SPECIAL PUBLICATION 524

Assessment Of Current Building Regulatory Methods As Applied To The Needs Of Historic Preservation Projects

U.S. DEPARTMENT OF COMMERCE / National Bureau of Standards

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Assessment Of Current Building Regulatory Methods As Applied To The Needs Of Historic Preservation Projects

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ASSESSMENT OF CURRENT BUILDING REGULATORY METHODS AS APPLIED TO THE NEEDS OF HISTORIC PRESERVATION PROJECTS

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The National Trust for Historic Preservation is the only private, nonprofit organization chartered by the Congress to encourage public participation in the preservation of sites, buildings and objects significant in United States history and culture. National Trust support is provided by membership dues, endowment funds, contributions and grants from public agencies.

ABSTRACT

To meet contemporary safety and health requirements as defined by the building regulatory system, conflicts frequently occur with the needs of historic building preservation projects. This report (1) identified, evaluated and proposed historic preservation categorical definitions as applied to buildings; (2) developed performance objectives, requirements, criteria and tests for each definition category; and (3) identified and assessed those current methods most commonly used by regulatory jurisdictions to mitigate adverse impacts on historic preservation projects.

KEY WORDS: Architecture; building regulatory system; codes; health and safety; historic buildings; historic preservation; impacts; performance-based standards; research.

CONTENTS

TABLE OF ILLUSTRATIONS

1. INTRODUCTION

At the request, and with the support, of the Building Economics and Regulatory Technology Division, Center for Building Technology, National Engineering Laboratory, National Bureau of Standards, the National Trust for Historic Preservation undertook an assessment of current building regulatory methods as applied to the needs of historic preservation projects.

It has been recognized that the needs of assuring safety and health, as defined by the building codes, standards and federal regulations of the building regulatory system, frequently conflict with the needs of historic preservation projects. It was a premise of this study that one potential answer to resolving this conflict may be the development of a performance-based standard or set of regulations that would not specify design solutions to meet the needs of health and safety but would, rather, specify these needs in goal-oriented (i.e., performance language), rather than prescriptive, solutions. This would allow the architect undertaking an historic preservation project the maximum freedom in meeting the needs of safety and health while not compromising the historical and architectural integrity of the building.

It is recognized that such performance-based standards and regulations require extensive building research to develop. In the short term, other methods must be investigated to mitigate any adverse impact imposed on historic preservation projects by the building regulatory system. In fact, regulatory jurisdictions are utilizing primarily administrative methods to mitigate the adverse impact on historic preservation projects.

The purpose of this project was to identify those methods currently in use by regulatory jurisdictions and to assess the impact and effectiveness of those methods on historic preservation projects. To do this, the following major tasks were undertaken in the course of the project:

Definitions - Identify all categories of historic preservation activity, defining each category by making reference to authoritative sources, and identify any definitional discrepancies arising from these authoritative sources.

Development of performance objectives of historic preservation needs - For each of the definition categories identified, specify the building's characteristics that should be maintained for historic preservation purposes and develop detailed performance requirements. Where possible, further identify criterion for each performance requirement (the measurable or quantifiable level that should be met to assure the intent of the requirement is met) and the test (the method of assessing whether the criterion is met).

Methods utilized to mitigate adverse impact of the building regulatory system on historic preservation projects - Identify the methods commonly used and the extent of usage in the United States. Identify three of the most important methods and sample at least three jurisdictions that utilized these methods. Based on the developed performance standards, develop methodology for the purpose of assessing the effectiveness of each of the three methods. Utilize this methodology in assessing sample projects in each of the identified jurisdictions. Provide recommendations for needed further research as might be determined from this project.

2. METHODOLOGY

2.1 Definitions

The existing body of recent preservation literature which was national in scope was reviewed by the project director for terms and definitions related to building activity. Based on the project director's best judgement, a survey package was developed which included a cover questionnaire and copies of the selected terms and definitions (Appendix A). This package was mailed to a national sampling of federal preservation agencies, state historic preservation offices, local landmarks and historic district commissions, member organizations of the National Trust and professional staff of the National Trust. While the survey was underway, the project director was serving on a National Conservation Advisory Council (NCAC) subcommittee that was preparing a report on the state of architectural conservation in the United States. The subcommittee report included an appendix, "Definitions of Terms Used in the Treatment of Historical Architecture." This appendix, together with the previously selected terms and definitions and the survey responses to those terms and definitions, formed the collection of definitions from which the performance objectives were developed.

2.2 Performance Objectives to Meet Preservation Needs

The working chart was developed by the project director and a first draft prepared from his working experience; the draft was reviewed and revised principally by M. Hamilton Morton, Jr., under subcontract to the National Trust. Each of the other subcontractors, Messrs. Bullock, Cavaglieri and Holmes, also reviewed and commented on the initial draft.

2.3 Mitigation of Adverse Impact of the Building Regulatory System on Preservation Projects

A survey form to identify the primary adverse impacts and the mitigating techniques (Appendix B) was developed by the project director for circulation to local landmarks and historic district commissions. Data previously collected from a survey sampling of attendees at a national conference on historic preservation and building codes (primarily practicing architects and building officials) was also utilized. These mail survey results were randomly checked in personal conversation with preservation project directors and professional consultants.

2.4 Assessment Methodology in Sample Projects

This phase of the project was conducted primarily by subcontractors to the National Trust who are practicing architects specializing in historic preservation. Six sample projects in five differing geographic locations were selected in consultation with the project director to obtain a sampling which was representative of the most common forms of contemporary preservation activity, ranging from a traditional small historic house museum restoration to a large adaptive use project.

3. FINDINGS

3.1 Historic Preservation Definitions

The first element of this project called for the identification and evaluation of the general national acceptance of common historic preservation definitions as applied to buildings. A survey of recent preservation literature which is national in scope identified the following as being an appropriate base on which to conduct the evaluations.

3.1.1 Administrative Policies for Historical Areas of the National Park System (revised September 1975), U. S. Department of the Interior, National Park Service, Washington, D. C., pp. v-12.

> "TREATMENT OF HISTORIC RESOURCES
>
> For purposes of preservation treatment, the Service recognizes three classes of historic resources: historic sites, historic structures, and historic objects (which differ from structures in being generally movable). Perpetuation of these resources will be accomplished by one or more of the following methods: preservation, restoration, or reconstruction.
>
> Preservation involves the application of measures to sustain the existing terrain and vegetative cover of a site and the existing form, integrity, and material of an object or structure. It includes initial stabilization work, where necessary, as well as ongoing maintenance.
>
> Restoration is the process of recovering the general historic appearance of a site or the form and details of an object or structure by the removal of incompatible natural or human-caused accretions and the replacement of missing elements as appropriate. For structures, restoration may be for exteriors and interiors and may be partial or complete.
>
> Reconstruction involves the accurate reproduction of an object or structure, in whole or in part."

The evaluative comments received included the following:

National Park Service: These definitions are designed to apply to properties in public ownership intended for interpretation and public visitation, not private use.

South Carolina Department of Archives and History: Prefers the term "stabilization" to "preservation" because of the associative value the word "preservation" has assumed in the public mind.

Historic Savannah, Inc., Ga.:- Prefers "stabilization" in the context designated for "preservation" because of the public's general use and understanding of the term "preservation."

The Society for the Preservation of New England Antiquities: A new category, "conservation," should be considered either by itself of as a part of "restoration" or "preservation."

Midwest Regional Office, Southwest/Plains Field Office of the National Trust, and Utah Heritage Foundation: The word "preservation" can mean a system of architectural approaches which includes adaptive use and restoration, or it can mean a particular method of building treatment, or it can mean a field of study and work, or it can refer to a popular movement. "Preservation" should have a broad, more all-inclusive definition encompassing such terms as "adaptive reuse," "restoration," "reconstruction," etc.

Midwest Regional Office, National Trust: This office holds the position that the definition for "preservation" is misapplied and is in fact a definition for "stabilization."

Utah Heritage Foundation: Foundation maintains that the definition of "historic" is lacking in that this determination is critical to application of the other terms.

3.1.2 The National Register of Historic Places Supplement 1976, U. S. Department of the Interior, National Park Service, Washington, D. C., p. vii.

"Terminology (as used in published edition of the National Register of Historic Places)

1. Building - a structure created to shelter any form of human activity.

2. Structure - a work constructed by man.

3. Object - a material thing of function, aesthetic, cultural, historic, or scientific value that is usually by nature or design, movable.

4. Site - the location an event, building, structure, or object.

5. District - a geographically definable area, urban or rural, possessing a significant concentration or linkage of sites, buildings, structures, or objects unified by past events or aesthetically by plan or physical development."

"Terminology (expanded and as used in the published How to Complete National Register Nomination Forms)

A. A district is a geographically definable area, urban or rural, possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects which are united by past events or aesthetically by plan or physical development. A district also may be comprised of individual elements which are separated geographically but are linked by association or history.

B. A site is the location of a significant event, activity, building, structure, or archeological resource where the significance of the location and any archeological remains outweighs the significance of any existing structures.

C. A building is a structure created to shelter any form of human activity. This may refer to a house, barn, church, hotel, or similar structure. Buildings may refer to a historically related complex, such as a courthouse and jail or a house and barn.

D. A structure is a work made up of interdependent and interrelated parts in a definite pattern of organization. Constructed by man, it is often an engineering project large in scale.

E. An object is a material thing of functional, aesthetic, cultural, historical, or scientific value that may be, by nature or design, movable yet related to a specific setting or environment."

The evaluative comments received included the following:

Commission on Chicago Historical and Architectural Landmarks: Somewhat vague and abstract as used in this abbreviated format. Actual experience in working with this terminology illustrates the need to refer to the National Park Service's expanded definitions.

Washington State Parks and Recreation Commission: Definition for "structure" in abbreviated form is hopelessly vague.

3.1.3 "Project Performance Standards," description from March 16, 1976, draft of Memorandum of Agreement between Advisory Council on Historic Preservation and the National Park Service.

"VII. Project Performance Standards

Acquisition: Acquisition is defined as the act or process of acquiring absolute ownership (fee simple acquisition),

or the act or process of acquiring a specific interest other than absolute ownership (less-than-fee-simple acquisition). Less-than-fee-simple ownership includes: a. The acquisition of development rights. The preservation objective may be achieved in certain cases through acquiring negative easements limiting a property owner's right to develop, alter, or use all or part of the property. For example, a facade easement binds an owner for specified compensation not to alter an exterior without the permission of the easement holder; b. Acquisition of remainder interest, such as the acquisition of property subject to a life estate.

Protection: Protection is defined as the act or process of applying measures designed to affect the physical condition of a property by defending or guarding it from loss or attack or to cover or shield the property from danger or injury. Protection does not include rebuilding or recreating lost historic features. Protection includes improvements to the physical condition or environment of a property to safeguard it from weather or other natural, animal, or human intrusion which could be harmful to the historic resource.

Stabilization: Stabilization is defined as the process of applying measures designed to reestablish the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present. Stabilization aims at halting further deterioration and enhancing safety. It does not include rebuilding or recreating lost prehistoric or historic features. Stabilization includes: a. techniques to arrest or slow structural failure or material deterioration of a property; b. improvement in physical conditions to make the property safe, habitable, or otherwise useful.

Preservation: Preservation is defined as the application of measures designed to sustain the form and extent of a property essentially in its existing state. It aims at halting further deterioration and providing structural safety, but does not include significant reconstruction or restoration of lost historic features. Preservation includes techniques of arresting or retarding the deterioration of a property; or improvement of structural or mechanical conditions to make a property safe, habitable or otherwise useful without removal of original fabric. All historic property is suitable for preservation.

Restoration: Restoration is defined as the process of accurately recovering the form and details of a property and its setting as it appeared at a particular period of time by means of the removal of later work and by the replacement of missing earlier work. Restoration may be of the following kinds: full restoration (exterior and interior) or partial restoration (exterior, interior, or any part thereof). The extent of restoration to be undertaken, whether full or partial, must be evaluated on a case by case basis by qualified professional persons.

Rehabilitation: Rehabilitation is defined as the process of returning a property to a state of efficiency to soundness by repairs or alterations so that it will serve a useful continued or adaptive purpose. Those portions of the property (external, internal, or in combination) which are important to its significance are preserved or restored. A property is not suitable for rehabilitation when such treatment would significantly diminish or destroy the historical or architectural integrity of the property.

Reconstruction: Reconstruction is defined as the process of reproducing by new construction the exact form and detail of a vanished building, structure, or object, or a part thereof, as it appeared at a specific period in time. A property is suitable for reconstruction when it is essential to fill a gap in a historic district or scene, and when a contemporary design solution is not acceptable. Reconstruction is an appropriate treatment of a historic resource only when the property to be reconstructed is essential for understanding and interpreting the value of a historic district when no other building or structure with the same association has survived, and sufficient historical documentation exists to insure an exact reproduction of the original."

The evaluative comments received included the following:

South Carolina Department of Archives and History: Distinction between "preservation" and "stabilization" is not very clear. "Adaptive restoration" (used in "Treatment of Historic Resources") seems to be more expressive than "rehabilitation" since the latter is also used for buildings with no architectural value.

Midwest Regional Office, National Trust: "Rehabilitation" is in fact a definition for "adaptive reuse." "Rehabilitation" under popular usage implies considerable leeway to alter relative to personal choice. "Adaptive reuse" as used traditionally by architects and preservationists has implied changes with sensitivity to important existing fabric and as little as is

practical for contemporary use. We might begin to think about "maintenance" for that is really the best and only true way we can ever hope to preserve anything. We encourage and promote this way too little.

Washington State Parks and Recreation Commission: As with the definitions for "preservation," "stabilization" need not imply the additional work required to make a structure "habitable or otherwise useful" which is more properly associated with the term "rehabilitation." Often with obsolete or remote buildings, it is sufficient to simply halt further deterioration and restore structural integrity to the point that public safety is insured.

Office of Historic Properties, National Trust: Questions whether the term "preservation" should not be used in the generic term; questions the applicability to all situations of the last sentence of the definition of "rehabilitation" and suggests that some of these entries, such as "acquisition" and "reconstruction" go beyond the basic definition.

3.1.4 Table 1, "On Formulating New Parameters for Preservation Policy," James Marston Fitch, in Preservation and Conservation: Principles and Practices, The Preservation Press, National Trust for Historic Preservation, Washington, D. C. 1976, p. 312.

Although not definitions per se, the categories and examples listed below identify the range of scale and degree encountered in historic preservation projects.

Profundity of Intervention
(in ascending order of severity or radicalness)

1. Conservation

   a. Natural features: California redwoods
      Rare birds and animals

   b. Works of art: Sculpture, painting, frescoes, mosaics

2. Preservation: Hyde Park, New York
   Brighton Royal Pavilion, England
   Wavel Palace, Warsaw

3. Restoration: Independence Hall, Philadelphia
   Hradcany Castle, Prague
   Monticello, Virginia

4. Adaptive modification: Castello Sforszeca, Milan
   Casa Rosa, Genoa
   Opera House, Warsaw
   Ford's Theatre, Washington, D. C.

5. Structural consolidation: White House, Washington, D. C.
   York Minster, England
   Norwich Cathedral, England

6. Reconstitution

   a. In situ: Santa Trinita Bridge, Florence
      Iwo Treasure Houses, Japan
      Illinois State Capitol, Springfield

   b. On new sites: Skansen, Stockholm
      Abu Simbel, Egypt
      London Bridge, Arizona

7. Reconstruction: Governor's Palace, Williamsburg
   Church of Jan Hus, Prague
   Fort Louisbourg, Canada
   Stoa of Attalus, Athens

8. Replication: Full-scale replica of the Parthenon, Nashville, Tenn.
   Use of sculptural replicas outdoors, Pisa and Florence

Scale of Intervention
(in descending order of physical magnitude)

1. Entire historic towns: Telc, Czechoslovakia
   Venice, Italy
   Williamsburg, Virginia

2. Historic districts: Vieux Carre, New Orleans
   Mala Strana, Prague
   Stare Miasto, Warsaw

3. Historic building complexes: Regent's Park, London
   Lafayette Square, Washington, D. C.
   Kremlin Palace, Moscow

4. Individual historic buildings

   a. In situ: Versailles, France
      Hampton Court, London
      Mount Vernon, Virginia

   b. Relocated on new sites: Boscobel Garrison, New York
      Abu Simbel, Egypt

   c. Relocated in groups: Skansen, Stockholm
      Cooperstown Farm Museum, New York
      Freiland-museet, Copenhagen

5. Building fragments--decorative arts museums:

   Victoria and Albert Museum, London
   Metropolitan Museum of Art, New York City
   National Museum of Anthropology and Ethnography, Mexico City

3.1.5 "Definitions of Terms Used in the Treatment of Historical Architecture," Subcommittee on Architectural Conservation, National Conservation Advisory Council.

Concurrent with this phase of the project, the NCAC Subcommittee on Architectural Conservation was preparing a report concerning the state of architectural conservation in the United States. Their report, submitted and accepted by the full Council in November 1976, includes a set of terms used in the treatment of historic architecture. These definitions represent a consensus of current thinking among nationally recognized preservationists. The subcommittee consisted of representatives from the National Park Service, National Trust, Office of the Architect of the U. S. Capitol, American Institute of Architects, Society for the Preservation of New England Antiquities, Columbia University School of Architecture (preservation program), and University of Florida Department of Architecture (preservation program).

"DEFINITIONS OF TERMS USED IN THE TREATMENT OF HISTORICAL ARCHITECTURE

PRESERVATION: The maintenance of the structure in the same physical condition as when it was received by the curatorial agency. Although the word has assumed varied meanings, its definitions fall under two basic headings. When applied to the preservation movement, it basically denotes halting the demolition of old and/or historic buildings and finding means for their retention and reuse. When applied architecturally, its meaning narrows. The National Park Service defines preservation as:

> the application of measures designed to sustain the form and extent of a structure essentially as existing when the National Park Service assumes responsibility. Preservation aims at halting further deterioration and providing structural safety, but does not contemplate significant rebuilding. Preservation includes techniques of arresting or slowing the deterioration of a structure; improvement of structural conditions to make a structure safe, habitable or otherwise useful; normal maintenance and minor repairs that do not change or adversely affect the fabric or appearance of a structure.*

RESTORATION: The process of accurately recovering, by the removal of later work and the replacement of missing earlier work, the form and details of a structure, together with its setting, as it appeared at a particular period of time.

*Activity Standards, Section III, Part IV, National Park Service, U. S. Department of the Interior, December 21, 1971, p. 18.

REHABILITATION: The process of returning a structure to a state of usefulness by repairs or alterations when its significance does not justify full restoration and when its condition or proposed use precludes preservation in its existing form.

ADAPTIVE USE: The process of adapting a building to a use other than that for which it was designed, e.g., a piano factory being converted into housing or a mansion into offices. This usually involves restoration and/or rehabilitation, and can be accomplished with varying changes to the appearance of a structure from minimal to major.

RECONSTITUTION: A more radical version of the above, in which a structure can be saved only by piece-by-piece reassembly, either in situ or on a new site. Reconstitution in situ is ordinarily the consequence of disasters like war or earthquakes, where most of the original constituent parts remain. On occasion, it may be necessary to dismantle a building and reassemble it on the same site, but reconstitution on new sites is more common.

RECONSTRUCTION: The process of rebuilding a non-extant structure to its original appearance through archival and archeological investigation. Although parts of the original structure are sometimes included in the reconstruction, the process usually involves new construction materials.

REPLICATION: The construction of an exact copy of a still extant building on a site removed from the prototype."

It is this set of NCAC definitions that the National Trust elected to use as the basis for the second phase of this project, with some modification reflecting comments on the previous sections.

Although outside of the scope of this project, it should be noted that the subject of historic preservation definitions is also the current subject of a study by the International Council of Monuments and Sites (ICOMOS). The United States is represented by the U. S. Committee for ICOMOS. This effort is attempting to survey and develop international terminology standards

3.2 Performance Objectives for Historic Preservation

Using the NCAC subcommittee definitions as a basis, the definitions which follow were used in this project.

Also, the following categories of building elements were developed for this phase of the project and are used in the subsequent charts. These elements represent a range of differing factors which have to be considered in both determining and evaluating performance objectives.

3.2.1 Category/Definitions

a. Preservation: The maintenance of the structure in the same physical condition as when it was received by the curatorial agency.

b. Rehabilitation: The process of returning a structure to a state of usefulness by repairs or alterations when its significance does not justify full restoration and when its condition or proposed use precludes preservation in its existing form.

c. Adaptive use: The process of adapting a building to a use other than that for which it was designed. It usually involves restoration and/or rehabilitation and can be accomplished with varying changes to the appearance of a structure.

d. Consolidation: The physical intervention in the actual fabric of the structure to insure its continued structural integrity. Such intervention can range from relatively minor to very radical actions and may be an integral part of broader programs of recycling for adaptive use.

e. Restoration: The process of accurately recovering, by the removal of later work and the replacement of missing original work, the form and details of a structure together with its setting, as it appeared at a particular period of time.

f. Reconstitution: The saving of a structure by the piece-by-piece reassembly, either in situ or on a new site.

g. Reconstruction: The process of rebuilding a nonextant structure to its original appearance through archival, architectural and archeological investigation.

h. Replication: The construction of an exact copy of an extant building on a site removed from the prototype.

3.2.2 Building Elements

a. Use/occupancy - program/compatible/noncompatible
- use/assembly/residential/business/educational/etc.
- private/public/museum/landmark
- compatible/adaptive use

b. Site/land use - orientation/surrounding area
- yard/set-back requirements
- walks/ramps/parking
- accessory buildings
- landscaping

c. Form/volume/penetrations/
projections - exterior enclosure/walls/roof
- penetrations/doors/windows/arcades
- projections/cornices/balconys/chimneys/dormers/
towers/balustrades

d. Interior space/floor plan - public space/foyers/major/minor
- private space/rooms/offices
- service spaces/storage/mechanical/attics/
basement

e. Egress/circulation - engress/protected horizontal exitways/fire doors/
stairs/protected/unprotected/handicap access
- circulation/halls/foyers/elevators/conveyor equipment

f. Exterior materials - wall surface/roof
- penetration/doors/windows
- details/cornices/shutters
- water control/gutters/downspouts

g. Interior materials - wall/ceiling/floor surfaces (hard)
- soft materials (decorations)
- material finishes/color/visual appearance
- specialities/fireplaces/balustrades

h. Structural system/materials - design loads/dead and live
- structural system exposed/concealed
- partitions/bearing/nonbearing

i. Environment/comfort/safety - heating/ventilating/air conditioning
- lighting/electrical
- plumbing/vents/toilets
- safety/alarm/smoke systems/fire extinguishers

3.2.3 Performance Objectives

a. Preservation: The maintenance of the structure in the same physical condition as when it was received by the curatorial agency.

Building elements	Design goals/ requirement	Criterion	Performance test
Use/occupancy	Determine by purpose.	Adhere to existing or accommodate without alterations.	Historically and architecturally accurate representation.
Site/land use	Maintain existing conditions.	Adhere to historical and architectural evidence.	Ditto.

Building elements	Design goals/ requirement	Criterion	Performance test
Form/volume/ penetrations/ projections	Ditto.	Adhere to existing conditions.	Ditto.
Interior space/floor plan	Ditto.	Ditto.	Ditto.
Egress/ circulation	Determine by purpose.	Adhere to existing or accommodate without alterations.	Ditto.
Exterior materials	Maintain existing conditions	Preserve surviving materials as possible and replicate original materials in all replacements.	Ditto.
Interior materials.	Ditto.	Preserve surviving materials where possible and meet use/occupancy needs with compatible or concealed architectural installation.	Ditto.
Structural system/ materials	Service for intended use/ occupancy.	Preserve surviving as possible and meet use/ occupancy needs with compatible or concealed architectural installation.	Provide new systems with minimum interference and preserve historically and architecturally accurate representation.
Environment/ comfort/ safety	Ditto.	Preserve surviving systems as possible (may or may not be operative) and meet use/occupancy needs with compatible architectural installation.	Ditto.

b. Rehabilitation: The process of returning a structure to a state of usefulness by repairs or alterations when its significance does not justify full restoration and when its condition or proposed use precludes preservation in its existing form.

Building elements	Design goals/ requirement	Criterion	Performance test
Use/occupancy	Degree of change may or may not be anticipated.	Accommodate without disruption of surviving plan and materials.	Retain basic historic/ architectural integrity with compatible alterations.
Site/land use	Ditto.	Respect basic characteristics of structure and site in alterations.	Ditto.
Form/volume/ penetrations/ projections	Ditto.	Retain basic form/volume with compatible new elements.	Ditto.
Interior space/floor plan	Ditto.	Retain basic plan with compatible new elements.	Ditto.
Egress/ circulation	Ditto.	Accommodate with minimum disruption of surviving plan and materials.	Ditto.
Exterior materials	Ditto.	Retain surviving materials as possible and be sensitive in use of new materials.	Ditto.
Interior materials	Ditto.	Ditto.	Ditto.
Structural system/ materials	Service for intended use/ occupancy.	Retain usable systems and materials with compatible or concealed architectural installation of new.	Meet use/occupancy and retain basic historic/ architectural integrity.
Environment/ comfort/ safety	Ditto.	Ditto.	Ditto.

c. Adaptive use: The process of adapting a building to a use other than that for which it was designed. It usually involves restoration and/or rehabilitation and can be accomplished with varying changes to the appearance of a structure.

Building elements	Design goals/ requirements	Criterion	Performance test
Use/occupancy	Change from original anticipated.	New use compatible with architectural constraints of structure.	Minimum alteration to existing structure with compatible alterations.
Site/land use	Degree of change from original anticipated.	Alter respecting basic character.	Alterations executed in architectural compatibility with site.
Form/volume/ penetrations/ projections	Degree of change from original may or may not be anticipated.	Ditto.	Alterations architecturally compatible.
Interior space/ floor plan	Ditto.	Alter to minimally impact exterior character and retain major significant interior spaces.	Ditto.
Egress/ circulation	Change from original anticipated.	New compatible with architectural constraints of structure.	Minimum alteration to existing structure with compatible alterations.
Exterior materials	Degree of change from original anticipated.	Preserve surviving materials and restore as possible with new work being compatible with surviving materials.	Historically and architecturally accurate representation for surviving while new work is architecturally compatible with surviving fabric.
Interior materials	Ditto.	Ditto.	Ditto.
Structural system/ materials	Service for intended use/occupancy.	Install replacement or supplementary systems in manner compatible or concealed with original and new fabric.	Meet use needs while remaining sensitive to overall exterior and interior architectural character.

Building elements	Design goals/ requirement	Criterion	Performance test
Environment/ comfort/ safety	Ditto.	Meet use needs with modern systems installed in manner compatible or concealed with original and new fabric fabric.	Ditto.

d. Consolidation: The physical intervention in the actual fabric of the structure to insure its continued structural integrity. Such intervention can range from relatively minor to very radical actions and may be an integral part of broader programs of recycling for adaptive use.

Use/occupancy	Determine by purpose.	Adhere to specified period of interpretation while any new use adheres or is compatible with form/ volume and plan.	Historically accurate representation while new functions are compatible with form/volume and plan.
Site/ land use	Maintain existing conditions.	Retain character as found.	Accurate and compatible setting.
Form/volume/ penetrations/ projections	Ditto.	Adhere to existing conditions.	Historically and architecturally accurate representation
Interior space/floor plans	Determine by use/occupancy.	Adhere to specified period while nonpublic spaces may or may not be adapted for new functions.	Historically and architecturally accurate representation while new functions may or may not be historically and architecturally accurate representation.
Egress/ circulation	Determine by purpose.	Adhere to specified period for interpretation while new use adheres or is compatible with form/volume and space.	Historically accurate representation while new functions are compatible with form/volume and plan.
Exterior materials	Conserve/ consolidate all possible surviving.	Adhere to specified period for interpretation while new use adheres or is compatible with form/ volume and space.	Historically and architecturally accurate representation.

Building elements	Design goals/ requirement	Criterion	Performance test
Interior materials	Ditto.	Ditto.	Historically and architecturally accurate representation to degree necessary to meet use/occupancy requirements.
Structural system/ materials	Service for intended use/occupancy.	Preserve surviving where possible and meet new use/ occupancy and code needs with compatible or concealed architectural installation.	Historically and architecturally accurate representation to degree necessary to meet use/occupancy and architectural requirements.
Environment/ comfort/ safety	Ditto.	Preserve surviving systems as possible (may or may not be operative) and meet new use/occupancy and code needs with compatible or concealed architectural installation.	Ditto.

e. Restoration: The process of accurately recovering, by the removal of later work and the replacement of missing original work, the form and details of a structure together with its setting, as it appeared at a particular period of time.

Use/occupancy	Determine by purpose.	Adhere to evidence of period represented and accommodate new work without alteration to period represented.	Historically and architecturally accurate representation.
Site/ land use	Restore to a period in time.	Adhere to historical and architectural evidence of period. Conceal modern functions to degree possible.	Ditto.
Form/volume/ penetrations/ projections	Ditto.	Adhere to historical and architectural evidence of period.	Ditto.

Building elements	Design goals/ requirement	Criterion	Performance test
Interior space/floor plan	Ditto.	Ditto.	Ditto.
Egress/ circulation	Determine by purpose.	Adhere to evidence of period represented and accommodate new work without alteration to period represented.	Ditto.
Exterior materials	Restore to a period in time.	Preserve surviving materials, adhere to historical and architectural evidence of period and replicate evidence of period in new.	Ditto.
Interior materials	Ditto.	Ditto.	Ditto.
Structural system/ materials	Service for intended use/ occupancy.	Adhere to period represented and meet new use/ occupancy and code needs with compatible or concealed architectural installation.	Provide new systems to meet needs of use/ occupancy and architectural requirements with a minimum of interference and preserve historically and architecturally accurate statement.
Environment/ comfort/ safety	Ditto.	Preserve surviving systems, as possible (may or may not be operative) and meet new use/occupancy and code needs with compatible or concealed architectural installation.	Ditto.

f. Reconstitution: The saving of a structure by the piece-by-piece reassembly, either in situ or on a new site.

Use/occupancy	Determine by purpose.	Adhere to original as required by interpretation and by form/volume and and space.	Historically accurate statement while new work conforms and is compatible with form/volume and plan.

Building elements	Design goals/ requirement	Criterion	Performance test
Site/ land use	Replicate conditions of period represented by project.	Restore original to period represented, while new replicates period represented. Conceal modern functions.	Historically and architecturally accurate representation.
Form/volume/ penetrations/ projections	Replicate original.	Adhere to original.	Ditto.
Interior space/floor plan	Determine by purpose.	Adhere to specified period, nonpublic spaces may be adapted for new function.	Historically and architecturally accurate representation while new work may or may not represent historically and architecturally accurate representation.
Egress/ circulation	Determine by purpose.	Adhere to original as required by interpretation and by form/volume and space.	Historically accurate representation while new work conforms and is compatible with form/volume and plan.
Exterior materials	Reuse surviving materials and replicate missing.	Preserve and reuse surviving materials as possible while new replicates surviving.	Historically and architecturally accurate representation.
Interior materials	Ditto.	Preserve and reuse surviving materials as possible while new replicates surviving or is compatible with surviving, depending on use/ occupancy.	Historically and architecturally accurate representation to meet needs of use/occupancy.
Structural system/ materials	Service for intended use/ occupancy.	New systems to be compatible with interpretation and compatible or concealed with form/volume and space.	Meet requirements and may or may not, depending on use, be historically and architecturally accurate representation.

Building elements	Design goals/ requirement	Criterion	Performance test
Environment/ comfort/ safety	Ditto.	Preserve systems where possible (may or may not be operative) and meet new use/occupancy and code needs with compatible or concealed architectural installation.	Ditto.

g. Reconstruction: The process of rebuilding a non-extant structure to its original appearance through archival, architectural and archeological investigation.

Use/occupancy	Determine by purpose.	Adhere to specified period of interpretation, while new use adheres or is compatible with form/ volume and space.	Historically accurate representation while new functions are compatible with form/ volume and plan.
Site/ land use	May or may not be on original site.	Restore original surroundings and design new surroundings that are compatible with structure.	Historically and architecturally accurate representation while new work is compatible with or concealed visually from original.
Form/volume/ penetrations/ projections	Replicate original exterior, while depending on use, interior may or may not replicate original.	Adhere to original where required.	Historically and architecturally accurate representation.
Interior/ space/floor plan	Depending on use, may or may not replicate original.	Adhere to specified period for interpretation, while new use may replicate all or portion of original.	Historically and architecturally accurate representation to degree necessary to meet use/occupancy needs.
Egress/ circulation	Determine by purpose.	Adhere to specified period for interpretation, while new use adheres or is compatible with form/volume and space.	Historically accurate representation while new functions are compatible with form/ volume and plan.

Building elements	Design goals/ requirement	Criterion	Performance test
Exterior materials	Replicate original.	Reuse surviving in identical context of original structure while new materials replicate original.	Historically and architecturally accurate representation.
Interior materials	Replicate original to degree required by use.	Reuse surviving in identical context of original structure, while new materials may or may not replicate original depending on use/occupancy.	Historically and architecturally accurate representation to degree necessary to meet needs of use/ occupancy.
Structural system/ materials	Service for intended use/ occupancy.	New structure to be compatible with interpretation, with form/volume and space or to be concealed.	Provide new systems to meet needs of use/occupancy and architectural requirements with a minimum of interference and preserve historically accurate representation.
Environment/ comfort/ safety	Ditto.	Meet new use/occupancy and code needs with compatible or concealed architectural installation. Historical systems may or may not be operative.	Ditto.

h. Replication: The construction of an exact copy of an extant building on a site removed from the prototype.

Use/occupancy	Determine by purpose.	Compatible with purpose of replication.	Historically accurate representation to degree necessary.
Site/ land use	Compatible with purpose of replication.	Compatible with purpose of replication.	Historically and architecturally accurate representation to degree necessary.
Form/volume/ penetrations. projections	Replicate original.	Adhere to prototype.	Ditto.

Building elements	Design goals/ requirement	Criterion	Performance test
Interior space/floor plan	Ditto.	Ditto.	Ditto.
Egress/ circulation	Determine by purpose.	Compatible with purpose of replication.	Historically accurate representation to degree necessary.
Exterior materials	Replicate original.	Adhere to prototype.	Historically and architecturally accurate representation to degree necessary.
Interior materials	Ditto.	Ditto.	Ditto.
Structural system/ materials	Service for intended use/occupancy.	Adhere to prototype but may utilize concealed modern systems.	Meet requirements for use/occupancy and architectural compatibility.
Environment/ comfort/ safety	Ditto.	Ditto.	Ditto.

3.3 Adverse Impact of the Building Regulatory System

3.3.1 Problems Encountered with Code Requirements

The survey sample indicated that four most common problems are:

a. accommodating a change in the principal use and accommodating mixed use;

b. having existing stairways and exits meet requirements, including access for the handicapped, and/or integrating new ones which do not violate the aesthetic/historic character of the building;

c. providing fire rated egress routes while maintaining the character of the existing structures and materials;

d. changing existing and/or adding new electrical, mechanical, ventilation and fire detection/protection systems / signage which do not violate the aesthetic/historic character of the building.

The survey sample indicated the most commonly dealt with historic building types were residential, commercial and institutional, in that order of frequency. The building uses which presented the most commonly encountered problems were public assembly, commercial and residential, in that order.

The information for this section of the report was gathered from questionnaires completed by a national sample of 50 architects specializing in preservation work, local building officials, city and state preservation agency administrators, and chairpersons of 25 local landmarks/historic district commissions.

3.3.2 Methods Utilized to Mitigate Impact

The four most common general methods employed to mitigate adverse impact of the building regulatory requirements on historic buildings are:

a. face-to-face negotiation with local building regulatory representatives throughout the building preservation process to meet the code requirements and to minimize adverse impact on the building;

b. development of specific historic building provisions in the code which permit the granting of variations from the code for historic buildings;

c. use of an existing special appeal board process for requirements as applied to historic buildings;

d. the proposal of revised code provisions to alleviate the most objectionable parts of the existing requirements.

3.3.3 Sample Projects

The specifics of the above general methods are included in the following six case examples.

a. Brooklandwood Mansion, Falls Road, Brooklandville, Baltimore County, Md.

Built in 1790 by Charles Carroll of Carrollton, the house passed through a series of ownerships before becoming, in 1952, the principal building of St. Paul's School. Each successive owner/occupant made substantial changes in the mansion while retaining its essential late 18th-century character. The modifications which had been made to adapt it to meet the needs of the school were of a temporary and cosmetic character. The mansion is entered in the National Register of Historic Places.

In 1969-70, a project was undertaken to restore most rooms to their period character including the kitchen on the first floor and one bathroom on the second floor. Contemporary modifications were provided on the second floor to provide domestic facilities for the headmaster's family and guests, facilities for a small infirmary, as well as school offices in the basement and first floor. The applicable code was the Building Officials and Code Administrators (BOCA) code which was adopted by the county.

PROBLEM 1: Occupancy Classification

Three occupancy classifications were required to meet the client's program for the use of the building: business office, infirmary and residential.

Identification of method utilized to mitigate adverse impact

Negotiations were conducted with the building officials to secure approval of the three split-use classification.

Identification of performance standard

a. The ideal performance standard of historic preservation: Within the owner's established program to justify continued use and, thus, existence of the building within the school's campus, all occupancy classifications had to be used.

b. The achievable performance standard: Desired standard achieved through cooperation of building officials.

Effectiveness in achieving historic preservation

Split-use classification permitted the project to be undertaken and the building saved and reused.

Recommendations

Establish performance guidelines for authorizing mixed use and for providing for a determination of probably risks incurred by proposed occupancies and subsequent modifications of exit requirements, fire separations, etc., based on the retention of maximum historic values while incurring minimum risks.

PROBLEM 2: Exterior Fire Escapes

The approved occupancy classification combined with the existing floor plan and the overall historic preservation objectives mandated the retention of the two exterior fire escapes, one fire escape to serve the first and second floors, the second to serve the second and third floors (see illustrations 1, 2, 4, 5 and 6).

Identification of method utilized to mitigate adverse impact

The fire escapes were painted white to blend as much as possible with the mansion's white exterior walls.

Identification of Performance standard

a. The ideal performance standard for historic preservation: The exterior of the building would not have to be altered by the installation of exterior fire escapes.

b. The achievable performance standard: The fire escapes were required and, thus, the combination of their location toegether with the painting to reduce the contrast with the exterior walls represented the achievable standard.

Effectiveness in achieving historic preservation

Both fire escapes were in place before the project was started. One is very noticeable and detracts seriously but it provides a second means of escape from the attic rooms; no other solution was achievable. The other fire escape in the rear of the building is also architecturally incompatible but to a degree is screened by planting.

Required fire escapes cannot be concealed on the exterior of a building. Seldom can historic buildings safely be used for public assembly without either some defacement of the exterior or modification in the interior.

Recommendations

Restrictions in use and early warning systems, plus an automatic fire-retarding system may held avoid unsightly exterior fire escapes in many similar cases.

PROBLEM 3: Fire Alarm Bells, Exit Signs and Doors

The occupancy classification required a fire alarm bell system in the office and infirmary area, illuminated exit signs in the office area, and exit doors from the office and infirmary areas opening outwards (see illustration 3).

Identification of method utilized to mitigate adverse impact

Illuminated green exit signs were installed in the office area. A fire alarm bell system was installed in the office and infirmary areas from which exit doors open outwards. Those doors exiting directly to the outside from the residential areas were able to remain opening inwards as there are more than the required number of exit doors securing this area.

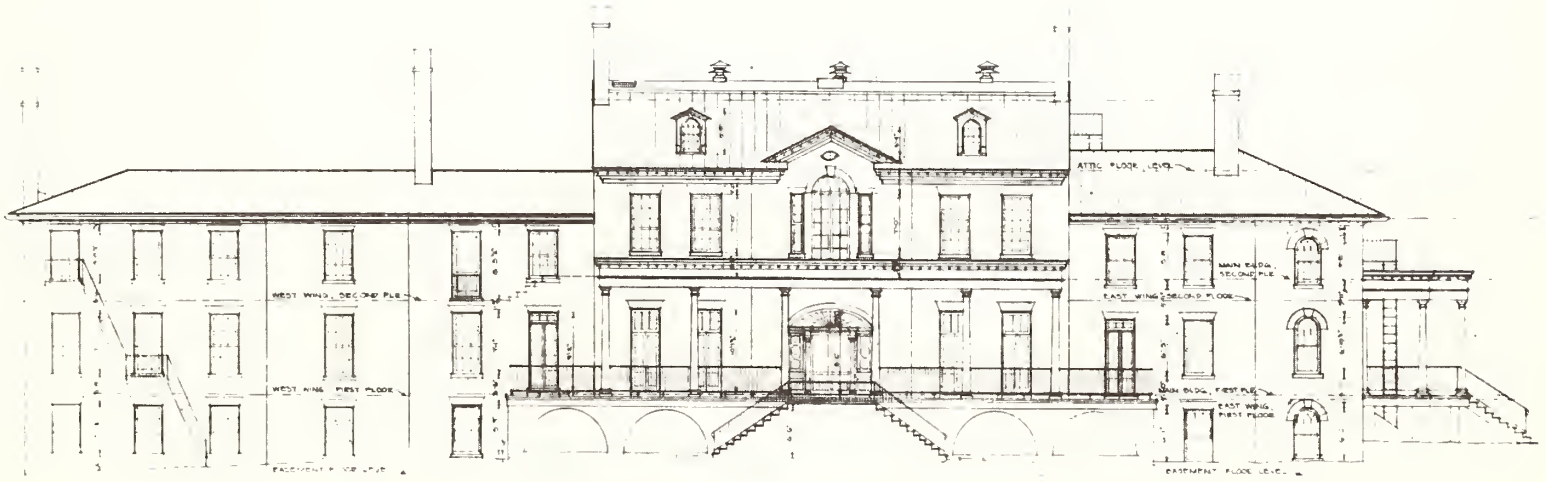
Identification of performance standard

a. The ideal performance standard for historic preservation: From this viewpoint, the conspicuous exit signs and alarm bells would have been omitted and all exterior doors would swing inwards.

b. The achievable performance standard: The standard accomplished within the applicable regulations involved using exit signs in the office area only, and changing exterior doors to open outwards from the office and infirmary areas.

Effectiveness in achieving historic preservation

The lack of need for exit signs can usually be established in most historic building restorations or their presence is of minor importance in the overall



SOUTH ELEVATION 1969

Illustration 1: Brooklandwood Mansion, Brooklandville, Md.
south elevation

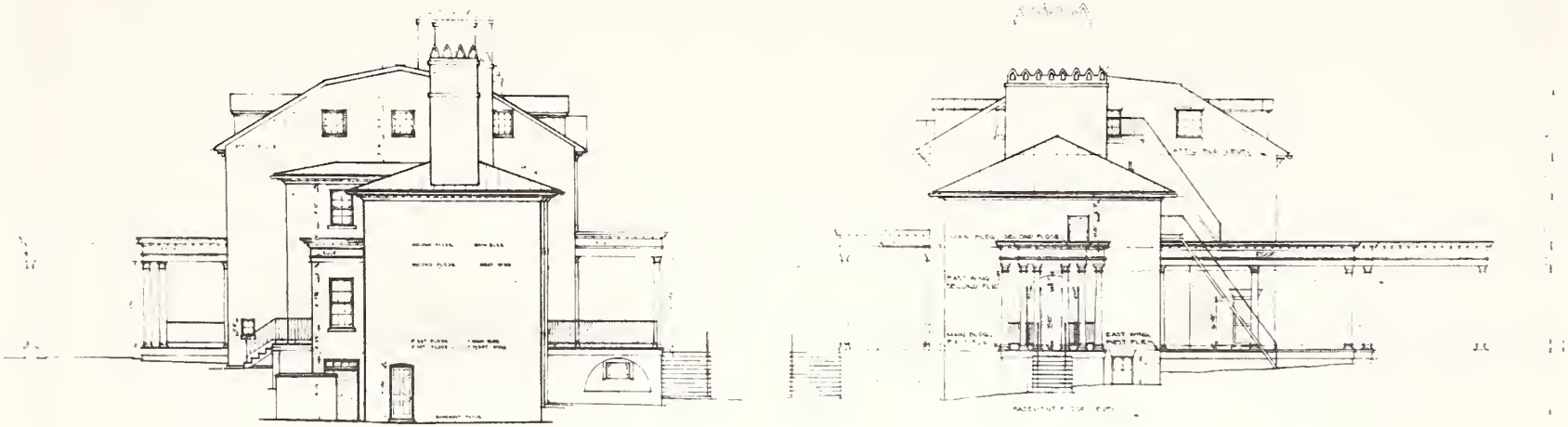


Illustration 2: Brooklandwood Mansion, Brooklandville, Md.
west and east elevations

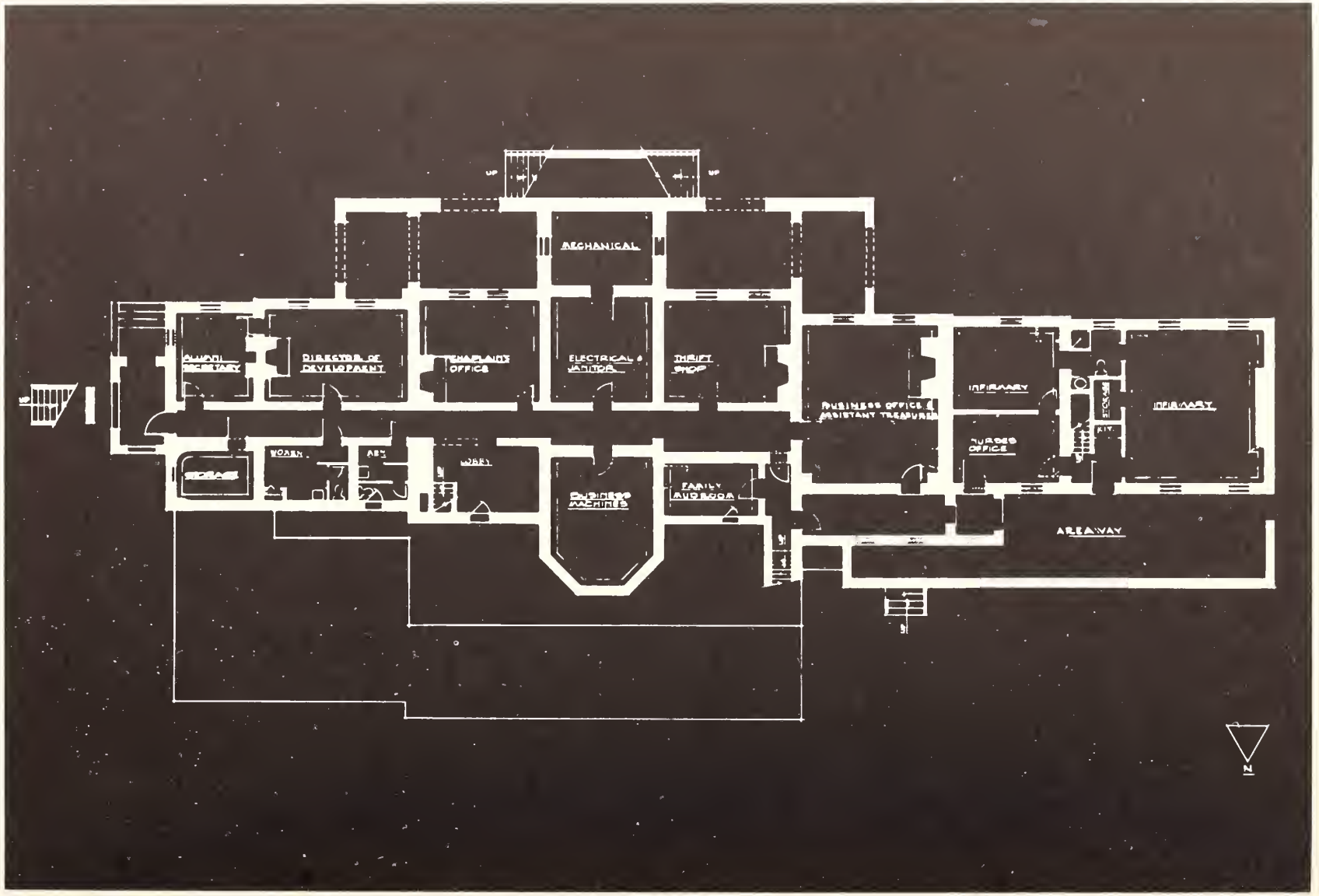


Illustration 3: Brooklandwood Mansion, Brooklandville, Md.
ground floor

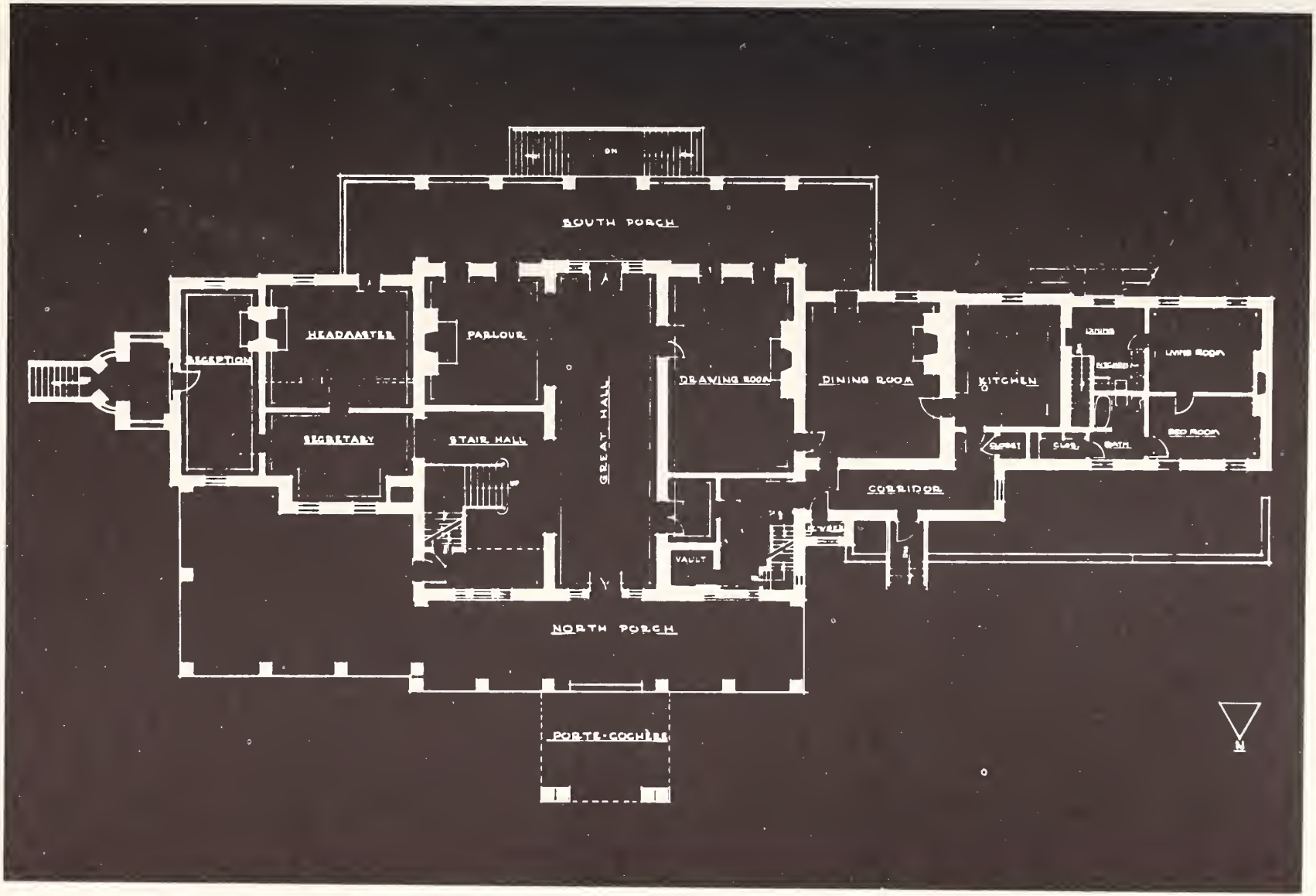


Illustration 4: Brooklandwood Mansion, Brooklandville, Md.
first floor

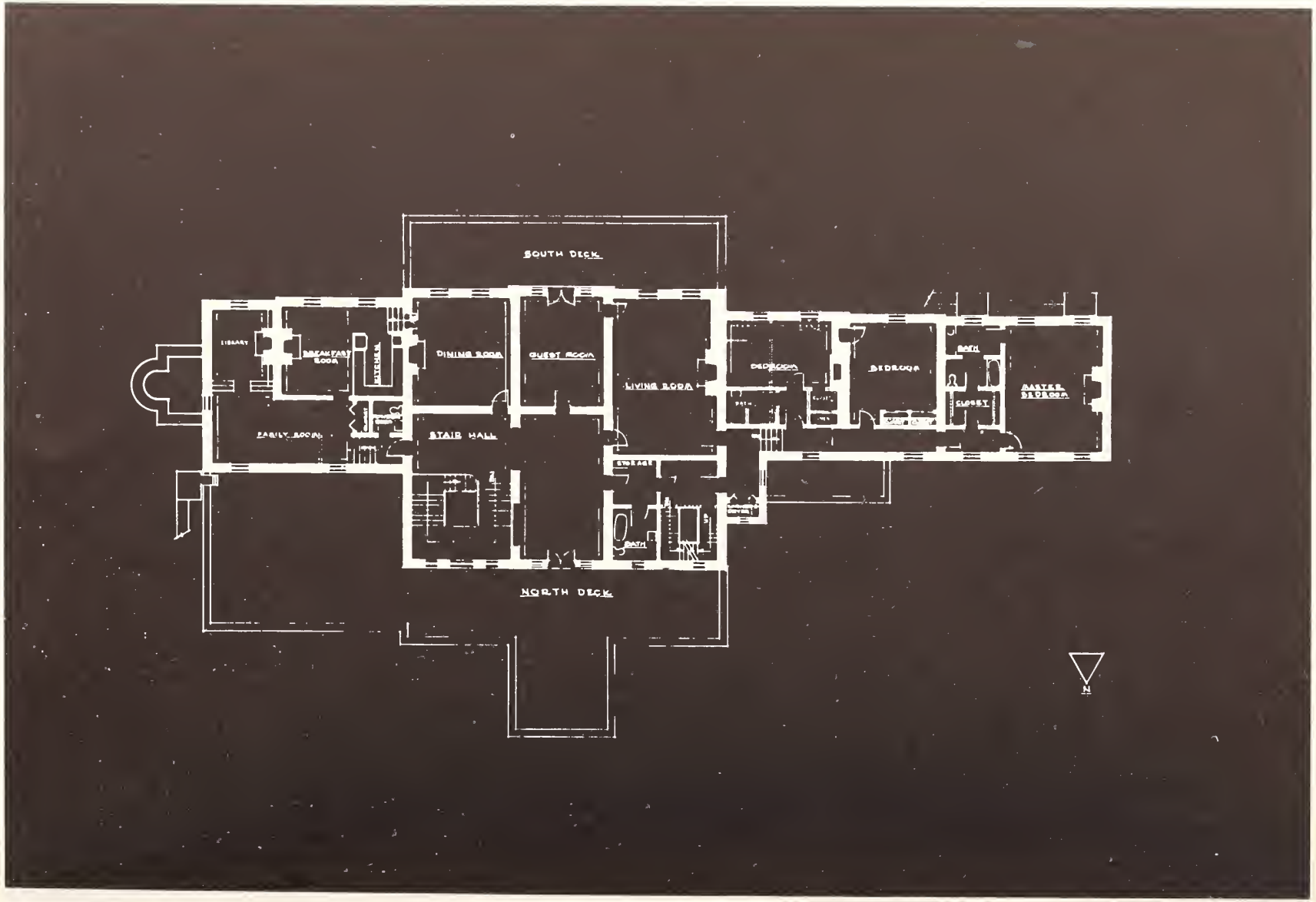


Illustration 5: Brooklandwood Mansion, Brooklandville, Md.
second floor

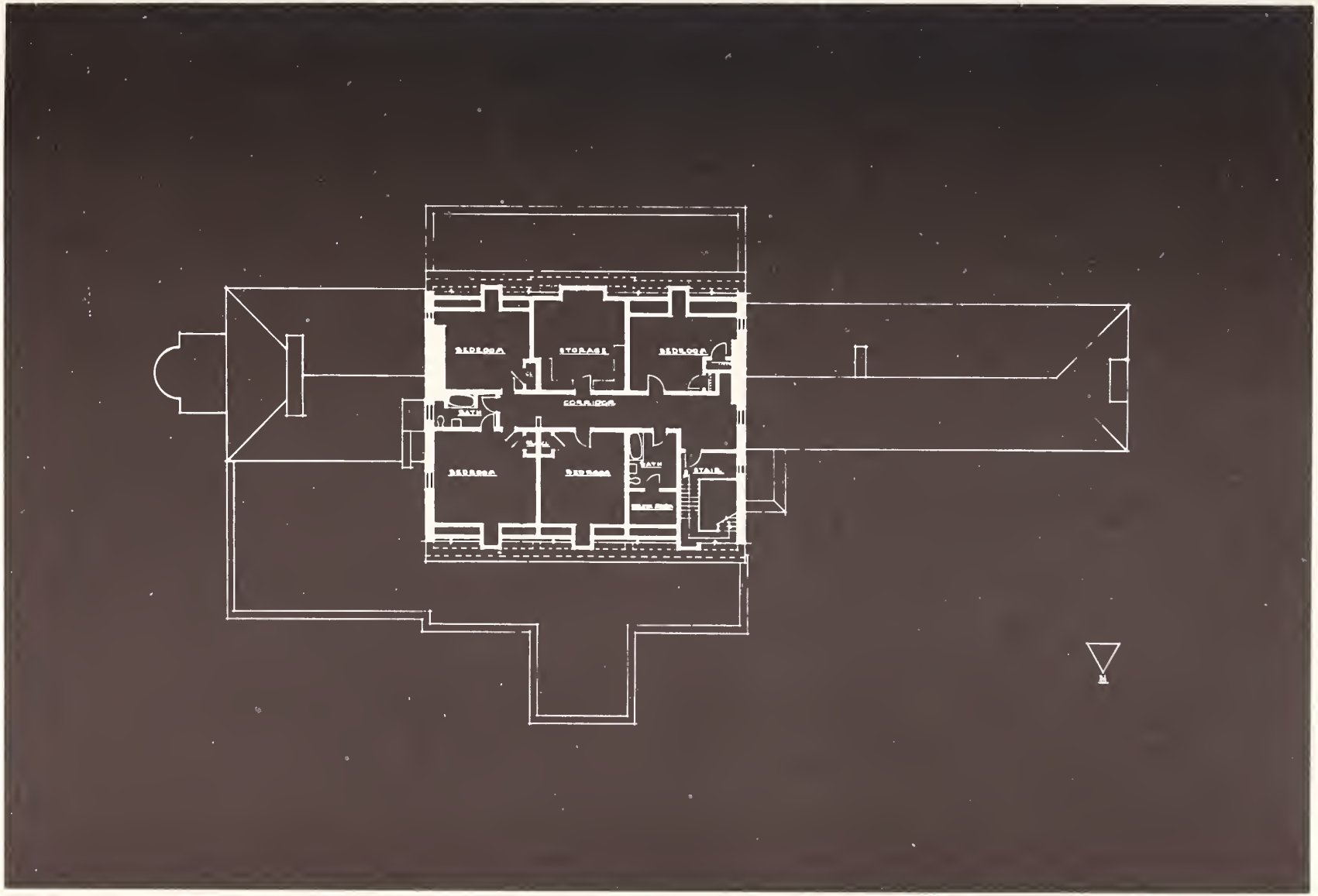


Illustration 6: Brooklandwood Mansion, Brooklandville, Md.
third floor

evaluation of the monument. Since the greatest source of fire is open flame, it should be possible in most restorations to avoid the use of open flame heating plants within the building.

Recommendations

Illuminated exit signs should only be required in historic buildings in places where strangers and the public will assemble. They serve no real need in the spaces occupied by relatively few persons on a regular workday basis. Doors providing egress from historic areas which will not be used for public assembly should not be required to open outwards, particularly from areas where there are two or more other exitways.

b. Hezekiah Alexander House, 3420 Shamrock Drive, Charlotte, N.C.

The home of Hezekiah Alexander, signer of the Mecklenburg "Resolves," in Charlotte, has been accurately restored by a local foundation to the condition as it appeared c. 1774, and is on exhibition as an historic house museum operated by the City of Charlotte. It is a stone house consisting of a basement, two stories, and an attic, 960 square feet per floor and is located in an open suburban setting. Supporting visitor and interpretation facilities are in a contemporary building located about 300 yards away. The house is entered in the National Register of Historic Places. The applicable code was the Southern Standard Building Code (SSBC) as adopted by the city.

PROBLEM 1: Exits

Three exterior doors serving the first floor of the building were retained and restored. The door ways open onto stoops approximately four feet above grade level (see illustrations 7 and 8).

Identification of method utilized to mitigate adverse impact

Having the building treated as an educational, three-dimensional object, the exterior doors were viewed as an integral part of accuracy of the total restoration project and, thus, historic preservation objectives prevailed.

Identification of performance standard

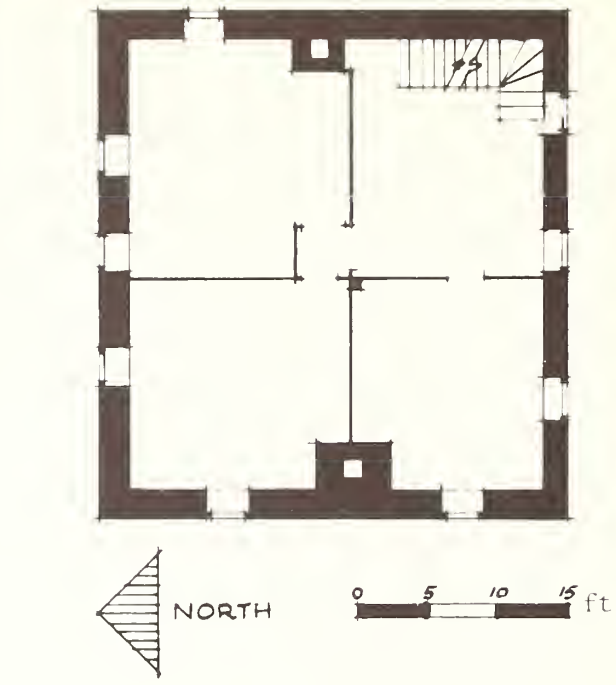
a. The ideal performance standard for historic preservation: Retain the three original exterior doors in their original locations, dimension, material and with their door swings remaining inwards.

b. The achievable performance standard: The historic preservation standard was adhered to instead of changing location, dimension, material or making the doors opening outwards.

Effectiveness in achieving historic preservation

All of the historic preservation objectives were achieved for this element of the building.

Illustration 7: Hezekiah Alexander House, Charlotte, N. C.
north elevation



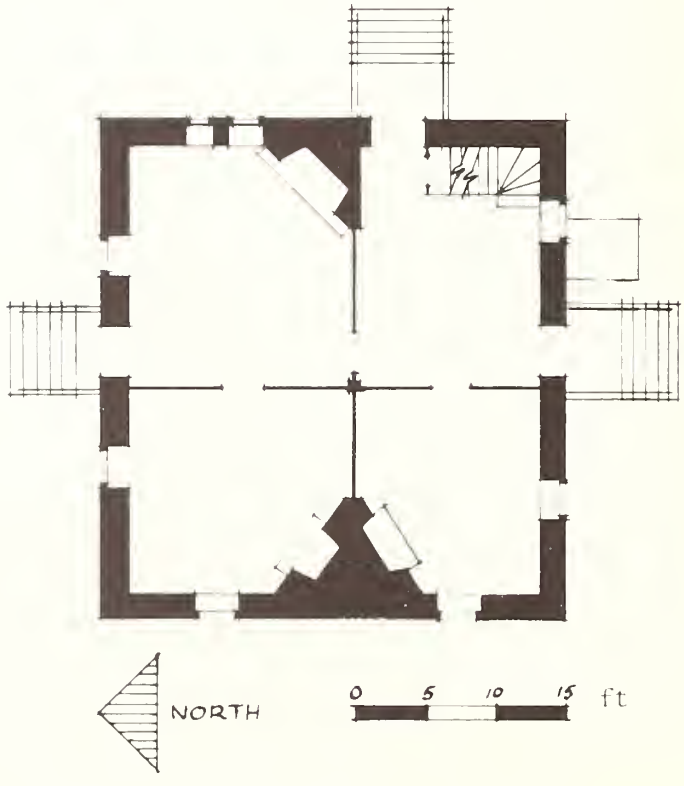


Illustration 8: Hezekiah Alexander House, Charlotte, N.C.
upper drawing: second floor plan; lower drawing - first floor plan

Recommendations

Such 18th century buildings used only as museum objects, might be posted with signs stating "This 18th century building may be hazardous to your health and safety. Enter with extreme caution." With historic accuracy in restoration being the goal for such educational purposes, the hazards to visitors must be mitigated by restricting the number of visitors and providing escorts.

PROBLEM 2: Interior Stairway

One original, enclosed wooden and winding stairway, the only one in the building, was to be restored to link the basement, first, second and attic floors. Visitors actually only go into two rooms on the first floor and only one room on the second floor (see illustration 8).

Identification of method utilized to mitigate adverse impact

Visitations to interior is both controlled in numbers and escorted by guides. Modern handrail provided on stairs for visitors use.

Identification of performance standard

a. The ideal performance standard for historic preservation: The one original 18th century interior stairway is to be retained in place with no changes in dimension and material.

b. The achievable performance standard: The historic preservation standard was adhered to instead of altering location, design, dimension or material.

Effectiveness in achieving historic preservation

All of the historic preservation objectives were achieved for this element of the building.

Recommendations

Same recommendation as in problem 1 above.

PROBLEM 3: Mechanical Systems

The fireplaces were retained and restored to their 18th century appearance. The restoration program did not call for the fireplaces to be operative. The building was provided with a modern electrical service heating and air conditioning system (see illustration 8).

Identification of method utilized to mitigate adverse impact

The modern mechanical systems were installed, one in a basement room and under the low headroom in the attic. The heated and cooled air is distributed

through the unused chimney flues and fireplaces so as to be concealed from view, and provide the specified needs without detracting from the 18th century appearance of the interior. No open flames are allowed within the building.

Minimum electrical lighting is achieved by low voltage fixtures which are concealed from the view of visitors behind the exposed ceiling beams.

Identification of performance standard

a. The ideal performance standard for historic preservation: Retain the 18th century historic appearance of the interior spaces.

b. The achievable performance standard: Standard achieved only with the sacrifice of not having authentic operating 18th century fireplaces. The fireplaces adequately serve aesthetic historical requirements.

Effectiveness in achieving historic preservation

The basic historic preservation objective was achieved with the compatible addition of required modern heating and air conditioning equipment necessary for the proper conservation of artifacts displayed within the building and for employee and visitor comfort.

Recommendations

Satisfactory resolutions of the historic preservation objectives and mechanical requirements were achieved.

c. The First White House of the Confederacy, southwest corner of Washington Avenue and South Union Street, Montgomery, Alab.

In the early 1830's, William Sayre built a two-story frame dwelling; in 1854, the building was substantially altered and a one-story frame addition was built on the rear. In 1861, it was leased by the Confederate government and served for several months as the residence of Jefferson Davis, President of the Confederate States of America. In 1920, it was acquired by the State of Alabama and moved to its present site, across the street from the State Capitol.

Since that time, the White House been open as a museum. It is entered in the National Register of Historic Places. At the time of its relocation and through the succeeding years, all manner of inappropriate and intrusive elements have been added. During the period 1973-76, a project was completed to restore the building to its condition (as best as could be determined) when it was occupied by Mr. Davis. The total cost of the project was $250,000.

This project qualifies as a restoration project under the category/definitions of this report. Under the SSBC, it is classified by usage as a place of small assembly and according to its construction as type VI, wood frame. There is no statewide building code in Alabama.

PROBLEM 1: Occupancy Classification

As a two-story frame structure, it was technically illegal under the city code for use as a place of small assembly (see illustration 9).

Identification of method utliized to mitigate adverse impact

The mitigation method for this project was primarily administrative rather than technical. By virtue of the project having been conducted under the direction of the Building Commission of the State of Alabama, a higher unit of state government, the project did not have to comply with all of the provisions of the local city code. The building was exempted under the "Existing Buildings" section of the code. While used as a private residence for its first 90 years, the building had been a public museum for the last 55 years--longer than the local code had been in existence.

Identification of performance standard

a. The ideal performance standard for historic preservation: To be fully utilized as an educational, three-dimensional public museum property, the building's first two floors have to be accessible to the public.

b. The achievable performance standard: The building, being classified as an "Existing Building," was subjected to the following positive actions taken in accordance with the code: all structural defects were corrected; a new concealed sprinkler system replaced an older, undersized system; a new heating, ventilation and air conditioning system contained local alarms and smoke detection devices tied directly to local fire departments; and a new electrical system was installed.

Effectiveness in achieving historic preservation

The occupancy classification determination set conditions for other code determinations. The building was restored to meet historical evidence and the client's use program. The local building official's determination of less than 50 percent "physical value" contributed to the resolution of this determination.

Recommendations

At the time the project was conducted, the historic building section of the code had not been adopted by the SSBC; state and local building officials, together with the architect agreed that the process would have been

Illustration 9: First White House of the Confederacy, Montgomery, Alab.
exterior front elevation

Illustration 10: First White House of the Confederacy, Montgomery, Alab. entrance hall

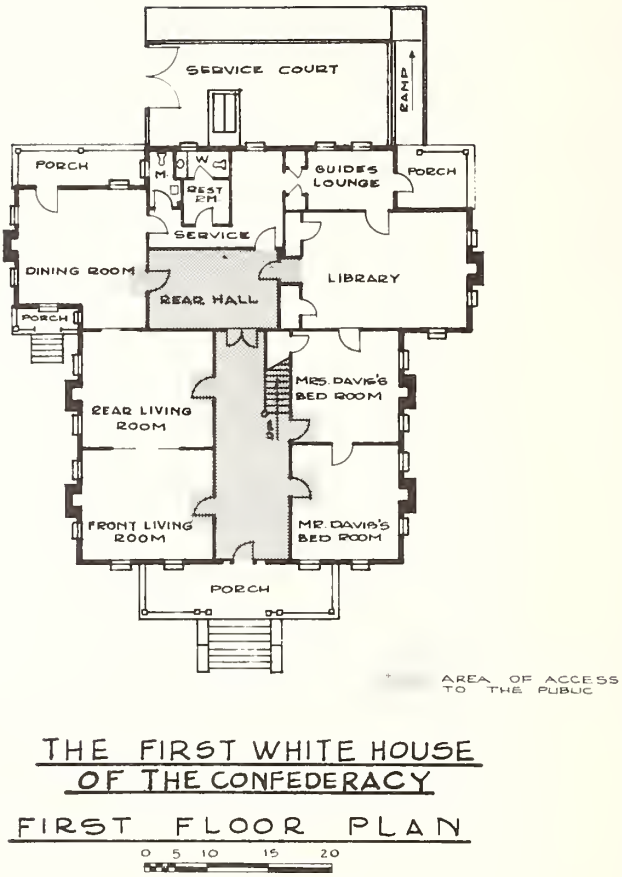


Illustration 11: First White House of the Confederacy, Montgomery, Alab. first floor plan

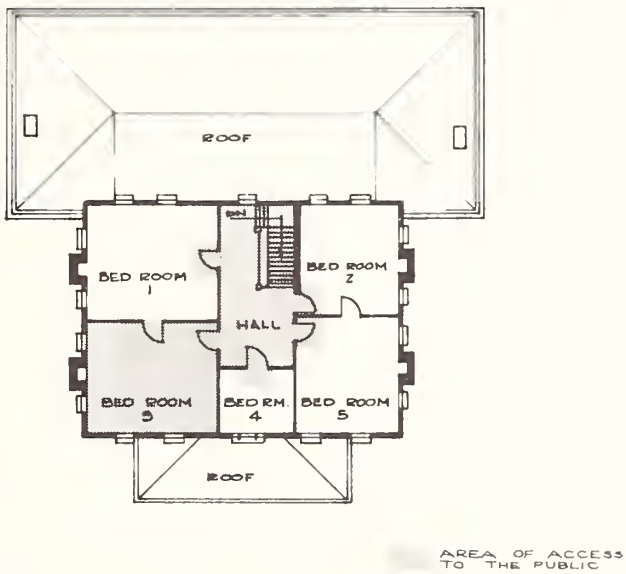


Illustration 12: First White House of the Confederacy, Montgomery, Alab. second floor plan

easier had the section been present in the SSBC. Under the provisions of this historic building section, the final judgement is made by the building official but the request must be made by a professional architect or engineer. Clearly, there must be agreement between the two sides prior to formal application by the project designer and formal approval by the official. It is during these early stages that the technical trade-off and compensating features must be reviewed and the actual risk involved analyzed by both sides.

To utilize the "physical value" concept for historic preservation, one must be able to show the official that the value of the restoration work is less than 50 percent of the existing physical value. Also, obviously, the usage cannot change. As this concept requires a dialogue between the project designer and the building official, it is not unusual at all that the "compensating elements" and "technical trade-offs" enter the picture whether specifically mandated by code or not.

Third is the provision under the SSBC for appeal. The code establishes a technical board of appeals consisting of architects, engineers and other members of the construction industry. This arrangement is utilized in many areas. Also utilized is the "political" board of appeals such as that in Mobile where the board consists of three elected city commissioners. Each system has advantages and disadvantages. The technical board is better acquainted with actual risks. On the other hand, the political board is probably more responsive to requests from the electorate.

PROBLEM 2: Interior Stairs

The first and second floors were linked by a single, open wood stair (see illustrations 10, 11 and 12).

Identification of method utilized to mitigate adverse impact

The local code requirements for two enclosed stair towers to the second floor of a building used for public assembly were waived under the occupancy classification determination. The building is only open to visitors when guides are present and is not occupied at night.

Identification of performance standard

a. The ideal performance standard for historic preservation: The stair had to be retained in place without altering dimensions or materials. Public access to the second floor was required by the use of the building.

b. The achievable performance standard: Achieved in full but done so in concert with other requirements such as controlled visitor accesss, open flame restrictions and installation of adequate fire and smoke detection and suppression systems.

Effectiveness in achieving historic preservation

Achieved in full.

Recommendations

Same recommendations as in problem 1.

PROBLEM 3: Exits

The principal first floor front entry door opened inwards. The rear exit was in a wing where the floor level was six inches lower than that of the main house. The rear exit is in an egress path and had only one riser instead of the required three (see illustration 11).

Identification of method utilized to mitigate adverse impact

The principal front entry door remained swinging inwards; however, all doors to the rear exit had to be swinging in the direction of travel. Therefore, the rear door had to be altered to swing outwards; this door is in a lattice-enclosed porch and almost invisible; it is adjacent to the ramp. One exit light was installed in the public space to mark the rear exit.

Identification of performance standard

a. The ideal performance standard for historic preservation: All door dimensions, materials and swings should remain historically accurate.

b. The achievable performance standard: The front main exterior door dimensions, materials and swings remained historically accurate while all interior doors in the direction of travel, to the altered rear exit, had only the swings changed to conform with the direction of travel.

Effectiveness in achieving historic preservation

A satisfactory compromise permitted achievement of major historic preservation objectives while meeting the local building official requirements.

Recommendations

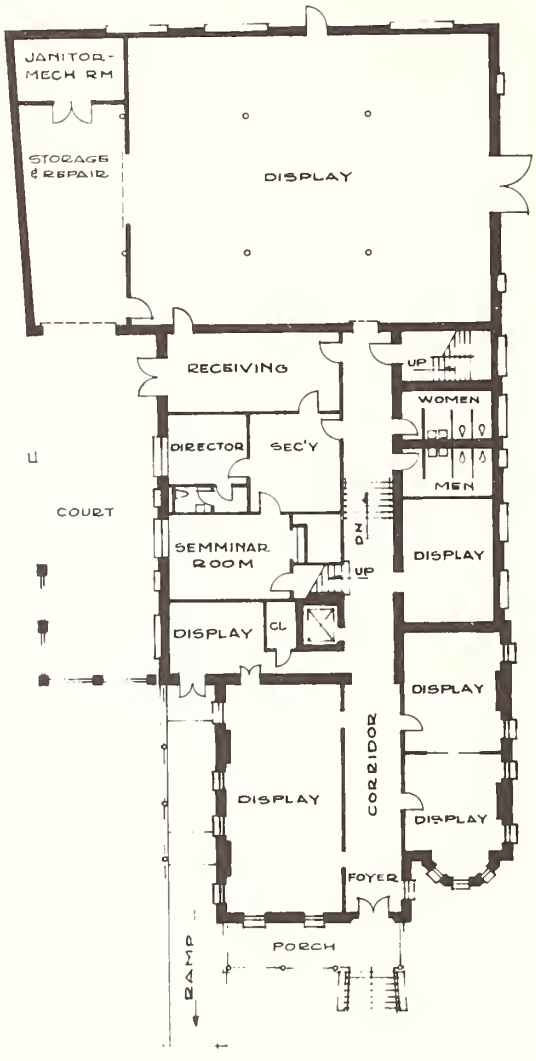
Same recommendations as in problem 1. While not in full technical compliance with the local code, the building is far safer after the restoration than it had been in the preceeding 145 years.

d. The Bernstein-Bush House, 355 Government Street, Mobile, Alab.

This building was constructed in 1872 and consists of two stories plus a partial basement, masonry exterior walls and wood interior framing. In the early part of the 20th century, several additions were made and it became a mortuary. It remained in that usage until the 1960's when it was acquired

Illustration 13: Bernstein-Bush House, Mobile, Alab.
exterior front elevation

Illustration 14: Bernstein-Bush House, Mobile, Alab.
entrance foyer

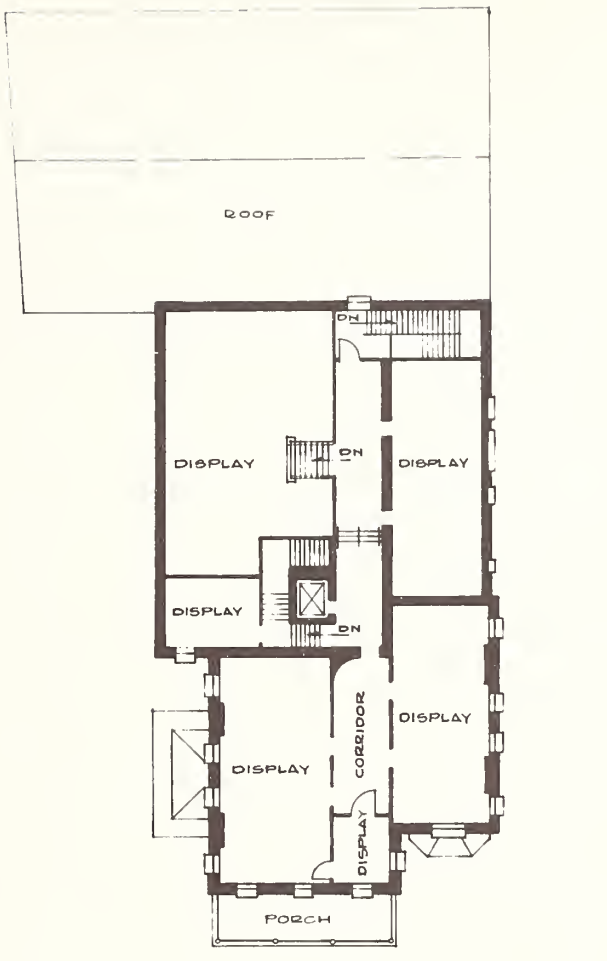


THE BERNSTEIN - BUSH HOUSE

FIRST FLOOR PLAN

0 5 10 15 20

Illustration 15: Bernstein-Bush House, Mobile, Alab.
first floor plan



THE BERNSTEIN - BUSH HOUSE

SECOND FLOOR PLAN

0 5 10 15 20

Illustration 16: Bernstein-Bush House, Mobile, Alab.
second floor plan

by the Mobile Housing Board as part of its urban renewal activities. Subsequently, the building was purchased by the City of Mobile and during the period 1971-75 a project was undertaken to adapt it for use as a part of the museum system of the city. Mobile's museum system consists of four buildings--two older buildings adapted for reuse, one "reconstitution" and one "reconstruction." The building is entered in the National Register of Historic Places as part of a listed historic district.

The objective of the project was to preserve the exterior appearance of the building including the later additions, and to adapt the interior spaces for display uses, offices, preparation areas and so forth.

Additional work is still required to finish the second floor and the rear wing. To date, the work has cost approximately $300,000.

The project is classified as "adaptive use" under the category/definitions of this report. Under the SSBC usage classification, the building is type V, masonry exterior walls with unprotected interior framing.

PROBLEM 1: Occupancy Classification

The ground floor was larger than the allowable floor area for a building of its use and type (see illustration 15).

Identification of method utilized to mitigate adverse impact

A portion of the ground floor is separated by making an existing masonry wall between the display area and receiving room into a fire wall. One window on the rear wall was closed and two openings were filled with fire-rated doors. The partial basement was sealed off from the crawl space beneath the first floor and given a fire-rated ceiling.

Identification of performance standard

a. The ideal performance standard for historic preservation: The basic use of the building was changed from a mortuary to a city museum. Since the program called for saving the building and adapting it as part of a museum complex, some alterations to accomplish this were recognized as being necessary.

b. The achievable performance standard: For the purpose of intended use, the desired standard was achieved.

Effectiveness in achieving historic preservation

The necessary alterations were completed in accordance with overall historic preservation objectives for the project. The most important goal of retaining a building long a part of the cityscape was achieved.

Recommendations

This project was conducted without the benefit of the historic building section of the SSBC, and the building official extended the limitations of the "physical value" of the existing structure. The historic building section will be an extremely effective tool, more effective than any of the other methods previously available. However, even the use of this section will or should not be the basis for the deletion of some of the most basic elements required by the responsible professional code by common sense. Exit lights, ramps, handrails and other 20th century safety elements will and should continue to find their way into both pure restoration work and adaptive use projects. These may offend the purist but will comfort the professional who knows of the possible liability when the letter of the code has been breached.

PROBLEM 2: Exits

The monumental front entrance was to be retained and restored. Other exits were to be provided as determined by the building's intended use and code requirements (see illustrations 13 and 14).

Identification of method utilized to mitigate adverse impact

A required ramp was built on one side of the house and a full length window was replaced with a new door. This door, coupled with a rear exit door, provided the two exits required by the code so that the monumental front entrance could remain swinging inwards.

Identification of performance standard

a. The ideal performance standard for historic preservation: Same standard as in problem 1 performance standard.

b. The achievable performance standard: Same standard achieved as in problem 1.

Effectiveness in achieving historic preservation

The necessary alterations were completed in accordance with the overall historic preservation objectives for the project. The most important goal was that the building was retained.

Recommendations

Same recommendations as in problem 1.

PROBLEM 3: Interior Stairs

A single interior, winding stair existed in the main portion of the house, linking the first and second floors. However, since it is an open

stair it is not considered legal means of egress. A second, enclosed rear stair was added to comply with the code requirements. The balcony did not satisfy the code requirements (see illustrations 15 and 16).

Identification of method utilized to mitigate adverse impact

Two legal means of egress from the first to second floors were required plus an elevator for the handicapped. An enclosed new stair fire tower was built at the rear of the house to serve as one legal means of egress from the second floor. An elevator was accommodated in the plan. This was justified by securing an exemption under the "existing buildings" section of the local code. The building had previously been a mortuary, a place of small assembly, hence, there was no change of occupancy. Other mitigating factors noted were: the museum was not occupied overnight; its fire and smoke detection systems would be tied directly to the city fire department; its exits were clearly marked; and its guides were all off-duty city firemen.

Identification of performance standard

a. The ideal performance standard for historic preservation: Installation of the required means of egress was completed in a manner to require minimal alteration to the building's plan and structure.

b. The achievable performance standard: Only one legal means of egress from the second floor is provided. The existing stair is intact but is illegal. The balcony is also illegal.

Effectiveness in achieving historic preservation

Same comments as in other problems.

Recommendations

Same recommendations as in above problems.

e. The Restored Chapel of the Good Shepherd, Roosevelt Island, New York, N. Y.

Following the decision to establish a "new town" on what was then Welfare Island, now Roosevelt Island, measures were defined for the protection of the seven existing landmark buildings on the island. The measures were published by the New York State Urban Development Corporation (UDC) in "Protection of Landmark Buildings, Welfare Island, NYC". After construction work started on the island, the Urban Development Corporation began the search for a specific use for the abandoned chapel, a building entered in the National Register of Historic Places. At first, the goals of converting the building into a "meeting room-theater" with commercial possibilities and flexibility of use was pursued. The applicable code was the New York State Building Code (NYSBC).

Illustration 17: Restored Chapel of the Good Shepherd, New York, N.Y.
exterior aerial view

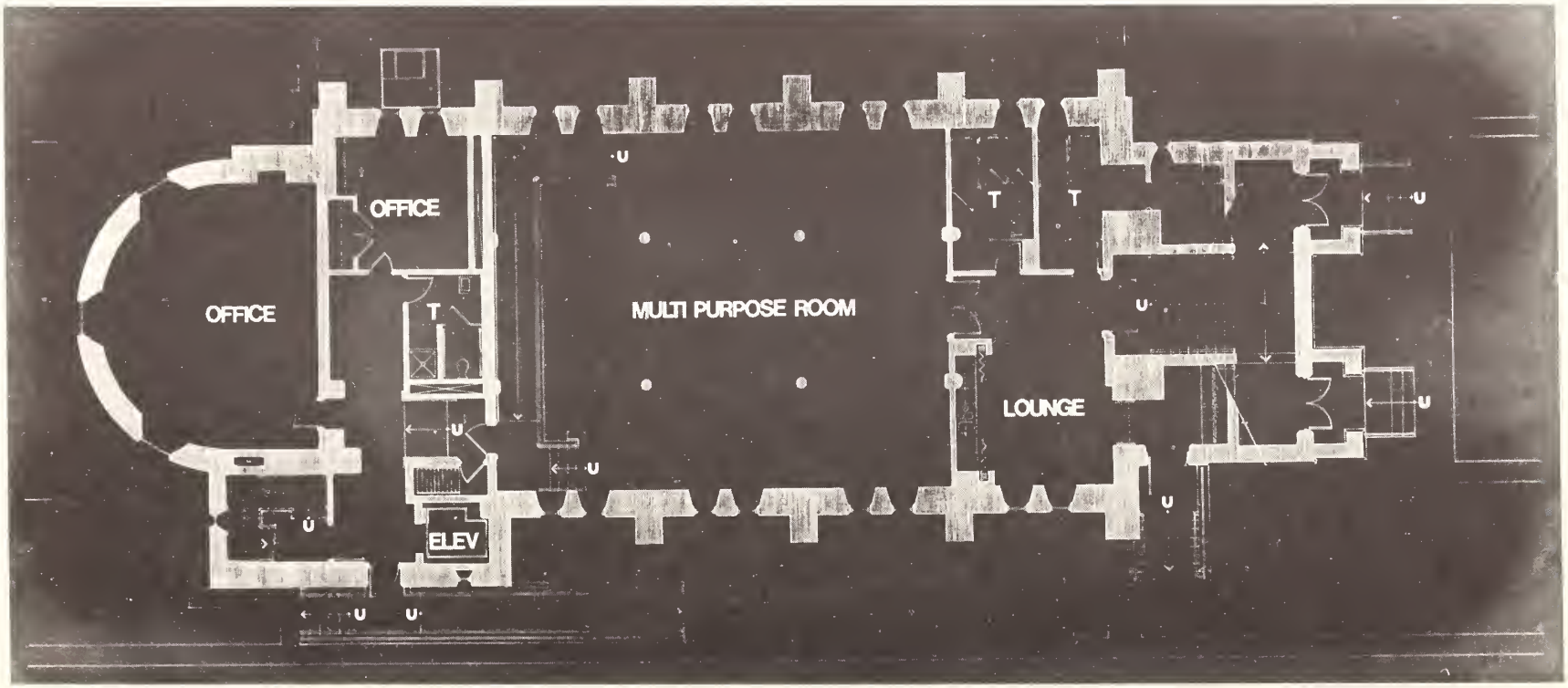


Illustration 18: Restored Chapel of the Good Shepherd, New York, N.Y.
basement plan

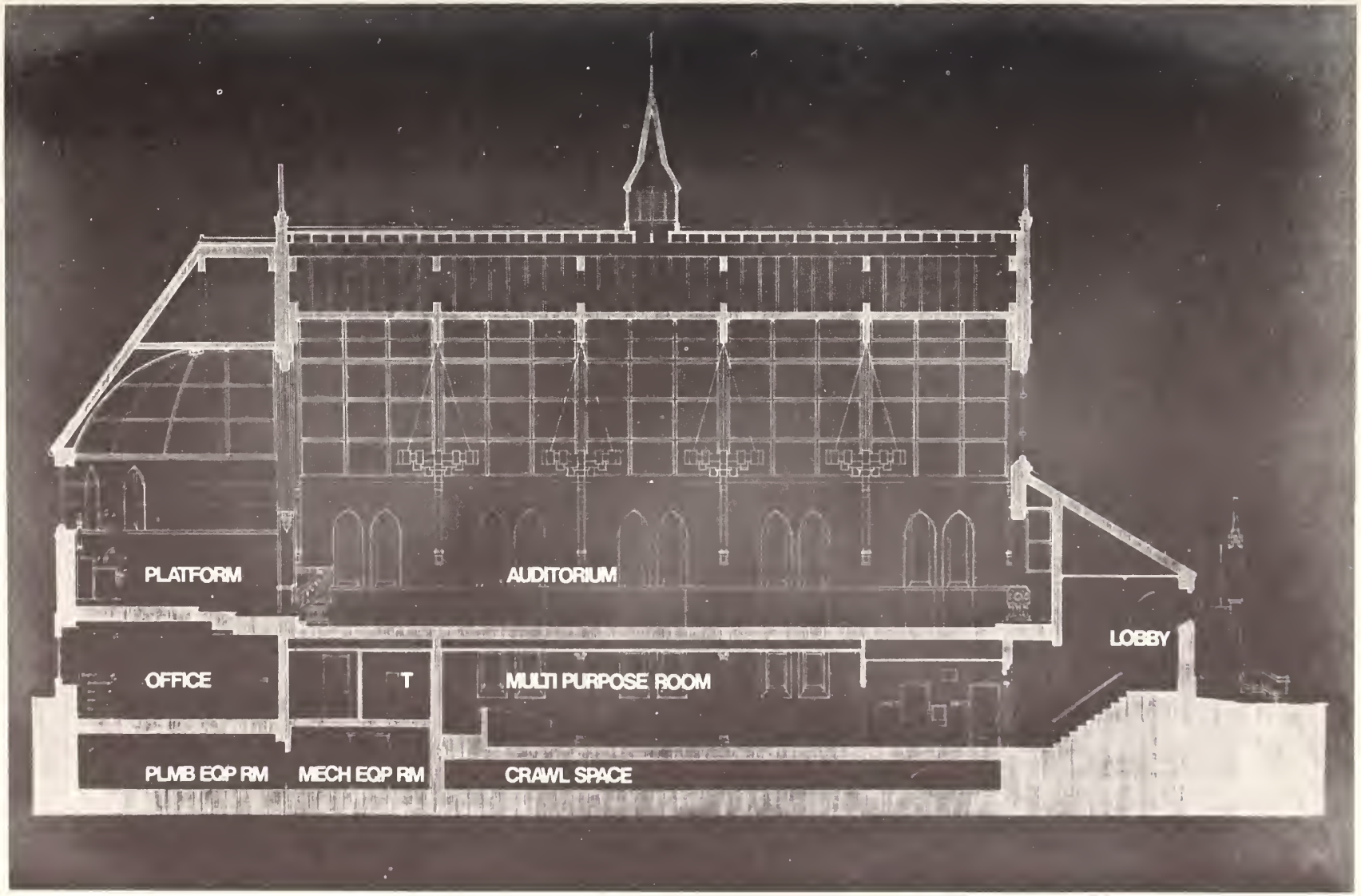


Illustration 19: Restored Chapel of the Good Shepherd, New York, N.Y.
longitudinal section

PROBLEM 1: Occupancy Classification

Calculations showed that the wood joists were capable of carrying a live-load of 60 pounds per square foot. The timber girders which supported the joists could not; nor could the cast iron columns which carried the girders. Live-load requirements of the NYSBC relate to each specific use. The figure for each use is established as the one necessary to protect the occupants in accordance with what is considered today to be the safe practice for the use intended. In order to meet the code requirements for the intended use of the building, the live-load of 100 pounds per square foot for theater use demanded structural changes. The owner then considered the option of regarding the use of the ground floor as a "place of assembly with fixed seats" (the original pews were still in place) thereby permitting the live-load to be set at 60 pounds per square foot. However, it was finally decided that movable seating was required to allow the room to be used for the varying functions that were expected. The structure then had to be upgraded (see illustration 19).

The NYSBC on this particular matter is in a sense a performance code because it demands only that the floor carrying capacity be proven to be adequate by engineering calculations. The architect is to select the method of calculation to prove the capacity. From the historical point of view, the best solution for the Chapel would have been to maintain the floor as it was in order not to interfere with the appearance of the ceiling in the spaces below. In the original construction, typical milled wood, tongue-and-groove boards, were nailed to the underside of the wood joists. Wood girders which were below the joists were left exposed as was their connection to the cast iron columns.

Applicable regulations permitted the wood joists to remain; additional joists were added to upgrade the capacity of the floor. Girders and columns had to be changed or reinforced. The substitituion of the original timber girders with some other much larger wood girders, sized to meet live-load requirements, would have changed the appearance of the room below. It was decided to install new steel girders in place of the existing wood ones because other elements within the space under the main auditorium, such as ducts and sprinklers, caused inevitable visual changes to the room, making the historic interior almost impossible to maintain. A hung ceiling seemed inevitable.

Fortunately, but with great effort in sizing and routing the ducts, the new hung ceiling could be set high enough to permit full exposure to the existing cast iron columns. The cast iron columns could have been removed and substituted with steel columns or with masonry piers. Neither solution would have maintained the appearance of the room. However, the possibility occurred and was favorably tested, to retain the cast iron columns by filling them with concrete; this increased their loading capacity but it did not meet the fire rating requirement established in the code for columns. The fire rating requirement was

waived because of the special activities expected in the rooms, hopefully under supervision, and in any event, exiting from all levels of the building was easy and direct. Today, the cast iron columns are still in place and their decorative features have not been obscured by fireproofing.

Another live-loading item of concern was the certification required by the owner (who was mandated by the law which created UDC to act as its own code administrative entity) of the soundness of the trusses supporting the roof. These were of a Gothic hammer-beam type, built of wood members with a super structure of purlins, rafters and planking. The timbers being 100 years old were exceptionally dry; some were checked. All joists were mortised and tenoned and pegged with wood dowels, thus, discouraging new nailing or drilling, particularly at connection points. According to engineering calculations, the cross section arrangement of these structural members was capable of supporting the snow load as required by the code but some doubt remained regarding the connections. It was decided after very careful visual investigation that if no new added loading was applied to the system, the diagonal planking and the existing wood ceiling could provide adequate rigidity to the existing structure to permit it to last through a possible second century of life.

The above demonstrates that besides code definitions and calculations, it is absolutely essential to properly evaluate conditions in the field.

Identification of method utilized to mitigate adverse impact

The capacity of the existing structural system was upgraded to meet code requirements. Fire rating requirements for the cast iron columns were waived.

Identification of performance standards

a. The ideal performance standard for historic preservation: In this instance, it was a program requirement of the project to have flexibility in seating arrangements on the ground floor level. The live-loading standard for this purpose ssems to be appropriate and to be a proper performance standard which should not be modified.

b. The achievable performance standard: Existing structures can be reinforced, partly or wholly replaced to successfully meet the standard.

Effectiveness in achieving historic preservation

While the historic appearance of the basement level ceiling was modified, the higher goal of safely using a completely restored main ground floor space was achieved. Even the original floor planks of this space were left in place and refinished and the historic appearance maintained.

Recommendations

It is not foreseen that any possibility of significantly changing live-load requirements can be done without proper research. It is specifically endorsed that the method established by the state code which permits the architect to determine the proper method of calculating the capacity of the existing structure be free of prescribed procedures and formulas.

PROBLEM 2: Ventilation

Ventilation requirements for the chapel auditorium space created an adverse impact which needed to be resolved. The state code sets a minimum figure for the openable windows in a room depending on the square footage of its floor to achieve proper ventilation. While such criterion is of a completely empirical nature, it clearly expresses a relationship desired between the number of occupants in a room and the amount of fresh air which the openings can let in. In the Chapel of the Good Shepherd, the windows are enclosed by fixed panes of stained glass with openable sections limited to less than a third of the size of the window openings. Neither the apse windows, nor the rose window of the western wall, have openable sections (see illustration 17).

All of the stained glass of the windows could have been reset into fully openable frames; however, such a procedure would have been costly and would have made it difficult to properly operate the windows. Moreover, even if the complete surface of all window openings had been made openable, the required five percent of floor space for openable fenestration would not have been obtained because of the height of the windows. To increase the number of openings from the main auditorium would have meant to change the design of the facades with the addition of windows and, therefore, would have defeated the concept of rehabilitation of the original Withers' Chapel and its design.

It was, therefore, decided to install mechanical ventilation. With a minor budget addition, the system could be made to provide summer cooling and climate control, more suitable to 20th century use. This brought about a completely new problem. Space had to be found for the mechanical equipment and ducts which had to be installed. The installation of a climatization system requires space for rather large equipment.

The decision was reached to use the existing bell tower by removing the bell and creating in it two separate mechanical levels for the installation of equipment. The existing stained glass windows in the tower were maintained; the louvered stone openings at the top where the bell was located were used to ventilate the cooling tower. From the tower, ducts were lead to a space within the attic roof trusses and inserted along the lentgh of the chapel over the existing wood ceiling of the auditorium.

Only a minor change on the surface of the roof had to be made to permit a duct from the tower to enter the attic; some grilles had to be installed in the existing wood ceiling. Apart from this, the entire mechanical installation is hidden and does not impair either the plaza or the historical appearance of the building.

Identification of method utilized to mitigate adverse impact

The requirement to provide proper ventilation in contemporary terms frequently creates an adverse impact on historic structures where window openings are often small in size when compared to today's standards. Rather than to deface the facade by widening existing openings and changing the design of the stained glass, a mechanical ventilation system had to be provided. To increase the capability of the system, a cooling tower was installed in the bell tower with a regrettable displacement of the tower bell; it was replaced on a specially designed base in the plaza surrounding the chapel.

Identification of performance standard

a. The ideal performance standard for historic preservation: Ventilation requirements set at contemporary standards might be waived or modified for historic buildings when a public assembly use is desired.

b. The achievable performance standard: Mechanical ventilation system was introduced to meet code requirements with minimum impact on building.

Effectiveness in achieving historic preservation

For cost reasons, requirements for ventilation can frequently discourage historic preservation particularly when mechanical ventilation is the only alternative.

Recommendations

Requirements for ventilation could be waived or reduced for historic properties, in some instances.

PROBLEM 3: Access for the Handicapped

A third item of the code requirements affecting the chapel rehabilitation was the one of access for the handicapped. This was resolved by the installation of an elevator, accessible at the basement level through a ramp sunk inconspicuously into the plaza. For this intermediate lower level of offices, a handicapped individual can reach the multi-purpose room which is at the lowest basement level through another ramp. With the same elevator, he can reach the level of the main auditorium (see illustration 18).

The shaft for the hydraulic elevator was set within the existing projection in the facade which links the main church column with the bell tower. In the original design, the organ had been installed in this area. The organ had to be removed and a new decorative wood enclosure was set in front of the former organ niche and the elevator installed along with a fire exit leading to a new stair in the bell tower.

Identification of method utilized to mitigate adverse mmpact

Code and other requirements to provide access for the handicapped can frequently have an adverse impact on the historic fabric of a building. In the case of the Chapel of the Good Shepherd, ramps and an elevator had to be installed. The elevator is a costly item; it also displaced the original pipe organ which needed extensive and equally costly repair.

Identification of performance standard

a. The ideal performance standard for historic preservation: Historic preservation and access by handicapped individuals are legislated goals of society which frequently come into conflict. Code requirements for access by handicapped individuals to all public assembly spaces and similar requirements which are part of the criteria for various state and federally funded programs, demand, as has been our experience, costly installation of elevators, ramps, etc. Ths installation of these elements can be done in an ingenious way but they, most certainly, have an impact on historic preservation. The ideal standard for historic preservation would be to permit, in some instances, waiving of the requirement of providing facilities for the handicapped.

b. The achievable performance standard: Access by the handicapped can be provided frequently at considerable cost and modification to the historic appearance of the building and site as well.

Effectiveness in achieving historic preservation

It is beyond the scope of this report to decide which is more important: access by the handicapped or historic preservation. None the less, the subject should be raised.

Recommendations

Each project should be judged on its own, rather than mandating by law the need to provide facilities for the handicapped in all cases.

f. New York State Maritime Museum, The South Street Seaport, New York, N.Y.

This project entailed the adaptive use of an entire block of buildings erected at different times throughout the 19th century which are now all included in the National Register of Historic Places. The purpose was to

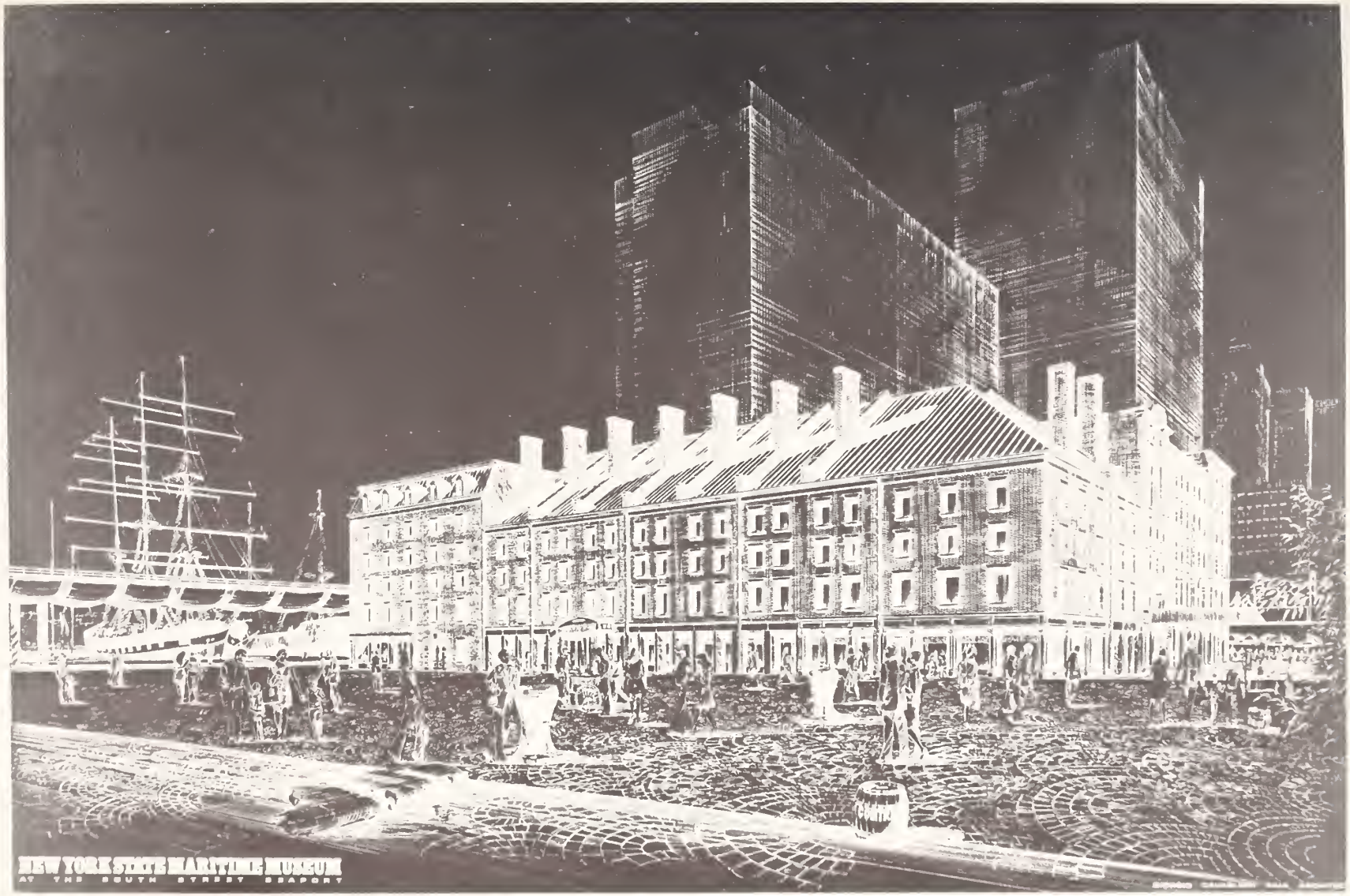


Illustration 20: New York State Maritime Museum, Schermerhorn Row, New York, N. Y. - view to the south

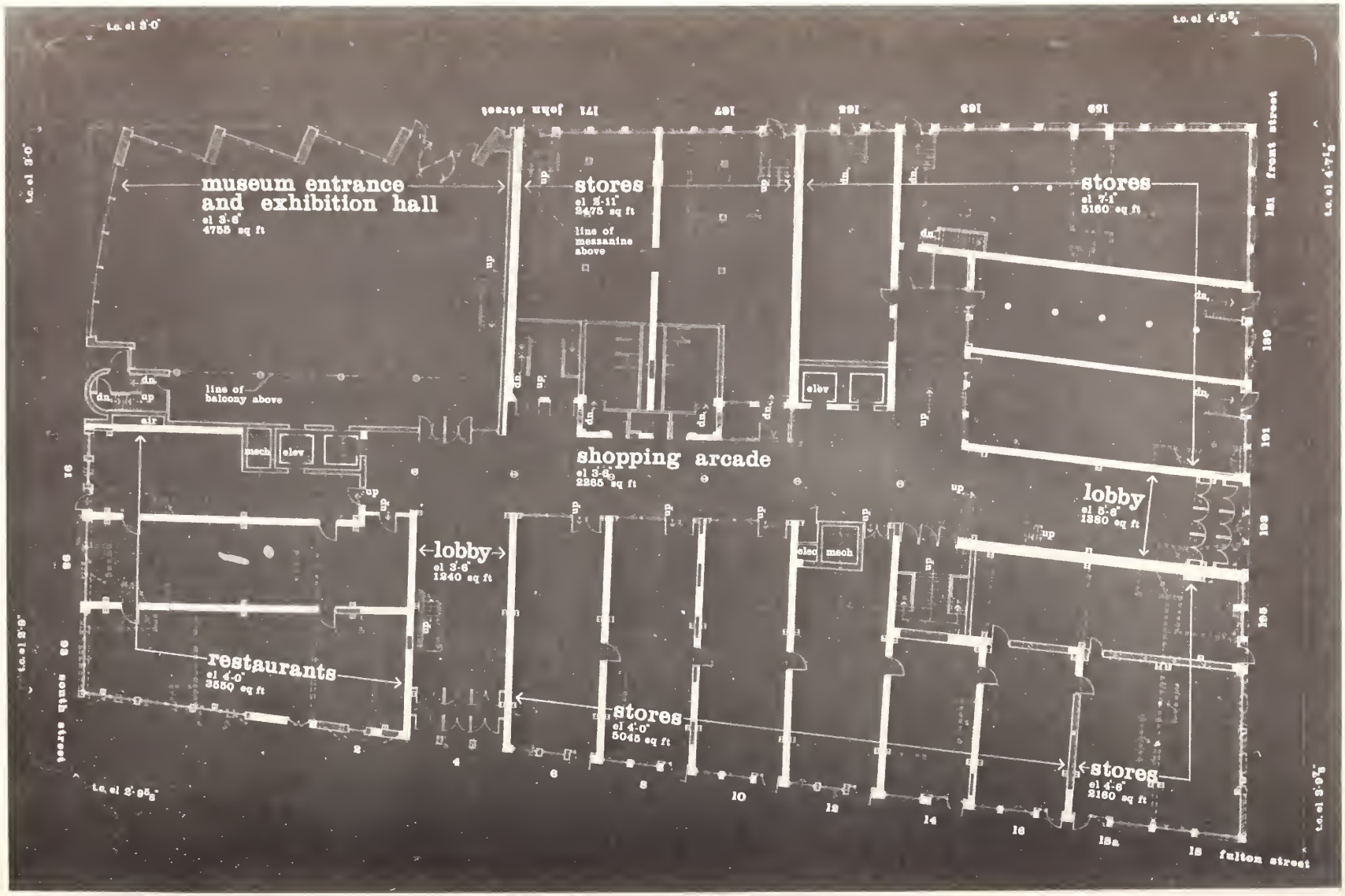


Illustration 21: New York State Maritime Museum, Schermerhorn Row, New York, N. Y. - ground level plan

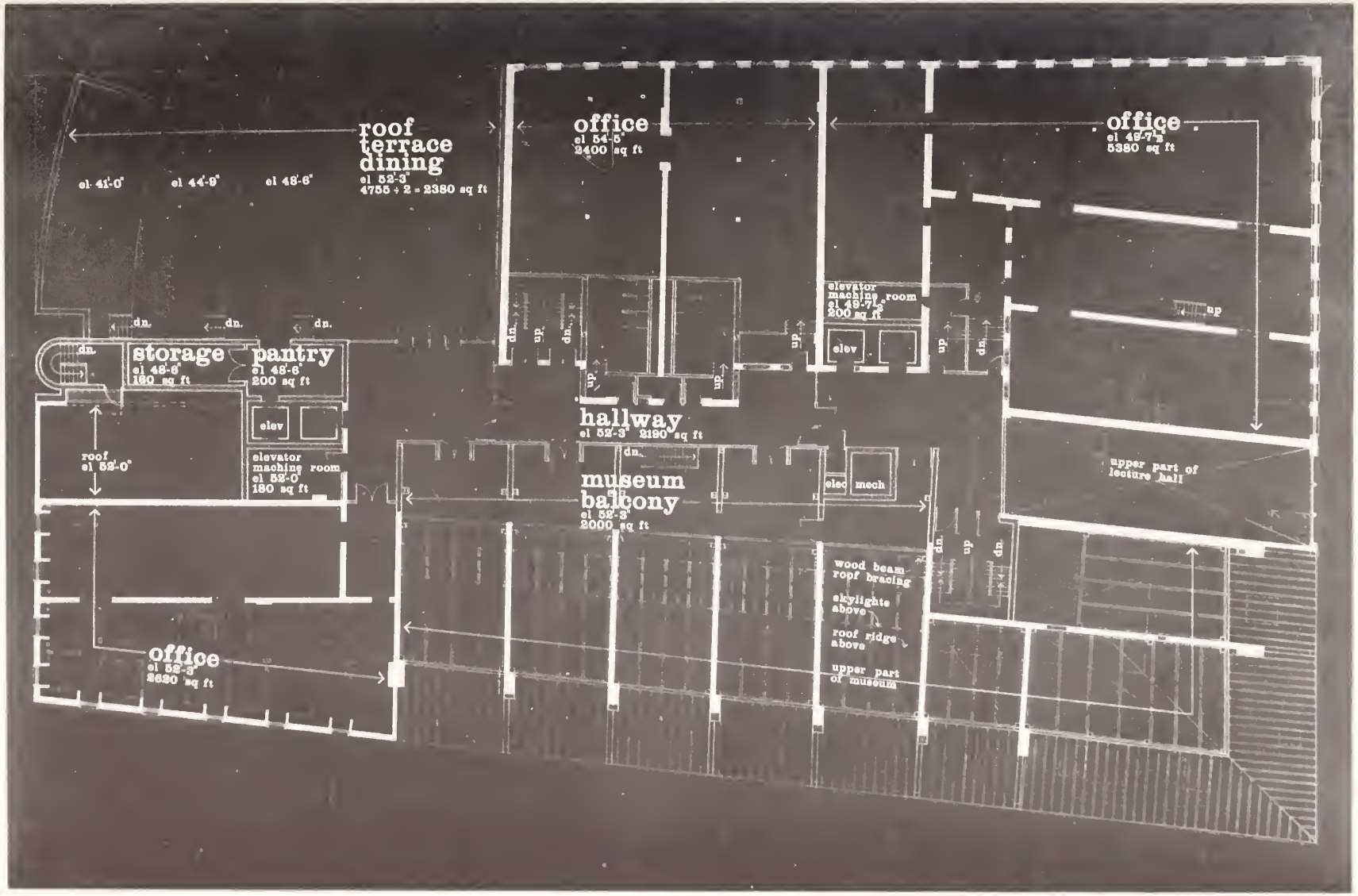


Illustration 22: New York State Maritime Museum, Schermerhorn Row, New York, N. Y. - attic level plan

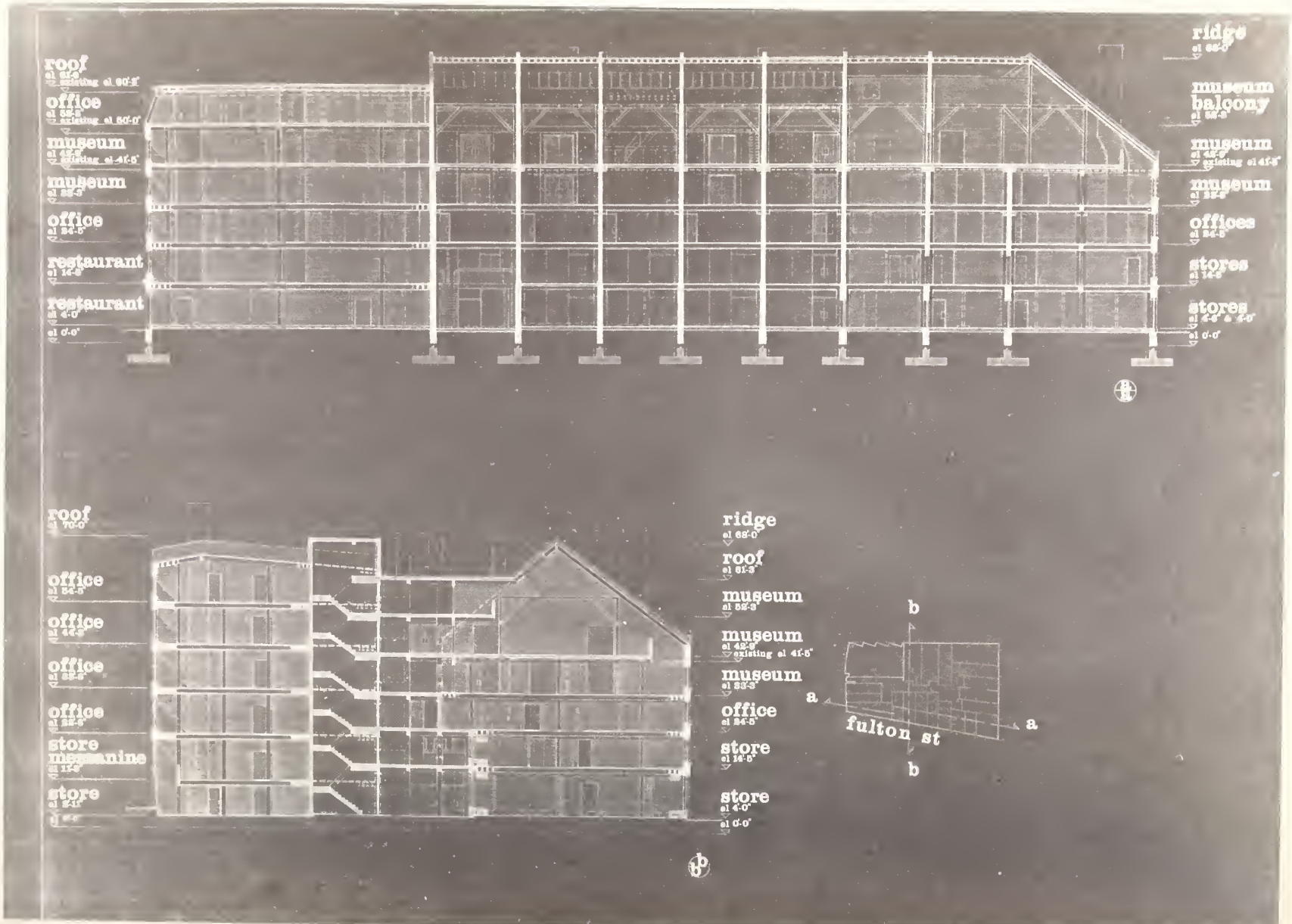


Illustration 23: New York State Maritime Museum, Schermerhorn Row, New York, N. Y. - cross sections

transform these largely underutilized and deteriorating group of buildings into a commercially viable, self-sufficient, mixed use of stores, offices and museum spaces. Due to a down turn in the city and state economy, the project has been held in abeyance.

PROBLEM 1: Occupancy Classification

The occupancy classification of this project, which was to be predominantly used for museum purposes, is "assembly." The existing building construction classification is Type 4a, "ordinary" under the state code, and Class II B under the city code. The state code prohibited the full use of the existing six and seven story buildings for "assembly" purposes. By providing sprinklers throughout, however, the lower three floors could be used. The rest of the floors would have had to be sealed off (see illustration 22).

Another possibility was to change alternating floors into mezzanines. This could be done by cutting two-thirds of every other floor to make it into a mezzanine for the floor below. Both solutions would have resulted in an unacceptable loss of floor area and severe alteration of the historic appearance of the block. Upper floors would have been sealed off and made unaccessible, or every other floor level window would not have actually served a full floor as historically intended.

The building could have been gutted and new floors constructed with noncombustible materials thereby changing the construction classification of the building. This would have resulted in an unacceptable loss of historic elements and details.

The city code while not having significantly different fire resistance requirements for structural elements, permitted the use of the entire building for "assembly" purposes. The interrelationship of occupancy classification, area and height limitation, and construction classification is always a significant consideration when evaluating the adaptive use of a building.

Identification of method utilized to mitigate adverse impact

Under the state code, the project would have been impossible; under the city code, the project was feasible. The variation between the two codes is due to the theoretical difference between the availability of fire fighting apparatus, the time it takes for it to arrive at the site, and the quality of the fire fighting force.

For this project, the state agency reluctantly accepted the use of the city code and, hence the adverse impact of the state code was mitigated.

Identification of performance standard

a. The ideal performance standard for historic preservation: The interrelationship of use, building size and construction type should be related to a calibrated scale, and the effectiveness of the fire fighting force that will be called upon in an emergency at this historic site.

Other fire control systems such as smoke detectors, fire alarms and standpipe systems, as well as around the clock security guards should also be considered in setting use, building size and construction type limitations. In this manner, blanket limitations could be made variable.

b. The achievable performance standard: Adaptive use of a large building for mixed use is achievable under the New York City code. Under the state code, it is not. The reason is that the city code is written with its existing building stock in mind and the quality of its fire fighting force is taken into account. The state code virtually ignores these considerations striving for a stiff blanket standard.

Effectiveness in achieving historic preservation

Adaptive use and conversion of buildings to new purposes has always been done and seems to be on the increase in New York City. Less restrictive but realistic use, building size and construction type limitations seem to encourage historic preservation.

Recommendations

As outlined in a. above, considerations should be given to occupancy classification, area and height limitations and construction classification, and methods of fire control in addition to the favorable consideration given because of the installation of sprinklers in a historic property.

Frequently, the installation of sprinklers can have an adverse impact on the historic elements of an interior. Other newly developed fire control systems should be considered along with the quality of the fire fighting forces and security forces engaged in the protection of a historic building, when establishing use, size and construction type limitations.

PROBLEM 2: Exits

The occupancy classification of museum spaces as "assembly" under the city code sets the occupant load at ten net square feet per person for "exhibit" space. This is the same as that for a theater with movable seating.

In this project, it was a program requirement to have the museum spaces located on the top floor so that the more than two story high attic spaces could be utilized for exhibit purposes (see illustrations 21, 21 and 22).

With exhibit space equivalent to the occupant load of a theater, an incredible number of vertical exits (stairs) were required to bring the occupants down from the upper floors to the street. This had a particularly adverse impact on the ground and second floors where every square foot counted for valuable retail space whose rent would be utilized to offset museum costs. Another adverse impact would have been increased disruption of the historic building fabric.

Identification of method utilized to mitigate adverse impact

A unique aspect of the city code is its provision for exit reduction through the utilization of "areas of refuge." This is accomplished by dividing the floor space vertically with the separations so that one floor area could be used as a safe place to exit into from another. By doing this only a percentage of the required number of vertical exits need to be provided for the total floor area. Each area of refuge must have at least one vertical means of exit and be sized to hold the occupant load it receives.

As the existing block of buildings is really composed of a series of separate structures with supporting members resting on shared masonry party walls, it was quite a simple matter to divide each of the third through sixth floors into three areas of refuge. In this manner, it was possible to take a 33 percent reduction in the required number of vertical exits. The state code does not include nor does it mention the concept of areas of refuge as a means to reduce the required number of vertical exits.

Identification of performance standard

a. The ideal performance standard for historic preservation: The preservation of many large historic buildings can occur through adaptive use employing mixed occupancy. Some spaces within the building, particularly those of major historic importance, will frequently be considered for exhibit purposes. The ideal performance standard should take into account the actual number of visitors expected rather than the veritable stampede which seems to be anticipated by setting the occupancy load of an exhibit space equivalent to that of a theater.

b. The achievable performance standard: The concept of establishing areas of refuge seems to be a sound one and particularly easy to use in large historic masonry bearing wall buildings. It should be a component part of any building code.

Effectiveness in achieving historic preservation

The reduction in the anticipated number of occupants for any given use should not be done merely to reduce the required number of exits;

it should be realistically evaluated. By eliminating exits, construction cost is frequently reduced and sometimes, more importantly, the historic fabric of the structure is less disrupted. While these are desirable goals, public safety must remain as the first goal particularly in the adaptive use of a building where extensive changes are frequently inevitable and sacrifices in the area of public safety are less justified.

The concept of areas of refuge seems to be an effective way of reducing the number of required vertical means of exit. This is effective in achieving historic preservation in an indirect way.

Recommendations

Occupancy loads should be realistically established for uses in historic buildings.

PROBLEM 3: Fire Rating of Building Components

This subject is very much related to the previous one of occupancy classification, area and height limitations, and construction classification. To reach any construction classification above the lowest one of "Type 5 - frame construction" in the state code, and I-E in the city code, almost every building component must have some kind of fire rating. Generally, the requirements for the fire rating of floor and roof construction and vertical exits seems to have the most impact on the preservation of historic elements.

The state and city codes run roughly parallel on the fire rating requirements of each building component as they relate to the construction classification of the building. The attainment of a higher construction classification means an increase in permitted area and height, thereby encouraging the adaptive use of a property. Frequently, existing elements of construction although appearing quite substantial, such as a decorative plaster ceiling on wood lath, really do not have any fire rating as measured in contemporary terms.

In the Maritime Museum project, it was essential that the level of construction classification II-B be achieved to permit the entire building to be occupied. As a museum occupancy in anything less than a class II-B sprinklered building, only the lower four floors could be used. This would have meant closing off the fifth, sixth tnd seventh levels. The most adverse impact would have been that the historically important and useful attic would have had to be sealed off and remain unused and unseen.

Identification of method utilized to mitigate adverse impact

For class II-B construction, floors had to have one hour, roofs three-fourths of an hour, and vertical exits two hour fire ratings. Ceilings

with the required fire rating had to be installed underneath all existing wood floor and roof joists. New noncombustible vertical exits had to be constructed replacing existing wood stairs.

This resulted in a regrettable loss of some wooden stairs which in the final analysis could have been kept as accessory stairs if desired. The hung ceilings covered over the original joists and attic trusswork. This loss was perhaps the most regrettable one but it was necessary in order to realize the use of the entire building and the attic space itself.

Identification of performance standards

a. The ideal performance standard for historic preservation: There should be some codified relationship between the historical importance of an element of construction and the need to fire rate it. Often, the end result of achieving such a rating is to obscure it from view.

The complete abandonment of fire rating requirements particularly in an adaptive use project, where extensive changes are more likely, seems unadvisable. Partial or complete failure of other fire control systems such as sprinklers, smoke detectors, etc., could lead to rapid spread of fire.

However, some standard should be established to allow at least parts of the original structure to remain exposed for educational purposes, perhaps compensating by demanding more sophisticated fire detection equipment or reduce the allowed number of people. This might be particularly acceptable where elements of construction are found in a repetitive situation.

b. The achievable performance standard: Fire rating of construction elements can be achieved through testing the existing construction to determine its capacity to meet contemporary standards. Another method (in cases such as the one of a decorative plaster ceiling) is to carefully remove its components to insert a fire rated assembly behind it and then to reinstall the original. Frequently, however, such testing and reassembly methods are beyond the financial restraints of the project budget.

Effectiveness in achieving historic preservation

The insertion of new contemporary fire rated materials into the existing building fabric can frequently mean the difference between the adaptive use of the building or its abandonment. Frequently, the entire structure can be saved, revitalized and used only with the sacrifice of some historic details. Thus, the larger goal of preservation is served.

Recommendations

Where unique elements of construction are found, special fire control systems such as deluge sprinklers, smoke alarms, etc., should be allowed to offset, in isolated instances, fire rating requirements.

4. RECOMMENDATIONS FOR FURTHER RESEARCH

Based upon the six previous sample projects and the professional experience of the architects for these projects, the following further research is recommended:

Research needs to be conducted on commonly found historic building components, i.e., plaster ceilings on wood lath, metal ceilings, etc., which in themselves may have met applicable code standards at the time they were installed, to determine what their fire rating is or could be achieved should they remain in place.

In considering the development of a performance-based code, the potential significant differences between an inner city code and a suburban code should be identified and evaluated.

More investigation and evaluation needs to be conducted on the administrative types of legislation that will allow more flexibility in the use of historic property; it has been observed that it is "occupancy change" which creates most of the problems.

Research should be conducted to determine if the occupancy load for various uses in historic properties is sufficiently different from the loads anticipated by many building codes. If so, a special table should be considered for adaptive use-historic preservation projects on the design, use and installation.

Research should be conducted to establish the proper condition between use, size and construction type standards, and fire fighting and control methods and standards in order to identify possible minimum requirements and encourage historic preservation through adaptive use and mixed occupancy.

The issues associated with the property owner's and architect's liability by use of performance-based code standards should receive further consideration. During the course of this project, the observation was made that a rigid, prescriptive code may provide the property owner and the professional with more liability protection than a less explicit, performance-based standard.

When considering the development of performance-based codes related to the category of "restoration," particularly as it applies to the highest quality of museum interpretation and educational programs, research in the following categories may be especially necessary:

How effective are guides, hosts or docents in controlling the number of visitors, their circulation and preventing accidents?

What are the statistics on accidents to visitors or to employees in historic houses and sites? Where did falls take place--on steps or stairs, or on walks or floors? What were the surfaces?

In making emergency exits, what available exit doors are required to open out and in? What should their opening width be? Should they remain open or closed? Should they be equipped with panic bars?

What has been the statistical incidence of fires in historic house museums? What were the causes? Did they occur during hours when the museum was open to the public? Was there personal injury?

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6. ILLUSTRATION CREDITS

Pages 28-33 — Brooklandwood Mansion - architectural drawings of elevations and floor plans provided by Orin M. Bullock, FAIA.

Pages 35-36 — Hezekiah Alexander House - photography provided by Gordon H. Schenck, Jr.; architectural drawing of floor plan provided by Mr. Bullock.

Pages 40-43 — First White House of the Confederacy - photographs provided by Carl V. Kling, Jr.; architectural drawing of floor plan provided by Nicholas H. Holmes, FAIA.

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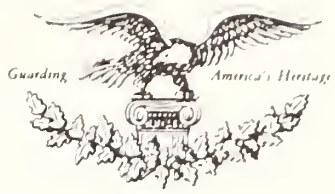
Pages 61-64 — New York State Maritime Museum - architectural drawings of floor plans provided by Mr. Cavaglieri.

7. APPENDICES

A. Letter/questionnaire on historic preservation definitions

B. Letter/questionnaire on adverse impact of the building regulatory system

C. Questionnaire to participants of "Preservation and Building Codes Conference"



National Trust for Historic Preservation

740-748 JACKSON PLACE, N.W. WASHINGTON, D.C. 20006 (202) 638-5200

ASSESSMENT OF CURRENT BUILDING REGULATORY METHODS AS APPLIED TO THE NEEDS OF HISTORIC PRESERVATION PROJECTS

Phase 1 - Common historic preservation definitions as applied to buildings

August 19, 1976

Enclosure 1 - "Treatment of Properties"

/ / I find these to be acceptable definitions.

Comments: _____

_____

/ / I find these to be unacceptable definitions.

Comments: _____

_____

Enclosure 2 - "Terminology"

/ / Acceptable definitions.

Comments: _____

_____

/ / Unacceptable definitions.

Comments: _____

_____

Enclosure 3 - "Project Performance Standards"

/ / Acceptable definitions.

Comments: _____

_____

/___/ Unacceptable definitions.

Comments: _____

_____

Enclosure 4 - "Possibilities for Protecting the Artistic and Historic Patrimony"

/___/ Acceptable definitions.

Comments: _____

_____

/___/ Unacceptable definitions.

Comments: _____

_____

In addition to these definitions, I would suggest you also consider the following:

_____

_____

_____

_____

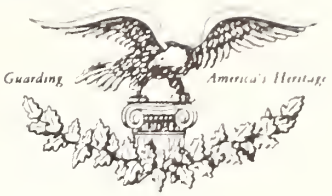
_____

_____

_____
name

_____
date

Please return in the enclosed self-addressed and stamped envelope to Russell V. Keune, Vice President for Preservation Services, National Trust for Historic Preservation, 740 Jackson Place, N.W., Washington, D.C. 20006.



National Trust for Historic Preservation

740-748 JACKSON PLACE, N.W. WASHINGTON, D.C. 20006 (202) 638 5200

December 15, 1976

Dear Landmarks/Historic District Commission:

The National Trust would appreciate your assistance in a project in which we are attempting to assess current building regulatory methods as they currently apply to historic preservation projects. Your taking the time to answer the two following questions would contribute to our being able to compile a national perspective of current major problems and solutions.

A. Please identify up to four major problems your commission is aware of in applying the local applicable building regulatory requirements to preservation projects. We are particularly interested in the reaction to small alterations to buildings the commission has designated.

1. _____

2. _____

3. _____

4. _____

B. Please identify up to four of the most current common methods (waivers, clauses, code revisions, etc.) utilized to mitigate adverse impacts on preservation projects brought about by those local building regulatory requirements.

1. _____

2. _____

3. _____

4. _____

Name and title of individual completing questionnaire:

_____

City and state: _____

Telephone number: ( ) _____
area code

Please return to me at the address indicated.

Enclosed is a copy of a special supplement on building codes and preservation which appeared in the November 1976 issue of Preservation News. We will be sharing the results of this study with you following its completion.

Thank you for your cooperation.

Sincerely,

Russell V. Keune, AIA
Vice President
Preservation Services

Enclosure

QUESTIONNAIRE

To: Building Codes Conference Participants
From: National Trust for Historic Preservation, Russell V. Keune
740 Jackson Place, N.W.
Washington, D.C. 20006

_____
name

_____
title

_____
organization

_____
city state

Category: _____Architect-Engineer _____Building Code Official

_____Preservationist _____Other (specify)

1. Name the code you work with most often.

_____

Answer the following questions within the context of your experience with problems in meeting modern building code requirements in historic buildings that are being preserved and restored or adapted to new uses.

2. What type of historic building is most often involved? (check one)

_____Residential _____Commercial _____Industrial _____Institutional

_____Other (specify) _____

3. What building use creates the most problems? (check one)

_____Residential _____Commercial _____Public Assembly

_____Other (specify) _____

4. List the four most common problems you face when dealing with codes and historic buildings.

a) _____

b) _____

c) _____

d) _____

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6. Performing Organization Co

7. AUTHOR(S)

Russell V. Keune, AIA (CBT Contact Patrick Cooke)

8. Performing Organ. Report N

9. PERFORMING ORGANIZATION NAME AND ADDRESS

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Washington, D.C. 20006

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Washington, D.C. 20234

13. Type of Report & Period Covered: Final

14. Sponsoring Agency Code

15. SUPPLEMENTARY NOTES This publication presents the results of a contract study for an nalysis of current building regulatory methods as applied to the needs of historic reservation projects. Any conclusions, opinions, or interpretations contained herei re the responsibility of the authors of this report.

16. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)*

To meet contemporary health and safety requirements as defined by the building regulatory system, conflicts frequently occur with the needs of historic buildi preservation projects. This project: (1) identified, evaluated and proposed historic preservation categorical definitions as applied to buildings; (2) developed performance objectivies, requirements, criteria and tests for each definition category; and (3) identified and assessed those current methods most commonly used by regulatory jurisdictions to mitigate adverse impacts on building preservation projects.

17. KEY WORDS *(six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons)* Architecture; building regulatory system; codes; health and safety; historic buildings; historic preservation; impacts; performance-based standards; research.

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