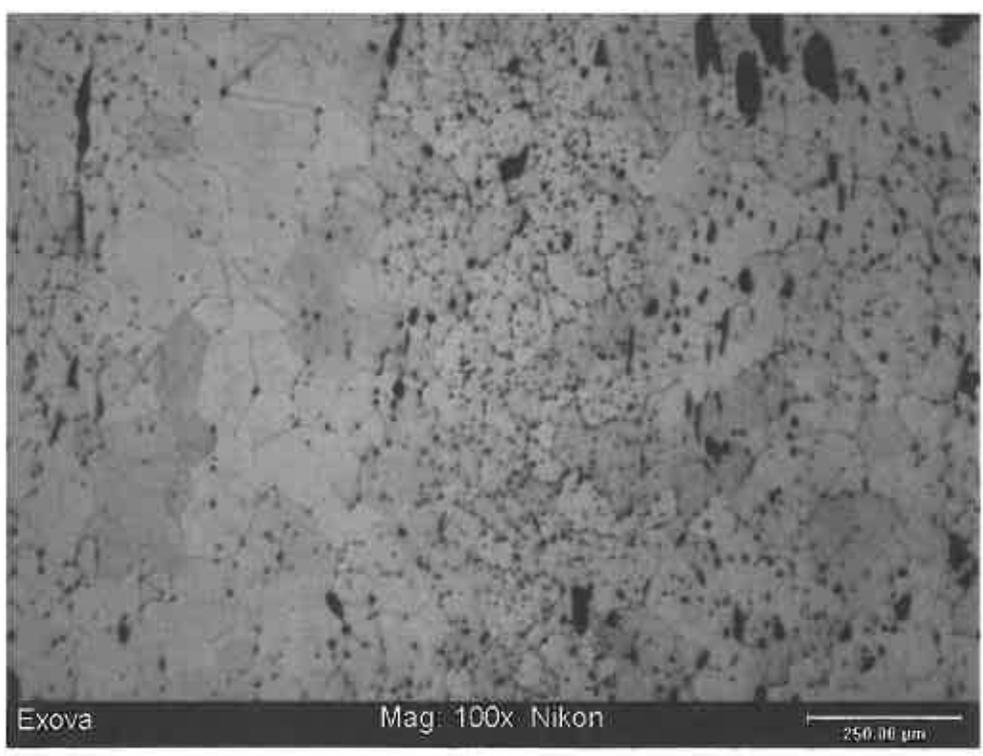
	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

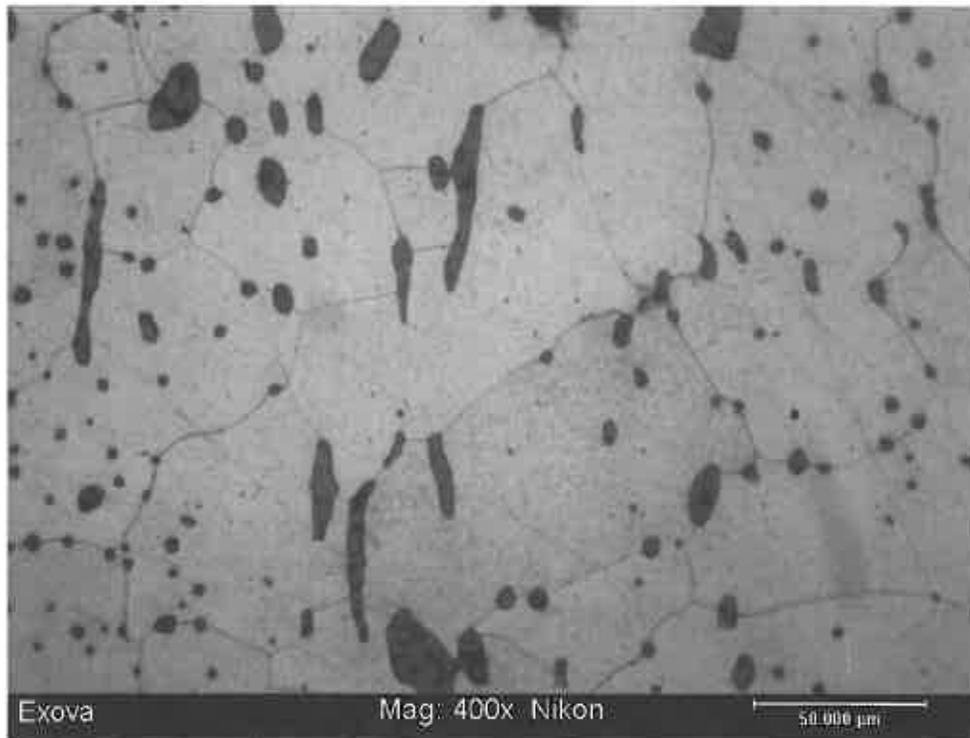
	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	



Stated magnification refers to original capture condition.



## Test Certificate

Wiss, Janney, Elstner Assoc.  
10 South LaSalle  
Suite 2600  
Chicago, IL  
60603

Attn: Stephen J. Kelley

REF No T 201310 : Issue 1  
Page 1 of 4  
Ord No WJE 2011.3699  
Date Tested 01/26/12  
Date Printed 01/31/12  
Date Received 01/20/12

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 5-SOUTH WING, ATTIC TRUSS REMNANT, REMOVED BY NPS 1/2012

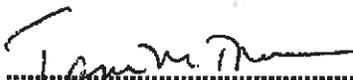
Specification - Not Applicable

Chemical Analysis													
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]	Comments	
001:	.019	.01	.366	.020	.07	.03	<.01	<.01	.01	<.01	<.01	None	
	Mg [%]											Comments	
001:	<.01											None	
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.													

Micro Examination - ASTM E8-11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below
Item 02: Wrought iron microstructure observed: ferrite with iron-silicate slag and possibly trace amounts of grain boundary pearlite			

### Certificate Comments

The composition and microstructure of the section is indicative of wrought iron.

  
Tami M Tonon  
Section Manager/SrMetallurgist  
For and on behalf of  
Exova Inc.



Wiss, Janney, Elstner Assoc.  
10 South LaSalle

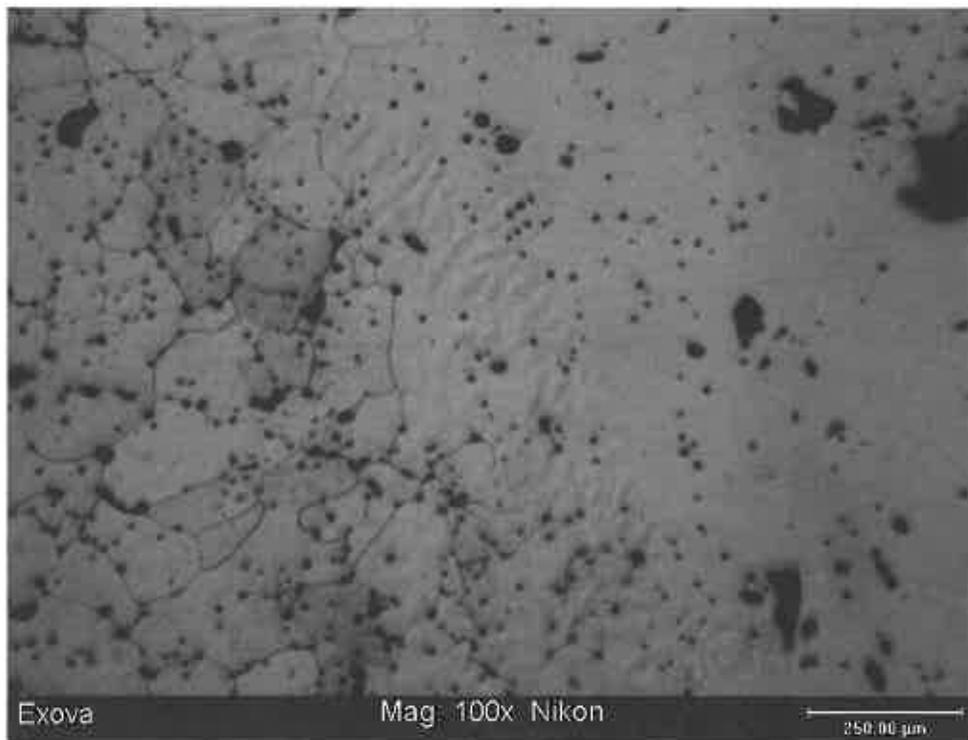
CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN  
ST. LOUIS, SAMPLE 5-SOUTH WING, ATTIC TRUSS REMNANT, REMOVED

REF No  
Page

T 201310 Issue 1  
3 of 4

**Photographs - In House Procedure**

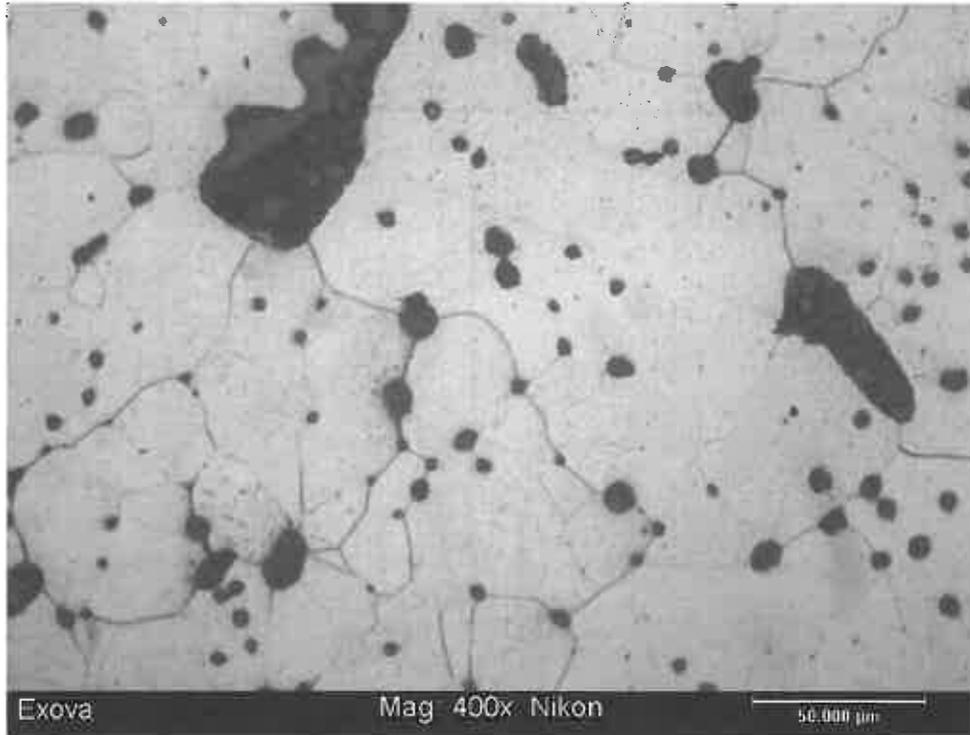
	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	



Stated magnification refers to original capture condition.



# Test Certificate

Wiss, Janney, Elstner Assoc.  
 10 South LaSalle  
 Suite 2600  
 Chicago, IL  
 60603

REF No T 201311 : Issue 1  
 Page 1 of 4  
 Ord No WJE 2011.3699  
 Date Tested 01/26/12  
 Date Printed 01/31/12  
 Date Received 01/20/12

Attn: Stephen J. Kelley

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 6-SOUTH WING, ATTIC TRUSS REMNANT. REMOVED BY NPS 1/2012

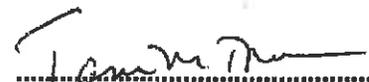
Specification - Not Applicable

Chemical Analysis													
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]	Comments	
001:	.003	.01	.363	.097	.10	.03	<.01	<.01	.02	<.01	<.01	None	
	Mg [%]											Comments	
001:	<.01											None	
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.													

Micro Examination - ASTM E3-11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below
Item 02: Wrought iron microstructure observed: ferrite with iron-silicate slag and possible trace amounts of bain boundary pearlite			

### Certificate Comments

The composition and microstructure of the section are indicative of wrought iron.

  
 Tami M Tonon  
 Section Manager/SrMetallurgist  
 For and on behalf of  
 Exova Inc.

Wiss, Janney, Elstner Assoc.  
10 South LaSalle

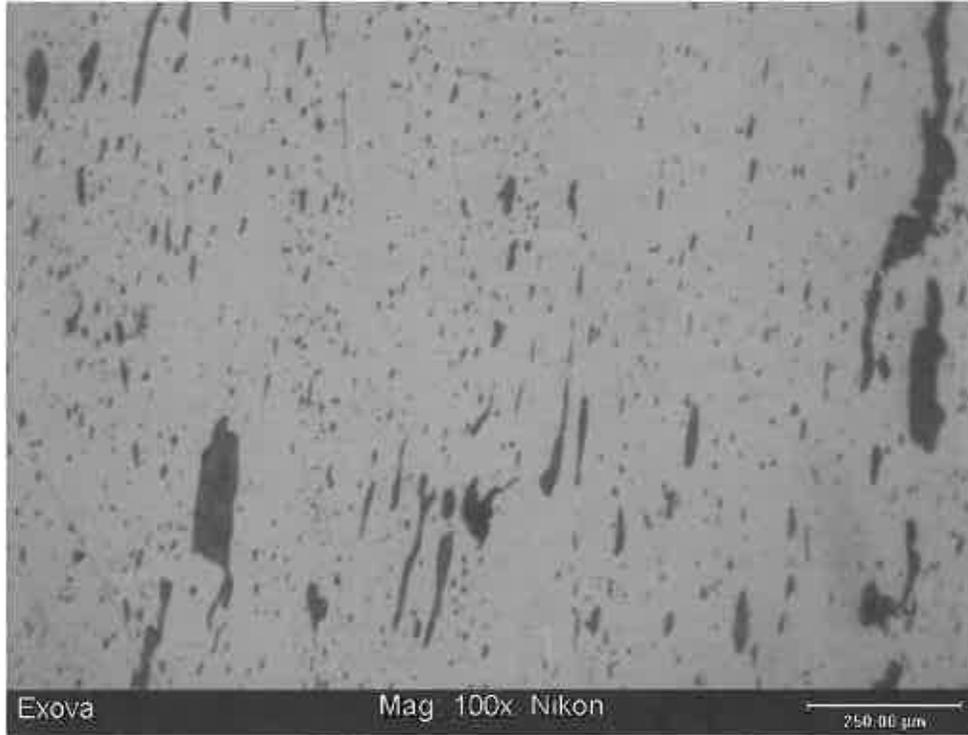
CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN  
ST. LOUIS, SAMPLE 6-SOUTH WING, ATTIC TRUSS REMNANT. REMOVED

REF No  
Page

T 201311 : Issue 1  
2 of 4

**Photographs - In House Procedure**

	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	



Stated magnification refers to original capture condition.

The recording of false, fictitious or fraudulent statements or entries may be punished as a felony under federal law  
This certificate should not be reproduced other than in full, without the written approval of Exova, 194 Internationale Blvd, Glendale Heights IL, USA, 60139  
These results pertain only to the item(s) tested as sampled by the client unless otherwise indicated.  
Testing has been conducted to specification revision levels as described in the laboratory's document control procedure.  
Information regarding estimate of measurement uncertainty (where appropriate) available upon request.



Wiss, Janney, Elstner Assoc.  
10 South LaSalle

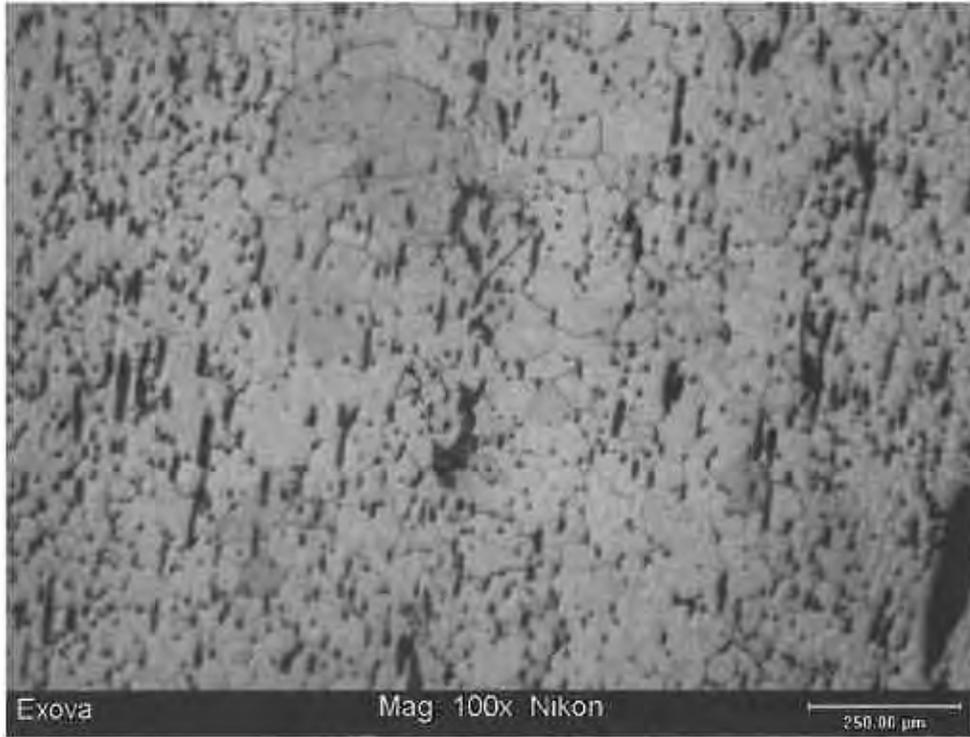
CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN  
ST. LOUIS, SAMPLE 6-SOUTH WING, ATTIC TRUSS REMNANT. REMOVED

REF No  
Page

T 201311 : Issue 1  
3 of 4

Photographs - In House Procedure

	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

Wiss, Janney, Elstner Assoc.  
10 South LaSalle

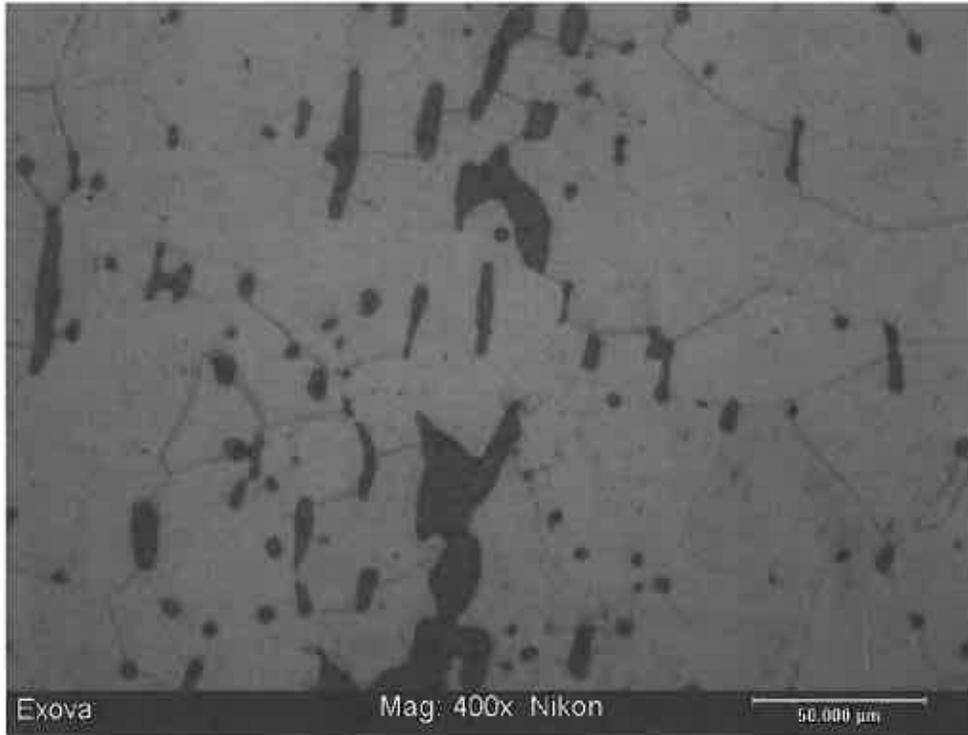
CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN  
ST. LOUIS, SAMPLE 6-SOUTH WING, ATTIC TRUSS REMNANT. REMOVED

REF No  
Page

T 201311 : Issue 1  
4 of 4

Photographs - In House Procedure

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	



Stated magnification refers to original capture condition.



# Test Certificate

Wiss, Janney, Elstner Assoc.  
 10 South LaSalle  
 Suite 2600  
 Chicago, IL  
 60603

REF No  
 Page  
 Ord No  
 Date Tested  
 Date Printed  
 Date Received

T 201312 : Issue 1  
 1 of 4  
 WJE 2011.3699  
 01/26/12  
 01/31/12  
 01/20/12

Attn: Stephen J. Kelley

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 7A-DOME, RADIAL BAND, REMOVED BY NPS 1/2012

Specification - Not Applicable

Chemical Analysis													Comments
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]		
001:	.018	.02	.216	.023	.26	.02	<.01	<.01	.01	<.01	.01	None	
	Mg [%]											Comments	
001:	<.01											None	

Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.

Micro Examination - APTX E1 - 11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below

Item 02: Wrought iron microstructure observed: ferrite with iron-silicate slag and possibly trace amounts of grain boundary pearlite

### Certificate Comments

The composition and microstructure of the section are indicative of wrought iron.

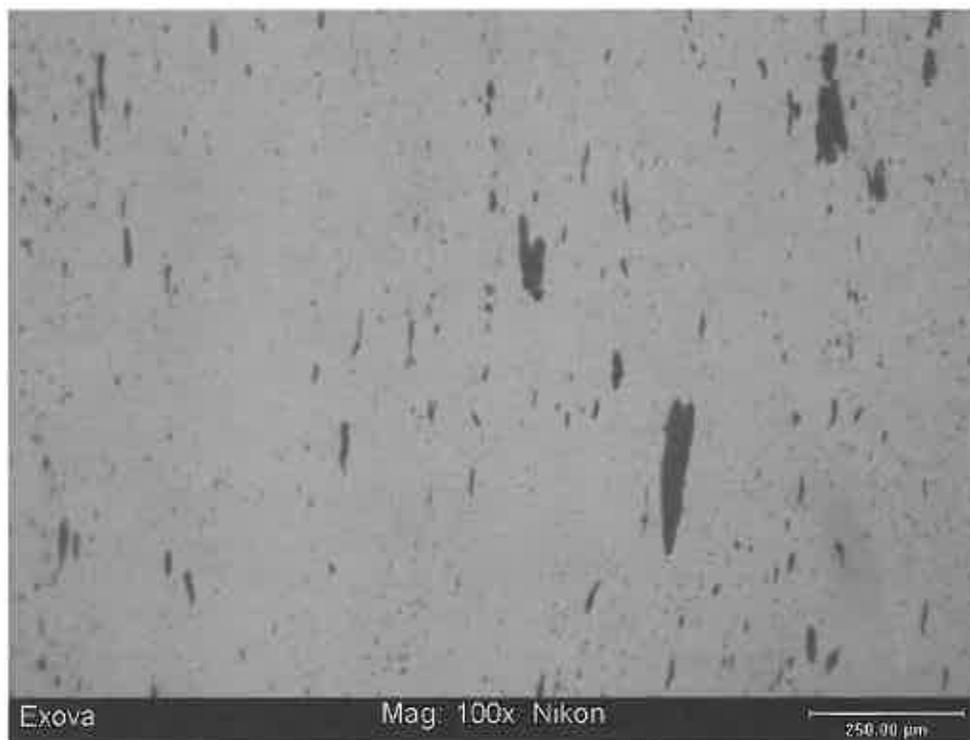
*Tami M. Tonon*  
 Tami M Tonon  
 Section Manager/SrMetallurgist  
 For and on behalf of  
 Exova Inc.

The recording of false, fictitious or fraudulent statements or entries may be punished as a felony under federal law  
 This certificate should not be reproduced other than in full, without the written approval of Exova, 194 Internationale Blvd, Glendale Heights, IL, USA, 60139  
 These results pertain only to the item(s) tested as sampled by the client unless otherwise indicated.  
 Testing has been conducted to specification revision levels as described in the laboratory's document control procedure.  
 Information regarding estimate of measurement uncertainty (where applicable) available upon request.



**Photographs - In House Procedure**

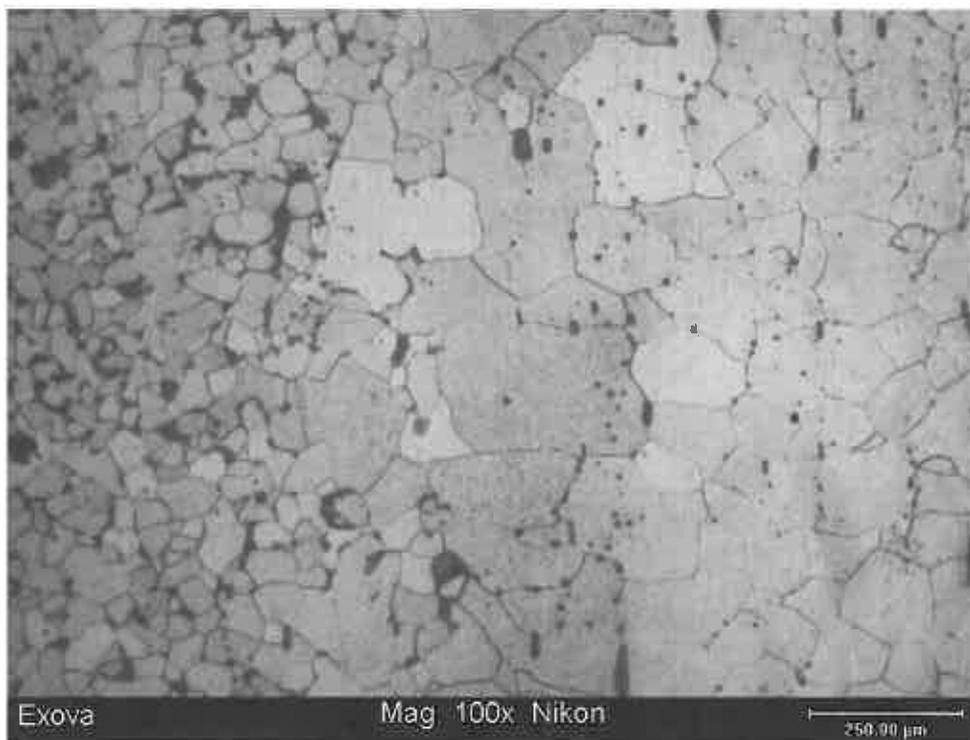
	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

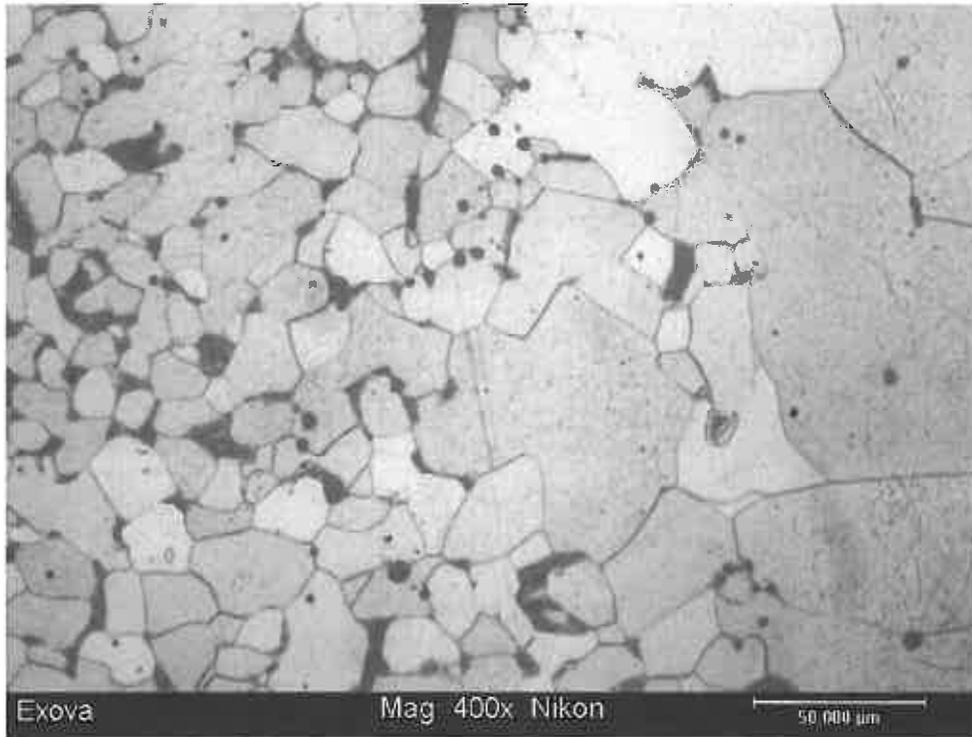
	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	



Stated magnification refers to original capture condition.



## Test Certificate

Wiss, Janney, Elstner Assoc.  
10 South LaSalle  
Suite 2600  
Chicago, IL  
60603

REF No  
Page  
Ord No  
Date Tested  
Date Printed  
Date Received

T 201313 : Issue 1  
1 of 4  
WJE 2011.3699  
01/26/12  
01/31/12  
01/20/12

Attn: Stephen J. Kelley

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 7B-DOME, BRACING ELEMENT, REMOVED BY NPS 1/2012

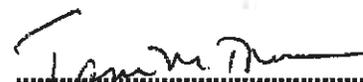
Specification - Not Applicable

Chemical Analysis													
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]	Comments	
001:	3.96	.32	.219	.087	1.11	.01	<.01	<.01	<.01	<.01	.07	None	
	Mg [%]											Comments	
001:	<.01											None	
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.													

Micro - examination - ASTM E3 - 11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below
Item 02: Gray iron microstructure observed: flake graphite in an essentially pearlitic matrix with ferrite and carbide			

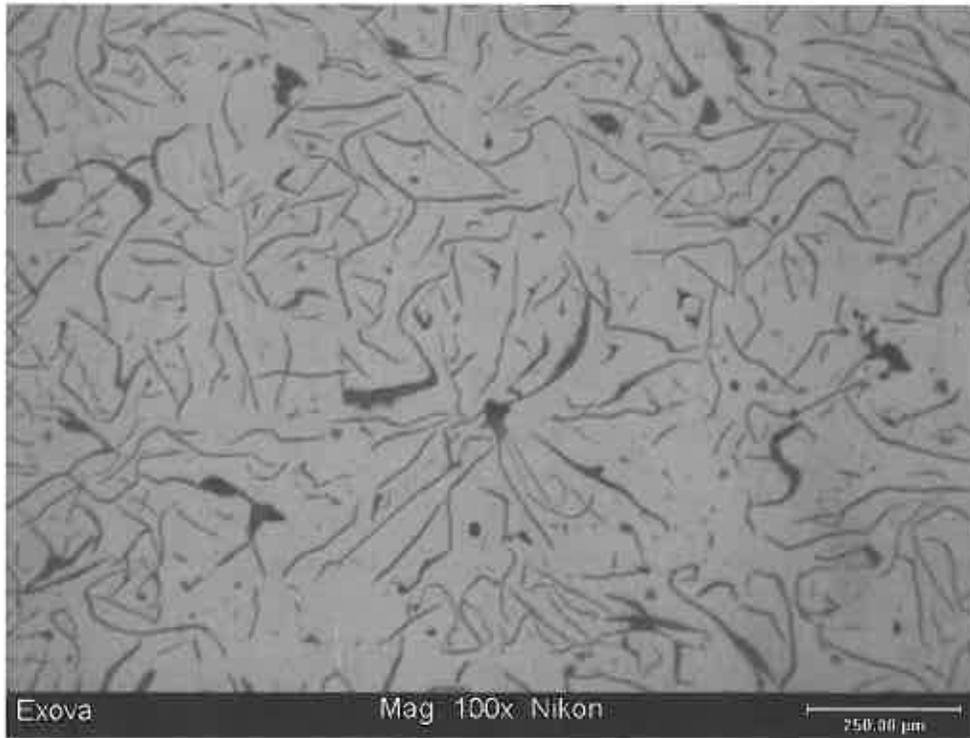
### Certificate Comments

The composition and microstructure of the section are indicative of gray cast iron.

  
Tami M Tonon  
Section Manager/Sr Metallurgist  
For and on behalf of  
Exova Inc.

**Photographs - In House Procedure**

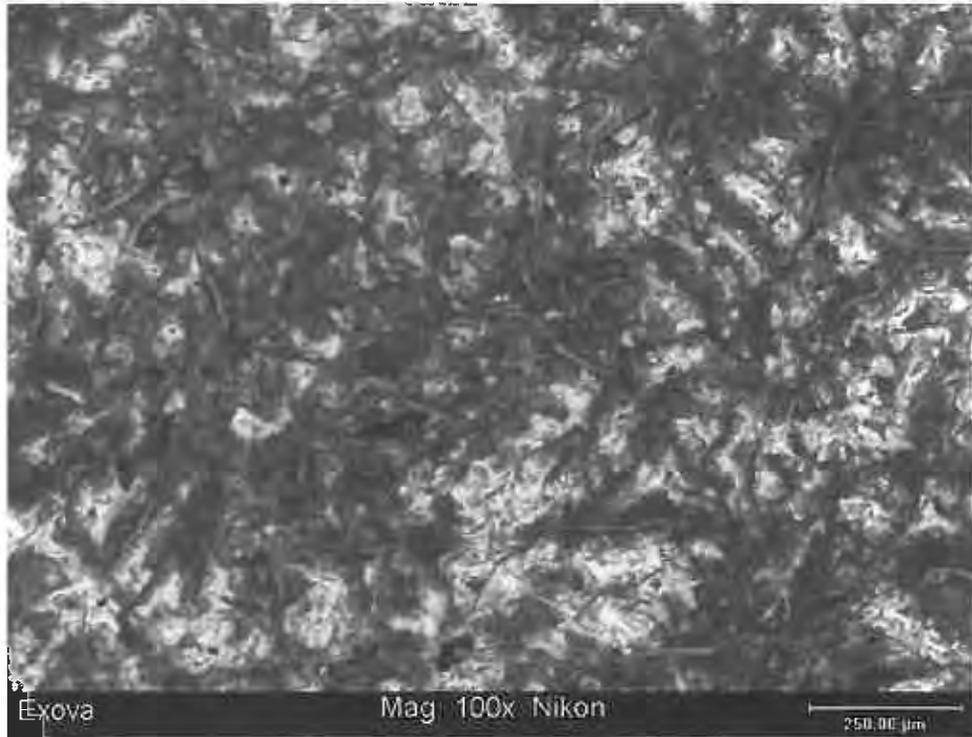
	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	



Stated magnification refers to original capture condition.



# Test Certificate

Wiss, Janney, Elstner Assoc.  
 10 South LaSalle  
 Suite 2600  
 Chicago, IL  
 60603

REF No  
 Page  
 Ord No  
 Date Tested  
 Date Printed  
 Date Received

T 201314 : Issue 1  
 1 of 4  
 WJE 2011.3699  
 01/26/12  
 01/31/12  
 01/20/12

Attn: Stephen J. Kelley

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 8-WEST WING, SECOND FLOOR BEAM,(2 SAMPLES) REMOVED 1/10/12

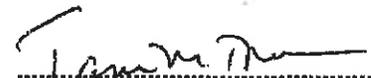
Specification - Not Applicable

Chemical Analysis													
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]	Comments	
001:	3.55	.16	.469	.123	1.85	.01	.01	<.01	<.01	<.01	.04	None	
	Mg [%]											Comments	
001:	<.01											None	
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.													

Microstructure - ASTM E3 -11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below
Item 02: Gray iron microstructure observed; flake graphite in an essentially pearlitic matrix with ferrite, steadite and carbide			

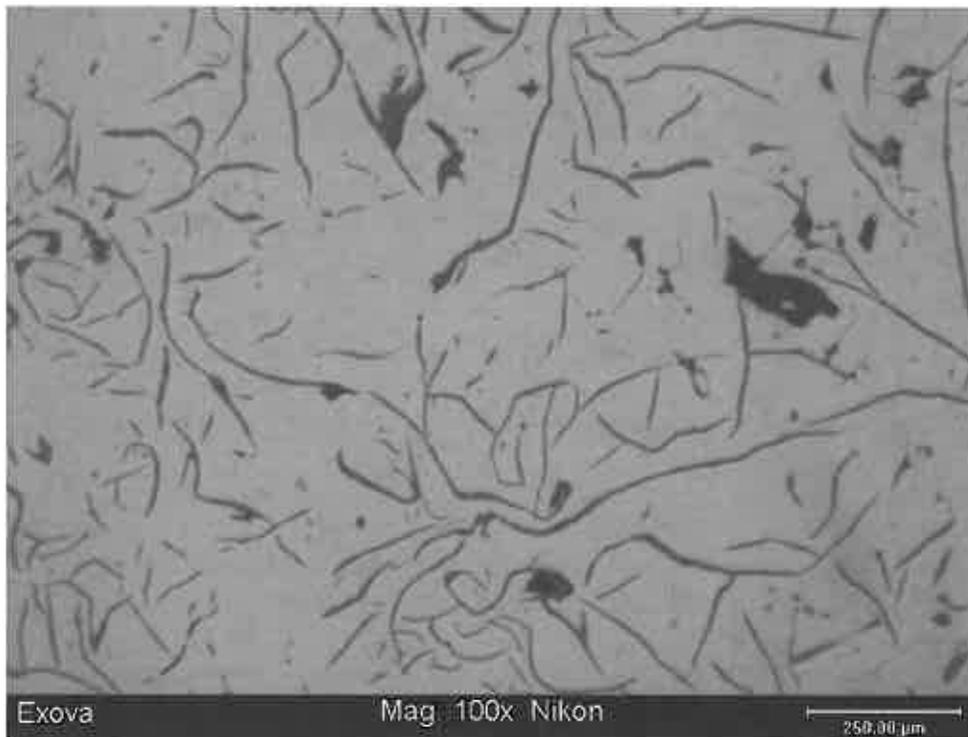
### Certificate Comments

The composition and microstructure of the section are indicative of gray cast iron.

  
 Tami M Tonon  
 Section Manager/Sr Metallurgist  
 For and on behalf of  
 Exova Inc.

**Photographs - In House Procedure**

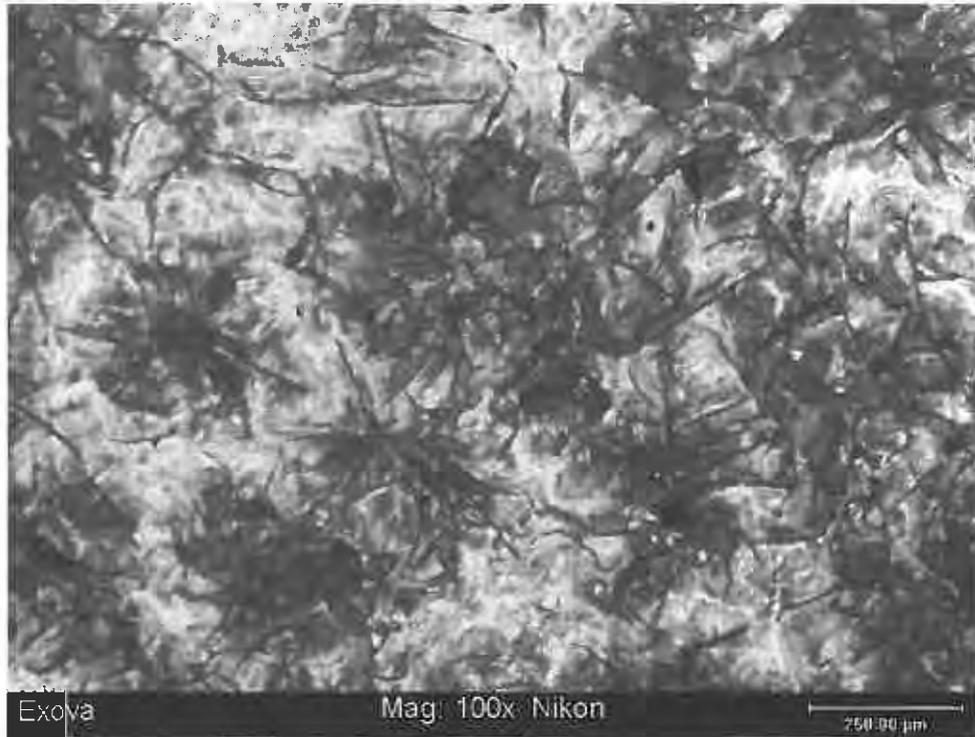
	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

Wiss, Janney, Elstner Assoc.  
10 South LaSalle

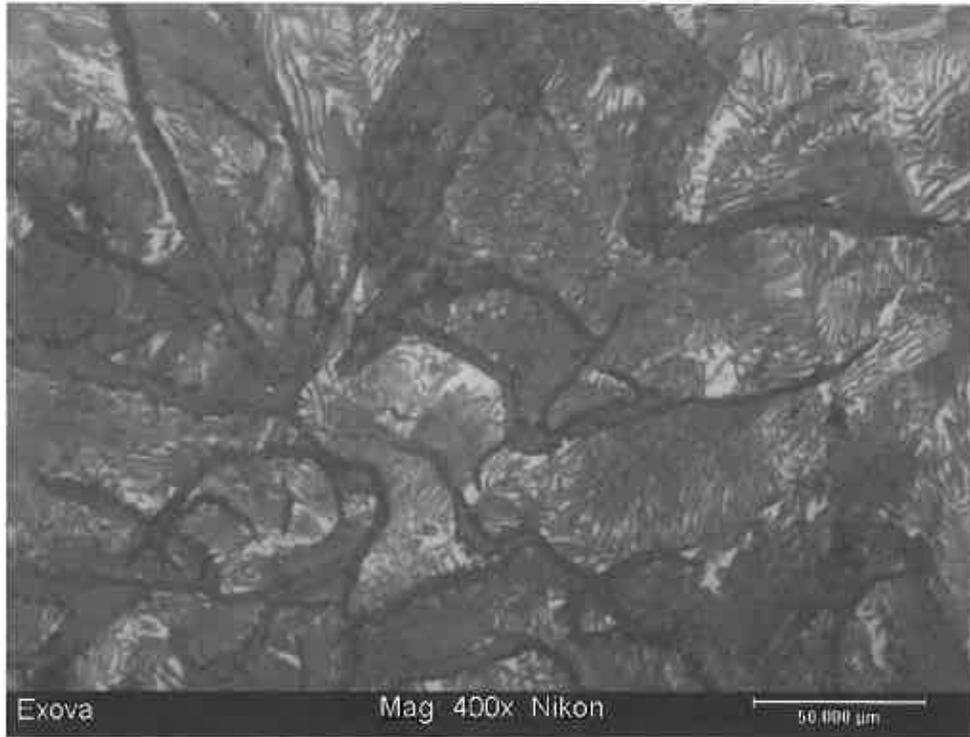
CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN  
ST. LOUIS, SAMPLE 8-WEST WING, SECOND FLOOR BEAM,(2 SAMPLES)

REF No  
Page

T 201314 : Issue 1  
4 of 4

**Photographs - In House Procedure**

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	

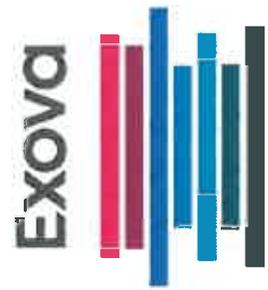


Stated magnification refers to original capture condition.

The recording of false, fictitious or fraudulent statements or entries may be punished as a felony under federal law.  
This certificate should not be reproduced other than in full, without the written approval of Exova, 194 Internationale Blvd, Glendale Heights, IL, USA, 60129.  
These results pertain only to the item(s) tested as sampled by the client unless otherwise indicated.  
Testing has been conducted to specification revision levels as described in the laboratory's document control procedure.  
Information regarding estimate of measurement uncertainty (where appropriate) available upon request.



Accredited  
**Nadcap**  
Materials Testing Laboratory



## Test Certificate

Wiss, Janney, Elstner Assoc.  
 10 South LaSalle  
 Suite 2600  
 Chicago, IL  
 60603

Attn: Stephen J. Kelley

REF No  
 Page  
 Ord No  
 Date Tested  
 Date Printed  
 Date Received

T 201315 : Issue 1  
 1 of 4  
 WJE 2011.3699  
 01/26/12  
 01/31/12  
 01/20/12

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 9-EAST WING, FIRST FLOOR BEAM, REMOVED 1/12/12

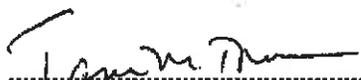
Specification - Not Applicable

Chemical Analysis													
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]	Comments	
001:	3.46	.12	.543	.129	1.27	.01	.01	.01	.01	<.01	.01	None	
	Mg [%]											Comments	
001:	<.01											None	
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.													

Micro Examination - ASTM E3 -11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below
Item 02: Gray iron microstructure observed: flake graphite in an essentially pearlitic matrix with ferrite and steadite			

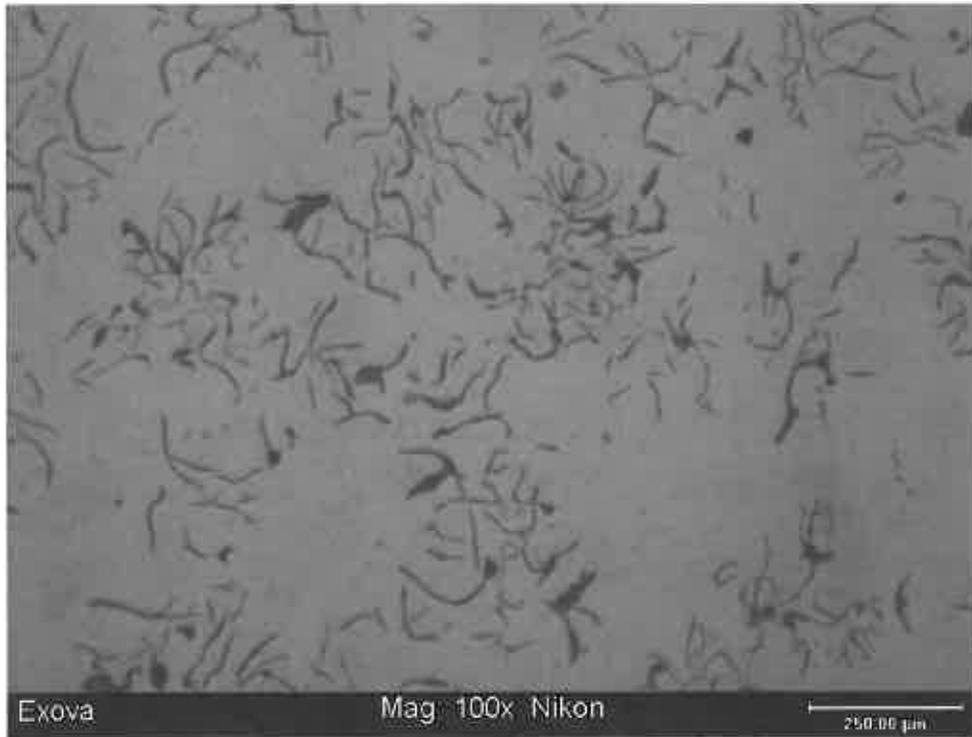
### Certificate Comments

The composition and microstructure of the section are indicative of gray cast iron.

  
 Tami M Tonon  
 Section Manager/SrMetallurgist  
 For and on behalf of  
 Exova Inc.

**Photographs - In House Procedure**

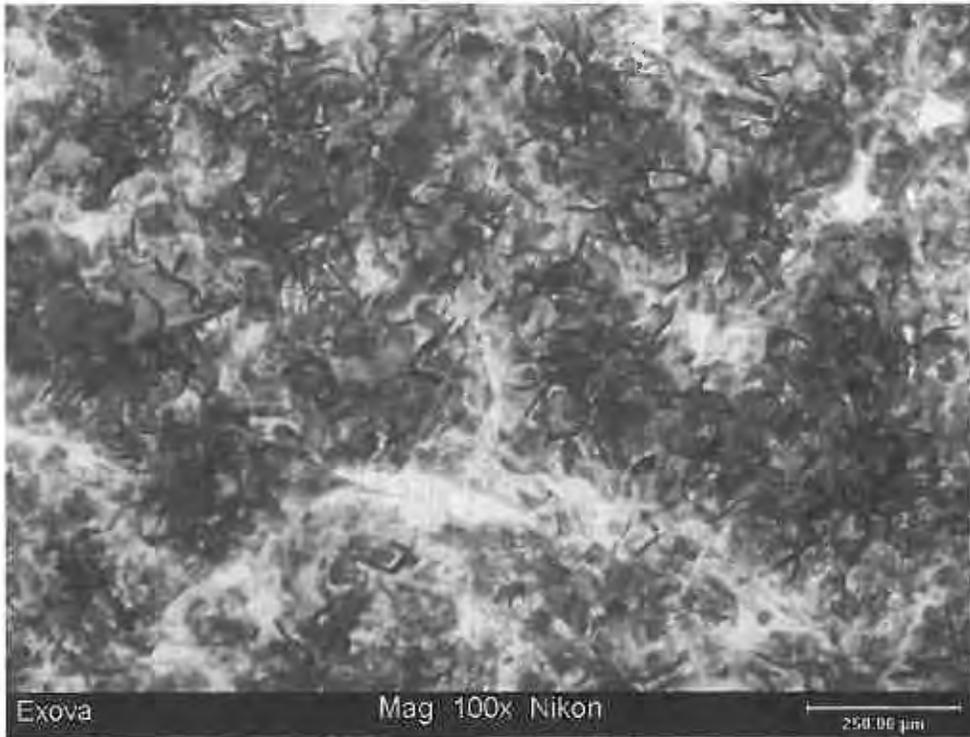
	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	



Stated magnification refers to original capture condition.

**Photographs - In House Procedure**

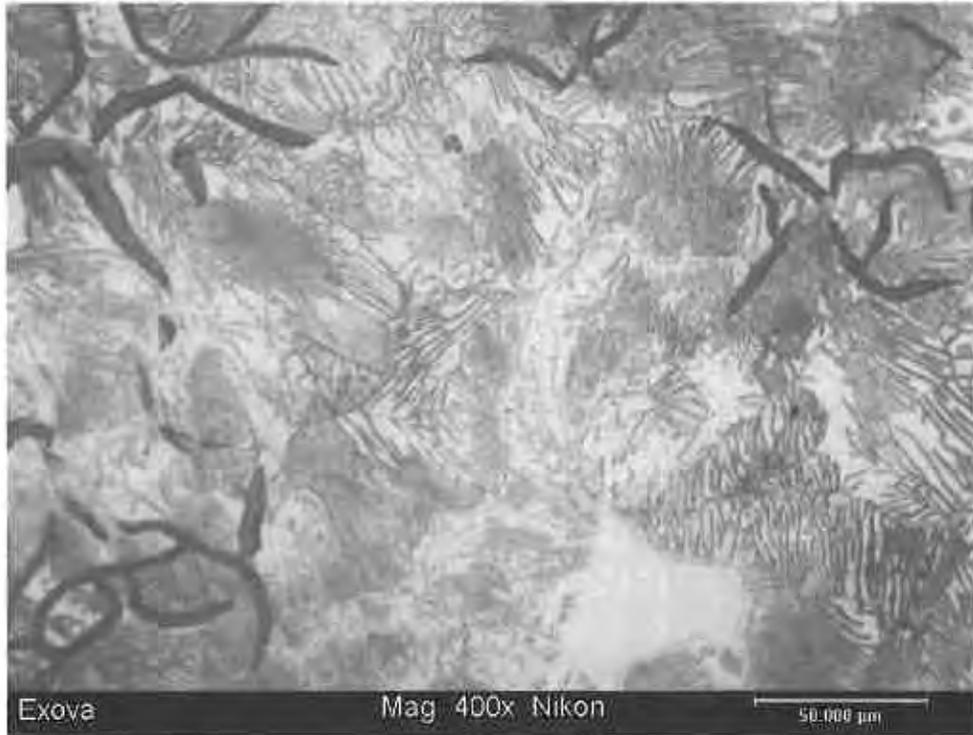
	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

Photographs - In House Procedure

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	



Stated magnification refers to original capture condition.



# Test Certificate

Wiss, Janney, Elstner Assoc.  
10 South LaSalle  
Suite 2600  
Chicago, IL  
60603

REF No  
Page  
Ord No  
Date Tested  
Date Printed  
Date Received

T 201316 : Issue 1  
1 of 4  
WJE 2011.3699  
01/26/12  
01/31/12  
01/20/12

Attn: Stephen J. Kelley

Item - CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN ST. LOUIS, SAMPLE 10-NORTH WING, FIRST FLOOR BEAM, REMOVED 1/11/12

Specification - Not Applicable

Chemical Analysis													Comments
	TC [%]	Mn [%]	P [%]	S [%]	Si [%]	Ni [%]	Cr [%]	Mo [%]	Cu [%]	Sn [%]	V [%]		Comments
001:	3.70	.73	.533	.063	2.44	.02	.01	<.01	<.01	.01	.04		None
	Mg [%]												Comments
001:	<.01												None

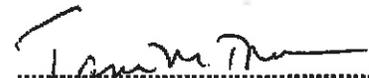
Analysis by ICP, OES, Combustion and/or Gravimetric Methods. Details available upon request.

Microstructure Examination - ASTM E3 -11			
	Position	Details	Comments
002:Microstructural Exam	Random Area	General Structure	See Below

Item 02: Gray iron microstructure observed; flake graphite in an essentially ferritic matrix with pearlite

## Certificate Comments

The composition and microstructure of the section are indicative of gray cast iron.

  
Tami M Tonon  
Section Manager/Sr Metallurgist  
For and on behalf of  
Exova Inc.

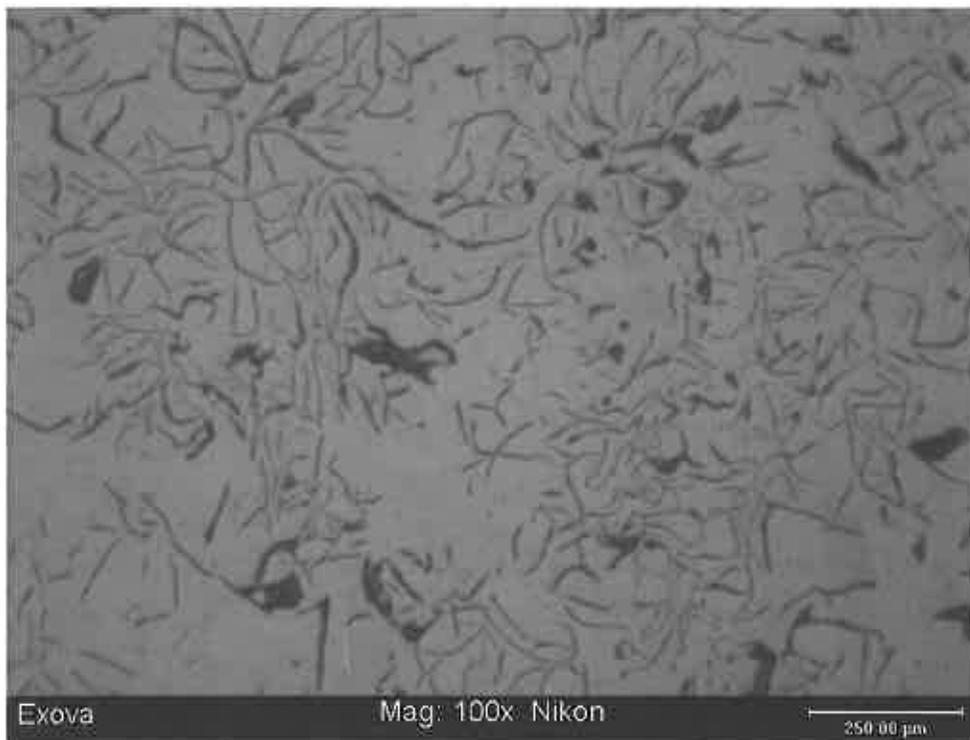
Wiss, Janney, Elstner Assoc.  
 10 South LaSalle  
 CHEMISTRY AND MICROSTRUCTURE FROM OLD COURTHOUSE IN  
 ST. LOUIS, SAMPLE 10-NORTH WING, FIRST FLOOR BEAM, REMOVED

REF No  
 Page

T 201316 : Issue 1  
 2 of 4

**Photographs - In House Procedure**

	Location	Position	Magnification	
003:Micro Section	As-polished	Random Area	x100	

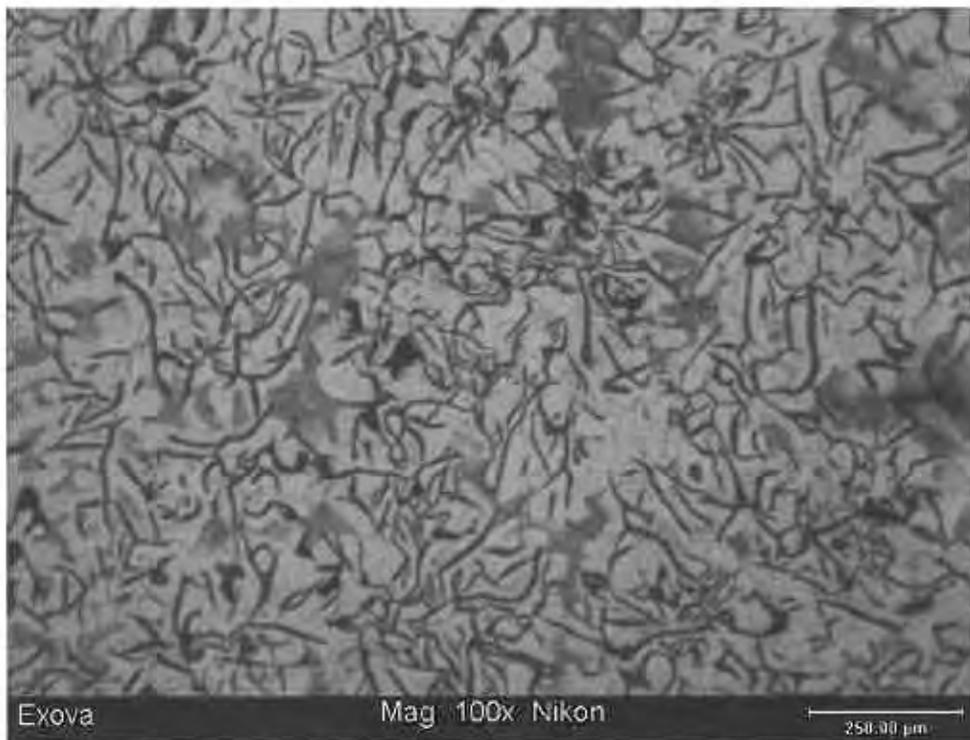


Stated magnification refers to original capture condition.

The recording of false, fictitious or fraudulent statements or entries may be punished as a felony under federal law  
 This certificate should not be reproduced other than in full, without the written approval of Exova, 194 Internationale Blvd, Glendale Heights, IL, USA, 60139  
 These results pertain only to the item(s) tested as sampled by the client unless otherwise indicated.  
 Testing has been conducted to specification revision levels as described in the laboratory's document control procedure.  
 Information regarding estimate of measurement uncertainty (where appropriate) available upon request.

**Photographs - In House Procedure**

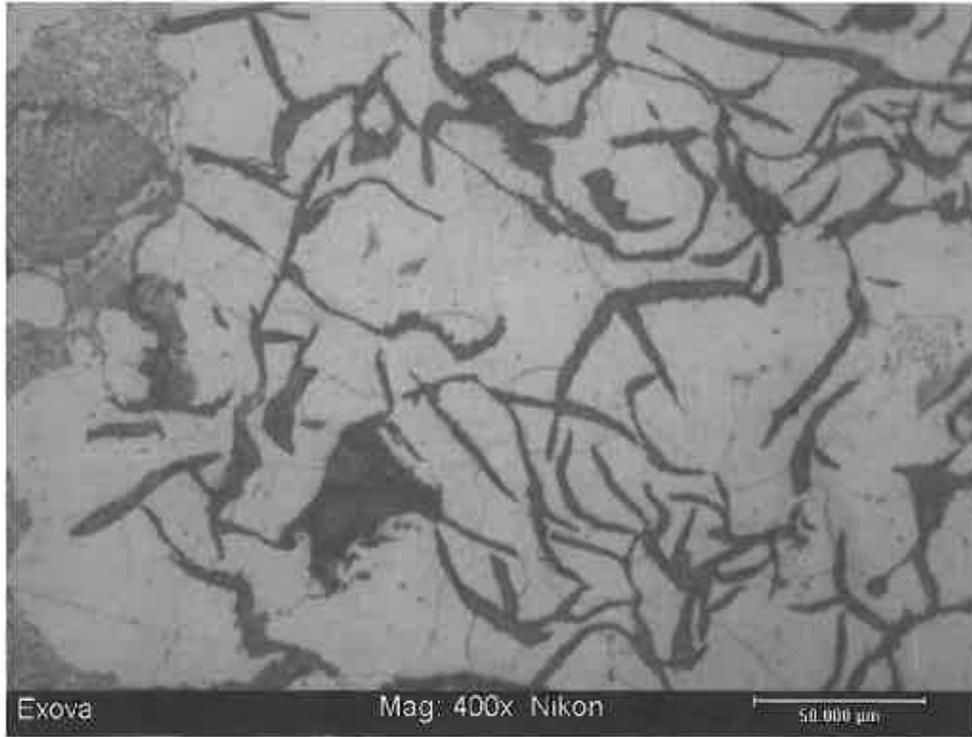
	Location	Position	Magnification	
004:Micro Section	Nital Etch	Random Area	x100	



Stated magnification refers to original capture condition.

Photographs - In House Procedure

	Location	Position	Magnification	
005:Micro Section	Nital Etch	Structure Detail	x400	



Stated magnification refers to original capture condition.



## **Appendix C**

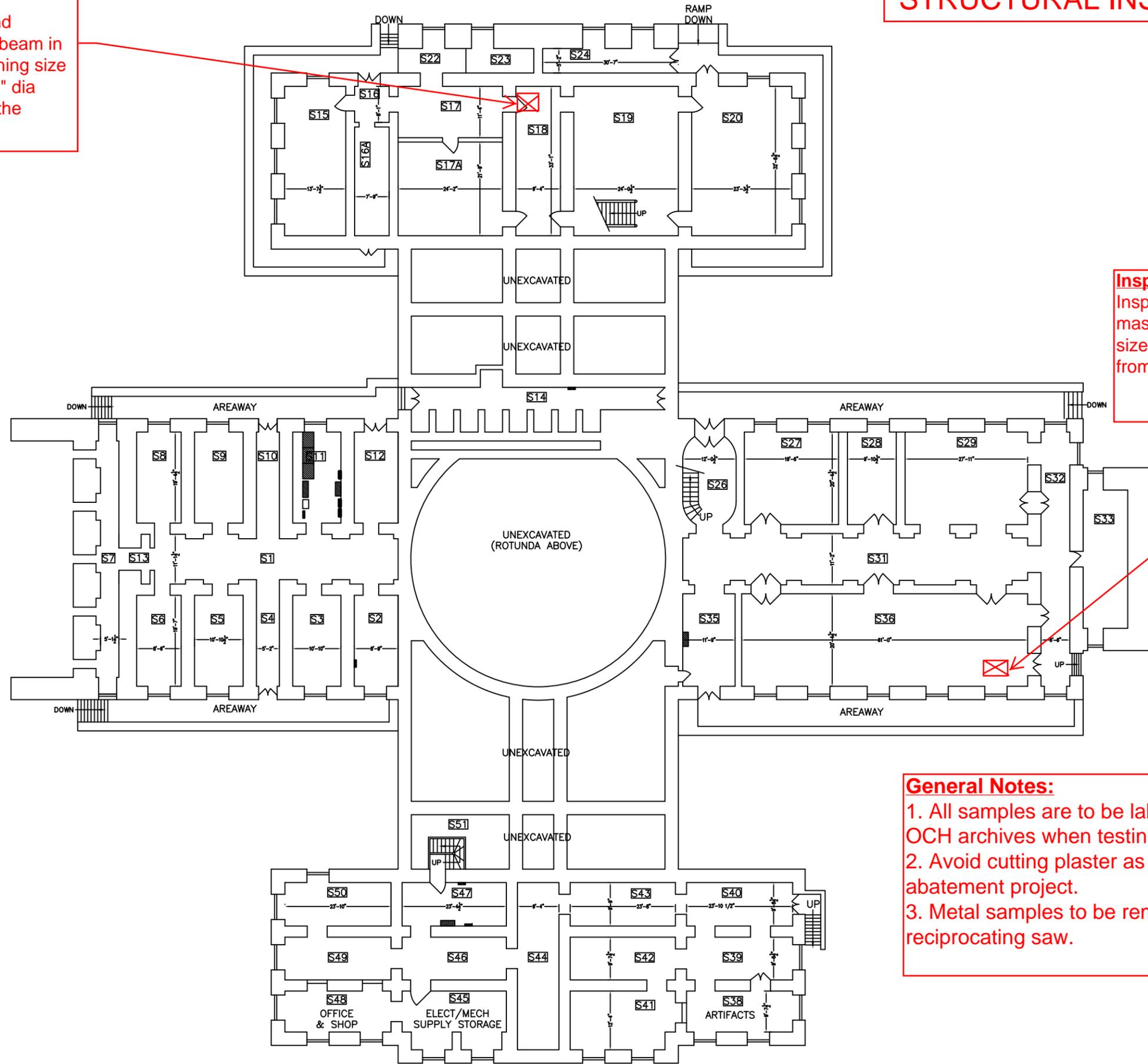
### **Structural Inspection Openings**

Appendix C contains a graphic representation of inspection opening locations.



**Inspection Opening #1 & Sample Location #10**  
 Inspection Opening in plaster and masonry arch alongside double beam in ceiling of conference room (opening size approx. 8"x12"). Remove (2) 3/4" dia plugs from the bottom flange of the beam.

**STRUCTURAL INSPECTION OPENINGS**



**Inspection Opening #2 & Sample Location #9**  
 Inspection Opening alongside iron beam in masonry arch in ceiling of workshop. (Opening size approx. 12"x12"). Remove (2) 3/4" plugs from bottom flange of beam.

**General Notes:**

1. All samples are to be labeled and returned to OCH archives when testing is complete.
2. Avoid cutting plaster as this will cause an abatement project.
3. Metal samples to be removed using a reciprocating saw.

**BASEMENT FLOOR PLAN** ↑N

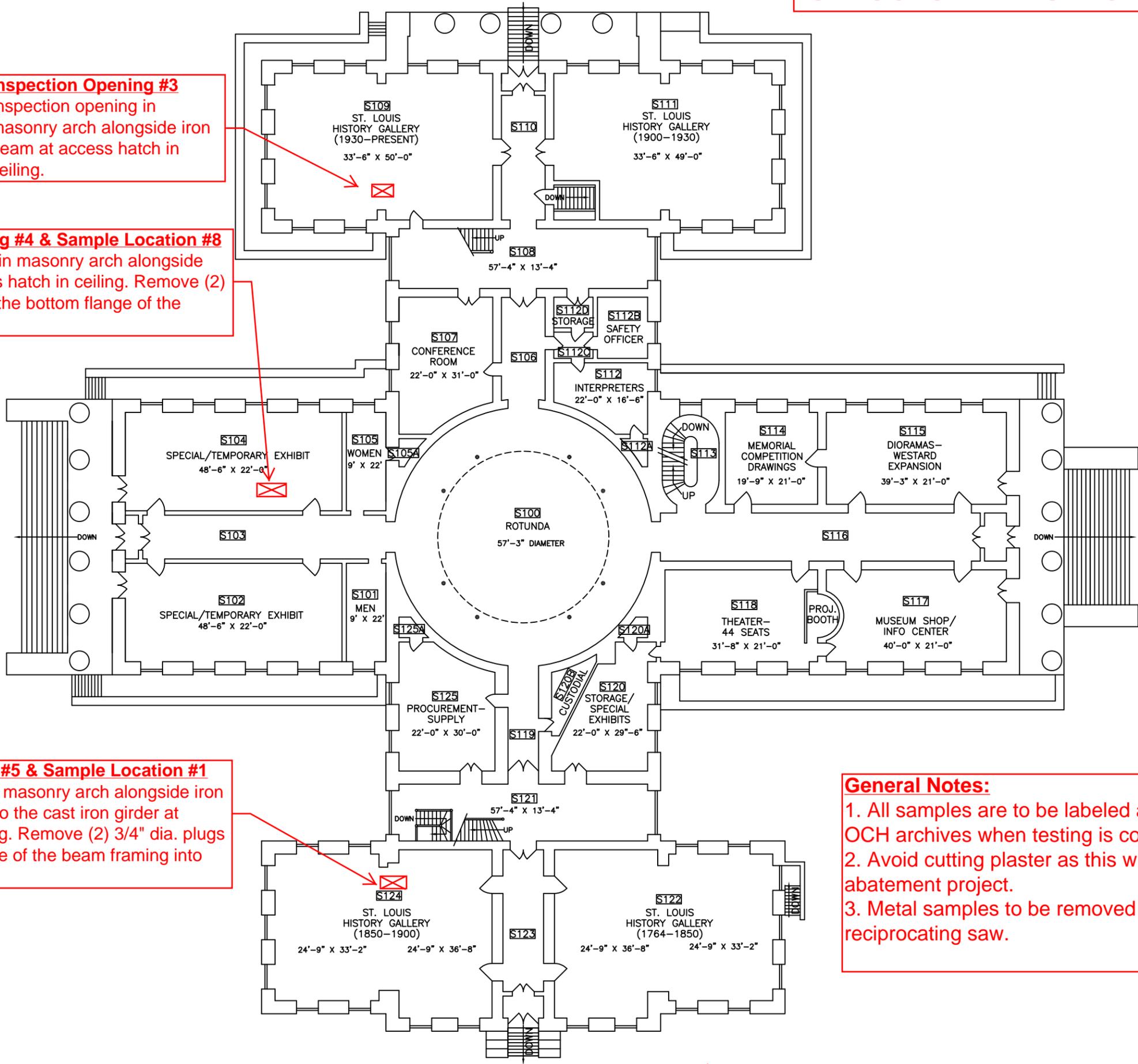


# STRUCTURAL INSPECTION OPENINGS

**Inspection Opening #3**  
 Inspection opening in masonry arch alongside iron beam at access hatch in ceiling.

**Inspection Opening #4 & Sample Location #8**  
 Inspection opening in masonry arch alongside iron beam at access hatch in ceiling. Remove (2) 3/4" dia plugs from the bottom flange of the beam.

**Inspection Opening #5 & Sample Location #1**  
 Inspection opening in masonry arch alongside iron beam which frame into the cast iron girder at access hatch in ceiling. Remove (2) 3/4" dia. plugs from the bottom flange of the beam framing into the girder.



**General Notes:**

1. All samples are to be labeled and returned to OCH archives when testing is complete.
2. Avoid cutting plaster as this will cause an abatement project.
3. Metal samples to be removed using a reciprocating saw.

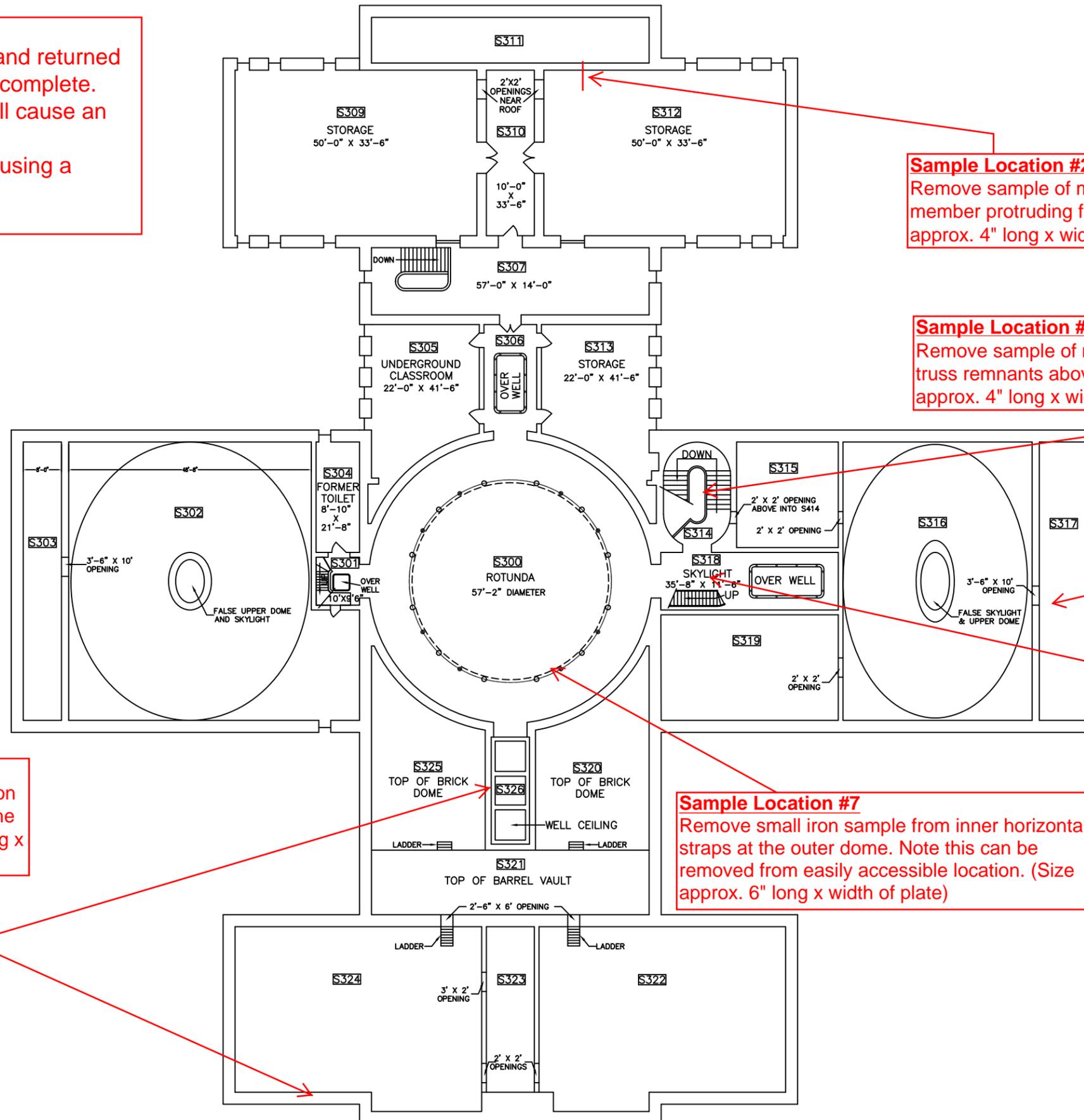
FIRST FLOOR PLAN ↑N



# STRUCTURAL INSPECTION OPENINGS

## General Notes:

1. All samples are to be labeled and returned to OCH archives when testing is complete.
2. Avoid cutting plaster as this will cause an abatement project.
3. Metal samples to be removed using a reciprocating saw.



### Sample Location #2

Remove sample of metal of portion of truss member protruding from the masonry wall. (Size approx. 4" long x width of plates)

### Sample Location #3

Remove sample of metal of portion of remaining truss remnants above stair and in attic space (Size approx. 4" long x width of plates)

### Sample Location #4

Remove sample of existing metal purlin. **Note this sample has already been removed.**

### Sample Location #6

Floor tiles removed to reveal beam top flange.

### Sample Locations #5 & #6

Remove samples of metal of portion of truss member protruding from the masonry wall. (Size approx. 4" long x width of plates)

### Sample Location #7

Remove small iron sample from inner horizontal straps at the outer dome. Note this can be removed from easily accessible location. (Size approx. 6" long x width of plate)



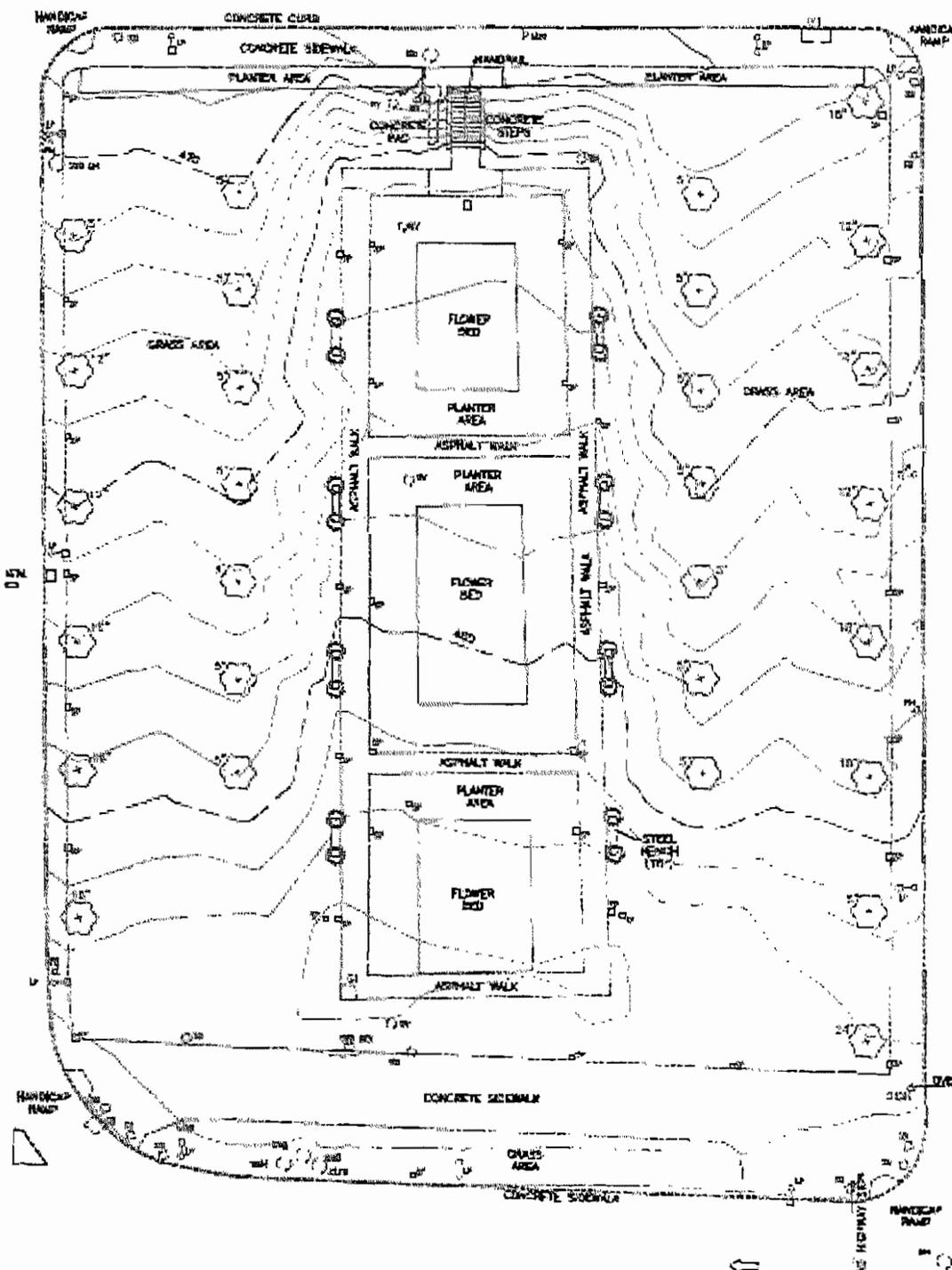


**Appendix D**  
**Mechanical Evaluation**



MARKET STREET

MARKET STREET



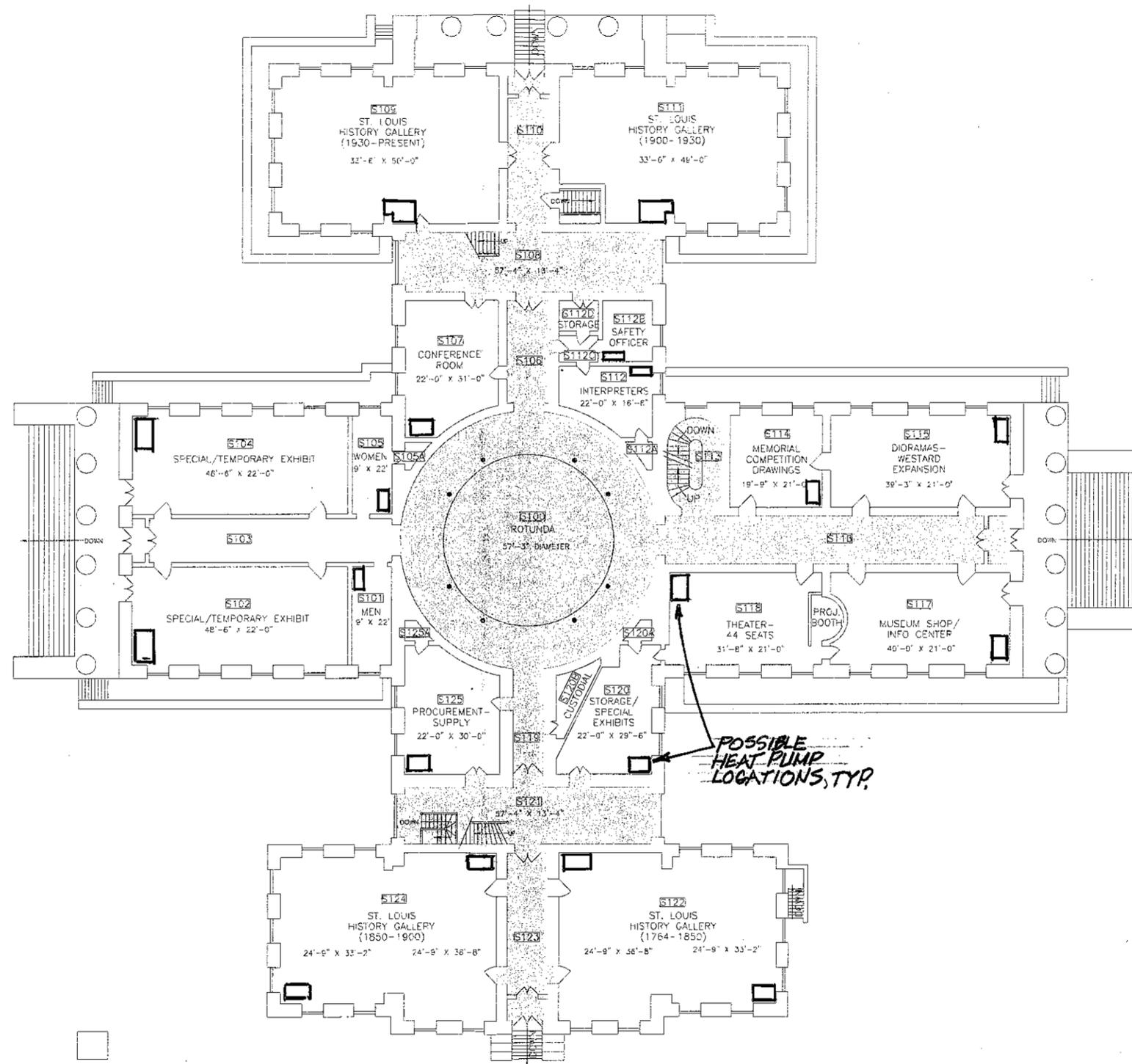
CHESTNUT STREET

CHESTNUT STREET

OVERHEAD WIRE

MARKET STREET





POSSIBLE  
HEAT PUMP  
LOCATIONS, TYP.

POSSIBLE HVAC EQUIPMENT  
LOCATIONS

FIRST LEVEL



ARCHITECTURAL CONSERVATOR  
WISS JANNEY ELSTNER ASSOCIATES, INC.  
10 SOUTH LASALLE STREET, SUITE 2600  
CHICAGO, IL 60603  
(312) 372-0555

ARCHITECT  
BAHR VERMEER HAECKER ARCHITECTS  
440 N 0TH STREET STE 100  
LINCOLN, NE 68508  
(402) 475-4551

MARK	SHEET	REVISED	DATE	APPROVED	DATE
				REVIEWED	DATE
				REVIEWED	DATE
				REVIEWED	DATE
				REVIEWED	DATE

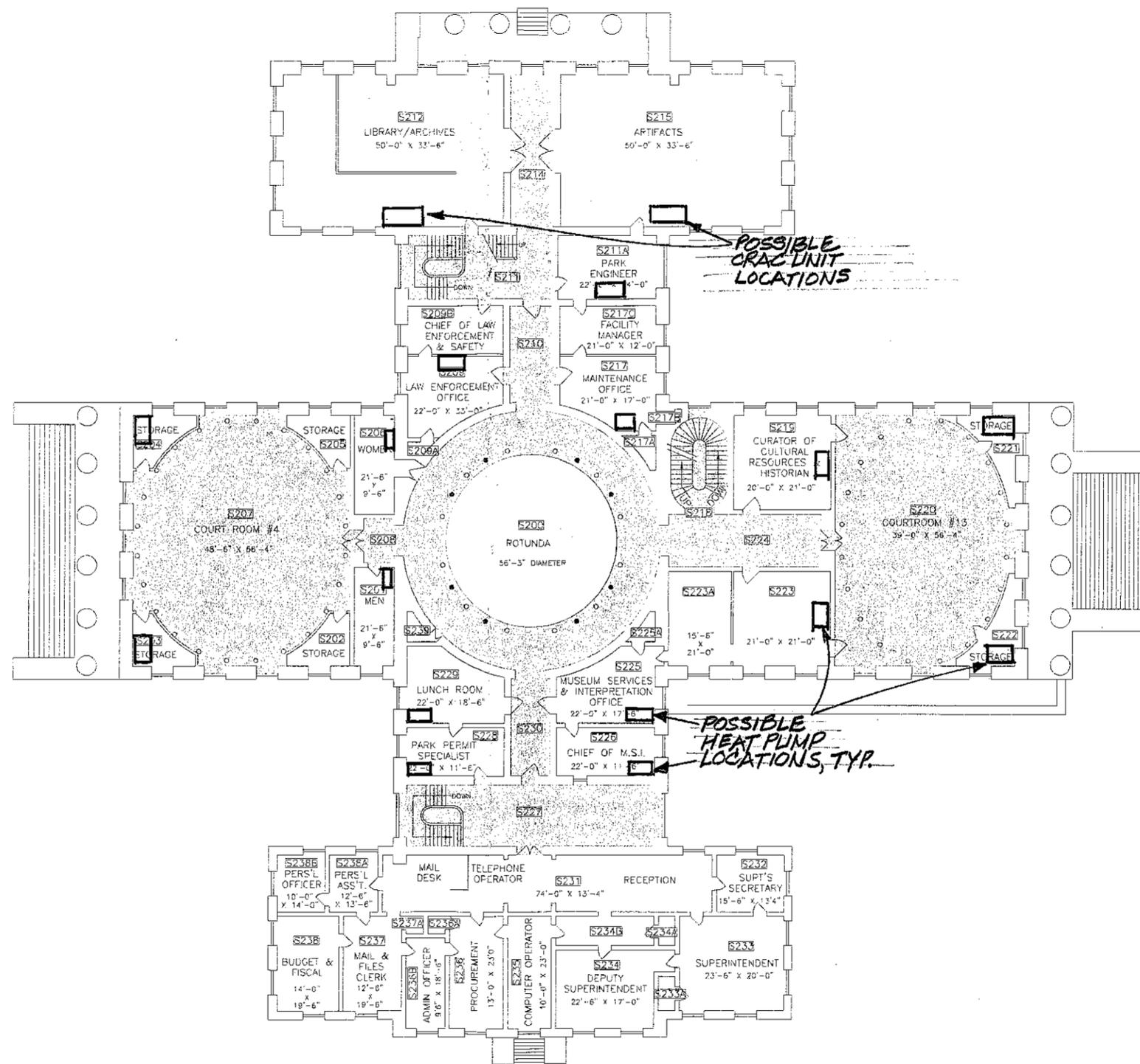


UNITED STATES  
DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
Omaha Regional Center

Old Court House  
St. Louis, MO  
Historic Structures Report

DRAWING NO.	
PKG. NO.	
SHEET	
OF	





POSSIBLE CRAC UNIT LOCATIONS

POSSIBLE HEAT PUMP LOCATIONS, TYP.

POSSIBLE HVAC EQUIPMENT LOCATIONS

SECOND LEVEL



ARCHITECTURAL CONSERVATOR  
 WISS JANNEY ELSTNER ASSOCIATES, INC.  
 10 SOUTH LASALLE STREET, SUITE 2600  
 CHICAGO, IL 60603  
 (312) 372-0555

ARCHITECT  
 BAHR VERMEER HAECKER ARCHITECTS  
 440 N 8TH STREET STE 100  
 LINCOLN, NE 68508  
 (402) 475-4551

DATE	SHEET	REVISED	BY	APPROVED	DATE

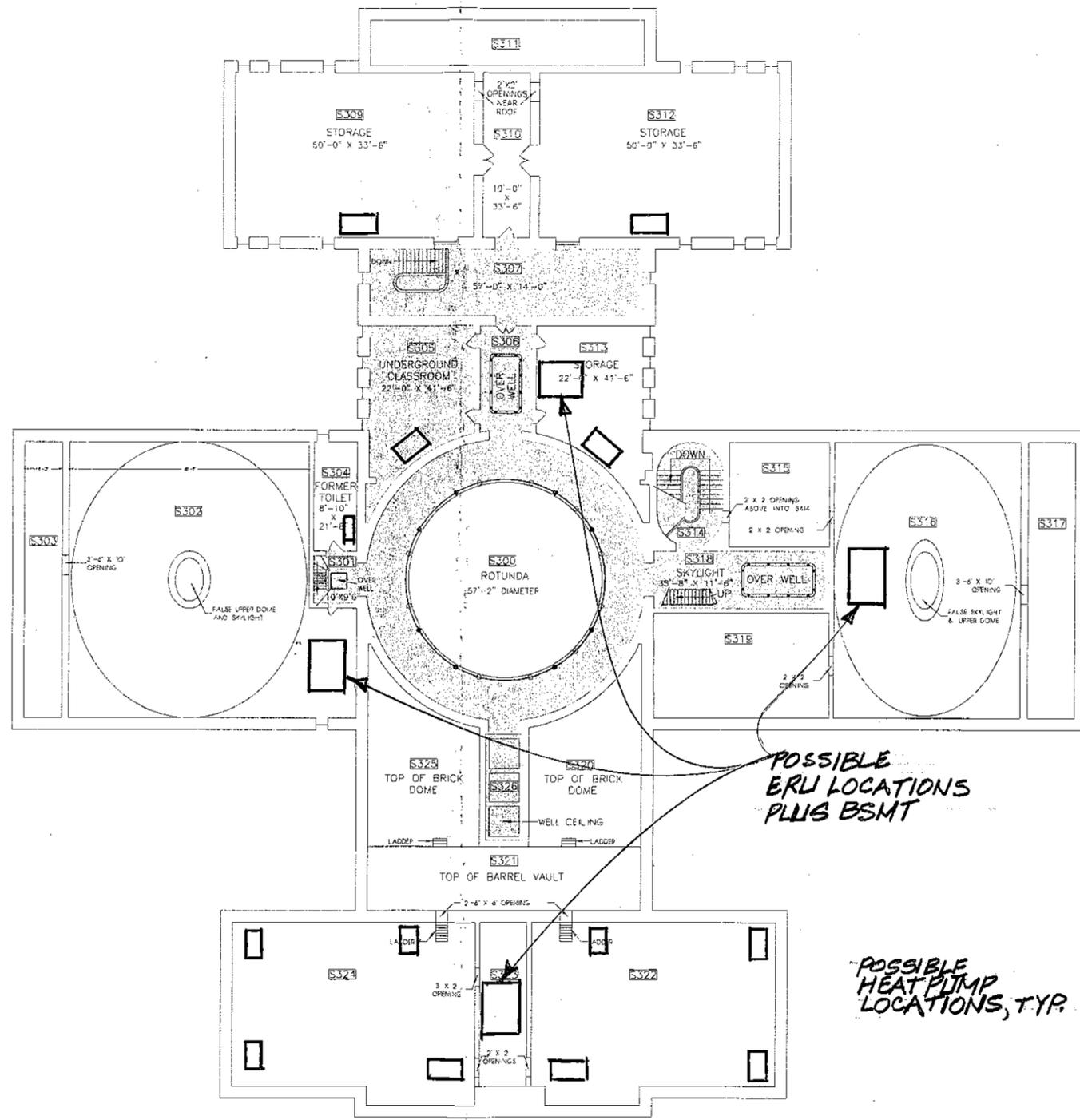


UNITED STATES  
 DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE  
 Omaha Regional Center

Old Court House  
 St. Louis, MO  
 Historic Structures Report

DRAWING NO.	
PKG. NO.	
SHEET	
OF	





POSSIBLE  
ERU LOCATIONS  
PLUS BSMT

POSSIBLE  
HEAT PUMP  
LOCATIONS, TYP.

POSSIBLE HVAC EQUIPMENT  
LOCATIONS

THIRD LEVEL



ARCHITECTURAL CONSERVATOR  
WISS JANNEY ELSTNER ASSOCIATES, INC.  
10 SOUTH LASALLE STREET, SUITE 2800  
CHICAGO, IL 60603  
(312) 372-0555

ARCHITECT  
BAHR VERMEER HAECKER ARCHITECTS  
440 N 8TH STREET STE 100  
LINCOLN, NE 68508  
(402) 475-4551

NO.	DATE	REVISIONS	BY	CHKD



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
Omaha Regional Center

Old Court House  
St. Louis, MO  
Historic Structures Report

DRAWING NO.	
PKG. NO.	
SHEET	
OF	



COLLECTIONS STORAGE

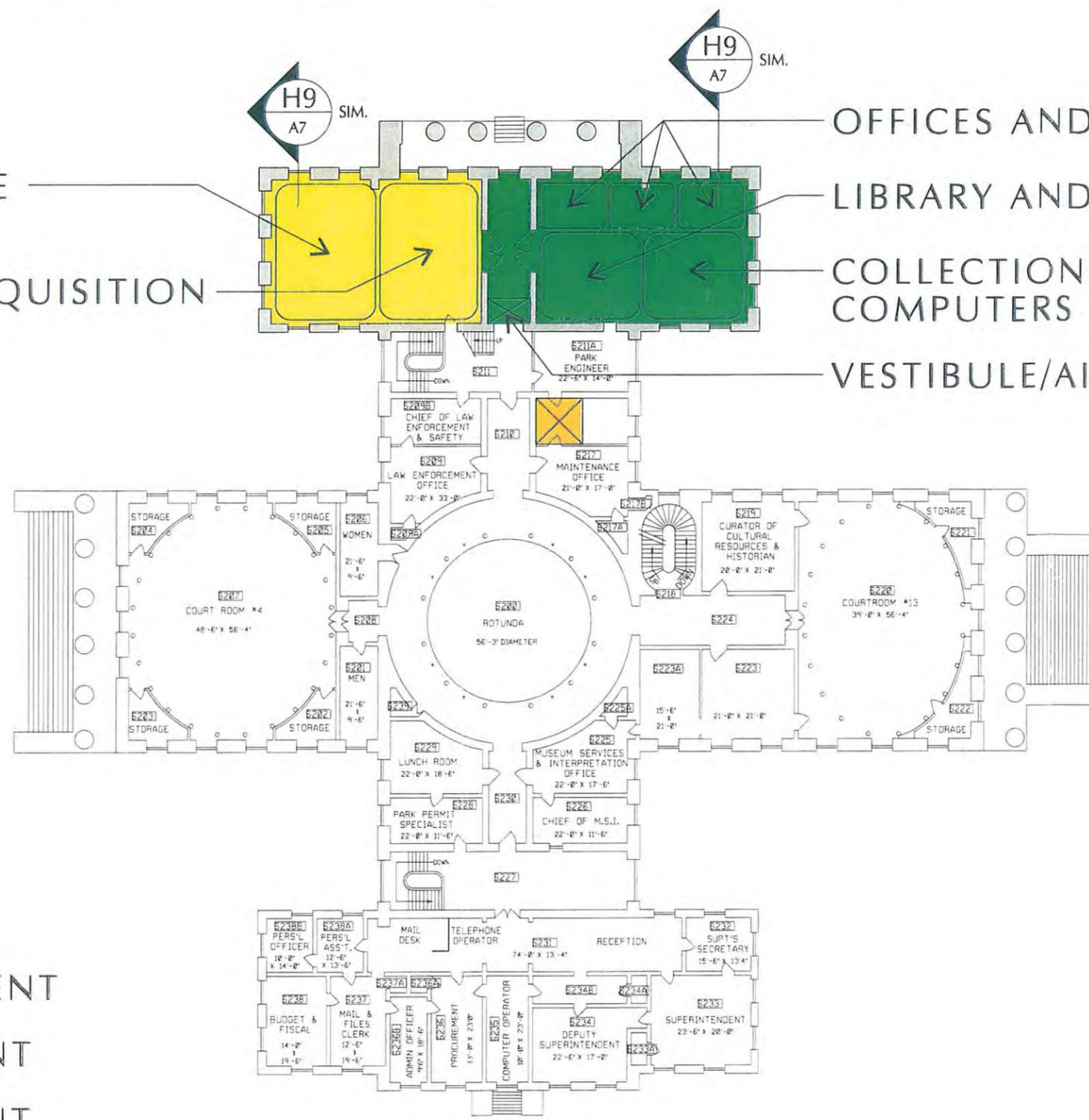
PREP/CLIMITIZATION/AQUISITION

OFFICES AND WORK STATIONS

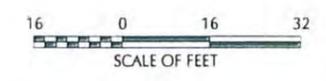
LIBRARY AND READING ROOM

COLLECTIONS REFERENCE/COPIER/COMPUTERS

VESTIBULE/AIRLOCK



- CLASS AA ENVIRONMENT
- CLASS A ENVIRONMENT
- CLASS B ENVIRONMENT
- POTENTIAL ELEVATOR LOCATION



SCHMATIC DESIGN  
DRAFT SUBMITTAL - NOT FOR CONSTRUCTION

ARCHITECT  
BAHR VERMEER HAECKER ARCHITECTS  
121 SOUTH 13TH STREET, SUITE 200  
LINCOLN, NE 68508  
(402) 475-4551

MECHANICAL ENGINEER  
ALVINE AND ASSOCIATES INC.  
1645 N STREE, SUITE B  
LINCOLN NE 68508  
(402) 477-6161

DESIGNED DW  
DRAWN MGH  
TECH. REVIEW  
DATE: 29 APRIL 2005

SUB SHEET NO.  
**A3**

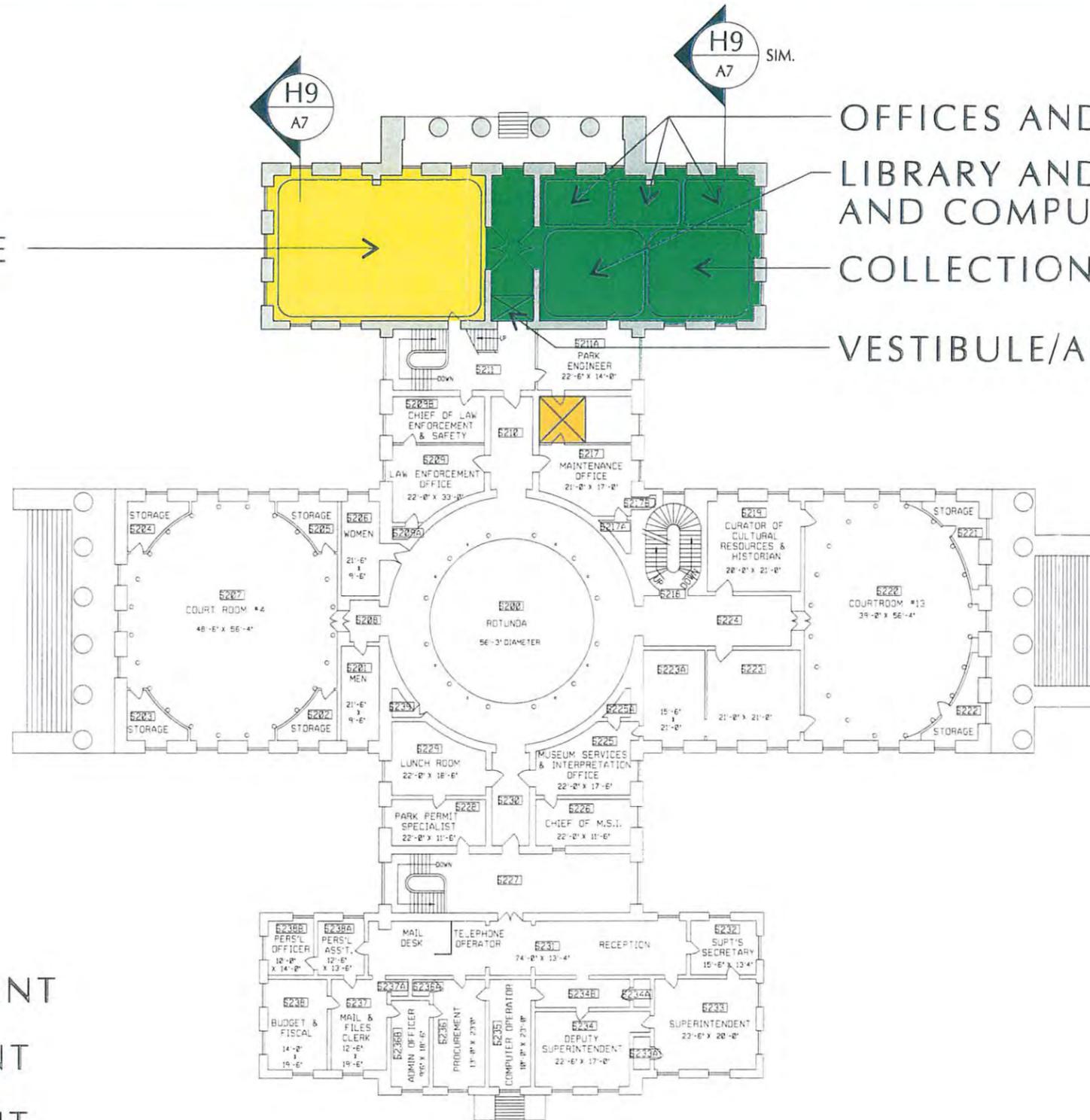
**SECOND FLOOR  
ALTERNATIVE A**  
MECHANICAL EVALUATION  
COLLECTIONS STORAGE AREAS  
OLD COURTHOUSE  
JEFFERSON NATIONAL EXPANSION MEMORIAL  
ST. LOUIS, MISSOURI

DRAWING NO.  
SHEET  
**3**  
of 7



COLLECTIONS STORAGE

OFFICES AND WORK STATIONS  
 LIBRARY AND READING ROOM  
 AND COMPUTERS  
 COLLECTIONS REFERENCE/COPIER  
 VESTIBULE/AIRLOCK



- CLASS AA ENVIRONMENT
- CLASS A ENVIRONMENT
- CLASS B ENVIRONMENT
- POTENTIAL ELEVATOR LOCATION



SCHMATIC DESIGN  
 DRAFT SUBMITTAL - NOT FOR CONSTRUCTION

ARCHITECT  
 BAHR VERMEER HAECKER ARCHITECTS  
 121 SOUTH 13TH STREET, SUITE 200  
 LINCOLN, NE 68508  
 (402) 475-4551

MECHANICAL ENGINEER  
 ALVINE AND ASSOCIATES INC.  
 1645 N STREE, SUITE B  
 LINCOLN NE 68508  
 (402) 477-6161

DESIGNED  
 DW  
 DRAWN  
 MGH  
 TECH. REVIEW  
 DATE: 29 APRIL 2005

SUB SHEET NO.  
**A5**

**SECOND FLOOR  
 ALTERNATIVE B**  
 MECHANICAL EVALUATION  
 COLLECTIONS STORAGE AREAS  
 OLD COURTHOUSE  
 JEFFERSON NATIONAL EXPANSION MEMORIAL  
 ST. LOUIS, MISSOURI

DRAWING NO.  
 SHEET  
**5**  
 OF  
**7**



GENERAL STORAGE/  
MECHANICAL

COLLECTIONS STORAGE

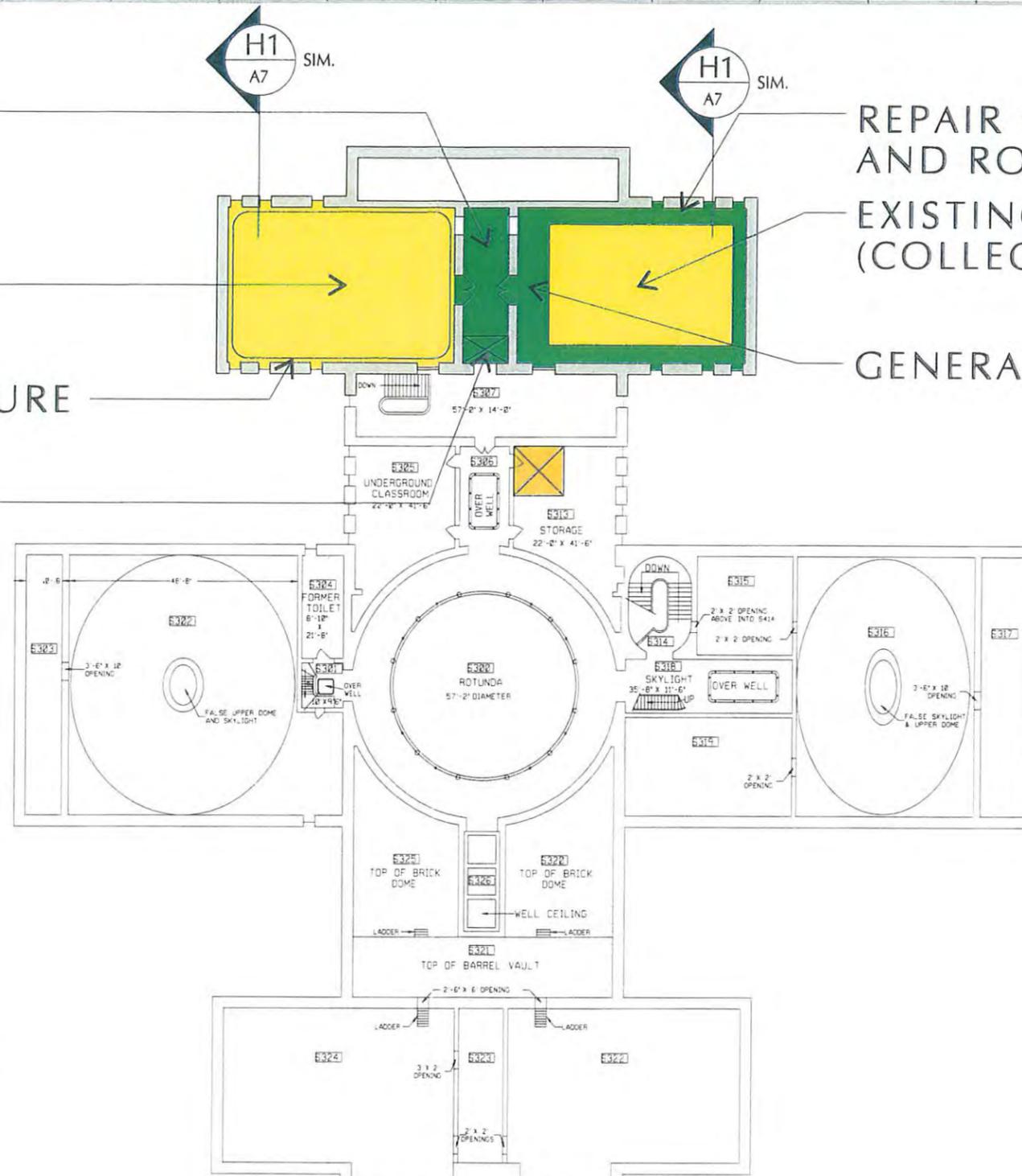
REPAIR EXTERIOR ENCLOSURE  
AND ROOF (BY OTHERS)

VESTIBULE/AIR LOCK

REPAIR EXTERIOR ENCLOSURE  
AND ROOF (BY OTHERS)

EXISTING BALLY BUILDING  
(COLLECTIONS STORAGE)

GENERAL STORAGE



- CLASS AA ENVIRONMENT
- CLASS A ENVIRONMENT
- CLASS B ENVIRONMENT
- POTENTIAL ELEVATOR LOCATION



SCHMATIC DESIGN  
DRAFT SUBMITTAL - NOT FOR CONSTRUCTION

ARCHITECT  
BAHR VERMEER HAECKER ARCHITECTS  
121 SOUTH 13TH STREET, SUITE 200  
LINCOLN, NE 68508  
(402) 475-4551

MECHANICAL ENGINEER  
ALVINE AND ASSOCIATES INC.  
1645 N STREE, SUITE B  
LINCOLN NE 68508  
(402) 477-6161

DESIGNED  
Dw  
DRAWN  
MGH  
TECH. REVIEW  
DATE: 29 APRIL 2005

SUB SHEET NO.  
**A4**

**THIRD FLOOR  
ALTERNATIVE A**  
MECHANICAL EVALUATION  
COLLECTIONS STORAGE AREAS  
OLD COURTHOUSE  
JEFFERSON NATIONAL EXPANSION MEMORIAL  
ST. LOUIS, MISSOURI

DRAWING NO.  
SHEET  
**4**  
OF  
**7**



**Appendix E**  
**Cost Estimates**

**Cast Iron Capital Relacement**  
**Encaustic Tile Restoration and Replacement**  
**Geothermal HVAC**  
**Courtyard Rehabilitation**



Class C Construction Cost Estimate  
 JEFF Old Court House Historic Structure Report  
 St Louis, MO

Estimate By: **Corey Thomas**

Date: 11/1/2012

Reviewed By: **MPG**

Date: 11/1/2012

**Cast Iron Capital Replacement  
 Option #1 -Cast Aluminum**

Estimate is Based on 2012 Construction Costs

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
General		\$114,000	\$0	\$114,000
Mechanical		\$0	\$0	\$0
Electrical		\$0	\$0	\$0
<b>Subtotal Direct Construction Cost</b>		<b>\$114,000</b>	<b>\$0</b>	<b>\$114,000.00</b>
Published Location Factor (0 Percent)	0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)	0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent on labor portion)	3%	\$1,710	\$0	\$1,710
Design Contingency (15 Percent)	15%	\$17,100	\$0	\$17,100
<b>Total Direct Construction Costs</b>		<b>\$132,810</b>	<b>\$0</b>	<b>\$132,810</b>
Standard General Conditions (0 Percent)	0%	\$0	\$0	\$0
Government General Conditions (5 Percent)	5%	\$6,641	\$0	\$6,641
Historic Preservation Factor (5 Percent)	0%	\$0	\$0	\$0
<b>Subtotal NET Construction Cost</b>		<b>\$139,451</b>	<b>\$0</b>	<b>\$139,451</b>
Overhead (15 Percent)		\$0	\$0	\$0
Profit (10 Percent)		\$0	\$0	\$0
<b>Subtotal NET Construction Cost</b>		<b>\$139,451</b>	<b>\$0</b>	<b>\$139,451</b>
Contracting Method Adjustment (8a)		\$0	\$0	\$0
<b>Estimated NET Construction Cost</b>		<b>\$139,451</b>	<b>\$0</b>	<b>\$139,451</b>
<b>TOTAL Estimated NET Cost of Construction</b> (Inflated to Summer 2010)	4%	<b>\$145,029</b>	<b>\$0</b>	<b>\$145,029</b>
Construction Contingency (5%)	5%	\$7,251	\$0	\$7,251
Construction Management (NAPA 0%)	0%	\$0	\$0	\$0
<b>GROSS CONSTRUCTION COSTS</b>		<b>\$152,280</b>	<b>\$0</b>	<b>\$152,280</b>



Class C Construction Cost Estimate  
 JEFF Old Court House Historic Structure Report  
 St Louis, MO

Estimate By: **Corey Thomas**  
 Date: 11/1/2012  
 Reviewed By: **MPG**  
 Date: 11/1/2012

**Cast Iron Capital Replacement  
 Option #2 - GFRC**

Estimate is Based on 2012 Construction Costs

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Option #2 - GFRC				
General		\$138,000	\$0	\$138,000
Mechanical		\$0	\$0	\$0
Electrical		\$0	\$0	\$0
<b>Subtotal Direct Construction Cost</b>		<b>\$138,000</b>	<b>\$0</b>	<b>\$138,000.00</b>
Published Location Factor (0 Percent)	0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)	0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent on labor portion)	3%	\$2,070	\$0	\$2,070
Design Contingency (15 Percent)	15%	\$20,700	\$0	\$20,700
<b>Total Direct Construction Costs</b>		<b>\$160,770</b>	<b>\$0</b>	<b>\$160,770</b>
Standard General Conditions (0 Percent)	0%	\$0	\$0	\$0
Government General Conditions (5 Percent)	5%	\$8,039	\$0	\$8,039
Historic Preservation Factor (5 Percent)	0%	\$0	\$0	\$0
<b>Subtotal NET Construction Cost</b>		<b>\$168,809</b>	<b>\$0</b>	<b>\$168,809</b>
Overhead (15 Percent)	0%	\$0	\$0	\$0
Profit (10 Percent)	0%	\$0	\$0	\$0
<b>Subtotal NET Construction Cost</b>		<b>\$168,809</b>	<b>\$0</b>	<b>\$168,809</b>
Contracting Method Adjustment (8a)	0%	\$0	\$0	\$0
<b>Estimated NET Construction Cost</b>		<b>\$168,809</b>	<b>\$0</b>	<b>\$168,809</b>
<b>TOTAL Estimated NET Cost of Construction</b> (Inflated to Summer 2010)	4%	<b>\$175,561</b>	<b>\$0</b>	<b>\$175,561</b>
Construction Contingency (5%)	5%	\$8,778	\$0	\$8,778
Construction Management (NAPA 0%)	0%	\$0	\$0	\$0
<b>GROSS CONSTRUCTION COSTS</b>		<b>\$184,339</b>	<b>\$0</b>	<b>\$184,339</b>



A	B	C	D	E	F	G
1	Project: Old Courthouse.			Estimate By:	Pishney Restoration	
2	Park: JNEM, St. Louis, Missouri			Date:	11/02/12	
3	PMIS:			Reviewed By:	MPG	
4				Date:	11/05/12	
5	Replace Dome Column Capitals					
6						
7	Estimate is based on 2012 costs					
8						
9						
10	Item No.	Description	Quantity	Unit	Cost/Unit	Total
11	Option #1	Replace Dome Column Capitals-Cast Aluminum				
12		a. 24 prefinished aluminum capitals and fasteners	24		\$1,500.00	\$36,000
13		b. Create master mold	1		LS	\$5,000
14		c. Labor -installation of replacement capitals	1		LS	\$18,000
15		d. Access -scaffold engineering/erection/rental	1		LS	\$55,000
16		<b>Subtotal Direct Construction Costs -Option #1</b>				<b>\$114,000</b>
17						
18	Option #2	Replace Dome Column Capitals-GFRC				
19		a. 24 prefinished GFRC capitals and fasteners	24		\$2,500.00	\$60,000
20		b. Create master mold	1		LS	\$5,000
21		c. Labor -installation of replacement capitals	1		LS	\$18,000
22		d. Access -scaffold engineering/erection/rental	1		LS	\$55,000
23		<b>Subtotal Direct Construction Costs -Option #2</b>				<b>\$138,000</b>
24						



**Encaustic Tile Restoration and Replacement**

Estimate is Based on 2012 Construction Costs

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
General		\$222,870	\$0	\$222,870
Mechanical		\$0	\$0	\$0
Electrical		\$0	\$0	\$0
<b>Subtotal Direct Construction Cost</b>		<b>\$222,870</b>	<b>\$0</b>	<b>\$222,870.00</b>
Published Location Factor (0 Percent)	0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)	0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent on labor portion)	3%	\$3,343	\$0	\$3,343
Design Contingency (1.5 Percent)	15%	\$33,431	\$0	\$33,431
<b>Total Direct Construction Costs</b>		<b>\$259,644</b>	<b>\$0</b>	<b>\$259,644</b>
Standard General Conditions (0 Percent)	0%	\$0	\$0	\$0
Government General Conditions (5 Percent)	5%	\$12,982	\$0	\$12,982
Historic Preservation Factor (5 Percent)	0%	\$0	\$0	\$0
<b>Subtotal NET Construction Cost</b>		<b>\$272,626</b>	<b>\$0</b>	<b>\$272,626</b>
Overhead (15 Percent)			\$0	\$0
Profit (10 Percent)			\$0	\$0
<b>Subtotal NET Construction Cost</b>		<b>\$272,626</b>	<b>\$0</b>	<b>\$272,626</b>
Contracting Method Adjustment (8a)	0%	\$0	\$0	\$0
<b>Estimated NET Construction Cost</b>		<b>\$272,626</b>	<b>\$0</b>	<b>\$272,626</b>
<b>TOTAL Estimated NET Cost of Construction</b> (Inflated to Summer 2010)	4%	<b>\$283,531</b>	<b>\$0</b>	<b>\$283,531</b>
Construction Contingency (5%)	5%	\$14,177	\$0	\$14,177
Construction Management (NAPA 0%)	0%	\$0	\$0	\$0
<b>GROSS CONSTRUCTION COSTS</b>		<b>\$297,707</b>	<b>\$0</b>	<b>\$297,707</b>



A	B	C	D	E	F	G
1	Project: Old Courthouse.			Estimate By:	Pishney Restoration	
2	Park: JNEM, St. Louis, Missouri			Date:	11/02/12	
3	PMIS:					
4				Reviewed By:	MPG	
5	Restore Encaustic Tile Floor			Date:	11/05/12	
6						
7	Estimate is based on 2012 costs					
8						
9						
10						
11	Item No.	Quantity	Unit	Cost/Unit	Total	
12	Restore existing encaustic tile					
13	a. General Conditions	1,800	S.F.	\$7.50	\$13,500	
14	b. Removal method trials		S.F.	LS	\$9,950	
15	c. Removal of mastic	1,800	S.F.	\$30.25	\$54,450	
16	d. Removal of white leveling compound	1,800	S.F.	\$7.75	\$13,950	
17	e. Removal of floor transition cement	1,800	S.F.	\$10.30	\$18,540	
18	f. Leveling of floor transition	1,800	S.F.	\$5.00	\$9,000	
19	g. Installation of duplicate tiles		S.F.	LS	\$19,000	
20	h. Grout/cleaning/waxing		S.F.	LS	\$10,500	
21	j. Encaustic tile replacement units -Cravin Dunnill- (Assumes 60% of total square footage to be replaced)	1,080	S.F.	\$68.50	\$73,980	
22	<b>Subtotal Direct Construction Costs</b>				<b>\$222,870</b>	



**Geothermal HVAC**

Estimate is Based on 2012 Construction Costs

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
General			\$3,060,000	\$0	\$3,060,000
Mechanical			\$3,250,000	\$0	\$3,250,000
Electrical			\$650,000	\$0	\$650,000
<b>Subtotal Direct Construction Cost</b>			<b>\$6,960,000</b>	<b>\$0</b>	<b>\$6,960,000.00</b>
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent on labor portion)		3%	\$104,400	\$0	\$104,400
Design Contingency (15 Percent)		15%	\$1,044,000	\$0	\$1,044,000
<b>Total Direct Construction Costs</b>			<b>\$8,108,400</b>	<b>\$0</b>	<b>\$8,108,400</b>
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$405,420	\$0	\$405,420
Historic Preservation Factor (5 Percent)		0%	\$0	\$0	\$0
<b>Subtotal NET Construction Cost</b>			<b>\$8,513,820</b>	<b>\$0</b>	<b>\$8,513,820</b>
Overhead (15 Percent)	included in estimate	0%	\$0	\$0	\$0
Profit (10 Percent)	included in estimate	0%	\$0	\$0	\$0
<b>Subtotal NET Construction Cost</b>			<b>\$8,513,820</b>	<b>\$0</b>	<b>\$8,513,820</b>
Contracting Method Adjustment (8a)		0%	\$0	\$0	\$0
<b>Estimated NET Construction Cost</b>			<b>\$8,513,820</b>	<b>\$0</b>	<b>\$8,513,820</b>
<b>TOTAL Estimated NET Cost of Construction</b> (Inflated to Summer 2010)		4%	<b>\$8,854,373</b>	<b>\$0</b>	<b>\$8,854,373</b>
Construction Contingency (5%)		5%	\$442,719	\$0	\$442,719
Construction Management (NAPA 0%)		0%	\$0	\$0	\$0
<b>GROSS CONSTRUCTION COSTS</b>			<b>\$9,297,091</b>	<b>\$0</b>	<b>\$9,297,091</b>



# Cost Estimate (Section IX)



1102 Douglas on the Mall, Omaha, Nebraska 68102 (402) 346-7007

April 18, 2012

NPS OCH HSR

Alvine No. 2011 2364

<b>Predesign Cost Estimate (Class C)</b>	
<b>Recommended Geothermal HVAC System</b>	
<b>Mechanical</b>	
Well field (180 wells)	\$648,000.00
HP headers to basement	\$30,000.00
Header manifold in basement	\$12,000.00
HPs, piping, ducts, pumps, etc.	\$1,632,000.00
ERUs, louvers, ductwork, etc.	\$653,000.00
BAS system	\$245,000.00
Supporting plumbing: Floor drains, makeup	\$30,000.00
<b>Total Mechanical</b>	<b>\$3,250,000.00</b>
<b>Electrical</b>	
Power to HVAC	\$418,000.00
Limited lighting replacement due to required demolition by HVAC work	\$125,000.00
Fire alarm (required for HVAC)	\$107,000.00
<b>Total Electrical</b>	<b>\$650,000.00</b>
<b>Architectural and Structural</b>	
\$45/SF x 68,000 SF	\$3,060,000.00
<b>Total Estimate Geothermal Cost</b>	<b>\$6,960,000.00</b>

Geothermal HVAC System Cost Estimate Qualifiers

1. Well field landscaping is flat grade rebuilt and seeded grass.
2. Plumbing scope is only in support of HVAC system; simply makeup water, and floor drains.
3. Assume power service to building is adequate, as is.
4. Lighting work is very limited, only such lighting as must be demolished to allow for HVAC installation.
5. Project will be open bid to public and not a targeted set-aside.
6. Construction will be continuous with Owner turning over a quarter or more of the building at a time to contractor.
7. No occupant moving costs or other soft costs are included in estimate.
8. No utilities relocation costs are included at well field site (block east of OCH) or to bore HP headers under street between well field and Old Courthouse.
9. No fire sprinklers are included.
10. No window or roof replacement or other major envelope improvement is included.
11. Assume whole building served by geothermal HP system with dedicated outside air system (ERUs). No special HVAC systems or room envelope improvements for archived or critical environment space included.

**United States Department of the Interior  
National Park Service  
Class C Construction Cost Estimate**

**PROJECT COST SUMMARY**

**Project:** Project Name  
**Park:** Park Name  
**Alpha:** Park Code  
**PMIS:** TBD OR PMIS number if known

**Estimate By:** Estimator Name  
**Date:** Estimate Date

**Reviewed By:** Reviewer  
**Date:** Review Date

Item No.	Description	Quantity	Unit	Cost/Unit	Total
1	Construct Brick Sidewalk	1	VALUE	\$676,163	\$676,163
2	Rehabilitate Courtyards	1	VALUE	\$263,552	\$263,552
3		1	VALUE	\$0	\$0
4		1	VALUE	\$0	\$0
5	Asset / Project Element 5	1	VALUE	\$0	\$0
6	Asset / Project Element 6	1	VALUE	\$0	\$0
7	Asset / Project Element 7	1	VALUE	\$0	\$0
8	Asset / Project Element 8	1	VALUE	\$0	\$0
9	Asset / Project Element 9	1	VALUE	\$0	\$0
10	Asset / Project Element 10	1	VALUE	\$0	\$0
11	Asset / Project Element 11	1	VALUE	\$0	\$0
12	Asset / Project Element 12	1	VALUE	\$0	\$0
13		1	VALUE	\$0	\$0
14		1	VALUE	\$0	\$0
15		1	VALUE	\$0	\$0
16		1	VALUE	\$0	\$0
17		1	VALUE	\$0	\$0
18		1	VALUE	\$0	\$0
<b>Subtotal Direct Construction Costs</b>					<b>\$939,715</b>
<b>Value of Government Furnished Property (GFP) Included in Direct Cost (see footnote)*</b>					<b>\$0</b>
<b>Direct Cost Subtotal without GFP</b>					<b>\$939,715</b>
	Published Location Factor	0.00%			\$0
	Remoteness Factor	0.00%			\$0
	Federal Wage Rate Factor	0.00%			\$0
	State & Local Taxes	0.00%			\$0
	Design Contingency	0.00%			\$0
<b>Total Direct Construction Costs</b>					<b>\$939,715</b>
	Standard General Conditions	0.00%			\$0
	Government General Conditions	0.00%			\$0
	Historic Preservation Factor	0.00%			\$0
<b>Subtotal NET Construction Cost</b>					<b>\$939,715</b>
	Overhead	0.00%			\$0
	Profit	0.00%			\$0
<b>Estimated NET Construction Cost</b>					<b>\$939,715</b>
	Bonds & Permits	0.00%			\$0
	Contracting Method Adjustment	0.00%			\$0
	Inflation Escalation	0	Months	0.00%	\$0
<b>Total Estimated NET Cost of Construction</b>					<b>\$939,715</b>

\* GFP costs are only used when the Government pre-purchases items, or provides other materials out of Government inventory, to be installed by contractor. Adjustments and Markup on GFP only include Inflation Escalation; No other adjustment factors or O&P markup have been applied.



United States Department of the Interior  
National Park Service  
Class C Construction Cost Estimate

**LINE ITEM COST SUMMARY**

**Project:** Project Name  
**Park:** Park Name  
**Park Alpha:** Park Code  
**PMIS Number:** TBD OR PMIS number if known

**Estimate By:** Estimator Name  
**Date:** Estimate Date  
**Reviewed By:** Reviewer  
**Date:** Review Date

**Total Cost:** Total Cost

**Summary Item 2** Rehabilitate Courtyards

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
<b>F20</b>	<b>SELECTIVE BUILDING DEMOLITION</b>					
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
Level 3 Code	Description	0	Unit	\$ -	\$0	
	<b>SUBTOTAL SELECTIVE BUILDING DEMOLITION</b>	<b>1</b>	<b>VALUE</b>	<b>\$ -</b>	<b>\$0</b>	

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
<b>G10</b>	<b>SITE PREPARATION</b>					
G1010	Miscellaneous site clearing	1	LS	\$ 5,000.00	\$5,000	
G1010	Soil testing (borings and analysis)	1	LS	\$ 15,000.00	\$15,000	
G1020	Remove concrete pads	54	SF	\$ 30.00	\$1,620	
G1020	Remove floodlamps	16	LS	\$ 200.00	\$3,200	
G1020	Remove turf	27	MSF	\$ 65.00	\$1,755	
G1020	Remove landscape edging around planting beds	251	LF	\$ 10.00	\$2,510	
G1020	Remove specified plants from planting beds	1	LS	\$ 2,500.00	\$2,500	
G1020	Remove irrigation system	1	LS	\$ 10,000.00	\$10,000	
	<b>SUBTOTAL SITE PREPARATION</b>	<b>1</b>	<b>VALUE</b>	<b>\$ 41,585.00</b>	<b>\$41,585</b>	





United States Department of the Interior  
National Park Service  
Class C Construction Cost Estimate  
**LINE ITEM COST SUMMARY**

Project: \_\_\_\_\_ Project Name \_\_\_\_\_  
 Park: \_\_\_\_\_ Park Name \_\_\_\_\_  
 Park Alpha: \_\_\_\_\_ Park Code \_\_\_\_\_  
 PMIS Number: \_\_\_\_\_ TBD OR PMIS number if known

Estimate By: \_\_\_\_\_ Estimator Name \_\_\_\_\_  
 Date: \_\_\_\_\_ Estimate Date \_\_\_\_\_  
 Reviewed By: \_\_\_\_\_ Reviewer \_\_\_\_\_  
 Date: \_\_\_\_\_ Review Date \_\_\_\_\_

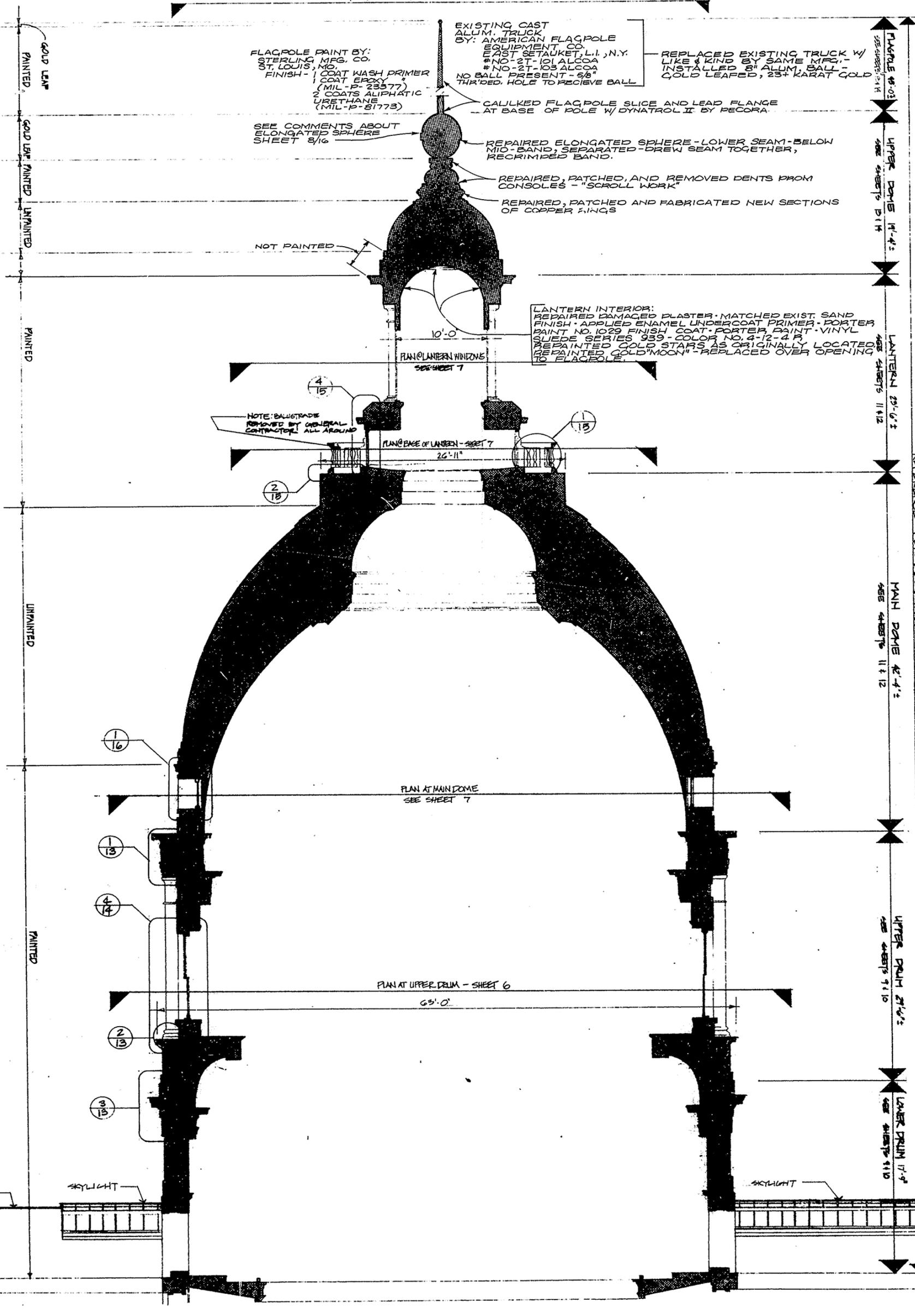
Summary Item 2 Rehabilitate Courtyards

Total Cost: Total Cost

Uniformat II WBS Code	Description	Quantity	Unit	Cost/Unit	Total Cost	Remarks
<b>TOTAL COST - Rehabilitate Courtyards</b>						
		1		VALUE \$ 263,551.50	\$263,552	

**Appendix F**  
**Copies of Selected Archival Documentation**





FLAGPOLE PAINT BY:  
STERLING MFG. CO.  
ST. LOUIS, MO.  
FINISH - 1 COAT WASH PRIMER  
1 COAT EPOXY  
(MIL-P-23377)  
2 COATS ALIPHATIC  
URETHANE  
(MIL-P-81773)

EXISTING CAST  
ALUM. TRUCK  
BY: AMERICAN FLAGPOLE  
EQUIPMENT CO.  
EAST SETAUKET, L.I., N.Y.  
#NO-2T-101 ALCOA  
#NO-2T-103 ALCOA  
NO BALL PRESENT - 5/8"  
THREADED HOLE TO RECEIVE BALL

REPLACED EXISTING TRUCK W/  
LIKE & KIND BY SAME MFG.  
INSTALLED 8" ALUM. BALL -  
GOLD LEAFED, 23+ KARAT GOLD

SEE COMMENTS ABOUT  
ELONGATED SPHERE  
SHEET 5/16

CALULKED FLAGPOLE SLICE AND LEAD FLANGE  
AT BASE OF POLE W/ DYNATROL II BY RECORA

REPAIRED ELONGATED SPHERE - LOWER SEAM - BELOW  
MID-BAND, SEPARATED - DREW SEAM TOGETHER,  
RECRIMPED BAND.

REPAIRED, PATCHED, AND REMOVED DENTS FROM  
CONSOLES - "SCROLL WORK"

REPAIRED, PATCHED AND FABRICATED NEW SECTIONS  
OF COPPER FINIS

NOT PAINTED

LANTERN INTERIOR:  
REPAIRED DAMAGED PLASTER - MATCHED EXIST SAND  
FINISH - APPLIED ENAMEL UNDERCOAT PRIMER - PORTER  
PAINT NO. 1029 - FINISH COAT - PORTER PAINT - VINYL  
SLIIDE SERIES 939 - COLOR NO. 4-12-4 R  
REPAINTED GOLD STARS AS ORIGINALLY LOCATED  
REPAINTED GOLD "MOON" - REPLACED OVER OPENING  
TO FLAGPOLE.

NOTE: BALUSTRADE  
REMOVED BY GENERAL  
CONTRACTOR ALL AROUND

10'-0"

PLAN @ LANTERN WINDOWS  
SEE SHEET 7

26'-11"

PLAN AT MAIN DOME  
SEE SHEET 7

65'-0"

PLAN AT UPPER DRUM - SHEET 6

PAINTED  
GOLD LEAF

GOLD LEAF PAINTED  
UNPAINTED

PAINTED

UNPAINTED

PAINTED

PLATE 14'-0"

UPPER DOME 14'-4"

LANTERN 25'-6"

MAIN DOME 42'-4"

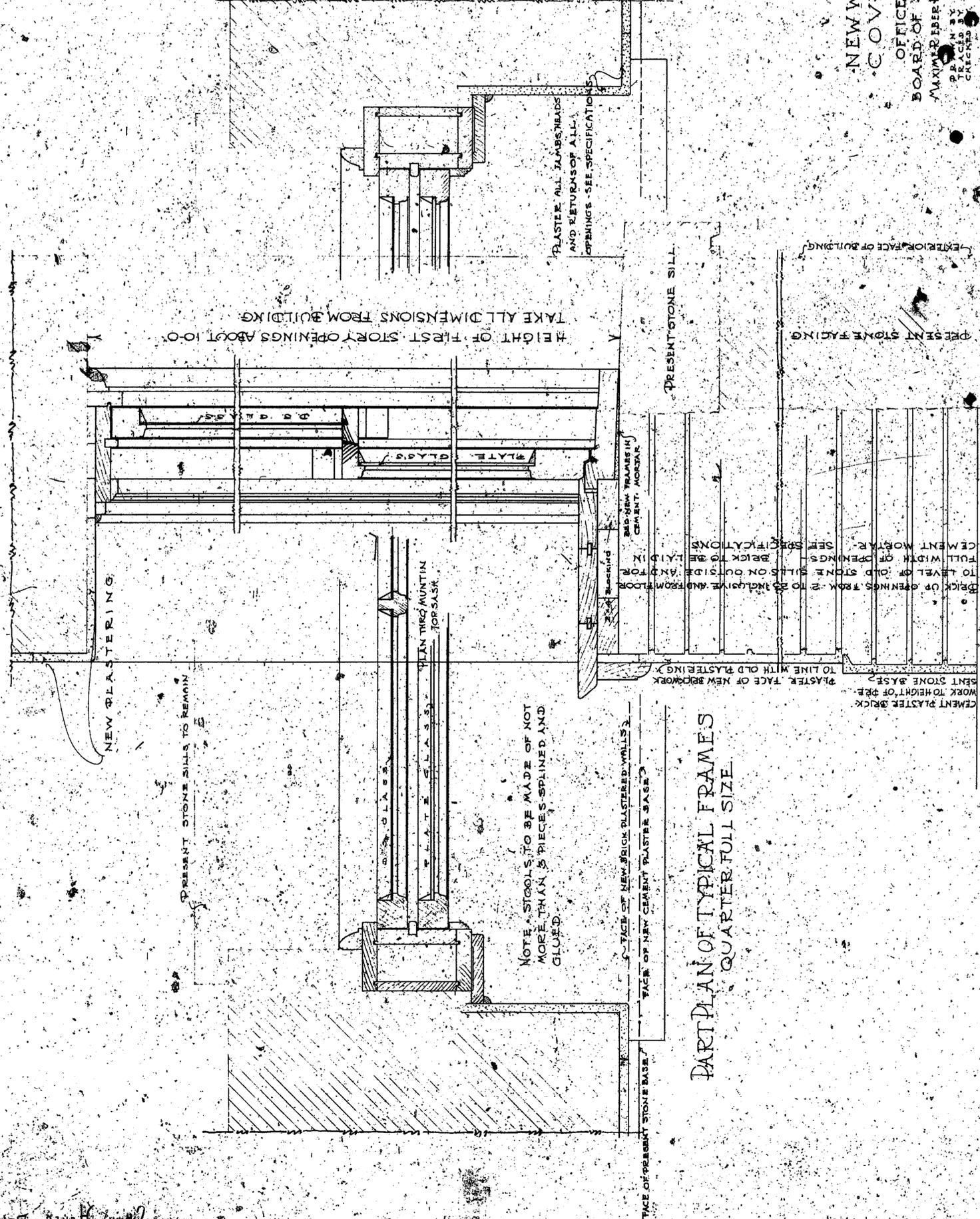
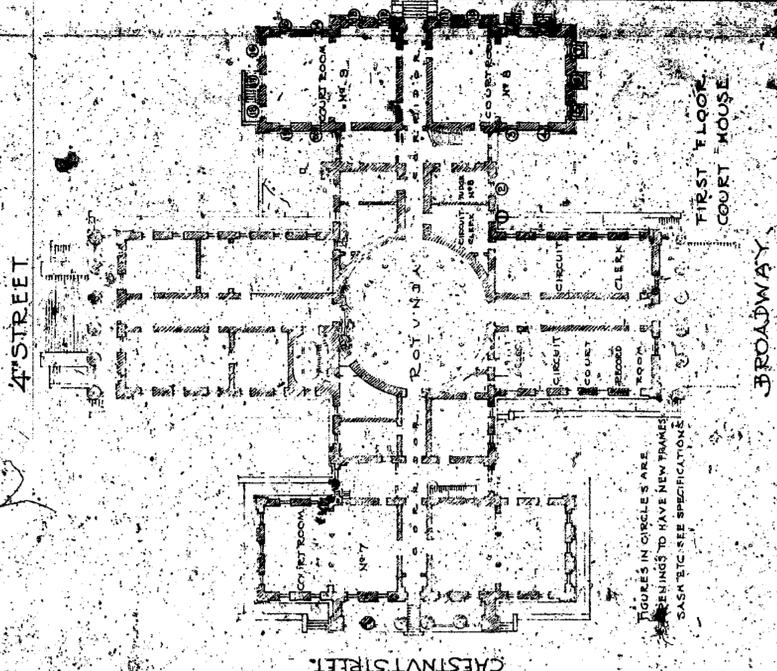
UPPER DRUM 27'-4"

LOWER DRUM 17'-9"

REFERENCE FOR ELEVATION SHEETS

SECTION THROUGH LANTERN, DOME & DRUM  
SCALE IN FEET  
DRAWN @ 3/16" = 1'-0"

DESIGNED	3/66
DRAWN	2/20/71 A
CHECKED	2/21
DATE	5/79
PKG. NO.	25007A
SHEET NO.	4
TOTAL SHEETS	16



PART PLAN OF TYPICAL FRAMES  
QUARTER FULL SIZE.

CROSS SECTION THRO TYPICAL FRAMES, ETC.  
QUARTER FULL SIZE.

NEW WINDOW FRAMES  
COURT HOUSE.

OFFICE OF PRESIDENT  
BOARD OF PUBLIC IMPROVEMENTS  
MAXIMILIAN PER... CM TALBERTA  
DRAWN BY... JULY 1910  
CHECKED BY...

SCALE 3/16  
2 SHEETS SHEET NO 1

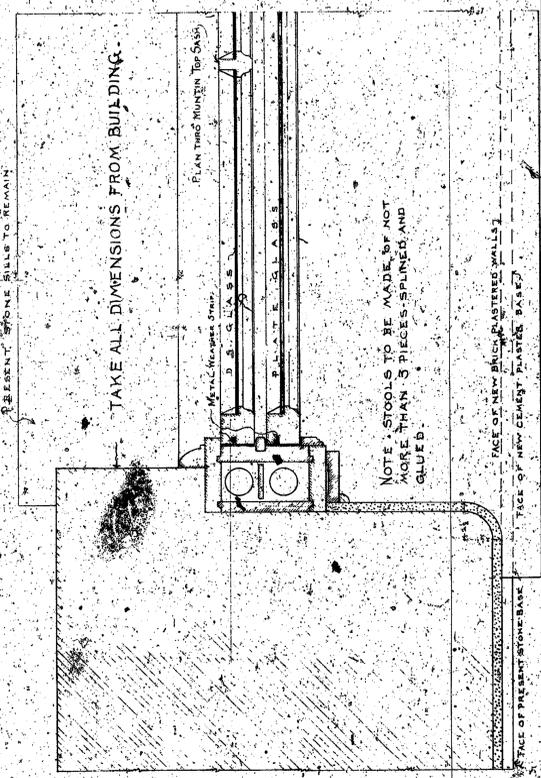
366/41, 910

*Handwritten signature*

*Handwritten notes and signatures at the bottom left of the page.*

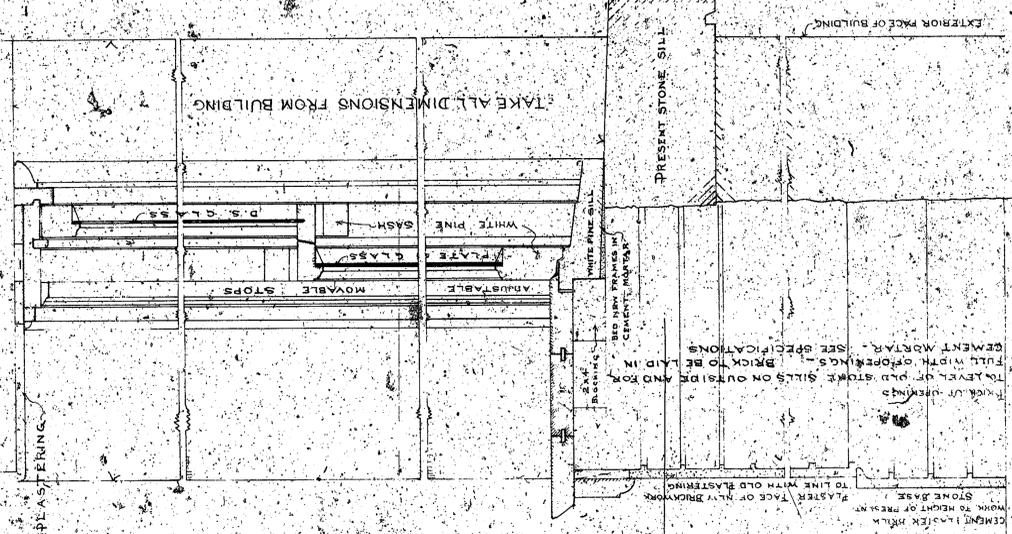


Remove Existing Windows  
 Remove Existing Sills  
 Court House

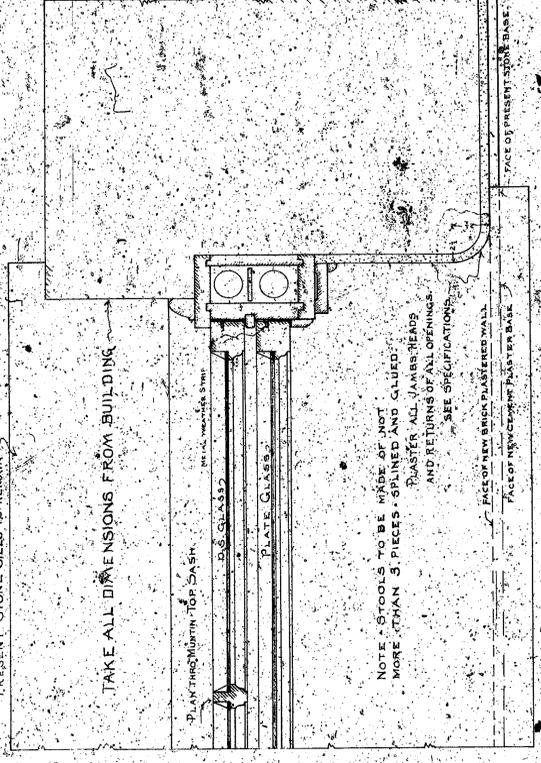


PART PLAN OF TYPICAL FRAMES

Note:  
 1. 2. and 3. are Yellow Pine  
 4. is Yellow Pine  
 5. is Yellow Pine  
 6. is Yellow Pine  
 7. is Yellow Pine  
 8. is Yellow Pine  
 9. is Yellow Pine  
 10. is Yellow Pine  
 11. is Yellow Pine  
 12. is Yellow Pine  
 13. is Yellow Pine  
 14. is Yellow Pine  
 15. is Yellow Pine  
 16. is Yellow Pine  
 17. is Yellow Pine  
 18. is Yellow Pine  
 19. is Yellow Pine  
 20. is Yellow Pine  
 21. is Yellow Pine  
 22. is Yellow Pine  
 23. is Yellow Pine  
 24. is Yellow Pine  
 25. is Yellow Pine  
 26. is Yellow Pine  
 27. is Yellow Pine  
 28. is Yellow Pine  
 29. is Yellow Pine  
 30. is Yellow Pine  
 31. is Yellow Pine  
 32. is Yellow Pine  
 33. is Yellow Pine  
 34. is Yellow Pine  
 35. is Yellow Pine  
 36. is Yellow Pine  
 37. is Yellow Pine  
 38. is Yellow Pine  
 39. is Yellow Pine  
 40. is Yellow Pine  
 41. is Yellow Pine  
 42. is Yellow Pine  
 43. is Yellow Pine  
 44. is Yellow Pine  
 45. is Yellow Pine  
 46. is Yellow Pine  
 47. is Yellow Pine  
 48. is Yellow Pine  
 49. is Yellow Pine  
 50. is Yellow Pine  
 51. is Yellow Pine  
 52. is Yellow Pine  
 53. is Yellow Pine  
 54. is Yellow Pine  
 55. is Yellow Pine  
 56. is Yellow Pine  
 57. is Yellow Pine  
 58. is Yellow Pine  
 59. is Yellow Pine  
 60. is Yellow Pine  
 61. is Yellow Pine  
 62. is Yellow Pine  
 63. is Yellow Pine  
 64. is Yellow Pine  
 65. is Yellow Pine  
 66. is Yellow Pine  
 67. is Yellow Pine  
 68. is Yellow Pine  
 69. is Yellow Pine  
 70. is Yellow Pine  
 71. is Yellow Pine  
 72. is Yellow Pine  
 73. is Yellow Pine  
 74. is Yellow Pine  
 75. is Yellow Pine  
 76. is Yellow Pine  
 77. is Yellow Pine  
 78. is Yellow Pine  
 79. is Yellow Pine  
 80. is Yellow Pine  
 81. is Yellow Pine  
 82. is Yellow Pine  
 83. is Yellow Pine  
 84. is Yellow Pine  
 85. is Yellow Pine  
 86. is Yellow Pine  
 87. is Yellow Pine  
 88. is Yellow Pine  
 89. is Yellow Pine  
 90. is Yellow Pine  
 91. is Yellow Pine  
 92. is Yellow Pine  
 93. is Yellow Pine  
 94. is Yellow Pine  
 95. is Yellow Pine  
 96. is Yellow Pine  
 97. is Yellow Pine  
 98. is Yellow Pine  
 99. is Yellow Pine  
 100. is Yellow Pine



CROSS SECTION THRO' TYPICAL FRAMES, ETC.  
 SCALE QUARTER FULL SIZE



PART PLAN OF TYPICAL FRAMES

NEW WINDOW FRAMES, SASHES, ETC.  
 COURT HOUSE

OFFICE OF PRESIDENT  
 BOARD OF PUBLIC IMPROVEMENTS  
 MAXINE REBER, Architect  
 UNCLE SAM'S BUILDING  
 WASHINGTON, D. C.  
 DRAWN BY J. E. M. MAY 27, 1914  
 CHECKED BY J. J. P. MAY 27, 1914

2 SHEETS SHEET No. 2

366/4/1914

CIRCUIT COURT No. 1

CIRCUIT COURT No. 4

# COURT HOUSE

## COURT HOUSE REMODELING PORTIONS OF SOUTH WING

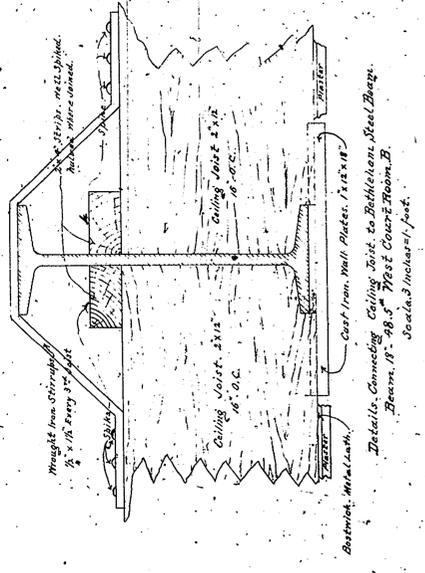
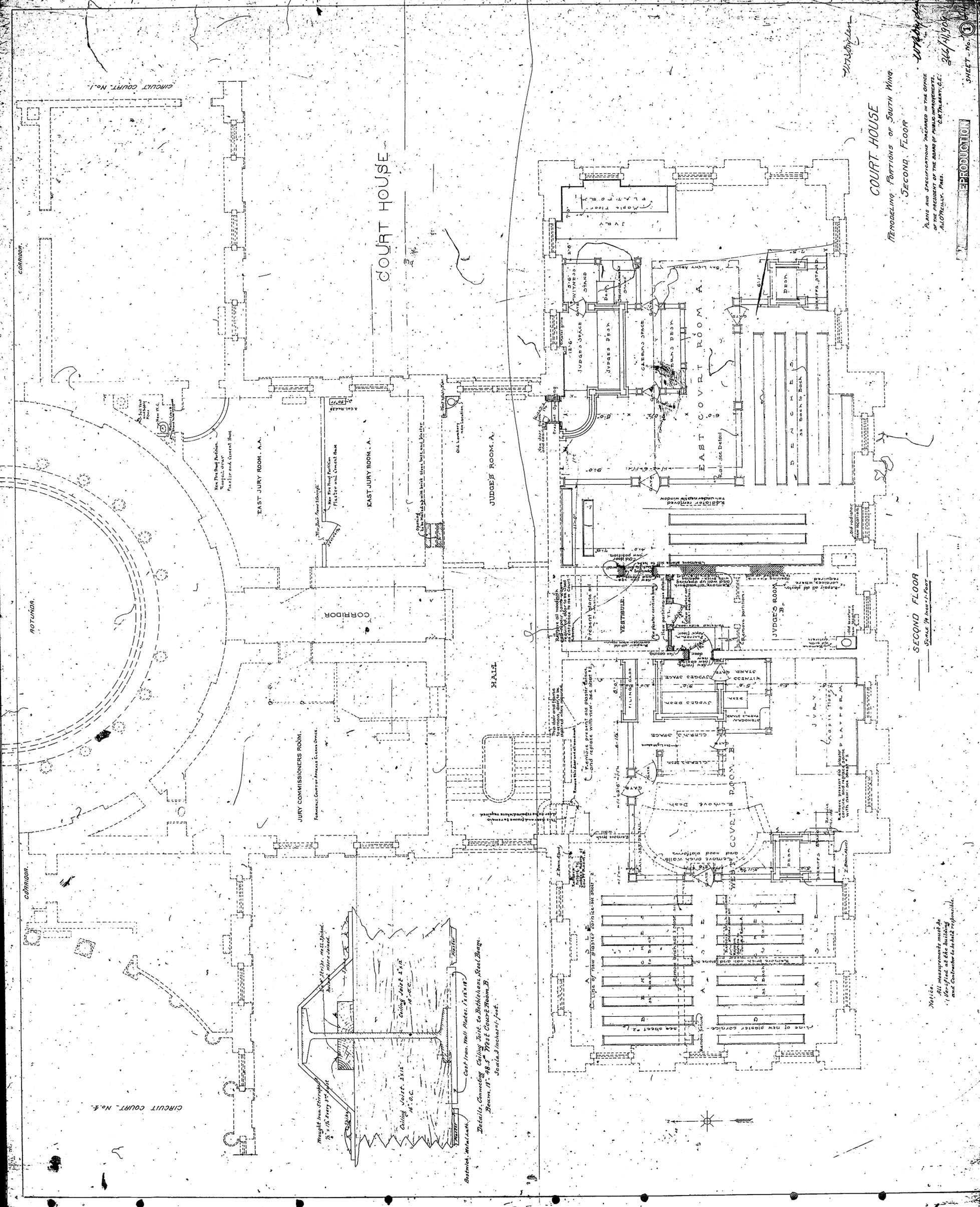
SECOND FLOOR

SECOND FLOOR  
Scale 1/8" = 1'-0"

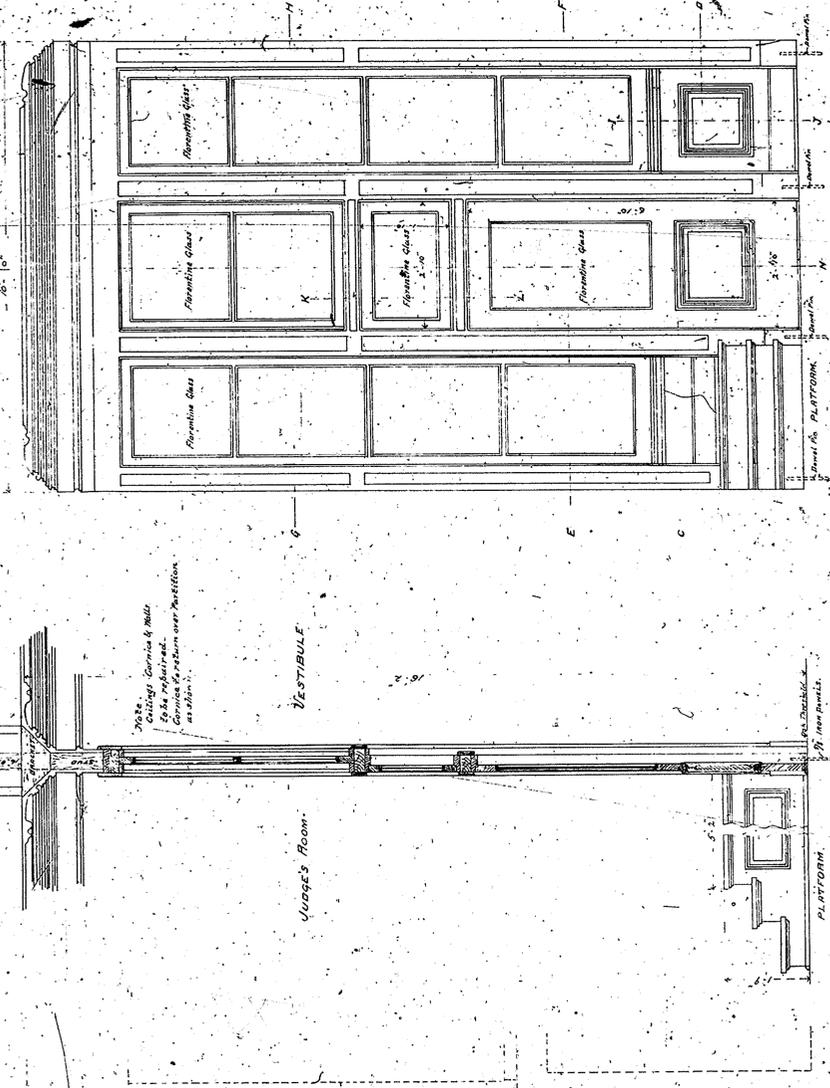
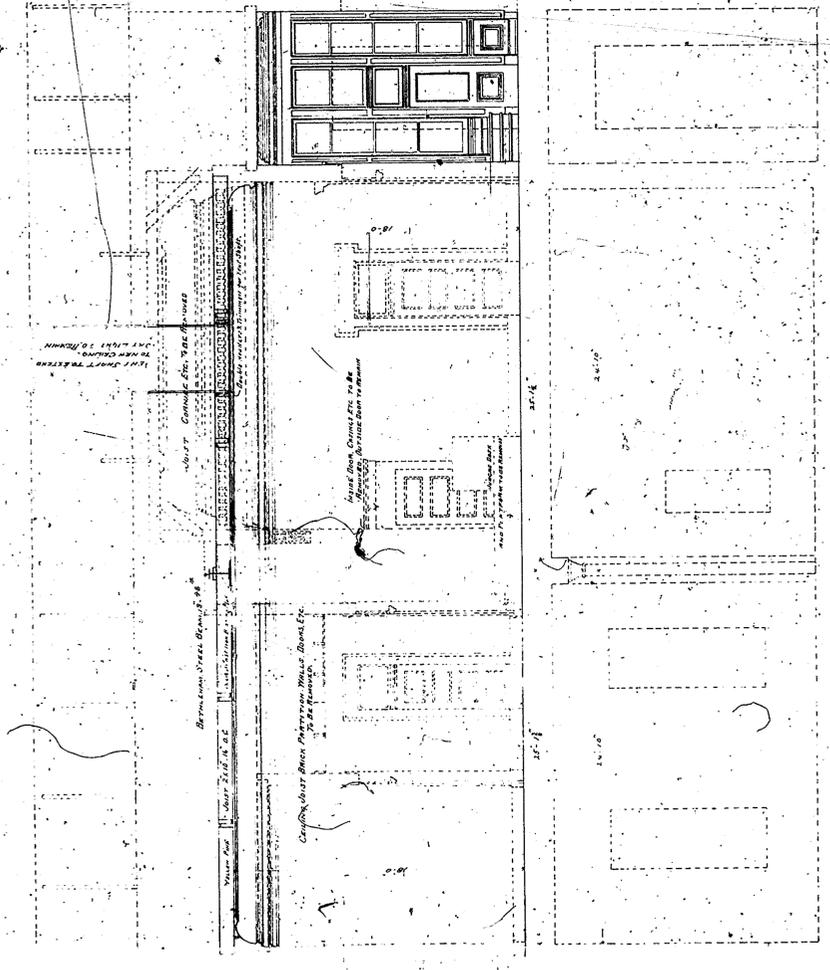
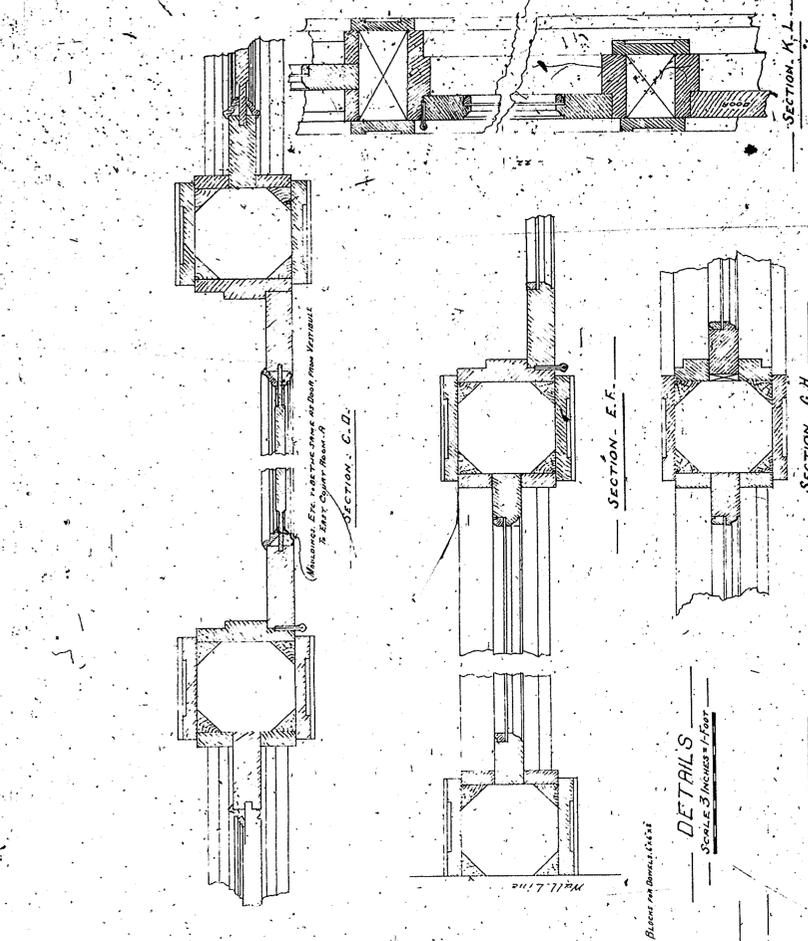
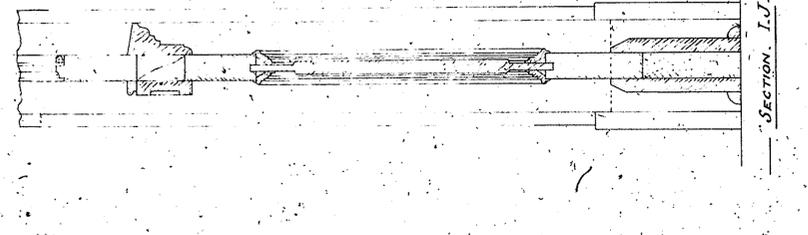
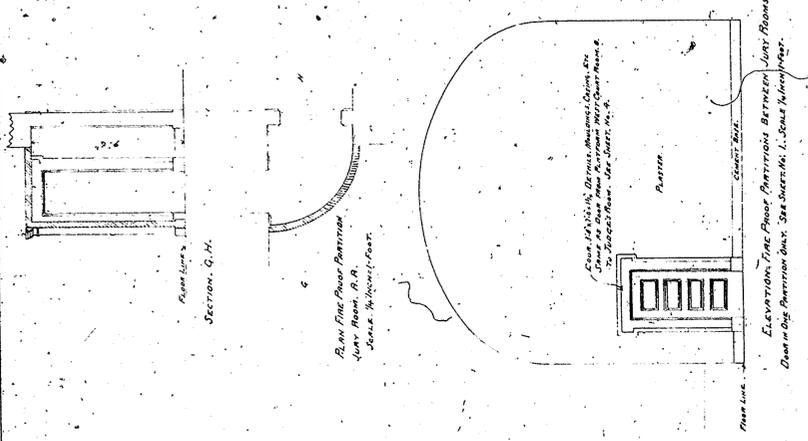
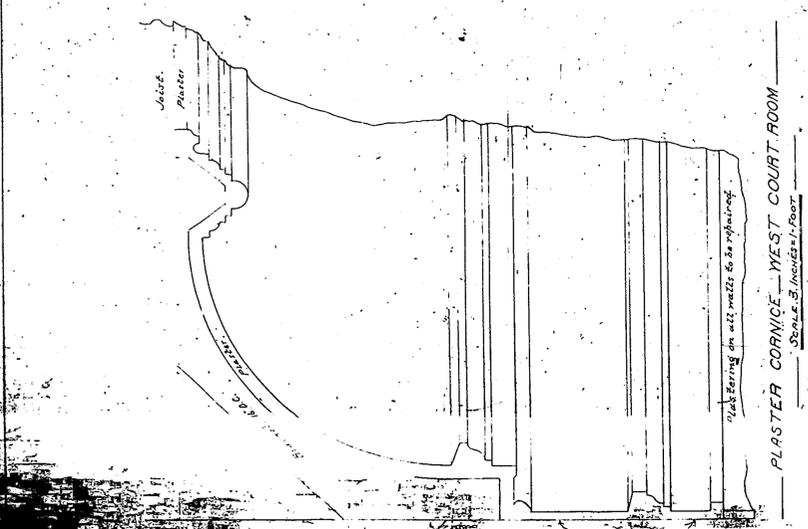
PLANS AND SPECIFICATIONS DRAWN IN THE OFFICE  
ON BEHALF OF THE BOARD OF PUBLIC WORKS  
BY ARCHITECT J. W. HAYDEN, C.E.  
AND ENGINEER F. H. BROWN, P.E.

REPRODUCTION

SHEET No. 3



Notes:  
 All measurements must be  
 verified at the building  
 and contractor to be held responsible.



WEST COURT ROOM  
LONGITUDINAL SECTION A, B  
SCALE 3/16 INCHES = 1 FOOT

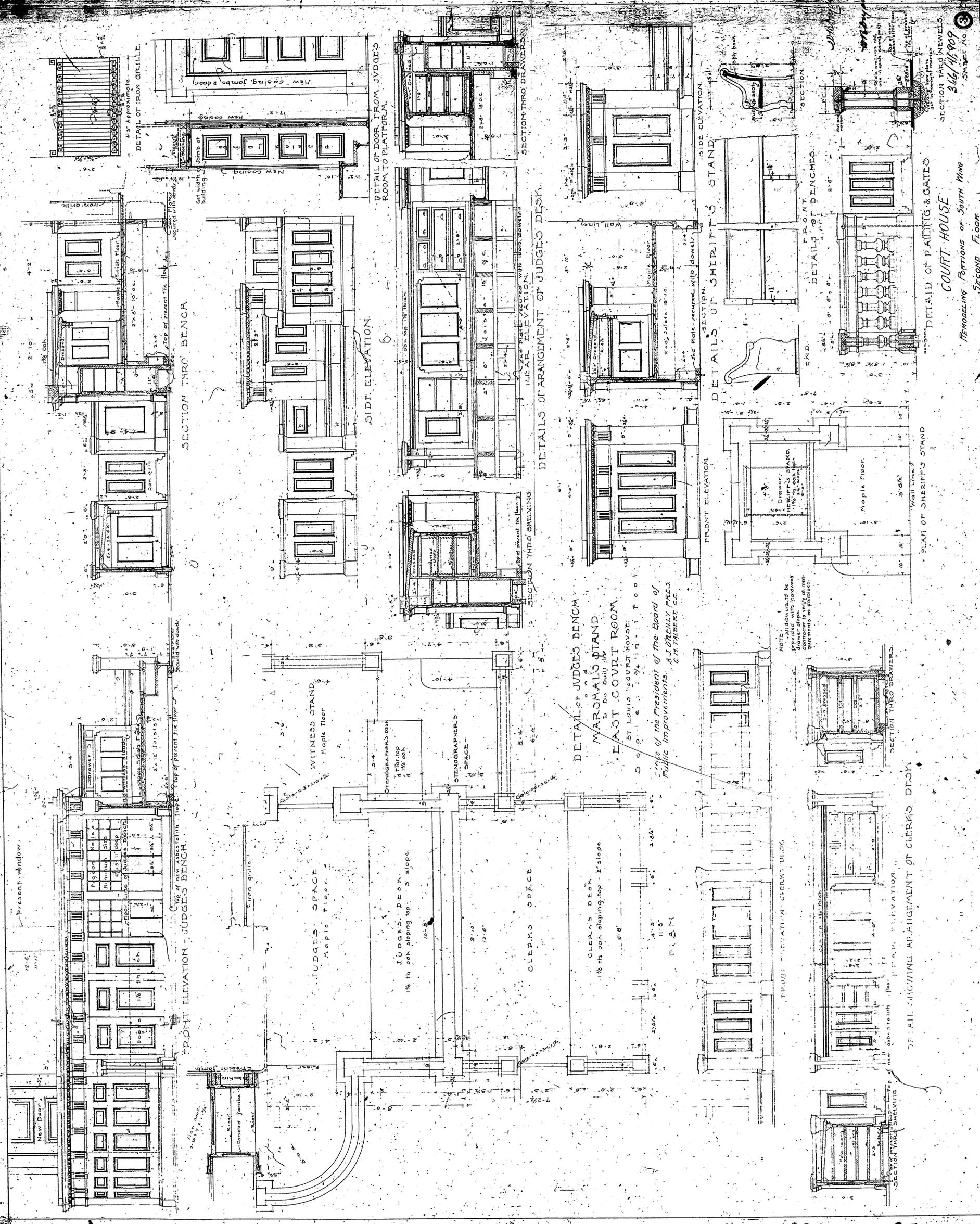
JUDGES ROOM  
Note: Indicate Old Work  
Full Lines. New Work  
Dashed Lines. Repairs  
Controlled by the Architect  
for the same.

PARTITION BETWEEN JUDGES ROOM  
AND VESTIBULE  
SECTION M, N  
SCALE 3/16 INCHES = 1 FOOT

ELEVATION  
SCALE 3/16 INCHES = 1 FOOT  
PLAN E.F.  
SCALE 3/16 INCHES = 1 FOOT

COURT HOUSE  
RETROFITTING PARTITIONS OF SOUTH WING SECOND FLOOR

2664/1909  
SHEET NO. 2 of 4



DETAIL OF JUDGE'S BENCH  
 MARSHAL'S STAND  
 TO BE BUILT BY  
 ST. LOUIS COURT HOUSE  
 34 1/2" x 11" x 1" FOOT  
 Price of the President of the Board of  
 Public Improvements. A. J. DITZEL, PRES.  
 C. H. TRIMMER, CLK.

NOTE:  
 All drawers to be  
 finished with  
 drawers slope  
 connector to verify all men-  
 surments on plan.

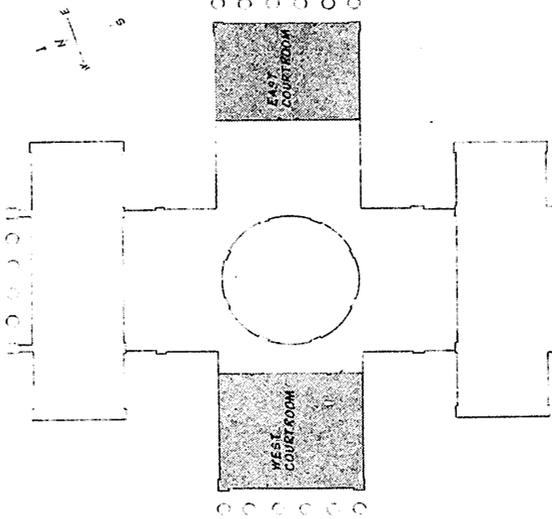
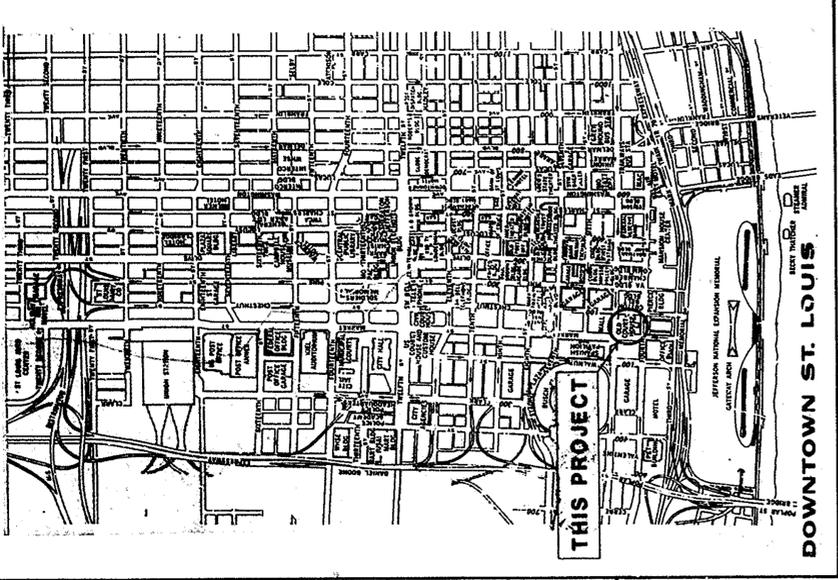
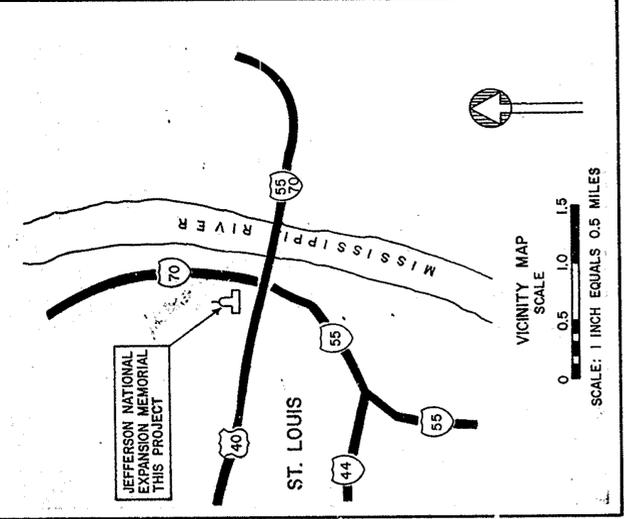
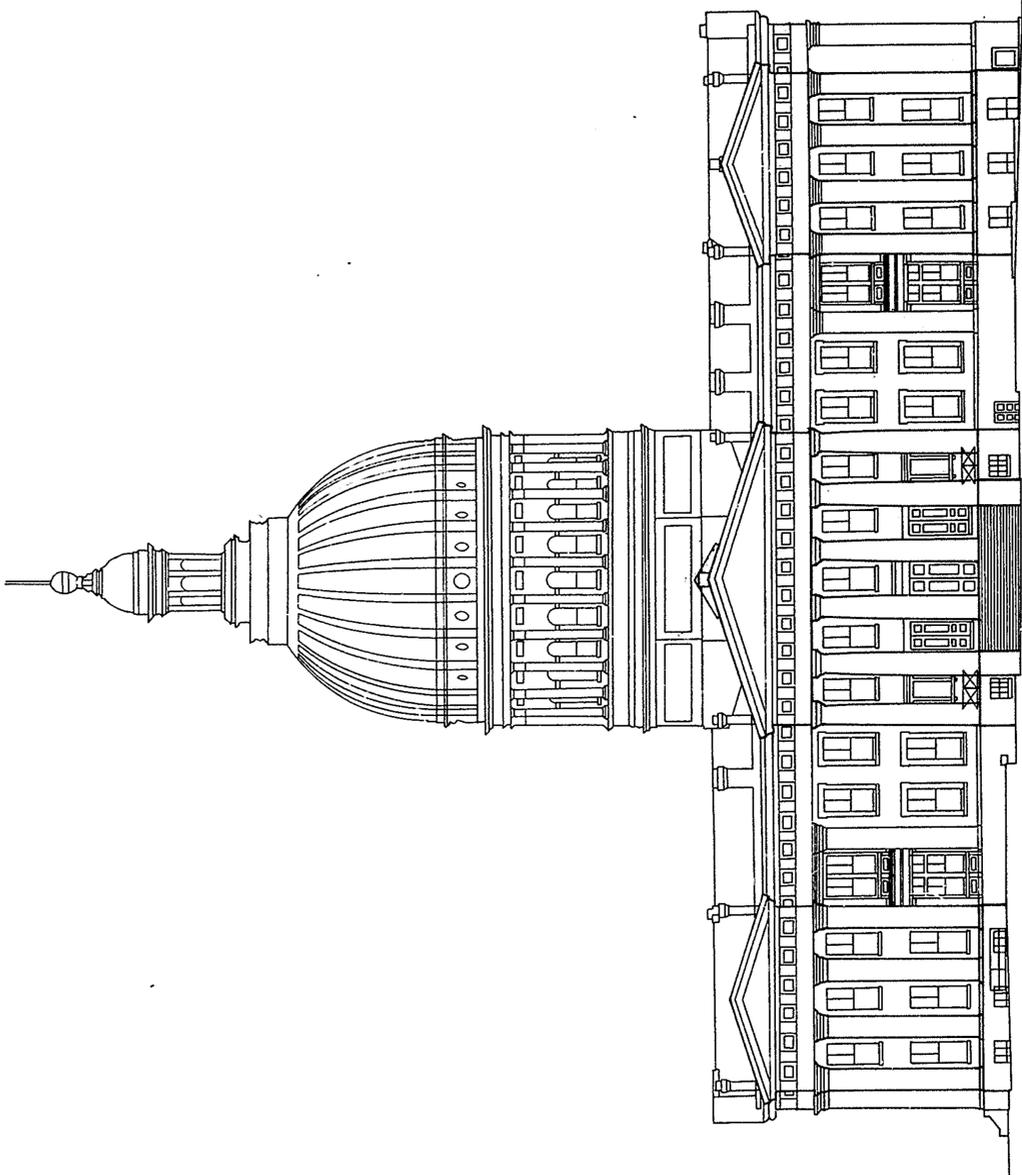
SECTION THRU NEWEL'S  
 266/11,909  
 SHEET NO. 3

DETAIL OF PAINTING & GATES  
 COURT HOUSE  
 REMODELING PORTIONS OF SOUTH WING  
 SECOND FLOOR

FRONT ELEVATION - CLERK'S DESK  
 SECTION THRU DRAWERS

# JEFFERSON NATIONAL EXPANSION MEMORIAL NATIONAL HISTORIC SITE

SAINT LOUIS, MISSOURI



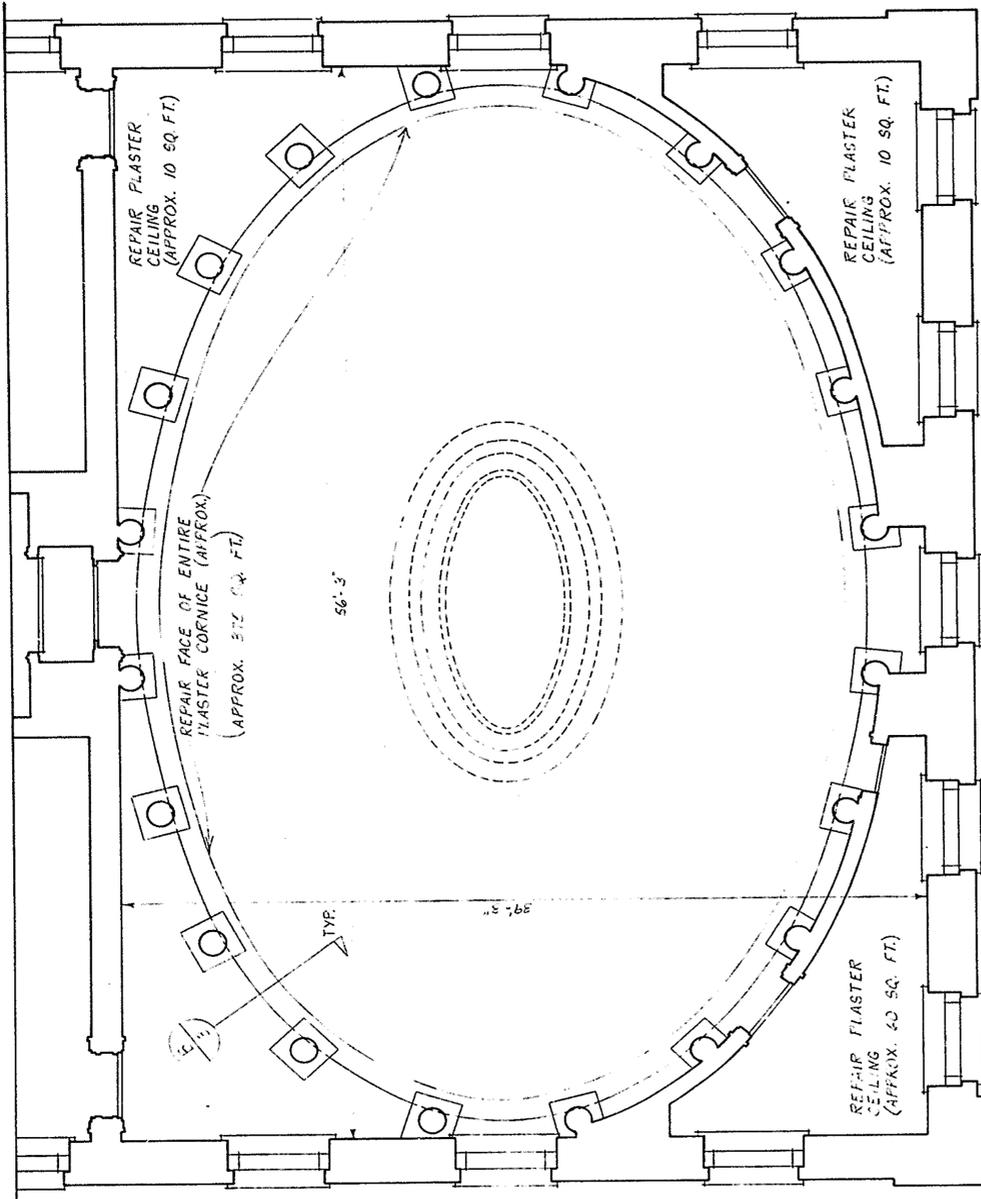
## INDEX OF DRAWINGS

1. COVER SHEET
2. REFLECTED CEILING PLANS : EAST COURTROOM & WEST COURTROOM
3. SECTIONS THROUGH PLASTER CORNICES
4. FIRST FLOOR PLANS : EAST COURTROOM & WEST COURTROOM

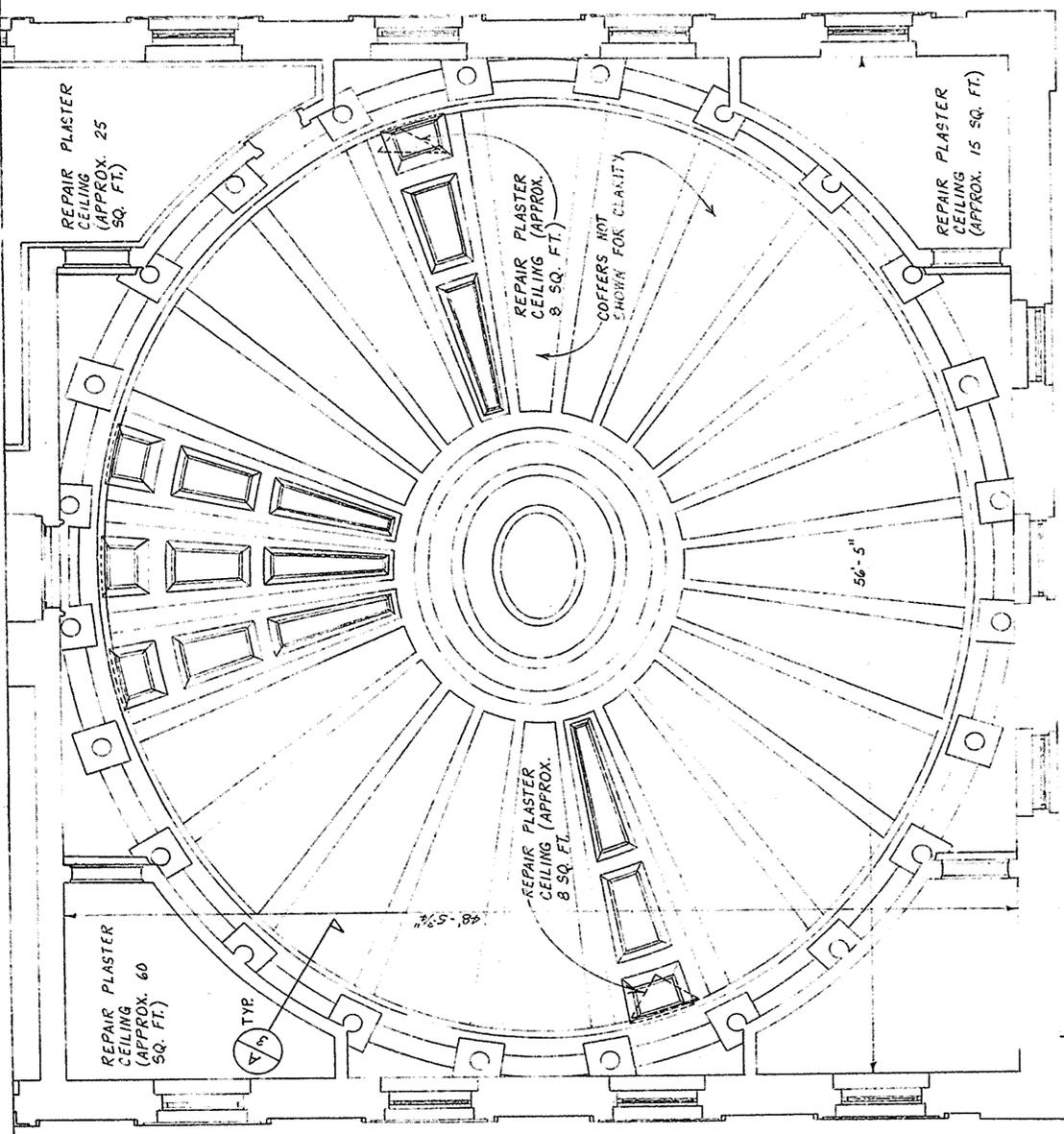
## REDUCED SIZE REPRODUCTION

REVISED	DATE	INITIAL	PREPARED	RECOMMENDED	DATE
			LEE	JERRY L. SCHORER	1/14/88
			DESIGNED	SUPERINTENDENT	DATE
			AFH	CHIEF CULTURAL RESOURCES MANAGEMENT	1/18/88
			DRAWN	CONCURRED	DATE
			CHECKED	ASSOCIATE REGIONAL DIRECTOR	1/19/88
			DATE	APPROVED	DATE
				REGIONAL DIRECTOR	1/19/88

UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE PLANNING AND RESOURCE PRESERVATION MIDWEST REGIONAL OFFICE	DRAWING NO. 366 80008
PLASTER REPAIRS	SHEET 1 OF 4
OLD ST. LOUIS COURTHOUSE	



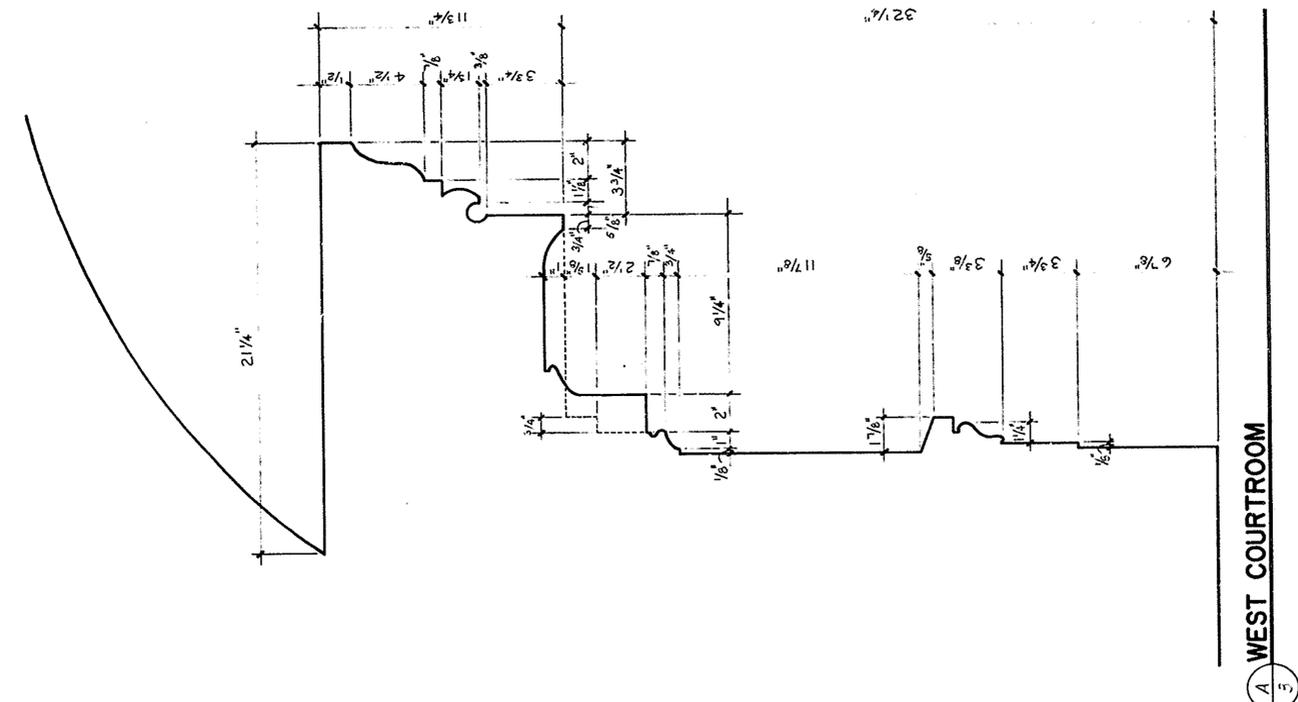
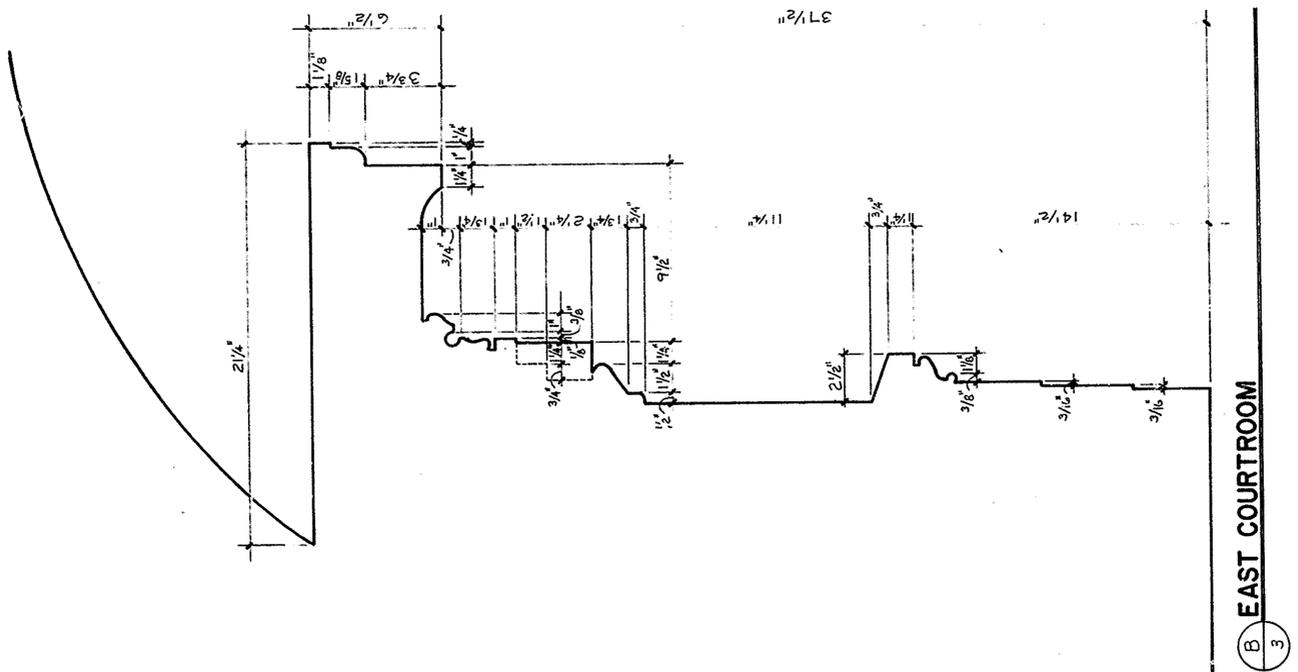
REFLECTED CEILING PLAN : EAST COURTROOM  
SCALE: 1/4" = 1'-0"



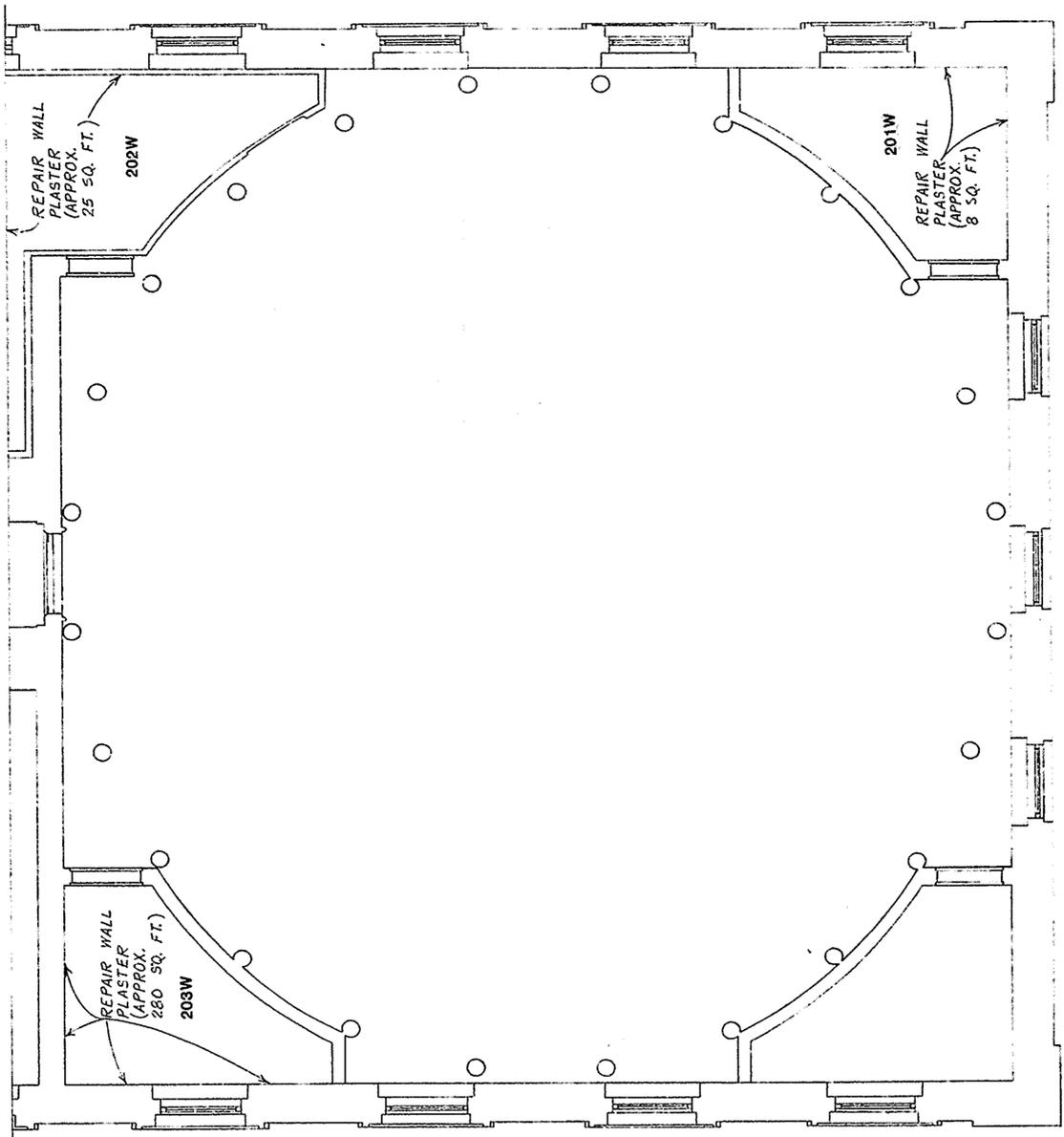
REFLECTED CEILING PLAN : WEST COURTROOM  
SCALE: 1/4" = 1'-0"

PREPARED	DRAWING NO	366 80008	SHEET	2	OF	4
CHAVEZ DESIGNED	AFH DRAWN					

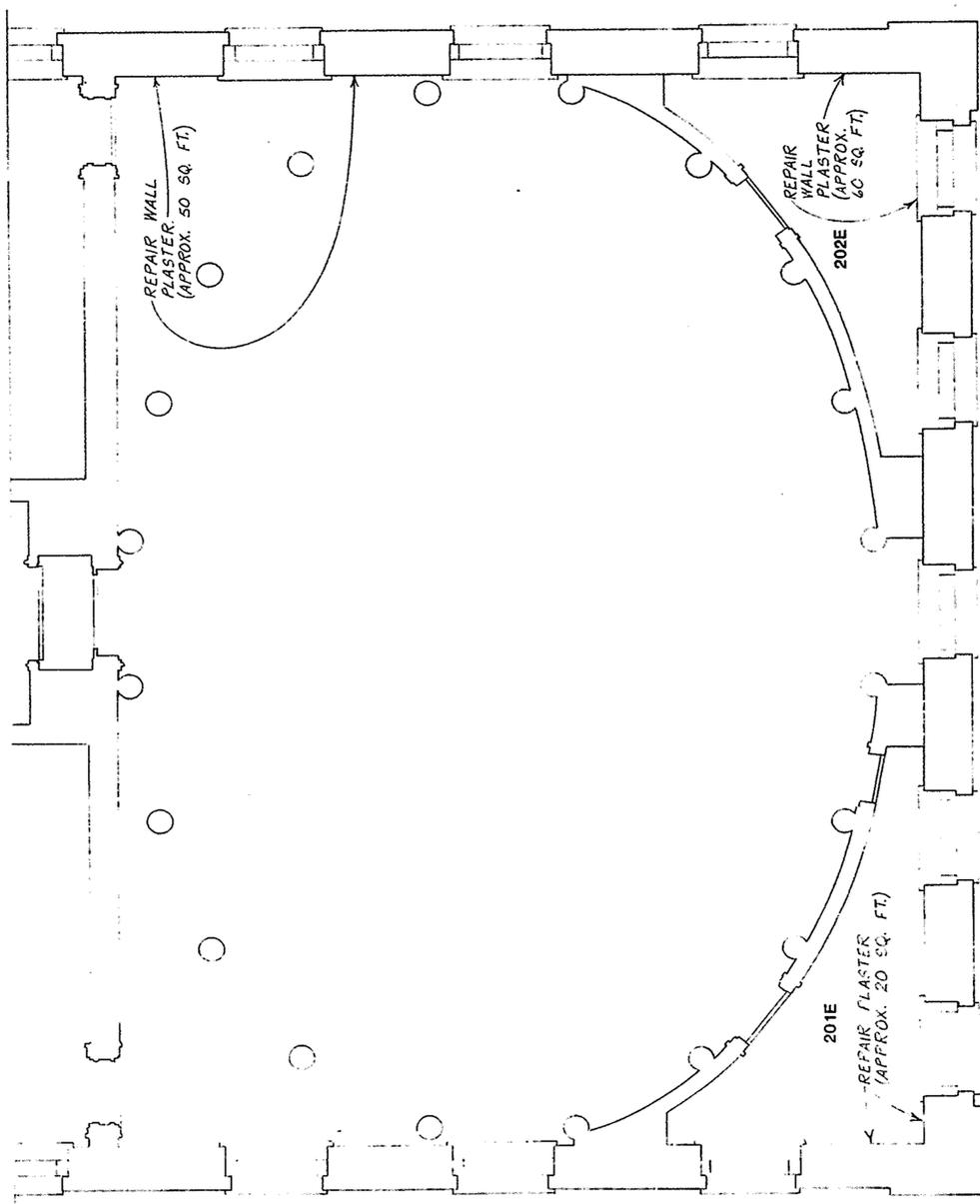
PREPARED	DRAWING NO.
CHAVEZ	366
DESIGNED	80008
JJM	
DRAWN	
CHECKED	SHEET 3
DATE	OF 4



**SECTIONS THROUGH PLASTER CORNICES**  
SCALE: 1/4" = 1'-0"



**FIRST FLOOR PLAN : WEST COURTROOM**  
SCALE : 1/4" = 1'-0"

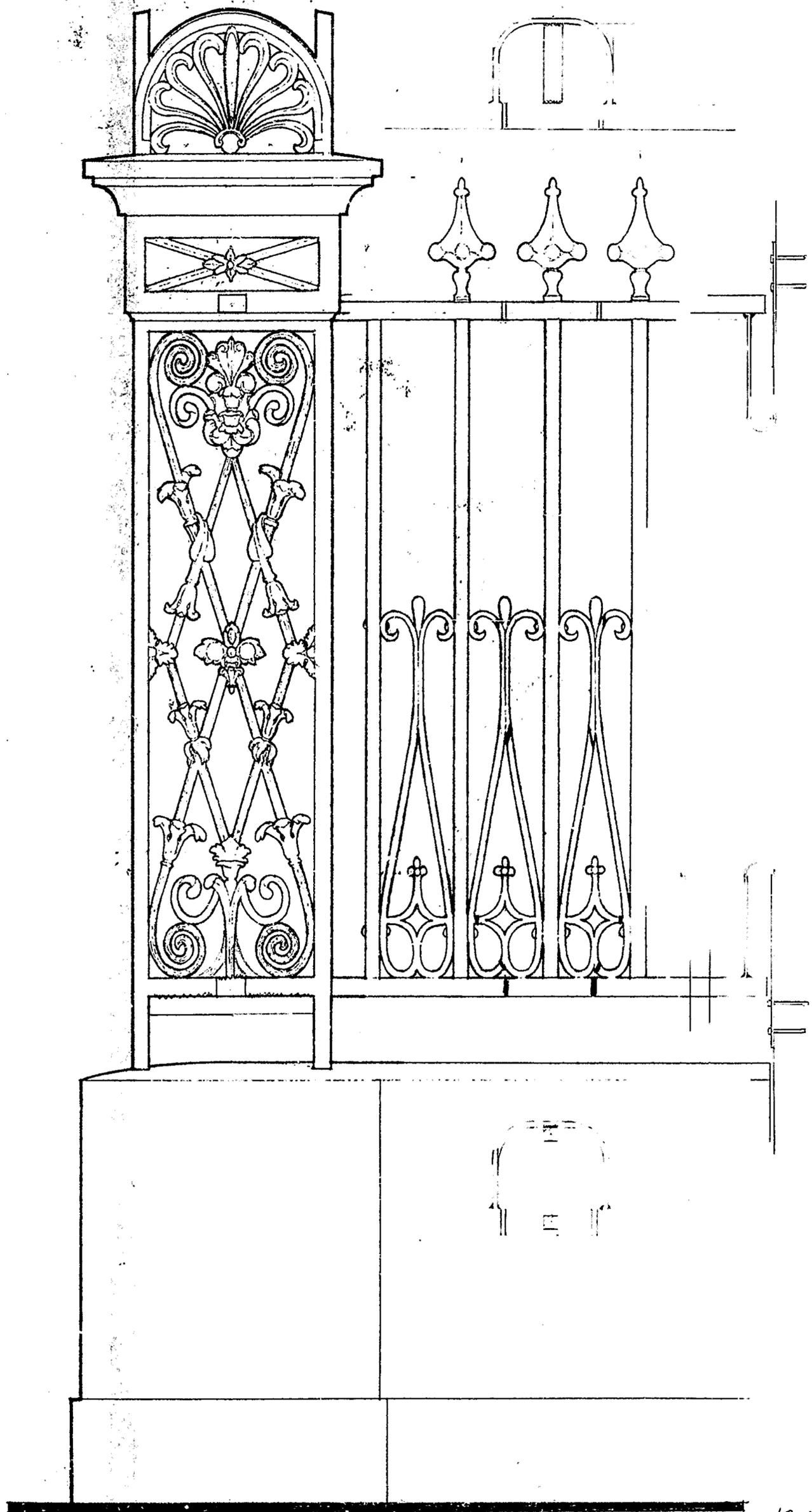


**FIRST FLOOR PLAN : EAST COURTROOM**  
SCALE : 1/4" = 1'-0"

PREPARED	DRAWING NO.	366 80008	4 4
LEE	DESIGNED		
AFH	DRAWN	CHECKED	DATE

BY WVA





IRON FENCE DETAIL

SCALE 3" = 1'-  
5/8" = 1'-0"

Drawn by J.H.F.  
3 of 7

366/41,061