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DRAFT CODE FOR HISTORIC BUILDINGS

THE DRAFT HISTORIC BUILDING CODE PROJECT

OCTOBER 2000

A PROJECT OF THE ASSOCIATION FOR PRESERVATION TECHNOLOGY INTERNATIONAL

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Draft Code for Historic Buildings
Final report

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Draft Code for
Historic Buildings

EXECUTIVE SUMMARY

Section A. Executive Summary

General Introduction

The draft Code for Historic Buildings (dCHB) was prepared for the Association for Preservation Technology, International by principal consultants architect Marilyn E. Kaplan and fire protection engineer Dr. John M. Watts, Jr. The dCHB was developed between 1998 and 2000, by the principal consultants working with a committee of peers representing the International Code Council, the model code organizations, the National Park Service, and architects with specific expertise in rehabilitation and historic preservation. Funding for the project has been provided by the National Park Service's Center for Preservation Technology and Training.

The project was designed to produce the skeleton of a document, independent of any particular code, that could be adapted for historic buildings by individual states, municipalities or other code promulgating entities. Over the course of the project, the committee determined that the final product should be redirected and align with the format and language of *the International Building Code* (IBC), published in early 2000 by the International Code Council (ICC).

The IBC is intended to become the nation's first nationally applicable building code. Written primarily to address new construction, the IBC is limited in the direction it provides for existing and historic buildings. It is understood that an *International Existing Buildings Code* is currently under development, and it is hoped that the dCHB will have a substantive role in the development of the historic building provisions of this code or a separate historic building code.

Importance of the draft Code for Historic Buildings

With the nation's move to a single national building code system, it is an ideal time for special consideration to be given to historic buildings. While all structures are vulnerable to damage and destruction by fire and other catastrophic situations. Historic buildings have additional vulnerability: their destruction represents an irretrievable loss to the cultural heritage, and they can be substantively damaged by catastrophe or the imposition of code requirements written for new construction. New construction requirements generally limit the flexibility of code officials and design professionals to resolve safety-related items in a manner that protects both life safety and the structure's historic and architectural significance.

While separate codes for rehabilitation and historic preservation have been promulgated since the late 1970s, few have received national use or recognition. It is the intent of this project to incorporate the approaches embodied by these existing codes and to synthesize their approaches. The dCHB is unique in its

combining these approaches into a single document, as well as one of the first general building codes to integrate a Performance Based methodology.

Project Methodology

Sixteen existing rehabilitation and preservation codes, representing the landmark documents written by model code organizations and state and federal agencies over the last 20 years, were analyzed. Exemplary provisions and approaches of these were extracted and synthesized into the dCHB.

To organize the comparison and analysis, categories of Technical Components and Administrative Components were established. Although the project focused on building and fire protection, the format of the dCHB was designed such that other technical components typically addressed by codes---structural/seismic, energy conservation, accessibility, mechanical, electrical and plumbing—could be integrated in the future. It is assumed that these technical components can also be successfully addressed by the selection of one of the approaches established in the dCHB.

Goals of the draft Code for Historic Buildings

The primary goals of the dCHB are to:

- Provide a mechanism for historic buildings to pro-actively control the regulatory process while providing a balance between life safety and historic preservation goals;
- Improve the predictability of code applications to historic buildings by providing a system that is rational, uniform and consistent;
- Provide technical information to code users that can minimize the need for variance procedures;
- Provide a cost effective means of making historic buildings safe.

The dCHB will also assist in the implementation of government mandates as required by the National Historic Preservation Act and similar state legislation, as well as promote the restoration and economic revitalization of urban areas defined by their historic building stock.

Organization of the draft Code for Historic Buildings

Since every historic building is uniquely defined by its significance, condition, and program, the development of a single document that offers simultaneous protection of life safety and historic and architectural significance is a challenging task. The document must be flexible to allow for the determination of an appropriate protection method based on a thoughtful and sensitive approach that integrates an understanding of a building's historic nature with the safety objectives of the code.

The dCHB provides three optional approaches for historic buildings: Adapting Prescriptive Requirements, Risk Indexing, and Performance-Based Evaluation. The approach selected should be the one that, as a function of the building's unique characteristics and program, best meets a project's life safety and historic preservation goals.

Draft Code for
Historic Buildings

PROJECT REPORT

Section B-1. Project Overview

1.1 General Introduction

This draft Code for Historic Buildings (dCHB) was prepared for the Association for Preservation Technology, International by principal consultants architect Marilyn E. Kaplan and fire protection engineer Dr. John M. Watts, Jr. The dCHB was developed between 1998 and 2000 by the principal consultants working with a committee of individuals representing the International Code Council, the model code organizations, the National Park Service, and architects with specific expertise in rehabilitation and historic preservation. Funding for the project has been provided by the National Park Service's Center for Preservation Technology and Training.

The project was designed to produce the skeleton of a document, independent of any particular code, that could be adapted for historic buildings by individual states, municipalities or other code promulgating entities. Over the course of the project, the committee determined that the final product should be redirected and align with the format and language of *the International Building Code* (IBC), published in early 2000 by the International Code Council (ICC). The ICC, founded in 1995 by the model code organizations, has also published other nationally adopted documents, including codes addressing topics such as plumbing, energy conservation, residential construction, property maintenance.

The IBC is intended to become the nation's first nationally applicable building code. Written primarily to address new construction, the IBC is limited in the direction it provides for existing and historic buildings. It is understood that an *International Existing Buildings Code* is currently under development, and it is hoped that the dCHB will have a substantive role in the development of the historic building provisions of this code or a separate historic building code.

1.2 Importance

With the nation's move to a single national building code system, it is an ideal time for special consideration to be given to historic buildings. While all structures are vulnerable to damage and destruction by fire and other catastrophic situations. Historic buildings have additional vulnerability: their destruction is an irretrievable loss to the cultural heritage, and they can be substantially damaged by the imposition of code requirements written for new construction. Such requirements generally limit the flexibility of code officials and design professionals to resolve safety-related items in a manner that protects both life safety and the structure's historic and architectural significance.

While separate codes for rehabilitation and historic preservation have been promulgated since the late 1970s, few have received national use or recognition. It is the intent of this project to incorporate the approaches embodied by these existing codes and to synthesize their approaches into a single document. The dCHB is unique in its combining these approaches into a single document, as well as one of the first general building codes to integrate a Performance Based methodology.

1.3 Organization of the dCHB

Since every historic building is uniquely defined by its significance, condition, and program, the development of a single document that offers simultaneous protection of life safety and historic and architectural significance is a challenging task. The document must be flexible to allow for the determination of an appropriate protection method based on a thoughtful and sensitive approach that integrates an understanding of a building's historic nature with the safety objectives of the code. The dCHB thus provides three optional approaches for historic buildings: Adapting Prescriptive Requirements, Risk Indexing, and Performance-Based Evaluation.

The approach selected should be the one that, as a function of the building's unique characteristics and program, best meets both the life safety and historic preservation goals.

1.4 Methodology

Sixteen existing rehabilitation and preservation codes, representing the landmark documents written by states, the model code organizations, and federal agencies over the last 20 years, were analyzed for this project. From these, exemplary provisions and approaches were extracted and synthesized into the dCHB.

To organize the comparison and analysis, categories of Technical Components and Administrative Components were established. Although the project focused on building and fire protection, the format of the dCHB was designed such that other technical components typically addressed by codes---structural/seismic, energy conservation, accessibility, mechanical, electrical and plumbing—could be integrated in the future. It is assumed that these technical components can also be successfully addressed by the selection of one of the approaches established in the dCHB.

1.5 Project Goals

The primary goals of the dCHB are to:

- Provide a mechanism for historic buildings to pro-actively control the regulatory process while providing a balance between life safety and historic preservation goals;
- Improve the predictability of code applications to historic buildings by providing a system that is rational, uniform and consistent;
- Provide technical information to the code users that will minimize the need for lengthy variance procedures;
- Provide a cost effective means of making historic buildings safe.

The dCHB will also assist in the implementation of government mandates as required by the National Historic Preservation Act and similar state legislation, as well as promote the restoration and economic revitalization of urban areas defined by their historic building stock.

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Section B-2. Analysis

2.1 Introduction

Detailed reviews of some of the model and state codes presently applied to historic buildings are provided in the last section of this report. This section organizes and analyzes the information gleaned from the review of these codes, enabling the identification of regulatory methodologies and component parts of codes and, ultimately, the synthesis of a comprehensive and systematic code for historic buildings.

This section does not cover every aspect of the codes reviewed or contained within the Draft Code for Historic Buildings. Administrative provisions that may be of relevance in some political venues are not dealt with in this section: neither are issues that can be adjusted for a particular adaptation of the Code, such as definitions.

Additionally, this section does not cover the details of compliance alternatives that are prevalent in most of the codes analyzed. Before such details can be evaluated, it is necessary to establish a structure within which they can be properly invoked. Moreover, to be considered in the evaluation of compliance alternatives is the cumulative effect on a fire safety system, which is composed of many parts, when more than one compliance alterative is accepted.

The codes were analyzed by identifying specific common and unique components, as well as by establishing categories describing the basic approaches employed. These separate taxonomies (components and approaches) provide the basis of organization for this project's research:

Components are the chapters or principal sections of the rehabilitation or historic building code. These are further divided into technical components and administrative components. Technical components address a specific technical issue: seven principal technical components have been found in the code reviews. Administrative components are code sections, typically addressing implementation and special cases, usually appearing in the first code chapter(s).

Approaches are methods for considering a similar set of building and fire safety attributes or technical details to achieve code objectives. Approaches are the various ways of treating the interaction of attributes within the framework of the administrative components. The six approaches identified fall within two groups. Three of these are exclusive options for evaluating a building: adapting prescriptive requirements, indexing, and performance-based evaluation. The other three approaches, hazard ranking, proportionality, and consultation, are most often used in conjunction with other approaches.

The preponderance of code regulation addresses building and fire safety issues: many code reviews did not include any other technical components. Although this first Draft Code for Historic Buildings focuses primarily on building and fire safety, containing four administrative chapters and one technical chapter on fire safety, the code's format is potentially applicable to all of the future technical components that should be considered for inclusion in an historic building code.

2.2 Components

For the purposes of this project, components are either technical or administrative.

2.2.1 Technical Components

Technical components addressing specific technical issues are as follows:

a Building and Fire Safety
b Accessibility
c Electrical
d Energy Conservation
e Mechanical
f Plumbing
g Structural/Seismic

Specific codes that addressed components b through g are shown in Table 1.

Table 1. Code Technical Components
(other than Fire Safety)

COMPONENTS: Comparison of select rehabilitation & historic preservation codes						
	Accessibility	Energy Conservation	Mechanical	Electrical	Plumbing	Structural/ Seismic
BOCA National Building Code	N	O	N	E		
Standard Existing Buildings Code	✔		✔	✔	✔	✔
Uniform Code for Bldg. Conservation	✔					✔
IBC (draft)	✔					
HUD/NARRP	✔	✔	✔	✔	✔	✔
NFPA 101			✔			
NFPA 101A	N	O	N	E		
NFPA 914 (draft)	N	O	N	E		
California	✔		✔	✔	✔	✔
Massachusetts		✔				✔
New Jersey	✔		✔	✔	✔	✔
New York		✔				
North Carolina						✔
Vermont				✔		
Wisconsin	✔	✔	✔	✔		✔

2.2.2 Administrative Components

Administrative components, code sections that usually appear in the first chapter(s) and address implementation and special cases, are as follows:

a Appeals/ variances
b Archaic materials and methods of construction
c Change of occupancy
d Definitions
e Documentation
f Historic Museums/Sites
g Relationship to prevailing code(s)
h Unsafe buildings
i Relocation of buildings

The administrative components of strictly political interest, e.g., appeals and variances, have not been addressed in the Draft Code for Historic Buildings. One exception is (g) relationship to the prevailing code, arguably the most significant item on the above list. This item is most often characterized in a statement of scope or application. Some of the code reviews are retroactive and apply to all existing or historic buildings while others assume or explicitly state nonconforming rights of existing buildings:

> **Nonconforming rights**. Buildings in existence at the time of the adoption of the prevailing code may have their existing use or occupancy continued if such use or occupancy was legal at the time of the adoption of the code, provided such continued use is not dangerous to life. Nothing in the prevailing code or the historic building code shall be interpreted as requiring the repair, renovation, alteration or reconstruction of such existing buildings, or construed to allow the degradation of those systems, devices and equipment required by the code under which the building was constructed.

In jurisdictions where nonconforming rights are an issue, codes use specific "triggers" or thresholds such as extent of projected work or change of occupancy to identify when a building must conform.

2.2.2.1 Projected work

One of the most common triggers for existing or historic buildings is when a building is to be subject to alteration, repair, or addition and a building permit is issued. Traditionally, a second trigger was based on the dollar value of the work to be undertaken [see HUD Guidelines]. More recently, some of the code reviews use the type of work as the trigger to establish the amount of code compliance required or the number of provisions that are applicable. See "proportionality" in the next section. [NAARP].

2.2.2.2 Change of Occupancy

A change of use or occupancy has traditionally been considered justification for requiring compliance with code provisions for new construction. The rationale for this requirement may be an assumption that the major alteration associated with a change of use of occupancy has a corresponding change in fire risk. This assumption is challenged in this study.

While the fire risk may indeed change with use or occupancy, the change may be an increase or decrease. If there is no increase in risk, it is not reasonable to require a historic building to meet requirements for new construction. There are two common approaches to addressing this issue, exclusions and hazard ranking.

A. **Exclusions.** Most codes which use the change of occupancy trigger establish two categories: those where the prevailing code applies and those where the code does not apply and the nature of the occupancy requires more specific consideration, such as a risk analysis or performance-based approach. For example, the Wisconsin Historic Building Code excludes application to nursing homes and hospitals. Exclusions may also be based on more specific risk factors and limited to certain approaches. As an example, the following language would exclude general application to the traditional high risk occupancies of schools, hospitals, and jails:

> This code shall not apply where more than 50% of occupants are:
> a) under the age of 18, or
> b) receiving residential care or treatment for illness or infirmity, or
> c) legally detained or incarcerated.

B. **Hazard Ranking.** A ranking of fire hazard based on occupancy classification is also used to trigger application of a code. This process is described under Hazard Ranking in a paragraph 2.4.1.2. of this report.

The above methods only superficially address the code trigger issues arising from a change of occupancy. A more technical analysis would raise questions such as the following: does a change in occupancy mean a change in the likelihood of fire or a change in combustible contents such that the rate of production of combustion heat and toxicants presents an increased fire risk regardless of the occupancy's characteristics. While some codes consider a change of occupancy an opportunity to require compliance with new construction or other special requirements, this approach is often impracticable and inappropriate for historic structures.

Moreover, while change of occupancy criteria can simplify enforcement, these invariably lead to inequities for some historic buildings with unique occupancy conditions as well as eliminate the option for more creative solutions. In response to these shortfalls, Chapter 4 of the Draft Code for Historic Buildings proposes to eliminate change of occupancy criteria when the DCHB is elected, (when elected, the DCHB supercedes the requirements of the prevailing code, whether or not there is a change of occupancy).

2.2.2.3 Election

Some of the code reviews allow the code user to choose between the new construction provision of the general (new) construction code and those written for existing buildings. This approach, apparently based on the recognition that no single approach will work for all existing or historic buildings, allows the code user to elect the approach most appropriate to a unique set of circumstances. The ability to make this election based on a knowledgeable evaluation of a particular building is an approach that has been incorporated into the DCHB.

2.2.3 Summary

The analysis has identified important aspects of scope and applicability (relationship to the prevailing code) that have been integrated into the Draft Code for Historic Buildings:

A) It is desirable for the Draft Code for Historic Buildings to be written to address the broadest possible range of code applications. For jurisdictions that regulate existing buildings retroactively or otherwise have special concerns, the scope of the DCHB can be limited as determined appropriate.

B) In lieu of triggers or thresholds that establish another level of safety, e.g., that of the nonconforming building, in the interest of equity in public safety the Draft Code for Historic Buildings incorporates a scope statement that includes all historic buildings.

C) An alternative to the issue of nonconforming rights and triggers is to make the code elective. The DCHB is thus an option available to the owner for instances where the prevailing code would impose an unduly restrictive requirement.

2.3 Approaches

Approaches are methods for considering a similar set of building attributes or technical details to achieve code objectives. They are the various ways of treating the interaction of attributes within the framework of the administrative components.

Six approaches were identified among the codes reviewed. They are listed and briefly defined in Table 2. The wide disparity of approach among the code reviews is indicated in Table 3.

As with the components, these approaches have been categorized as administrative or technical. The first three approaches---consultation, hazard ranking, and proportionality---are most often used in an administrative context. The other three approaches---adapting prescriptive requirements, indexing, and performance-based evaluation---are more exclusive options for systematically evaluating the technical attributes of a building. Each of these groups will be discussed separately.

Table 2. Code Approaches

APPROACH	DESCRIPTION
Consultation	Negotiation among code official, design professional, and historic preservation official.
Hazard Ranking	Ranking of fire hazard based on occupancy classification.
Proportionality	Variation of requirements based on type or extent of work
Adaption of Prescriptive Requirements	Variations of prescriptive requirements in the prevailing code.
Indexing	Scoring of fire safety features to produce a numerical measure of relative risk
Performance-based evaluation	Engineering evaluation of achievement of specified goals and objectives

Table 3. Comparison of Code Approaches

APPROACHES:
Comparison of select rehabilitation & historic preservation codes

	Consultation	Adaption of Prescriptive Requirements	Hazard Ranking	Proportionality	Indexing	Performance
BOCA National Building Code		✔			✔	
Standard Existing Buildings Code	✔	✔				
Uniform Code for Bldg. Conservation	✔	✔	✔	(✔)		
IBC (draft)		✔			✔	
HUD/NARRP	✔	✔	✔	✔	✔	
NFPA 101		✔				
NFPA 101A					✔	
NFPA 914 (draft)		✔				✔
California	✔	✔				
Massachusetts	✔	✔	✔			
New Jersey	✔	✔	✔	✔		
New York		✔				
North Carolina		✔	✔		✔	
Vermont	✔				✔	
Wisconsin		✔			✔	

2.3.1 Administrative Approaches

The administrative approaches---consultation, hazard ranking, and proportionality—can be used individually or collectively.

2.3.1.1 Consultation. Consultation is a form of negotiation between a code official, the owner, and an historic preservation official to reach a consensus on either a general approach to evaluation or on a specific building attribute. The importance of this approach is so great that it is a required part of the application process in the Code for Historic Buildings.

2.3.1.2 Hazard Ranking. As identified in Section 2.3.2.2, ranking of fire hazard based on occupancy classification is used by some of the code reviews to trigger application (MA, NAARP, NC, & NJ) . These codes appropriately incorporate an assessment of occupancy risk given the potential for an occupancy change to impact risk.

In the following example from the North Carolina State Building Code, Volume IX, Existing Buildings, an existing building may change to an occupancy in the same or lesser hazard category by complying with the provisions for existing buildings. If a change of occupancy is to a higher category, the requirements for new construction in the prevailing building code apply.

TABLE 501 - Hazard Categories and Classifications

RELATIVE HAZARD	OCCUPANCY CLASSIFICATION
1 (Highest Hazard)	Essential Facilities
2	Large Assembly
3	Small Assembly, Educational
4	Residential
5	Business, Mercantile
6	Factory-Industrial, Storage-1
7	Auto Parking Structure, Storage-2
8	Private Garages, Carports, Sheds
9 (Lowest Hazard)	Agricultural Buildings

2.3.1.3 Proportionality. Proportionality refers to a variation of requirements based on type or extent of work. The type of work undertaken triggers the amount of code compliance required or the number of applicable provisions. The NAARP provisions are an excellent example of this approach.

In the code reviews, proportionality establishes a trigger that identifies

when a historic building must conform to a code (see Section 2.3 discussion on relationship to the prevailing code), as well as moderates the degree of compliance required.

2.3.1.4 Summary. Consultation, hazard ranking, and proportionality are three administrative approaches identified in the code reviews. Consultation has been incorporated as an integral part of Chapter 4 of the Draft Code for Historic Buildings.

Hazard ranking and proportionality are used in other codes primarily as triggers to identify when the historic building must conform to the prevailing code. Since the Draft Code for Historic Buildings is elective, no triggers are necessary. However, the proportionality approach may be of assistance in moderating the degree of compliance required.

2.3.2 Technical Approaches

The other three approaches---adapting prescriptive requirements, indexing, and performance-based evaluation--- are more exclusive options for systematically evaluating the technical attributes of a building. Current implementation of these approaches is also shown in Table 3.

Consideration of these approaches is critical since in historic buildings, it is not always practical to apply the provisions of a prevailing code. Physical limitations may require disproportionate effort or expense with little increase in public safety or welfare. The following approaches provide different paths for achieving a code's safety objectives.

2.3.2.1 Adapting Prescriptive Requirements. Adapting prescriptive requirements represents variations of prescriptive requirements that exist in the prevailing code. There are three principal means by which this is achieved: alternatives, equivalency, and modifications.

A. ***Alternatives***. Alternatives are options explicitly stated in the requirements of the prevailing code. These are often incorporated as exceptions to specific provisions. A careful reading of the prevailing code may reveal acceptable alternatives to the standard compliance requirements.

B. ***Equivalency***. Equivalency refers to alternative measures that can be established to provide a level of objective compliance that is equivalent to the prevailing code, such as the installation of non required fire detection and suppression in lieu of interior structural alterations. Although less common, equivalency measures can also use operational features to compensate for

a code deficiency, such as providing occupant training in lieu of modifications that would eliminate an excessive corridor length.

Equivalency is a common code clause that allows other means of compliance if these can be demonstrated and documented through precedents, *ad hoc* equivalency, and component performance.

Precedents are continually established in the regulation of historic buildings. They represent alternative code solutions found acceptable in other situations, but that have not been formally incorporated into a regulatory document.

Ad hoc equivalency can be established by employing subjective logic. One qualitative approach used to evaluate alternative arrangements for equivalent safety from fire is NFPA 550, Fire Safety Concepts Tree. The tree is a logic diagram that represents all possible means of meeting fire safety objectives. An arrangement of equivalent fire protection can be established by increasing fire safety measures on one branch of the tree to offset a lack of required measures on another branch.

A component, performance-based approach can be used when the objectives of specific code requirements are known, as is the case with the fire resistance of assemblies, which have stated performance criteria. Component performance can also be evaluated on an ad hoc basis through the use of equivalency clauses in building codes.

C. ***Modifications***. The legal term *de minimis* is used in reference to conditions that are not in strict compliance with the prevailing code but do not present significant fire threats. Resolution of the noncompliant conditions may be impractical for what would be considered minimal gain.

Tolerances and waivers are among the means of *de minimis* modification of prescriptive requirements. Tolerances allow for flexibility by relaxing the many "magic numbers" in code requirements, e.g., 50 people, 32 inches wide, one hour fire resistance, etc. A 10 to 20 percent dimensional tolerance may be appropriate in applying prescriptive requirements when this tolerance allows historic preservation objectives to be achieved. Tolerance in strict application of installation standards may also be appropriate, e.g., allowing a particularly historically significant room to remain unprotected in a fully sprinklered building.

Waivers may be appropriate where the application of a code requirement in a historic building is not reasonable. For example, a requirement for exit doors to swing outward may not be reasonable in the historic building where physical limitations at the door frame exist or occupancy is limited.

2.3.2.2 Indexing. Indexing is a form of multi attribute decision analysis that produces an accumulated score of positive and negative system attributes that contribute to the overall objective of an area of concern. For example, the wind-chill factor accounts for both wind speed and temperature to describe how cold it feels.

In risk analysis, multi attribute evaluation is usually referred to a risk indexing, which can be further explained as a scoring of fire safety features to produce a numerical measure of relative risk. Fire risk indexing has been used for existing buildings for the past three decades, and has valuable application in the Draft Code for Historic Buildings.

More generically, multi attribute decision analysis, is used to evaluate all functional aspects of building design. The approach included for the technical component of fire safety in the DCHB is intended to serve as a model for multi attribute decision analysis of the other technical components of the DCHB that will be developed in the future.

2.3.2.3 Performance. Performance refers to an engineering evaluation of achievement of specified safety goals and objectives. The upcoming decades promise to be a time of extraordinary development in the area of performance-based evaluation of fire protection, and historic buildings will benefit tremendously from these advances. Performance evaluation can provide an unmatched opportunity to target a fire safety approach to each building's idiosyncratic characteristics. The increasing ability to predict fire hazard and performance accurately and to provide a quantifiable basis for the acceptance of equivalent systems will ease the inherent conflict between traditional codes and historic preservation.

2.3.2.4 Summary. The code reviews identified three approaches to systematically evaluating the technical attributes of a building: adapting prescriptive requirements, indexing, and performance evaluation. All have been adopted in the Draft Code for Historic Buildings as exclusive options for compliance.

Section B-3. Summary

3.1 Limitations

The task of preparing an historic building code that is easy to use, flexible, predictable, universally applicable, and acceptable to the code and historic preservation communities is ambitious. While the dCHB is successful in addressing these goals and providing a framework for further development, its limitations are recognized:

3.1.1 The dCHB has been created at a time of great change. At present there is no single foundation, e.g., the *International Building Code, International Existing Buildings Code,* or other code, on which the dCHB should be constructed.

3.1.2 There is tremendous variety in how the evaluated code documents interact with the general construction codes and single purpose codes that may also be applicable in a given jurisdiction. A full understanding of this interaction requires a level of familiarity with the documents that is not feasible.

3.1.3 The dCHB provides a basic framework that includes the ability to choose the most appropriate approach for compliance. The impact of modifications of the dCHB format and content to address local, regional, or otherwise specific concerns is unknown.

3.1.4 Initial reluctance to adopt the dCHB may be encountered as a result of its incorporation of language, processes, and concepts that are not typical to most codes. The requirement for consultation among all involved parties, and the ability to choose a method of compliance, are anticipated as areas where resistance may be encountered.

3.1.5 At this point, the dCHB incorporates a systemized method for selecting a compliance approach for fire safety only. While it appears that this method will be applicable to the other technical components (accessibility, electrical, energy conservation, mechanical, plumbing, structural/seismic strength, and general building safety), this will only be determined as these chapters are created.

3.1.6 The compliance alternatives identified in the appendix are representative of alternatives found in the evaluated documents. A thorough evaluation of these alternatives, including how these interact with other code provisions, has not occurred.

3.2 Future work

Future work that will allow the adaption and adoption of the dCHB may include the following:

3.2.1 Creating an adoptable code from the dCHB will require a clear determination from the code-writing authority of the relationship of the historic building provisions to other prevailing codes. The dCHB will then require further editing as well as legal review to integrate into the specifics of that regulatory framework.

3.2.2. As currently presented, the dCHB provides explanatory discussions within the body of the draft. Further review will determine if such information should be eliminated, written into the code, incorporated as appendix materials, or included in a companion handbook.

3.2.3 Use of the dCHB will clarify its strengths and weaknesses. Of particular interest are the usability of the document by code officials and designers, any deficiencies created by having the code as a stand alone document, the usability of the performance based approaches on different historic building types, and the benefits and limitations of the various risk index systems.

3.2.4 The other technical components identified in the project—structural/seismic, energy conservation, accessibility, mechanical, electrical and plumbing---require further development.

3.2.5 Available tools relative to the three basic approaches included in the dCHB must be further identified and evaluated.

3.2.6 If determined that specific compliance alternatives included in Appendix B should be included within the body of the code, these, as well as other compliance alternatives with apparent relevance, should be further evaluated.

There are numerous directions that the code for historic buildings might take. Its future will be enhanced by the acceptance by preservation organizations such as the Association of Preservation Technology International, the National Park Service, and the National Conference of State Historic Preservation Officers, and code promulgating entities such as the International Code Council and the National Fire Protection Association.

Moreover, the dCHB may have a role in other historic building code writing activities:

- Anticipating greater code consistency nationwide, the dCHB could be

adopted by the International Code Council, with modifications as determined necessary. It is fortuitous that the completion of the dCHB coincides with the creation of an *International Existing Buildings Code*, if the latter is determined by the ICC as the venue for historic building provisions.

- The National Park Service may consider subsequent efforts based on the dCHB, including further refining to allow the creation of an actual code, or its printing as an illustrated guideline, handbook or document used in concert with training events. Although without the force of law, such a product would provide code users technical substantiation and an organized methodology to meet certain conditions commonly faced by historic buildings.

- The National Fire Protection Association could consider the dCHB in conjunction with upcoming revisions of the NFPA 914, *Code for Fire Protection in Historic Structures,* or other future NFPA documents

- The the dCHB may be used by a jurisdiction for the preparation of its own historic building code. In this instance, the dCHB will require modifications to meet administrative requirements and local needs.

3.3 Acknowledgments

The principal investigators offer their appreciation to Harry Hunderman and other members of the Board of Directors of the Association for Preservation Technology International for their support of the project; to Dr. Mark Gilberg of the National Park Service's National Center for Preservation Technology and Training, which provided funding assistance; to Sharon Park, FAIA, of the National Park Service's Heritage Preservation Services, for arranging administrative support for the project; and to the members of the peer review committee who attended meetings and offered guidance as the project unfolded.

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DRAFT CODE FOR HISTORIC BUILDINGS

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draft

THE DRAFT
HISTORIC BUILDING CODE
PROJECT

A project of the
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(Chapters 6-12 are reserved for future development of other technical components: accessibility, electrical, energy conservation, mechanical, plumbing, structural/seismic strength, and general building safety.)

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CODE for HISTORIC BUILDINGS

Introduction to the Code

The Draft Code for Historic Buildings (dCHB) is a non-traditional code for non-traditional buildings. The following statement from the Section 3101 (b) of the Denver Colorado Building Code, December 1976, provides justification for the stated purpose: "It is hereby declared as a matter of public policy, that the rehabilitation, preservation, and restoration of older buildings located within the city is a public necessity, and is required in the general interest of the people."

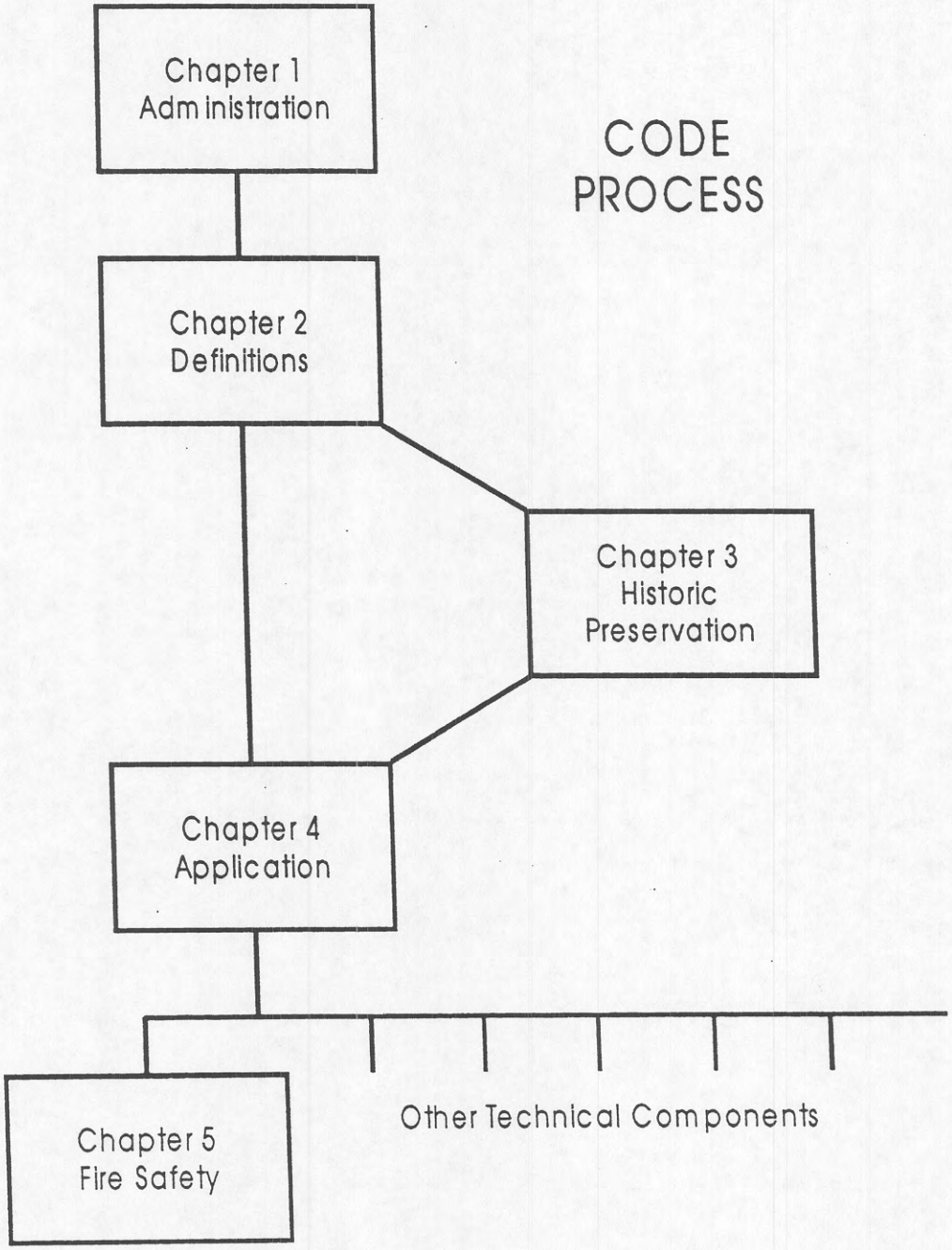
While this code maintains many aspects of traditional codes, it also includes significant innovations that address unique aspects of historic buildings and permit the broadest range of options in assuring public, safety, health, and general welfare. This code is intended to be elective: there are no "triggers" that cause it to be invoked other than the wishes of the owner of a historic building. This contrasts with most existing building codes that use conditions such as change of occupancy or type of work to identify applicability of historic building provisions, this code is intended to be elective. Other distinctive features of are contained in Chapters 3 and 4.

Chapter 3, Historic Preservation, is unique from any other building code. It addresses the stated code purpose of historic preservation by incorporation of the *Secretary of the Interior's Standards for Rehabilitation*. This also serves to inform the code official of specific preservation requirements. The responsibility for this chapter is with the preservation official, not the code official: this inclusion establishes a formal consultation process in which historic preservation objectives are considered from the earliest project stages.

Chapter 4 establishes a model for addressing the technical components of building codes that may impact historic preservation. It requires consultation among the owner, code official, and preservation official to identify means within the structure of this code to meet objectives. It also emphasizes documentation of the process by which these parties come to resolution on conflicting issues. Chapter 4 identifies three distinct compliance options that may be considered for historic buildings; adaption of prescriptive requirements, indexing, and performance-based evaluation. The section addressing adaption of prescriptive requirements is intended to interact with a prevailing code.

Chapter 5 is an example of the principles articulated in Chapter 4 applied to the issues of fire safety in historic buildings. Fire safety is the area that most often conflicts with historic preservation. Chapters on other technical components--- accessibility, electrical, energy conservation, mechanical, plumbing, structural/seismic strength, and general building safety--- could follow a similar format to the extent that there are recognized approaches to compliance.

The following diagram illustrates the code process by which these chapters are used to achieve the desired goals of historic preservation and public safety, health, and general welfare.



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CODE for HISTORIC BUILDINGS

CHAPTER 1
ADMINISTRATION

Introduction to this Chapter

A chapter on administration is fundamental to most codes. In Section 101, Title and Purpose, follow very closely the *International Building Code* in format and wording. The Applicability and Scope statements are unique to the draft Code for Historic Buildings.

Since the dCHB is intended to be elective, there are no "triggers" that cause it to be invoked. Instead, the historic building owner has the option of selecting this code or the general prevailing code.

Section 102 describes other administrative items that are of particular importance to the regulation of historic buildings; relationship to prevailing codes, relocated buildings, historic house museums, and unsafe buildings.

The administrative items---documentation, consultation, modifications, and alternative materials---are covered in Chapter 4. Other administrative items, such as variances, have political implications that are beyond the scope of this draft code and have not been included.

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CODE for HISTORIC BUILDINGS

CHAPTER 1
ADMINISTRATION

101 TITLE, APPLICABILITY, SCOPE, AND PURPOSE

101.1 Title. These provisions shall be known as the Code for Historic Buildings, and shall be cited as such and will be referred to herein as "this code".

101.2 Applicability. If an owner elects to be subject to this code, it shall be applied in its entirety except as otherwise specified in this code.

> **Commentary.** It is intended that this code be elective in lieu of or, where specified, in conjunction with, the prevailing code or codes of the jurisdiction (see paragraph 102.1).

101.3 Scope. The provisions of this code shall apply to historic buildings.

101.4 Purpose.

101.4.1 Safety, health, and general welfare. This code is intended to provide minimum requirements to safeguard the public safety, health, and general welfare. through fire safety, accessibility, electrical, energy conservation, mechanical, plumbing, structural/seismic strength, and general building safety.

101.4.2 Historic preservation. This code is intended to assist the long-term preservation of a property's significance through the preservation of historic materials and features .

> ***Commentary***: This is the stated intent of the Secretary of the Interior's Standards for Rehabilitation. See also Chapter 3.

102 OTHER

102.1 Relationship to prevailing codes. This code is to be used in lieu of or in conjunction with prevailing codes of the jurisdiction.

> ***Commentary***: See Chapter 4

102.2 Relocation of buildings. For the purposes of this code, a relocated

historic building shall be considered an historic building. Foundations, and exterior wall and opening requirements of relocated historic buildings shall comply with the requirements of the prevailing code.

102.3 Unsafe buildings When a historic building is determined to be unsafe as defined in the prevailing code, the requirements of this code are applicable to the work necessary to correct the unsafe conditions. Buildings that have been damaged from fire or other casualty shall be permitted to be restored to the original construction.

> ***Commentary***: A structurally stabilized, unoccupied building is not considered to be a danger to human life.

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CODE for HISTORIC BUILDINGS

CHAPTER 2
DEFINITIONS

Introduction to this Chapter

Most building codes have a separate chapter or section for definitions that are unique to the code or may have multiple meanings in other usage. Some code users find it most convenient to have all definitions in a single place. Other codes will centralize only those definitions that apply to more than one chapter, with a separate section in each chapter for definitions that apply only to that chapter. Because this code is relatively short, there is a single chapter for all unique or special definitions in the code.

Definitions have been taken from the IBC unless otherwise noted as follows: [1] Secretary of the Interior's standards for Rehabilitating Historic Buildings, [2] Wisconsin Historic Building Code, [3] original to this document, [4] NFPA 914.

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CHAPTER 2
DEFINITIONS

201 GENERAL

201.1 Scope. The provisions of this chapter govern the definitions of words and terms used in this code.

201.2 Interchangeability. Words used in the present tense include the future; words used in the masculine gender include the feminine and neuter; the singular number includes the plural, and the plural, the singular.

201.3 Terms not defined. Where terms are not defined through the methods authorized by this chapter, such terms shall have ordinarily accepted meanings such as the context implies.

201.4 Terms defined. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

202 DEFINITIONS

ADDITION. An extension or increase in floor area or height of a building or structure.

ALTERATION. Any construction or renovation to an existing structure other than repair or addition.

APPROVED. Acceptable to the code official.

BUILDING. Any structure used or intended for supporting or sheltering any use or occupancy.

BUILDING EVALUATION REPORT. A document that includes identification of features and materials, listing deficiencies and their causes. [3]

CODE OFFICIAL. The officer or other designated authority charged with the administration and enforcement of this code tor a duly authorized representative.

COMPLIANCE ALTERNATIVE. Means of reasonably meeting the intent of a

specific code provision. [3]

COMPLIANCE OPTION. Method for considering a set of building attributes to achieve code objectives.

CONSULTATION. Discussion among the code official, historic preservation official, and owner or a duly authorized representative thereof, typically a design professional.

EQUIVALENCY. An alternative means of providing safety greater than or equal to that afforded by strict conformance to specification standards [4].

FIRE RISK INDEX. Scoring of hazards and safety features to produce a numerical measure of relative risk [3].

HISTORIC BUILDINGS. Buildings which are listed in or eligible for listing in the National Register of Historic Places, or designated as historic under an appropriate state or local law.

HISTORIC CHARACTER. The essential quality of a historic building or space that provides its significance [1].

HISTORIC (HOUSE) MUSEUM. A building used as a museum where the primary purpose is to the preservation and display of the building, and the building is open to the public.

INDEXING. A form of multi attribute decision analysis that produces an accumulated score of positive and negative system attributes that contribute to one or more objectives of a code [3].

OWNER. Any person, agent, firm, or corporation having a legal or equitable interest in the property.

PERFORMANCE-BASED EVALUATION. Engineering prediction of achievement of specified objectives.

PRESERVATION OFFICIAL. The officer or other designated authority charged with the administration and enforcement of policies for the preservation of historic buildings [3].

Commentary: Representative of a governmental agency with legislated oversight of historic preservation.

PREVAILING CODE. The most current edition of the adopted building or fire code [2] that applies to a technical component [3].

PROPERTY. The interior and exterior of a historic building including its attached, adjacent, or related new construction and its related landscape features, site, and environment [1].

REHABILITATION. The process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values [1].

REPAIR. The reconstruction or renewal of any part of an existing building for the purpose of its maintenance.

STABILIZATION. Undertaking of repairs necessary to curtail deterioration of vacant structures [3].

STRUCTURE. That which is built or constructed.

STRUCTURALLY IMPRACTICAL. Alterations that require significant changes to load-bearing structural members other than conventional light-frame construction.

TECHNICAL COMPONENT. Chapter or section of a code that addresses a distinct societal risk or benefit. [3]

TECHNICALLY INFEASIBLE. Alterations where space limitations or the level of difficulty or complication exceeds that of standard construction.

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CODE for HISTORIC BUILDINGS

CHAPTER 3
HISTORIC PRESERVATION

Introduction to this Chapter

This chapter is unique in style and content from any other building code. It specifically addresses the stated code purpose of historic preservation. It is a list of preservation performance objectives without any formal methodology or criteria for assessing performance.

The purpose of this chapter is to incorporate the *Secretary of the Interior's Standards for Rehabilitation* in this code. The Secretary's Standards are a recognized national consensus guidelines for appropriate historic preservation work. They are included in this code to meet the purpose of historic preservation stated in section 101.4.2.

This chapter also informs the code official of specific preservation requirements that may conflict with other requirements, thereby necessitating an alternative approach. Where conflicts are irresolvable, it is intended that safety issues take precedence.

Not all of the Secretary's Standards are in mandatory language and it is not the intent that this chapter be enforced with police powers. As stated in paragraph 301.3, the responsibility for this chapter is with the preservation official, not the code official.

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CODE for HISTORIC BUILDINGS

CHAPTER 3
HISTORIC PRESERVATION

301 GENERAL

301.1 Scope. The provisions of this chapter pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and the interior, related landscape features and the building's site and environment as well as attached, adjacent, or related new construction.

301.2 Application. The provisions of this chapter are to be applied in a reasonable manner, taking into consideration structural practicality and technical feasibility.

301.3 Responsibility. The preservation official is hereby authorized and directed to enforce the provisions of this chapter. The preservation official shall have the authority to render interpretations of this chapter and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies, and procedures shall be in conformance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code

Commentary: The Code Official does not have responsibility for this chapter.

302 STANDARDS FOR REHABILITATION

Commentary: See *The Secretary of the Interior's Standards for Rehabilitation and Illustrated Guidelines for Rehabilitating Historic Buildings*, U.S. Department of the Interior, National Park Service, Heritage Preservation Services, Washington, DC, 1991 (reprinted 1997).

302.1 Use. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

302.2 Historic character. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

302.3 Historic period. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical

development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

302.4 Historic evolution. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

302.5 Characteristic features. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

302.6 Deterioration. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualitites and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

302.7 Treatments. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

302.8 Archeological resources. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

302.9 New construction. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

302.10 Reversibility. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

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CODE for HISTORIC BUILDINGS

CHAPTER 4
APPLICATION

Introduction to this Chapter

It is the intent of this chapter to establish a model for addressing provisions of technical components of prevailing codes that may impact historic preservation — fire safety, accessibility, electrical, energy conservation, mechanical, plumbing, structural/seismic strength, and general building safety.

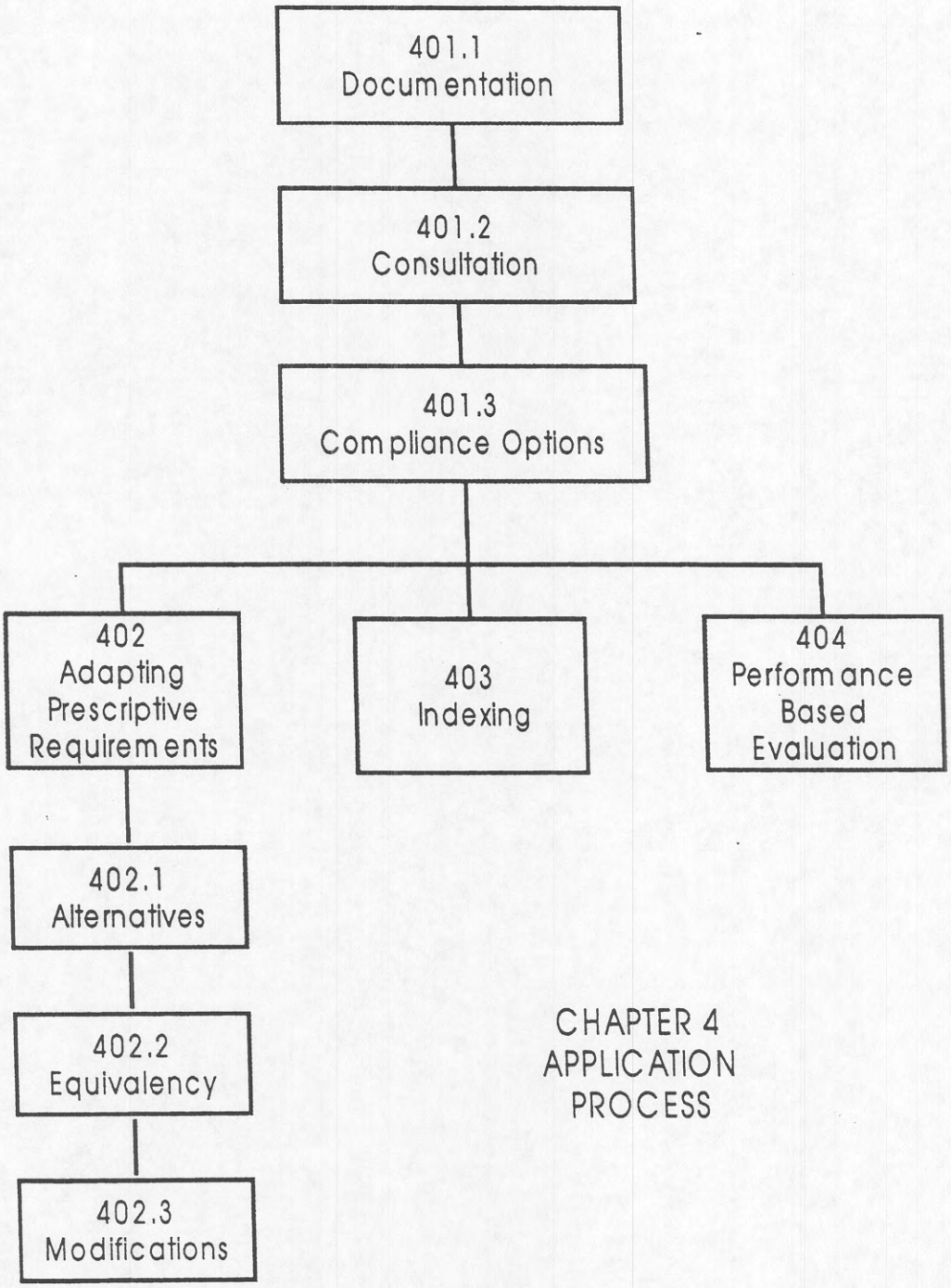
The chapter emphasizes consultation among the owner, code official, and preservation official to identify and resolve problems using the structure of this code. Consultation is key to selection of appropriate means to accomplish preservation and other objectives.

The chapter also emphasizes documentation of the process by which the interested parties come to agreement in the format of a Building Evaluation Report. This report may also be used to begin the consultation process, to determine the acceptable application option, or to document equivalencies or modifications.

This chapter identifies three compliance options that may be considered; adapting prescriptive requirements, indexing, and predicted performance evaluation. It is the intent that one of these options be selected exclusively, as appropriate, for each technical component of the code; fire safety, accessibility, electrical, energy conservation, mechanical, plumbing, structural/seismic strength, and general building safety.

Section 402, Adapting Prescriptive Requirements, is intended to interact with a prevailing code. Specific requirements of a prevailing code that conflict with historic preservation objectives can be addressed through alternatives, equivalency, or modification. In some cases an indexing approach as identified in Section 403 may use a prevailing code as a baseline for establishing adequate levels of building performance.

The following diagram illustrates the process for applying this code to the technical components.



CHAPTER 4
APPLICATION
PROCESS

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CODE for HISTORIC BUILDINGS

CHAPTER 4
APPLICATION

401 GENERAL

401.1 Documentation

401.1.1 Public record. All reports and consultation agreements shall be filed as part of the permanent public record.

401.1.2 Building evaluation report. When required by the code official or preservation official, building owners electing to use this code shall submit a building evaluation report to document the investigation and evaluation of the historic building.

Commentary: The Building Evaluation Report may be submitted at the earliest stages of consultation, or be the result of the consultation process. See 401.2.

401.1.3 Scope of report. The scope of the report shall be determined by the building official and preservation official. The report shall document the effects of any proposed work on the space under consideration or where necessary, the entire building. The report shall utilize the following sources of information as appropriate and available: drawings and previous reports on the building, historic designation reports, field surveys, nondestructive and destructive tests, and laboratory analysis.

Commentary: The scope of the Building Evaluation report may include:

1) identification of historic features and significance including status on recognized listings or registers.
2) identification of all nonconformities with the requirements of the prevailing code.
3) statement of prevailing code requirements from which a variation is sought
4) statement describing how strict compliance would be structurally impractical, technically infeasible, or would threaten or destroy the historic significance.
5) statement of feasible alternative(s) that will adequately protect the health, safety and welfare of the intended occupants and of the public generally
6) written statement by a qualified professional that features of the building that cannot be brought into strict compliance with other requirements are essential to maintaining the historical value and character of the building, stating the basis and reasons for this finding.
7) structural analysis

8) hazard analysis

401.2 Consultation. Discussion among the code official, preservation official, and owner or a duly authorized representative thereof, shall determine the appropriate approach for meeting the intent of this code.

401.2.1 Objectives. Consultation shall include explicit consideration of objectives of each technical component of this code in regard to public safety, health, and general welfare and in regard to historic preservation. (See Section 101.4, Purpose.)

401.3 Compliance Options. For each technical component, the purpose of this code shall be met through the application of one of the following options: adapting prescriptive requirements, indexing, or performance-based evaluation.

Commentary: It is the intent of this code that explicit objectives of Section 401.2.1 be met subjectively by adapting prescriptive requirements, implicitly through indexing, or objectively by performance-based evaluation.

Commentary: The building evaluation report of Section 401.1 will identify provisions of a prevailing code in conflict with historic preservation. These conflicts can then be addressed specifically by adapting them or using other options to achieve code objectives.

Commentary: The identified technical components of this code are fire safety, accessibility, electrical, energy conservation, mechanical, plumbing, structural/seismic strength, and general building safety. For each technical component, the options are exclusive. Only one option is permitted for a single technical component, but a different component may comply by using a different option.

402 ADAPTING PRESCRIPTIVE REQUIREMENTS

Commentary: It is intended that this Section interact with a prevailing code.

402.1 General. Prescriptive requirements of a prevailing code shall be applied with reasonableness and with the intent of achieving the stated purposes of Section 101.3 of this code. Alternatives, equivalencies, and modifications shall be permitted in the application of prescriptive requirements.

Commentary: The three approaches to compliance with prescriptive requirements, alternatives, equivalencies, and modifications, are in order of their legal certitude and should be considered in this order. However, early consultation can establish an acceptable level of compliance for a particular case. See paragraph 401.2.

Commentary: Any combination of alternatives, equivalencies, and modifications, may be used in conjunction with the prescriptive requirements of a prevailing code.

402.2 Alternatives. Prescribed alternative methods of compliance in the

prevailing code shall be identified.

Commentary: Alternatives refers to options that are explicitly stated in the requirements of the prevailing code. These are often incorporated in exceptions to specific provisions. A careful reading of the prevailing code may reveal more acceptable alternatives to the standard or typical compliance requirements.

402.3 Equivalency. Other systems, methods, or devices that are equivalent or superior to those prescribed by this document shall be permitted provided adequate documentation is submitted to demonstrate equivalency.

Commentary: Equivalency refers to alternative means of complying with the intent of the code that are not specifically delineated in the code. Evidence must be established that the alternative provides a level of compliance equivalent to that specified in the prevailing code.

402.4 Modification of Requirements. The requirements of the prevailing code shall be permitted to be modified if their application clearly would be structurally impractical or technically infeasible in the judgment of the code official, but only where it is also clearly evident that a reasonable degree of safety is provided.

Commentary: A modification is a waiver of a prescriptive requirement that in a particular application to a specific historic building, clearly does not significantly affect the level of safety or public welfare.

402.5 Totally Preserved Buildings. Special consideration shall be give to totally preserved buildings, including historic house museums, that maintain a limit on hazards, a limit on occupancy, staff supervision of occupied areas, or other operational features that minimize the need to adhere to prescriptive requirements.

Commentary: Allowances should be made for totally preserved buildings that restrict the use of electrical appliances, open flames, smoking and other hazards, and that restrict the number of occupants as well as having a trained employee or docent accompanying all visitors.

403 INDEXING

403.1 General. An approved indexing method shall be permitted to be used to establish a reasonable level of conformance to the prevailing code.

Commentary: Indexing is a form of multi attribute decision analysis that produces an accumulated score of positive and negative system attributes that contribute to the overall objective of an area of concern. In some cases, an index may interact with a prevailing code.

404 PERFORMANCE-BASED EVALUATION

404.1 General. An approved performance-based evaluation shall be permitted to be used to establish a reasonable level of conformance to objectives or intent of the prevailing code.

Commentary: Many aspects of building functionality are evaluated on a performance basis, including safety, security, and other public welfare concerns. A performance-based approach should be approved for the application intended.

DRAFT
CODE for HISTORIC BUILDINGS

CHAPTER 5
FIRE SAFETY

Introduction to this Chapter

This chapter is an example application of the principles of Chapter 4 for issues of fire safety in historic buildings. Fire safety is the technical code component that most often creates conflicts with historic preservation objectives.

Fire safety is also the preponderant technical component of most codes and particularly those applicable to existing buildings. Hence, it is the technical component with the most extensive experiential data base of compliance alternatives and other options.

This chapter identifies and characterizes the numerous approaches to fire safety in historic buildings that have been previously developed. Based on the documentation specified in Chapter 4 that identifies the condition of the building and its deficiencies in compliance with the prevailing code, the most appropriate option can be selected for a specific building.

It is expected that an annex to this chapter will delineate more specific compliance alternatives that have been considered on the basis of *de minimis* or reasonable tolerances.

Chapters on other technical components would follow a similar pattern to the extent that there are recognized approaches to compliance.

DRAFT
CODE for HISTORIC BUILDINGS

CHAPTER 5
FIRE SAFETY
501 GENERAL

501.1 Deemed Equivalencies. The following shall be deemed equivalent to compliance with this chapter.

501.1.1 NFPA 914., *Code for Fire Protection in Historic Structures*, National Fire Protection Association, Quincy MA, 2001.

501.2 Fire Safety Objectives. A historic building shall meet the following fire safety objectives:

501.2.1 Life Safety. Fire safety shall be designed, implemented, and maintained to protect building occupants not intimate with initial fire development for the time needed to evacuate, relocate, or defend in place.

501.2.2 Heritage protection. Fire safety shall be designed, implemented, and maintained to limit damage to historic elements of the building to a recoverable level.

501.3 Compliance Options. The objectives of this chapter shall be met through the application of one of the following options: adapting prescriptive requirements, fire risk indexing, or performance-based evaluation.

Commentary: It is the intent of this code that the options of Sections 502, 503, and 504 are exclusive of each other.

502 ADAPTING PRESCRIPTIVE REQUIREMENTS

502.1 General. Prescriptive requirements of a prevailing code shall be applied with reasonableness and with the intent of achieving the stated objectives of this chapter. Alternatives, equivalencies, and modifications shall be permitted in the application of prescriptive requirements.

Commentary: See Section 402.

502.2 Means of Egress - Where the means of egress in a historic building do not comply with the prevailing code, one or more of the following documents shall be consulted:

"Egress Guideline for Residential Rehabilitation", HUD Rehabilitation Guideline 5, 1981.

Commentary: This document makes extensive reference to code provisions that are 20 or more years old. However, the code objectives, and corresponding concepts for meeting them, remain appropriate for evaluating means of egress.

"Fire Safety Retrofitting in Historic Buildings", Advisory Council on Historic Preservation and General Services Administration, Washington, DC, 1989.

"Fire Prevention and Building Code Compliance for Historic Buildings: A Field Guide", Vermont Department of Labor and Industry, Montpelier, Vermont, 1997.

502.3 Fire Ratings of Archaic Materials. Where the fire ratings of archaic materials in a historic building do not comply with the prevailing code, the following document shall be consulted

"Guideline on Fire Ratings of Archaic Materials and Assemblies", U.S. Department of housing and Urban Development, Washington, DC, 1980.

Commentary: This document has been revised and updated and will be published as an appendix in NFPA 914, *Code for Fire Protection in Historic Structures*, National Fire Protection Association, Quincy MA, 2001

503 FIRE RISK INDEXING

503.1 Approved methods. The following shall be considered as approved fire risk indexing methods and shall be permitted to be used to establish conformance with a reasonable level of safety.

Commentary: Fire risk indexing is an multi attribute decision analysis approach to quantitatively balancing variables of risk and hazard and safety to achieve an acceptable level. The documents listed here have an established record of meeting code objectives through an indexing approach.

503.1.1 IBC Appendix Chapter 34-1. Compliance Alternatives, IBC Appendix Chapter 34-1, shall be an acceptable risk index.

503.1.2 NFPA 101A, Chapters 3-7 of NFPA 101A, *Guide on Alternative Approaches to Life Safety*, 1995, shall be shall be an acceptable risk index.

503.1.3 Wisconsin Historic Building Code. Subchapter IV, Building Evaluation Method, Chapter ILHR 70, Wisconsin Historic Building Code, shall be an acceptable risk index.

504 PERFORMANCE-BASED EVALUATION

504.1 Approved methods. The following shall be considered as approved methods of performance-based fire safety evaluation and shall be permitted to be used to establish conformance with a reasonable level of safety.

Commentary: Performance-based fire safety evaluation is a relatively recent development in the field of fire protection engineering in the U.S. A number of recent documents that have been developed in a consensus or proprietary system are listed.

504.1.1 ICC Building Performance Code (in preparation)

504.1.2 SFPE Guideline. *The SFPE Engineering Guide to Performance-Based Fire Protection Analysis and Design of Buildings,* National Fire Protection Association, Quincy, MA, 1999.

504.1.3 NFPA 914. Chapter 5, "Performance-Based Option", NFPA 914, *Code for Fire Protection in Historic Structures*, National Fire Protection Association, Quincy MA, 2001.

504.1.4 NFPA 101. Chapter 5, "Performance-Based Option", NFPA 101, *Life Safety Code,* National Fire Protection Association, Quincy MA, 2000.

Draft Code for
Historic Buildings

CODE REVIEWS

Section D. Code Reviews

In the absence of a national model code for historic buildings, a wide variety of existing building codes, historic building codes, rehabilitation codes and other model codes have been proposed, written, adopted, or used to evaluate safety in these structures. Each of the three model building codes as well as the NFPA Life Safety Code and the proposed ICC International Building Code contain sections or supplemental documents that specifically address existing buildings. Not all of them make a distinction for historic buildings. A number of individual States have recognized the need for more specific criteria and have tried to address the issue by promulgating their own codes for historic buildings. The federal government, through the US Department of Housing and Urban Development also has been active, in the past and currently, in establishing provisions to encourage safe rehabilitation of historic buildings.

We examined in detail 16 different State and model codes that are proposed or presently used to regulate safety in historic buildings. Our original intent was to choose the best provisions from this set to synthesize a single model code that would be uniformly applicable throughout the country. The following codes were analyzed:

California State Historical Building Code
Georgia, Official Code, Title 8, Chapter 2, Article 3
International Building Code (Draft) - Chapter 34
Massachusetts State Building Code - Chapter 34
National Building Code (BOCA) - Chapter 34
NFPA 101 Life Safety Code
NFPA 101A Alternative Approaches to Life Safety
NFPA 914 Fire Protection in Historic Structures
Nationally Applicable Recommended Rehabilitation Provisions (HUD)
New Jersey Uniform Construction Code - Rehabilitation Subcode
New York State Uniform Fire Prevention and Building Code, Subchapter E
North Carolina State Building Code - Existing Buildings
Standard Existing Building Code (SBCC)
Uniform Code for Building Conservation (ICBO)
Vermont Fire Prevention and Building Code
Wisconsin Historic Building Code

The reviews of these codes are an essential element of the research reported on in this document. In general our working notes, as recorded herein, include for each code, identification, summary, organization, application to historic buildings, administrative provisions, and examples of specific compliance alternatives.

CALIFORNIA HISTORICAL BUILDING CODE

Part 8, Title 24, California Code of Regulations
(Printed in Part 8 and as Chapter 34, Division II of Part 2)
California Building Standards Commission
Sacramento, CA

Summary

The California State Historical Building Code (SHBC),) was first published in 1979 following 5 years of preparation necessary to translate the code from a philosophy to actual regulations. The SHBC contains alternative building standards and building regulations which must be applied for repairs, alterations and additions on qualified historical buildings by building departments and state agencies.

The SHBC is a stand-alone document, although references throughout the code are made to conditions which must comply with the "regular," California Building Code.

The intent of the code is to "...save California's architectural heritage by recognizing the unique construction problems inherent in historical buildings and by providing a code to deal with these problems."[1] Section 101 of the code further states that "...Such regulations are intended to provide alternative solutions for the preservation of Qualified Historic Buildings or Properties, to provide access for persons with disabilities, to provide a cost-effective approach to preservation, and to provide for the reasonable safety of the occupants or users. These regulations require enforcing agencies to accept reasonably equivalent alternatives ..."

Among the unique qualities of the SHBC are the breadth of historic preservation terms used and defined in the code (e.g., character defining feature, historic fabric or materials, integrity, period of significance); the number of compliance alternatives; and the inclusion of performance based language throughout the document. Within the code are procedures for review and appeals to be held by the State Historical Building Safety Board (SHBSB). Past rulings of the SHBSB are scheduled for publication as an appendix to the SHBC.

Organization

The 43 page SHBC is organized as follows:

Chapter 1	Administration
Chapter 2	Definitions
Chapter 3	Use and Occupancy
Chapter 4	Fire Protection
Chapter 5	Means of Stress

[1]California State Historic Building Code, Preface, July 21, 1998.

Chapter 6	Alternative Accessibility Provisions
Chapter 7	Alternative Structural Regulations
Chapter 8	Archaic Materials and Methods of Construction
Chapter 9	Mechanical, Plumbing and Electrical Requirements
Chapter 10	Historic Districts, Sites and Open Spaces

Historic Buildings

The SHBC defines a qualified historic building or structure as:

> any structure or collection of structures, and their associated sites deemed of importance to the history, architecture, or culture of an area by an appropriate local or state governmental jurisdiction. This shall include structures on existing or future national, state or local historical registers or official inventories, such as the National Register of Historic Places, State Historical Landmarks, State Points of historical interest, and city or county registers or inventories of historical or architectural significant sites, places, historic districts, or landmarks.

Additionally, Chapter 2 provides specific definitions for a range of preservation terms, including: adaptive reuse, alteration, architectural significance, character defining feature, historic fabric or materials, historic significance, integrity, etc.

Like the other rehabilitation codes, the SHBC provides specific definitions, language, and compliance alternatives or exemptions to address the special circumstances presented by historic buildings. These are summarized below: those noted with only a heading indicate that this particular item is not addressed by the SHBC.

ACCESSIBILITY

Alternative provisions provided (Chapter 6).

ADDITIONS

APPEALS/VARIANCES

State Historical Buildings Safety Board established for interpretation of code and to hear appeals (104.1).

ARCHAIC MATERIALS AND METHODS OF CONSTRUCTION

Alternative regulations provided as guidance for acceptance of any reasonable equivalent alternatives. General engineering guidance for the use of historic methods and materials of construction (solid masonry, solid-backed stone masonry, independent wythe stone masonry, adobe, wood, concrete, steel and iron, hollow clay tile, terra cotta) (Chapter 8).

CHANGE OF OCCUPANCY

May be changed without conformance to new construction requirements. Special requirements

exist for residential and non-residential occupancies (10, Chapter 3)

DOCUMENTATION

HISTORIC SITES
Provides alternative regulations to govern site related items: open space, access way, landscaped areas and features, parking spaces, etc. (Chapter 10).

MECHANICAL, PLUMBING AND ELECTRICAL
Alternative regulations provided as guidance for acceptance of any reasonable equivalent alternatives (Chapter 9).

MUSEUMS

RELOCATION OF BUILDINGS
Siting of relocated buildings, and new non-historical construction must comply with the regular code. Reconstruction and restoration may comply with SHBC (102.1.2).

REPAIRS/REPLACEMENT
May be made with original or existing historic materials and methods (105.1).

STRUCTURAL
Alternative regulations provided as guidance for acceptance of any reasonable equivalent alternatives (Chapter 7).

UNSAFE BUILDINGS
Necessary work limited to the correction of unsafe conditions. Guidance provided for determining when a structural survey is required (102.1.5).

COMPLIANCE ALTERNATIVES
Enforcing agencies required to accept reasonably equivalent alternatives. Means of egress alternatives specifically cited. (502.1).

Building Floor Area
In 1 story buildings without a suppression system, 15,000 sf floor area permitted. Buildings of any height may have unlimited floor area and no fire separation walls if have complete suppressions system. No height limitations unless additions constructed (302.5).

Building Height
Maximum height and number of stories not limited by construction type, provided height or number of stories does not exceed designated historical design (302.5).

Finishes

- Existing nonconforming materials on interior wall and finishes may be surfaced with fire retardant to increase rating of natural finish to within reasonable proximity of required rating (403).
- If building has suppression system, historic finishes need not receive fire retardant (403).

Fire Alarm System

Every building must be provided with fire alarm system as required by regular code. Or other approved alternative (409).

Fire Extinguishing System

- Every building which cannot be made to conform to construction requirements in regular code, and which constitutes a distinct fire hazard shall be considered in compliance if it has automatic fire suppression system, or approved alternative life-safety system (410).
- Fire suppression system not to be used as substitute or alternative to required number of exits (410.2).

Fire Resistive Requirements, Interior

- When building has complete suppression system, separations of more than 1-hour may be reduced to 1 hour if openings have 3/4 hour assemblies with automatic closing (302.3).
- 1 hour resistance not required if building has suppression system, approved life safety evaluation, or alternative measures (402.2).
- Wood lath and plaster walls considered to have ½ hour rating, or 1 hour if filled with mineral or glass fiber (404).

Fire Resistive Requirements, Exterior

Exterior fire resistance not required when exterior suppression system provided (402.1).

Glazing

- 1 hour glazing not required in fire rated system if smoke seals and suppression system (402.3).
- Historic glazing acceptable where alternative protective measures provided (additional glazing panels, protective film or guards, etc.) (812).

Light and Ventilation

- Existing provisions may remain (302.7).
- In residential occupancies, min. 6% or 6 sf windows to be ½ openable (303.6).

Doors

- Existing widths can be retained (502.1).

Escape Windows and Doors

Requirements for escape windows and doors provided (503).

Fire Escapes/Exit ladders

- In residential occupancies, for 2nd and 3rd floors, exit ladder devices of 25' in length permitted for 9 or less persons (303.4).
- Existing fire escapes/ladders acceptable as one of required means of egress (502.1);
- New fire escapes/ladders acceptable with specific requirements (502.2);

Roof Coverings

Existing or same material acceptable. Wood roofs permitted if treated with fire-retardant materials to have Class C finish (408).

Room Dimensions

In residential occupancies, 50 sf acceptable for sleeping purposes if average ceiling height is 7'. Other habitable areas must be functional (303.5).

Stairways

- Existing dimensions can be retained (502.1).
- Enclosure not required if building has suppression system (407).

Vertical Shafts

Enclosure not required if 2" solid blocking, or if has suppression system (407).

GEORGIA OFFICIAL CODE ANNOTATED

Uniform Act for the Application of Building and Fire Related Codes to Existing Buildings
State Historic Preservation Office
270 Washington Street, SW, Suite 701
Atlanta, GA 30334

Background

In January 1983 the Georgia Trust for Historic Preservation, in conjunction with the State Historic Preservation Section of the Department of Natural Resources, convened the Building and Fire Codes Task Force. The Task Force also included representatives from the Georgia State Fire Marshall's Office, the Georgia Department of Community Affairs, Legal Counsel of the State Legislature, the Institute of Government of the University of Georgia, the Georgia Chapter of the American Institute of Architects, Georgia power Company, local building and fire code officials, and developers.

After numerous drafts, the Task Force proposed a bill to amend sections of the Georgia State Law concerning the building and fire code enforcement in existing buidilngs, House Bill 839. The bill passed the legislature unanimously and was signed by the Governor on 1 May 1984.

Organization

The enabling act has 8 Sections. The first Section amends Title 8, creating a new Article 3, known and cited at "The Uniform Act for the Application of Building and Fire Related Codes to Existing Buildings". Sections 2 through 6 make amendments to Title 28 relating to the regulation of fire and other hazards. The final two sections deal with the effective date and conflicting laws.

Specific Points

In Section 1 of House Bill 839, Chapter 2 of Title 8 of the Official Code of Georgia Annotated, relating to standards and requirements for construction and alteration of buildings and other structures, was amended by adding a new Article "The Uniform Act for the Application of Building and Fire Related Codes to Existing Buildings". There are 22 numbered paragraphs in this article, none of which are titled, making it very difficult to identify the logic of the legislation, much less apply it.

Paragraph 8-2-201 of the Act identifies two stated purposes:

1) To encourage the sensitive rehabilitation, restoration, stabilization, or preservation of existing buildings throughout this state and to encourage the preservation of buildings and structures deemed to be historic in total or in part; however, such efforts should upgrade safety features to provide a practical level of safety to the public.

2) To provide guidance regarding acceptable alternative soulutions and to stimulate enforcement authorities to utilize alternative compliance concepts wherever practical to permit the continued use of existing buildings and structures without overly restrictive financial burdens on owners and occupants.

Code Paragraphs 8-2-206 through 8-2-211 identify what are considered generally acceptable compliance alternatives. These are listed in the following categories of compliance issues:

1. Inadequate number of exits
2. Excessive trave distances
3. Unenclosed or improperly enclosed exit stairways or vertical shafts
4. Inadequate or total lack of fire partitions or fire separation walls
5. Lack of required protection of openings in exterior walls

Paragraph 8-2-220 states that "the Safety Fire Commissioner shall promulgate reasonable rules and regulations to implement and carry out the requirements of this article."

Sections 2 through 6 of the legislation seem to overlap and conflict with parts of Section 1 but deal more with the use of buildings.

Section 3 defines historic and landmark buildings as follows:

Historic building or structure means any individual building or any building that contributes to the historic character of an historic district, so designated by the State Historic Preservation Officer pursuant to legally adopted rules and regulations.

Landmark museum building means an historic building or structure used as an exhibit of the building or structure itself, and which exhibits a high degree of architectural integrity and a state or national level of significance, and which is open to the public. Landmark museum buildings must be so designated by the State Historic Preservation Officer pursuant to legally adopted rules and regulations.

Section 6 identifies twelve specific provisions and requirements that apply to landmark museum buildings.

INTERNATIONAL BUILDING CODE

International Building Code 2000, Final Draft July 1998
and
1999 Proposed Changes to the Final Draft
International Code Council
5360 Workman Mill Road
Whittier, CA 90601-2298
1-800-423-6587
tubbs@icbo.org

Summary

The Final Draft of the proposed International Building Code (IBC) contains a definition of Historic Buildings and a relief clause that exempts safe historic buildings from the Code. There is an appendix on accessibility in historic buildings.

Background

The International Code Council (ICC) was established in 1994 as a nonprofit organization dedicated to developing a single set of comprehensive and coordinated national codes. The ICC founders - the three model code groups, BOCA, ICBO, and SBCCI, created the ICC in response to technical disparities among the three sets of model codes now in use in the U.S. While it is now difficult for building industry professionals to move into different regions within the U.S., the ICC intends to offer a single, complete set of construction codes without regional variations.

Initial ICC efforts have resulted in publication of the International Plumbing Code, the International Private Sewage Disposal Code, and the International Mechanical Code. With the impending publication of the International Fire Code and the International Building Code, users will have a coordinated family of model construction codes. The ICC's goal is to complete this series of codes with the publication of the International Building Code in the year 2000.

Any interested individual or group may submit a code change proposal to the International Codes for consideration by the ICC code development committees. Only eligible ICC voting members may ratify committee decisions. The results of votes are published in annual reports of the ICC code development hearings. Final action on all challenged code change proposals is based on voting at the annual conferences of BOCA, ICBO and SBCCI.

Organization

The IBC Final Draft contains 35 chapters and 12 Appendices. There are 2 chapters (2 and 34) and 2 appendices (34-1 and 34-2) that are relevant to historic buildings.

Chapter 2 Definitions

Section 202 Definitions

> **Historic Buildings**. Buildings which are listed or eligible for listing in the National Register of Historic Places, or designated as historic under an appropriate state or local law. See Section 3405.

Chapter 34 Existing Structures

Section 3401 General
Section 3402 Additions, Alterations, or Repairs
Section 3403 Glass Replacement
Section 3404 Change of Occupancy
Section 3405 Historic Buildings
Section 3406 Moved Structures
Section 3407 Accessibility for People with Physical Disabilities

Appendix 34-1 Compliance Alternatives
Appendix 34-2 Accessibility for Qualified Historic Buildings and Facilities

Section 3405 Historic Buildings

> 3405.1 Historic Buildings. The provisions of this code relating to the construction, repair, alteration, addition, restoration, and movement of historic structures, and change of occupancy, shall not be mandatory for historic buildings where such buildings are judged by the building official to be safe and in the interest of public health, safety, and welfare.

Proposal G168 in the 1999 Proposed Changes to the Final Draft suggests changing the end of paragraph 3405.1 as follows: ~~be safe and in the interest of public health, safety, and welfare~~ not constitute a distinct life safety hazard.

The reason given is to establish consistency with the proposed International Fire Code.

Proposal G170 in the 1999 Proposed Changes to the Final Draft suggests a new Section 3408 on Dust and Debris.

Appendix 34-1 Compliance Alternatives

This Appendix is a direct extraction of Secton 3408.0 Compliance Alternatives from the BOCA National Building Codes/1996.

Appendix 34-2 Accessibility for Qualified Historic Buildings and Facilities

This Appendix refers largely to Section 106 of the National Historic Preservation Act.

There is no clarification of the word "qualified" in the Appendix and the terminology appears to be inconsistent with the definition in Chapter 2.

MASSACHUSETTS STATE BUILDING CODE

Massachusetts State Building Code, Sixth Edition
Chapter 34: Repair, Alteration, Addition, and Change of Use of Existing Buildings
Board of Building Regulations and Standards (BBRS)
McCormack State Office Building
One Ashburton Place - Room 1301
Boston, MA 02108
617-487-4472

Summary

Although the Massachusetts State Building Code (SBC) is based on the provisions of the 1993 BOCA *National Building Code,* significant changes have been made throughout, including the provisions for historic buildings. Within the SBC, historic buildings are considered as a subset of existing buildings, which are contained in Chapter 34: Repair, Alteration, Addition, and Change of Use of Existing Buildings.

The historic building provisions of the Massachusetts State Building Code build upon the landmark approach embodied in the original Article 22, adopted in 1979. Article 22, renamed Article 32 and eventually Article 34, was the result of work by various Massachusetts committees working in concert with model code and other national organizations. Article 34 has a tradition of incorporating innovative approaches to building rehabilitation, including the elimination of the 25/50% rule, articulation of various categories of existing buildings (two of which are historic), the use of hazard index ratings to determine the amount of compliance required for a rehabilitation project, and the encouragement of compliance alternatives. Article 34 also addresses energy conservation and seismic regulations (pending?). Separate, but related, regulations and laws in Massachusetts address fire prevention, and a range of environmental issues.

Organization

The chapter addressing existing buildings 17 pages in length. Within this, historic buildings is organized as follows: (note that some references back to the existing building sections are required, for example to Section 3403, 3404, and 3405 related to Hazard Indexes, and 3406 Compliance Alternatives.

3409.0	*Historic Buildings*
3409.1	Scope
3409.1.1	Key Definitions
3409.2	*Totally preserved buildings*

3409.2.1	State Building Code exceptions
3409.2.2	Mandatory safety requirements
3409.2.2.1	Fire protection equipment
3409.2.2.2	Exit signs and emergency lights
3409.2.2.3	Maximum occupancy
3409.2.2.4	Limited egress
3409.2.2.5	Inspections
3409.2.2.6	Accessibility for Persons with Disabilities
3409.2.2.7	Energy Conservation

3409.3	*Partially preserved buildings*
3409.3.1	State Building Code provisions
3409.3.2	State Building Code exceptions
3409.3.3	Applicability
3409.3.4	Continuation of use and occupancy
3409.3.5	Inspection certification and fees
3409.3.6	Fire Damage
3409.3.7	Change in occupancy
3409.3.8	New systems
3409.3.9	Lesser and equal hazard
3409.3.10	Greater Hazard
3409.3.11	Energy conservation
3409.3.12	Accessibility for Persons with Disabilities

In addition, *Appendix F, Reference Data for Repair, Alteration, Addition and Change of Use of Existing Buildings* is an extensive, 19 page document provided substantive information relative to implementation of Chapter 34.

Part 1	Guidelines Applications
Part 2	Suggested Compliance Alternatives
Part 3	Detailed Classification of Occupancy by Hazard Index Number and Use Group
Part 4	Archaic Construction Systems

Historic Buildings

In Section 3401.1, historic buildings are defined as follows:

a) Any building or structure individually listed on the National Register of Historic Places or

b) any building or structure evaluated by the Massachusetts Historical Commissions (MHC) to be a contributing building within a National Register or State Register District

c) Any building or structure which has been certified by the MHC to meet eligibility requirements for individual listing on the National Register for Historic Places.

Historic buildings are further defined as *Totally Preserved* or *Partially Preserved buildings*:

Partially Preserved Buildings:

a) Any building or structure individually listed on the National Register of Historic Places or

b) Any building or structure certified as a historic building by the Massachusetts Historical Commission and not designated a *totally preserved building* in *Appendix H.*

Totally Preserved Buildings:

A totally preserved building is an historic building or structure. The principal use of such a building or structure must be as an exhibit of the building or the structure itself which is open to the public not less than 12 days per year, although additional uses, originally and/or ancillary to the principal use shall be permitted within the same building up to maximum of 40% of the gross floor area. *Totally preserved buildings shall be those listed in Appendix H.* All entries into the *totally preserved building* list shall be certified by the Massachusetts Historical Commission. The Board of Building Regulations and Standards shall ratify all buildings or structures certified by the Massachusetts Historical Commission to qualify for totally preserved listing (See Appendix H).

Section 3409 Historic Buildings preempts other regulations of the SBC, although owners are not required to apply for this provision.

Totally preserved buildings are subject to the following exceptions in 3409.2.1

1) Repairs, maintenance and restoration need not comply with the general provisions of the SBC, if mandatory safety requirements are met:

3409.2.2	
3409.2.2.1	Fire Protection equipment (manual extinguishers, alarm systems and supervision, pull stations)
3409.2.2.2	Exit signs
3409.2.2.3	Occupancy limited by actual floor load capacity
3409.2.2.4	Limited egress (Occupancy load computed by actual egress available)
3409.2.2.5	Inspections: annual for building and fire official; Every 5 years for design professional (load capacity)
3409.2.2.6	Accessibility: refers to requirements of Architectural Access Board Regulations
3409.2.2.7	Energy Conservation - exempt from requirements

2) In case of fire or other casualty, the building can be rebuilt using techniques and materials as necessary to restore it to the original conditions and use group.

3) If, as a result of proposed work, the historic building or structure would become eligible for certification as a *totally preserved building*, work may proceed under the provisions available for *totally preserved buildings.*

Partially preserved buildings are subject to the following in 3409.3:

1)	3409.3.1.1	Individual components of existing systems may be repaired/replaced in kind)
2)	3409.3.1.2	Replacement in kind acceptable for historic features
3)	3409.3.2	Repair/replacement in kind acceptable for roofing, windows, entries/porches, wood siding/decorative elements, masonry, metals, interior features.
4)	3409.3.4	Legal use and occupancy may be continued without change or further compliance with SBC.
5)	3409.3.4	Provisions of 3409.Mandatory Safety Requirements required for buildings accessible to the public on more than 50 days per year.
6)	3409.3.6	Fire Damage: may be restored to original condition or meet SBC requirements
7)	3409.3.7	Change in Occupancy to lesser and equal hazard (waive for Type 3C or 5B). Section 3403 contains requirements for means of egress, capacity of exits, exit signs and lights, means of egress lighting, height and area limitations, fire and party walls, fire protection systems, enclosure of stairways, assembly use groups, institutional groups, residential use groups, fire hazard to adjacent buildings, accessibility, energy conservation).
8)	3409.10	Change in Occupancy to greater hazard (waive for Type 3C or 5B). Refers to Section 3405, where required to meet SBC, except energy and accessibility.
9)	3409.11	Energy Conservation: exempt from requirements, except for additions
10)	3409.12	Accessibility: refers to requirements of Architectural Access Board Regulations

Compliance Alternatives

Section 3406 Compliance Alternatives allows compliance alternatives to be accepted by the building official. Examples of compliance alternatives that have been used are provided in *Appendix F*. Building official may accept these or others proposed.

F202.1.1 Compliance alternatives for egress requirements

1. Provide connecting fire balconies.
2. Provide alternate egress facilities (windows, etc.)
3. Provide a fire escape
4. Provide fire-rated areas of refuge

F202.3.1 Compliance alternatives for enclosure of exitways

1. Improve enclosure of exitway
2. Add partial fire suppression system.
3. Add a detection system.

F203.1.1 Compliance alternatives for fire hazards

1. Improve fire separation
2. Add a fire suppression system
3. Add a detection system

Questions

1. It appears that Section 3409.3.4 requires partially preserved buildings (where the use and occupancy are continuing) that are accessible to the public on more than 50 days per year to meet the same Mandatory Safety Requirements as exists for totally preserved buildings in Section 3409.2.
   Are these requirements identical to those for totally preserved buildings?

2. Confusion regarding the different requirements for totally preserved and partially preserved buildings, in particular when considering only the first part of 3409.3.6:

Totally preserved	3409.2.1.1	In case of fire ... said building may be rebuilt, in total or in part, using such techniques and materials as are necessary to restore it to its original conditions and use group.
Partially preserved	3409.3.6	...may be restored to its original construction or it shall meet the requirements of 780 CMR provided these requirements do not compromise the features for which the building was considered Historic when listed in the National Register of Historic Places.

3. Sections 3409.3.9 and 3409.3.10 waive requirement to add one to the Hazard Index Number for Type 3C and 5B construction. Reference is made to Table 3403, where note 2.b. seems to set the waiver for 2C or 5B. Is one a type?

2/26/99

NATIONAL BUILDING CODE

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Summary

The BOCA *National Building Code* is a model building code produced by a professional association of building regulators. It specifically addresses both existing structures and historic buildings. While historic buildings are exempted from mandatory application of the code, the risk indexing system of Section 3408.0, Compliance Alternatives, can be used to establish an acceptable level of safety as prescribed in Section 3406.0, Historic Structures. However, because of inconsistent mandatory scores, this approach may be tested but not relied upon for the evaluation of historic buildings.

Introduction

Founded in 1915, Building Officials and Code Administrators International, Inc., is a nonprofit membership association, comprised of more than 14,000 code enforcement officials and others directly or indirectly engaged in the construction and building regulatory process. Its membership tends to be most heavily concentrated in the northeastern and Midwestern States. In addition to headquarters in Country Club Hills, Illinois, there are regional offices in New York, Ohio, Oklahoma, and Pennsylvania. Voting members of BOCA are representatives, employees, or elected officials of governmental units or departments of governmental units which administer, formulate or enforce laws, ordinances, rules or regulations relating to construction, fire safety, property maintenance development or land use. As with all model code writing organizations, BOCA has no power or authority to police or enforce compliance with its codes. It is only the governmental body that enacts the code into law that does so.

The BOCA codes are maintained through a hearing and revision procedure that allows stakeholders an opportunity to both propose changes to code provisions and testify regarding such change proposals. Any interested person, persons, or group may submit a code change proposal which will be duly considered by the applicable code change committee. The appropriate code changes committee conducts announced public hearing on the proposals to obtain as much factual information as possible about each proposed change. The

recommendations of the committee are approval as submitted, approval as modified, or denial. The committee's recommendations are published along with reasons and substantiation for their actions. Interested parties are invited to file a challenge to the committee recommendations. All code change proposals are either accepted or rejected by parliamentary action of the organization's voting members.

The BOCA Codes are completely updated with new editions every three years. Each new edition reflects all code changes approved by BOCA's voting members since issuance of the previous edition. The BOCA Codes are available in hard copy and electronic format. Current 1996 editions of relevant codes, include the *National Building Code*, *National Fire Prevention Code* and the *National Property Maintenance Code*. The BOCA *National Building Code* has the greatest regulatory impact on historic buildings.

BOCA *National Building Code*

The Building Officials and Code Administrators International (BOCA) first published its *Basic Building Code* in 1950. Later, BOCA assumed right to the title *National Building Code* which has been used since the 1987 edition. Like other model building code, it provides minimum standards to insure the public safety, health, and welfare insofar as they are affected by building construction. It is also intended to secure safety to life and property from all hazards incident to the occupancy of buildings, structures, or premises.

As a building code, The BOCA Code covers more than fire safety. Also included are requirements for interior environment and design, exterior envelope, structural performance, and building service systems, including sanitary equipment, lighting, and ventilation. The stated scope of the code is the control of all matters concerning the construction, alteration, addition, repair, removal, demolition, location, occurrence and maintenance of all buildings and structures. It further states that it shall apply to proposed *or existing* buildings and structures except as such matters are otherwise provided for.

Historic Buildings

In the common code format adopted by the three model building code groups, Chapter 34 applies to existing structures. This chapter is unique in the BOCA *National Building Code*. It is very different from the treatment of existing structures in the other two model building codes.

The Scope statement of this chapter reads as follows:

> **3401.1 Scope**: The provision of this chapter shall control the alteration, repair, addition, and change of occupancy of existing structures. Alterations, repairs, additions, and changes of occupancy to existing structures shall comply with Sections 3403.0 through 3407.0 or with the

requirements for compliance alternatives in accordance with Section 3408.0

Thus there is an option of using one or more of the sections 3403.0 to 3407.0 as applicable, or the more extensive Section 3408.0. Sections 3403.0 through 3407.0 are identified by title below:

SECTION 3403.0 ADDITIONS
SECTION 3404.0 ALTERATIONS
SECTION 3405.0 CHANGE OF OCCUPANCY
SECTION 3406.0 HISTORIC STRUCTURES
SECTION 3407.0 MOVED STRUCTURES

As indicated, it is in this chapter that historic buildings are specifically addressed.

SECTION 3406.0 HISTORIC STRUCTURES

3406.1 Compliance: The provisions of this code relating to the construction, repair, alteration, additions, restoration and movement of structures shall not be mandatory for existing buildings and structures identified and classified by the federal, state or local government authority as historic buildings where such buildings are judged by the code official to be safe and in the interest of public health, safety and welfare regarding any proposed construction, alteration, repair, addition, and relocation.

This paragraph has two important parts. First, it defines historic building as being so classified by a government authority. Second, it identifies the code, and hence, this chapter, as non-mandatory for historic buildings. This implies that compliance with the provisions of Chapter 34 is a sufficient but not a necessary condition. A problem can arise as to how to the code official will judge an historic building to be safe and in the interest of public health, safety and welfare. One option is for the building to meet the conditions of Section 3408.0 of the code, compliance alternatives.

SECTION 3408.0 COMPLIANCE ALTERNATIVES

3408.1 Compliance: The provisions of this section are intended to maintain or increase the current degree of public safety, health, and general welfare in existing buildings while permitting repair, alteration, addition, and change of occupancy without requiring full compliance with Chapters 2 through 33 or Sections 3403.0 through 3407.0, except where compliance with other provisions of this code is specifically required in this section.

It is important to recognize that this Section of the Code covers changes in occupancy.

3408.2.1 Change in use group: Where an existing building is changed to a new use group classification and this section is applicable, the provisions of this section for the new use group shall be used to determine compliance with this code.

Thus, unlike the NFPA Life Safety Code, a change in occupancy does not require that the building conform to the conditions prescribed for new construction.

Section 3408.0 is a multiattribute evaluation or risk index of fire safety for existing buildings

that was derived from NFPA 101A. As stated in paragraph 3408.1, the purpose of this section is to maintain or increase the level of safety in existing buildings without full compliance of other chapters of the Code. Section 3408.0 allows for older designs to be judged on their performance capabilities rather than forcing the buildings to adhere to modern standards for new construction.

Section 3408.0 is applicable to all occupancy use groups except high hazard (H) and institutional (I). For each use group there are separate point values for each of eighteen safety parameters and separate mandatory values to be considered as criteria for equivalency. The 1996 version of Section 3408.0 updated the evaluation method to comply with changes to the minimum requirements for existing buildings in the *BOCA National Fire Prevention* and *Property Maintenance Codes* and changes for new buildings in the *BOCA National Building Code*.

The eighteen safety parameters in BOCA Section 3408.0 and values of their relative importance for the business use group are shown in the following table.

Parameters and Importance for BOCA Section 3408 (Business Use Group)

PARAMETER	PERCENT	PARAMETER	PERCENT
Vertical Openings	22%	Corridor Walls	3%
Building Area	12%	Mixed Use Groups	3%
Max. Travel Distance	12%	Unit Separations	2%
Building Height	9%	Elevator Control	2%
Sprinklers	7%	Egress Emergency Light.	1%
HVAC Systems	6%	Dead Ends	1%
Compartmentation	6%	Smoke Control	1%
Fire Alarm System	5%	Spec. Occ. Area Protect.	1%
Automatic Fire Detection	4%	Means of Egress	0%

The percentages in this table were derived arithmetically as follows. Each parameter in Section 3408.0 has a minimum and maximum value that can be assigned. The difference between these values is the possible spread of points for that parameter. The difference between the sum of all the minimum values and the sum of all the maximum values is the total possible spread of building scores. The individual parameter spread divided by the total spread is a percentage that represents the relative effect of a parameter on the total fire safety score.

Even though the evaluation system in Section 3408.0 is not transparent, and in some cases is counterintuitive, much is to be said for the apparent consensus achieved within the BOCA community of code officials, architects, and fire protection engineers. The scoring is conceptually logical but in application the mandatory scores seem contradictory to the purpose of the evaluation as stated in Section 3408.1. That is, the requirements for existing buildings are greater than for new construction.

NFPA 101, LIFE SAFETY CODE

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Summary

The NFPA is a private, membership organization that writes standards only in the area of fire safety. Its Life Safety Code is widely adopted and addresses both new and existing buildings. It does not specifically addresses historic buildings in the current edition. Allowance for historic buildings is proposed for the next edition to be published in year 2000.

Introduction

The National Fire Protection Association (NFPA) is a nonprofit organization with approximately 68,000 members. Membership represents a broad range of interests including fire officials, fire fighters, building officials, manufacturers, insurance representatives, design architects, engineers, educational institutions, varied government officials, fire researchers, and practically anyone who has an interest in fire safety.

The basic technical activity of NFPA involves development, publication, and dissemination of fire safety codes and standards. There are presently 291 NFPA standards that have been developed by the 211 Technical Committees. These are full consensus standards which means they represent a balance of affected interests. Proposals for changes may be submitted by anyone and membership of the Technical Committees is controlled see that there is no dominant area of interest. Unlike model code groups, voting membership of the Association is open to all interested parties.

Life Safety Code

Similar to a building code but unique in several ways, is the National Fire Protection Association's (NFPA) *Life Safety Code*. The *Life Safety Code* is a product of the NFPA Committee on Safety to Life. In the present edition of the Life Safety Code, there are seven "core" chapters dealing with general information and requirements that are used in conjunction with 24 chapters that apply to ten categories of occupancy. The *Life Safety Code*, being one of

the largest NFPA documents, has thirteen Technical Committees that each deal with specific parts of the Code. Coordinating the activities of these Committees is a Technical Correlating Committee.

Historic Buildings

The *Life Safety Code* deals explicitly with existing buildings as well as new construction. Recognizing that a significant majority of buildings that will be occupied in the future are already here, and that it is not always economically feasible or physically possible to meet the standards for new construction when a building is rehabilitated, the *Life Safety Code* is divided into chapters for both new and existing buildings. However, if the occupancy classification of a building is changed, the requirements for new construction apply, as specified in paragraph 1-3.12.

> **1-3.12 Changes of Occupancy**. In any building or structure, whether necessitating a physical alteration or not, a change from one occupancy classification to another, or from one occupancy subclassification to another subclassification of the same occupancy, shall be permitted only if such structure, building, or portion thereof conforms with the requirements of this Code applying to new construction for the proposed new use.

Furthermore, the *Life Safety Code* does not specifically address historic buildings as distinct from other existing buildings. This oversight will be corrected in a proposal for change in the next edition to be published in the year 2000. The proposal is to add an allowance for special consideration of historic buildings as follows:

> **1-11.3 Historic Buildings**. The provisions of this code shall be permitted to be modified by the authority having jurisdiction for buildings or structures identified and classified as historic buildings where it is evident that a reasonable degree of safety is provided.

This proposed change will be accompanied by an added definition of historic building:

> **Historic Building**. A structure and its associated additions and site deemed to have historical, architectural, or cultural significance by a local, regional, or national jurisdiction.

Also proposed for the year 2000 edition of the *Life Safety Code* is a performance-based design option. This will provide a great deal of flexibility in meeting life safety criteria for exceptional historic buildings.

Compliance Alternatives

The Life Safety Code presently provides some flexibility for historic buildings through exceptions, equivalencies, and modifications.

Exceptions. In addition to the individual occupancy chapters, there are numerous exceptions to the code provisions for existing buildings. For example there is an exception to the Change of Occupancy clause cited above that reads:

> *Exception: Where specifically permitted elsewhere in the Code, existing construction features shall be permitted to be continued in use in conversions.*

An example of where this condition would apply is in the specified minimum door width.

> 5-2.1.2.2 Door openings in means of egress shall be at least 32 in. (81 cm.) In clear width.
>
> *Exception No. 2: In existing buildings, the door width shall be at least 28 in. (71 cm.)*

For some provisions, there are also alternative approaches spelled out in the code. For example, paragraph **6-2.4.5** specifies conditions under which unenclosed floor openings are permitted.

Equivalencies. There are standard allowances for documented alternatives to specific code provisions as follows:

> **1-6.1** Nothing in this Code is intended to prevent the use of calculation methods, test methods, systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety as alternatives to those prescribed by this Code, provided technical documentation is submitted to the authority having jurisdiction to demonstrate equivalency and the system, method, or device is approved for the intended purpose.

Modifications. The code also allows appropriate modification to its provisions

> **1-3.4 Modification of Requirements** for Existing Buildings. The requirements for existing buildings shall be permitted to be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction, but only where it is clearly evident that a reasonable degree of safety is provided.

The exceptions for existing buildings and the clauses on equivalency and modification allow for some flexibility in dealing with existing buildings. However, it takes a very careful reading and understanding of the code to identify applicable exceptions, a facility that many historic buildings may not have access to. Furthermore, the equivalency and modifications clauses give no guidance on how they might be invoked or applied for historic buildings.

NFPA 101A, ALTERNATIVE APPROACHES TO LIFE SAFETY

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Summary

The NFPA is a private, membership organization that writes standards only in the area of fire safety. NFPA 101A is a fire safety evaluation system that provides flexibility in the choice of parameters to achieve a level of fire safety equivalent to NFPA 101, *Life Safety Code*. It is widely used and addresses both new and existing buildings, but does not specifically address historic buildings.

Introduction

The National Fire Protection Association (NFPA) is a nonprofit organization with approximately 68,000 members. Membership represents a broad range of interests including fire officials, fire fighters, building officials, manufacturers, insurance representatives, design architects, engineers, educational institutions, varied government officials, fire researchers, and practically anyone who has an interest in fire safety.

The basic technical activity of NFPA involves development, publication, and dissemination of fire safety codes and standards. There are presently 291 NFPA standards that have been developed by the 211 Technical Committees. These are full consensus standards which means they represent a balance of affected interests. Proposals for changes may be submitted by anyone and membership of the Technical Committees is controlled see that there is no dominant area of interest. Unlike model code groups, voting membership of the Association is open to all interested parties.

Fire Safety Evaluation System

NFPA 101, *Life Safety Code* of the National Fire Protection Association is one of the most widely used voluntary codes for identifying a minimum level of fire safety. The Fire Safety Evaluation System (FSES) is a multiattribute, risk indexing approach to determining equivalencies to the NFPA *Life Safety Code* for certain occupancies. The technique was

developed in the late 1970's at the Center for Fire Research, National Bureau of Standards (presently the Building and Fire Research Laboratory, National Institute of Science and Technology).

The original FSES was developed for health care facilities to provide regulators with means to assess compliance with federal requirements. The objective of the FSES is to create a uniform method of evaluating fire safety to determine what measures would provide a level of safety equivalent to that provided by the *Life Safety Code*. It was also the intention to compile an efficient evaluation system that would present useful information with a minimum amount of effort by the user. NFPA 101A now includes FSESs for health care occupancies, correctional facilities, board and care homes, and business occupancies.

Fire Safety Parameters

As an example of the Fire Safety Evaluation Systems in NFPA 101A, consider the FSES for Business Occupancies. The Fire Safety Evaluation System for Business Occupancies computes a relative level of safety provided by an arrangement of safeguards differing from that specified in NFPA 101.

Input to the system is a value for each of 12 fire safety parameters that may be present to different degrees in a business occupancy. Each of the 12 parameters has a defined set of applicable values that correspond to conditions in the facility. The following table shows the 12 fire safety parameters and their respective importance in the Fire Safety Evaluation System for Business Occupancies.

Parameters and their Importance for Fire Safety Evaluation for Business Occupancies

PARAMETER	PERCENT	PARAMETER	PERCENT
Construction	15%	Fire Alarm	6%
Automatic Sprinklers	13%	Interior Finish	5%
Exit System	12%	Exit Access	5%
Vertical Openings	12%	Occupant Emergency Prog	5%
Corr/Room Separation	11%	Smoke Detection	4%
Segregation of Hazards	7%	Smoke Control	4%

The FSES is important to existing buildings because it provides an objective assessment of code equivalency, balancing better than minimum and less than minimum fire safety features. It thereby allows existing superior parameters to offset deficiencies in other requirements.

NFPA 914, CODE FOR FIRE PROTECTION OF HISTORIC STRUCTURES

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Summary

This standard is presently a recommended practice but is undergoing major revision and will be issued as a standard (containing mandatory language) in 2001. It provides unique approaches to the issues regarding fire safety in historic structures in Chapters 3,4, and 5. Chapter 3 identifies a process for analyzing fire safety needs in historic buildings, Chapter 4 outlines generic approaches to dealing with specific provisions of other codes that may endanger historic integrity. Chapter 5 presents a performance-based approach to fire safety in historic buildings.

Background

The NFPA is a private, membership organization that writes standards only in the area of fire safety. NFPA 914 is presently a recommended practice that originated in 1989 as *Fire Protection in Rehabilitation and Adaptive Reuse of Historic Structures*. The name was changed and extensive appendix material added in the 1994 edition. The Committee on Protection of Cultural Resources is now revising and updating this document from a recommended practice to a standard to make it more usable in resolving issues of fire safety in historic properties. This review is based on an internal draft dated March 1999.

Organization

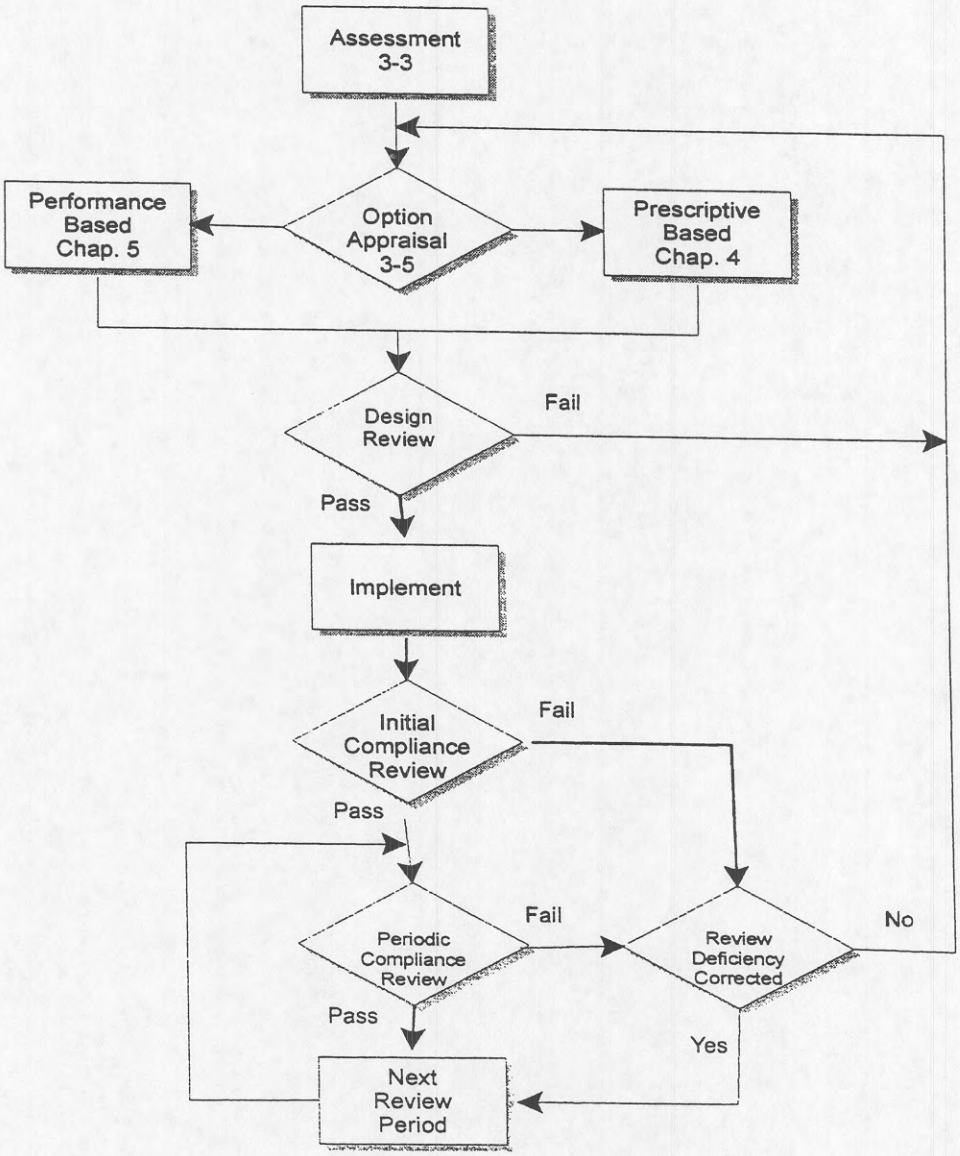
The functional content of the proposed standard is arranged in 8 chapters as follows:

Chapter 1 Introduction
Chapter 2 Definitions
Chapter 3 Process
Chapter 4 Prescriptive-Based Solutions
Chapter 5 Performance-Based Approach
Chapter 6 Fire Precautions During Alterations and Renovations
Chapter 7 Inspection, Testing, and Maintenance
Chapter 8 Operations

Chapter 1 Identifies the scope and purpose and specific goals and objectives for life safety and historic preservation.

Chapter 2 Includes a definition of historic structure as well as terms such as historic character, historic fabric, historic preservation, historic site, and historic structure.

Chapter 3 describes a process for applying the standard that is represented in the following figure:



Chapter 4 identifies four approaches to dealing with the prescriptive requirements of a prevailing code; exceptions, alternatives, equivalency, and modifications.

Chapter 5 is patterned after the performance-based approach proposed for the next edition of NFPA 101, Life Safety Code.

Chapter 6 focuses on historic preservation rather than life safety as it is acknowledging the anecdotal data on fire losses to historic buildings undergoing contractual work.

Chapter 7 is concerned with recognized fire hazards and the reliability of installed fire safety features.

Chapter 8 uniquely deals with fire prevention and the use of staff and management planning to mitigate fire and life safety hazards.

It is intended that the final standard will contain voluminous appendix material offering guidance on various options and alternatives. Thus one of its most useful aspects will be as a resource document for dealing with code issues in historic buildings.

Characteristics

NFPA 914 is in many ways quite different from the other codes reviewed for this project. Some of these differences are summarized in the table below.

	NFPA 914	**CODES**
Scope	Fire safety	All applicable building characteristics
Format	Standard	Model Code
Thrust	Protection from fire	Life safety
Geographic Range	International	USA, State, Local

NATIONALLY APPLICABLE RECOMMENDED REHABILITATION PROVISIONS

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Summary
The Nationally Applicable Recommended Rehabilitation Provisions (NARRP) was published in May of 1997 to provide a recommended framework applicable to all types of work in all existing buildings. The NAARP is intended for adoption, with minimal adaptation, by states, local jurisdictions, or model code organizations. The product was prepared by a project team led by the National Association of Home Builders Research Center.

The NARRP intends to "...encourage the continued use or re-use of legally existing buildings through a predictable system of requirements that will maintain or improve public health, safety and welfare." The intent is to clarify the requirements that apply when different types of work are performed in existing buildings, and to establish proportionality between the voluntary work undertaken by the owner of an existing building and the additional work necessary as required by code.

The NARRP is intended for use with other codes (building, mechanical, plumbing, and electrical), and includes specific references to these. In some instances the NARRP required upgrades for accessibility, seismic protection and energy conservation. The NARRP does not address asbestos or lead-based paint abatement, disaster mitigation or other improvements that are not presently required for existing buildings, although does provide references to these for guidance purposes.

In general, the NARRP incorporates a philosophy that improvements should be required when work on a building is undertaken, and that this work should be proportional to the nature and extent of the work. While the required improvements may not bring a building into compliance with codes for new construction, these improvements do provide an upgrade in safety that might have been permitted to continue unabated by other code approaches.

The NARRP implements this concept of proportionality by articulating six categories of work: repair, renovation, alteration, reconstruction, Change of Occupancy, and addition. Additionally, throughout the document, the NARRP provides commentary on underlying issues, clarifying use of the document, the intent of the specific provision, possible alternative approaches, and the relationship between various sections of the NAARP.

The NARRP also provides separate provisions and exceptions for historic buildings.

Organization

The 65 page NAARP contains 9 Chapters, Reference Standards and 2 Additional References:

Introduction

Chapter 1	Administration
Chapter 2	Definitions
Chapter 3	Repairs
Chapter 4	Renovations
Chapter 5	Alterations
Chapter 6	Reconstruction
Chapter 7	Change of Occupancy
Chapter 8	Additions
Chapter 9	Historic Buildings

The NARRP also includes Referenced Standards (1 pg.), Additional References (3 pgs.), and Appendix 1 and Appendix 2.

Appendix 1	*Uniform Code for Building Conservation:* Seismic Strengthening Provisions for Unreinforced Masonry Bearing Wall Buildings
Appendix 2	Section 3408, *BOCA National Building Code/1996* (ed., this specifies compliance alternatives, based on a quantitative analysis method

Where a change of occupancy of the historic building will occur, the non-historic provisions of the NARRP will apply, with some exceptions. The NARRP, organized according to category of work, defines four types of rehabilitation work (note these definitions do not match those of the *Secretary of the Interiors Standards*):

Repair	The patching, restoration, and/or minor replacement of materials, elements components, equipment and/or fixtures for the purposes of maintaining such materials, elements, components, equipment and/or fixtures in good or sound condition.
Renovation	The change, strengthening or addition of load bearing elements, the refinishing, replacement, bracing, strengthening, upgrading or extensive repair of existing materials, elements, components, equipment and/or fixtures. Renovation involves no reconfiguration of spaces. Interior and exterior painting are not considered refinishing for purposes of this definition, and are not renovation.
Alteration	The reconfiguration of any space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the

installation of any additional equipment.

Reconstruction The reconfiguration of a space which affects an exit, or element of the egress access shared by more than a single tenant; or renovation and/or alteration when the work area is not permitted to be occupied because existing means of egress and fire protection systems, or their equivalent, are not in place or continuously maintained; and/or extensive alterations as defined in Chapter 5 of these provisions.

Historic Buildings

The NARRP defines historic buildings as "any building or structure classified as historic by the federal, state or local government authority, or deemed eligible for such classification."

Chapter 9 *Historic Buildings* provides specific provisions that relate the amount of required work to the extent of work: e.g., repair, renovation, alteration, reconstruction, movement of building, and Change of Occupancy. Applicants have the choice of complying with this chapter or with Chapters 3-7. In general, historic buildings undergoing repair, renovation, alteration or reconstruction must generally comply with chapters 3,4,5,6 of the NAARP, with specific exceptions as noted below.

Like the other rehabilitation codes, the NAARP provides specific definitions, language, and compliance alternatives or exemptions to address the special circumstances presented by historic buildings. These are summarized below: those noted with only a heading indicate that this particular item is not addressed by the NAARP.

ACCESSIBILITY

Alternative provisions of accessibility are permitted if full compliance adversely affects the historic character (901.3).

ADDITIONS

Must comply with building code requirements.

APPEALS/VARIANCES

The NARRP establishes a process through which the building official can consider alternatives. See *Documentation* section below.

ARCHAIC MATERIALS AND METHODS OF CONSTRUCTION

Repairs or replacement of existing or missing features using original materials is permitted, as are partial replacement for repairs that match the original in configuration, height and size (902.1, 904.2).

CHANGE OF OCCUPANCY

Must comply with extensive requirements of Chapter 7 *Change of Occupancy,* with some exceptions. This is based on use group hazard indices (905.1). A change of occupancy to an equal or lower hazard rating is treated like a reconstruction throughout the portion of building. A change of occupancy to a higher hazard rating triggers building code requirements, with some exceptions.

DOCUMENTATION

The historic building must be investigated and evaluated. To comply with the requirements of Chapter 9, the code official may determine that a written report by a design professional be prepared. This report is to include documentation of building, field surveys, tests and or laboratory analysis; is to identify safety features in compliance with Chapter 9 and identify how compliance with other chapters would damage contributing historic features; and is to describe how equivalent levels of safety will be achieved for features not in compliance (901.2, 106.0).

ENERGY CONSERVATION

Historic buildings exempt (905.14)

MECHANICAL, PLUMBING AND ELECTRICAL

As with other building components, repairs are permitted with original materials and methods of construction.

MUSEUMS

May be considered to be a business use when used for museum tours, exhibits, or other public assembly activities, when life safety is demonstrated in accordance with documentation requirements of 901.2. Providing adequate means of egress may include maintaining doors in an open position, limit on building occupancy, limit on occupancy of certain areas or floors, and/or supervision by person familiar with emergency exiting procedures (901.4).

RELOCATION OF BUILDINGS

Relocated buildings may be treated as historic buildings, with the exception of the new foundation design, fire separation distance, and requirements for opening protectives (903.0)
.

REPAIRS/REPLACEMENT

Repairs can be made in original materials and methods (902.1).
Replacement of existing or missing features permitted to use original materials for all but Change of Occupancy or additions (904.2)

STRUCTURAL

Although specific requirements for historic buildings are not provided, Appendix Chapter 1 *Seismic Strengthening Provisions for Unreinforced Masonry Bearing Wall Buildings* is applicable to all existing buildings.

COMPLIANCE ALTERNATIVES

Chapter 9 notes the reporting requirements for seeking alternatives if the owner wishes to benefit from the exceptions provided. These generally require the approval of the code official:

Building Floor Area

For Change of Occupancy:

- Building floor area can exceed allowable by 20% (905.2).

Corridors

Except for Change of Occupancy:

- Existing undersized corridor widths can be retained (904.4).

For Change of Occupancy:

- Existing corridors may be approved or additional operational controls used to limit occupancy (905.5).

Doors

Except for Change of Occupancy:

- Existing doors can be retained (904.4).
- Existing doors need not swing in direction of exit (904.5).
- Existing transoms acceptable if fixed in closed position and suppression provided on both sides (904.6).

For Change of Occupancy:

- Existing doors may be approved or operational controls used to limit occupancy (905.5).
- Existing front doors need not swing in direction of traffic provided there is sufficient capacity for total occupancy load at other exits (905.6).
- Existing transoms required to be fire rated may be fixed in closed position with wired glass in steel frame or other approved glazing installed on one side of transom (905.7). Historic finishes acceptable (904.7).

Exit Signs

Except for Change of Occupancy:

- Alternate exit sign or egress path marking acceptable (904.11).

For Change of Occupancy:

- Exit Signs: Alternate exit sign locations may be acceptable (905.11).

Finishes

Except for Change of Occupancy:

- Demonstrated historic finishes can be retained or applied on walls and ceilings (904.7).

For Change of Occupancy:

- Non conforming materials required to have flame-spread classification of Class III or better may be surfaced with fire-retardant paint or finish (905.8), except if building has suppression system and documented historic finishes.

Fire Extinguishing System

Except for Change of Occupancy:

- Required where code compliance does not occur, but cannot be used as substitute for, or alternate to, number of exits (904.12).

Fire Resistive Requirements, Interior

Except for Change of Occupancy:

- One hour requirements not required if wall and ceiling are wood lath and plaster (904.9).

For Change of Occupancy:

- One hour rating not required where existing is wood lath and plaster(905.9).

Fire Resistive Requirements, Exterior

For Change of Occupancy:

- Where new use is higher hazard, alternative methods to address fire resistance and exterior opening protective requirements allowed (905.3)

Glazing

Except for change of occupancies and in hazardous locations, original glazing material permitted to be replaced in kind (904.2).

Light

For Change of Occupancy:

- Existing level of natural light acceptable if requirements will lead to loss of historic character or materials (905.13)

Roof Coverings

Except for Change of Occupancy:

- Existing roof covering type may be continued if historic materials are documented (904.3).

For Change of Occupancy:

- Roof covering with at least Class C permitted in lieu of fire-retardant roof covering(905.4)

Stairways

Except for Change of Occupancy:

- Existing stairway widths can be retained (904.4).
- Stairways serving only one adjacent floor need not be enclosed. In buildings three stories or less, no fire rating required if doors and elements are tight fitting (904.8).
- Hand rail and guard rail requirements not necessary on grand stairways (904.10).

For Change of Occupancy:

- Existing stairways may be approved or operational controls used to limit occupancy (905.5).
- Railing alternatives may be granted for grand stairways (905.10).

- Existing stairs changed to use groups R-1 and R-2 may be accepted if can support 75 lbs/sf live load (905.12)

NEW JERSEY UNIFORM CONSTRUCTION CODE REHABILITATION SUBCODE

New Jersey Administrative Code, Title 5, Chapter 23, Subchapter 6 (N.J.A.C. 5:23-6)
Department of Community Affairs
Division of Codes and Standards-Publications Unit
Post Office Box 802
Trenton, New Jersey 08625-0802

Summary

The *Rehabilitation Subcode* took effect in January 1998 to provide ..."provisions for existing buildings that were rational, predictable, and that delivered safe and sound rehabilitated structures."[2] It also recognizes that "Existing buildings that were built to comply with an earlier building code or with no code are often still safe and sound. Most existing buildings throughout the United States...are in this category."[3] The code was developed with guidance from a 30-member committee under the coordination of the Center for Urban Policy Research at Rutgers University.

The *Rehabilitation Subcode* eliminated the state's earlier approach that applied new construction standards to existing buildings when a change of use occurred, and that compared the dollar value of the rehabilitation to the building's replacement cost to determine which new construction provisions would be required of the rehabilitation project. Known as the 25%/50% rule, this approach required minimal improvements when the rehabilitation cost incurred within a specified time period were less than 25% of the building's replacement cost; additional requirements when the costs occurred were between 25% and 50%, and full compliance with new construction standards when more than 50% of the value of the building's replacement was expended. In its place, the subcode generally has project requirements based upon the type of work rather than the extent of work. Work is classified into six categories: repair, renovation, alteration, reconstruction, change of use, and additions. Among its provisions, the *Rehabilitation Subcode* liberalizes requirements for exit travel distance and dead end corridors, and allows for safety alternatives such as suppression systems rather than a new exit.

The *Rehabilitation Subcode* is the only subcode of the *New Jersey Uniform Construction Code* that is applicable to work in existing buildings, changing the use of an existing building, or work related to an addition in an existing building, unless specifically referenced. Its relationship to

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[2]*Rehabilitation Subcode: Guidance for the Code User*, NJ Department of Community Affairs, Trenton, NY, February 1988, page 1.

[3]Ibid.

the *Uniform Construction Code* is primarily administrative, e.g., issuances of permits, enforcement responsibilities, certificates of occupancy, and issuance of variances. However, within the *Rehabilitation Subcode* it is noted that the *Guidelines for Construction and Equipment of Hospital and Medical Facilities* must also be met, and that the intent of the *Rehabilitation Subcode* is to be at least as stringent as requirements under the *Uniform Fire Code*, the *Regulations for Maintenance of Hotels and Multiple Dwellings* and the *New Jersey State Housing Code.*

Organization

The *Rehabilitation Subcode* is organized as follows:

Section 6.1	Introduction
Section 6.2	Applicability and Compliance
Section 6.3	Definitions
Section 6.4	Repairs
Section 6.5	Renovations
Section 6.6	Alterations
Section 6.7	Reconstruction
Section 6.8	Materials and Methods
Section 6.9	New Building Elements
Section 6.10	Basic and Supplemental Requirements-General
Section 6.11	Basic Requirements- All Use Groups
Section 6.11A-6.28A	Basic and Supplemental Requirements by Use Group
Section 6.29	Mixed Use Buildings
Section 6.30	Special Technical Requirements, All Use Groups
Section 6.31	Change of Use
Section 6.32	Additions
Section 6.33	Historic Buildings

The *Rehabilitation Subcode* defines four categories of rehabilitation work that range from minimal repairs to full reconstruction projects (note these definitions do not match those of the *Secretary of the Interiors Standards*). Minimal requirements apply to buildings being repaired: the most substantial requirements are imposed on projects that involve reconstruction, a change of use, or an addition. Rehabilitation is defined to mean the repair, renovation, alteration or reconstruction of any building or structure, as follows:

Repair	The restoration to a good or sound condition of materials, systems and/or components that are worn, deteriorated or broken using materials or components identical to or closely similar to the existing.
Renovation	The removal and replacement of covering of existing interior or exterior

finish, trim, doors, windows, or other materials with new materials that serve the same purpose and do not change the configuration of space. Renovation shall include the replacement of equipment or fixtures.

Alteration — The rearrangement of any space by the construction of walls or partitions or by a change in ceiling height, the addition or elimination of any door or window, the extension or rearrangement of any system, the installation of any additional equipment or fixtures and any work which reduces the loadbearing capacity of or which imposes additional loads on a primary structural component.

Reconstruction — Any project where the extent and nature of the work is such that the work area cannot be occupied while the work is in progress and where a new certificate of occupancy is required before the work area can be reoccupied. Reconstruction may include repair, renovation, alteration or any combination thereof. Reconstruction shall not include projects comprised only of floor finish replacement, painting or wallpapering, or the replacement of equipment or furnishings. Asbestos hazard abatement and lead hazard abatement projects shall not be classified as reconstruction solely because occupancy of the work area is not permitted.

Historic Buildings

Chapter *6.33 - Historic Buildings* defines historic buildings as those meeting the following criteria:

I Buildings listed on the New Jersey or National Registers of Historic Places either individually or as a contributing building to a historic district;

ii Buildings that have been issued a Determination of Eligibility by the Keeper of the National Register of Historic Places;

iii Buildings identified as contributing buildings to Local Historic Districts which have been Certified by the Keeper of the National Register of Historic Places either individually or as a contributing buildings to a historic district.

iv Buildings with a State Historic Preservation Officer Opinion or Certification that the property is eligible to be listed on the National Register of Historic Places either individually or as a contributing building to a historic district.

Like the other rehabilitation codes, the New Jersey Rehabilitation Subcode provides specific definitions, language, and compliance alternatives or exemptions to address the special circumstances presented by historic buildings. These are summarized below: those noted with only a heading indicate that this particular item is not addressed by the Code.

ACCESSIBILITY

Required except when compliance is technically infeasible. Unless historic character would be threatened/destroyed, there shall be a minimum of one accessible route from an accessible parking space, public transportation stop or passenger loading zone to an accessible entrance, an accessible route from this entrance to all publicly-used spaces on the level of the accessible entrance, and at least one accessible toilet facility when toilets are provided (6.33.a.3).

ADDITIONS

Must comply with provision of other subcodes of *Uniform Construction Code* (6.1.g.6.h).

APPEALS/VARIANCES

(6.33.a.2) Reporting requirements from owner for seeking variances are cited (6.33.2). These include written request that states the requirement from which a variance is sought, statement of how strict compliance would result in practical difficulties or detract from the historic character; and statement of feasible alternatives that will provide adequate protection.

A variance may be granted where no feasible alternative exists, provided a qualified architect determines that the feature cannot be brought into strict compliance with the requirements, and that the feature is essential to maintaining historic value and character of the building (6.33.a.2.i.)

ARCHAIC MATERIALS AND METHODS OF CONSTRUCTION

The *Subcode* generally provides for the use of original or replica materials and original methods of construction, although an exception is made for concealed building system including electrical, plumbing and heating equipment. (6.33 (b)1.

CHANGE OF OCCUPANCY

Compliance with all exemptions of 6.33.b permitted provided restoration consistent with the *Secretary of the Interior Standards for the Treatment of Historic Properties* (6.33.d).

DOCUMENTATION

When an alternative to the *Subcode* is proposed, specific documentation is required This documentation includes a statement of the requirements from which a variance is sought, a statement reflecting how strict compliance with the subcode would result in practical difficulties or would detract from the historic character, and a statement of feasible alternatives. Statements related to maintenance of the historic value and character must be provided by a qualified architect (6.33.(a)2.

MUSEUMS

House museums are classified as business (rather than assembly) provided: occupancy less than 50 persons; where single means of egress, occupancy limited to first and second floors and travel distance is less than 75'; two means of egress exist from third floor; and employee or volunteer available to supervise emergency exiting when occupied by visitors (6.33.4).

RELOCATION OF BUILDINGS

New construction requirements only necessary for foundations and siting with respect to exterior walls and openings (6.33.c.1, 6.33.c.2).

REPAIRS/REPLACEMENT

Original or replica materials can be used except for hidden building systems including electrical, plumbing, and heating equipment, when consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties (*6.33.4).

COMPLIANCE ALTERNATIVES

For repair, renovation, alteration, restoration or reconstruction consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties, the following apply when approved by the code official (6.33.4.1-12).

Additionally, the quantitative assessment system included in Section 3408.6 of the *BOCA National Building Code* is considered to provide an alternative to compliance with this code (6.2.c.4).

Building Floor Area

For Change of Occupancy, if change is to higher hazard category, floor area may exceed that specified for proposed use group by 50% (6.33.d.1).

Corridors

Existing undersized corridor widths may be retained if code official determines adequate width and height (6.33.b.5).

Doors

- Existing doors and undersized corridor and stairway widths may be retained if code official determines adequate width and height (6.33.b.5).
- Front or main exit doors need not swing in direction of exit when fewer than 50 persons served or other approved exits have sufficient capacity to serve total occupant load (6.33.b.6).
- Existing/replica hardware may be permitted if meets intent of Barrier Free Subcode if applicable. Existing/replica hardware may be fixed in place or modified (6.33.b.6.i).
- Transoms may be retained 6.33.b.7).

Exit Signs

Alternate exit sign design and or location may be acceptable if compliance would damage historic character (6.33.b.11).

Finishes

- Existing or replacement finishes on corridors and ceilings can be retained if demonstrated to be historic (6.33.b.8).
- In exitways of use groups other than R-3, finishes must have flame-spread of Class III or better. Existing nonconforming materials may be surfaced with a fire-retardant paint or finish unless building has complete suppression system (6.33.b.8.i.).

Fire Resistive Requirements, Interior

One hour rating not required if wall and ceiling are lath and plaster (6.33.b.3).

Fire Resistive Requirements, Exterior

Exterior walls not required to be meet fireresistive requirements (6.33.b.2).

Roof Coverings

Existing or historic roof covering can generally be continued or replaced when documented to be historic (6.33.b.4), although certain new constructions standards apply.

Room Dimensions

Existing ceiling heights acceptable. Exception Use Group R-1 and R-2 (6.33.b.12).

Stairways

- Existing undersized stairway widths may be retained if code official determines adequate width and height (6.33.b.5).
- For one stair of building, stairway enclosure not required between first and second floor (6.33.b.9.i).
- In buildings less than three stories, fire resistance rating not required if doors and elements are tight fitting(6.33.b.9.i.1).
- Existing or original riser height and tread width can be replaced or repaired (6.33.b.9.ii).
- Original handrails can be retained or replaced to match (6.33.b.10.I).
- Rail height of at least 30" required for drops between 30" and 48", and existing/original baluster spacing acceptable. Exception Use Group E and R-1 (6.33.b.10.ii).

NEW YORK STATE UNIFORM FIRE PREVENTION AND BUILDING CODE SUBCHAPTER E

New York State Department of State, Codes Division
41 State Street
Albany, New York 12207
518-474-4073

Summary

Subchapter E *Conversions, Alterations, Additions and Repairs to Existing Buildings* is the part of the New York State Uniform Fire Prevention and Building Code (UFPBC) that addresses historic buildings. New York is one of only two states in the nation that does not use a model code as the basis of its building regulations. The UFPBC was first adopted in 1984: subchapter E, the result of the work of a statewide committee, became effective in 1994. Although originally drafted with a quantitative assessment index, similar to BOCA's, this section was eliminated in the public comment period.

Organization

The 18 page chapter is organized as follows:

Part 1230	Purpose and Scope	
Part 1231	Applicability and Special Provisions	
	1231.1	General requirements
	1231.2	Conversions
	1231.3	Alterations and Repairs
	1231.4	Additions
	1231.5	Relocation of buildings
	1231.6	Historic Building exemptions
Part 1232	Requirements and Methods of Compliance	
Part 1233	Special Conditions Compliance Method	
Part 1234-35	*Reserved*	
Part 1236	Facilities for People with Physical Disabilities	
Part 1237	Alternative Requirements	

Historic Buildings

Historic buildings are defined in the code as "...officially designated by the state historic preservation officer as historic" (606 a.105).

Compliance with general rehabilitation provisions (Part 1232) are required of existing buildings, with the exception of the following:

Historic buildings are eligible for exemptions under the following conditions (1231.6.a):

1) Conversion to a museum, where a primary purpose is the preservation and display of the building
2) Relocation when a primary purpose of the relocation is preservation and display of the building.
3) Alterations and repairs when a primary purpose is preservation or restoration of the building.

When these exemptions are taken, the following requirements apply (1231.6.b):

1) The plans are certified by the state historic preservation officer
2) Work on equipment and systems
3) The building complies with prescribed structural requirements, or has occupancy limited.
4) Full fire and smoke-detection, or sprinkler system, installed throughout building.
5) Building has emergency lighting, including occupied spaces, assembly spaces, areas of public assembly, and exits.
6) Building has exit and directions signs.
7) Building is accessible, in accordance with Part 1236.

For historic buildings that do not meet the criteria for exceptions, compliance with the new construction standards (Subchapter B) are required, except as modified by Parts 1233 (*Special Conditions*), 1236 (*Facilities for People with Physical Disabilities*), and 1237 (*Alternative Requirements*).

In Part 1233 *Special Conditions*, criteria exists to allow classification of buildings as "minor buildings." In general, these do not exceed 2 story structures with a 4,000 sf cumulative floor area. Minor buildings are allowed provisions that are less restrictive of those for new construction for items including: Height and fire are for certain construction and occupancy classifications; space requirements (heights, horizontal dimensions, ventilation, and window heights); exits (stairways, doors, exit enclosures; exterior fire spread (parapet walls, distance separation, construction limitations; interior fire spread (mixed use occupancies); interior finishes; atria; and special occupancy/multiple dwellings/bed and breakfasts (third story units, emergency lighting, signage, kitchens).

In Part 1236 *Facilities for People with Physical Disabilities,* the special provisions largely parallel those of the Americans with Disabilities Act.

Part 1236 *Alternative Requirements* permits existing features of building systems and equipment to be retained. Additionally, alternative structural requirements are permitted, based on evaluation by a design professional.

NORTH CAROLINA STATE BUILDING CODE VOLUME IX, EXISTING BUILDINGS

(1997/1998 Revisions to the 1995 edition)
Adopted through June 10, 1997

North Carolina Building Code Council and
North Carolina Department of Insurance
Post Office Box 26387
Raleigh, North Carolina 27611

Summary

The objective of this code is to promote the safe continued use and re-use of existing buildings. It establishes life-safety requirements for all existing buildings that undergo alteration of a change in use and provides alternative methods of achieving safety so that the inventory of existing buildings can be preserved. The code contains many of the elements that appear in other codes; specific provisions, hazard grouping, fire risk ranking, a separate chapter for historic buildings, and special consideration of historic museums. This code is somewhat unique in its dependence on earlier editions of the North Carolina State Building Code and includes excerpts of 5 earlier codes in the appendices. The Chapter on Historic Buildings has very little specific relief from the requirements for other existing buildings. The code includes a process flow chart for its application that is helpful but not consistent.

Background

The first North Carolina State Building Code was adopted in 1936 and has had several revisions up to the current edition of 1995. Development of an existing building code for the State was authorized in 1991. It was created in acknowledgment of need for a code that was sensitive to the renovation of existing buildings and recognition that older buildings comprised that majority of the State's building stock. It was previously the practice to apply regulations for new construction to alterations and renovations in existing buildings with the effect of unwarranted demise of many useful and significant buildings. The objective of Volume IX Existing Buildings is to promote the safe continued use and re-use of existing buildings. A recognized need of the existing building code is to provide users with access to the intent of regulations. This led to the inclusion of selected portions of earlier editions of the State Building Code in the appendices. A basic philosophy is that buildings erected according to a previous edition of the building code were safe or in compliance at the time of construction for their intended use and, that as long as reasonable maintenance has been performed, they are still considered to be in compliance. Therefore, the standards in force at the time of construction are appropriate to apply.

Organization

This code consists of 43 pages in 7 chapters plus appendices These are as follows:

CHAPTER 1 - ADMINISTRATION
CHAPTER 2 - DEFINITIONS AND STANDARDS
CHAPTER 3 - HISTORIC STRUCTURES
CHAPTER 4 - MINIMUM STANDARDS FOR EXISTING BUILDINGS
CHAPTER 5 - MINIMUM STANDARDS FOR CHANGE OF OCCUPANCY
CHAPTER 6 - EVALUATION OF BUILDING PERFORMANCE
CHAPTER 7 - BUILDING SERVICE SYSTEMS

APPENDIX A - Brief description of 1980 HUD Rehabilitation Guidelines (2 pages).

APPENDICES B-F - Reprints of selected portions of the North Carolina State Building Code, 1936, 1953, 1958, 1967, and 1978 respectively (133 pages).

Each of the above chapters is summarized below, highlighting the aspects most relevant to this study.

CHAPTER 1 - ADMINISTRATION contains sections on the following: Title, Purpose, Scope, Application, Maintenance, Alternate Materials, Designs, and Methods of Construction, Tests, Administration, Permits Required, Inspection of Work, Appeals and Interpretations, and Validity.

101 Title. North Carolina State Building Code, Volume IX-Existing Buildings

102 Purpose. The stated purpose of the code is to encourage the continued use or reuse of existing buildings and provide a minimum standard of life safety as established in this code. It is intended to serve as a construction code, not as a maintenance code. It is to be used in conjunction with the current and previous editions of the North Carolina State Building Code, hence the selected excerpts in the appendices.

103 Scope. The code excludes day care centers, farm, hazardous, high rise, and institutional buildings, one-and-two family dwellings, and residential care facilities.

104 Application. All existing buildings undergoing additions, alterations, repairs, rehabilitations, or changes of occupancy must comply with (1) this code, (2) the building code applicable when the building was built, or (3) the current building code

When the provisions of Chapter 4, Minimum Standards for Existing Buildings, cannot be met, Chapter 6, Evaluation of Building Performance, may be used. The chapters are intended to be

mutually exclusive except where specifically noted in Chapter 6.

Buildings are permitted to continue their existing occupancy provided they are maintained in a safe, sanitary, and usable condition. Buildings erected prior to 1936 may continue their existing occupancy provided such use is not dangerous to life and meets Chapter 4, Minimum Standards for Existing Buildings, and Chapter 7, Building Service Systems.

Alterations, repairs, and rehabilitations may be made without requiring the entire building to comply with the current building code if the requirements of Chapter 4, Minimum Standards for Existing Buildings, Chapter 7, Building Service Systems, and the building code applicable when the building was built are met. Additions must conform to requirements for new construction.

If there is an occupancy change to a higher hazard group (See Chapter 5), the current building code (as may be modified by Chapter 6, Evaluation of Building Performance) applies.

Historic buildings must meet all requirements of this code except as modified in Chapter 3, Historic Buildings. However, Chapter 3 is not cross-referenced to other requirements.

106 Alternative Materials, Designs, and Methods of Construction may be used provided they are reviewed and authorized by the CEO at his sole discretion. In such cases, evidence or proof must be submitted and actions granting approval must be recorded.

CHAPTER 2 - DEFINITIONS AND STANDARDS has three sections, General, Definitions, and Standards. The definitions of note are:

ADDITION - an extension or increase in floor area or height of a building or structure beyond the existing building envelope.

ALTER OR ALTERATION - any change or modification in construction or occupancy.

CODE ENFORCEMENT OFFICIAL (CEO) (term used in this code)

EXISTING BUILDING - any structure erected prior to the adoption of the building code edition presently enforced.

HAZARD GROUP - a grouping of similar occupancies based upon hazards (See Chapter 5).

HISTORIC BUILDING - a building or structure identified and classified by the North Carolina Department of Cultural Resources, Division of Archives and History, as historic.

HISTORIC MUSEUM BUILDING - a historic building restored or recreated to display the building itself and associated artifacts.

REHABILITATE - to restore a building or structure to a former state or condition. As applied to historic structures, it includes the preservation of those portions or features that are of historical, architectural, and cultural value.

REPAIR - the reconstruction or renewal of any part of an existing building for the purpose of its maintenance.

The standards listed include NFPA 101, Life Safety Code, 1994 and NFPA "101M Alternative Approaches to Life Safety, 1994", which is presumably intended to be NFPA 101A, 1995. Specific reference to the latter was not located in the code. The list did not include NFPA 914, Recommended Practice for Fire Protection in Historic Structures, 1994.

CHAPTER 3 - HISTORIC BUILDINGS AND STRUCTURES contains sections on Purpose, General, Repairs, Relocated Buildings, Fire Safety, Special Historic Museum Building Provisions, and Ceiling Heights.

301 Purpose. "It is the intent of this chapter to provide means for the preservation of historic buildings and structures."

Chapter 3 applies only to historic commercial buildings constructed prior to 1936 and to historic dwellings used for commercial purposes constructed prior to 1972. Historic buildings constructed after these dates must comply with the building code in effect at the time of construction.

The code states that historic buildings need to comply with Chapter 4, Minimum Standards for Existing Buildings, or Chapter 6, Evaluation of Building Performance, except as modified by Chapter 3, but there is no reference to provisions that may be modified.

Similarly, historic buildings that undergo a change of occupancy must comply with Chapter 5 unless modified by Chapter 3. But, again, no such modifications are identified.

302 General includes two objective statements as follows:

(1) The rehabilitated building shall be no more hazardous, based on life safety and sanitation, than the building before rehabilitation"

(2) Consideration may be given by local authorities when adherence to this code would require destructive alteration or demolition of building features identifiable as contributing to the significance of the building.

No guidance is given or referenced for assessing the hazard or giving consideration to significant features.

305 Fire Safety has two broad provisions, the first a comprehensive compliance alternative and the second an exemption for exit dimensions.

305 Special Historic Museum Building Provisions has six specific sections covering General (a provision for allowance of assembly occupancies above the level of exit discharge), Additions, Single Exits, Guardrail Height, Guardrail Openings, and Catastrophes. These provisions apply only to historic buildings restored or recreated to display the building itself and associated artifacts as defined in Chapter 2, Definitions and Standards.

307 Ceiling Heights sets a minimum of 7 feet for habitable or occupiable rooms.

CHAPTER 4 - MINIMUM STANDARDS FOR EXISTING BUILDINGS contains the following sections:

401 General
402 Arrangement and Number of Exits
403 Shaft Enclosures
404 Corridors
405 Exit Illumination and Sighs
406 Existing Fire Escapes
407 Handrails and Guardrails
408 Special Mixed Occupancies
409 Property Protection
410 Fire Protection
411 Handicap Accessibility
412 Elevators
413 Structural Safety
414 Firestopping and Draftstopping

401 General. The stated intent of this chapter is to provide a minimum standard of life safety in existing buildings that do not conform to the building code in effect at the time of construction. Buildings constructed prior to 1936 must meet the 1936 building code or NFPA 101, Life Safety Code, for existing buildings, and this code.

Sections 402 - 414 delineate specific provisions or compliance alternatives.

CHAPTER 5 - MINIMUM STANDARDS FOR CHANGE OF OCCUPANCY has a General Section and a section on Heights and Areas. A change of occupancy is permitted if the existing buidling meets the requirements and those of either Chapter 4, Minimum Standards for Existing Buildings, or Chapter 6, Evaluation of Building Performance. This chapter establishes hazard category classifications for different occupancy classifications as shown in Table 501.

TABLE 501 - Hazard Categories and Classifications

RELATIVE HAZARD	OCCUPANCY CLASSIFICATION
1 (Highest Hazard)	Essential Facilities
2	Large Assembly
3	Small Assembly, Educational
4	Residential
5	Business, Mercantile
6	Factory-Industrial, Storage-1
7	Auto Parking Structure, Storage-2
8	Private Garages, Carports, Sheds
9 (Lowest Hazard)	Agricultural Buildings

An existing building may change to an occupancy in the same or lesser hazard category by complying with the provisions of this code. If a change of occupancy is to a higher category, the requirements of the current Building Code, as may be modified by Chapter 6, Evaluation of Building Performance, apply.

Section 502 - Heights and Areas allows existing buildings that are changing occupancy to exceed limitations of the current Building Code if two conditions are met: (1) the hazard category of the new occupancy is the same or less, and (2) the height and area does not exceed that permitted by the code under which the existing building was built.

CHAPTER 6 - EVALUATION OF BUILDING PERFORMANCE has seven sections, General, Implementation, Evaluation, Building Score, Safety Scores, Evaluation of Building Safety, and Mixed Uses. This chapter presents a fire risk indexing system that is essentially the same as the BOCA *National Building Code*, Chapter 34 - Existing Structures, 1993 Edition, but adapted to provisions of the North Carolina State Building Code. It is intended to maintain or increase safety in existing buildings while permitting changes, but without full compliance of the current Building Code.

CHAPTER 7 - BUILDING SERVICE SYSTEMS includes sections on Scope, Evaluation of Service Systems, Mechanical Systems, and Plumbing Systems. Building service systems which conform to the building code in effect at the time of construction and which have been properly maintained, are deemed in compliance. Additions and buildings in which there is a change of hazard category of occupancy must comply with the current Building Code. Also, alterations, repairs, or additions to existing service systems must comply with the current Building Code.

Identification of code sections corresponding to APT Project elements:

ACCESSIBILITY - Section 411 - meet requirements of code under which building was constructed

ADDITIONS - Section 101.4 -

APPEALS/ VARIANCES - Section 111 - refers to State Building Code

ARCHAIC MATERIALS AND METHODS OF CONSTRUCTION - Section 106

CHANGE OF OCCUPANCY - Chapter 5

DOCUMENTATION - Section 106

HISTORIC SITES

MECHANICAL, PLUMBING AND ELECTRICAL - Chapter 7

MUSEUMS - Chapter 3

RELOCATION OF BUILDINGS - Section 104.7

REPAIRS - Section 104.3

STRUCTURAL - Section 413

UNSAFE BUILDINGS

COMPLIANCE ALTERNATIVES

Building Floor Area - Section 502

Building Height - Section 502

Corridors - Section 404

Doors

Escape Windows and Doors

Fire Escapes and Exit Ladders - Section 406

Finishes - Section 410.3 & 410.4

Fire Alarm System - Section 410.2

Fire Extinguishing System - Section 410.1

Fire Resistive Requirements, Interior

Fire Resistive Requirements, Exterior - Section 409

Glazing

Light and Ventilation

Means of Egress - Section 402

Roof Coverings

Room Dimensions

Stairways

Vertical Shafts - Section 403

STANDARD EXISTING BUILDINGS CODE

Southern Building Code Congress International, Inc.
900 Montclair Road
Birmingham, Alabama 35213-1206
205-591-1853

Summary

The 1997 Standard Existing Buildings Code (SEBC), first printed in 1988, is intended for use in conjunction with the other Standard codes, e.g., the *Standard Building Code, Standard Fire Prevention Code*, et. al.

The SEBC provides "regulations and general guidelines that enable local communities to preserve existing buildings that might otherwise be destroyed, and at the same time satisfy basic structural and fire safety needs of the public." The Code aims to provide the Building Official a greater degree of freedom in evaluating possible means of achieving a minimum level of occupant safety. The code is intended to be used with the other Standard Codes.

The SEBC is not mandatory, and to be used must be adopted by a jurisdiction. It is understood that the SEBC has not been widely adopted or used.

Organization

The 22 page SEBC includes 8 Chapters:

1 Administration
2 Definitions and Abbreviations
3 Historic Structures
4 Means of Egress
5 Fire Protection
6 Light, Ventilation and Sanitation
7 Building Services
8 Maintenance

The 164 page Appendix is based on the *HUD Rehabilitation Guidelines 1980*, and includes the following:

A1 Egress Guideline For Residential Rehabilitation
A2 Electrical Guideline for Residential Rehabilitation
A3 Plumbing DWV Guideline for Residential Rehabilitation
App 1 Performance Criteria
App 2 Examples of Acceptable DWV Practices for Building Rehabilitation
A4 Guideline on Fire Ratings of Archaic Materials and Assemblies
A5 Structural Assessment

Historic Structures

A definition of historic structure is included in the Chapter 3 provision which also describes how historic structures are to be treated by the code. In entirety, Chapter 3 states:

> The provisions of this code relating to the construction, alteration, repair, enlargement, restoration, relocation or moving of buildings or structures shall not be mandatory for existing buildings or structures identified and classified by the state or local jurisdiction as Historic Buildings when such buildings or structures are judged by the building official to be safe and in the public interest of health, safety and welfare regarding any proposed construction, alteration, repair, enlargement, restoration, relocation or moving of buildings within fire districts.

The code is not specific with respect to whether this provision applies to historic structures when there is a change of occupancy.

Additionally, the *Standard Building Code* includes two references to historic structures in Chapter 34:

> 3401.5 Special historic buildings. (Defined per above)
>
> 3403.3 (Existing Building Accessibility for People with Physical Disabilities). Historic buildings. These provisions shall apply to buildings and facilities designated as historic structures that undergo alterations or a change in occupancy, unless technically infeasible. If the historic character of the building is adversely affected, alternate provisions may be accepted.

Unlike the other rehabilitation codes, the SEBC provides few specific definitions, language, and compliance alternatives or exemptions for historic buildings. The following are illustrative of approaches to existing buildings, or as noted, specific commentary on historic buildings.

ACCESSIBILITY

- Accessibility to conform with requirements 409 and new construction standards (101.7.2).
- For historic buildings, new construction provisions apply when change of occupancy, unless technically infeasible. When the historic character of the building is adversely affected, alternative provisions may be accepted (409.2, 409.3).

ALTERATIONS, REPAIRS AND REHABILITATION

- "Alterations, repairs or rehabilitation work may be made to any existing buildings without requiring the building to comply with all the requirements of this code provided that the alteration, repair or rehabilitation work conforms to the requirements of the building, plumbing, mechanical, gas and electrical codes for new construction. The

building official shall determine the extent to which the remainder of the building shall be made to conform to the requirements of this code for existing construction." (101.5.1).

- Alterations or repairs may be made with same materials, provided there is no adverse effect on structural member or required fire resistance of component (101.5.3)

ALTERNATE MATERIALS AND METHODS.

- "The provisions of this code are not intended to prevent the use of any material or method of construction not specifically prescribed by this code, provided any such alternate has been approved by the building official. The building official shall approve any such alternate, provided he finds that the alternate for the purpose intended is at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. The building official shall require that sufficient evidence or proof be submitted to substantiate any claim made regarding the alternate." (102.6)

APPEALS

The appeal process applies to all existing buildings covered by the code. Appeals may be granted following the rejection or refusal of the building official when it is determined that the code provisions do not apply, that an equally good or more desirable form of installation can be employed, or that the true intent and meaning of the code have been misconstrued or incorrectly interpreted. (105.1).

ARCHAIC MATERIALS AND METHODS OF CONSTRUCTION

Alterations or repairs may be made with the same materials with which the existing building or structure was built, provided such use has no adverse effect on any structural member or required fire resistance of any component (101.5.3)

CHANGE OF OCCUPANCY

If occupancy change, building to conform with new construction standards (101.7)

LIABILITY

Clarifies that jurisdiction and employee are not liable in tort for damages for defect or hazardous or illegal condition on inadequacy...subject to inspection (101.2.3)

MEANS OF EGRESS

Appendix A1 *Egress Guideline for Residential Rehabilitation* is reprinted from the 1980 *HUD Rehabilitation Guidelines* series (No. 5).

MECHANICAL, PLUMBING AND ELECTRICAL

Mechanical, gas and electrical work must comply with requirements for new construction (101.5).

Appendix 1 *Performance Criteria,* Appendix 2 *Examples of Acceptable DWV Practices for*

Building Rehabilitation, Appendix A2 *Electrical Guideline for Residential Rehabilitation*, and Appendix A3 *Plumbing DWV Guideline for Residential Rehabilitation* are reprinted from the 1980 *HUD Rehabilitation Guidelines* series.

REPAIRS

Alterations, repairs or rehabilitation work may be made without compliance with the SEBC; the building official determines extent to which the remainder of the building must comply (101.5.1).

STRUCTURAL

Requirements necessary for strength or stability that are not addressed by the code are determined by the building official (102.5). Chapter 8 Maintenance requires the structural system to be maintained in a structurally sound condition. Appendix A5 *Structural Assessment* is reprinted from the 1980 *HUD Rehabilitation Guidelines* series (No. 9).

VACANT BUILDINGS

Buildings left vacant form more than 2 years to be analyzed prior to occupancy (structural strength, stability, light, plumbing, etc.) These findings to be included in permit application (101.4.2).

COMPLIANCE ALTERNATIVES

Note: given the brevity of the historic building chapter of the SEBC, none of the following are specific to historic buildings. The list is not exhaustive, but rather provides examples of requirements or exceptions.

Corridors

May remain (404.1).

- Except in Group R, existing corridors acceptable without a fire resistance rating provided effective smoke barrier. Doors to have self-closing or automatic closing devices (404.2.1).
- In Group R, existing may be acceptable if have alternate safety features per 406 (404.2.2)

Fire Escapes and Exit Ladders

Existing fire escapes permitted if provide less than 50% of capacity, and meet specific criteria (407.1, 407.2).

Handrails and Guardrails

- Existing handrails and guardrails permitted if greater than 30" above ramp or tread. Handrails part of guard rail can be 42" (408).
- Guardrails permitted if at least 36" in residential occupancies and 42" in other (408.2.1).

- Intermediate or ornamental rails permitted when allowed by official (408.2.2).

Light and Ventilation

SEBC includes Chapter 6 Light, Ventilation and Sanitation.

Means of Egress

SEBC includes Chapter 4 Means of Egress.

- Non-conforming exits may be permitted when additional safety features provided (406).
- Notes intent to provide a reasonable degree of safety to persons occupying existing buildings that do not conform with minimum requirements (401.1).
- Directs building official to take into account other features of the building, such as requirements when built, occupancy classification, etc (401.2).
- Defines where single exits are permitted, per use group (402.1.3).
- Identifies where key locking devices acceptable (402.5).

Stairways

- Existing exit stair enclosures and opening protection may be acceptable pending approval. Additional safety features may be considered to provide an equivalent degree of protection, such as: sprinkler system with alarm, smoke detection with alarm, manual fire alarm system, fire compartmentation barriers, stairwell pressurization, new fire escape serving 5 or less stories (60' max). All required enclosures shall provide barrier against smoke spread (403.3, 406).

UNIFORM CODE FOR BUILDING CONSERVATION

International Conference of Building Officials
5360 Workman Mill Road
Whittier, CA 90601-2298
800-284-4406

Summary

The *Uniform Code for Building Conservation* (UCBC) was first published in 1994 to "establish(es) life-safety requirements for all existing buildings that undergo alteration or a change in use. Its provisions offer alternative methods of achieving safety so that the inventory of existing buildings can be preserved."

The UCBC has three chapters that apply to historic buildings: Chapter 4 *Minimum Standards for Existing Buildings* are minimum provisions for all historic buildings; Chapter 5 *Minimum Provisions for Change of Occupancy* applies to historic buildings undergoing a change of occupancy, although many provisions are exempt if the change of occupancy is to a group with equal or less hazard); and Chapter 6 *Historic Structures* for historic buildings not undergoing a change of occupancy. Requirements of Chapter 5 are a function of the hazard category and classification according to five criteria: heights and areas, life safety and exits, occupancy separations, exposure of exterior walls and stairway enclosures, and earthquake safety.

The UCBC code, to be used in concert with the *Uniform Building Code's* (UBC) Sections 3403 and 3405, provides a minimum level of safety or performance for all existing buildings. The baseline is determined by the *Uniform Code for the Abatement of Dangerous Buildings* and the *Uniform Housing Code*. The UCBC is intended to be used with other ICBO documents, including the *Uniform Building Code,* although must be separately adopted.

The *Uniform Building Code's* Section *3405* provides wide discretion to the local authority, as well as includes separately adopted appendix sections that provide retroactive life safety requirements. Where the UCBC has been separately adopted, its provisions for historic buildings provided greater direction.

It is understood that the UCBC has not been widely adopted or used, and thus has had few code changes proposed in its history.

Organization

The 15 page UCBC includes 7 Chapters and 6 Appendix Chapters:

Chapter 1 Title and Scope

Chapter 2	Enforcement and Permits
Chapter 3	Definitions
Chapter 4	Minimum Standards for Existing Buildings
Chapter 5	Minimum Provisions for Change of Occupancy
Chapter 6	Historic Structures
Chapter 7	Requirements for Group R Occupancies

The 284 page Appendix and Guidelines include the following:
Appendices:

Appendix Chapter 1	Seismic Strengthening Provisions for Unreinforced Masonry Bearing Wall Buildings
Appendix Chapter 2	Life-safety Requirements for Existing High-rise Buildings
Appendix Chapter 3	Accessibility
Appendix Chapter 4	Energy Conservation
Appendix Chapter 5	Earthquake Hazard Reduction in Existing Tilt-up Concrete Wall Buildings
Appendix 6	Prescriptive Provisions for Seismic Strengthening of Cripple Walls and Sill Plate. Anchorage of Light, Wood-framed Residential Buildings

Guidelines:	(note: these guidelines are based on the *HUD Rehabilitation Guidelines 1980*, and include the following:)
UCBC-1	Exit Systems
UCBC-2	Fire Ratings of Archaic Materials
UCBC-3	Allowable Stresses for Archaic Materials
UCBC-4	Electrical Guideline
UCBC-5	Plumbing DWV Guideline

Historic Buildings

Definition
The UCBC defines an historic structure as "a building or structure that has been designated by official action of the legally constituted authority of this jurisdiction as having special historical or architectural significance."

No Change of Occupancy
For repairs or alterations, the UCBC does not allow the level of safety to be reduced below the code under which the building was constructed. Chapters 4 *Minimum Standards for Existing Buildings* and Chapter 6 *Historic Structures* are applicable to these projects, with specific compliance provisions included provided in Sections 605-608.

Change of Occupancy
When a Change of Occupancy occurs, the requirements of Chapter 5 *Change of Occupancy* are a function of the hazard category and classification according to five criteria: heights and areas,

life safety and exits, occupancy separations, exposure of exterior walls and stairway enclosures, and earthquake safety. Buildings changing to an occupancy with a higher hazard group or to a Group A, Division 1 or 2, or Group E, H or I occupancy must comply with the requirements of the Building Code, with the exceptions identified in Chapter 5 of the UCBC. Buildings changing to an occupancy within the same hazard group or to an occupancy in a lesser hazard group need not comply to the requirements of Chapter 5.

Like the other rehabilitation codes, the UCBC provides specific definitions, language, and compliance alternatives or exemptions to address the special circumstances presented by historic buildings. These are summarized below: those noted with only a heading indicate that this particular item is not addressed by the UCBC.

ACCESSIBILITY

Generally, the accessibility provisions of Appendix Chapter 3 Accessibility are applicable. When the building official determines that the provisions would threaten or destroy historic significance, the modifications of Section A304.3 may be utilized. These address accessible routes, accessible entrances, and toilet facilities.

ADDITIONS

Must conform ro requirements for new building, not cause existing building to become unsafe or overloaded, not exceed height, etc. specified for new buildings (105).

APPEALS/ VARIANCES

Building Conservation Advisory and Appeals Board designated to hear appeals (207).

ARCHAIC MATERIALS AND METHODS OF CONSTRUCTION

HUD's 1980 *Guideline on Fire Ratings of Archaic Materials and Assemblies* is included as an appendix to the UCBC.

CHANGE OF OCCUPANCY

Generally required to meet Chapter 5 of UCBC, except for compliance alternatives for finishes and roofing and exemptions where hazard rating is equal or less (607, 501.2).

MECHANICAL, PLUMBING AND ELECTRICAL

All Historic Buildings:

- Unsafe conditions to be corrected, including broken, loose, frayed, inoperable, defective or missing portions of electrical system (405.4, 405.5, 405.6)

Additionally, the 1980 *HUD Rehabilitation Guidelines* (Electrical, Plumbing DWV) are reprinted as Guidelines.

RELOCATION OF BUILDINGS

Historic Buildings without Change of Occupancy:

- Foundations must comply with new construction standards. Otherwise treated as historic

buildings, although exterior wall and openings requirements relative to siting must comply with Building Code or compliance alternatives (604).

REPAIRS

Historic Buildings without Change of Occupancy:

: Repairs (defined as the reconstruction or renewal of any part of an existing building) to any portion may be made with original materials and original methods of construction, subject to provisions of Chapter 6 (603).

STRUCTURAL

All Historic Buildings:

- Except those undergoing minor alterations or repairs as provided in Section 3403 of Building Code, must comply with limits of Dangerous Buildings Code and Chapter 16 of Building Code (403).
- Unreinforced masonry buildings undergoing structural alterations in Seismic Zone to have parapet bracing and wall anchors at roof line when reroofing permit issues, except for certain residential occupancies with no loess than five dwelling units or guest rooms (403).

Historic Buildings without Change of Occupancy:

- Compliance with Building Code live load requirements, although building official may accept existing floors and approve operational controls to limit live load (606).
- Required seismic strengthening not required for unreinforced masonry buildings if low hazard occupancy or use (606).

Historic Buildings with Change of Occupancy:

- Analysis and test methods for evaluation of existing materials may use methods of code under which building was constructed, or other standards approved by building official (505.1).
- Earthquake regulations of Building Code not required when change is to equal or less hazard group (505.2).

WEATHER PROTECTION

All Historic Buildings:

- Roofs to provide weather protection. Drains and other devices to convey roof water to be fully operational (404.2).
- All exposed surfaces to provide weather protection (404.3).

COMPLIANCE PROVISIONS

Section 602 states that "Historic buildings and structures shall meet the minimum standards specified in this chapter. Exceptions:

1. Conformance with the general intent of this code.
2. Compliance with the minimum standards required by Chapter 4 and the specific occupancy requirements of this code.
3. Conformance with the requirements of Chapter 5 when a change of occupancy occurs, except as modified in this chapter.
4. All unsafe and substandard conditions described in this code are corrected.
5. The restored building or structure shall be no more hazardous, based on life safety, fire safety and sanitation, than the building was before renovation."

In addition, the following excerpts from Chapters 4,5, and 6 describe the minimum requirements to be met for historic buildings, whether or not a change of occupancy is to occur. Note that fewer requirements exist if the change of occupancy involves a new use that is equal to or less than the existing use.

Building Floor Area

All Historic Buildings:

- Existing areas acceptable provided minimum requirements of Chapter 4 are met (401.2).

Historic Buildings with Change of Occupancy

- May exceed allowable area for new buildings if hazard level of new occupancy is equal to or less than existing hazard group (502).

Building Height

All Historic Buildings:

- Existing heights acceptable provided minimum requirements of Chapter 4 are met (401.2).

Historic Buildings with Change of Occupancy:

- May exceed allowable height for new buildings if hazard level of new occupancy is equal to or less than existing hazard group (502).

Corridors

All Historic Buildings:

- Existing openings in walls and ceilings can be maintained if covered with 3/4" thick gypsum wallboard or equivalent material on room side, or with fixed wired glass in steel frame in corridor wall and ceiling (402.4).
- Existing walls, ceilings and openings may be retained when suppression system installed: may be from domestic water-supply (402.4).

Historic Buildings without Change of Occupancy:

- Existing undersized corridor widths can be retained provided sufficient width to traverse the means of egress (605).

Doors

All Historic Buildings:

- 1 3/8" thick solid-bonded wood-core door or equivalent steel door or door with less than a 20 minute rating, all with self or automatic closing devices, acceptable for buildings constructed under codes without requirements for 20 minute ratings (402.4).
- Existing transoms can be maintained if covered with 3/4" thick gypsum wallboard or equivalent material on room side, or with fixed wired glass in steel frame in corridor wall and ceiling (402.4).

Historic Buildings without Change of Occupancy:

- Existing doors can be retained provided there is sufficient width and height exist for passage through the opening (605).
- Front or main exit doors need not swing in direction of exit provided other means of egress have sufficient capacity to serve total occupant load (605).
- Existing transoms acceptable if fixed closed and wired glass in steel frame installed on one side (605).

Fire Escapes and Exit Ladders

All Historic Buildings:

- Permitted as one means of egress (not the primary means) that was not required by code under which building was constructed, with exceptions (402.3, 402.5).

Finishes

Historic Buildings without Change of Occupancy:

- When Class III or better flame spread classification required, existing nonconforming materials acceptable if surfaced with fire-retardant paint or finish (607.1).
- In building with suppression system, fire-retardant paint or finish no required if nonconforming materials are substantiated as historic in character (607.1).

Fire Extinguishing System

Historic Buildings without Change of Occupancy:

- Required when code compliance does not occur and when building is considered a distinct fire hazard. Cannot be used as substitute for, or alternate to, number of exits (605).

Fire Resistive Requirements, Interior

All Historic Buildings:

- ½" of gypsum wall board acceptable where one hour fire resistive construction required (402.4).

Historic Buildings without Change of Occupancy:

- One hour fire-resistive construction not required (605).

Historic Buildings with Change of Occupancy:

- When change to higher hazard group, wood lath and plaster or ½" thick gypsum wallboard acceptable where 1 hour fire resistance required (503.3).

Fire Resistive Requirements, Exterior

Historic buildings with Change of Occupancy:

- When change to higher hazard group, walls not perpendicular to property line required to have fire resistance and opening protection as required by Building Code, except that for certain building classifications not greater than three stories existing non-combustive walls with rating of two hours acceptable (504.1)
- When change to higher hazard group, exceptions for Building Code requirements for opening protections include:
  a) for certain residential occupancies less than 3 stories and less than 3' from property line (504.2.1)
  b) building with full fire suppressions system (504.2.2)
- When change to lower hazard group, no protection of opening required (504.2.3)

Means of Egress

All Historic Buildings:

- If existing systems comply with 402.2 through 402.4 (means of egress, number of means of egress, corridors, fire escapes, stairways) , deemed as meeting Building Code, provided exit system is judged by building official to be at least equivalent to the exit system that was required by the code under which the building was constructed or equivalent provisions of the current code (402.1).

Historic Buildings with Change of Occupancy:

- If change is to higher hazard group, compliance with Building Code required except for existing corridors and stairways meeting Chapter 4 (above) requirements, and may use compliance alternatives in UCBC (503.1).
- If change is to equal or lesser hazard group, existing means of egress system acceptable if complies with Chapter 4 (503.2).

Roof Coverings

Historic Buildings without Change of Occupancy:

- Roof covering materials with less than Class C rating allowed where fire retardant roof covering required (607.2).
- Non-rated materials may be accepted by the building official (607.2).

Historic Buildings with Change of Occupancy:

- Existing roofs may be retained if unsafe or overloaded conditions corrected or where dead load is not increased (505.1).

Stairways

All Historic Buildings:

- Stairways 30" or less in height not required to have guardrails (405.2).
- At stairways (but not landings), 30" high rails acceptable (608.1, 405.2)
- Existing winding or spiral stairway acceptable as one means of egress, if complete handrail. May not be the primary means when used w/fire escape. Width to comply with Building Code. Circular stair complying in width acceptable as means of egress (402.6)

- Riser/run variations: maximum 3/8" difference between largest and smallest dimensions (405.1.1).
- Each stairway to have at least one handrail, except existing stairs with less than four risers (405.1.2).

Historic Buildings without Change of Occupancy:

- Existing undersized stairway widths can be retained (605).
- Spacing between intermediate railings or openings in existing ornamental patterns are acceptable. Missing elements or members may be replaced in kind (608.2).

Historic Buildings with Change of Occupancy:

- When change to higher hazard occupancy, exceptions for enclosure required by Building Code:

  a) for most occupancies openings serving only one adjacent floor and not connected with corridors or stairways serving other floors (503.4.2.1)

  b) when separated from other stories by one hour fire-resistive construction or approved wired glass set in steel frames when all exit corridors have suppression system (503.4.2.2).

Vertical Shafts

Historic Buildings with Change of Occupancy:

- When change to higher hazard occupancy, one-hour fire resistive construction not required when:

  a) entire building has suppression system, or

  b) if shafts are blocked at every floor level by at least 2" of solid wood or equivalent construction.
- When change to higher hazard occupancy, openings to shafts to be protected with assemblies with one hour rating and automatic closing. Existing fusible link closers permitted if rating does not exceed 135 degrees F.

VERMONT FIRE PREVENTION & BUILDING CODE - (1999 DRAFT)

Fire Prevention Division
Vermont Department of Labor and Industry
National Life - North Building
Drawer 20
Montpelier, VT 05602

Summary

An interagency workgroup has made proposals for addressing the issue of historic buildings in the next edition of the State Fire Prevention and Building Code. These include specific recognition of the need for use of exceptions and alternatives and the expanded use of NFPA 101A to cover educational, assembly, mercantile, storage, and residential occupancies. A new Appendix will assist in application of the code to historic buildings.

Background

Vermont has an unusually high proportion of older buildings and it is recognized that these contribute substantially to the sense of place that sets Vermont apart. In 1996 the Vermont Department of Labor and Industry, in conjunction with the Agency of Commerce and Community Development, created a technical working group to assess the State's regulation of historic buildings. The Vermont Fire Prevention and Building Code adopts the BOCA *National Building Code*, NFPA *Fire Prevention Code* (NFPA 1) and NFPA *Life Safety Code* (NFPA 101).

The group reviewed other states' historic building codes ["Historic Building Code Interim Report", Vermont Department of Labor and Industry, Montpelier, 17 February 1997]. They identified 16 states that had legislative acts addressing historic buildings and analyzed 5 (CT, MA, NJ, WI, and Telluride, CO) for specific provisions addressing older and historic building features and issues.

The work group concluded that provisions for protecting historic buildings already are or can be incorporated into the existing Vermont Fire Prevention and Building Code. They recommended specific provisions for protecting historic buildings to be incorporated into the next edition of the State Code.

Organization

The 1999 Vermont Fire Prevention & Building Code is 59 pages long consisting of 15 Sections (33 pages) and 12 Appendices (26 pages). Sections relevant to historic buildings are Section 2. Intent of Code, Section 3. Scope and Construction, Section 4. Application for a Construction Permit, Section 10. Adoption of Nationally Recognized Safety Standards, Section 11. Compliance Dates, Variances, and Exemptions, and Appendix VII. Information for Historic Buildings. Each of these is addressed briefly below.

Section 2. Intent of Code - A specific statement addressing historic buildings is to be added to this section as follows:

> It is also the intent of this code to facilitate the rehabilitation of change of use of historic buildings to preserve the historic fabric and integrity providing that the public safety and protection is ensured.

Section 3. Scope and Construction This Section states that the code is equally applicable to new and existing buildings without exceptions.

> (b) The Vermont Fire Prevention and Building Code shall apply to new and existing buildings, premises, and their use, occupancy and maintenance..

Section 4. Application for a Construction Permit - A new paragraph in this Section

> (a) (2) Where the applicant is requesting special consideration as a historic building, the application for a construction permit for a building shall include documentation on the designation of the building as being historic, ..

The paragraph continues to require identification and evaluation of:

- historic adjacent structures and site elements,
- historic construction features, and
- historic spaces.

It also advises that assistance in preparing this information is available from the State Division of Historic Preservation.

Section 10. Adoption of Nationally Recognized Safety Standards .- In this Section there National codes are adopted by specific reference; *BOCA National Building Code*, NFPA *Fire Prevention Code* (NFPA 1), and NFPA *Life Safety Code* (NFPA 101).

Section 11. Compliance Dates, Variances, and Exemptions - A new paragraph on variance requests is added that expands use of NFPA 101A, *Guide on Alternative Approaches to Life Safety*, to cover educational, assembly, mercantile, storage, and residential occupancies::

c.) Variance Requests 4. Historic Buildings. In addition to the above, historic buildings not already categorized under NFPA 101A may use alternative sections of NFPA 101A when a fire safety plan has been developed in accordance with NFPA 914 sections 4-3 and 4-4 (1994 edition) as follows:

i. The business occupancy section may be used for historic buildings classified as educational and assembly occupancies. Where there are exit deficiencies the alternate calculations for egress width are also required.

ii. The business occupancy section may be used for historic buildings classified as mercantile, industrial or storage when additional information on the fire loading for the building is provided.

iii. Historic buildings classified as residential occupancy may use the board and care occupancy section.

Appendix VII. Information for Historic Buildings

This appendix summarizes the Sections of the Code that may affect historic buildings and provides additional information on use of archaic materials, fire alarm and detection systems, fire extinguishing systems, and successful case studies of issues for historic buildings, largely by reference to NFPA 914, *Recommended Practice for Fire Protection in Historic Structures*. Briefly, these 5 sections are as follows:

Important Sections Affecting Historic Buildings: outlines the Sections that address historic buildings and that may dictate the need for permits. It includes a paragraph on seeking assistance from regional offices of the Fire Prevention Division.

Use of Archaic Building Materials: explains concepts of interior finish ratings and fire resistance ratings with reference to NFPA 914, Appendix D, Guideline on Fire Ratings of Archaic Materials and Assemblies.

Fire Alarm and Detection Systems: provides a brief description and refers to NFPA 914, Appendix A, Table A-2, Glossary of Fire Detection and Alarm Systems.

Fire Extinguishing Systems: provides a brief description and refers to NFPA 914, Appendix A, Table A-3, Glossary of Fire Extinguishing Systems.

Successful Case Studies of Issues for Historic Buildings: discusses means of addressing common fire safety issues in historic buildings, specifically;

- winders in stairways,
- illumination of means of egress, and
- fire rating for doors.

WISCONSIN HISTORIC BUILDING CODE

Wisconsin Administrative Code
Chapter ILHR 70, Historic Buildings
Department of Industry, Labor, and Human Relations
Madison, WI 53702
(608) 266-3151

Summary

Chapter ILHR 70 of the Wisconsin Administrative Codeis a building code for historic structures. Its purpose is to provide alternative building standards for preserving or restoring buildings or structures designated as historic buildings. It also provides a process for granting variances to permit the proper preservation or restoration of qualified historic buildings. The Building Evaluation Method has similarities to the NFPA FSES and BOCA Chapter 34, however, it is specifically adapted to historic buildings and can be used in conjunction with any code.

Introduction

Unlike most other states in the US, Wisconsin has developed its own building code rather than adopt a model code. Beginning in 1914, the State adopted a set of rules designed to ensure that buildings were structurally sound, fire resistant, and generally safe for the building's occupants. Over the years, these rules became more sophisticated as new materials, fire protection techniques, and methods for protecting the public were developed. In addition, the code became the vehicle for enactment of regulations designed to promote certain social goals, primarily providing accessibility for disabled persons and energy conservation. The Wisconsin State Building Code is changed every five years, the latest edition being 1995.

As with other building codes, a recognized limitation of the Wisconsin Code is that it is designed for new buildings. In 1982, the Wisconsin State Legislature established the Historic Building Code Council and charged it with creating an equivalent and elective historic building code. The adjective *equivalent* meant that the council had no power to waive the prevailing code requirements. The term *elective* means that the historic building code is optional, i.e., the owner of an historic building can either opt for the historic building code or use the prevailing code. The resultant historic building code is identified as Chapter ILHR 70 of the Wisconsin Administrative Code, dated June 1995. This code is not intended to prescribe sympathetic work but to allow owners of historic buildings to make modifications sympathetically. An overall objective of the Wisconsin Code is to eliminate to the extent possible the variance petition process.

Organization

The contents of Chapter ILHR 70, Historic Buidings, is in eleven subchapters as follows:

Subchapter I - Purpose, Scope, and Application
Subchapter II - Administration and Enforcement
Subchapter III - Definitions
Subchapter IV - Building Evaluation Method
Subchapter V - Miscellaneous Building Requirements
Subchapter VI - Alternative Structural Requirements
Subchapter VII - Alternate Accessibility Requirements
Subchapter VIII - Alternate Energy Conservation Requirements
Subchapter IX - Alternate Energy Conservation Requirements
Subchapter X - Alternate Electrical Requirements
Subchapter XI - Totally Preserved Buildings Used As Historical Exhibits

There are three major components of the Code. Subchapters I-III are the administration and enforcement section containing application rules. Subchapter IV is a "trade-off" system that allows balancing safety parameters in a manner comparable to the NFPA FSES and BOCA's Section 3408. The third component is comprised of specific rules about features and systems commonly found in historic buildings such as atria, handrails, and stairways. The Code offers specific remedies and exemptions for certain historical features in Subchapters V-X. The last subchapter (XI) is a separate section for buildings that function strictly as a museum. The purpose is to allow those buildings to remain historically accurate, if the owners are willing to comply with special occupancy restrictions commensurate with museum use.

Subchapter I identifies qualified buildings to which ILHR 70 may be applied. An historic building is defined as one which is:

(a) Listed on, or nominated by the state historical society for listing on, the national register of historic places in Wisconsin;

(b)Included in a district which is listed on, or nominated by the state historical society for listing on, the national register of historic places in Wisconsin, and has been determined by the state historical society to contribute to the historic significance of the district;

(c)Listed on a certified municipal register of historic property, or ;

(d)Included in a district which is listed on a certified municipal register of historic property, and has been determined by the municipality to contribute to the historic significance of the district.

Thus, there are two levels of qualification for the historic building code. The property may be listed in the National Register or it may be designated locally by a certified municipality. A certified municipality is one that has been determined by the Wisconsin State Historical Society to conform with enabling legislation that created the building code. Owners of historic buildings

must send to the Historical Society or local unit of government a verification form to confirm the structure as a "qualified historic building". Excluded are schools, residential health care facilities, and new or reconstructed buildings and additions. A Qualified historic building may opt to comply with ILHR 70 in lieu of any other building codes that would be applicable.

Building Evaluation Method

Subchapter IV of the Code is a system for multiple attribute evaluation, called the Building Evaluation Method. It is used to determine code compliance of a qualified historic building. The Building Evaluation Method assesses life safety for a qualified historic building by comparing seventeen building safety parameters with the requirements of the prevailing code. If an historic building has less of a parameter than is required by the prevailing code, a negative number is assigned. If an historic building has more of a parameter than is required by the prevailing code, a positive number is assigned. Thus evaluation is directly related to the prevailing code. If the sum of all the parameters is greater than or equal to zero, the building is compliant. The same trade-offs would have been allowed under the variance petition process but are now codified. This adds a degree of certainty of approval that did not previously exist, often impeding development of historic buildings.

Unlike the NFPA FSES and BOCA Chapter 34, the Building Evaluation Method has no mandatory scores. If the total safety score is equal to or greater than zero, the building is considered code compliant. Also unlike the FSES and BOCA, Wisconsin Subchapter IV does not vary by occupancy. A table for each parameter gives a set of numerical values, one of which is selected for each evaluation. Criteria for these values refer directly to the prevailing code. The same set of values applies for all nonexcluded building uses and occupancies.

Subchapter IV, Building Evaluation Method, in ILHR 70 of the *Wisconsin State Building Code* - 1995 is outwardly very similar to Section 3408.0, Compliance Alternatives, in the BOCA *National Building Code* - 1996. However, there are some significant differences. Of particular relevance is that while BOCA exempts historic buildings from Chapter 34, ILHR 70 is specifically intended for historic buildings.

Subchapter IV, Building Evaluation Method, in ILHR 70 of the *Wisconsin State Building Code* - 1995 is outwardly very similar to Section 3408.0, Compliance Alternatives, in the BOCA *National Building Code* - 1996. However, there are some significant differences. Of particular relevance is that while BOCA exempts historic buildings from Chapter 34, ILHR 70 is specifically intended for historic buildings.

The seventeen safety parameters in the Building Evaluation Method are listed below along with their relative importance.

Parameter Importance for Wisconsin Subchapter IV

PARAMETER	PERCENT	PARAMETER	PERCENT
Number of Stories	15%	Attic Compartmentation	4%
Vertical Openings	12%	Mixed Occupancies	4%
Sprinklers	9%	Emergency Power	4%
Building Area	6%	Fire stopping	3%
HVAC Systems	6%	Dead Ends	3%
Smoke Control	6%	Exit Capacity	3%
Fire Alarms	6%	Smoke Detection	3%
Travel Distance	6%	Building Setbacks	2%
Elevator Control	5%		

A flexibility is built into the Wisconsin method by referencing the "prevailing code" in general rather than a specific edition of a specific building code. A recent major rehabilitation project was evaluated in the neighboring state of Illinois by applying the Building Evaluation Method of Subchapter IV and referencing the BOCA *National Building Code* - 1996 as the "prevailing code". This was justified because of the exclusion of historic buildings in BOCA and applicability of ILHR 70.

Specific Provisions

Subchapter V - Miscellaneous Building Requirements

1. Atriums - Existing atriums are permitted to remain subject to certain restrictions and requirements for number of levels, doors, smoke detection, smoke removal, and exiting.

2. Roof coverings - Existing roof coverings may remain unless more than 59% is being repaired.

3. Illuminated exit signs - Required in conformance with prevailing code.

4. Fire escapes - May continue to be used subject to building use, height above grade, exits to fire escapes, and structural analysis.

5. Stairway requirements - Existing stairs are required to comply with the existing code with exceptions for width, riser and treads, and handrails.

6. Guardrails - Existing guardrails with exceptions for height and openings below top rail.

7. Doors - Exit door size and swing are required to comply with the existing code.

8. Sanitary facilities - required to comply with the existing code.

Subchapter VI - Alternate Structural Requirements

1. Applies to renovations and changes in use.

2. Alternative standards for floor live loads or "Test of Time":

> (2) TEST OF TIME STANDARD. The test of time standard may be applied in lieu of meeting the design load requirements for roof dead load, live load, and wind load specified in the the prevailing code where no change of loading will occur, providing:
> (a) The historic building has been determined to support the imposed floor loads; and
> (b) the building has stood for more than 20 years with no visible signs of deterioration.

3. Use of archaic materials is permitted subject to alternative standards.

Draft Code for
Historic Buildings

APPENDIX: COMPLIANCE ALTERNATIVES

APPENDIX - COMPLIANCE ALTERNATIVES

The following are compliance alternatives generated from the historic buildings provisions evaluated in the codes reviewed for this study.

1. The compliance alternatives noted herein are provided only to provide a general understanding of the breadth of alternatives that have been adopted in various documents.
2. This selective list is not comprehensive and in most cases represents only alternatives identified for historic buildings. Precise applications may require coordination with other code provisions.
3. The list includes paraphrased or repeated provisions, as necessary to convey the intent of the provision.
4. Abbreviations are as follows:

BO	Building Official
CO	Change of Occupancy
SOIS	Secretary of the Interior's Standards (where indicated, provision requires that these standards are met)
CA	California Historical Building Code (1998)
NARRP	Nationally Applicable Recommended Rehabilitation Provisions
NJ	New Jersey Administrative Code, Uniform Construction Code, Rehabilitation Subcode
UCBC	Uniform Code for Building Conservation

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TABLE 1

1.0	**ACCESSIBILITY**			
1.1	General	...If the historic character is adversely affected, then alternative provisions of accessibility are permitted.	NAARP	901.3
1.2	General	Compliance not required when compliance is technically infeasible.	NJ	6.33(a)3
1.3	Accessible Routes	Unless would threaten or destroy historic character, at least one accessible route to accessible entrance, at least one accessible entrance, an accessible route to public spaces on accessible entrance level, and at least one accessible toilet when toilets provided.	NJ	6.33(a)3
1.4	General	If historical significance is threatened, alternative provisions for access may be applied... (section includes specific alternatives for entry, doors, toilet rooms, power assisted doors, toilet rooms, exterior & interior ramps and lifts).	CA	8-602 8-603

TABLE 2

2.0	**BUILDING HEIGHT AND AREA**			
2.1	Floor Area	Floor area for building undergoing change of occupancy permitted to exceed allowable areas by 20%.	NARRP	905.1
2.2	Floor Area	CO. Floor area when change of use to a higher hazard category...may exceed the allowable areas for proposed group by 50%.	NJ	6.33(d)1 (CO)
2.3	Floor Area	Regardless of use or character of occupancy, area of a one-story historic building may not exceed 15,000 sf, unless increase otherwise permitted. Historic buildings with full sprinklers (incl. basements and cellars) may have unlimited floor area w/o fire resistive area separation walls.	CA	8-302.4
2.4	Height and Area	CO. Existing buildings exceeding allowable heights and areas may undergo change of occupancy if new hazard level is equal to or less than existing hazard level. [Note: applies to all existing buildings.]	UCBC	502
2.5	Height	Maximum height and number of stories not limited because of construction type, provided these do not exceed designated historical design.	CA	8-302.5

TABLE 3

3.0	**CHANGE OF OCCUPANCY**			
3.1	Applicability	Clarifies that buildings with CO qualify for certain provisions of historic building chapter.	NAARP	903.1 905.1
3.2	Applicability	Establishes list of alternatives [6.33(b)] and building area provisions [(6.33(d) 1] apply to buildings with CO (SOIS).	NJ	6.33(d)1
3.3	Applicability	Historic buildings undergoing CO to meet requirements of all existing buildings for change of occupancy, with exception of provisions for flame-spread classification and roof covering.	UCBC	607
3.4	Applicability	...CO does not mandate conformance with new construction requirements provided new use or occupancy does not create a fire hazard or other condition detrimental to the safety of occupants or firefighting personnel.	CA	8-302.2
3.5	Special Buildings Provisions	Special provisions for building undergoing CO: location on property, roof covering, means of egress, door swing, transoms, finishes, fire resistance, one hour fire resistive assembly, stairs and railings, exit signs, exit stair live load, natural light, energy.	NARRP	905.2-14

TABLE 4

4.0	**EGRESS**			
4.1	Museums	For Use Group R-3 also used for A,B or M such as museum tours, exhibits and other public assembly activities, BO may consider to be Use Group B, provided adequate means of egress be provided (incl. means of maintaining doors in open position, limit on building occupancy, limit on occupancy of certain floors or areas, or supervision.	NAARP	901.4
4.2	Museums	Classify as Use Group B provided occupancy less than 50, and travel distances using following parameters: for buildings w/single means of egress, occupancy limited to 1st and 2nd floor and travel distance not to exceed 75'; two means of egress from all floors above 2nd floor where occupancy permitted. Also, supervision by guide or employee/volunteer knowledgable in emergency exiting procedures when building is occupied.	NJ	6.33(a)4

4.0	**EGRESS**			
4.3	Widths	Existing door openings and corridor and stairway widths of noncompliant dimensions approved providing BO determines sufficient width and height for person to pass through or traverse exit and capacity of exit system is adequate for occupant load or where acceptable or where acceptable operational controls limit occupancy.	NARRP	904.4 905.5
4.4	Widths	Existing door openings and corridor and stairway widths of noncompliant dimensions may be approved providing BO determines sufficient width and height for a person to pass through or traverse the exit. (SOIS)	NJ	6.33(b)5
4.5	Widths	Existing door openings and corridor and stairway widths of noncompliant dimensions may be approved providing BO determines sufficient width and height for a person to pass through or traverse the exit.	UCBC	605.2
4.6	Door Swing	When approved by BO, existing front doors need not swing in direction of exit travel, provided other approved exits have sufficient capacity to serve the total occupant load.	NARRP	904.5 905.6 (CO)
4.7	Door Swing	Existing front or main entry doors need not swing in direction of exit travel when serving fewer than 50 person or when other approved exits have sufficient capacity to serve the total occupant load (SOIS)	NJ	6.33(b)6
4.8	Door Swing	When approved by BO, existing front doors need not swing in direction of exit travel, provided other approved exits have sufficient capacity to serve the total occupant load.	UCBC	605.2
4.9	Door Swing	Front or main exit door(s) need not be rehung to swing in direction of travel provided other means to serve total occupant load are provided.	CA	8-502.1 Except. 4
4.10	Door Hardware	Existing or replica hardware permitted provided that no life safety hazard is created and the hardware meets the intent of the accessibility requirements. Existing or replica hardware may be fixed in place or modified to meet the intent of the accessibility requirements. (SOIS)	NJ	6.33(b)6.i
4.11	Exit Signs	BO to accept alternate exit sign or egress path marking location (that identify exits and egress path) where compliance would damage historic character.	NARRP	904.11
4.12	Exit Signs	BO may accept alternate exit sign design and/or location where strict compliance would damage historic character. Alternate signs to identify exits and exit path (SOIS)	NJ	6.33(b)11

4.0	**EGRESS**			
4.13	Exit Ladder Device	In residential occupancies, an exit ladder (a permanently installed, fixed, folding, retractable, or hinged ladder) acceptable as second means of egress from 2nd or 3rd stories. Unless specifically approved, ladders to be no greater than 25' long, and limited to areas serving an occupant load of less than 10 persons.	CA	8-303.4.
4.14	General	New fire escapes and fire escape ladders are acceptable as one of required means of egress. Existing, previously approved fire escapes/ladders acceptable as one of required means of egress if extend to ground are easily used and in good working order... Enforcing agency to grant reasonable exceptions to specific provisions when these will not adversely affect life safety (ex. existing door openings and corridor and stairway widths of less than specified dimensions may be permitted; existing risers/treads at variance with that specified are allowed).	CA	8-502.1 8-502.2
4.15	Rescue Windows and Doors	Basements in dwelling units and sleeping rooms below 4th floor to have at least one openable window or door approved for emergency escape...	CA	8-503

TABLE 5

5.0	**ENERGY CONSERVATION**			
5.1	General	CO. Historic buildings are exempt from requirements	NARRP	905.14 (CO)
5.2	General	Buildings exempt from requirements.	CA	8-901.5

TABLE 6

6.0	**ENFORCEMENT**			
6.1	Interpretations	The State Historical Building Safety Board to act as a review body to provide interpretations and to hear appeals.	CA	9-104.1-5

TABLE 7

7.0	**EXTERIOR FIRE RESISTANCE**			
7.1	General	Historic buildings undergoing change of use to higher hazard...may use alternative methods to comply with fire-resistance and exterior opening protective requirements	NARRP	905.3
7.2	Sprinklers	Fire resistance requirement for existing exterior walls and existing opening protection satisfied when a sprinkler system designed for exposure protection is installed. System may be installed on underside of roof line w/at least one head over each opening to be protected. Additional heads to be distributed along combustible walls. System may be connected to domestic water supply.	CA	8-402.1

TABLE 8

8.0	**FIRE ALARM AND SUPPRESSION**			
8.1	Suppression	Every building which cannot be made to conform to requirements in regular code, and which constitutes a distinct fire hazard, will be deemed to be in compliance if provided with a sprinkler system, or when an alternative life safety system is approved. Sprinkler system will not be considered a substitute or act as alternative for required number of exits.	CA	8-409 8-410.2

TABLE 9

9.0	**GLAZING**			
9.1	Transoms	In fully sprinklered building (I-1, R-1, R-2), existing transoms in corridors and other fire rated walls may be retained if fixed in closed position and sprinkler installed on each side of transom.	NARRP	904.6 905.7(CO)
9.2	Transoms	Existing transoms in corridors and other fire rated walls may be retained...	NJ	6.33(b)7
9.3	Transoms	Existing transoms may be maintained if fixed in closed position and fixed wire glass set in steel frame installed on one side.	UCBC	605.4
9.4	Natural Light	Existing level of natural lighting to be considered acceptable when BO determines compliance with natural light requirements would cause loss of historic character or historic materials.	NARRP	905.13(CO)

9.0	**GLAZING**			
9.5	Light and Ventilation	Existing provisions for light and ventilation which do not constitute a safety hazard may remain. In residential uses, windows in habitable areas to have area of 6% of floor area, or 6 sf, whichever is greater. Windows in sleeping rooms to be operable. Dwelling occupancies need not be provided with electric light.	CA	302-7 8-303.6
9.6	Interior Glazing	Historic glazing in interior walls required to have one-hour rating may be approved when provided with smoke seals and area affected is sprinklered.	CA	8-402.3
9.7	General	Historic glazing in areas of human impact may be approved when alternative protective measures include additional glazing panels, protective film, protective guards or systems, devices or signage.	CA	8-812.1

TABLE 10

10.0	**INTERIOR FIRE-RESISTIVE CONSTRUCTION**			
10.1	Interior	One hour fire resistive assembly not required where existing wall and ceiling finish is wood lath and plaster.	NARRP	904.9 905.8 (CO)
10.2	Interior	One hour fire resistive construction not required where existing wall and ceiling finish is lath and plaster (SOIS).	NJ	6.33(b)3
10.3	Interior	One hour fire resistive construction not required regardless of construction.	UCBC	605.3
10.4	Interior	Occupancy separations of more than one hour may be reduced to one hour fire resistive. construction with all openings protected by not less than 3/4 hr. fire-resistive assemblies of the self closing or automatic-closing type when building is fully sprinklered. One hour fire reistive construction may be omitted when building is fully sprinklered.	CA	8-302.3
10.5	Interior	Upgrading a building to one-hour fire-resistive construction and one-hour fire-resistive corridors not required when: 1) there is a full sprinkler system; 2) An approved life-safety evaluation is provided; 3) Other alternative measures are approved.	CA	8-402.2
10.6	Exterior	Not required to be modified to meet requirements for fireresistive wall construction (SOIS)	NJ	6.33(b)2

10.0	**INTERIOR FIRE-RESISTIVE CONSTRUCTION**			
10.7	Vertical Shafts	Interior vertical shafts such as elevators hoistways, service and utility shafts, etc., need not be enclosed if entire building is protected with automatic sprinkler system. [Note: applies to all existing buildings.]	UCBC	503.4.3

TABLE 11

11.0	**INTERIOR WALLS AND CEILINGS**			
11.1	Ceiling Height	Existing ceiling heights permitted to remain, except Use Group R-1 or R-2 to comply with regulations for those occupancies. (SOIS)	NJ	6.33(b)12
11.2	Retention	Existing walls and ceilings acceptable if demonstrated as historic finishes.	NARRP	904.7
11.3	Retention	Existing finishes or replacement finishes on corridor walls and ceilings may be accepted where documented as historic (SOIS).	NJ	6.33(b)8
11.4	Flame Spread	(CO) When required to have flame-spread classification of Class III or better, nonconforming materials surfaced with fire-retardant materials surfaced with an acceptable fire-retardant paint or finish are acceptable. Not required when building equipped with automatic fire suppression system and nonconforming materials documented as historic.	NARRP	905.8(CO)
11.5	Flame Spread	In buildings other than Use Group R-3, finishes in exitways to have flame spread classification of Class III or better. Existing nonconforming materials to be surfaced with fire retardant paint or finish unless building has automatic fire suppression system (SOIS).	NJ	6.33(b)8.i
11.6	Flame Spread	(CO) Where required to have flame-spread classification of Class III or better, existing nonconforming materials surfaced with an approved fire-retardant paint or finish are acceptable. Not required when building equipped with automatic suppression system installed throughout and nonconforming materials documented as historic.	UCBC	607.1
11.7	Finish Materials	Nonconforming materials may be surfaced w/fire retardant to increase rating of natural finish to w/i reasonable proximity of required rating. No fire retardant required when building is fully sprinklered.	CA	8-403

11.0	**INTERIOR WALLS AND CEILINGS**			
11.8	Wood Lath and Plaster	Wood lath and plaster may be considered in accordance w/ codes, standards and listings published prior to 1943 where this assembly obtains a ½ hour fire-reistive rating. Rating may be increased for interior walls to as much as one hour by filling wall w/mineral or glass fiber.	CA	8-404

TABLE 12

12.0	**MECHANICAL, PLUMBING and ELECTRICAL**			
12.1	Mechanical	General provisions for equipment, venting and ventilation, ducts, and misc. equipment	CA	8-902
12.2	Plumbing	General provisions	CA	8-903
12.3	Electrical	General provisions	CA	8-904

TABLE 13

13.0	**REPAIRS/REPLACEMENT**			
13.1	General	Repairs to any portion of historic building permitted with original materials and methods of construction...	NAARP	902.1
13.2	General	Replacement of existing/missing features using original materials permitted. Partial replacement for repairs matching original in configuration, height and size permitted.....(exception: glazing in hazardous locations).	NARRP	904.2
13.3	General	Original or replica materials and original methods of construction may be used..., except for components of systems hidden from view, e.g., electrical equipment and wiring, plumbing equipment and piping and heating equip. (SOIS)	NJ	6.33(b)1
13.4	General	Repairs permitted with original materials and original methods of construction...	UCBC	603
13.5	General	Repairs to any portion of the historic building or property can be made in-kind with historic materials and using original or existing historic methods of construction...	CA	8-105.1
13.6	General	In residential occupancies, the amount of alterations and repairs is not limited provided there is no nonhistorical increase in floor area, volume or size of the structure.	CA	8-303.7

TABLE 14

14.0	**RELOCATIONS**			
14.1	Foundations	Only new foundations and fire separation distance and opening protectives to comply with new construction provisions.	NAARP	903.2
14.2	Foundations	Only new foundations and exterior walls and openings to comply with new construction provisions	NJ	6.33(c)
14.3	Foundations	Only new foundations and exterior walls and openings to comply with new construction provisions	UCBC	604

TABLE 15

15.0	**ROOFING**			
15.1	General	Existing or original roofing materials may be repaired or reconstructed if detailed/modified to preserve historic materials and appearance Wooden roof materials may be used where fire-resistive required provided treated with material with Class C fire-resistive rating.	CA	8-408

TABLE 16

16.0	**ROOM DIMENSIONS**			
16.1	General	Rooms used for sleeping purpose may contain a minimum of 50 sf provided ceiling height averages 7'. Other habitable rooms need only be of adequate size to be functional.	CA	8-303-5

TABLE 17

17.0	**SPRINKLERS**			
17.1	General	Every historic building which does not conform to construction requirements for occupancy or use and which, in opinion of BO, constitutes a fire safety hazard, may be equipped with an automatic, compliant sprinkler system, although this system will not be considered a substitute for, or alternate to, required number of exits.	NARRP	904.12

17.0	**SPRINKLERS**			
17.2	General	Every historic building which does not conform to construction requirements for occupancy or use and which, in opinion of BO, constitutes a fire safety hazard, to be equipped with an automatic, compliant sprinkler system, although this system will not be a substitute for, or alternate to, required number of exits	UCBC	605.1

TABLE 18

18.0	**STAIRWAYS**			
18.1	Enclosure	Stairway enclosures may be omitted where such stairway serves only one adjacent floor	NARRP	904.8.1
18.2	Enclosure	Stairway enclosures may be omitted for portion of stair serving 1st and 2nd floors. Provision applies to only one stair per building. (SOIS)	NJ	6.33(b)9.i
18.3	Enclosure	In buildings 3 or less stories, exit enclosure construction can limit the spread of smoke by use of tight fitting doors and solid elements, which need not have a fire rating.	NARRP	904.8.2
18.4	Enclosure	In buildings of 3 stories or less, exit enclosure construction can limit the spread of smoke by use of tight fitting doors and solid elements, which need not require a fire resistance rating. (SOIS)	NJ	6.33(b)9.i.1
18.5	Enclosure	Approved sprinkler systems or other solutions may be considered in lieu of enclosure of stairwells.	CA	8-407
18.6	Live Load	CO. Historic stairways in buildings changed to Use Groups R-1 and R-2 acceptable where demonstrated that stairway can support 7 psf live load.	NARRP	905.12 (CO)
18.7	Risers/ Treads	When stairs are replaced or repaired, existing or original riser height and tread width permitted to remain. (SOIS)	NJ	6.33(b)9.ii
18.8	Railings	Grand stairways acceptable w/o compliance with handrail and guardrail requirements. Existing handrails and guards permitted to remain provided they are not structurally dangerous.	NARRP	904.10
18.9	Railings	Existing handrails may remain or be replaced with handrails matching original (SOIS).	NJ	6.33(b)10.i
18.10	Stairways and Railings	CO. BO to grant alternatives for grand stairways and railings if alternative stairways are found to be acceptable/judged as meeting intent of provisions.	NARRP	905.10 (CO)

18.0	**STAIRWAYS**			
18.11	Guardrails	For vertical drops between 30" and 48", a rail height of at least 30" is acceptable. Existing/original baluster spacing permitted to remain, except that replacement guardrails in Use Group E or R-1 to comply with new construction requirements (SOIS).	NJ	6.33(b)10.ii
18.12	Guardrails	Spacing between intermediate railing or openings in existing ornamental patterns acceptable. Missing elements or members of guardrail may be replaced in a manner that preserves historic appearance.	UCBC	608

TABLE 19

19.0	**STRUCTURAL**			
19.1	Vertical Loads	BO may accept existing floors and approve operational controls that limit the live load on any floor.	UCBC	606.1
19.2	Loads	Additions, alterations or repairs to not cause a qualified historical building or structure to become unsafe or overloaded.	CA	8-102.1.1
19.3	Earthquake Loads	Unreinforced masonry buildings may be exempted from required seismic strengthening if occupancy or character of use is such that the hazard is low.	UCBC	606.2
19.4	General	Notes alternative provisions and processes for structural (gravity loads, wind loads) and lateral loads.	CA	8-702
19.5	Seismic	Section includes alternative provisions for masonry, wood, concrete, steel and iron, hollow clay tile, veneers, and glass and glazing.	CA	8-806

TABLE 20

20.0	**UNSAFE CONDITIONS**			
20.1	General	Work to remedy (unsafe) building is limited to the correction of unsafe conditions; it is not required to bring entire building into compliance.	CA	8-102.1.5

TABLE 21

21.0	**VERTICAL SHAFTS**			
21.1	Enclosure	Vertical shafts need not be enclosed when fully blocked at every floor level by not less than 2" of solid wood or equivalent construction. Approved sprinkler systems or other solutions may be acceptable in lieu of enclosure of vertical shafts and stairwells.	CA	8-407