

Archeological investigations can provide information on the locations of building foundations and other sub-grade building elements, and can also assist in developing information on the function of adjacent site areas, building elements, and previously unfinished floor spaces (Fig. 10). The survey may also address the immediate site landscape, if this is not covered in a separate cultural landscape report.

Information gathered during the survey can be documented with field notes on baseline drawings consisting of field sketches or measured drawings. In addition, documentation can include photographs (35-mm, large format, digital, perspective-corrected, and scale-rectified photographs; photogrammetry; and laser techniques), sketches and measured drawings, computer-aided design and drafting (CADD), video records, and written notes and field measurements. Depending upon project requirements, documentation may need to be prepared to archival standards regarding paper, photographs and negatives, electronic records, and backup data.

Measured drawings and record photography. The collection of the Historic American Building Survey / Historic American Engineering Record (HABS/HAER) archive at the Library of Congress should be searched in case the property has been previously documented through drawings and photographs. While many historic properties have been documented since the start of this invaluable collection in the 1930s, it is still more likely that this type of documentation does not exist for a property for which a historic structure report is being undertaken. Preparation of such documentation to portray the current condition of a property can be an invaluable addition to the historic structure report. Besides serving as a documentary record of a structure, the recording documents can serve another purpose such as an easement document, information for catastrophic loss protection, interpretive drawings, or baseline drawings for proposed work. If undertaken as part of the current building study, the measured drawings and record photography should follow the *Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation*.

Materials investigation and testing. Field examination and testing of building material may include non-destructive (non-intrusive) or, where necessary, destructive (intrusive) examination and/or testing of materials, components, and systems (Fig. 11). Examples of non-destructive methods of field examination and testing include field microscopy, the use of a metal detector to locate concealed metal elements, and X-ray techniques to assess concealed conditions. Some examples of destructive methods of field examination and testing include structural testing, strain relief testing, and inspection openings (probes). Instruments such as a borescope, through which concealed conditions can be viewed through a small hole, permit

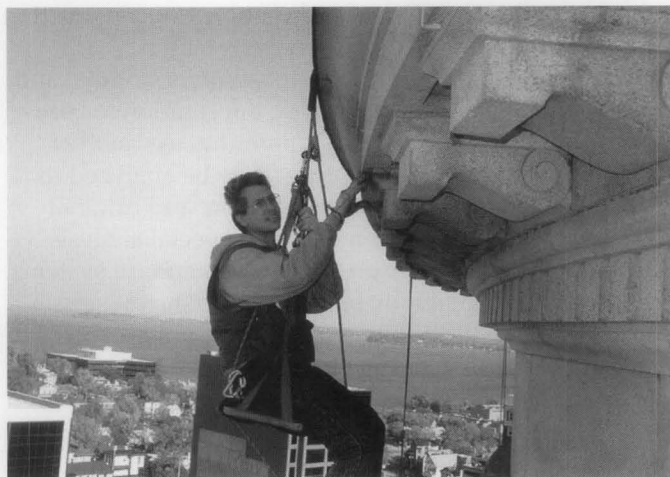


Figure 11. The use of special access methods may be necessary for close-up investigation of building elements. At the Wisconsin State Capitol, project architects and engineers used rappelling techniques. Photo: Wiss, Janney, Elstner Associates, Inc.



enhanced examination while limiting damage to the existing building fabric.

Depending upon existing conditions and the results of the site inspection, field monitoring may be required. Field monitoring can include humidity and temperature monitoring, documentation of structural movement and vibrations, light level monitoring, and other environmental monitoring.

In addition, materials samples may be removed for laboratory studies. A wide range of laboratory testing may be appropriate to establish the composition of various construction materials, determine causes of deterioration, and identify and assess appropriate conservation and repair measures (Fig. 12). Materials analysis may also be helpful in dating changes to the

structure and in developing a chronology of construction (Fig. 13). For example, mortar analysis may be performed to determine the composition of original and repointing mortars and to provide information for use in designing a mortar mix for repointing. As another example, paint and other coatings may be analyzed to determine finish types and composition, and original and subsequent color schemes, using special analysis techniques and comparison with color standard systems. Samples should generally be returned to the owner and retained in case future testing is required. In some cases, it may be appropriate to reinstall the samples after materials studies have been completed.

Sample removal and analysis may also be required to identify hazardous materials, which are present in many historic buildings. For example, lead and other heavy metals are components of many older paints and coatings, and asbestos is a constituent of some roofing materials, claddings, sealants, and insulation. Mold and mildew may be present and require special treatment; in this case a consulting industrial hygienist may need to be included in the project team. Analysis may be performed to confirm the materials present, determine the nature of the hazard, and help identify methods of remediation or management.

As buildings constructed during recent decades become "historic," newer materials require study and analysis as part of historic structure reports. For example, curtain wall components and joint sealants may require analysis to determine their composition, identify causes



Figure 13. Paint studies may not only help establish the chronology of paints and paint colors used on a building but also may aid in the dating of existing architectural features. Examination of the paint layers on these modillions utilizing a hand-held microscope enabled an investigating team to confirm in the field which modillions were original and which were later replacements. Photo: Charles Fisher, National Park Service.

of deterioration, and select appropriate replacement sealants. Composite materials and plastics, present in post-World War II buildings, may also require special effort to determine repair techniques or appropriate materials for replacement.

All of the information gathered during the physical investigation, and through field testing and laboratory analysis, should be documented in field notes, sketches, photographs, and test reports. This information is incorporated in the historic structure report and provides a basis for the development of treatment recommendations.

Evaluation of significance. The process of evaluation occurs throughout the study of the historic structure as information is gathered, compared, and reviewed. Historical data and physical evidence are reviewed to help evaluate the historical, architectural, engineering, and cultural significance of the property, its construction and use, and occupants or other persons associated with its history and development. This evaluation includes determination of the period(s) of primary significance. An overview of the building's history and an assessment of its significance are included in the report.

Depending on the historical significance of the property, and whether a detailed history has already been written,

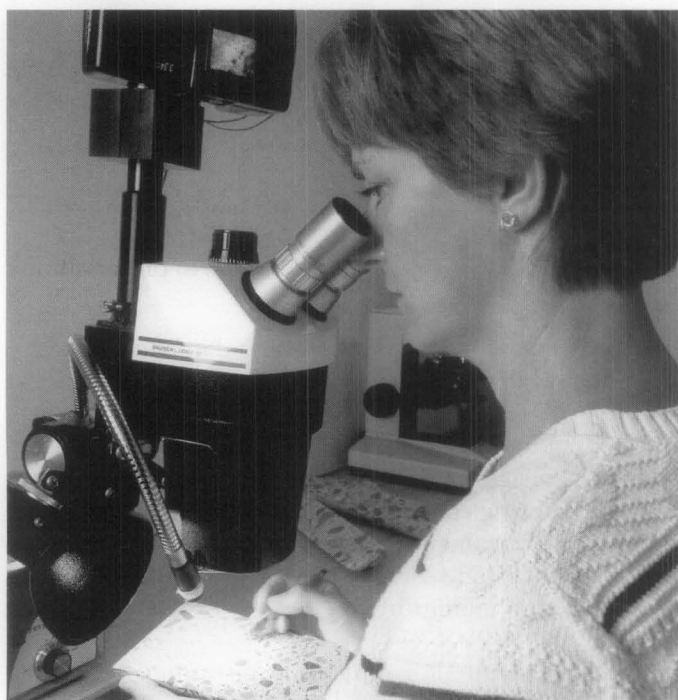


Figure 12. Field and laboratory studies of construction materials may be performed as part of a historic structure report. Laboratory studies of samples removed from the building may include a range of chemical and physical testing and evaluation. Here, a petrographer uses a stereomicroscope to examine concrete specimens. Photo: Wiss, Janney, Elstner Associates, Inc.

The Secretary of the Interior provides four distinct but interrelated approaches to the treatment of historic properties.

Preservation focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.

Rehabilitation acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.

Restoration is undertaken to depict a property at a particular period of time in its history, while removing evidence of other periods.

Reconstruction re-creates vanished or non-surviving portions of a property for interpretive purposes.

a brief or more detailed history may be appropriate. A chronology of construction and changes to the building, developed through historic and physical research, is an effective approach to identifying original building elements, as well as modifications that have occurred over time. If a comprehensive National Register nomination or other inventory has been prepared, the significance may already be defined. In other cases, the significance of a building and even its treatment may have been established through authorizing legislation or through the charter of an organization or foundation

that owns the historic property. Where appropriate, however, the building's significance should be re-evaluated in light of research performed for the historic structure report.

The results of the research, investigation, and field and laboratory testing are reviewed as a basis for developing specific work recommendations. The history and significance of the building and its site are evaluated to understand what spaces, elements, and finishes are of architectural or historical importance, and to confirm the overall project goals and treatment direction. The physical condition of the building and its systems is evaluated with regard to existing deterioration and distress, and needed repairs, as well as changes required to meet treatment goals. Attention is given to identification of life safety issues and code considerations. Conditions are also identified that could lead to future safety risks, loss of historic fabric, or loss of performance.

Selection of a treatment approach. Once the building's history, significance, and physical condition have been researched and investigated, an appropriate treatment is usually selected (Fig. 14). Depending upon the intended use of a property, funding prospects, and the findings of the investigation, it may be necessary in some cases to identify and discuss an alternate treatment as well. For example, a building currently occupied by caretakers that is a candidate for restoration and use as a museum may require such ambitious funding support that, for the foreseeable future, a more practical treatment could be to preserve the building and retain the caretakers. In this case, the treatment recommendation would be to restore the property and project work relevant to the

restoration would be described. However, the alternate treatment (in this instance an interim one) of preserving the building in its current form would also be described, including discussion of work appropriate to preservation such as repairing the existing roof and installing a monitored fire detection system.

In selecting an appropriate treatment, the Secretary of the Interior's Standards for the Treatment of Historic Properties can be particularly helpful. (See sidebar.) In use for more than twenty-five years, the Standards are a widely accepted means of planning for and undertaking project work in a manner that preserves historic materials and elements. The Secretary's Standards have been adopted by many state and local review



Figure 14. The treatment approach selected for a building usually is determined by the intended use of a property, funding prospects, and the findings of an investigation. The Wolf Creek Inn, operated by the Oregon Parks and Recreation Department, is among the most intact and oldest active travelers' inns in Oregon. The historic structure report outlined a rehabilitation treatment which included such work recommendations as repairs to specific historic fabric, landscape restoration and site improvements, and upgrading of the building's mechanical and electrical systems. Photo: Historic American Building Survey, 1934.

entities for review of work proposals on historic structures.

The Standards and their accompanying Guidelines describe four different options for treatment and list recommended techniques for exterior and interior work consistent with each option. One treatment (preservation, rehabilitation, restoration, or reconstruction) is usually selected and followed



Figure 15. The historic structure report for the Hotel Florence, shown here in 1886 (upper), 1963 (center), and 2004 (lower) views, provided a basis for stabilization and repair work which has been completed. Initial phases of work addressed preservation of the building envelope, structural repairs, and limited mechanical and electrical improvements. The report also provided recommendations for future rehabilitation work that will be implemented in phases as funding becomes available. Photos: upper and center, Historic American Building Survey; lower, Wiss, Janney, Elstner Associates, Inc.

throughout the course of a project involving a particular building. Application of a single treatment approach helps to avoid inappropriate combinations of work, such as restoring a building's appearance to an earlier time in history while simultaneously constructing a new addition.

Development of work recommendations. The work recommendations are a central feature of the report. They are developed only after the research and investigation has been completed and the overall project goal established as to whether a particular building should be preserved, rehabilitated, restored, or reconstructed. The specific work recommendations need to be consistent with the selected treatment. If analysis performed during the study suggests that the approach or use initially proposed would adversely affect the materials, character, and significance of the historic building, then an alternate approach with a different scope of work or different use may need to be developed. The process of developing work recommendations also needs to take into account applicable laws, regulations, codes, and functional requirements with specific attention to life safety, fire protection, energy conservation, abatement of hazardous materials, and accessibility for persons with disabilities.

In addition to project goals, the proposed work is also guided by the building's condition. The scope of recommended work may range from minor repairs to structural stabilization to extensive restoration. In addition, the scope of work may be very narrow (e.g., priming and painting of woodwork and repair of deteriorated roof flashings), or very extensive (e.g., stabilization of timber framing or major repair and repointing of exterior masonry walls). The result of implementing (or not implementing) the recommended work needs to be considered as the recommendations are developed.

Of course, the available project budget is also a factor in determining the extent of recommended work and whether it must be accomplished in several phases or projects. Whether or not available budget is the primary factor in determining the extent of work that can be performed, it is often useful to prioritize recommended work items. The recommended tasks can be examined in terms of relative importance and the time required for implementation. Prioritizing repairs can be critical where immediate or short-term work is needed to stabilize a building or structure, eliminate safety hazards, make the building weather tight, and protect it against further deterioration (Fig. 15).

Appropriate procedures for undertaking the recommended work items are described in the historic structure report and are intended to serve as a basis for planning the repair, rehabilitation, or restoration design. The level of detail to which the work items are defined should be limited in the historic structure report, as these

recommendations serve as the foundation for, rather than in place of, design and construction documents for the work. For example, baseline drawings annotated with existing condition notes can later serve as a starting place for development of construction drawings. Outline procedures provided in the report for recommended work items can be used later to develop specifications for the work. Finally, a general opinion of probable costs associated with the recommended work is often prepared. A cost estimate is useful to building owners and managers in budget planning and also assists in prioritizing the work. For large or complex projects, the services of a professional cost estimator may be helpful in this effort.

Report Preparation. Upon completion of the research, physical investigation, evaluation, and work recommendations, the historic structure report is compiled. The principal investigator may submit an outline of the report for owner review at the beginning of the report preparation. A draft report may also be submitted for review when the report is partially complete, especially if there are many new research findings, significant physical distress conditions to be addressed, or complicated choices to be made in determining the treatment.

The report should be prepared in a style and format that is readily accessible and user-friendly; however, it is not essential that a standardized method or format be followed for all historic structure reports. The report can be primarily narrative or graphic, but is most typically a combination of these formats. Ease and economy of report preparation should be considered but should not take precedence over clarity and thoroughness of documentation.

Meetings and presentations. In addition to meetings with site personnel early in the study process, it is helpful for the project team to meet at key points during the research, investigation, and development of the historic structure report. For example, it is useful for the project team members performing archival research to meet with site personnel to review documents and findings, and to help ensure that important archival sources have not been overlooked. Project team members may also walk through the building with site personnel during the investigation phase to review and discuss existing conditions and possible recommendation approaches. When the report is in draft form, a meeting of the project team with those personnel who will be reviewing and using the report is useful to discuss overall goals, treatments, and recommendations as these are being developed. Finally, when the study is complete, a presentation of the completed study by the project team helps to familiarize the owner and building personnel with the report, highlight key issues, answer questions, and provide a transition to the use of the report as a working document by the building's caretakers.

Report Organization

The scope of the study—historical research, condition survey, investigation and testing, evaluation, selection of appropriate treatment, and development of specific work recommendations—generates a wealth of information about the history and condition of the building and the specific work needed to preserve, rehabilitate, restore, or reconstruct it. This information is typically a combination of historical and technical data obtained by different members of the project team and presented as an integrated report in text, photographs, drawings, and tables (Fig.16). The project leader or principal author must guide the development of the report so that key issues are addressed, information is

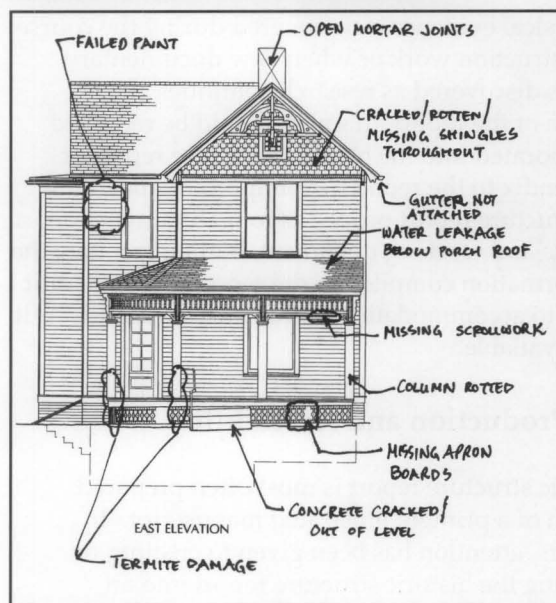
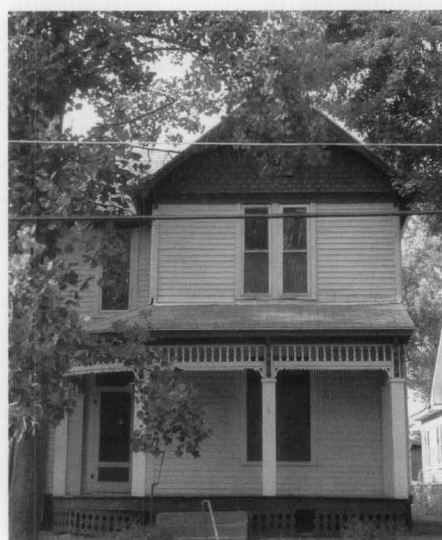


Figure 16. The historic structure report for the Noland House in Independence, Missouri, a vernacular house that is significant as part of the context of Harry S Truman's life and family in Independence, Missouri, includes photographs and measured drawings to record existing features and conditions of the building. The measured drawings will also provide a basis for construction documents for future preservation work. This photograph and drawing illustrate the front elevation of the house. Photo and drawing: Bahr Vermeer Haecker Architects.

documented and assimilated in the report findings and discussion, recommendations are clearly presented, and no information is lost or misinterpreted in the compilation process.

In order to integrate the many pieces of information into a coherent and comprehensive whole, the historic structure report is generally organized into two principal sections preceded by a brief introduction that summarizes overall findings and recommendations and provides project administrative data. The main sections of the report consist of (1) a narrative that documents the evolution of the building, its physical description, existing condition, and an evaluation of significance; and (2) a discussion of historic preservation objectives, together with recommendations for an overall treatment approach and for specific work. The report is usually supplemented with footnotes or endnotes, bibliography, and appendices of historical documentation and technical data.

It is highly recommended that a post project record of all work performed later be added as a supplement to the historic structure report. This record may consist of annotated drawings, photographs, and other documentation of the work performed. Site personnel may help coordinate this supplement or record if the principal author of the report is not involved in the later construction phase. Some organizations and government agencies consider the post project record to be a third part of a historic structure report and not just a supplement.

When physical evidence is discovered during the course of the construction work or when new documentary evidence is discovered as research continues after completion of the report, this also should be recorded and incorporated into the historic structure report or in an appendix to the report. An important goal of the historic structure report process is to maintain the report as an active and working document, both to facilitate the use of information compiled in the report and to permit the report to accommodate new information readily as it becomes available.

Report Production and Availability

The historic structure report is most often prepared in the form of a printed, illustrated manuscript. In recent years, attention has been given to creating or transforming the historic structure report into an electronic document as well. In electronic format, the report can easily be shared with interested parties and is readily updated.

However, because historic structure reports are still mostly produced in printed format (although sometimes concurrently with an electronic document), it is important that, after production, one or more copies be provided to the

property owner and also made available to the project team. As the basis for design and construction documents, the historic structure report needs to be readily available and extensively used during implementation of the work. At least one site copy should be maintained in a physical format that can be readily updated, such as a three-ring notebook to which additional documentation can easily be added. Field documentation materials, including photographs and negatives, measured field drawings, condition reports and surveys, materials test reports, and other information gathered during the study can be stored in an archive by the building owner for future reference.

An archival copy should also be provided to the owner, and a minimum of one archival copy kept at the project site and at an appropriate local or regional archive, such as a state historical library. Copies of the historic structure report may also be provided to a local historical organization or university and the state historic preservation agency or historical society. In addition, a copy may be given to the National Trust for Historic Preservation Library at the University of Maryland at College Park, which has established a reference collection of historic structure reports.

Summary

Various agencies and organizations have employed historic structure reports as planning tools for many years, for example, the National Park Service, General Services Administration, New York State Office of Parks, Recreation and Historic Preservation, and the Society for the Preservation of New England Antiquities. These and other agencies and organizations may have specific requirements and procedures for reports prepared for properties under their stewardship that differ from those described in this Preservation Brief. All historic structure reports, however, share a common goal—the careful documentation and appropriate treatment of significant historic structures.

The historic structure report is an optimal first phase of historic preservation efforts for a significant building, preceding design and implementation of its preservation, rehabilitation, restoration, or reconstruction. If work proceeds without a historic structure report as a guide, physical evidence important to understanding the history and construction of the building may be destroyed. The preparation of a report prior to initiation of work provides documentation for future researchers. Even more importantly, prior preparation of a report helps ensure that the history, significance, and condition of the property are thoroughly understood and taken into consideration in the selection of an appropriate treatment and in the development of work recommendations. A well prepared historic structure report is an invaluable preservation guide.

Content and Organization of Report

- Cover Page
- Table of Contents
- Introduction
 - Study Summary
 - Project Data
- Part 1 - Developmental History
 - Historical Background and Context
 - Chronology of Development and Use
 - Physical Description
 - Evaluation of Significance
 - Condition Assessment
- Part 2 - Treatment and Work Recommendations
 - Historic Preservation Objectives
 - Requirements for Work
 - Work Recommendations and Alternatives
- Bibliography
- Appendices
- Supplemental Record of Work Performed (section often added later)
 - Completion Report
 - Technical Data (on work completed)

Introduction. This section includes a concise account of research and investigation findings and recommendations for treatment and use, and a record of project administrative data.

- *Study Summary* - a brief statement of the purpose, findings, and recommendations of the study, including major research findings, key issues addressed by the study, and a summary of recommendations for treatment and use.
- *Project Data* - a summary of project administrative data (e.g., location, ownership, and landmark status of property) and the methodology and project participants.

Part 1 Developmental History. This section consists of a narrative report based on historical research and physical examination documenting the evolution of the building, its current condition and causes of deterioration, and its significance.

- *Historical Background and Context* - a brief history of the building and its context, its designers and builders, and persons associated with its history and development.
- *Chronology of Development and Use* - a description of original construction, modifications, and uses, based on historical documentation and physical evidence.
- *Physical Description* - a description of elements, materials, and spaces of the building, including significant and non-significant features of the building.
- *Evaluation of Significance* - a discussion of significant features, original and non-original materials and elements, and identification of the period(s) of significance (if appropriate).
- *Condition Assessment* - a description of the condition of building materials, elements, and systems and causes

of deterioration, and discussion of materials testing and analysis (if performed as part of this study).

Part 2 Treatment and Work Recommendations. This section presents the historic preservation objective and selected treatment (preservation, rehabilitation, restoration, or reconstruction), requirements for work, and recommended work that corresponds with the defined treatment goal.

- *Historic Preservation Objectives* - a description and rationale for the recommended treatment and how it meets the project goals for use of the building, e.g., rehabilitation for a new use, restoration for interpretive purposes, etc.
- *Requirements for Work* - an outline of the laws, regulations, and functional requirements that are applicable to the recommended work areas (e.g., life safety, fire protection, energy conservation, hazardous materials abatement, and handicapped accessibility).
- *Work Recommendations and Alternatives* - a presentation of tasks recommended to realize the proposed treatment approach; evaluation of proposed solutions; and description of specific recommendations for work, including alternate solutions, if appropriate.

Notes, Bibliography and Appendices

- Footnotes or endnotes
- Bibliography, annotated if possible
- List of sources of information (e.g., archives, photograph collections)
- Appendices (e.g., figures, tables, drawings, historic and current photographs, reference documents, materials analysis reports, etc.)
- Index (if the report is particularly long or complex)

Supplemental Record of Work Performed. This section documents work performed, which may include planning studies, technical studies such as laboratory testing or structural analysis, or other investigation work that was not part of the scope of the original historic structure report, and records physical work on the building (construction documents, annotated drawings, photographs). The section is usually added later to update the report, as most historic structure reports are issued prior to implementation of the recommended treatment approach and specific work. It is sometimes referred to as Part 3 of the report.

- *Completion Report* - a record of the work accomplished, physical evidence discovered during construction, and how findings affect interpretation of the building.
- *Technical Data* - a collection of field reports, material data sheets, field notes, correspondence, and construction documents.

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¹ From the introduction to the *University of Virginia, Pavilion 1, Historic Structure Report*, Mesick Cohen Waite Hall Architects, 1988.

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