Structural Fire
Reference Manual 58

National Park Service
U.S. Department of the Interior

Division of Fire and Aviation

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TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION

1. INTRODUCTION
2. RESPONSIBILITIES
3. STRUCTURAL FIRE MANAGEMENT PROGRAM OBJECTIVES
4. STRUCTURAL FIRE MANAGEMENT PROGRAM REQUIREMENTS
5. AUTHORITIES
6. STRUCTURE OF REFERENCE MANUAL 58

CHAPTER 2 ESSENTIAL ELEMENTS OF STRUCTURAL FIRE MANAGEMENT

1. INTRODUCTION
2. ESSENTIAL ELEMENTS BY POSITION

CHAPTER 3 INCIDENT REPORTING

1. INTRODUCTION
2. RESPONSIBILITIES
3. PARALLEL REPORTING REQUIREMENTS
4. ATTACHMENTS

CHAPTER 4 STRUCTURAL FIRE MANAGEMENT PLANS

1. INTRODUCTION
2. RESPONSIBILITIES
3. SFMP REQUIREMENTS
4. SFMP AUTHORITY
5. SFMP UPDATES
6. REQUIRED ELEMENTS OF A STRUCTURAL FIRE MANAGEMENT PLAN (SFMP)
7. STRUCTURAL FIRE MANAGEMENT PLAN TEMPLATE
8. ATTACHMENTS

CHAPTER 5 PROGRAM AUDITS, ASSESSMENTS, REVIEWS, AND INCIDENT INVESTIGATIONS

1. INTRODUCTION
2. RESPONSIBILITIES
3. STRUCTURAL FIRE PROGRAM REVIEW OBJECTIVES
4. INFORMATION REQUIRED
5. FINAL REPORT STANDARDS AND FORMAT

CHAPTER 6 STRUCTURAL FIRE PREVENTION AND FIRE CODE COMPLIANCE

1. INTRODUCTION

2. RESPONSIBILITIES
3. CONSTRUCTION PLANNING AND DESIGN REVIEW
4. FIRE PROTECTION SYSTEMS
5. FIRE PROTECTION SYSTEMS COMMISSIONING, AND CERTIFICATE OF OCCUPANCY PERMITS
6. VARIANCE/WAIVER REQUESTS
7. INSPECTION AND ABATEMENT PROGRAMS
8. EMERGENCY PLANS, BUILDING EVACUATION DRILLS AND CROWD MANAGEMENT
9. PORTABLE FIRE EXTINGUISHERS

CHAPTER 7 FIRE PROTECTION FOR HISTORIC STRUCTURES AND BUILDINGS WITH COLLECTIONS

1. INTRODUCTION
2. RESPONSIBILITIES
3. LEGISLATIVE REQUIREMENTS AND FEDERAL MANDATES
4. PROTECTION AND STEWARDSHIP OF CULTURAL RESOURCES FROM THE EFFECTS OF STRUCTURAL FIRE
5. APPLICABLE FIRE AND LIFE SAFETY CODE IMPLICATIONS: LIFE SAFETY OR PROPERTY PROTECTION
6. FIRE AND LIFE SAFETY CODE COMPLIANCE FOR HISTORIC STRUCTURES AND STRUCTURES WITH MUSEUM COLLECTIONS
7. PLANNING: PROJECT IDENTIFICATION AND FORMULATION FOR PMIS INPUT
8. ENSURING COMPLIANCE DURING THE CONSTRUCTION PHASE
9. FIRE SAFETY DURING CONSTRUCTION
10. INTRODUCTION TO APPENDIX A – STRUCTURAL FIRE PROTECTION OF CULTURAL RESOURCES IN THE NATIONAL PARK SERVICE

CHAPTER 8 STRUCTURAL FIRE PROGRAM JOB DESCRIPTIONS

1. NATIONAL LEVEL POSITIONS AND RESPONSIBILITIES
2. DENVER SERVICE CENTER POSITIONS AND RESPONSIBILITIES
3. REGIONAL LEVEL POSITIONS AND RESPONSIBILITIES
4. PARK LEVEL POSITIONS AND RESPONSIBILITIES

CHAPTER 9 FIRE SUPPRESSION (OPERATIONS)

1. INTRODUCTION
2. RESPONSIBILITIES
3. ENGINE COMPANY OPERATIONS
4. SPECIAL OPERATIONS
5. FIREFIGHTING EQUIPMENT
6. ACRONYMS AND ABBREVIATIONS

CHAPTER 10 TRAINING AND CERTIFICATION

1. INTRODUCTION
2. POSITIONS
3. CERTIFICATION REQUIREMENTS
4. TRAINING (TESTING AND EVALUATION)
5. CERTIFICATION EVALUATORS OR PROCTORS
6. REVOCATION, SUSPENSION, ANNULMENT OR DENIAL OF CERTIFICATION
7. LIVE FIRE TRAINING
8. BIANNUAL REFRESHER
9. ANNUAL TRAINING REQUIREMENTS
10. CERTIFICATION CHALLENGE PROCESS
11. RECORD MANAGEMENT
12. FORMS

CHAPTER 11A MEDICAL STANDARDS

1. INTRODUCTION
2. RESPONSIBILITY
3. MEDICAL STANDARDS
4. MEDICAL EXAMINATIONS
5. RISK ASSESSMENT PROCESS
6. MANAGEMENT OFFICIAL'S DECISION
7. EXISTING WAIVER OR RISK MITIGATION WITH CONDITIONS
8. DOCUMENTATION
9. FORMS
10. APPENDIX

CHAPTER 11B FITNESS STANDARDS

1. INTRODUCTION
2. RESPONSIBILITY
3. FITNESS STANDARDS
4. FITNESS STANDARDS (NON-COMPLIANT)
5. RECORD MANAGEMENT
6. DEFINITIONS

CHAPTER 12 STRUCTURAL FIRE INVESTIGATIONS

1. INTRODUCTION
2. RESPONSIBILITIES
3. NOTIFICATION PROCEDURES
4. PROCEDURES FOLLOWING A FIRE
5. STRUCTURAL FIRE INCIDENT REVIEW TEAM
6. INVESTIGATION RESOURCES

CHAPTER 13 FIRE SAFETY FOR COMMERCIAL SERVICES (*Under development*)

CHAPTER 14 AGREEMENTS AND CONTRACTS

1. INTRODUCTION
2. RESPONSIBILITIES
3. TYPES OF AGREEMENTS
4. CONTRACTS
5. REFERENCES
6. ATTACHMENTS

CHAPTER 15 SCOPE OF WORK FOR PROJECTS

1. INTRODUCTION
2. RESPONSIBILITIES
3. SCOPE OF WORK (SOW)
4. TASK ORDERS
5. REFERENCES

ATTACHMENTS

INTRODUCTION

1. Introduction

Reference Manual 58: *Structural Fire Management* provides detailed and comprehensive guidance on implementing a service-wide structural fire management policy for the National Park Service. The National Park Service's policy on structural fire is expressed in the NPS *Management Policies* and in Director's Order 58*: Structural Fire Management*.

Reference Manual 58 (RM 58) provides NPS field employees with references, operating policies, standards, procedures, general information, recommendations, and examples to assist them in carrying out the *Management Policies* and Director's Order. While certain chapters or sections provide important guidance by themselves, there is an inter-relationship among the chapters that provides clarity and continuity for carrying out the management of NPS structural fire programs.

This manual is a revision of the previously issued RM 58. The provisions of this reference manual supersede all previous NPS instructions, requirements, and statements of policy relating to structural fire management.

RM 58 is available electronically on the NPS intranet. The reference manual contains links to other pertinent information that will be valuable to personnel with structural fire responsibilities. This manual will be maintained as a living document and revisions will be made as necessary.

The objectives of RM 58 are as follows:

- Establish a framework through which the NPS institutionalizes and implements principles, codes, standards, policies, guidance, and reporting requirements related to structural fire.

- Provide a consistent approach for addressing structural fire effectively and efficiently with service-wide programs such as Facility Management, Cultural Resource Management, Wildland Fire Management, Commercial Services Management, Law Enforcement, and Emergency Medical Services.

- Identify the structural fire codes and standards that have been adopted by the NPS.

- Provide a framework for communicating the objectives and standards of the NPS structural fire management program to internal and external audiences.

- Re-emphasize that it is essential that structural fires be prevented and suppressed in order to protect life and property.

- Identify clear guidelines for preparing, responding, and recovering from structural fire incidents.

2. Responsibility

2.1. National Level

The Branch Chief, Structural Fire is responsible for the NPS structural fire program leadership, coordination, and management at the national level. The Branch of Structural Fire is located at the National Interagency Fire Center (NIFC) in Boise, Idaho. Specific structural fire program responsibilities are found in each chapter of RM 58.

2.2. Regional Level

Regional Directors are hereby designated as the Authority Having Jurisdiction (AHJ), as defined in NFPA 1, within their respective regions. AHJs will be the individual responsible for enforcing DO/RM 58 and for approving designs, equipment, materials, and all procedures regarding structural fire. Regional Directors may grant waivers or refer the request to the Director as the situation warrants. The Regional Directors may delegate, in writing, to other qualified individuals within his or her region the authority necessary for the administration of all structural fire safety and enforcement. This includes the approval of design, equipment, materials, installations, and all procedures regarding structural fire. The AHJ will be responsible for resolving conflicts between codes or standards.

NPS Regional Structural Fire Managers (RSFMs) are responsible for NPS structural fire program leadership, coordination, and management within their regions. The RSFM will provide training, oversight, and information to parks within their region and coordinate activities with other regions, agencies, and states as necessary and prudent for the program. The Regional Structural Fire Managers must involve other programs, such as Facility Management, Cultural Resource Management, Wildland Fire Management, Commercial Services Management, Law Enforcement, and Emergency Medical Services, as necessary and appropriate, to ensure an integrated program. Specific structural fire program responsibilities are found in each chapter of RM 58.

2.3. Park Level

NPS Park Superintendents are responsible for assigning a Park Structural Fire Coordinator (PSFC). The PSFC is responsible for developing, implementing, and evaluating structural fire management activities within their parks. Park Superintendents will ensure that their employees are trained and made available for participation in structural fire management, as the situation demands. Employees with operational, administrative, or other skills will support structural fire management efforts, as necessary. Specific structural fire program responsibilities are found in each chapter of RM 58.

3. Structural Fire Management Program Objectives

Structural fire management activities are essential to the accomplishment of the NPS mission. The management emphasis of RM 58 is that the National Park Service manages structural fire to protect people, building contents, structures, and

resources from the effects of fire. Parks must ensure that structural fire management is fully integrated into all related program management and planning.

Structural fire management policy and procedures reflect the considerations, capabilities, and program direction, while being responsive to related management objectives. Park Superintendents must ensure that these policies are incorporated into all structural fire management actions. Managers and other personnel must actively embrace and implement the recommendations, and be committed to ensuring full implementation.

4. Structural Fire Management Program Requirements

The first principle of NPS structural fire management is that fires be prevented and suppressed in order to protect life and property. Structural fires have caused injuries and extensive damage to assets in the National Parks. Yet, most structural fires are preventable, and by implementing a structural fire management program, the costly effects of structural fires can be minimized.

As stated in National Park Service Management Policies 2006, 9.1.8, *Structural Fire Protection and Suppression:*

"Superintendents will manage structural fire activities as part of a comprehensive interdisciplinary effort to protect resources and promote the safe and appropriate public enjoyment of those resources. Fire prevention, protection, and suppression will be primary considerations in the design, construction, rehabilitation, maintenance, and operation of all facilities. Structural fires will be suppressed to prevent the loss of human life and minimize damage to property and resources. The Service's structural fire protection and suppression program will provide, through Director's Order #58: Structural Fire Management and Reference Manual 58, additional policy, standards, operational procedures, and accountability to meet the diverse needs and complexities of individual park units. The goal is to ensure that all national park areas receive an appropriate level of fire protection that is provided in a safe and cost-effective manner by qualified personnel.

Each superintendent will complete a structural fire assessment and develop a structural fire plan to meet park needs. Structural fire protection and suppression capabilities will be maintained in accordance with those plans. Prevention priorities will focus on occupied structures and cultural resources, with emphasis placed evenly on code compliance, early warning detection, suppression systems, employee training, and awareness.

Fire prevention through code-compliant new construction, upgrading of existing structures, standardized and regularly scheduled fire inspections, and properly installed and maintained detection and suppression systems will be the primary means of addressing and correcting NPS structural fire deficiencies. Where these measures are not sufficient to meet park needs, agreements will be entered into with non-NPS entities capable of providing requisite fire suppression assistance. Support from neighboring fire protection organizations is encouraged and superintendents should enter into

appropriate agreements whenever possible to enhance fire-fighting capabilities. Development of a park fire brigade will be considered only when all other options have been explored and found unacceptable."

Additional specific structural fire program requirements are found in each chapter of RM 58.

5. Authorities

Authorities for the management of structural fire on National Park Service lands include the following:

- United States Department of the Interior, Departmental Manual
- National Park Service Management Policies, August 31, 2006
- Director's Order 58
- Reference Manual 58
- International Fire Code (IFC)
- International Building Code (IBC)
- National Fire Protection Association (NFPA)
- Occupational Safety and Health Administration (OSHA)
- International Fire Service Training Association (IFSTA)
- U.S. Fire Administration (USFA)
- ICC International Wildland Urban Interface Code

6. Structure of Reference Manual 58

Chapter 1 Introduction
Chapter 2 Essential Elements of Structural Fire Management
Chapter 3 Incident Reporting
Chapter 4 Structural Fire Management Plans
Chapter 5 Content of Structural Fire Program Review
Chapter 6 Structural Fire Prevention and Fire Code Compliance
Chapter 7 Fire Protection for Historic Structures and Buildings with Collections
Chapter 8 Structural Fire Program Job Descriptions
Chapter 9 Fire Suppression (Operations)
Chapter 10 Training and Certification
Chapter 11a Medical Standards
Chapter 11b Fitness Standards
Chapter 12 Structural Fire Investigations
Chapter 13 Fire Safety for Commercial Services *(under development)*
Chapter 14 Agreements and Contracts
Chapter 15 Scope of Work for Projects
Chapter 16 Attachments

ESSENTIAL ELEMENTS OF STRUCTURAL FIRE MANAGEMENT

1. Introduction

The responsibility for structural fire within the National Park Service is the same for all regions, parks, and management levels and, with few expectations, is accomplished through collateral duties. While there may be some differences within each region, the essential elements do not change. This chapter identifies the key positions and the associated responsibilities that each has in assisting the NPS to meet its structural fire mandates.

- Director
- Associate Director, Visitor and Resource Protection (V&RP)
- Division Chief, Fire & Aviation Management
- Regional Directors
- Regional Chief Rangers
- Regional Structural Fire Managers (RSFMs)
- Park Superintendents
- Park Structural Fire Coordinators (PSFCs)

The National Park Service's policy on structural fire is expressed in Director's Order 58 (DO 58). The Director's Order and Reference Manual 58 (RM 58) provide technical information regarding structural fire management requirements and procedures.

A list identifying the essential elements for each position is provided. These lists are quick reference tools to be used in identifying the minimum essential elements for each position. Due to the uniqueness and complexity of structural fire management programs, other elements may be added.

2. Essential Elements by Position

DIRECTOR
STRUCTURAL FIRE PROGRAM
ESSENTIAL ELEMENTS

The Director of the National Park Service is responsible for assuring every unit of the NPS is meeting its fire and life safety responsibilities.

ASSOCIATE DIRECTOR, VISITOR AND RESOURCE PROTECTION
STRUCTURAL FIRE PROGRAM
ESSENTIAL ELEMENTS

1. The AD, V&RP is responsible to the Director for assuring all federal requirements as they pertain to fire and life safety in the NPS are being met.

2. Assures agency policies are clear and meet fire and life safety requirements across the Service.

3. Ensures that positions within in the program are encumbered by qualified personnel to meet the needs of the program.

4. Provides policy development guidance on implementation of new requirements within the program.

DIVISION CHIEF, FIRE AND AVIATION MANAGEMENT
STRUCTURAL FIRE PROGRAM
ESSENTIAL ELEMENTS

1. Assures fire and life safety requirements are communicated properly to responsible agency managers.

2. Assists Branch Chief with tactics and methods to effectively communicate fire and life safety requirements servicewide and to senior agency managers.

BRANCH CHIEF, STRUCTURAL FIRE
STRUCTURAL FIRE PROGRAM
ESSENTIAL ELEMENTS

1. Develops agency policy to assure the agency is meeting its structural fire responsibilities.

2. Assures agency policies meet all federal requirements as they apply to fire and life safety and emergency response to structure fires.

3. Communicates and educates policies and directives to the field to assure policies are understood and implemented.

4. Assures that appropriate funding is available to ensure that the program is effective.

5. Develops audit processes to evaluate regions and parks compliance with policies.

REGIONAL DIRECTORS
STRUCTURAL FIRE PROGRAM
ESSENTIAL ELEMENTS

Regional Directors are accountable to the Director for structural fire management programs and activities for the region.

1. Remain current and knowledgeable of the goals and objectives of the Structural Fire Management Program.

2. Become knowledgeable of the responsibilities associated with the designation of "The Authority Having Jurisdiction" for matters pertaining to fire safety.

3. Retain or delegate to a qualified person within the region the "Authority Having Jurisdiction" for fire safety. It is recommended that the responsibility be delegated to the Regional Structural Fire Manager.

4. Assure that appropriate funding is available to ensure that the program is effective.

5. Incorporate current and future structural fire management goals in all regional planning and program development.

REGIONAL CHIEF RANGERS
STRUCTURAL FIRE PROGRAM
ESSENTIAL ELEMENTS

In most cases, Regional Chief Rangers directly supervise the Regional Structural Fire Manager.

1. Remain knowledgeable of the current Structural Fire Management Program Strategic Plan.

2. Remain knowledgeable of Director's Order and Reference Manual 58: *Structural Fire Management*.

3. Provide general day-to-day guidance and supervision to the Regional Structural Fire Manager.

4. Support and advocate for the Regional Structural Fire Manager's availability and involvement with various work groups, meetings, and committees.

5. Promote and provide resources, funding, and support to the Regional Structural Fire Manager.

REGIONAL STRUCTURAL FIRE MANAGERS
STRUCTURAL FIRE PROGRAM
ESSENTIAL ELEMENTS

Regional Structural Fire Managers are accountable for region wide program implementation, leadership, coordination, and management.

1. Qualified Regional Structural Fire Managers that are delegated by the Regional Director as the "Authority Having Jurisdiction" have the responsibility on all matters related to structural fire within the region.

2. Remain actively involved and engaged with the national program office regarding the setting of goals and objectives of the Structural Fire Management Program for the service.

3. Maintain an intimate knowledge of Director's Order and Reference Manual 58 and the 2010 - 2015 Strategic Plan for structural fire.

4. Review and approve park Structural Fire Management Plans and works to assure parks are complying with all elements of the plan.

5. Ensure new information or information regarding the modification of structural fire program standards are distributed to all parks within the region.

6. Provide technical support for parks within the region.

7. Notify the national office of regional structural fire related problems, conflicts, or deficiencies.

PARK SUPERINTENDENTS
STRUCTURAL FIRE PROGRAM
ESSENTIAL ELEMENTS

Park Superintendent are accountable for the park's structure fire program and must take appropriate actions necessary to ensure life safety and do all that is possible and reasonable to prevent fires.

1. Remain knowledgeable of Director's Order and Reference Manual 58 – Structure Fire Management.

2. Appoint in writing a Park Structural Fire Coordinator and makes the individual known to the Regional Structural Fire Manager.

3. Ensure that a Park Structure Fire Management Plan is written, current, and implemented in accordance with Reference Manual 58.

4. Ensure Fire Protection Condition Assessments (FPCAs) in all park structures that pose a fire and life safety or resource threat have been completed and funding requests are in place to address identified deficiencies.

5. Assure all fixed fire protection systems are inspected and tested annually and invoice and inspection reports are kept on file with the PSFC or Commercial Services.

6. Ensure a solicitor reviewed and approved aid agreement is in place, if the park relies on local agencies to provide fire suppression or fire protection services.

7. Assure a qualified person as discussed with the AHJ conducts fire and life safety inspections in all Commercial Services managed facilities annually and inspection results are filed with the Park Structural Fire Coordinator and/or the park Commercial Services office.

8. Convene and participate in an annual structural fire meeting that focuses on the state of structure fire in the park. This is an opportunity to check compliance with the A123 internal control assessment, DO/RM 58 compliance, and safe engine company operations, if applicable, and, most importantly, to understand and make priorities for known structure fire deficiencies and tasks.

PARK STRUCTURAL FIRE COORDINATORS
STRUCTURAL FIRE PROGRAM
ESSENTIAL ELEMENTS

Park Structure Fire Coordinators (PSFCs) are designated by Park Superintendents and serve as the primary point of contact within the park for structural fire issues.

1. Implement a parkwide structural fire management program in accordance with Director's Order and Reference Manual 58: *Structural Fire Management*.

2. Assure the park's Structure Fire Management Plan is developed, approved, and implemented in accordance with guidance provided by Reference Manual 58 and the Regional Structural Fire Manager

3. Ensure the structural fire program is integrated with other park programs and divisions as appropriate.

4. Ensure that information and issues regarding the park structural fire program are coordinated with the Regional Structural Fire Manager.

5. Ensure that the PSFC attends and completes WASO approved Park Structural Fire Coordinator training within one year of being designated

6. Ensure that pre-incident plans are written as needed for all park structures and that responding forces have these plans and are familiar with these structures and their contents.

7. Assure the aid agreement is in place and that responding forces are familiar with hydrant systems, building construction, collections within, historic status, and/or historic fabrics of the building, etc.

8. Assure there is a hot work permitting process in place in the park and it is followed.

INCIDENT REPORTING

1. Introduction

The reporting of structural fires is an agency requirement and also an important element in understanding how to prevent future fires. The use of a consolidated reporting system can play a role in reducing injuries, fatalities, and economic losses from fire and related emergencies. Incident reports facilitate the collection, compilation, analysis, and use of structural fire data to produce and disseminate information needed by agency decision makers.

Incidents to be reported are fires involving structures and/or alarm activations (with the exception of alarm problems transmitting a 'trouble' alarm). A structure is defined as any man-made object. This includes dumpsters, boardwalks, vehicles, boats, aircraft, and buildings. It does not include fires that burn only wildland fuels. All structural fire incidents within park boundaries are to be reported, regardless of the responding unit (NPS or non-NPS). Additionally, any time an NPS resource responds to a structural fire incident outside of the park boundaries, it is to be reported. A report is to be submitted any time the structure fire apparatus responds, even if it is cancelled en route. Any type of incident requiring the response of NPS engine company personnel and/or apparatus or any incident with outside fire department response to park property must be reported. This includes non-fire incidents, such as hazmat and rescue incidents.

There are two required reporting systems that apply to structural fire incidents within all NPS units:

- Incident Management Analysis and Reporting System (IMARS) – As of January 1, 2013, IMARS is the required reporting system for all NPS incidents. Therefore, all structural fire incidents are to be reported in IMARS. A memorandum issued September 2013 outlines this requirement.

- Serious Incident Notification – The purpose of the Serious Incident Reporting System is to ensure prompt and proper notification of NPS and Departmental officials of serious incidents that occur near or within park areas. All significant field incidents will be reported in a timely manner to the Deputy Chief, Law Enforcement, Security and Emergency Services, Operations and Policy (DCOP) and the appropriate Regional Office following established procedures. Under NPS serious incident reporting requirements, structural fires are considered Level 2 emergencies. They are to be reported to the DCOP via email within three days. For additional guidance, refer to RM-9, Ch. 36.

2. Responsibilities

2.1. National Level

- Coordinate with the Office of Law Enforcement, Security and Emergency

Services to ensure that structural fire reporting requirements are met for IMARS.

- Ensure that Regional Structural Fire Managers (RSFM) follow the established incident reporting procedures and assist the regional offices with questions or issues about structural fire incident reporting, incident notification, and incident updates.

- Develop and distribute an annual report of all NPS structural fire incidents**.**

2.2. Regional Level

- Ensure that structural fire incident information is communicated between parks, the regional office, and the national program office.

- Ensure that the agency's incident reporting requirements for structure fire and all hazard incidents are being followed and assist the parks with questions or issues as they arise.

- Review for accuracy and completeness all structural fire incidents that occur within the region.

2.3. Park Level

- Report all structural fire incidents utilizing IMARS. Those parks without direct access to IMARS (i.e. parks without assigned law enforcement officers) should contact their Regional Structure Fire Manager to work out a solution for having structural fire incidents entered into the system.

- Follow any regional incident reporting requirements that may be in place in addition to the agency requirements.

- Serious Incident Notification – Under NPS serious incident reporting requirements, structural fires are considered Level 2 emergencies. Parks are to report all structural fires involving any NPS-owned property to the Deputy Chief, Law Enforcement, Security, and Emergency Services, Operations and Policy (DCOP) via email within three days.

- Additional Agency Reports – Additional NPS reporting procedures may be applicable, as outlined in 3.3.2.

3. <u>Parallel Reporting Requirements</u>

3.1 Outside Agency Reports

- In many incidents, particularly with structural fires, other federal, state, and local agencies with overlapping jurisdictions or through aid agreements respond to incidents on NPS property. These agencies have information gathering or reporting requirements that are separate from the NPS. Reporting requirements

for other agencies do not nullify NPS sites from meeting NPS reporting requirements. Reports prepared by other departments should be submitted as part of the NPS report to provide additional information and documentation for the incident.

3.2 Additional NPS Reports

In addition to the submission of an incident report in IMARS, the following agency reports may be required as well. NPS requirements to submit serious incident reports do not negate the park's responsibility to submit an incident report for the same event. The data requirements for each report are similar but not identical. Incident reports are detailed accounts which can help provide statistical data that can assist in planning and decision making and to strengthen justifications to support requests for resources to meet operational needs.

- Serious Incident Reports are required for all level-2 emergencies.

- For incidents which involve employee injuries or deaths, there is additional guidance on agency notification requirements which may be found in Reference Manual 50B, *Occupational Safety and Health Program*.

- In incidents where a fire involved wildland fire fuels, the guidance for wildland fire reporting can be found in RM 18, Ch. 11. In cases where a fire burns both a structure and wildland fuels, a wildland fire report should be completed in addition to a structure fire report.

3.3 National Fire Incident Reporting System (NFIRS)

- NFIRS is the world's largest national database for fire incident information. All 50 states and the District of Columbia report into the NFIRS database. Parks are encouraged, but are not required to reported structural fire incidents into NFIRS. At this time, IMARS does not collect comparable data, so the Service is unable to submit agency fire reports as a single entity into NFIRS. Parks that are interested in reporting their structural fire events into NFIRS can visit the following website for additional information:

  http://www.usfa.fema.gov/fireservice/nfirs/index.shtm

4. References

Structural Fire Incident Report

IMARS Code Classification List

Structural Fire Incident Reporting Memorandum

Serious Incident Notification web page

STRUCTURAL FIRE MANAGEMENT PLANS

1. Introduction

This chapter identifies the standards, procedures and required components for developing or updating a Structural Fire Management Plan (SFMP). National Park Service 2006 Management Policies require that a SFMP be completed for all parks with buildings, or manmade resources having the potential for damage or loss from fire. An SFMP is considered an essential park planning document.

The park plan needs to provide the federal laws, DOI and NPS policies that require this plan. In the interest of making this as easy as possible, a template for developing the SFMP is provided. The template provides all of the required elements that must go into creating a comprehensive plan. However, it is understood that not all elements may pertain at all parks. Where this is the case, the subject block is to remain in the plan and "not applicable" or N/A is to be written under this subject block. This is important for a couple of reasons. The regional AHJ will know this subject has been considered and not just over looked by the park and as conditions, operations, significant fire event and missions change at the park this subject block may now be required.

The SFMP is required to be reviewed annually and after a significant structural fire incident occurs. An SFMP also requires a regional level review every 5 years.

2. Responsibilities

2.1. National Level

- Establish and maintain the standards and requirements for the development of Structural Fire Management Plan.
- Ensure that RSFM's have the latest version of this template and are knowledgeable of the requirements and importance of these plans.

2.2. Regional Level

- Review each newly completed SFMP.
- Review park SFMP after a significant structure fire incident to assure plan addresses the circumstance that lead up to that incident and is edited to reduce the potential or prevent that type of incident from occurring again.
- Perform detailed reviews of SFMPs every five years to ensure conformance with current standards, laws, policies, and service-wide objectives and revise as needed to assure plan adequately addresses the conditions and complexities in the park.
- Serve as a consultant for park personnel regarding SFMP development and updates.

2.3. Park Level

Superintendent

- Have written, review and approve new and updated SFMPs to ensure policy and regulatory compliance, as well as technical and operational soundness. The Superintendent is to assign this to the PSFC who is to consult with the Regional AHJ in the development, review, and revision of the SFMP for the park.

Park Structural Fire Coordinator (PSFC) will:

- Review and update the SFMP annually.

- Review SFMP with park management after a significant structural fire incident to ensure the plan includes and accurately addresses current standards, laws, policies, and agency objectives and to prevent or minimize the potential for this type of incident from occurring again.

- Assure plan is current and signed by the Superintendent.

- It is recommended that the regional AHJ is included in all revisions and updates to the plan.

3. SFMP Requirements

The development of SFMPs should be coordinated with all park management program areas, all park staff to the extent possible, cooperators, park partners, volunteers and neighboring fire response agencies and reflect the park's existing planning documents, such as the General Management Plan (GMP). The SFMP is a document based on professional structural fire management expertise, specific knowledge of park resources and responsibilities, and an accurate assessment of the park's structural fire assets, liabilities and operations.

SFMP's need to include applicable references and citations to policy and provide clear operational guidance and made known by all entities, persons and businesses that work within or conduct business with the park unit.

New and updated SFMPs are to be reviewed, approved and signed by the Park Superintendent.

4. SFMP Authority

National Park Service Management Policies 2006 states*:*

"Each superintendent will complete a structural fire assessment and develop a structural fire plan to meet park needs. Structural fire protection and suppression capabilities will be maintained in accordance with those plans. Prevention priorities will focus on occupied structures and cultural resources, with emphasis placed evenly on code compliance, early warning detection, suppression systems, and employee training and

awareness."

Once a draft SFMP is approved by the Superintendent, the plan will be reviewed by the regional AHJ to ensure that the plan:

a. Has life safety as its first priority.
b. Is comprehensive in approach and addresses all known fire and life safety conditions at the park.
c. Includes structural fire management objectives that protect life, property, and resources and places the appropriate emphasis on fire prevention, protection and operations.
d. Has been developed with internal and external interdisciplinary input, and reviewed by appropriate subject matter experts.
e. Installation, inspection, testing and maintenance of all fire protection systems and equipment are performed and documented in accordance with Department of Interior and NPS policies.
f. Alterations, modifications and changes to historic structures or historic landscapes must include review and compliance with State Historic Preservation Office requirements.

5. <u>SFMP Updates</u>

Annual updates, updates following a significant structural fire incident, and five-year comprehensive reviews are required for all SFMPs. The purposes of the updates and reviews are to:

- Evaluate and validate planned actions.
- Assess annual program results and outcomes to determine whether actions identified in the SFMP are effective or require modification.
- Update policy, terminology, references and incorporate new technology if applicable.
- Revisit planning assumptions and synchronize with other park planning efforts (e.g., GMP or RSS revisions and direction)
- The initial writing of a SFMP is required to have the review, signature and date of the RSFM.
- Annual inspections are to be done in park but a review by the RSFM is strongly encouraged.
- A SFMP review after a significant structure fire incident in the park should include the involvement of the RSFM.
- A fire year comprehensive review is required to have the review, signature and date of the RSFM.

5.1. Annual SFMP review and update requirements

The annual SFMP update is intended to keep the document current with policy and to ensure the fire management program includes a process of adaptive management to incorporate new knowledge, modernization, and the best available technologies. In addition, the annual update is essential to ensuring the document continues to conform to current laws, objectives, codes and standards procedures, strategies, and terminology.

Dates set for annual reviews of SFMP's should serve as a trigger for park management to schedule meetings with senior staff, engine company members, all entities that have aid agreements with parks to discuss all aspects of the structure fire program. This should include review of all aid agreements, general review and understanding of the agreement. Identify, update and conduct Pre Incident plans and schedule walk-throughs of all target hazards and buildings with significant or irreplaceable contents, update call out and contact lists for emergency responses, assure clear and concise communications are in place for emergency responses, any delegations of authority are still current and accurately reflected the interest and understanding of all entities involved, that no policy changes on behalf of any party has changed and will affect any aspect of the agreement.

Documentation of SFMP's updates is required. The documentation will at a minimum contain the annual update checklist and a signature page signed and dated by the Superintendent. The annual plan updates are to be incorporated into copies of the park's SFMP, with records kept in the park files. An electronic copy of the plan is to be made available to the regional AHJ if requested.

5.2. Five year Comprehensive SFMP review and update requirements

Although five-year comprehensive reviews have purposes similar to the annual update process, the five-year review includes a more comprehensive and interdisciplinary approach to reviewing and updating the SFMP and this effort should be led by the RSFM.

6. Required elements of a Structural Fire Management Plan (SFMP)

The SFMP is divided into two subsections, Relationship to Policy and Structural Fire Program Management. Information required for each subsection is identified below.

6.1. Relationship to Policy

The purpose of this section is to link the SFMP to NPS Structural Fire Policy. It is to summarize in broad terms the direction for managing structural fire in the park. This section is to reflect the goals, objectives, and desired future conditions related to structural fire found in the General Management Plan and all other park plans that could be affected by a structure fire event to assure these program areas are included and considered for their protection, safety and preservation.

The following topics are to be included:

- Reference and include the current version of NPS *Management Policies* concerning structural fire management.
- Briefly explain why the unit was established.
- Briefly summarize the significant resources and values at risk of the unit.
- State the goals and objectives contained in the park's General Management Plan (GMP) or similar foundational planning document as they pertain to structural fire management.
- State the objectives of the park's Cultural Resource and Facilities Management Plans as they pertain to structural fire management.
- State that the Structural Fire Management Plan will help meet the objectives of the GMP and other pertinent park plans by translating those objectives into specific structural fire management actions designed to achieve those objectives.

6.2. Structural Fire Program Management

The Structural Fire Program Management section is divided into the following headings.

a. General Management Considerations

Provide a brief overview of how structural fire will be managed. Topics to be addressed may include staffing, employee training, use of fire notification and automatic suppression systems, cooperative agreements with local fire response agencies, specifically how key program requirements are currently being met or plan to be met.

b. Structural Fire Management Goals

This section is used to identify the goals specific to structural fire management, as opposed to the goals of the General Management Plan or other park plans addressed in the *Relationship to Policy* section above. These goals provide the direction for the program and should be aligned with those found in the General Management Plan and other pertinent park plans. This section describes how the SFMP will safely and effectively help the park in achieving the goals as stated in the park's overall management plan.

Examples of goals may include, but are not limited to:

- " Life safety is the highest priority of every fire management activity",
- "Suppress all structural fires regardless of ignition source to protect the public, property, cultural and historic resources…"

c. Program Scope

Describe the scope of structural fire management program elements that will be implemented within the park and further developed through the SFMP. It should include a brief and defensible rationale for all fire management components that are to be implemented such as:

- Structural fire prevention
- Structural fire education
- Structural fire suppression
- Structure fire training

d. NPS Unit Description and General Characteristics

Provide a description of the administrative unit, including cultural and historical resources, and real property. Include a description of individual park units, if applicable, and the general protection strategy to be used for each.

Identify key structural fire issues within the unit, such as historic structures, collections, multi-story buildings, fuel tanks etc. Cite all target hazards[1] that provide significant fire and life safety concerns for park managers and how each is to be protected to prevent or minimize the potential for a fire ignition. Identify and list those buildings that are required to have fire evacuation drills conducted. List all entities on current aid agreements to provide suppression, inspection and investigative support to the park.

e. Responsibilities

List individual employee positions and identify their role and responsibilities related to structural fire. If the park unit has an engine company, identify the positions and organizational structure. (See Chapter 8, *Structural Fire Program Job Descriptions* for further information on structural fire positions.)

f. Aid Agreements

Identify all existing aid agreements that apply to structural fire. Provide the following details for each agreement:

- Name of the agency or organization
- Terms of the agreement

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[1] **Target Hazard**: A structure whose building materials and/or contents are combustible, whereby if a fire were to start, a significant loss or damage to the structure or its contents or loss of life could occur. Examples may be:

1. Any structure that is actively used for any purpose, including seasonally used structures and structures used solely for storage.
2. Any structure that has significance to the park history and/or mission.
3. Any structure that if lost or damaged would represent a significant cultural or historic loss, or have a negative impact to the park's continuity of operations.

- Signature page with expiration date
- Contact name and number

(See Chapter 14, *Agreements and Contracts*, for further information regarding agreements.)

g. Funding

Describe the funding strategy that will be used to support all aspects of the park SFMP.

h. Structural Fire Training

Identify all of the structure fire training needs including, but not limited to, building evacuation and fire drills, use of portable fire extinguishers, and engine company operations. Break out that training that is required and that which would benefit the park but is not required.

(See Chapter 10, *Training,* for further information about structural fire training.)

7. Structure Fire Management Plan Template

The SFMP has been developed in an outline format to assist park management in completing a comprehensive plan that fully addresses the fire and life safety and structure fire requirements of the park. The park is required to complete this template in its entirety. For those elements in the plan that do not pertain to the park than a N/A is to be annotated. This allows the RSFM to know that that element has been considered but does not apply at this park. More importantly, that element may pertain in future years.

8. References

Structural Fire Management Plan Template

PROGRAM AUDITS, ASSESSMENTS, REVIEWS, AND INCIDENT INVESTIGATIONS

1. Introduction

1.1

Director's Order 58 states, "Regional and park structural fire programs will be periodically reviewed for quality and effectiveness as required in RM-58," thereby establishing the authority for audits, assessment, and reviews. Additional authority, including authority for incident investigations, can be found in Directors Order #50b, Occupational Safety and Health Program, and in OMB Circular A-123.

> ***Rule 6. All the functions of repair, quality control and technical support must fit together.***
> *Audits and inspections are an important part of your job as a leader in public safety. We cannot assume that all is going well. We must have control measures in place to assure things are being done right. This is not micromanagement – it is called doing your job.*
> *If you do not have the audits (formal and informal) in place, you will not know about problems until they become consequences, and then you are in the domain of lawyers. That is too late for action, as all you can do then is address the consequences.*
> ***Excerpt from Seven Rules of Admiral Rickover by Gordon Graham***

1.2

The intent of this policy is to ensure that program audits, assessments, reviews, and incident investigations are conducted so that the agency can confirm that structural fire management programs are in place, that parks and regional offices are compliant with policy, and that policies are integrated into park operations.

1.3

This chapter outlines a range of program assessments and processes that require different levels of complexity and deployment of resources.

1.4

These assessments will help the agency examine a wide variety of incidents to help determine cause and contributing factors that lead up to an incident. Where appropriate, corrective actions will be developed. All assessment processes, regardless of the type used, are designed to assist the service with the identification of program shortfalls and weaknesses, evaluation of current agency policy for potential revision, enhancement of employee safety, or improved protection of resources.

2. Definitions

2.1 Audit

By definition, an audit is "a systematic check or assessment, especially of the efficiency or effectiveness of an organization or process." As it applies to this policy, an audit is a

standardized and methodical examination of structural fire program areas at parks and regional offices to assess their compliance with policies.

2.2 Assessment

The definition of an assessment is "a judgment about something based on an understanding of the situation." As it applies to this policy, an assessment describes the processes that are incorporated into an audit. For example, the NPS uses operational risk management principles to evaluate the general risk and effectiveness of a structural fire program at the park level.

2.3 Review

A review is to "examine something to make sure that it is adequate, accurate, or correct."

2.4 Incident Investigations

There are four classifications of accidents or "incidents with potential" in the NPS.

2.4.1 Minor Accident/Incident

A minor accident/incident is an event without injury or with first-aid treatment only (OSHA definition). No lost days from work or job transfer or restricted work activity or loss of consciousness. And any property damage must be less $2,500.

2.4.2 Recordable Incidents

Injuries and occupational illnesses that are defined in OSHA recordkeeping requirements as medical treatment beyond first-aid, including loss of consciousness, lost days away from work, and restricted work activity or transfer of duties.

2.4.3 Significant Property Damage/Operating Loss Incidents

These are incidents that result in property damage or operating loss from $2,500 up to, but less than $250,000.

2.4.4 Serious Accidents

A serious accident is a work-related fatality of an employee (NPS, other agency under NPS jurisdiction, or contractors and volunteers directly supervised by the NPS), overnight hospitalization of three or more employees from a single occurrence, and/or incidental damage to NPS property of $250,000 or more.

3. Roles and Responsibilities

3.1 Associate Director, Visitor and Resource Protection (ADVRP)

The ADVRP has the ultimate responsibility for structural fire program audits, assessments, reviews, and incident investigations and has delegated that responsibility to the FAMDC for incidents involving wildland or structural fires (NPS involvement only). The results and findings are used to assist in the development of NPS servicewide decisions and guidance. All other events have delegated responsibility to the Chief of Risk Management, WASO.

3.2 Fire and Aviation Division Chief (FAMDC)

To the extent possible, or as delegated, the FAMDC will coordinate the Branch of Fire and Aviation's regional reviews to consolidate and minimize the impact to the regions.

3.3 Structural Fire Branch Chief (SFBC)

The SFBC is responsible for conducting and tracking all assessments of structural fire programs in parks and regions. In addition, the SFBC is responsible for providing the framework that provides clear and concise minimum standards, which may include recommended assessment templates and preferred procedures.

In addition, the SFBC shall:

- Develop policies, provide guidance, and establish direction and procedures for conducting structural fire program audits, assessments, and reviews for the regions in consultation with the regional staff.
- Assist with the development of program audits, assessments, and reviews for parks in conjunction with the regions.
- Develop and provide templates and checklists to assist in conducting audits, assessments, and reviews.
- Use park and regional program reviews and audit information to analyze and identify servicewide trends and comparisons. Information gathered from audits, assessments, and reviews will be used to identify program shortfalls and weaknesses and will be considered in the development of new policies, procedures, or guidelines.
- Analyze results from the audits, assessments and reviews and use the data to formulate funding requests and develop servicewide strategies to address common deficiencies across the service.

3.4 Regional Chief Ranger (RCR)

The RCR is responsible for conducting park structural fire program audits, assessments, and reviews on a recurring basis. Results of program audits shall be made available to the SFBC upon request. The RCR will ensure that the structural fire program reports are completed and submitted to the Park Superintendent through the Regional Director.

3.5 Regional Structural Fire Manager (RSFM)

RSFMs assist RCRs with conducting park audits, assessments, and reviews. They may also be asked to assist the SFBC with conducting regional and/or park audits.

In addition, the RSFM shall:

- Serve as a liaison between the park and the review team and assure logistics are in place for the review team.

- Assist in conducting park structural fire program reviews.

- Identify park program deficiencies. Deficiencies are to be documented, prioritized, and relayed to the SFBC upon request.

3.6 Park Chief Ranger or Park Structural Fire Coordinator (PSFC)

The Park Chief Ranger or PSFC shall coordinate directly with the RCR or RSFM in conducting park audits, assessments, and reviews.

In addition, the PSFC will:

- Collect and organize all necessary documents and information required as part of a comprehensive program review in advance of and during a review.

- Provide logistical support in advance of and during a review team's visit.

- Assist with coordination and scheduling of interviews in advance. These likely will include interviews with the Chiefs of Concessions, Facilities, Cultural Resources, Housing, Chief Ranger, engine company members, etc.

3.7 NPS Employee

An NPS employee is anyone who is working for the NPS or is an agent of the NPS, including personnel who are working for other federal, state, or local agencies that are under the direct supervision or jurisdiction of the NPS. This includes contractors and volunteers.

4. Program Audits

4.1 General

The intent of an audit is to establish baseline data that accurately describes areas of success, as well as areas of potential improvement and growth. Results from audits will be presented as observations and recommendations for management and operational improvement. It should be noted that audits represent a "snapshot" in time.

Audits are completed by a review team using a standardized template. The review team will use their judgment and expertise to assess a park's or region's compliance with policies, procedures, and best practices.

Audits of parks and regions may contain three sections, which are:

- Audit section
- Assessment section
- Analysis section

4.2 Audit Section

Audits are conducted through the evaluation of planning documents, review of internal park or regional procedures, interviews with park or regional program managers and program administrators who have responsibilities directly associated with structural fire program objectives and requirements. Information is collected and reviewed and opinions and recommendations are generated to assist with program improvements.

4.3 Assessment Section

The “assessment” component is optional and may include employee surveys and personal interviews, which can be utilized to measure the health of the program and identify communication problems or workplace obstacles that make compliance difficult. This section of the audit may include customer and/or employee opinion surveys, which target performance, supervision, and organizational effectiveness.

Examples may include:

- Customer and Client Opinion of Services and Procedures
  This consists of an anonymous online survey to collect customer opinion regarding performance, supervision, and organizational efficiencies. The survey could also allow for customer/client suggestions and comments.

- Employee Opinion
  This may consists of an opinion survey which is distributed internally to employees representing the assessed park or region with the intent to evaluate their level of work satisfaction. This information can be useful in identifying areas of weakness and assist in the development of internal communication plans.

4.4 Analysis Section

The analysis section of an audit evaluates compliance with agency policy (DO/RM-58). The objective, using quantifiable metrics, is to be able to assess a program’s strengths and general risks, and identify areas of improvement (mitigations) based on Operational Risk Management (ORM) principles.

Specific objectives include:

- Assess the program’s overall health, based on ORM principles with measurable results.

- Ensure consistency and compliance with Structural Fire Management policy (DO/RM-58).

- Acknowledge where parks/regions are doing well.

- Identify areas in need of improvement.

- Provide consultation and recommendations on program management.

- Establish and maintain a collaborative working relationship between the park and the regional offices and between the regional offices and the WASO program office.

5. Regional Program Audits

5.1

The FAMDC or their designee will convene an audit team to audit regional structural fire management programs. Whenever possible, these audits will be coordinated with other program audits to minimize the impact on regional operations. Regional audits should be conducted on a seven (7) year cycle, at a minimum, or one region per year using the current NPS organization.

5.2

Regional program audits will generally be conducted by a team of 1-3 people who have knowledge on structural fire program management within the NPS. The audit purpose is to obtain, analyze, and evaluate information concerning the management, planning, and operational procedures of the regional structure fire program.

5.3

The purpose of a regional program audit is to understand if and where the region has shortcomings on understanding policy and to understand the effectiveness of policy implementation and communication to the parks. These audits will assist WASO in understanding how best to provide support and assistance for improving program effectiveness for the regions and the parks servicewide. The focus of the audit will be to assess regional procedures, their quality, and the effectiveness of their implementation.

Key areas the audit will focus on:

- Adequacy of regional procedures and policies.
- Adequacy of enforcement of procedures and policies.
- Adequacy of the region's park audit program.
- Assess the region's effectiveness of communicating regional priorities to parks.
- Assess the region's collaboration with other regional program areas (e.g. facilities, curatorial, housing, etc.).

5.4 Response to Regional Program Audits

A "draft" final audit report will be provided to the audited unit for review and discussion and to reach consensus before the final report is issued. Final audit reports require a written response from the audited unit. The audited unit's written response will be submitted through the appropriate chain of command back to the auditors in a reasonable amount of time agreed to by the audited unit and the auditing office. Responses are to include the unit's proposed actions to address or mitigate any recommendations and corrective actions. Status reports with updates on mitigations and corrective actions are to be provided by the auditing unit twice per year.

Any priority mitigations identified in the audit report, once mitigated, are to be provided to the auditing unit as soon as those mitigations have been put in place.

6. Park Program Audits

6.1

Park program audits are the responsibility of the RCR or their designee. A standardized park structural fire audit template should be used by all the regions.

6.2

It is encouraged that regions conduct 3-5 park audits each year. The cumulative data from these audits should provide the regions with a snapshot of a park's compliance with structural fire management within their regions.

6.3

Park audits conducted by the regional office shall be made available to the SFBC upon request. Regions are to synthesize trends and common deficiencies from park audits and provide to the SFBC. This information will be used to help identify servicewide vulnerabilities and shortcomings and address them through policy creation or editing or the generation of funding requests.

6.4

Due to the inherent dangers and liability associated with manual structure fire suppression, parks with these operations will be audited at a least once every (5) years or as needed based on the information gained, regional request, change in management, or an incident with a poor or questionable outcome. Program audits may be initiated at either the regional or WASO level. These audits should be performed jointly between the involved region and WASO.

6.5

Due to the high risk/low frequency nature of structural fire incidents within the NPS, parks that maintain a manual structure fire suppression operation shall have a fourth program assessment element. In addition to the park audit, a skills proficiency assessment will be scheduled for the same visit. In most cases, this may require an additional day for the audit. The skills proficiency assessment will consist of a series of company drills to be demonstrated by all currently certified members of the engine company.

The purpose of these company drills is to assess the park's ability to provide an effective emergency response to all hazard incidents safely. This will include a close look at SOPs, all equipment, apparatus, and all associated and required documentation for engine company operations. Randomly selected training evolutions used to evaluate firefighter performance will be provided to the park 30 days prior to the scheduled program audit. Findings from the skill proficiency review will be included in the final park report.

7. Lessons Learned Reviews (LLRs)

7.1

The intent of a LLR is to collect and share knowledge from incidents to assist the agency with improving safety, performance, efficiency, and organizational learning throughout the entire structural fire community. LLRs can also be called “incidents with potential (near-hit)” or “near-miss.”

7.2

The LLR should be tailored to the event being reviewed and the scope of the review should be commensurate with the potential severity and complexity of the incident. An LLR will not be substituted for a Serious Accident investigation. There are a number of different types of LLRs available. The NPS is encouraged to use a Facilitated Learning Analysis (FLA) or the agency’s equivalent.

7.3

In order to foster a learning environment that improves overall agency safety, it is imperative that an open, honest, and non-punitive dialog is created with the review team and incident participants.

7.4

When a LLR has been requested, the review shall be led by a facilitator who was not involved in the incident or event. The facilitator should be an appropriate expert who possesses skills in interpersonal communication and organization and be unbiased to the event. A team of technical experts will be gathered to support the facilitator in conducting the review. The number of team members and the expertise will depend on the potential severity and complexity of the incident.

7.5

Personnel involved in the event will be participants in the review process. In addition, the LLR team should visit the incident site as soon as possible following the incident.

7.6

The LLR facilitator will:

- Obtain a Delegation of Authority from the appropriate agency level. See Attachment 1.0 *Sample FLA Delegation of Authority*.

- Develop a report that will contain a compelling accident story designed specifically for organizational learning. In addition, the report will contain an executive summary, an introduction, lessons learned by those involved, lessons learned analysis (including the underlying reasons for success and/or the unintended outcomes), summary, appendices and recommendations.

- Provide the final written report to the person issuing the Delegation of Authority on a timeline agreed to by both parties.

- Submit a copy of the final report to the SFBC.

8. After Action Incident Reviews (AARs)

8.1

An AAR is a learning tool intended for an evaluation of an incident or project in order to improve performance by identifying strengths and correcting weaknesses. An AAR should be conducted as soon as possible following the event by the personnel involved in the incident and should be led by the crew leader, incident leader, or incident commander, but the responsibility may be assigned to someone else.

8.2

AARs can be conducted at any organizational level; however, all AARs involve the exchange of ideas and observations and focus on improving proficiency.

The AAR should encourage input from the participants that is focused on the following:

- What was planned?
- What actually happened?
- Why it happened?
- What can be done the next time?

8.3

Generally, AARs do not result in a summary report and are not to be utilized as an investigative review. For additional information, consult the Interagency Standards for Fire and Fire Aviation Operations (Red Book) for details or access the information at:

http://www.fireleadership.gov/toolbox/after_action_review/index.html

9. OMB Circular A-123, Management's Responsibility for Internal Control

9.1

The Federal Managers Financial Integrity Act (FMFIA) requires the Director to perform annual internal review and provide Congress with annual assurances regarding the management, accounting, and administrative controls in all programs, organizations, and functions, commonly called A-123. This is not a financial reporting process.

9.2

An A-123 internal control assessment is a documented analysis of program risks and the related mitigating management controls, which will identify the effectiveness and efficiency of the program activities and their associated mission.

9.3

The A-123 internal control assessment is managed by the Comptroller's office who determines which programs are reviewed each year. These assessments can be performed regionally or nationally. For details on the internal control assessment process, visit the following site:

http://www.aoc.nps.gov/documents/ic_docs.html

10. Incident Investigations

10.1

Policy found in Director's Order and Reference Manual 50B *Safety Program Management,* specifically Section1, is to be followed closely and can be found at:

http://www.nps.gov/policy/DOrders/50B.htm

10.2 Concession Accidents and/or Injuries

Structural fire related events or incidents on concession owned and/or operated facilities may be investigated by a SAIT or FLA team, if deemed necessary by the NPS DASHO, Regional Director, Park Superintendent, or the FAMDC.

10.3

Additional information regarding serious accident investigations and SAIT can be found at:

http://www.nps.gov/policy/DOI_SAI_Guide.pdf.

11. Structural Fire Assessment Standardization

The WASO structural fire program office is responsible for providing the framework and templates for audits, assessments, and reviews that will include current fire management standards, as agreed to by WASO and regional offices. These standards will include specific program audit elements and procedures. These will include, but are not limited to structural fire specific audit worksheets, standardized scoring matrices, data tracking techniques, and preferred methodologies that are all in the interest of standardizing all structure fire assessments of parks and regions.

11.1 Recommended Frequency of Audits and Reviews

Required Activity	Frequency	Required by	Delegating or Authorizing Official
Regional Program Audit	Every 7 Years or as Needed	RM 58	WASO
Park Program Audit	Annually (Representative Sample)	RM 58	Region/WASO
Lesson Learned Review (LLR)	Management Driven As incident warrants	RM 58	Park/Region/WASO
After Accident Incident Review	Management Discretion As incident warrants	RM 58 and RM 18	Park/Region/WASO

11.2 Required Frequency of Investigations

Required Activity	Investigation Type	Required by	Delegating or Authorizing Official
Serious Accident[1]	SAI	DO/RM 50b DOI 485 DM 7	WASO/Regional
Structural Fire Incident[2] (Significant Property Damage)	TI, FLA	RM 58	WASO/Regional/Park

[1] Serious accidents - A work related fatality of an employee (NPS, other agency under NPS jurisdiction, or contractors and volunteers directly supervised by NPS), overnight hospitalization of three or more employees from a single occurrence, and/or incidental damage to NPS property of $250,000 or more.

[2] Significant property Damage/ Operating Loss Incidents - Incidents that result in property damage or operating loss from $2,500 up to, but less than $250,000

STRUCTURAL FIRE PREVENTION AND FIRE CODE COMPLIANCE

1. Introduction

The National Park Service has over 32,000 structures, many are historic, even iconic, and others house unique museum collections. Buildings and structures range from grand lodges, to the Gateway Arch, visitor centers, houses, dormitories, and Fords Theater. Historically, these buildings have not been immune from the effects of fire and will not be in the future. Many of Architect Steven Underwood's lodges, located in the Grand Circle area of the Southwest, have been lost to fire. Underwood defined lodge style architecture in the NPS and designed many of the Grand Lodges that still exist today. Electrical wiring, improper use of electrical equipment and historical reenactments are just a few of the causes of fires in our buildings.

In order to be successful in protecting structures, fires must be prevented from starting. Many parks that are located outside of established fire response zones do not have adequate or available fire suppression services available. Few parks have structural fire suppression response capabilities. NPS buildings receive hundreds of thousands of guests and house millions of irreplaceable objects. Many of the buildings are historic, one of a kind, and of great importance in telling America's story and preserving the American heritage. Preventing structural fires from starting is the number one goal of the NPS structural fire program.

Prevention is achieved only when:

- All NPS employees and partners are informed of best practices, know their responsibilities, and are empowered to act upon them.

- There is an aggressive inspection and abatement program conducted by knowledgeable people with clear procedures to follow, ensuring that the hazards noted are properly mitigated.

- There is a process in place, which includes the Regional Structural Fire Manager in the construction planning, design review, construction inspection, building commissioning, and acceptance phases. This process must clearly define the structural fire professional's role and authority in commissioning fire protection systems and issuing Certificates of Occupancy.

- Fire protection systems are properly designed, installed, inspected, tested, and maintained by qualified persons.

Effective structural fire prevention occurs only when all members of the National Park Service take the time and make the effort to identify, reduce, or remove the potential for a fire to start in our buildings.

Fire and life safety inspections, building construction, inspection, testing, and maintenance of fire protections systems, and other fire code compliance issues are based on the most current edition of applicable National Fire Protection Association (NFPA) codes and standards. These codes and standards include NFPA 1 (Fire Code), NFPA 101 (Life Safety Code), NFPA 13 (Standard for the Installation of Sprinkler Systems), NFPA 25 (Standard for the Inspection, Testing, and Maintenance of Water-based Fire Protection Systems), and NFPA 72 (National Fire Alarm and Signaling Code). Additional codes that are frequently consulted for NPS projects are NFPA 909 (Code for the Protection of Cultural Resources Properties – Museums, Libraries, and Places of Worship) and NFPA 914 (Code for Fire Protection of Historic Structures).

2. Responsibilities

2.1. National Level

The national program office will provide guidance and policy as well as maintain information and standards regarding structural fire prevention and fire code compliance requirements. Additionally, the national program office will identify and develop training and education programs that will strive to ensure all NPS employees receive the training they need to help them meet their responsibilities by learning to identify structural fire hazards and what they can do to help correct them. The national program office maintains detailed comprehensive data of fire and life safety building inspections. This data clearly identifies fire prevention and fire code compliance hazards that exist in the parks.

2.2. Regional Level

Within Director's Order 58: *Structural Fire Management,* the Director of the NPS has assigned each Regional Director as the Authority Having Jurisdiction (AHJ) for structural fire matters. The AHJ is defined in NFPA 1, *Fire Code,* as the person responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure. The responsibilities of an AHJ are highly technical and require a clearly defined skill set. Because of this, most Regional Directors will choose to reassign the AHJ responsibilities to the Regional Structural Fire Manager (RSFM).

NPS Regional Structural Fire Managers (RSFM) are responsible for assisting the national office in developing policy and guidance, as well as implementing these policies and providing guidance to park units. RSFMs implement national policy by developing and enforcing effective structural fire prevention and fire code compliance efforts within their regions. Implementation of a successful program includes oversight of the various inspection programs identified in this chapter and assuring that parks are complying with fire codes by providing plan review, onsite inspections, and system commissioning. RSFMs provide guidance to park management and the Park Structural Fire Coordinators (PSFC) by assisting them in understanding ways to establish effective inspection and prevention programs. They provide oversight and work to assure compliance by conducting program reviews and ensuring corrective action plans are developed, implemented, and enforced.

2.3. Park Level

A successful park fire prevention and fire code compliance program exists only when effective policy is developed, implemented, and communicated to park units. Effective policy also requires guidance and support by the regional staff and all levels of park management. The keys to a successful fire prevention program are an educated staff that understands the need for effective fire prevention and fire code compliance programs that include annual fire hazard abatement inspections and the need for a comprehensive inspection, testing, and maintenance (ITM) program for all fire protection systems and equipment.

While all park staff must take an active role in fire prevention, there are a few key positions that make the effort much more effective.

- Superintendent

    a. Strengthens fire prevention when he/she reinforces to staff the importance of fire prevention and fire code enforcement through:

        - The development and commitment to support a Structural Fire Management Plan (SFMP).

        - Ensuring that funding is allocated annually for ITM for all fire protection systems and equipment.

        - Designating a Park Structural Fire Coordinator (PSFC) in writing.

- Ensuring adequate response to structural fire emergencies through the use of park firefighters and/or properly executed aid agreements.

b. Provides sufficient time and resources for employees to receive training and information on:

- Fire drills, evacuation drills and accountability procedures.
- Means of reporting fires and other emergencies.
- Fire prevention in the workplace and at home.
- Portable fire extinguishers (available on DOI Learn).
- Fire prevention procedures and responsibilities for places where large groups gather, known in the fire code as public assembly occupancies.

- Park Structural Fire Coordinator once appointed:

a. Attends and completes WASO approved Park Structural Fire Coordinator training within one year of being designated.

b. Responsible for the development and maintenance of the park Structural Fire Management Plan (SFMP).

c. Assists with the scheduling, delivery, or development of emergency action plans, building evacuations drills, and portable fire extinguisher training sessions and exercises.

d. Develops a close relationship with the RSFM to ensure park structural fire needs are communicated appropriately and that all plans for new and altered building construction are reviewed by the RSFM.

e. Schedules and/or conducts fire inspections in all target hazard[1] **buildings** at least once annually. Documents the inspections and follows up to

[1]**Target Hazard**: A structure whose building materials and/or contents are combustible, whereby if a fire were to start, a significant loss or damage to the structure or its contents or loss of life could occur. Examples may be:

1. Any structure that is actively used for any purpose, including seasonally used structures and structures used solely for storage.
2. Any structure that has significance to the park history and/or mission.
3. Any structure that if lost or damaged would represent a significant cultural or historic loss, or have a negative impact to the park's continuity of operations.

ensure that the deficiencies have been corrected or are being actively addressed.

f. Develops a working relationship with outside fire responders to ensure they are familiar with all target hazard buildings and helps them to develop pre-incident plans for these buildings.

g. Ensures a hot work permit process is in place in the park

- Chief of Facilities:

  a. Becomes knowledgeable about, and follows the requirements of, DO 58 and RM 58 as it applies to construction, alteration, and change of occupancy.

  b. Oversees the ITM program for all fire protection systems (suppression and detection) and portable fire extinguishers.

  c. Places a high priority on abating fire hazards found during the various inspection processes.

  d. Ensures all construction projects are reviewed for fire code requirements by the Regional Authority Having Jurisdiction (AHJ).

- Chief Ranger:

  a. Ensures qualified NPS personnel are at the scene of all structural fires and all hazard incidents to assist the senior fire officer in command. If the senior fire officer in command is from an agency outside of the park, the Chief Ranger or the person assigned to the scene represents the Superintendent at the Incident Command Post.

  b. Ensures incident scenes are secure and works to preserve the incident scene to the extent possible, so that an investigation can be conducted to help determine cause and origin.

  c. Ensures the park has the proper structural fire response capabilities through either internal response resources or properly executed aid agreements.

- Supervisors at all levels are responsible for informing their staff of standard operating procedures (SOP) and providing guidance related to NPS structural fire prevention and safety.

Parks may have employee housing as well as concessions operations and concessions housing within the park boundary. If this is the case, the person in charge of each has specific roles in the prevention of fires and enforcement of fire codes. When roles are assigned, each person assigned needs to closely coordinate with the PSFC to ensure fire safety issues are properly addressed.

- Housing Manager (This section refers to NPS employee housing also known as Government Furnished Quarters):

    a. Ensures that all housing occupants to include the employee and all occupants are aware of their responsibilities for fire prevention in their quarters, including ensuring that dependents are familiar with fire prevention instructions, know how to report fires, and know how to safely evacuate their quarters in the event of an emergency or a fire. A representative of the housing office and the new resident will inspect the quarters prior to occupancy. The inspection is to focus on the condition of the unit, fire safety requirements, and education of the employee and other occupants.

    Battery operated smoke detectors should be replaced with hard-wired smoke detectors as soon as funding becomes available. When replacing battery operated smoke detectors with hard-wired smoke detectors, the installation will meet the requirements of NFPA. This includes interconnected detectors in each sleeping room, outside each room, and on each floor. In instances where battery only operated smoke detectors still exist, the housing occupants need to be reminded to change their batteries twice annually. Park housing policy is to be clear as to whether batteries are to be provided by the government or provided by the occupant.

- Chief of Commercial Services:

    a. Ensures that concessions contracts include requirements for fire prevention and safety, specifically to:

        i. Brief concessions operators on their role in preventing fires.
        ii. Inspect concessions operations to ensure:
            a. All employees participate in fire drills.

b. Annual portable fire extinguisher training is conducted.
c. Fire protection systems are properly inspected and maintained in accordance with NFPA and NPS standards.
d. Annual fire and life safety building inspections are conducted in all concessions operated buildings with qualified staff.

b. If housing is provided for concessions employees, ensures they are familiar with the concessions housing requirements. Concessions contracts that include housing need to ensure the units meet requirements of NFPA and NPS policy for the installation and ITM of fire protection systems.

Responsibilities at the park level often vary from park to park. Specific responsibilities need to be clearly delineated in the park's structural fire management plan.

3. Construction, Planning, and Design Review

After the decision has been made to construct a new building, alter, provide an addition, renovate, and/or change the use of an existing building, it is imperative that the park contact their RSFM. The RSFM will provide critical guidance in regards to the fire and life safety requirements by reviewing construction plans for conformance with applicable fire codes. The need for in-progress and final inspections, system commissioning, and the issuance of a Certificate of Occupancy (CO) should all be discussed at this time. Construction plans for all new and significantly altered buildings, as defined below, require review and approval by the Regional Structural Fire Manager (RSFM) or his/her designee. Design and construction are to be in accordance with the most current edition of NFPA codes and standards and NPS policy. Should the codes or standards change during the construction planning process, those codes or standards originally accepted remain in effect. From the initial stages when plans are being developed to requests for funding and the final approval of construction drawings, the AHJ must be involved in each project.

Common review milestones for any construction project with the AHJ are:

- Initial planning PMIS submission
- Pre Design (PD) stage
- Schematic Design (SD) stage
- Design Development (DD) stage
- Construction Drawings (CD) stage
- System commissioning
- Issuance of the Certificate of Occupancy (CO)

3.1. Building Alteration

Buildings are altered in many ways and defined by many different codes and references. It is not the intent of this document to require complete compliance with fire codes every time routine maintenance takes place in a building. To provide clarity, altered buildings requiring compliance with NFPA 101, new occupancy chapter requirements, and this RM requirement for fire protection systems are defined as:

- **Rehabilitation**, as defined in RM 36 (Note this pertains to housing only as it is not an NFPA definition. All other definitions below pertain to all NPS buildings including housing):

  A one-time rehabilitation of the entire housing unit that includes any of the following elements:
  a. Major improvements to the electrical system
  b. Major improvements to the plumbing system
  c. Reroofing - In this instance, the term reroofing should be interpreted to mean the replacement of structural members of the roof system. The replacement of shingles is not considered a major rehabilitation project and does not trigger compliance with new fire codes.

- **Renovation,** as defined in NFPA 101, Chapter 43, and as revised here, is the replacement in kind or strengthening of load-bearing elements.

- **Modification,** as defined in NFPA 101, Chapter 43, and as revised here, is:
  a. The reconfiguration of any space.
  b. The addition or elimination of load-bearing elements. NOTE: The reconfiguration or extension of any system, or the installation of any additional equipment, while part of the definition, will not always warrant compliance with new fire codes. In these instances, the Regional Structural Fire Manager (RSFM) must be consulted.

- **Reconstruction**, as defined in NFPA 101, Chapter 43, is:
  a. The reconfiguration of a space that affects an exit or a corridor shared by more than one occupant space.
  b. The reconfiguration of a space such that the rehabilitation 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.

- **Change of Occupancy/Use**, as defined in NFPA 101, Chapter 43, is a change in the occupancy classification of a structure or portion of a structure. NOTE: This is an NFPA definition of a building's intended change of use in accordance with code

definitions. It is not to be interpreted as a change of persons or entities occupying a space, which does not trigger compliance with existing fire codes.

3.2. Day Labor Construction

Day labor construction projects refer to those projects carried out by non-contractual methods, usually by NPS or concession employees. All day labor construction projects that may have an adverse impact on any fire protection system and/or means of egress must be coordinated through the PSFC and Park Facility Manager and needs to be approved by the AHJ or authorized representative before work begins. Day labor electrical work is prohibited, unless conducted by a certified electrician or a Federal Wage System 2805 electrician at the grade of 8 or higher.

Every day labor construction, remodel, or renovation project is to be performed in accordance with Director's Order 58 and Reference Manual 58. Any day labor construction work completed in violation of these policies that **has not been** officially approved in advance may be subject to additional changes and requirements as determined by the AHJ.

4. Fire Protection Systems

Fire protection systems must be installed in buildings when required by NFPA 101 or as otherwise defined in this chapter. Once it is determined that a fire protection system is required, it is imperative that it is designed, installed, and maintained by qualified personnel. Frequently, parks do not have adequate water storage or pressure for systems to meet the requirements of NFPA 1. Consult with project engineers to verify that existing system pressures and flows have been taken into account during project planning and development. Fire Protection Systems Installation and ITM Guidance was developed to help parks understand what is meant when this document mandates compliance with NFPA for the installation and inspection, testing, and maintenance (ITM) requirements of fire protection systems. NFPA has many complex scenarios where these systems are required and where alternatives are available. The annex will help to understand NFPA requirements, but the AHJ must be involved to help determine the best solution, as the annex does not cover every possible scenario. This section sets policy for when fire protection systems are required and who is authorized to design, install, and maintain these systems.

4.1. When to Install Fire Protection Systems

The National Fire Protection Association Life Safety Code (101) is the minimal requirement to provide a reasonable level of fire protection for all NPS buildings. Any new building, newly acquired building, building undergoing significant alteration as described above, and/or any building undergoing a change of use (occupancy) shall be protected with fire protection systems, if required by the applicable new occupancy chapter of NFPA 101, Life Safety Code, prior to occupancy.

There are extreme circumstances in the NPS where fire protection systems are necessary in order to protect life, significant and/or historic buildings, and buildings with irreplaceable artifacts under our protection. In addition to NFPA 101 requirements, this chapter requires park managers to consider installation of fire protection systems in buildings even when not required by fire codes. Chapter 9 Fire Protection for Historic Structures and Buildings with Collections provides detailed guidance for determining structural fire requirements for these buildings. The following are a few examples of buildings where fire protection systems might be considered by the NPS when above and beyond fire code requirements:

- Structures that have a high risk occupancy in areas that are so remote that manual fire suppression response is not an effective or viable option.
- Are unique, one of a kind, iconic structures.
- Have unique construction features.

High risk occupancies are those buildings where large numbers of people gather, such as a theater or large visitor center and/or are unique, one-of-a-kind structures with unique construction features. In most instances, fire codes will require smoke alarms, fire alarms, and/or fire sprinklers in these occupancies, but not in every instance. When they are not required by fire codes, and when manual fire suppression is not an effective option due to the distance of first responders, park managers must consult with the regional AHJ to determine the adequate level of fire protection for each building.

4.2. Fire Protection Systems Design

Design of fire protection systems requires a thorough understanding of fire codes and a solid background in fire protection engineering principles. Many systems are highly complex and should only be designed by a fire protection engineer. The regional AHJ will make that determination. Fire protection systems can be designed by:

- A fire protection engineer.
- A NICET III technician for the type of system designed.
- As approved by the AHJ.

4.3. Fire Protection Systems Installation

The installation of fire protection systems requires skill in construction methods, knowledge of fire codes, and at times specific information about the system only obtainable from the manufacturer of the system. There are many different types of systems and many ways to ensure a contractor is capable of doing the installation. Local fire departments, building departments, and your AHJ can all help to achieve the goal of locating a qualified and competent installer. Persons installing fire protection systems in NPS buildings must meet one or more of the following criteria:

System Type	Installation Requirements
Fire Alarm	1. State or municipal certified/licensed fire alarm contractor 2. Qualified by manufacturer 3. NICET Level II 4. As approved by AHJ
Sprinkler System	1. State or municipal certified/licensed sprinkler contractor 2. NICET Level II 3. As approved by the AHJ
Hood and specialty Suppression Systems	1. State or municipal certified/licensed contractor for type of system 2. Qualified by manufacturer 3. As approved by AHJ
All Other	1. State or municipal certified/licensed contractor for type of system 2. Qualified by manufacturer 3. As approved by AHJ

4.4. Commissioning of Installed Fire Protection Systems

Ensuring a fire protection system is correctly installed and meets the requirements of fire codes is the responsibility of the AHJ or his/her designee. At the initial planning phases for any construction project, the logistics of who is going to commission the system and how that is going to be accomplished must be agreed to. This may require travel dollars for the AHJ or extra money in the contract for a fire protection engineering firm to be contracted to do the job. Issuance of the Certificates of Occupancy (CO) will likely be delayed, if systems are not properly commissioned. In most cases, a representative of the installation company who is NICET III and/or a manufacturer's representative must be present at the commissioning. A representative of the manufacturer is extremely important for many fire alarm systems, as the codes required to program them are very proprietary. This too should be determined as early in the planning phases as possible.

4.5. Fire Protection Systems Inspection Testing and Maintenance

Most fire protection systems are installed in a building primarily to increase life safety and protect the resource. In order to ensure these systems work properly, NFPA clearly lays out inspection, testing, and maintenance (ITM) criteria for each type of system. Job plans and forms are available on the Structural Fire Program InsideNPS website. Almost every system type needs to have ITM accomplished by a qualified person (Section 4.5.1) annually. Many systems have more frequent requirements, such as weekly visual inspections of sprinkler valves and monthly checks of portable fire extinguishers. It is not the intent of this section to require contracted personnel to accomplish these more frequent inspections. There are many options available, including electronic monitoring or training building occupants or maintenance personnel to conduct these inspections.

4.5.1. ITM Qualified Personnel

a. State, county, or municipal certified/licensed contractor for type of system[2]
b. NICET II or greater certification for the type of system being worked on
c. Certified by the manufacturer for the make and model of system being worked on
d. As approved by the AHJ

Many NPS buildings are shut down for the winter season or for other reasons. If fire protection systems are also shut down, due to a lack of electricity or the fear of freezing pipes, there are certain procedures that need to be followed. First, the building is not to be occupied. Shutting down fire alarms and sprinkler systems may be done by personnel trained to carry out these tasks. Fire codes often call for a full acceptance test each time a system is brought back online. However, NPS policy does not require this, but does provide the following policy and guidance:

Any building that is used for overnight occupancy must, prior to being reoccupied, have the system pass an annual inspection and testing, in accordance with the latest edition of NFPA 72 or 25. If this is done through contract, it is suggested that the contract include the requirement to bring the system back online, then perform the annual ITM.

Some parks bring buildings back online at different times of the year. An example of this might be a park with buildings at differing altitudes where buildings are brought back into operation as the snow melts and they become accessible. Buildings that are used for overnight occupancy are required to have their fire protection systems pass an annual

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[2]In parks that share boundaries with multiple states or municipalities, certification from any of the border states or municipalities will suffice.

ITM inspection prior to allowing overnight occupants. Buildings that do not have overnight occupants are allowed one month from the time the building is brought back up to have the systems pass their annual ITM. This is to allow time to contract several buildings whose openings may be staggered into one contract. If there is a need for a longer time period, the parks AHJ must be consulted.

5. Fire Protection Systems Commissioning and Certificate of Occupancy Permits

Department Manual 485 6.3.C., 29 CFR 1960.34, and Reference Manual 58 require that pre-occupancy inspections for safety and health considerations be conducted prior to allowing a building to be occupied. The Regional Structural Fire Manager, as the AHJ, or his/her designee will provide these inspections to ensure compliance with fire codes. Based on the inspection findings, the AHJ or designee will issue a Certificate of Occupancy Permit, approving the occupancy in part, pending corrective actions, or disapproving the occupancy. Visitors and/or employees cannot occupy structures, until the Occupancy Permit is issued. The permit is not required for incidental structures, such as comfort stations, sheds, pump houses, ticket booths, or barns. If there is doubt as to whether an Occupancy Permit is required, the AHJ should be contacted for guidance. Occupancy Permits will be issued only when the pre-occupancy and fire protections systems inspections have been completed and deficiencies have been rectified or the AHJ has approved the plan to correct the deficiencies in a timely manner.

Issuance of the Certificate cannot occur until all fire protection systems have been accepted by the AHJ. For this reason, it is imperative that all park construction projects be reviewed by the AHJ at the earliest possible point in the process. Funding and travel expenses should be reviewed and solutions for inspections, commissioning of fire protection systems, and issuance of the Certificate of Occupancy Permit must be agreed to in advance, so as to not delay the park's ability to occupy the building.

6. Variance/Waiver Requests

At times, it may not be possible or appropriate to comply with various fire or life safety related issues. When this is the case, a "Variance" or "Waiver" may be requested. It is required that the request be reviewed by and approved or rejected by the AHJ.

A "Variance" is to be requested for an equivalent solution. A "Waiver" is to be requested when the prescriptive code requirement cannot be met, but does not impact life safety.

6.1. AHJ Appeal Process

Variance and waiver requests are processed by the AHJ for the park. AHJ authority starts with the Director of the NPS is assigned by DO 58 to each Regional Director who usually reassigns the authority to his/her Regional Structure Fire Program Manager. In some instances, the RSFM may authorize employees at the park level to undertake AHJ authority for their park. All appeals will be directed to the next higher authority.

The "Fire Protection Variance/Waiver Request" form is available at: http://classicinside.nps.gov/documents/ITM Variance Form.pdf.

7. Inspection and Abatement Programs

The purpose of this section is to set forth the necessary operational policies and procedures to ensure the park's Structural Fire Management Program meets current fire and life safety codes, standards, and NPS policies. The NPS is committed to protecting all resources entrusted to its care and focuses on preventing fires and minimizing the resulting damage in accordance with:

- Department of Interior policies
- NPS Management policies
- Director's Order 58, *Structural Fire Management*
- Reference Manual 58, *Structure Fire Management*
- Director's Order 50 and RM-50B, *Occupational Health and Safety Program*

One of the key objectives of the NPS structural fire prevention program is for all personnel to be able to recognize a fire or life safety hazard and to understand the procedures and notifications necessary to abate or eliminate that hazard. This is done through a comprehensive inspection, education, and abatement program. All park level structural fire programs must include the following elements:

- Fire Protection Condition Assessments (FPCA), which are comprehensive, baseline fire and life safety building inspections conducted by fire protection engineers.
- Annual fire and life safety building inspection program.
- Pre-occupancy inspections and acceptance and commissioning of fire protection systems.
- Review of construction plans or similar projects to assure fire code compliance.

7.1. Fire Protection Condition Assessments (FPCA) - Comprehensive Building Inspections

Director's Order 58 states:

"Each Superintendent will ensure the completion of a comprehensive Fire Protection Condition Assessment (FPCA) on buildings, and the development of a Structural Fire Management Plan (SFMP) in accordance with guidelines and procedures outlined in RM-58."

The FPCA is a standardized NFPA 1 (*Fire Code*) and 101 (*Life Safety Code*) prescriptive inspection of fire and life safety systems and processes for buildings, which is performed by professional fire protection engineers. The FPCA documents the compliance and noncompliance status of NPS buildings electronically. The Regional AHJ reviews and selects deficiencies for costing. Once selected, the engineers create Class C cost estimates for the deficiencies, which are then transferred to FMSS where work orders are created.

Parks that have not been inspected through this process should contact their RSFM to begin planning for this inspection.

7.2. Fire and Life Safety Building Inspection Program

Parks need to have a fire prevention program that, at a minimum, includes:

- Annual fire and life safety inspections of all target hazard buildings.
- A pre-occupancy inspection of all residential units for every new occupant.
- Control of hazardous operations.
- Emergency plans developed, evacuation drills conducted, and crowd managers trained and drilled.

7.2.1. Annual Fire and Life Safety Building Inspections of Target Hazards

The Park Structural Fire Coordinator is required to identify target hazard buildings and schedule annual fire inspections for each of these buildings. The inspection results are to be recorded and kept on file by using the Annual Fire and Life Safety Building Inspection Form. The national program office has developed a data collections system for these inspections and requires parks to enter the data into the web-based annual fire and life safety building inspection database known as the Structural Fire Data Management System (SFDMS). Access to this system can be gained by contacting your RSFM. More frequent inspections may be conducted, if the AHJ or PSFC determines there is an increased potential of risk or hazard or there is a change in occupancy use or tenants. The PSFC schedules follow-up inspections as needed. All inspections with identified deficiencies will be forwarded to the proper supervisor, who is responsible for mitigating the deficiency. The Annual Fire and Life Safety Inspection format and database are designed for use by people who have little background in structural fire inspections. Some parks may wish to do more extensive inspections and

use more robust data collections systems. Parks desiring to use other fire and life safety inspection processes and data collections must request to do so from their AHJ.

In instances where deficiencies are identified that may pose an imminent danger to the building, its contents or persons therein, the RSFM is to be notified as soon as possible.

Annual fire and life safety inspections focus on general fire prevention issues. Training for conducting fire inspections can be achieved through completion of the NPS Park Structural Fire Coordinator class, through organizations like NFPA, and through community college programs.

7.2.2. Pre-Occupancy and Annual Residential Inspections

- Housing Pre-Occupancy Fire Safety Inspections

The Housing Manager must ensure that all NPS housing, including seasonal housing, is inspected prior to each new occupant being allowed to occupy the building. The housing pre-occupancy inspection must be completed jointly with the new occupant. Tenants should be instructed on how to test smoke alarms, told how to use fire extinguishers, and instructed on home exit drills. Identified deficiencies are to be corrected before the tenant sleeps in the structure.

- Annual Inspections of Housing

RM 36, *Housing Management Handbook*, requires annual inspections of housing units that focus on health and safety issues. The Park Structural Fire Coordinator (PSFC) should work closely with the Park Housing Manager and the facilities manager to ensure each housing unit is inspected at least once annually. It is recommended that these inspections occur concurrently with the housing Condition Assessment Annual (CAA) in order to lessen the burden on the tenant.

Annual and preoccupancy inspection checklists can be found on the structural fire program website.

7.2.3. Control of Hazardous Operations

7.2.3.1. Vehicle Parking & Storage

Vehicle parking and storage is to be regulated to ensure emergency vehicle access during incidents and to provide for the safe storage of flammable materials contained in vehicles and powered equipment. Specifically:

- Vehicles and/or trailers may not be parked in fire lanes, within 15 feet of fire hydrants and sprinkler/standpipe connections, or in any manner that would preclude access by fire apparatus to all sides of buildings.

- Vehicles may not be parked within 50 feet of any fuel storage area, except in designated parking spaces or for the purpose of loading and unloading.

- Fuel powered equipment, such as lawn mowers, snow blowers, and other devices should be stored in buildings designated for storage, such as warehouses and garages.

7.2.3.2. Aircraft

Aircraft present several fire and safety issues. NFPA has specific regulations on fueling and storage of aircraft. Additionally, RM 60, *Aviation Management*, should be referenced and the Regional Aviation and Structural Fire Managers should be consulted if a fire or safety concern is recognized by park personnel that involves aircraft.

7.2.3.3. Watercraft and Marinas

Watercraft and marinas present several very complicated fire and safety issues. NFPA has specific regulations on fueling and storing of watercraft in marinas. If the park has these types of operations, they are to contact the RSFM to ensure fire safe operations are taking place.

7.2.3.4. Flammable and Combustible Liquids

A flammable liquid is any liquid having a flash point below 100 deg. F, whereas a combustible liquid is one with a flash point at or above 100 deg. F. The flash point is the lowest temperature at which a liquid can vaporize to form an ignitable mixture in air.

Petroleum, oil, and lubricant facilities include any area or building used for storing, dispensing, or handling any type of flammable or combustible liquid. The procedures and precautions required with these types of operations are many and can be found in NFPA standards and codes. Buildings with these types of storage or operational needs should be considered high risk and your AHJ should be consulted to ensure safe operations.

7.2.3.5. Fireworks

Fireworks include any composition or devices used for the purpose of producing a visible or an audio effect for entertainment purposes by combustion, deflagration, or detonation.

Using or possessing fireworks and firecrackers is prohibited, except pursuant to the terms and conditions of a permit or in designated areas under such conditions as the Superintendent may establish, and in accordance with 36 CFR, applicable state law, and NFPA codes and standards. Violation of the conditions established by the Superintendent or of the terms and conditions of a permit issued in accordance with this section is prohibited and may result in the suspension or revocation of the permit. Where these operations are permitted the park must reference NFPA 1, Chapter 65 to assure all fire and safety hazards are in place.

In some instances, fireworks may be requested for use indoors. This is typically requested in theater productions or live music events. The use of fireworks for this purpose is covered under NFPA 1126, Standard for the Use of Pyrotechnics Before a Proximate Audience. Parks considering granting a permit for this type of use should consult with their AHJ for specific requirements found in this standard.

7.2.3.6. Explosives

An explosive material is a substance that contains a great amount of energy that can produce an explosion, which is a sudden expansion of the material after initiation, usually accompanied by the production of light, heat, and pressure.

Using, possessing, storing, or transporting explosives, blasting agents, or explosive materials is prohibited, except pursuant to the terms and conditions of a permit. When permitted, the use, possession, storage and transportation will be in accordance with 36 CFR, applicable federal and state laws, and NFPA codes and standards. PSFCs should contact their AHJ for advice, if they face issues regarding explosive material.

Many park sites store black powder or other explosives or munitions for use in historic weapons demonstrations. These programs are exempt from the requirement to obtain permits, but must follow the NPS Historic Weapons Safety Manual in accordance with RM 6 Interpretation and Education.

The conditions and requirements regarding the storage and transport of any explosive products must be clearly defined in the park's Structural Fire Management Plan.

7.2.3.7. Compressed Gases

Gases in compressed form serve countless indispensable roles in modern technology and will be found in one form or another in most parks that have maintenance

operations. The following standards are essential to the safe storage and use of compressed gases in buildings as found in NFPA 1, Chapter 60.

- All compressed gas cylinders must be secured in place by a chain, strap, or noncombustible material.

- Cylinders, when not in use, must have the manufacturer provided cap on tightly.

- Oxygen and acetylene cylinders must be equipped with flash back arrestors and the equipment must be turned off when not in use. Acetylene cylinders must always be stored in the upright position and be properly secured.

- Oxygen cylinders in storage are to be separated from fuel gas cylinders or combustible materials, including oil or grease, by a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high with a fire rating of one-half hour.

Liquid Propane Gas (LPG) if stored in cylinders inside of buildings is subject to these requirements. LPG installed outside of buildings for such things as cooking and heating is subject to NFPA 58, Liquefied Petroleum Gas Code. Equipment, storage vessels, installation and piping must meet the requirements of this code.

7.2.3.8. Hot Work

Hot work is addressed by NFPA 51B, *Standard for Fire Prevention during Welding, Cutting and Other Hot Work.* Hot work is defined as work involving burning, welding, or a similar operation that is capable of initiating fires or explosions. Common hot work processes are welding, soldering, cutting, and brazing. When flammable materials are present, processes such as grinding and drilling become hot work. Hot work can be performed in both a designated area and a permit required area. These regulations apply to NPS personnel, contractors, commercial service personnel, and partners. Hot work done in private residence garages as a “hobby” must be done safely and with all precautions noted here, but does not require a permit.

Designated Areas

Designated areas are places such as maintenance shops or a detached outside location that is noncombustible or made of fire resistive construction. Designated areas are essentially free of combustible and flammable contents and are suitably segregated from areas that have combustible or flammable contents. Park maintenance personnel should strive to conduct any hot work operation in one of these designated areas whenever possible. Shop foreman are responsible for ensuring these designated areas

are kept free of combustible and flammable contents and that welding gasses are stored properly and their quantity is kept to only what is needed for efficient operations.

Permit Required Area

Any hot work outside of a designated area requires a hot work permit to be issued by a Permit Authorizing Individual (PAI). In order for permits to be issued, the area must be clear of all combustible material. Sheet metal guards, fire retardant blankets, or similar protection are required to prevent hot metal and sparks from falling on wooden floors, partitions, or combustible materials which cannot be removed. In all cases, the hot work environment will be free of flammable liquids and vapors. Fire extinguishers are to be provided at the work location. Combustible materials within a radius of 35 feet will be protected or removed. Fire watch procedures are necessary when hot work is conducted within 35 feet of combustible materials. Hot work will cease at least 30 minutes prior to leaving the work site. This time frame will be noted on the permit and may be altered by the PAI should conditions warrant. Permits are generally written for only one day at a time. Projects requiring multiple day permits, which are so remote as to make the daily issuance of a permit impracticable, requires the approval of the AHJ or his/her designee. The PAI may download the Hot Work Permit from the Structural Fire InsideNPS website.

Nonpermissible Areas

Hot work shall never be allowed to be performed in any of the following areas:

- Areas not authorized by management. Collections management plans and historical building plans may designate areas or buildings where hot work is to be restricted.
- In sprinklered buildings where sprinklers are impaired, unless authorized by the AHJ.
- In the presence of explosive atmospheres (flammable gases, vapors, liquids, or dusts).
- In the presence of unclean or improperly prepared equipment, drums, tanks, or other containers that have previously contained materials that could develop explosive atmospheres.

Permit Authorizing Individual (PAI)

The NPS defines a PAI as anyone, such as a supervisor, foreperson, AHJ, or PSFC, who is familiar with NFPA 51b *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*. Under no circumstances will the PAI be the same person doing the hot work. The PAI will always be an NPS or commercial services employee. If hot work is

being done under contract, then an NPS employee will be designated as a PAI for the contract. Hot work accomplished by commercial service operators may have a PAI who works for the commercial services operator. All other requirements of this section apply to the commercial services PAI. The PAI is responsible to ensure safe operations in all permit required hot work operations. Prior to issuing a hot work permit, the PAI needs to consider:

- Alternatives to conducting hot work
    - Mechanical removal and relocation of frozen piping to a heated area
    - Manual hydraulic shears
    - Mechanical bolting
    - Screwed, flanged, or clamped pipe
    - Reciprocating saw
    - Mechanical pipe cutter
    - Approved self-drilling or compressed air-actuated fasteners

- Doing the hot work in a designated area

If hot work must be performed, the PAI must ensure, prior to issuing the permit, that:

- Safety of the hot work operator and fire watch with respect to personal protective equipment being used for protection of any other special hazards, such as asbestos, lead, or radiation beyond the hot work.
- The exemption of flammable atmospheres, such as vapors, gasses, liquids, or dust in the hot work area.
- The removal or protection of combustible contents within 35 feet of the hot work area.
- The need for a fire watch, while hot work is being performed has been considered.
- A fire extinguisher is present and appropriate for the hazards present.

Fire Watch

In any area where hot work is being performed near combustibles that could not be removed or in the determination of the PAI not properly protected, a person separate from the hot work operator will be designated as a fire watch. The fire watch must remain on site for 30 minutes after hot work has been terminated. If no fire watch has been assigned, the PAI must return within 30 minutes of work stoppage to inspect for smoldering fires.

Buildings with sprinkler systems and/or fire alarm systems are to be in service and fully functional during any hot work operation. During construction and renovation projects, a building's automatic fire detection and suppression system(s) must only be removed

from service to the extent required to accomplish the work. Once the work requiring the system(s) to be removed from service is completed, the system(s) will be returned to service immediately, even when the facility is unoccupied. If this is not possible, the fire watch will be required to remain for 24 hours after hot work is completed. The PAI must be notified any time a fire protection system is removed from service and again when it is returned to service.

Tar Kettles

When tar kettles are used, at least one 20 pound dry chemical fire extinguisher needs to be located within 30 feet of the kettle. The use of any solid fuel or flammable liquid with a flashpoint under 100 degrees Fahrenheit is prohibited. Tar kettles are not to be transported with open flame. Tar kettles used in roofing are not permitted on the roof of buildings. Instead, the material must be pumped to the roof from ground level. Mops and other tools used for the application of roofing materials must be stored away from buildings and combustibles.

8. Emergency Plans, Building Evacuation Drills and Crowd Management

8.1. Building Specific Emergency Plans

Building-specific emergency plans and fire prevention plans will be developed for each facility or group of facilities in compliance with 29 CFR 1910.38, 1910.39, and NFPA 101. In the event of a fire or any indication of fire, such as smoke, odor, or unusual heat conditions, it is the duty of any individual who discovers a fire (or potential fire) to initiate a general alarm in the facility. The building is to be evacuated immediately. OSHA provides an eTool that will aid in writing these plans.

Each employee needs to know the emergency notification procedures and numbers. When reporting a fire, someone should be assigned to wait outside to direct the responding firefighters to the location of the fire.

All fires, regardless of size or nature, are to be reported through the park chain of command and follow the reporting procedures as found in Chapter 3 of this manual.

8.2. Evacuation/Fire Drills

The purpose of fire drills (egress and relocation drills) is to educate the participants of a building's fire safety features, the egress facilities available, and the procedures to be followed in the event of an emergency. Speed in evacuating buildings or relocating occupants, while desirable, is not the only objective of a drill. Instruction and practice

should also be provided prior to conducting a fire drill. This educational opportunity should be presented in a non-threatening manner, with consideration to the prior knowledge, age, and ability of the occupants.

Fire drills are to be conducted periodically for certain occupancy types and as required in NFPA 1, *Fire Code*, Chapter 10. Drills should be held at unexpected times, and under varying conditions, to account for real world conditions. If building fire alarms are to be used to initiate these drills, it is imperative to notify the alarm receiving station that this drill is going to take place and that they will be called back when the drill is complete and the alarm system has been reset. The fire department responsible for emergency response to the building must also be notified of this drill and will also be called when the drill is completed and the alarm system has been reset. Mandatory fire drills are to be conducted in the following occupancies:

Occupancy Type	Monthly	Quarterly	Annually	Crowd Managers	Other
Public Assemblies[3]				**X[4]**	
Education	X[5]				
Day Care[6]	X[4]				
Hotels		X[7]			
Dormitories					X[8]
Mercantile[9]					X[7]
Business[10]					X[7]

[3] An occupancy (1) used for a gathering of 50 or more persons for deliberation, worship, entertainment, eating, drinking, amusement, awaiting transportation, or similar uses; or (2) used as a special amusement building, regardless of occupant load.
[4] Special provisions apply, depending on size and type. Consult your AHJ.
[5] In climates where the weather is severe, the monthly emergency egress drills may be permitted to be deferred, but the required number of emergency egress drills must be conducted, and not less than four must be conducted before the drills are deferred.
[6] An occupancy or home in which four or more clients receive care, maintenance, and supervision, by other than their relatives or legal guardians, for less than 24 hours per day.
[7] Employees of hotels are to be instructed and drilled in the duties they are to perform in the event of fire, panic, or other emergency. This is a training requirement not a drill requirement, guests do not have to be evacuated.
[8] Emergency egress and relocation drills, must be held with sufficient frequency to familiarize occupants with the drill procedure and to establish conduct of the drill as a matter of routine. Drills will include suitable procedures to ensure that all persons subject to the drill participate. These occupancies must be drilled at least once annually. In the case of seasonal dormitories, the first drill must happen within 30 days of opening.
[9] Buildings 2000 Ft^2 and larger used to display and sale merchandise.

Evacuees are to meet at the pre-designated assembly areas outside the facility. The supervisor or their designee will ensure the accountability of the employees and ensure the safe evacuation of all visitors. The supervisor will establish procedures to assist handicapped and special needs personnel, during building evacuation.

8.3. Crowd Management

Many park sites operate theaters and other places of public assembly where large crowds should be expected. Typically public assembly buildings are places where people gather for the purpose of recreation, entertainment, or dining. In these cases, employees must be trained in crowd management techniques and the facility must have a plan to handle large evacuations. As a general rule, one crowd manager or crowd manager supervisor is required for every 250 people in a building. Training and drill requirements are listed in NFPA 1 and 101. The AHJ should be consulted on the plan and can help provide training to the park.

9. Portable Fire Extinguishers

Portable Fire Extinguishers (PFEs) are often the first line of defense when a fire breaks out in a building. When PFEs are installed in a building, are maintained, and when employees are trained to use them, they can stop a fire before it gets out of control. They can be a very effective tool in preventing the loss of our resources, as well as injury and death to persons in our buildings.

9.1. PFE Training

OSHA requires that all employees who have access to portable fire extinguishers in their worksite receive annual fire extinguisher education. Live fire training is the preferred method of education, but it is often difficult to accomplish. A web-based PFE education program has been developed and is available on DOI learn. Once logged into DOI Learn, search for “NPS Annual Fire Extinguisher Education.”

9.2. PFE Selection and Placement

There are many different types of fire extinguishers available from pressurized water for Class A (Ordinary combustibles) fires to CO2 extinguishers for energized electrical systems. The selection of the proper fire extinguisher will ensure the fire is safely

[10] An occupancy used for the transaction of business other than mercantile occupied by more than 500 persons, or by more than 100 persons above or below the street level.

suppressed and the employee does not get injured by adding fuel to the fire or conducting electricity to the fire extinguisher and the person holding it. For most applications, a multipurpose ABC fire extinguisher is the best choice, but careful consideration should be given to the type of extinguisher used in any curatorial space, so as to not apply a chemical that does more damage to a collection or artifact than the fire.

In addition to the type of fire extinguisher, it is important to have the extinguishers properly spaced in a building, so employees can access them before the fire gets too big. Spacing depends on many factors, including type of occupancy, hazards present in the building, square footage, and building layout.

NFPA 101 Life Safety Code and NFPA 10 Standard for Portable Fire Extinguishers are the documents referenced to determine what type and where in a building fire extinguishers need to be placed. Regional Structural Fire Managers will, during construction plan review, accept or alter the plans for fire extinguisher type and placement.

9.3. Inspection Testing and Maintenance of Portable Fire Extinguishers

NFPA 10 Standard for Portable Fire Extinguishers gives clear details on what constitutes ITM on a fire extinguisher, how often it is to be performed, and who is qualified to do it. As a general rule, monthly inspections of fire extinguishers should be carried out by the building's occupants, while annual ITM and periodic hydrostatic testing needs to be performed by trained individuals acceptable to the AHJ.

Fire Protection for Historic Structures and Buildings with Collections

1. Introduction

The National Park Service is responsible for maintaining, protecting, preserving and operating many of the nation's most important and architecturally significant buildings. This diverse inventory includes single room backcountry cabins, presidential birthplaces, the grand western lodges, the monuments on the National Mall, and virtually every type of structure in between. The NPS is also the steward of the second largest museum collection in the United States, second only to the Smithsonian. Collections range from historic artifacts to documents, furnishings, artwork, archival records, and scientific specimens. NPS museum collections, such as the pottery at Chaco Canyon, George Washington's campaign tent, and Dr. Martin Luther King, Jr.'s bible, are windows into the nation's rich history. Fossils, herbarium collections, rocks, and other specimens illustrate the natural processes of the earth and ongoing scientific research in the parks. Archival collections document the lives of presidents, environmental leaders, common soldiers, artists, and everyday citizens, as well as preserve the history of the management and operation of the National Park Service and individual parks. These are just a few examples of the collections that the NPS is responsible for preserving and protecting.

Stewardship of our Nation's heritage and protecting it from the effects of fire is fundamental to the mission of the National Park Service. However, protection of those historic buildings and collections present difficult challenges. Challenges, which require a partnership between fire protection and cultural resource professionals to find effective solutions, ensure that the integrity and historic fabric[1] of the buildings and collections are preserved for future generations.

2. Responsibility

2.1. National Level

- Establish and maintain standards for providing fire protection for historic properties, museum collections, and other cultural resources.

- Ensure that the goals and policies of the structural fire program and the cultural resource programs are synchronized. Insure the most recent proven technologies

[1]From the glossary of Director's Order 28, Cultural Resource Management Guideline:

Historic fabric: see material.

Material: the physical elements that were combined or deposited to form a property. Historic material or historic fabric is that from a historically significant period, as opposed to material used to maintain or restore a property following its historic period(s).

and applications are used to cost effectively provide for maximizing life safety and property protection.

- Identify evaluation and planning processes for achieving the most effective fire protection solutions.

- Obtain and distribute information regarding new and developing educational tools and fire protection principles and industry developments to ensure that Regional Structural Fire Managers (RSFMs) are knowledgeable of emerging technologies.

- Assist regions by providing technical support and resources as needed.

2.2. Regional Level

- Assist parks in identifying prescriptive and performance-based fire prevention and protection options that have specific application to the unique nature of historic structures, their significance, contents, and use.

- Where persons knowledgeable in providing technical solutions in addressing fire protection of historic structures or their contents is not available at the park level, technical assistance from the region should be provided.

- Provide technically knowledgeable assistance for identifying fire protection requirements and solutions for all buildings, including historic.

- Provide guidance for maintaining fire protection for historic structures, buildings with museum collections, and other cultural resources.

- Implement and enforce fire protection requirements established by the national office.

- Assist the national office with the development of NPS policies and best practices statements for structure fire protection servicewide.

2.3. Park Level

- Identify historic buildings and collections requiring fire protection systems.

- Follow NPS/regional processes and procedures to request funding for installing and maintaining fire protection systems in structures that have been approved by the region.

- Ensure the park has a current and approved Collections Management Plan (CMP) that includes, at a minimum, guidance on the prevention and protection from fire for historic buildings and buildings with collections in the park that is in accordance with DO 28 Cultural Resource Management.

- Ensure that the CMP includes the implementation of appropriate, regularly scheduled training programs and drills to ensure that all park staff is aware of and can carry out their responsibilities in an emergency.

- Maintain emergency vehicle access to each structure.

- Institute site emergency response capabilities and limitations.

- Establish an assessment team and define fire protection goals.

- Conduct periodic meetings with local emergency response organizations to maintain site familiarity.

- Ensure that fire protection features are commensurate with the current use of the building.

- Implement the park Structural Fire Management Plan

3. Legislative Requirements and Federal Mandates

Congress has delegated the National Park Service with the responsibility to preserve, protect, maintain, and provide public access to the cultural resources of the United States through the following laws:

1) The 1906 Antiquities Act
2) The 1916 National Park Service Organic Act
3) Historic Sites Act of 1935
4) Management of Museum Properties Act of 1955, as amended
5) National Historic Preservation Act of 1966, as amended
6) Archeological and Historic Preservation Act of 1974, as amended
7) Archaeological Resources Protection Act of 1979, as amended
8) National Parks Omnibus Management Act of 1998

The Secretary of the Interior's Standards for the Treatment of Historic Properties – (Title 36 CFR, Part 68) is the standard against which all Federal, State, and local agencies, historic districts, and planners evaluate their efforts for appropriate treatment. Finding the correct fire protection solution typically requires the knowledge of historic preservationist and structural fire professionals to work together in the initial planning stages and throughout the entire project. Such professionals may include fire protection engineers, qualified fire and life safety professionals, historical architects, architectural historians, historians, historical engineers, archeologists, and others who have experience in working with historic buildings.

In addition to the laws mentioned above, the NPS also must adhere to various Department, and Agency regulations and directives:

- Departmental Manual, Property Management, Part 411
  Chapter 3: Standards for Managing Museum Property

- Departmental Manual, Environmental Quality Programs, Part 519
  Chapter 2: Preservation of American Antiquities and Treatment and Disposition of Native American Cultural Items

- Director's Order #24: National Park Service Museum Collection Management

- Director's Order #28: Cultural Resource Management

4. Protection and Stewardship of Cultural Resources From the Effects of Structural Fire

The integration of fire protection principles into the fabric of historic buildings is often extremely difficult. If the project is not well planned and executed, it can have catastrophic and irreversible effects on historic fabrics and architectural features of a historic structure. However, the installation of a properly funded, designed, installed, tested, and maintained fire protection system is the most prudent, cost effective and proven means for the protection of buildings, people, and contents from the effects of fire.

Regional Structural Fire Managers work within the direction and guidance found in Federal laws, Department and Agency mandates and the authority provided in the designation of Authority Having Jurisdiction (AHJ).

Regional Structural Fire Managers and their regional cultural resources counterparts share a common responsibility for the protection and preservation of these important and irreplaceable cultural resources from the effects of fire. The goal of the NPS is to put in place a process that maximizes life safety and optimizes property fire protection measures, while preserving the character and fabric of historic structures.

Fire can quickly destroy or damage buildings and collections. Arson, contractor negligence, accidents, deteriorating and/or inappropriately used or installed electrical and mechanical systems, and wildfires are common sources of fire. However, congested work places, offices, and storage areas can also contribute to structural fires or augment their effects.

Appendix A "Structural Fire Protection of Cultural Resources in the National Park Service" provides detailed guidance as it applies to the protection and stewardship of NPS cultural resources and historic structures from the effects of a structural fire.

5. Applicable Fire and Life Safety Code Implications: Life Safety or Property Protection

NPS compliance with applicable fire codes requires awareness of two primary components.

1) The first is awareness that prevailing fire codes are typically based on the general prescriptive requirements that have been established for new construction. These codes often make it difficult to concurrently address fire and life safety and historic preservation. Attempting to bring historic structures into compliance with fire and life safety and historic preservation codes without some sort of concessions to one or the other often results with neither code being fully met.

2) Second is to understand the concepts of minimum life safety and property protection. Most contemporary building and fire codes are developed to provide a minimum level of life safety protection to the inhabitants of the structures. When designing fire protection for historic structures, it is often necessary to go beyond the scope of prescriptive codes in order to achieve minimum life safety and property protection.

5.1. The following codes are integral in providing fire prevention and protection for historic structures and collections:

- NFPA 101: Life Safety Code states, "This Code addresses those constructions, protection and occupancy features necessary to minimize danger to life from the effects of fire, including smoke, heat, and toxic gases created during a fire." (NFPA 101, Life Safety Code, Section 1.1.2).

- NFPA 914: Code for Fire Protection of Historic Structures and NFPA 909: Code for the Protection of Cultural Resource Properties – Museums, Libraries and Places of Worship states, "The goals of this code shall be to provide for fire protection to all historic structures and their occupants while protecting those elements, spaces, and features that make them historically or architecturally significant." (NFPA 914, Section 1.3). These documents also describe a process for merging life safety and property protection goals.

- 29 C.F.R. part 1960, Director's Order and Reference Manual 58, Departmental Manual (DM) Part 485, and the Public Buildings Amendment Act of 1988 establish the requirements for code compliance in NPS public buildings. Furthermore, Director's Order 58 states: "The National Park Service hereby adopts, and will enforce as minimum standards, the most current version of the National Fire Protection Association's (NFPA) Fire Prevention Code (NFPA 1), Life Safety Code (NFPA 101), and all other associated codes and standards, which includes NFPA 909 and 914. The purpose of these codes is to prescribe minimum requirements necessary to establish a reasonable level of fire safety and to protect property from the hazard created by fire."

Code implications as they relate to structural fire and the protection of cultural resource properties are covered in further detail in Appendix A, Chapter 2

6. <u>Fire and Life Safety Code Compliance for Historic Structures and Structures With Museum Collections</u>

The NPS mission requires providing for fire protection to all structures and their occupants while protecting lives, property, the environment, and our cultural heritage from the effects of fire. Specifically, the NPS has two goals relative to the stewardship of historic structures and collections:

- Life Safety: Provide protection and life safety from the effects of fire by providing an environment that is reasonably safe from the effects of fire.
- Historic Preservation and Collection Stewardship: Provide a reasonable level of protection against damage to and loss of collections and historic structures by:
  (1) Minimizing damage to historic structures, materials or collections from fire and the installation of fire detection and suppression systems.
  (2) Maintaining and preserving original space configurations of historic buildings.
  (3) Minimizing alterations, destruction, or loss of historic fabric or design.

Modifying a historic building to meet these responsibilities is sometimes necessary. As stewards, each manager must consider the impacts that full code compliance will have on the collections and historic structure's character - defining spaces, view-sheds, features, and finishes of those resources.

Close coordination between cultural resource managers, including historic preservationists and architects and the regional AHJ is imperative. It is often necessary to look beyond the "letter" of code requirements to their underlying purpose; most modern codes allow for alternative approaches and reasonable variance to achieve compliance.

Because of the difficulties of integrating fire protection systems with historic preservation goals, most building and fire safety codes have provided special exceptions for heritage resources. The codes usually give AHJ's full authority to grant variances from full application of the codes with little guidance on acceptability. The NFPA 914 and 909 codes provide a process to help resolve these conflicts, using a logical and well-documented approach.

6.1. Code Options

Structures that are found to have life safety deficiencies, preservation needs, or both, require a plan of correction developed by qualified persons with knowledge and experience representing both disciplines.

7. Planning: Project Identification and Formulation for PMIS Input

The planning processes identified by Director's Order 28 Cultural Resource Management and National Fire Protection Association (NFPA) 914 Code for Fire Protection in Historic Structures are similar and aim to achieve the same objective.

Planning includes the collection and analysis of the project or structure, the development and evaluation of alternatives, and the selection of a preferred alternative. A general framework for planning may include:

- Team approach: The superintendent shall designate a Team for purposes of defining the fire protection and cultural resource preservation needs of a particular project.

- Conduct project assessment: The purpose of the project assessment is to identify all known historic preservation and collections, life safety, operational, and location/logistical issues and opportunities.

- Assessment Tools: Appendix A, Chapter 3 includes detailed assessment tools designed to assist the team in determining hazards specific to the historic property, collections, life safety, and operational issues.

- Plan Development: Structures that are found to have life safety deficiencies and preservation needs shall have a plan of correction developed. This plan may include prescriptive fire code compliance, risk-indexing compliance, performance based compliance, or any combination of these. Appendix A Chapter 4, Section II discusses these options in great detail.

- Fire Protection Engineer (FPE) Services: Historic buildings often require unique design and preservation approaches due to their remote location, changing occupancies, construction materials, and historic and architectural significance. NFPA 914 and 909 allow flexibility in the strict application of prescriptive code requirements, but non-prescriptive code requirements require studied and substantiated information in order for the AHJ to make decisions. Depending on the individual project complexity, the expertise of a licensed fire protection engineer may be required. Appendix A, Chapter 5 has a detailed description of how fire protection engineers can integrate into a project and help achieve the desired outcome.

8. Ensuring Compliance During the Construction Phase

- Design: The design team composition, as determined by the team leader, may include the professional services of a licensed fire protection specialist. If a fire protection specialist becomes part of the team, the person shall be involved with the project from conception and design to implementation, construction, and final acceptance or as determined by the team leader. The regional AHJ must also be included throughout the project. The regional AHJ in conjunction with the regional Cultural Resource Manager shall make the final determination as to whether or not compliance has been achieved for the project.

- Implementation: All persons involved with the construction process shall be thoroughly briefed on the cultural significance and importance of the property, prior to the beginning of the work. Specialty engineering services, such as fire protection engineers and preservation consultants, shall be included throughout the

construction process for purposes of shop drawing review, field inspections, and consultation.

- Initial Compliance Audit: Upon completion of the implementation phase, there shall be an initial compliance audit by the process team to ensure compliance with the selected design approach. The regional AHJ shall make the final determination as to whether or not compliance has been achieved.

- Periodic Compliance Audit: Periodic compliance audits shall be conducted by the AHJ or designee at intervals identified in an approved fire safety management plan to insure that any variances to the code are being respected. Additional compliance audits may be conducted prior to any unusual or special events. Other compliance audits may be necessary to insure that occupancy use has not changed, that management operational systems are still in place, and that any special maintenance requirements are being carried out. The AHJ shall conduct an exit interview with the superintendent or manager of the building, upon completion of the periodic compliance audit.

9. Fire Safety During Construction

A high percentage of fires in buildings occur during the construction or remodeling of a building. It is during this time that extra attention is required to insure the protection of the property from fire and security intrusions. During the process of construction and repair, normal routines and oversight responsibilities are often suspended. Managers often assume that because repairs are being made, the building will be improved and become complacent during this period when the property is most at risk. Construction always subjects the building to new threats that are not normal to routine operation. Hasty demolition, arson, the use of potentially hazardous means, methods, equipment, materials, and people not familiar with the property are real threats. Maintaining a job site in a fire safe manner is required and is the responsibility of:

- Superintendent
- All contractors and designated fire protection personnel
- Park Structural Fire Coordinator
- Park Safety Officer
- Project Contractor
- Local Fire Protection Authority

10. Introduction to Appendix A – Structural Fire Protection of Cultural Resources in the National Park Service

In April 2005, a working group comprised of subject matter experts from both structural fire and cultural resources came together to begin working on a document to help define procedures within the NPS to comply with fire and life safety codes in historic buildings and within buildings housing collections, while not significantly altering the historic fabric of these buildings. Appendix A will help to further define many of the concepts discussed in this chapter of the reference manual and serves as further guidance for

structural fire and cultural resource professionals and contractors that are selected to rehabilitate, remodel, or upgrade historic structures managed by the NPS.

STRUCTURAL FIRE PROTECTION OF CULTURAL RESOURCES IN THE NATIONAL PARK SERVICE (NPS)

TASK GROUP

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

1. Introduction: Stewardship and Protection of Cultural Resources from Structural Fire

2. Code Implications: Life Safety versus Property Protection

3. Project Identification and Formulation Stage for PMIS Input

4. A Park-Based Process for Planning the Fire Protection of Historic Structures and Park Collections

5. Recommendations for Incorporating the Services of a Professional Fire Protection Engineer (FPE) into a Project

6. Guidance for Acceptance of Fire Test Certifications

Appendix A: Using Codes to Protect Historic Buildings from Fire

Appendix B: Fire Testing Laboratory Certifications – Nationally Recognized Testing Laboratory (NRTL)

EXECUTIVE SUMMARY

The National Park Service (NPS) is mandated to preserve and protect the nation's significant and irreplaceable cultural resources. Of the thousands of historic buildings on the NPS inventory, only a very small percent of the total count have been identified as having fire suppression systems. The integration of fire protection measures into the fabric of historic buildings can be a difficult and potentially adverse action. As a result, most modern building and fire codes have long made exceptions from full compliance with prevailing codes and standards when applied to cultural resources.

Working within the NPS mandate, the Regional Structural Fire Managers (RSFMs), which also serve as the regional Authority Having Jurisdiction (AHJ) on matters pertaining to structural fire, the WASO structural fire program managers, and managers of the cultural resources programs share a common interest in the protection and preservation of these important and irreplaceable cultural resources from the effects of fire. The goal of the NPS is to put in place a process that maximizes its life safety and optimizes property fire protection measures, while respecting the character and fabric of the historic structures being preserved.

During the week of April 4, 2005, a meeting was convened by the Chief of the Structural Fire Management Program and the Chief Historical Architect of the NPS. The meeting identified issues and concerns in regards to life safety and resource stewardship. The task group that was formed at that meeting was charged with preparing this document for the protection of our historic buildings and collections from the effects of fire. This document is the result of that meeting and will be included as an appendix to the NPS Reference Manual 58 (RM 58), Chapter 7, Fire Protection for Historic Structures.

The following common principles were developed as a result of that meeting.

1. There is concurrence between the cultural resources and the structural fire programs that there needs to be better communication in defining fire protection needs and shared stewardship responsibilities. The NPS shall establish a fire protection design process modeled on the recommendations of the National Fire Protection Association (NFPA), specifically *NFPA 914—Code for Fire Protection of Historic Structures* and *NFPA 909—Code for the Protection of Cultural Resource Properties—Museums, Libraries and Places of Worship.* NFPA 909 and 914 prescribe an interdisciplinary approach to scoping and designing fire protection needs. An interdisciplinary approach that integrates the concerns and responsibilities of structural fire and cultural resources programs has resulted in the concept of the establishment of process teams to develop and oversee individual projects. Superintendents shall designate the appropriate process team members, which at a minimum shall consist of the RSFM/AHJ (or designated representative) and an appropriate cultural resources manager. At the discretion of the superintendent, the size of the process team may include additional team members based on the complexity of the individual project. For additional information concerning the process team concept, see page 28.

2. Relief from prevailing codes, which are generally requirements for new construction, is often necessary when addressing issues of fire safety and protecting historic structures. For purposes of determining relief, only those structures named on the List of Classified Structures (LCS), those structures listed on or determined to be eligible for the National Register of Historic Places, or those museum and archival collections that park management has determined are important to the park's purpose, themes, and resources shall trigger the process defined in in this appendix.

3. The NFPA body of fire codes and other applicable codes as referenced in RM 58 shall be followed to determine the minimum life safety requirements for all structures. It is understood that these codes typically establish only a minimum life safety requirement. Due to the special significance of historic properties and collections, additional property protection measures may be necessary. The superintendent and process team are charged with determining additional property protection needs commensurate with the significance and the potential risk to the property above and beyond minimum life safety protection.

4. The extent of fire protection services required for historic structures and collections shall typically be weighted based on a structure or collection's significance, resource integrity, use, location, construction type, and adjacent fuel loading. Fire protection requires a comprehensive fire protection strategy, which calls for the reduction of risk of ignition, reliable early detection and notification, and in some cases automatic suppression systems.

5. The basic NPS requirements for fire protection systems are defined in RM 58, Chapter 6 which adopts compliance with the new occupancy chapters of NFPA 101 for all new and altered buildings. In effect, Chapter 6 will require that all historic structures which have overnight accommodations shall be sprinklered and provided with appropriate fire alarms/smoke alarms. Typically, preliminary designs shall be based on the occupancy type in the historic building, using recognized codes and standards. When requested, that design may be modified to address the impact on the historic fabric or collections, unique situations, limited water supply, utility reliability, and/or lack of fire department response.

6. All cost and resource impacts should be considered when decisions pertaining to appropriate fire protection systems are made. Good project design for fire protection systems needs to evaluate the actual system installation and maintenance costs, the relative costs for archeological investigations, costs of opening and closing historic fabric in a historic building, extraordinary collection protection requirements, water service installation or upgrade, and the reliability of utilities, as well as access issues which may inhibit fire engine company access.

7. Variances from Chapter 6 requirements for the protection of collections and historic structures shall be evaluated on a case-by-case basis; a variance shall be considered to determine if it is:

- A variance from minimum Life Safety Code Requirements, and/or
- A variance to additional Property Protection Measures and Systems.

8. The services of a fire protection engineer may be procured as part of the design team for those projects that are sufficiently complex regarding fire protection and/or where the completion of work may potentially have an adverse impact to historic fabric. The range of engineering services may include research and design through project planning, specification submittal review, construction, project inspection, and fire investigations.

9. For purposes of accepting qualified fire testing and labeling, the NPS shall recognize laboratories that are certified by a Nationally Recognized Testing Laboratory (NRTL) accreditation program and those laboratories and processes that are recommended by the Science Advisory Committee of the National Association of State Fire Marshals (NASFM).

10. Alternative methods and means to afford fire protection for historic properties and collections shall be encouraged, including limitations of use and occupancy and special provisions of the park's management operations systems and procedures. All available fire suppression system technology shall be considered when the process team determines that certain systems meet the NPS fire protection and historic preservation goals and are tested in compliance with NRTL accreditation.

FIRE PROTECTION OF CULTURAL RESOURCES GUIDANCE DOCUMENT

1. Stewardship and Protection of Cultural Resources from Structural Fire

A structure fire can destroy a park's museum collection or a historic structure in a matter of minutes. Arson, contractor negligence, accidents, deteriorating and/or inappropriately used or installed electrical and mechanical systems, wildfires, and congested offices, work, and storage areas are but a few of the conditions that can cause structure fires or augment their effects.

Some of the most significant issues regarding fire protection, historic preservation, and collection conservation grow out of the following issues:

- Improper or poorly prepared Project Management Information System (PMIS) project statements.
- General lack of reasonable levels of protection.
- Lack of dialogue throughout the design process between structural fire personnel and cultural resources managers charged with historic preservation and/or collection management.
- Relying on inexperienced or improperly trained engineers or architects to provide creative fire engineering solutions to protect sensitive cultural properties.
- Too great of a reliance on performance specifications by architects and engineers (A & Es) to address sophisticated and complex design issues.
- Not retaining qualified fire protection engineers when the complexity of a project warrants it and hesitancy to use alternative methods to resolve unique issues.
- Not retaining those same qualified fire protection engineers throughout the design, preparation of contract documents, shop drawing review, inspection, and commissioning phases of the work.
- Lack of reliable, basic utilities in many parks.
- Lack of qualified COTR's to oversee installation in historic structures.
- "Hot work" during construction and repair.

Ensuring that the cultural resources managed by the NPS are protected from damage and destruction due to fire or smoke is the responsibility of all NPS employees. Working together cooperatively, park superintendents, cultural resources managers, and structural fire managers have taken the lead in developing policies and procedures to secure these fire prevention goals. At the same time, NPS structural fire managers have been charged with the responsibility of establishing a structure fire program consistent with industry standards and with meeting this NPS commitment to protecting our visitors and our nation's most significant cultural and natural resources, so they can be handed down "unimpaired" to future generations. Stewardship is the common thread of these two NPS programs.

To provide for the highest level of protection against the threat of structure fires, the NPS has adopted proactive fire safety strategies to safeguard both people and resources. Reducing the risk of fires through the use of properly installed and maintained detection and suppression systems (including security systems appropriate to the various risks

identified in the park's Security Survey), knowledgeable and well-trained staff, appropriate planning documents and Standard Operating Procedures (SOPs), good housekeeping, regularly scheduled drills, and constant fire safety awareness by all is far superior to simply relying solely on a responding fire department to extinguish a fire after it starts.

The cultural resources managed by the NPS include a diverse array of historic structures, museum objects, and archival collections—all of which have varying tolerances to heat, smoke, water, or other adverse effects resulting from a structure fire. As a result, there is no single, universal prescriptive system, which will provide optimum fire protection for all of the resources under NPS stewardship. Depending on the nature of the resource to be protected and on any related special considerations, there may be a number of different fire protection systems and approaches, which are appropriate for an individual application.

Current technology and conservation methodologies allow for the repair or rehabilitation of many objects and structural elements damaged by water during the response to a structure fire. However, burned objects and buildings, and sometimes even those just exposed to smoke and heat, may be lost forever. Although there are numerous suppression systems available, there is no universal solution. Properly installed and maintained water-based fire suppression (sprinkler) systems are extremely reliable and the most common fire suppression systems. According to National Fire Protection Association (NFPA) statistics, 69 percent of fires in structures with sprinkler systems were contained to the object of origin (Rohr and Hall, 2005). The largest majority of fires are suppressed with a single-head discharge. Similar results were documented in a ten-year study of the benefits of the Scottsdale, Arizona, fire sprinkler ordinances (Ford, 1997). As a result, whenever possible, historic buildings and facilities housing museum collections should be equipped with appropriate automatic fire detection and suppression systems that are properly designed, installed, and maintained. All historic structures and facilities housing museum collections will benefit from the process outlined in this guidance document.

In keeping with a proactive fire prevention stance, both the Department of the Interior and the NPS have adopted numerous regulations and requirements relative to fire prevention and protection. At the same time, the DOI and the NPS have adopted the codes and standards of the NFPA as minimum standards to establish a reasonable level of fire safety. Listed below are some of those departmental, servicewide, and NFPA regulations, requirements, codes, and standards. Superintendents and program managers are tasked with ensuring that their programs are, at a minimum, in full compliance with those policies and code requirements.

Legislative Requirements

Antiquities Act
National Park Service Organic Act
Historic Sites Act of 1935
Management of Museum Properties Act of 1955, as amended
National Historic Preservation Act of 1966, as amended

Archeological and Historic Preservation Act of 1974, as amended
Archaeological Resources Protection Act of 1979, as amended
National Parks Omnibus Management Act of 1998

Departmental Requirements

Departmental Manual, Safety Management, Part 485
- Chapter 6: Inspections and Abatement
- Chapter 19: Fire Safety
- Chapter 20: Personal Protective Equipment
- Chapter 23: Public Health and Safety

Departmental Manual, Administrative Services, Part 310
- Chapter 11: Smoking in Public Buildings

Departmental Manual, Property Management, Part 411
- Chapter 3: Standards for Managing Museum Property

Departmental Manual, Environmental Quality Programs, Part 519
- Chapter 2: Preservation of American Antiquities and Treatment and Disposition of Native American Cultural Items

National Park Service Requirements

Management Policies
5.3.1.2 “Fire Detection, Suppression, and Post-fire Rehabilitation and Protection”
5.3.5.4 “Historic and Prehistoric Structures”
5.3.5.4.7 “Use of Historic Structures”
5.3.5.5 “Museum Collections”
9.1.8 “Structural Fire Protection and Suppression”
9.4.2 “Museum Collections Management Facilities”

Director’s Orders and Reference Manuals
DO #18: Wildland Fire Management
Reference Manual 18: Wildland and Prescribed Fire Management Policy
DO #20: Agreements
DO #24: National Park Service Museum Collection Management
DO #28: Cultural Resource Management
Cultural Resource Management Guideline, Chapter 4, Section D: “Fire Management”
DO #36: Housing Management
DO #48A: Concession Management
DO #50B: Occupational Safety and Health Program
Reference Manual #50B: Occupational Safety and Health Program, Section 12: Fire Safety
DO #50C: Public Risk Management Program
DO #50D: Smoking Policy
DO #58: Structural Fire Management
Reference Manual #58: Structural Fire Management

NPS Museum Handbook
Museum Handbook, Part I (MH-1), Chapter 9: Museum Collections Security and Fire Protection
MH-1, Appendix F: National Park Service Museum Management Checklists
MH-1, Appendix G: Protection of National Park Service Museum Collections

National Fire Protection Association (NFPA) Codes and Standards (except NFPA 5000)

NFPA 1: Uniform Fire Code
NFPA 13: Standard for the Installation of Sprinkler Systems
NFPA 25: Standard for Inspection Testing and Maintenance of Water Based Fire Protection Systems
NFPA 40: Standard for the Storage and Handling of Cellulose Nitrate Film
NFPA 70: National Electrical Code
NFPA 72: National Fire Alarm Code
NFPA 101: Life Safety Code
NFPA 909: Code for the Protection of Cultural Resource Properties – Museums, Libraries, and Places of Worship
NFPA 914: Code for the Fire Protection of Historic Structures.
Note: NFPA recognizes the special nature of libraries, museums, and historic structures and the difficulties of meeting all contemporary life safety and property protection requirements. The NFPA 909 and 914 codes provide special tools and opportunities to meet these life safety and property protection requirements.

References

Ford, Jim. Saving Lives, Saving Money: Automatic Sprinklers, A Ten Year Study. Scottsdale, AZ: City of Scottsdale and the Home Fire Sprinkler Coalition, 1997.

Rohr, Kimberly D. and John R. Hall, Jr. U.S. Experience with Sprinklers and Other Fire Extinguishing Equipment. Quincy, MA: National Fire Protection Association, 2005.

2. Applicable Code Implications: Life Safety versus Property Protection

Director's Order 50B (DO 50B) and Reference Manual 50B, 29 C.F.R. part 1960, Departmental Manual (DM) Part 485, and the Public Buildings Amendment Act of 1988 establish the requirements for code compliance in NPS public buildings. DO 50B states, "The NPS will meet or exceed applicable safety, health, environmental, and related trade codes and standards. Where conflicts arise between codes and standards, the more stringent requirement(s) will be used. If codes, standards, procedures, and guidelines do not exist or if those in existence are not adequate, appropriate requirements will be developed."

The same codes, standards, procedures, and guidelines specify that the following federal and national consensus standards be used in NPS operations. For structural fire protection and prevention, the NPS shall designate an AHJ as defined in NFPA 101,

Section 3-2 (Life Safety Code). The NPS has designated AHJ's. The designated individual or office is responsible for approving equivalent levels of safety (equivalencies), exemptions, installations, equipment, and procedures.

Director's Order 58 states, "The National Park Service hereby adopts, and will enforce as minimum standards, the most current version of the National Fire Protection Association's (NFPA) Fire Prevention Code (NFPA 1), Life Safety Code (NFPA 101), and all other associated codes and standards, which includes NFPA 909 and 914. The purpose of these codes is to prescribe minimum requirements necessary to establish a reasonable level of fire safety and to protect property from the hazard created by fire".

Also under Director's Order 58, "The Structural Fire Program will, at a minimum, comply with the requirements of the National Fire Protection Association and its family of codes and standards when providing technical assistance regarding new and existing construction, rehabilitation or renovation, fire suppression, fire prevention, and any other areas in which structural fire or life safety are involved."

Code Compliance

NPS compliance with applicable fire codes requires awareness of two primary components.

The first is the awareness that prevailing codes are typically based on the general prescriptive requirements for new construction, which often makes it nearly impossible to fully address issues of both fire safety and historic preservation and bring those structures into full compliance with those codes.

The second is to understand the concepts of minimum life safety and property protection. Most contemporary building and fire codes are typically developed to provide a minimum level of life safety protection to the inhabitants of the structures. NFPA 101 states, "This code addresses those constructions; protection and occupancy features necessary to minimize danger to life from fire, including smoke, fumes and panic." (NFPA 101, Life Safety Code, Section 1.1.2)

NFPA 914 Code for Fire Protection of Historic Structures and NFPA 909 Code for the Protection of Cultural Resource Properties – Museums, Libraries and Places of Worship, go beyond minimum life safety requirements to include additional measures for property protection of cultural resources. These two codes describe a process, which has been adopted in this document, for merging life safety and property protection goals. NFPA 914 states, "The goals of this code shall be to provide for fire protection to all historic structures and their occupants while protecting those elements, spaces, and features that make them historically or architecturally significant." (NFPA 914, Section 1.3)

The NPS mission to preserve and protect its structures and collections follows the goals of NFPA 909 and 914. Each NPS project for historic preservation and collection protection shall be analyzed to determine the extent of measures that may be necessary to increase the protection of those historic buildings and park collections beyond the minimum life safety code requirements in order to meet NPS resource protection goals.

Fire code analysis is the primary tool to clearly define minimum life safety requirements for each project. Once those life safety requirements are defined, the NPS shall determine the additional property protection requirements.

Variance and Exemption Process

All variances and exemptions to the code for historic buildings or buildings with collections shall be evaluated based on the following:

- Variances to minimum life safety requirements shall be considered if it can be demonstrated that:
    - Equivalencies, performance compliance, and fire risk assessment can provide alternative methods and means that can provide adequate levels of protection.

- The variance will not;
    - Lessen protection of occupants not intimate with the initial fire development (NFPA 914, Chapter 1).
    - Lessen the survivability of occupants intimate with the initial fire development (NFPA 914, Chapter 1).

- Variances to property protection requirements shall be considered if it can be demonstrated that:
    - The Level 1 – Historic Property Assessment and/or Collections Assessment process determines that additional property protection is not required. OR
    - A risk assessment determines that additional measures are not required to protect the historic fabric and integrity of the building and collections (NFPA 914, Chapter 1). OR
    - A risk assessment determines that partial protection of a historic structure is adequate to protect the historic fabric and integrity of the building and collections. OR
    - Additional measures will not minimize damage to the historic structures and materials from fire and fire suppression (NFPA 914, Chapter 1). OR
    - Property protection measures will cause unacceptable alterations and will not allow for the maintenance and preservation of the original space configurations of historic buildings (NFPA 914, Chapter 1). OR
    - Property protection measures will cause unacceptable alteration, destruction, or loss of historic fabric or design (NFPA 914, Chapter 1).

3. <u>Project Identification and Formulation for PMIS Input</u>

Proper project definition is fundamental to the development of good PMIS project statements. Because fire protection of cultural resources requires an interdisciplinary collaboration, the process team approach outlined in section 4 is encouraged. The Level

I assessments are provided for the purpose of quickly outlining the fire protection needs and resource issues that may be found in a typical historic preservation project. This process is modeled upon the process defined in the next section.

The superintendent shall designate a Project Assessment Team for purposes of defining the fire protection and cultural resource preservation needs of a particular project. The following assessments shall be conducted:

- Historic Property Assessment Matrix – The parks project assessment team should start with this form for all projects in historic buildings. Points are assigned for each category. The total will result in the recommendation for the type(s) of systems needed in the building.
- Museum Collections Assessment Matrix – Any building being built for or being renovated that houses collections should use this matrix to help determine the level of protection required.
- Fire Safety Assessment Matrix – Defining the risks in the building will help the AHJ to understand the issues and work with the park to make a more informed decision.

The last table, Fire Protection Systems Comparison, should be used by the parks project assessment team when either the historic property matrix or museum collections matrix (or both) point to the need for a fire suppression and/or alarm system. There are many types of systems that can be used for different applications to provide for life safety as well as building and collections preservation. This table will help the project assessment team to discuss with the AHJ the many options available.

HISTORIC PROPERTY ASSESSMENT MATRIX

Not all NPS properties may require the same level of fire protection. Use this chart to help establish criteria for selecting different levels of protection appropriate to the significance and integrity of historic structures or collections. This chart serves as a reference guide only; it does not establish design criteria for historic structures or collection facilities. **Note:** Determining the proper fire protection for each specific application should be a collaboration between the resource manager and the Regional AHJ (process team). Depending on the complexity of the resource, the services of a fire protection engineer may be required by the process team. All final plans must be reviewed and approved by the Regional AHJ.

HOW TO USE THIS MATRIX

Rate each historic structure or other collections facility according to the 7 elements above, using a score of 1-5 (levels 1-5).

For a total score of:	**Scoring Recommendations**	
1 – 14	Fire alarm system should be considered; however, Fire Suppression System May Not Be Needed for this Structure *(variance request would be required if no system installed).*	
15 – 21	Fire alarm system required; Park may Want to Install a Fire Suppression System in this Structure *(variance request would be required if no system installed).*	
22 – 28	Fire alarm system required; Park should Install a Fire Suppression System in this Structure *(variance request would be required if no system installed).*	
29 – 35	Fire alarm system required; Suppression System Required *(variance request would be required if no system installed).*	

HISTORIC PROPERTY ASSESSMENT MATRIX					
	LEVEL 5 (Five Points)	**LEVEL 4 (Four Points)**	**LEVEL 3 (Three Points)**	**LEVEL 2 (Two Points)**	**LEVEL 1 (One Point)**
1. Significance	National Register Eligible or part of park's enabling legislation	Nationally Significant	Regionally Significant and/or a primary park theme	Locally Significant	Common; little or no local significance, associative, design, construction, or information value.
2. Integrity	Good	Fair	Poor	Reconstruction	Little remaining historic fabric
3. Use	Exhibit Building open to the public: Self-guided tours only; may include assembly, overnight accommodation, cooking facility	Open to the public: Staff-guided tours only; controlled access; storage	Mixed Use: Public access and offices, retail, and/or storage	NPS or partner offices	Storage only
4. Location: Response	No brigade response available. No road access; developed utility service w/ topo. Access difficulties. High visitation; large crowds may impede responders.	Brigade response > 30 minutes. Rural road; reasonable topo. Access without developed utility services. Seasonal road access difficulties	Rural road access with developed utility services	Brigade response < 20 minutes. Urban access with minor vegetative or physical constraints	Brigade response <10 minute. Urban access, no vegetative or physical constraints
5. Location: Accessibility	High crime area: Perimeter easily accessible after-hours	High crime area: Perimeter not easily accessible after-hours	Low crime area: Perimeter easily accessible	Low crime area: not easily accessible	Low crime area: Secured Perimeter 24/7 or difficult to access
6. Construction Type (See *International Building Code (IBC)*, for additional information)	Type V: Wood Frame (Light Combustible Construction)	Type IV: Heavy Timber (Heavy Combustible Construction)	Type III: Masonry walls, wood floors (partial Combustible Construction)	Type II: Non-combustible (Non-combustible Construction)	Type I: Fire Resistive (Non-combustible Construction).
7. Fuel Load: Proximity	High: Adjacent, attached buildings not in owned by NPS; Forest/ grasslands in fire-prone area	High: Adjacent, attached buildings owned by NPS; OR Forest/grasslands in fire-prone area	High: Adjacent, attached buildings not in owned by NPS, OR Forest/ grasslands in fire-prone area	Adequate: Defensible space based on historic models	Not prone to fires
SCORE					

HISTORIC PROPERTY ASSESSMENT MATRIX					
	LEVEL 5 (Five Points)	**LEVEL 4 (Four Points)**	**LEVEL 3 (Three Points)**	**LEVEL 2 (Two Points)**	**LEVEL 1 (One Point)**

MUSEUM COLLECTIONS ASSESSMENT MATRIX

Not all NPS museum collections may require the same level of fire protection. Use this chart to help establish criteria for selecting different levels of protection appropriate to the significance, integrity, and physical durability of the collections, location of the facility, building use, etc. This chart serves as a reference guide only; it does not establish design criteria for historic structures or museum facilities. **Note:** Determining the proper fire protection for each specific application should be a collaboration between the resource manager and the Regional AHJ (process team). Depending on the complexity of the resource, the services of a fire protection engineer may be required by the process team. All final plans must be reviewed and approved by the Regional AHJ.

HOW TO USE THIS MATRIX

Rate each historic structure or other collections facility according to the 8 elements below, using a score of 1-5 (levels 1-5).

For a total score of:	**Scoring Recommendations**	
1 – 14	Fire alarm system should be considered; however, Fire Suppression System May Not Be Needed for this Structure *(variance request would be required if no system installed).*	
15 – 21	Fire alarm system required; Park may Want to Install a Fire Suppression System in this Structure *(variance request would be required if no system installed).*	
22 – 28	Fire alarm system required; Park should Install a Fire Suppression System in this Structure *(variance request would be required if no system installed).*	
29 – 35	Fire alarm system required; Suppression System Required *(variance request would be required if no system installed).*	

MUSEUM COLLECTIONS ASSESSMENT MATRIX					
	LEVEL 5 (Five Points)	**LEVEL 4 (Four Points)**	**LEVEL 3 (Three Points)**	**LEVEL 2 (Two Points)**	**LEVEL 1 (One Point)**
1. Significance	Scientific Type Specimen, Threatened or Endangered Species, related to a World Heritage Site, National Historic Landmark, or part of park's enabling legislation	Nationally Significant	Regionally Significant and/or a primary park theme	Locally Significant	Common; little or no local significance, associative, scientific, or information value
2. Condition	Excellent	Good	Fair	Poor	Little or no remaining historic fabric or scientific integrity
3. Physical Properties/ Durability of Item/Specimen	Fragile, water-soluble, low-temperature items and/or flammable	Combustible and/or extremely sensitive to heat, smoke and water	Sensitive to smoke, heat and water	Highly Durable and relatively unaffected by limited exposure to smoke, heat and water	Fire-Resistant or contained within a fire-resistant cabinet, exhibit case, vault, etc.
4. Use of Building	Exhibit Building open to the public: limited staff supervision	Open to the public: guided tours only or sizable staff presence	Mixed Use: Public access and offices, retail, and/or storage	NPS or partner offices	Storage only
5. Building Location: Response	No brigade response available. No road access; developed utility service w/ topo. Access difficulties. High visitation; large crowds may impede responders.	Brigade response > 30 minutes. Rural road; reasonable topo. Access without developed utility services. Seasonal road access difficulties	Rural road access with developed utility services	Brigade response < 20 minutes. Urban access with minor vegetative or physical constraints	Brigade response <10 minute. Urban access, no vegetative or physical constraints
7. Location: Accessibility	High crime area: Perimeter easily accessible after-hours	High crime area: Perimeter not easily accessible after-hours	Low crime area: Perimeter easily accessible	Low crime area: not easily accessible	Low crime area: Secured Perimeter 24/7 or difficult to access
7. Construction Type of Building	Type V: Wood Frame (Light Combustible Construction)	Type IV: Heavy Timber (Heavy Combustible Construction)	Type III: Masonry walls, wood floors (partial	Type II: Non-combustible (Non-combustible	Type I: Fire Resistive (Non-combustible

MUSEUM COLLECTIONS ASSESSMENT MATRIX					
	LEVEL 5 (Five Points)	**LEVEL 4 (Four Points)**	**LEVEL 3 (Three Points)**	**LEVEL 2 (Two Points)**	**LEVEL 1 (One Point)**
and/or room that Houses the Collection (See *International Building Code (IBC)*, for additional information)			Combustible Construction)	Construction)	Construction)
8. Fuel Load: Proximity	High: Adjacent, attached buildings not in owned by NPS; Forest/ grasslands in fire-prone area	High: Adjacent, attached buildings owned by NPS; OR Forest/grasslands in fire-prone area	High: Adjacent, attached buildings not in owned by NPS, OR Forest/ grasslands in fire-prone area	Adequate: Defensible space based on historic models	Not prone to fires
SCORE					

PARK	**FMSS ID#**	**NAME (structure)**	**Name (surveyor)**

FIRE SAFETY ASSESSMENT

STRUCTURE DESCRIPTION	YES	NO	HIGH	MEDIUM	LOW	N/A	COMMENT
Visitor Access (Low = 0-50, Med = 51-299, High >300)							Approximate Daily Number:
Security							
Building Security							
Collection Security							
Occupancy Types							
Overnight Accommodations (Low = 0-50, Med = 51-200, High >200)							Daily Number:
Library Reading Area							
Library Archives (Low = 0-200sqft, Med = 201-350sqft, High = >350sqft)							Approximate SQ FT:
Museum Exhibit (Low = 0-625sqft, Med = 626-1000sqft, High = >1000sqft)							Approximate SQ FT:
Museum Curatorial Storage (Low = 0-150sqft, Med = 151-350sqft, High = >350sqft)							Approximate SQ FT:
Other Specialized Storage Requirements							
Assembly Occupancies							
Theaters & Auditoriums							
Residential							
Business, Office							
Educational, Institutional							
Vehicle Repair							
Kitchens, Restaurants							
Storage, Manufacturing							
Stages							
Repair Garages							
Machine Shop, Wood Shop							
Risks							
Ignition Sources and Risk (Low = general electrical, Med = use of extension/strip cords, High = electric/fuel space heaters, stoves, candles, etc.)							
Combustible Construction and Rating per NFPA (See evaluation worksheet 1, col. 6)	Type:						
Code Compliant Exiting from Structure (Low = 1 exit, Med = 2 exits, High = 3+ exits)							
Potential Impact of Installation Damage to Historic Fabric (Low = minor, Med = moderate, High = substantial)							
Fuel Load for Structure (Low = no exhibits, no storage; Med = exhibits, no storage; High = exhibits and storage)							

PARK	**FMSS ID#**						**NAME (structure)**	**Name (surveyor)**
FIRE SAFETY ASSESSMENT								
STRUCTURE DESCRIPTION	YES	NO	HIGH	MEDIUM	LOW	N/A	COMMENT	
Potential for Resource Loss and Risks (arson, wildland fire, lighting, etc.) (Low = Risk is not likely, Med = Risk is limited, High = Risk is very possible)								
Life Safety Risks (Low = single grade level, 2 or more exits; Med = multiple story, less than two exits; High = multiple story above or below grade with single exit)								
Existing Fire Protection Devices								
Emergency Lights (yes/no)								
Fire Resistive Separations								
Available Monitor Station							Age:	
Existing Fire Detection and Alarm System							Age & Manufacture:	
Existing Fire Suppression System							Type:	
Lightning Protection								
Existing Fire Protection Systems/Devices are Installed Building-wide								
Site Fire Protection Resources								
Available Water (Low = well, Med = reservoir/pumps, High = commercial supply)							Type:	
City Water							Capacity and Pressure:	
Individual Well							Capacity and Pressure:	
Other (Describe)							Capacity and Pressure:	
Available Electricity* (Low = single phase power; Med = sufficient 3 phase power; however, unreliable; High =reliable commercial supply)								
Single Phase Power							Reliability:	
Three Phase Power*							Reliability:	
Site or Backup Power*							Yes ___ No ___ Age_____	
Local Available/Reliable Fire Department Response (Low = >15 min; Med = >7 min <15 min; High = >4 min <7 min)								
Site Access Constraints*								
Mutual Aid in Place with Local FD (MOU, MA, or Cooperative Agreement) – Yes/No answer only								
FD Familiarity with Building								
This initial Fire Safety Assessment: This assessment is intended to provide useful information for the evaluation of each structure to define any major issues that could affect the project. It does not replace an actual code evaluation of the building.								
* Building and/or Collection Security –What is the vulnerability of the building or collection from arson or vandalism? Arson is perhaps the single largest risk to cultural properties. It is a security issue more than a fire protection issue.								

PARK	**FMSS ID#**	**NAME (structure)**	**Name (surveyor)**

FIRE SAFETY ASSESSMENT

STRUCTURE DESCRIPTION	YES	NO	HIGH	MEDIUM	LOW	N/A	COMMENT
* Available Electricity – In rural settings, overhead power lines can often be knocked down during storms, causing power outages.							
* Single Phase versus Three Phase – Has been an issue at some NPS remote sites. Can be an expensive issue for most fire pumps.							
* Site or Backup Power: This issue speaks to power reliability or availability in many rural situations. Many NPS sites do not have a primary power system and rely either on a site-managed power generator, or on backup generators that are provided due to unreliable commercial power.							
* Site Access Constraints: As part of the site analysis, are there any obstacles which can restrict access by a fire department? Such as a bridge that is vulnerable to flooding; a lane of trees along the site driveway, which could blow down in a storm and restrict access; a rural road subject to washout.							

FIRE PROTECTION SYSTEMS

This document is developed to act as a quick reference guide only, and not to establish design criteria for historic structures, rather each building will be evaluated on its own merit. It is assumed that all structures have changed their usage from originally designed, and changes to fire protection/prevention are necessary to ensure safe public access and resource protection. The proper fire protection for specific application must be designed by a fire protection engineer or others as approved by the Regional AHJ. All final plans must be reviewed and approved by the Regional AHJ. ***(For a comprehensive description of the system types, reference NFPA 914 Table F)***.

FIRE PROTECTION SYSTEM COMPARISONS

	System 1	**System 2**	**System 3**
FIRE PROTECTION SYSTEMS	**No Fire Suppression System**; Relies on Fire Brigade/ Public Fire Department response	**Passive Fire Protection** (controlling doors through fire alarm system for smoke and fire containment)	**Fuel Reduction,** such as a change in approach to building usage: increase use of flame retardant material; minimize use of heating or cooking sources; reduce ignition sources and use of electricity; and implement a WUI plan
DESCRIPTION	ALL	Typically fire walls, doors	Good housekeeping practices. Removing transient combustibles.
PROTECTION ADVANTAGE	Suppression to minimize exposure to surrounding environment	Life Safety and Resource Protection	Minimizing risk
PROTECTION DISADVANTAGE	Dependent on response time, equipment, training, and if mutual aid agreements are in place with local jurisdiction	May require additional equipment (door closures) and construction features	Dependent on occupants' vigilance and does not provide protection or notification
DISADVANTAGE	Firefighting techniques are not sensitive to historic fabric and may create a considerable amount of collateral damage to the resource during firefighting process	More equipment to install and maintain with associated costs	Impact to facility operations and possibly interpretation
RESOURCE ADVANTAGE	Short response time by an appropriately equipped and properly trained brigade may allow for the structure and/or collections to be saved from total loss	Limits the size of the fire and the effects of a fire	Potential to reduce threats from wildfires, lightning, accidents, and inappropriate activities
RESOURCE DISADVANTAGE *See Notes #1 and #2 Below	Damage to historic fabric from entry, attack, force of water, soaking of items, etc. Slow brigade response may result in a total loss	Not applicable for most historic structures; can disrupt historic fabric; increased ITM costs	May not be feasible in some historic structures
TYPICAL APPLICATION	ALL	ALL	Can and should be used anywhere
WATERFLOW RATES (Collateral Water Damage)	VERY HIGH	May be very high. Relies on Fire Department response	May be very high. Relies on Fire Department response

FIRE PROTECTION SYSTEM COMPARISONS			
	System 4	**System 5**	**System 6**
FIRE PROTECTION SYSTEMS	**Wet Pipe** *ITM – Annually;* *Visual inspection requirements weekly/monthly/ quarterly*	**Dry Pipe** *ITM – Annually;* *Visual inspection requirements weekly/monthly/ quarterly (Slight increase in costs due to additional equipment associated with Dry system*	**Antifreeze system** **ITM - Annually** **Visual inspection requirements weekly/monthly/quarterly (Slight increase costs due to additional equipment associated with antifreeze system**
DESCRIPTION	Closed heads; piping is filled with water	Closed heads; piping is filled with compressed air, which holds back water.	Closed heads. Piping is filled with a glycol/water solution.
PROTECTION ADVANTAGE	Life Safety and Resource Protection	Life Safety/building protection	Life Safety/building protection
PROTECTION DISADVANTAGE	Must be installed in climate-controlled space above 40 deg. F	Delay in initial response in dry system (code allows up to 60 seconds)	None
DISADVANTAGE	Staining, black steel pipe deteriorates more quickly than other pipe materials (such as copper, stainless galvanized)	Staining, Increased installation and ITM costs. Susceptible to inline corrosion; design requires adequate drainage of in-pipe condensation to prevent corrosion and low point drains. Is susceptible to MIC. Requires reliable power to maintain inline pressure	Cost of antifreeze; increased costs of ITM; specialized components
RESOURCE ADVANTAGE	Relatively easy and economical to maintain; ITM more likely to be carried out	Can be used to protect historic structures and museum buildings lacking HVAC and/or utilities	Can be used to protect historic structures and museum buildings lacking HVAC and/or utilities
RESOURCE DISADVANTAGE ***See Notes #1 and #2 Below**	Water may damage fragile historic fabric or collections. Some installations have been unsightly and insensitive to historic / interpretive setting due to poor design and construction oversight. See note 2 below	Water may damage fragile historic fabric or collections. Some installations have been unsightly and insensitive to historic / interpretive setting due to poor design. See note 2 below	Water and antifreeze discharge damage to fragile historic buildings, fabrics or collections
TYPICAL APPLICATION	ALL	Northern climates, historic buildings, unheated attics and concealed spaces, outbuildings, Pole building, storage buildings, and other non-climate controlled buildings	Northern climates, historic buildings, unheated attics and concealed spaces, outbuildings, Pole building, storage buildings, and other non-climate controlled buildings, where electricity for air compressor is not available
WATERFLOW RATES (Collateral Water Damage)	Low to moderate	Moderate/ high	Moderate

FIRE PROTECTION SYSTEM COMPARISONS			
	System 7	**System 8**	**System 9**
FIRE PROTECTION SYSTEMS	**Preaction** *ITM – Annually;* *Visual inspection requirements weekly/monthly/ quarterly (*potential 100% increase in costs due to the maintenance requirements of the required fire alarm system)*	**Performance Based** *ITM will be based on the proposed design*	**Deluge** *ITM – Annually* *Visual inspection requirements weekly/monthly/quarterly (*potential 100% increase costs due to the maintenance requirements of the required fire alarm system)*
DESCRIPTION	Closed heads; no water is in the piping; Detection system opens a valve to allow water in the pipe	Any type of system which is based on the unique situation and requires the services of a Fire Protection Engineer	Same as Preaction, but with open heads
PROTECTION ADVANTAGE	Life Safety/building protection	Designed to meet the intended needs	Special application system
PROTECTION DISADVANTAGE	None	Protection based on specific use. Requires specific AHJ Approval.	All sprinklers operate at once, resulting in considerable water damage. Special purpose only
DISADVANTAGE	Cost of antifreeze; increased costs of ITM; specialized components	Deviates from prescriptive code	Loss of fire alarm system will compromise all protection
RESOURCE ADVANTAGE	Can be used to protect historic structures and museum buildings lacking HVAC and/or utilities	System specifically tailored to the preservation needs of the collection and/or historic structure	Special, specific circumstances, such as to minimize damage to historic fabric while still protecting visitors and staff
RESOURCE DISADVANTAGE *See Notes #1 and #2 Below	Water and antifreeze discharge damage to fragile historic buildings, fabrics or collections		Extensive water damage to collections and/or historic fabric, including items not directly affected by flames and smoke
TYPICAL APPLICATION	Northern climates, historic buildings, unheated attics and concealed spaces, outbuildings, Pole building, storage buildings, and other non-climate controlled buildings, where electricity for air compressor is not available	Protection of the historic building where utilities are available	Extremely fast burning fires and exposure protection
WATERFLOW RATES (Collateral Water Damage)	Moderate	Varies based on proposed design	Moderate/high

FIRE PROTECTION SYSTEM COMPARISONS			
	System 10	**System 11**	
FIRE PROTECTION SYSTEMS	**Residential** *ITM – Annually; Visual inspection requirements weekly/monthly/ quarterly (Slight increase in costs if supported by a pressure tank; significant if using a pump)*	**Water Mist Systems** ITM – Quarterly & Annually; *Visual inspection requirements each shift (valves, controllers) weekly/monthly/ quarterly (potential 100% increase in costs due to available qualified service contractors)*	
DESCRIPTION	Closed head wet pipe or antifreeze system	A higher pressure, low water system that discharges extremely small water particles	
PROTECTION ADVANTAGE	Provide safe egress path from residence	Protects resource with minimum wetting of resource. Self-contained suppression system that can provide suppression for a designed period of response time. Low water requirement can be serviced with water storage tank	
PROTECTION DISADVANTAGE	Primarily a life safety system	Currently only tested (FM) for light hazard application. Expanded applications require services of Fire Protection Engineer	
DISADVANTAGE	System is based on small fire of short duration	Requires specialized installers, new technology in US = high installation costs due to lack of certified installers. Systems require intensive design and installation oversight to limit impact to historic resources	
RESOURCE ADVANTAGE	Relatively inexpensive to install and maintain	Reduces potential for water damage to collections and historic fabric, as less water used than a typical wet or dry pipe system. Can be used to protect structures which lack water and reliable utility service	
RESOURCE DISADVANTAGE ***See Notes #1 and #2 Below**	May not be adequate to thoroughly protect the resources	Expensive new technology; ITM minimum once installed (reference Robert Wilson, FPE, National Gallery)	
TYPICAL APPLICATION	Residential using domestic water or pressurized storage tank	Special application system; Special applications where water damage or lack of reliable power and/or water pressure and supply are issues	
WATERFLOW RATES (Collateral Water Damage)		Low	

FIRE PROTECTION SYSTEM COMPARISONS			
	System 12	**System 13**	
FIRE PROTECTION SYSTEMS	**Gaseous (Clean) Agent Systems**	**High Expansion Foam Suppression** ITM quarterly, semi- annual, and annual; visual inspection requirements weekly/monthly/quarterly(considerable increase in costs due to additional equipment associated with foam system	
DESCRIPTION	A "deluge-type" system that discharges a fire extinguishing gas rather than water	A fixed extinguishing system that generates a foam agent for total flooding	
PROTECTION ADVANTAGE	Protects contents and resources, and doesn't not drench the resource	Special application system for confined spaces	
PROTECTION DISADVANTAGE	Generally not applicable for deep seated fires	When properly designed, used in conjunction with water sprinklers, will provide more positive control and extinguishment than either extinguishment system used independently. Use to extend water sources	
DISADVANTAGE	Some gases require tightly sealed compartments for effective operation. Gas discharges with high pressure and can disturb fragile artifacts. High associated costs with ITM and replacement	The discharge of large amounts of high-expansion foam can inundate personnel, blocking vision, making hearing difficult, and creating some discomfort in breathing	
RESOURCE ADVANTAGE	Eliminates potential for smoke, flame and water damage to collections and historic fabric.	Foam used to extinguish alcohol fires in collections rooms with fluid-preserved scientific specimens (primarily in ethanol)	
RESOURCE DISADVANTAGE *See Notes #1 and #2 Below	Some clean agents may compromise research value of certain scientific specimens.	Foam ingredients may damage collections not stored within closed cabinets and historic fabric.	
TYPICAL APPLICATION	Collection rooms, computer rooms, telephone rooms. Etc.	Collections rooms housing specimens in alcohol, computer, telephone, archival rooms, compact storage shelves, exhibit cases, etc.	
WATERFLOW RATES (Collateral Water Damage)	NA		
Piping: The suppression systems have many available options for piping.			
Black steel: Steel pipe typically found in wet pipe systems. It is typically threaded by a power machine (on or off site).			
Blazemaster CPVC (orange plastic pipe): Can be used for residential systems (13R & D) and other NFPA 13 light hazard wet systems. Pipe is connected by CPVC glue.			
Stainless steel: Primarily used for high pressure water mist. Pipe is connected by compression fittings.			
Galvanized pipe: Galvanized pipe which is required for dry, Deluge and Preaction, and exposed exterior pipe. It is typically threaded by a power machine (on or off site).			

Copper Pipe: Approved for use with sprinkler systems. Offers better flow characteristics and can be connected through solder or compression fittings.
Flexible pipe: Industry offers flexible piping for wet sprinkler systems. Lengths are limited.

AUTOMATIC FIRE DETECTION SYSTEMS			
	System 14	**System 15**	**System 16**
FIRE PROTECTION SYSTEMS	***Monitored Automatic Fire Alarm System** *ITM – Monthly, Quarterly, Annually; Visual inspection requirements monthly/quarterly and semiannually*	**Incipient Sampling Detectors (Air Aspiration or Air Sampling)** *ITM – Annually; Visual inspection requirements semiannually (slight increase in cost due to operating characteristics)*	**Single Station Smoke Detection** Test monthly; *9vdc battery replacement semiannually*
DESCRIPTION	Smoke detectors, manual pulls, and horn/strobes in all areas, remotely monitored. May include heat detectors in some areas (attic, dusty locations).	A piping network that is connected to a high efficiency aspirator.	Residential
PROTECTION ADVANTAGE	Early warning and Life Safety	Life Safety and resource protection with a Fire Protection System. Very early detection of smoke and fire	Life Safety/occupant warning
PROTECTION DISADVANTAGE	Provides early warning; however, does not offer suppression	Very sensitive and may be subject to nuisance signals if not properly installed and maintained	Provides early warning to residents at specific location; however, does not offer suppression or building notification
DISADVANTAGE	Requires 110 vac for operation	More equipment to install and maintain with associated costs	Reoccurring costs of 9vdc batteries
RESOURCE ADVANTAGE	Can quickly alert brigade and park staff during a fire's incipient stage	Early warning system for specialized applications, such as a sterilized environment for extremely sensitive collections	Inexpensive means of alerting staff while on duty
RESOURCE DISADVANTAGE *See Notes #1 and #2 Below	Must be integrated into a suppression system to help provide the most effective resource protection	System acclimation may result in equipment nuisance alarms during initial installation.	Not applicable for buildings without staff; no protection possible during non-staffed hours
TYPICAL APPLICATION	ALL	Special applications	Residential
WATERFLOW RATES (Collateral Water Damage)	May be very high. Relies on Fire Department response	May be very high. Relies on Fire Department response	May be very high. Relies on Fire Department response
*Additional cost estimate is based on a fire alarm system being installed the sole for the purpose of 27ctober27n of deluge system control			

DETECTORS	
**The fire alarm industry provides a wide variety of options to provide adequate protection with minimum impact to the historic fabric and facilitates any design operating criteria through systems programming.	
Projected Beam Detectors	Beam detectors consist of a transmitter and receiver which are connected to the fire alarm circuit and are a type of photoelectric light obscuration smoke detector wherein the beam spans the protected area. Typically are used for open space protection (open atriums, large assembly halls, etc.).
Laser Detectors	Spot type wired detectors which utilize laser technology to provide very early warning to an incipient fire condition.
Line Type Heat Detection	A linear cable (approximately 1/8" thickness) that is routed through attics, crawl spaces, etc., and initiates an alarm condition upon a thermal activation within the protected environment.
Ionization Smoke Detector	Spot type wired smoke detectors that use ionization technology to detect incipient smoke in the early stages of a fire event. Ionization detectors are more responsive to invisible particles produced by most flaming fires. It is less responsive to larger particles typical of most smoldering fires.
Photoelectric Smoke Detector	Spot type wired smoke detectors that use photoelectric technology to detect incipient smoke in the early stages of a fire event. Photoelectric detectors are more responsive to larger particles typical of most smoldering fires.
Single Station Smoke Detector	Typically approved for residential environments. It is a detector comprising an assembly that incorporates a sensor, control components, and an alarm notification appliance in one unit operated from a power supply (9vdc battery).
Multiple-Station Alarm Device	Typically approved for residential environments. Two or more single station alarm devices that can be interconnected so that actuation of one causes all integral or separate audible alarms to operate.
Comments: **Note #1:** All fire suppression technologies and systems can adversely impact historic fabric, historic landscapes, or collections. All work should proceed in close collaboration between park maintenance, cultural resources, and protection (fire and LE) staff to minimize impacts while still ensuring life safety, resource protection, and code equivalency. **Note 2:** Visual impact is always an important consideration. Concealed installations, while not visually intrusive, typically and irreversibly damage historic fabric. Periodic repairs or system replacement further damages historic fabric. Exposed systems, while visually unattractive, are more reversible and have less physical impact on a historic structure. Planning for fire detection and suppression on a case-by-case basis needs to address this issue.	

4. A Park-Based Process for Planning the Fire Protection of Historic Structures and Park Collections

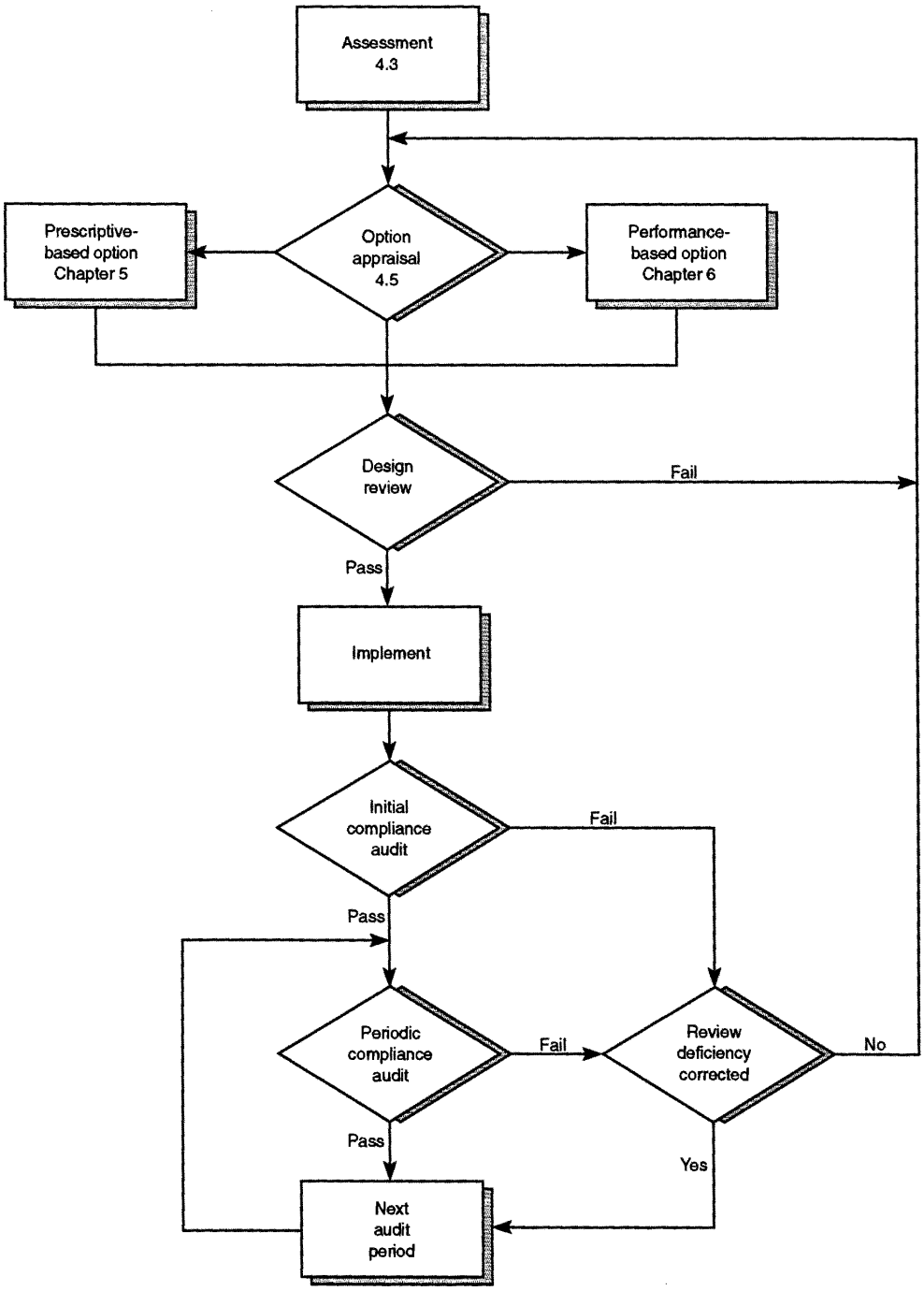
Project Development and Design Process

The fire protection of this nation's historic buildings has long been a difficult and sometimes contentious issue. It is an issue not foreign to the NPS with its long history of protecting America's cultural properties. Because of the difficulties of integrating fire suppression systems and protective measures with preservation goals, most building and fire safety codes have always made special exceptions for heritage resources. The codes usually give AHJ's full authority to grant variances from full application of the codes with little guidance on acceptability. Recognizing the inherent conflicts that sometimes exist between fire safety and cultural resource preservation, the NFPA 914 and 909 codes put forward a process to help resolve those conflicts and to better insure the safety of the occupants and the property. That process has been adopted here for use by the NPS.

The application of current codes in its simplest form allows for a continued traditional prescriptive approach to fire safety. For more complex historic preservation, collection conservation, and fire safety issues, NFPA 909 and 914 expand to provide a process that allows for alternative ways of resolving these issues. Clearly, the more complex the issues are, the more complex the design response.

The following Process Flow Chart is based on NFPA 914. NFPA 909 follows the 914 process, but museums and libraries are more focused on collections in new or historic buildings. See NFPA 909 and 914 for more detailed process information.

NFPA – 914 Figure 4.1 – Process Flow Chart



Process Team. Fundamental to this process is the establishment of an interdisciplinary process team. The superintendent shall designate a process team to oversee the application of the fire protection plan for the historic building and/or collection and to guide the project through design, Section 106 compliance, and construction. The size and makeup of the process team will vary, depending upon the complexity and significance of the resource property. For the simplest of projects, the process team shall include the RSFM/AHJ and a cultural resources specialist with experience that is relevant to the resource. The superintendent may consider including the services of a fire protection engineer or other resource experts in this process for more complex projects.

Note: Currently, the NPS Value Analysis process encourages a similar approach throughout a project design. The process team could also serve the value analysis function during design and implementation of fire protection systems.

I. PROJECT ASSESSMENTS. Project assessments shall be conducted by the process team to identify all resource, life safety, and operational needs. The assessments shall be sufficient to develop a comprehensive understanding of the project. The following assessments shall be conducted:

Note: The assessment tools used for the preparation of PMIS project statements have a dual purpose and may prove useful in the larger more detailed assessments in this section.

A. Historic Property Assessment: The purpose of this assessment is to provide a comprehensive overview of the historic property and its significance. The assessment shall identify all affected historic elements, spaces, and features of the structure(s). It shall also identify all significant site features, including archeologically sensitive areas and adjacent properties that contribute to the significance of the structure. The significance of the exterior, interior, and use of the structure shall be understood. In addition, the structure's construction type and organization, plus all its character-defining features shall be identified.

The building survey shall determine the primary and secondary significance of all historic elements, spaces, and features. It shall prioritize the significance of all historic elements, spaces, and features. In the fire protection elements of the structure, the goal shall be to limit modifications or additions to the structure to less visible, secondary areas in a manner that minimizes visual impact and damage to historic materials. Modifications and additions may be permitted at primary areas when all other options, including variances, have been exhausted.

For treatment beyond emergency stabilization, the NPS requires that a Historic Structures Report (HSR) be completed. HSR's are an excellent source of information on significance and treatment recommendations. However, it is recognized that HSR's are not design documents and therefore probably do not resolve all design issues.

B. Collection Assessment. The purpose of this assessment is to provide a comprehensive overview of the collection, its significance, special preservation

requirements, and the structure housing the collection. The Collection Assessment should include a survey of the museum collection housed within the building: the collection's significance (in its own right), its significance to the structure housing it (such as furnishings original to a historic home), specific preservation requirements and vulnerabilities, and related security issues. The security of the collection, historic structures, and other park resources cannot be overstated—arson is the leading cause of all non-residential structure fires in the United States (United States Fire Administration, 2004).

The park's Checklist for the Preservation and Protection of Museum Collections ("Museum Checklist"), Collection Management Plan (CMP), Scope of Collection Statement, Security Survey, Fire Protection Survey, Museum Emergency Operations Plan (MEOP), and Historic Furnishings Report should include much (or all) of the information necessary for a Collection Assessment. (Director's Order #24 and the NPS Museum Checklist require every park with a museum collection to have a current Museum Checklist, Collection Management Plan, Museum Emergency Operations Plan, Scope of Collection Statement, Security Survey, and Fire Protection Survey.) Of these required documents, the Museum Checklist, Collection Management Plan, and Fire and Security Surveys will probably provide the most information relative to the Collection Assessment:

1. The Museum Checklist evaluates each structure housing collections with reference to museum preservation and protection. When completed, the Museum Checklist provides a quantifiable "snapshot" of each museum facility with a corresponding "grade card" related to that structure's ability to preserve and protect the collections housed within it.

2. A Collection Management Plan (CMP) is a review of a park's overall museum management program. The CMP assesses all aspects of the museum program to identify problems and make recommendations on the management, care, and use of the collections. When finalized and approved, the CMP provides the park with prioritized recommendations, strategies, timelines, and guidance for providing optimum care for the collection.

3. Museum Security Surveys and Museum Fire Protection Surveys are usually conducted by fire protection specialists who have experience working with museums and other cultural institutions.

    - A Museum Security Survey includes information pertaining to: perimeter security; structures; policies and procedures; emergency plans; individual object protection; training; systems maintenance. In addition to identifying problems and challenges, the survey also should include prioritized recommendations to correcting deficiencies.

A Museum Fire Protection Survey includes information pertaining to: fire prevention; fire safety training; structural and procedural fire hazards; fire detection and suppression strategies, equipment, and systems; perimeter security; policies and procedures;

emergency plans; training; systems maintenance. In addition to identifying problems and challenges, the survey also should include prioritized recommendations.

A review of the findings and recommendations in these park-planning documents is vital to the success of subsequent fire protection planning efforts. However, if any of these plans are no longer current, the park's curator, working with other subject matter experts, should be tasked with assembling the necessary information into an up-to-date document that meets the park's current individual needs.

C. Fire Safety Assessment. The building assessment shall include a review of all fire safety-related requirements to determine if and where the historic building is deficient with respect to applicable codes. The code review shall distinguish between life safety and property protection goals and evaluate the structure accordingly. The fire assessment shall identify known conditions that contribute to the start or spread of a fire or to the endangerment of people or property by fire. The site shall also be evaluated to identify protection constraints such as accessibility issues, vegetation which could encumber access or pose a threat, utility infrastructure, water supply and pressure, fire department resources, site-disturbing activities, cultural landscape issues, etc.

The building shall be evaluated to determine known potential paths of fire spread, both internal and external, that are inherent to its design. An evaluation of the means of egress shall be completed.

Level I Fire Safety Assessment and Level I Fire Protection Systems matrix tools may prove useful as part of this assessment.

II. OPTION APPRAISALS. The process team shall evaluate the assessment findings and determine fire protection goals and objectives. Structures that are found to have life safety deficiencies and preservation needs shall have a plan of correction developed. Some of the tools available to resolve deficiencies include:

- Prescriptive code compliance
- Risk-indexing compliance
- Performance-based compliance
- Any combination of items 1, 2, 3.

Complex projects may require the services of fire protection engineers capable of evaluating and analyzing alternative ways of providing protection. Fire protection engineers apply engineering calculations, fire modeling, or other data. Alternatively, the fire protection engineer may work with an accredited lab to conduct tests in accordance with national testing standards or in accordance with specially developed criteria.

The Fire Safety and Historic Property assessments may establish additional property protection goals in excess of minimum life safety requirements. A studied approach to minimum life safety requirements and supplemental property protection goals and objectives will determine minimum fire detection and suppression requirements.

While an automatic fire suppression system and an automatic fire detection system are worthy goals for each historic building, the final decision regarding installation shall be based upon minimum life safety requirements and supplemental property protection measures.

The concept of "*de minimis"* tolerances can also play an important part in the evaluation and protection of historic buildings. *"De minimis* (derived from the Latin *de minimis non curat lex,* or 'the law does not care for, or take notice of, very small or trifling matters') is a legal term for aspects considered insignificant with respect to the intent of requirements. For fire safety in existing buildings, this refers to minimal, typically dimensional variations or tolerances that are insignificant with respect to the level of safety provided. Application of the concept is essential in existing buildings where minor improvements – for example, widening a corridor width by 3 in – would be extremely costly when compared with the relative increase of safety achieved. Although no fixed percentage of acceptable tolerance has been identified for all fire safety features, for historic buildings 10 to 20 percent has been considered reasonable" (Watts and Kaplan).

A. Prescriptive Code-Compliance Option. A Prescriptive Code prescribes fire safety for a generic use application. This approach will in most instances continue as the preferred approach to the majority of NPS properties. Strict application of prescriptive solutions in more sophisticated and significant historic buildings, with little concern for the qualities of the building, has had adverse impacts that are destructive to the integrity of the property. Some general approaches to equivalency and reasonableness in applying prescriptive codes to existing buildings include alternatives, tradeoffs, tolerances, and exceptions as defined in NFPA 914.

B. Fire-Risk Indexing. Fire risk indexing is a method that should be permitted to be used to establish conformance to a prevailing code. "*Fire risk indexing is a low-cost way of quantitatively balancing variables of risk and hazard and safety to achieve an acceptable level. This approach has been proposed for many applications of fire safety in existing and historic buildings as described in the sections on NFPA Life Safety Code, BOCA, National Building Code, and Wisconsin Historic Building Code. A difficulty is that the numerical tradeoff concept in fire risk indexing is not intuitive for many code officials"* (Watts and Kaplan).

Fire-risk indexing is a systemic approach to equivalency that considers the building in its entirety and produces a calculated value to identify the degree of compliance with the intent of a prescriptive code.

C. Performance-Based Option. Performance-based design approaches can be defined through a design process where fire safety solutions are developed to achieve a specified goal for a specified use or application, such as in the case of the preservation of a significant structure, a part of a structure, or a significant collection.

Performance-based solutions may be more useful for complex projects*: "Performance-based fire safety will generally require the services of a fire protection engineer for each application to assess compliance with agreed upon fire safety objectives. This is an appropriate procedure for world-class heritage buildings or others with the economic resources necessary to optimize objectives. Adequately protecting the buildings from fire will likely afford a level of life safety that is greater than the social norm implied by current buildings codes"* (Watts and Kaplan, Chapter 3).

D. Management Operational Systems. An additional tool available to the NPS is the permitted use of docents and onsite personnel to compensate for prescriptive solutions as equivalent alternatives or modifications and to be used as part of a performance-based approach to code compliance. Under this provision of 914 and 909, this tool has many potential applications for NPS managed properties where staff is present during hours of operation.

III. DESIGN. The process team and the professional services of any fire protection specialist that may have been commissioned for the project shall be involved throughout the preparation and review of all design and contract documents. The process team and any specialized engineering services shall be retained throughout the design and contract documents stages of the project.

IV. IMPLEMENTATION. All persons involved with the construction process shall be thoroughly briefed on the cultural significance and importance of the property prior to the beginning of the work. Specialty engineering services, such as fire protection engineers and preservation consultants, shall be included throughout the construction process for purposes of shop drawing review, field inspections, and consultation.

V. INITIAL COMPLIANCE AUDIT. Upon completion of the implementation phase, there shall be an initial compliance audit by the process team to ensure compliance with the selected design approach. The AHJ shall make the final determination as to whether or not compliance has been achieved.

VI. PERIODIC COMPLIANCE AUDIT. Periodic compliance audits shall be conducted by the AHJ or designee at intervals identified in an approved fire safety management plan to insure that any variances to the code are being respected. Additional compliance audits may be conducted prior to any unusual or special events. Other compliance audits may be necessary to insure that occupancy use has not changed, that management operational systems are still in place, and that any special maintenance requirements are being carried out. The AHJ shall conduct an exit interview with the superintendent or manager of the building upon completion of the periodic compliance audit.

Reference

United States Fire Administration, National Fire Data Center. *Fire in the United States, 1992–2001*, Thirteenth Edition. Emmitsburg, Maryland: United States Fire Administration, 2004. Available on the web at:
http://www.usfa.fema.gov/downloads/pdf/publications/fa-293-press.pdf

5. Recommendations for Incorporating the Services of a Fire Protection Engineer (FPE) into a Project

The preservation and protection of historic buildings and collections, while making them accessible to the visiting public, is a fundamental mission of the NPS. Lack of fire protection or incorrectly designed and installed fire protection could compromise the protection of life or irreplaceable resources should a fire occur.

The NPS's role in preserving and interpreting historic structures and collections to the visiting public often involves a change in use and occupancy from the structure's historic use. For example, a lighthouse that was originally intended to have one or two caretakers, which is changed to a structure with upwards of 1,500 visitors a day presents a radical change in use and occupancy. Such a significant change in occupancy may require the specialized engineering expertise of a fire protection engineer (FPE), a historical architect, and structural and mechanical engineers to ensure visitor, employee, and historic structure protection.

A fire protection engineer is a licensed engineer who demonstrates sound knowledge and judgment in the application of science and engineering to protect the health, safety, and welfare of the public from the effects of fire. In addition, the NPS requires the fire protection engineer to have extensive knowledge of and experience with existing buildings and historical structures.

Complementary to the fire protection engineer is the fire protection technician (FPT). The fire protection technician is an individual who has achieved accreditation, such as that which is offered by the National Institute for Certification of Engineering Technologies (NICET) in the appropriate subfield and who has the knowledge, experience, and skills necessary to lay out and inspect fire protection systems.

Historic buildings often require unique design approaches due to their remote location, changing occupancies, construction materials, and historic and architectural significance. NFPA 914 and 909 allow flexibility in the strict application of prescriptive code requirements. But non-prescriptive code requirements require studied and substantiated information in order for the AHJ to make decisions. Depending on the individual project complexity, a licensed fire protection engineer may be involved in several ways:

- The fire protection engineer may participate as an interdisciplinary process team member.
- The fire protection engineer may develop fire protection plans per RM 58 or Fire Safety Assessments.
- The fire protection engineer, as part of the A& E design team, should assess the existing structure, classification, occupancy, potential loss, customer requirements, ignition sources, and availability and reliability of local fire departments in the development of the fire safety plan. A professional skill that needs to be added to NPS IDIQ design services.

- Preparation of contractor provided shop drawings after field discovery and location of latent building conditions are revealed.
- The fire protection engineer may provide comprehensive engineering services as an A&E design team member responsible for schematic and design services, preparation of contract documents, specification submittal review, construction inspection, and system testing. The fire protection engineer may provide specialized engineering expertise pertaining to fire protection not found in typical mechanical engineering services or in performance specifications.
- The fire protection engineer may provide limited engineering services as part of an A&E design team. For example, after the award of the construction contract and during the preconstruction meeting, the fire protection engineer may brief contractors and park management, including the process team on the project requirements. Project oversight may be done by park personnel with periodic inspections by the AHJ and fire protection engineer to ensure proper installation of the specified systems.
- The fire protection engineer may conduct the final inspections, during the commissioning and accreditation phase of the project. The fire protection engineer may witness and review complete pre-test results of installed systems to verify that the systems meet the intended fire plan design and to verify that all NFPA-required documentation is provided and completed by the contractor to the satisfaction of the fire protection engineer and/or fire protection technician.
- The fire protection engineer may conduct specialized fire research and provide services to:
    - Evaluate equivalencies through the application of alternative methods of compliance
    - Advise on exceptions to the codes
    - Conduct fire risk assessments
    - Develop performance-based code analysis and design
    - Assist in the preparation of PMIS project statements
    - Conduct fire investigations
    - Advise on specialized fire testing

6. Guidance for Acceptance of Fire Test Certifications

Within the NPS there is misunderstanding regarding what constitutes acceptable fire research and testing-laboratory certifications. This misunderstanding may lead to the discounting of appropriate and valid fire testing information relative to fire protection products and systems. The following information provides direction and clarifies this issue.

In the U.S., there is a structured national system of standards and testing protocols relative to fire-research and fire-testing laboratories. That system is as follows:

- National accreditation organizations define the actual standards for accreditation for fire-research and fire-test laboratories. Those organizations outline standards for how fire research and fire tests are conducted and evaluate a laboratory's conformance to the national standards.

- The fire-research and fire-testing laboratories apply the national standards in their individual testing.
- The fire-research and fire-testing laboratories certify the results of the tests.

A variety of private, academic, and governmental fire-test laboratories provide certifications in the U.S. However, most certifications are the result of research and testing undertaken by private organizations, such as the familiar Underwriters Laboratory or Factory Mutual.

Fire-test certifications can also be confusing and the reviewer must know that in many instances the laboratories only list certain components as meeting a very limited use or hazard.

For example, in the case of sprinklers, UL lists components such as sprinkler heads and valves, but it does not list full systems based on performance. Other laboratories, such as Factory Mutual, have a full listing process that consists of component analysis (similar to UL) and also a series of fire performance tests. FM will certify a fire system in a way similar to VDS, a German testing laboratory. Because FM often insures the systems it certifies, FM's testing may be more stringent because the test laboratory may lose financially if its control is not adequate over the actual tests that are performed.

The NPS's AHJs are not the first to ask questions regarding fire-research and fire-test laboratory certifications. **Appendix B** draws heavily on the October 2001 draft and final report of the *Accrediting Independent Fire Testing Laboratories Guide.* The document was prepared by the Science Advisory Committee of the National Association of State Fire Marshals and their staffs for the purpose of defining the actual accreditation and certification process.

It is also important to know that in the U.S., and increasingly internationally, consumers, manufacturers, and AHJs are requiring better and clearer standards against which fire protection materials and systems can be evaluated. **Appendix B** demonstrates that third-party research and test laboratories must meet U.S. accreditation standards in order to manufacture and market their products and services in the U.S.

Third-party labs, such as UL, FM Global, Intertek Testing, Warnock Hersey, and Canadian Standards Association (CSA) to name a few, represent national and international fire-testing laboratories, which meet U.S. accreditation standards. The U.S. can also expect that due to global competition, more accreditation testing laboratories may begin to play a more important role in U.S. fire protection strategies. Two accrediting organizations, the National Cooperation for Laboratory Accreditation (NACLA) and the International Laboratory Accreditation Cooperation (ILAC), have been established with the purpose of promoting uniform international standards for testing and recognition of foreign certifications. The NPS may accept certifications from a variety of nationally recognized and accredited fire-research and fire-testing laboratories.

Because of the oversight through the accreditation process brought to fire research and fire-testing, most AHJs accept certifications from most U.S.-based and some international third-party laboratories.

Should there be greater flexibility in applying tests and labels under the design authority of a fire protection engineer? Because historic structures are artifacts of a different age and because the codes have primarily focused upon new construction, conflicts often result from strict application of the codes. Recognizing the reality of conflicts, NFPA codes, as with most building codes, have addressed that issue through the concept of equivalencies, alternatives, and modifications.

NFPA 1, 1.4, Equivalencies, Alternatives and Modifications, establishes a benchmark relative to equivalencies. It affords the opportunity of providing alternative methods of resolving fire protection issues.

NFPA 914, Code for the Fire Protection of Historic Structures, provides further clarification in Chapter 1.5.2: "Historic structures or portions of such structures that do not strictly comply with this code shall be considered to be in compliance if it can be shown that equivalent protection has been provided or that no specific hazard will be created or continued through noncompliance."

NFPA 909, Code for the Protection of Cultural Resource Properties – Museums, Libraries and Places of Worship, in Chapter 1.4 states: "Cultural resource properties or portions of such structures that do not strictly comply with this code shall be considered to be in compliance if it is shown that equivalent protection is provided or that no specific hazard is created or continued through noncompliance."

Both NFPA 914 and 909 also state: "A designer capable of applying more complete or rigorous analysis to evaluate and address special or unusual problems shall have latitude in the development of the applicable design. In such cases, the designer shall be responsible for demonstrating the validity of the approach. This code shall not eliminate the need for competent engineering judgment."

When listed products are required by applicable regulations but cannot be used for some reason, the NFPA allows for two alternative approaches to demonstrate that an equivalent level of protection is provided by an unlisted product or assembly.

Alternative 1: Unlisted information, such as the example of the historic wooden doors or the archaic wall assemblies that are referenced in the appendixes of NFPA 914, may be accepted by the AHJ as being sufficient.

Alternative 2: A design professional, such as a licensed fire protection engineer, may be hired to develop a protection scheme that provides an equivalent level of protection or to demonstrate that the unlisted product provides a level of performance equivalent to that of a listed product.

In developing the basis for equivalency, the engineer may hire a laboratory to conduct tests in accordance with nationally recognized testing standards or in accordance with specially developed criteria. Alternatively, the engineer may employ the use of engineering calculations, fire modeling, or other data. In instances of specific products or assemblies, manufacturers may hire laboratories to conduct research to develop

specially listed products that are to be used for only specific applications or to develop new products. In this case, testing laboratories that do not provide listing services, such as NIST or university laboratories, may be pursued.

APPENDIX A

USING CODES TO PROTECT HISTORIC BUILDINGS FROM FIRE

Relief from requirements for new construction in locally applicable building regulations, i.e., the prevailing code, is necessary to address the issues of fire safety and historic structures. A statement or clause that provides such relief should have two parts: a definition of what constitutes a historic building and provisions to apply alternative fire safety criteria.

Regulation requires a definition of a historic building to establish eligibility of buildings or structures to which the relief may be applied. Several characteristics of this definition should be considered. Depending on the use of terms in the prevailing code, the definition may address buildings or structures or both. Usually the term “structures” is more inclusive, but this may not always be so. Terms such as qualified, classified, listed or designated may be appropriate to establish eligibility depending on the manner in which historic buildings are identified in jurisdiction. The eligibility must have an official or legal basis and sometimes a list of alternative criteria may be included. The definition may include eligibility determined by federal, state, or local authority and may also include groups of structures in historic districts. The following is a suggested model definition of historic building.

> Buildings or structures designated as historic by federal, state or local law, including those in a legally designated historic district.

Several concepts are also necessary in the statement of relief. Essentially, the statement should be a “gate” that allows historic buildings to depart from the requirements of a prevailing code. However, it must also contain a proviso that the building is to be safe. The concept of safety is one of reasonableness and it must take into consideration the societal goal of preserving our cultural heritage. Reasonable safety is judged by the authority having jurisdiction, also referred to as code official, code enforcement official, building official, or department or authority’s representative. The following is a suggested model statement of relief from a prevailing code for new or existing construction:

> The provisions of this code are not mandatory for a historic building when it is evident to the authority having jurisdiction that a reasonable degree of safety is provided.

Establishing evidence of a reasonable level of fire safety in a historic building can take several different forms: dealing with the specific provisions of traditional specification codes, adopting a set of specific provisions for historic buildings, fire risk indexing, or performance-based fire protection engineering.

Adapting an existing building to meet code intent is the traditional form of fire safety evaluation and will be the more amenable to code officials. However, for historic buildings, this requires acceptance of certain perspective solutions:

- Most present code specifications are arbitrary and do not have a measurable association with life safety.
- Fire safety objectives can always be achieved in more than one way.
- In identifying a reasonable level of fire safety, trading off some fire safety for the societal goal of heritage preservation is appropriate.

General approaches for considering equivalency and reasonableness in applying prescriptive codes to existing buildings include alternatives, tradeoffs, tolerances, and exceptions.

Alternative methods of compliance often exist but need to be identified. Architects and engineers are typically attuned to the most efficient way to achieve code compliance in new buildings. Alternative means may slightly increase cost, but save an important characteristic of the structure. Guidance documents are available that can help identify alternative approaches. Some of these are listed in the bibliography.

Tradeoffs embody the concept of equivalency. It is quite common to provide unrequired fire detection and suppression in place of structurally altering the interior of a building. Less common is the compensation for a code deficiency by operational features: for example, compensating for a dead-end corridor with occupant training.

Tolerances allow for some flexibility by relaxing the limited criteria of the many “magic numbers” in code requirements, e.g., 50 people, 32 inches wide, one-hour fire resistance, etc. A 10 to 20 percent tolerance in such criteria is reasonable if it allows historic preservation objectives to be achieved. In legal jargon, such tolerances are referred to as *de minimis*, i.e., they are considered insignificant with respect to the overall safety of the building. Tolerance in the strict application of installation standards may also be appropriate, e.g., allowing a particularly sensitive room to remain unprotected in a fully sprinklered building. While automatic sprinklers are generally the best way to protect a historic building, they must be installed appropriately, e.g., as specified in TAN 14, the Installation of Sprinkler Systems in Historic Buildings noted in the bibliography.

Exceptions may be employed where applying a code requirement in an existing building is not reasonable. This approach is used extensively in NFPA 101, *Life Safety Code* [16] for door swing, curved stairs, handrails, etc. Regretfully, little such guidance exists for historic buildings, where greater leniency is appropriate.

One qualitative approach used to evaluate alternative arrangements for equivalent safety from fire is the NFPA Fire Safety Concepts Tree. The tree is a logic diagram that represents all possible means of meeting fire safety objectives. By increasing fire safety measures on one branch of the tree, one can theoretically offset a lack of required

measures on another branch, thus establishing an arrangement of equivalent fire protection.

Some states, e.g., California, Wisconsin, and New Jersey as described in this document, have adopted a set of specific provisions for historic buildings. Commonly these provisions take the form of compliance alternatives, tradeoffs, tolerances, and exceptions as discussed above. At the present we have no national consensus on how to prescribe fire safety to historic buildings.

Fire risk indexing is a low-cost way of quantitatively balancing variables of risk and hazard and safety to achieve an acceptable level. This approach has been proposed for many applications of fire safety in existing and historic buildings as described in the sections on NFPA Life Safety Code, BOCA, National Building Code, and Wisconsin Historic Building Code. A difficulty is that the numerical tradeoff concept in fire risk indexing is not intuitive for many code officials.

Performance-based fire safety will generally require the services of a fire protection engineer for each application to assess compliance with agreed-upon fire safety objectives. This is an appropriate procedure for world-class heritage buildings or others with the economic resources necessary to optimize objectives. Adequately protecting the buildings from fire will likely afford a level of life safety that is greater than the social norm implied by current buildings codes. For the vast proportion of historic buildings, performance-based fire safety as presently practiced is cost prohibitive.

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Appendix B

Fire Testing Laboratory Certifications
Nationally Recognized Testing Laboratory (NRTL)

FIRE TEST LABORATORY CERTIFICATIONS

Part I is from the October 2001 *Draft Report of the Accrediting Independent Fire Testing Laboratories Guide*. The document was prepared by the Science Advisory Committee of the National Association of State Fire Marshals and their staffs. The information was deleted from the final report because it was outside of the scope of the accreditation report. However, its explanatory narrative provides important context for understanding the fire testing process in the U.S.

Part II is the Final Report. Unlike the draft, it focuses only on the accreditation process.

INTRODUCTION

Part I. DRAFT PROCEDURES FOR DEVELOPING FIRE TEST STANDARDS

- A. Test Standards
- B. Types of Standards Developers
- C. ANSI and Consensus Development
- D. Procedures Followed by Various Private Sector Organizations (5 Models)
- E. Conformity Assessment
- F. Product Certification
- G. Disclosure of Test Data

Part II. ACCREDITING INDEPENDENT FIRE TESTING LABORATORIES – A Guide for State Fire Marshals and Their Staffs

- A. Scope of the Guide
- B. Introduction
- C. Requirements for Accreditation
- D. Types of Accreditation Bodies
- E. Criteria to Judge Laboratory Credibility
- F. National Cooperation for Laboratory Accreditation (NACLA)
- G. International Coordination
  - APPENDIX: Accredited Testing Laboratories

Part III. ADDITIONAL INFORMATION

- A. Research and Testing Laboratories
  - (1) Fire-Research Laboratories
  - (2) Fire-Testing Laboratories
  - (3) Laboratory Certification
- B. Use of Unlisted Products

IINTRODUCTION

Parts I and II of this appendix have a two-fold purpose:

- To provide an overview of the procedures followed by various organizations for the development of fire test standards.

- To describe how testing laboratories are accredited and the available accreditation standards, along with criteria for judging the credibility of the laboratory and its accrediting body.

II. PROCEDURES FOR DEVELOPING FIRE TEST STANDARDS

A. Test Standards

Private sector organizations usually write fire test standards, which are then adapted by government agencies. (These are categorized below, under "Procedures Followed by Various Private Sector Organizations.")

Test method standards define the process or procedures to be used to assess the performance or other characteristics of a material, product, or assembly. Contrast these with other types of standards:

- Product standards, which concern a product or a related set of products. These establish qualities or requirements to ensure that it/they will function safely or effectively.
- Process standards, which specify requirements to be met by a process (such as an assembly line operation), so that it can function effectively.
- Interface standards, which have to do with the compatibility of products. An example would be a standard for the point of connection between a telephone and a computer terminal.

Although some standards are voluntary, the test standards of concern to readers of this guide are usually mandatory—those that have been adapted as part of a code, rule, or regulation by a government body.

According to the International Organization for Standardization, "Standards are documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes, and services are fit [in the sense of suitable] for their purpose."

For the certification program to have validity, the standards chosen should have these characteristics:

- They should specify accurate and reproducible methods of testing for the specific characteristics.
- They should be clearly written and be capable of being uniformly interpreted.
- They should specify all of the characteristics and requirements that are necessary to define the properties of the product or its performance.

B. Types of Standards Developers

Both government agencies and private organizations write test standards. This guide focuses mainly on the private agencies that get involved in this type of standard setting.

Government agencies: When test standards are written by government agencies in the United States, staff personnel do the writing, and procedures follow those established by administrative law. Draft documents are made available for public comments and public hearings. In many cases, government agencies have policies of adopting existing standards from private sector organizations, where appropriate. In contrast to the United States, most other countries use test standards produced by their own government or by international standards-developing organizations.

Private sector organizations: With private sector organizations, the process varies, in that standards may be written by either staff or a committee of volunteers, and the process may be closed to public input. Some of these organizations only develop standards, whereas others develop standards and conduct tests.

C. ANSI and Consensus Development

For more than 80 years, the American National Standards Institute (ANSI) has served as the administrator and coordinator of the U.S. private sector's voluntary standardization system. Its publication *Procedures for the Development and Coordination of American National Standards* outlines the three methods of accreditation that will be outlined below.

ANSI does not develop American National Standards (ANS), of which there are close to 15,000. "A national standard is defined by ISO/IEC [Guide 2] as a standard that is adopted by a national standards body and is made available to the public." Rather, it facilitates development of standards by establishing consensus among qualified groups—more than 175 of them. ANSI's guiding principles—consensus, due process, and openness—govern three methods of accreditation: organization, committee, and canvass. These are described on the ANSI Web site (www.ansi.org) as follows.

- Accredited organization method. This method is most often used by associations and societies with an interest in developing standards. Participation on the consensus body is open to all interested parties, not just members of the association or society. This is the only method of consensus development that requires the standards developer to develop its own operating procedures—in line with section 2.2 of the ANSI Procedures.

- Accredited standards committee method. The committee method is most often used when a standard affects a broad range of diverse interests or whether there are several associations or societies with similar interests. These committees are administered by a

secretariat. That is an organization that takes responsibility for providing administrative oversight of the committee's activities and ensuring compliance with the pertinent operating procedures. These committees have the choice of adopting the procedures in Annex A of the ANSI Procedures or may follow the requirements in section 2.2 of those procedures.

- Accredited canvass method. The term *canvass* refers to a method of obtaining input by the users of standards when a new or revised standard is needed. Users may include industry, consumer groups, insurance representatives, government agencies and regulatory authorities, trade associations, and advisory groups.

- In the canvass method, the standards developer identifies those who are directly and materially affected by the activity in question. It then conducts a letter ballot, or *canvass,* to determine consensus on a document. A biweekly publication, *ANSI Standards Action*, announces the canvass so that other interested parties might participate. Canvass developers provide ANSI with internal procedures used in developing the draft American National Standard. However, the due process used to determine consensus begins after the draft standard has been developed. Annex B of the ANSI Procedures governs standards developers using the canvass method.

Canvass participants then may be selected for a standards technical panel, which reviews the product standard material and votes on whether it should be processed for approval as an American National Standard.

D. Procedures Followed by Various Private Sector Organizations: NFPA, ASTM, FM, UL (ICBO & UBC prior to consolidation)

There are five models for private sector organizations that develop fire test standards or codes (that is, codes in the sense of applications of standards):

1. Committee written, completely open process, standards development only
2. Model building code organizations written
3. Staff written, partially open process, separate standards development and testing
4. Staff written, partially open, combined standards development and testing
5. Staff written, closed process, combined standards development and testing

1. Committee written, completely open process, standards development only.
Examples: NFPA International, ASTM

In the committee written model, committee membership is open to anyone interested and qualified. Committee members, who are volunteers, address public comments at various stages in the standard's development. These organizations develop standards only—they do not conduct any tests.

NFPA is an example of a completely open, consensus based process. More than 6,500 volunteers serve on 225 technical committees that develop NFPA's codes and standards.

2. Model building code organizations written. Example: ICBO

Model building code organizations write and submit codes that are open for public comment through public hearings. Membership is restricted, and only members of the organization (such as building code officials for the International Conference of Building Officials) are eligible to vote. These organizations develop standards only—they do not conduct any tests.

3. Staff written, partially open, separate standards development and testing. Example: UBC-Evaluation Service (ES)

Like the above two models, this one reflects organizations that only develop standards or codes and do not conduct any tests. Membership takes the form of a by-invitation-only evaluation service committee of building officials. The committee reviews drafts, accepts public comments and testimony at public hearings, and recommends for or against adoption. This procedure has the advantage of being capable of responding quickly to new products and technological developments. It is comparable to some programs in Europe.

4. Staff written, partially open, combined standards development and testing. Example: Underwriters Laboratories (UL)

In the case of Underwriters Laboratories (UL), which is a not-for-profit safety testing and certification program, membership on advisory councils composed along industry lines, such as the Fire Council, is by invitation. These council members comment publicly as standards are being developed, but the process is private. A mail canvassing process is used when UL is seeking ANSI recognition for a test standard. UL also forms technical advisory panels on selected topics.

In 2000, ANSI named UL an "audited designator." This authorized UL to self-designate its "standards for safety" as American National Standards. As a result, UL no longer must submit its standards to the ANSI Board of Standards Review for review before publishing the document as an American National Standard.

5. Staff written, closed process, combined standards development and testing. Examples: Factory Mutual, university and industry laboratories.

These organizations have staffs that develop test standards and conduct tests, and the standards development is closed to the public, although the client has input into the test protocol. Where a particular building project is involved, the authority having jurisdiction may also have input on the test protocol. Generally, test protocols are developed for unique situations where existing standards are not applicable or do not exist.

An example is Factory Mutual Research, a not-for-profit research and testing organization that is managed by FM Global.

E. Conformity Assessment: NVLAP

"Conformity assessment" is defined in ISO/IEC Guide 2 as "any activity concerned with determining directly or indirectly that relevant requirements are fulfilled." Typical examples of conformity assessment activities are sampling, testing, and inspection; evaluation, verification, and assurance of conformity; and registration, accreditation, and approval. In its layman's guide on the subject, ANSI defines conformity assessment as a "process whereby a product, process, service, or system is evaluated against specified requirements."

Conformity assessment procedures are a way to ensure that the products, services, or systems produced or operated have the required characteristics, and that these characteristics are consistent from one product to another, and so on.

Usually a government agency or a private accreditor, such as the National Association for Laboratory Accreditation Program (NVLAP), formally recognizes the competence of accreditation programs.

Conformity assessments may be carried out by a supplier ("first party"), purchaser ("second party"), or a third party that is independent of the buyer or seller. Either a government agency or a customer may rely on a third party. The supplier may seek it as a way to differentiate its product in the marketplace or to obtain independent feedback.

F. Product Certification

Certification is the process of providing assurance that a product, process, or service conforms to a standard or specification or that a person is competent to perform a certain test. When a supplier obtains certification, it is authorized to use the certifying program's mark (certification mark) and a certificate of conformity (both described below), to indicate that the product, process, or service complies with applicable standards or specifications.

In theory, there are three types of certification: first party, second party, and third party. However, according to the ISO/IEC Guide 2, *Standardization and Related Activities—General Vocabulary,* "certification" refers *only* to "the procedure by which a *third party* gives written assurance that a product, process, or service conforms to specified requirements." Even though third-party certification encompasses the programs that are relevant to this guide, however, the other two types are briefly described below.

The certification body is responsible for assuring that certification is based on three key factors:

1. The results of actual tests of the attributes of the product, process, or service performed by a laboratory or inspection body.
2. The report of inspection of the product, process, or service that is recorded.
3. The furnishing of products, processes, or services under a system of quality assurance, such as those found in ISO 9001, 9002, or 9003, or ISO/IEC Guide 53.

Marking of certification is governed by ISO/IEC Guide 23 and ISO Guide 27. In addition to the "mark of conformity" that appears on the product (and that is registered with the U.S. Patent Office), additional information should be provided for the product:

1. An identification list or trace number to identify the product, the services performed, and limitations to any certification.
2. The applicable standards or specifications to which the product, process or service was certified. (When this is impracticable, however, disclosure can be through another means, such as the product directory.)
3. The testing organization, if different from the certification body.

Third-Party Certification. The producer's claim of conformity may be validated by a technically competent third party that is not under the control or influence of the producer or buyer. The "certifier"—the sponsor of the third party program—may be responsible for collecting the required data, generating test results, or conducting inspections. That is in addition to reviewing the results of those activities and making a final determination of the product's conformance or lack of conformance.

In the United States, ANSI sets the criteria and procedures through Standard Z-34.1 ("Third-Party Certification Programs for Products, Processes, and Services," 1993). All third-party certification bodies also must comply with ISO/IEC Guide 28 and ISO/IEC Guide 40. Their internal quality system and audit procedure must meet the minimum requirements of ISO/IEC Guide 56.

First-Party Certification. This is also called self-certification or a manufacturer's or supplier's declaration of conformity. A manufacturer or supplier is declaring that the product meets one or more standards based on (1) the manufacturer's confidence in the quality control system, or (2) the results of testing or inspection the manufacturer undertakes or authorizes others to undertake.

Another ANSI Standard, Z-34.2 ("Self-Certification by Producer or Supplier," 1987), applies here. At the international level, the International Standards Organization (ISO) offers Guide 22, *General Criteria for Supplier's Declaration of Conformity*.

Second-Party Certification. In this case, it is buyers who require and certify that the products they wish to purchase from suppliers meet one or more standards. The buyer sets the certification requirements for companies wishing to become suppliers to it.

G. Disclosure of Test Data

An issue that has not yet been addressed here concerns disclosure of test data. A specific concern is the unacceptable performance of samples.

Test data is considered the property of either the product's *supplier (*such as the manufacturer, assembler, or distributor) or the testing laboratory and is considered proprietary. (The supplier is responsible for assuring conformity with all requirements of the referenced standards or specifications.) Requests for test data must be directed to one or the other. It is common for the testing laboratory and the customer to have a

contractual agreement stating they will maintain confidentiality and refrain from disclosing third-party information obtained in confidence.

However, it should be possible to purchase or otherwise obtain a copy of the appropriate standard to which the product is required to conform.

STRUCTURAL FIRE PROGRAM JOB DESCRIPTIONS

This chapter provides a general description of the National Park Service structural fire program organization and job responsibilities. The program was established in 2002 to address structural fire issues throughout the over 30,000 structures that are the responsibility of the National Park Service.

1. National Level Positions and Responsibilities

The National Structural Fire Management Office provides overall direction and coordination for the NPS Structural Fire Program.

1.1. Branch Chief, Structural Fire

The Branch Chief, Structural Fire reports to the Division Chief of Fire and Aviation Management within the Associateship of Visitor and Resources Protection. The Branch Chief is responsible for setting overall program goals and standards and for providing oversight of the national program. This position also assures coordination with each of the seven regions, ensuring that NPS policies and procedures address the unique and specific needs of each region to the extent possible.

1.2. National Structural Fire Prevention Officer

The National Structural Fire Prevention Officer reports directly to the Branch Chief, Structural Fire and is responsible for setting servicewide fire prevention policies and goals. Responsibilities include establishing policies for the inspection, testing, and maintenance of fire detection and suppression systems; establishing policies for annual fire inspections; and developing strategies to protect resources, while maintaining the historic integrity of structures and developing servicewide structural fire prevention and education plans.

1.3. National Structural Fire Operations Officer

This position reports directly to the Branch Chief, Structural Fire and is responsible for setting servicewide structural fire operations, training, and certification policies and goals. Responsibilities include establishing policies for parks with structural fire response capabilities that meet or exceed the requirements of NFPA and OSHA for emergency first responders. This person will also establish training and certification criteria for all parks that maintain response capabilities.

2. Denver Service Center Positions and Responsibilities

2.1. Fire Protection Engineer (FPE)

The FPE is a licensed professional engineer who demonstrates sound knowledge and judgment in the application of science and engineering to protect the health, safety, and

welfare of the public from the impacts of fire. The FPE provides technical guidance and oversight regarding fire protection issues to the Regional Structural Fire Manager and the national office.

3. Regional Level Positions and Responsibilities

3.1. Regional Director

The Regional Director is the Authority Having Jurisdiction (AHJ) for all matters pertaining to structural fire safety in their region.

3.2. Regional Structural Fire Manager (RSFM)

Each region will have a Regional Structural Fire Manager assigned to carry out the day-to-day duties of overseeing the structural fire protection programs at each park. The Regional Director should delegate AHJ duties to this person. This position is the Subject Matter Expert (SME). As the delegated AHJ, they have direct oversight and responsibility for all structural fire matters within the region.

3.3. Regional Structural Fire Prevention Specialist (RSFPS)

The RSFPS is required to have extensive knowledge of fire science and prevention concepts. This position provides technical assistance to park management for project reviews, fire and life safety building inspections, fire protection systems, and final acceptance testing of new systems. This position also serves as a resource consultant for structural fire safety, education, and training programs in the parks.

4. Park Level Positions and Responsibilities

4.1. Park Superintendent

The Park Superintendent shall be accountable for the park's structural fire program, the creation and upkeep of the Park Structural Fire Management Plan, and park compliance with NPS policy on structural fire management. The Superintendent will appoint in writing a Park Structural Fire Coordinator (PSFC). Should the Superintendent wish the PSFC to have AHJ authority, he/she will request this from the Regional AHJ.

4.2. Park Facility Maintenance Chief

The Park Facility Maintenance Chief is ultimately responsible for ensuring that all fire detection and suppression systems are inspected, tested, and maintained (ITM) in accordance with this manual and industry requirements/guidelines by personnel who are properly trained and certified. Park Facility Maintenance Chiefs should consider resource pooling with other parks and the region to accomplish these requirements.

4.3. Park Structural Fire Coordinator (PSFC)

Each park is required to have a Park Structural Fire Coordinator (PSFC) who is designated by the Park Superintendent. The PSFC serves as the primary point of contact within the park for structural fire issues. Additional responsibilities may be delegated to the PSFC by the Park Superintendent. This position is mandatory for each park regardless of size or function.

Larger parks may have resources for other positions in fire prevention or as emergency first responders. These positions are listed in detail below.

4.4. Park Fire Prevention Officer

This position may reside in any park, regardless of whether or not the park maintains a structural fire response capability. Responsibilities include reviewing new and proposed fire codes, ordinances, and other legislation; implementing a public education campaign for visitors, park employees, and other park partners to help prevent fires; and evaluating inspection reports, forms and checklists related to structural fire for completeness and accuracy. The Fire Prevention Officer must be familiar with applicable codes, agency standards, policies and procedures, and must be able to ensure that information contained in forms and checklists is concise, correct, and addresses all pertinent issues. They must also be able to implement a permit process and evaluate consequences of improper enforcement.

4.5. Park Fire Inspector

This position may reside in any park, regardless of whether or not the park maintains a structural fire response capability. Responsibilities include ensuring life safety and preservation of buildings through a thorough inspection and code enforcement process. This person must be able to research codes, apply them to real life situations, document findings, and communicate the findings to appropriate personnel. The position requires a basic understanding of fire behavior, including flame spread, smoke development, ratings of contents, interior finishes, building construction elements, decorations and decorative materials, furnishings, and safe housekeeping practices.

4.6. Park Structural Fire Chief

This position is only found in parks that maintain structural fire engine companies as first responders. This position must have experience in structural fire and program management sufficient to allow the development of structural fire programs that comply with applicable guidelines. They are responsible for ensuring the safety of firefighters and the effectiveness of the response. This person must also be familiar with budget procedures, revenue sources, and funding mechanisms of the agency and be capable of creating program budgets that reflect the unit's need, organizational goals, and budget guidelines.

The Park Structural Fire Chief must accurately evaluate park fire protection systems and equipment provided for each of the park's buildings and facilities and determine whether they are appropriate and installed in compliance with applicable codes and standards. This evaluation should include ongoing observation of the structures, potential hazards, and fire protection systems. The evaluation must also identify and document

deficiencies and report them according to NPS policies. The Chief must also be able to perform code compliance evaluations for issues like emergency vehicle access, required fire flows, and hydrant location and spacing.

4.7. Park Chief Fire Officer(s)

This position is only found in parks that maintain structural fire engine companies as first responders. Park Chief Fire Officers may act as the Fire Chief in his/her absence. Park Chief Fire Officers should have some of the same skills as the Park Fire Chief, but may have less experience in some areas. While the Park Fire Chief will focus mainly on budget and policy issues, Park Fire Officers will be the primary on scene incident commanders for most major emergencies in the park. Fire Officers may function at the Assistant Fire Chief level with emphasis on managing programs such as training, operations, or prevention, or as Battalion Chief's level in charge of emergency response and structural fire programs in a park division or area.

4.8. Engine Company Officer

This position is only found in parks that maintain structural fire engine companies as first responders. Engine company officers are often the first fire officers on the scene of any emergency. Proper training and experience for these personnel will ensure an effective response that applies best practices and ensures crew safety at the emergency. The company officer is responsible for quickly sizing up the emergency, making personnel assignments, requesting resources, and taking direct action to mitigate the emergency. Engine Company Officers may also be qualified to conduct live fire training in accordance with NFPA 1403.

4.9. Fire Apparatus Driver/Operator

This position is only found in parks that maintain structural fire engine companies as first responders. Driver Operators (DOs) must get the crew and apparatus to the scene of an emergency safely and in a timely manner. DOs must maintain appropriate licenses as required by their state licensing authority for the type(s) of vehicles(s) they operate. Once on scene, the DO must be able to determine proper water flow through the use of friction loss formulas. The DO must be able to determine the amount and the availability of water supply and how that will affect overall fire operations. The DO must be familiar with the fire apparatus, pump, and the tools and equipment carried on the apparatus. The DO is responsible for the maintenance of these items and ensuring their ability to operate in an emergency.

4.10. Structural Firefighter

This position is only found in parks that maintain structural fire engine companies as first responders. A Structural Firefighter responds as a member of the fire crew to assist in fire and emergency operations. The Firefighter may be responsible for handling fire streams, operating fire hydrants and fire department connections, forcible entry, ventilation, search and rescue, and other emergency operations as required. The position will assist in the maintenance of the tools and equipment on the fire apparatus. They will attend drills and training as required by this manual and park policy.

Fire Suppression (Operations)

1. Introduction

1.1. General

Statistically, fire departments in the United States respond to a fire every 24 seconds. Because of this, fire suppression is a critical component that every park must consider and address in their structural fire management plan. Operations is typically responsible for a broad range of all-hazard/all-risk responses including, but not limited to, fire suppression, extrication, hazardous materials, mitigation of disasters, and rescue activities. As such all NPS units shall address their fire suppression needs in their structural fire management plan.

1.2. Levels of Service

NPS units are extremely diverse and can be found in highly developed areas and some of the country's most remote locations. As such, parks have a range of fire suppression services they can choose from to meet their structural fire suppression needs. Levels of service can be seen as being on a sliding scale depending on the staffing and resources a park has at any given time. A park may operate using several service levels at one time because of complexity issues or because of its size. Whatever level is chosen, integration of that service level must be incorporated into the park's fire management plan and clearly understood by the park management team.

1.2.1.

Level One: Localized Service by Agreement or by Fee

Description:

These are parks that do not routinely experience structural fire events and are not outfitted with the necessary equipment or fire engines to provide service for the park. The park relies solely on local fire departments and may be required by those departments to pay for their services. Service may be guaranteed by agreement, law, or by state-county-city mutual aid agreement. As a part of the service, the local fire department may conduct inspections, test fire hydrants, perform evacuation drills, develop evacuation and pre-plans, respond to alarms and calls, and handle any incidents directed to them.

Response to incipient fires is handled at the park level. Park emergency SOP's for these types of incidents is known by all employees, practiced, reviewed annually, and are mentioned in the park's Structural Fire Management Plan. Training and safe use of portable fire extinguishers is provided for all NPS employees, seasonals, partners, and cooperators. Emergency notifications are known and updated annually.

Required Resources:

Parks may be required to enter into an agreement for service. In some municipalities, agreements are not required as fire protection is guaranteed through local or state legislation, policy, or governmental agreement. The park shall ensure coverage is provided and, if an agreement is not required, has a memorandum to file identifying how service is provided. The park maybe required to pay for services. The park must have the fiscal resources to cover costs for service, agreement, or contract, if required by the service-providing agency.

Service:

Parks should provide annual orientation to external fire personnel and ensure that emergency response personnel know how to handle cultural or historic resources managed by the park, which require special protection or handling.

1.2.2.

Level Two: Partnership Operations

Description:

These are parks that do not routinely experience structural fire events and are not outfitted with the necessary equipment or fire engines to provide service for the park. The park supports local fire department resources by allowing their employees to serve on their departments as paid staff members with all of the rights and privileges of being an NPS employee. In turn, local departments frequently wave service fees for responses which occur within the park. How a park uses this level of services varies. In some circumstances, a park may decide to keep their employees in pay status for the majority of the incidents they respond to as a local firefighter or whenever the incident occurs within their normal work schedule. In other examples, employees are only covered in federal pay status for responses on park lands or within the parks primary geographic area of interest. Employees responding to incidents outside this geographic area do so as volunteers and are not covered by the NPS.

As with level one services, response to incipient fires is still handled at the park level. Park emergency SOP's for these types of incidents is known by all employees, practiced, reviewed annually, and are mentioned in the park's Structural Fire Management Plan. Training and safe use of portable fire extinguishers is provided for all NPS employees, seasonals, partners, cooperators. Emergency notifications are known and updated annually.

Required Resources:

Employees operating under this service must comply with all state training and certification requirements. NPS training may be used, if reciprocity is granted by the state. Personnel operating under NPS certifications must comply with Chapter 12, *Training and Certification*. In addition, all personnel must comply with agency medical and fitness

requirements and must be fit tested for SCBA use. Consult supporting chapters for details.

Service:

These parks rely solely upon local or state authorities to provide structural fire suppression response. Park employees are only available some of the time and are there primarily to support local resources when staffing is available.

1.2.3.

Level Three: Fixed or Portable System Operations

Description:

These are typically parks which do not routinely experience structural fire events and rely upon local resources that have a significant response delay due to distance and are not equipped with NPS fire apparatus. Because of significant natural, cultural, and/or historic resources, and the potential threat to park visitors, the park has committed to provide rapid initial response to save lives and limit fire growth. Fire suppression activities are initiated directly from hydrants/hose boxes, portable pumps, or fixed systems within a structure, such as standpipes.

Park employees may be called upon to perform exterior fire attack on structures, limited interior operations to check fire growth, or to evacuate the structure and/or assist arriving fire personnel with the suppression of a structural or WUI fire. Agency response is limited to fires that threaten structures which have fixed systems that may be used to limit fire growth, exterior operations, or evacuation because of staffing and equipment limitations.

Response to incipient fires throughout the rest of the park is frequently handled at the park level with the use of portable fire extinguishers. Park emergency SOP's for these types of incidents is known by all employees and practiced and reviewed annually. Training and safe use of portable fire extinguishers is provided for all NPS employees, seasonals, partners, and cooperators. Emergency notifications are known and updated annually.

Required Resources:

The park must have the necessary hydrants, fixed suppression systems (standpipes), and/or the appropriate portable pumps to provide the adequate water pressure to provide effective response and safety for park firefighters. Agency and partner firefighters shall be equipped with the appropriate tools, nozzles, and associated gear to safely conduct said service. Firefighters are outfitted with NFPA approved structural firefighter PPE, SCBA, and PASS. NPS employees and partners must meet NFPA 1001, *Standard for Fire Fighter Professional Qualifications* and be certified either through the NPS or the state in which service is being provided. Personnel must comply with agency medical and fitness requirements and are fit tested for SCBA use. Consult supporting chapters for details.

Service:

These parks primarily rely on local or state authorities to provide structural fire suppression response. Park employees and partners are only available some of the time and are there primarily to provide quick attack and to support local resources when staffing and equipment is available. Response is usually limited by the location of hose boxes/fire hydrants, fixed systems, or portable pumps which are provided.

1.2.4.

Level Four: Wildland Urban Interface Operations

Description:

These are parks which frequently do not have the staffing, resources, and the preparedness to serve as the park's primary response to structural fire and all hazard incidents and may only provide structural fire response sporadically. Frequently these are parks which experience a limited number of structural fire incidents, are remotely located with only a limited number of personnel available, and/or have personnel who are frequently engaged in interagency wildland fire calls, staff interagency fire engines, or perform assignments primarily handled by wildland firefighters who come upon or are dispatched to structural fires events, most often vehicle or transportation fires, dumpster, or trash piles.

Required Resources:

The park has a Type III fire engine (or larger) which is outfitted with structural fire equipment, including the appropriate hose, nozzles, and hand tools. Firefighters are outfitted with NFPA approved structural firefighter PPE, SCBA, and PASS. NPS employees must meet NFPA 1001, *Standard for Fire Fighter Professional Qualifications,* and be certified either through the NPS or the state in which service is being provided. Personnel must comply with agency medical and fitness requirements and are fit tested for SCBA use. Consult supporting chapters for details.

Service:

These parks primarily rely on local or state authorities to provide structural fire suppression response. Park employees and resources are only available some of the time and are there primarily to provide quick attack and to support local resources when staffing and equipment is available.

1.2.5.

Level Five: Engine Company Operations

Description:

These are parks which have determined that initial response to structural fire and all hazard incidents is the responsibility of the park. Frequently, these are parks which

experience structural fire incidents or because of their remote location cannot obtain creditable fire suppression services from state, local, volunteer, or career fire departments. The decision to utilize park resources for initial response is due to the number or value of park assets requiring protection, number of overnight occupancies within the park, visitation, isolation, and lengthy response times by cooperating fire service agencies. Park operations are there to provide rapid initial response to save lives and limit fire growth, until additional resources can arrive from the surrounding area. For many of these same reasons, it is not uncommon for parks that operate engine companies to provide mutual aid response to communities surrounding the park, as local resources are also insufficient. NPS personnel engaged in these operations usually play a significant role with providing a broad range of emergency services for the park and occasionally for the surrounding communities, including emergency medical services, hazardous materials emergencies, SAR, technical, swift water, and confined space rescue.

Required Resources:

The park must possess fire apparatus and commit employees, partners, or AD/emergency firefighters to staff the engine for response. Engines can be Type I, II or III and shall comply with NFPA 1901, *Standard for Automotive Fire Apparatus*. Depending on the size of the park, multiple engine companies may be required. Fire engines are outfitted with structural firefighting equipment, including but not limited to hose, nozzles, ventilation devises, and ladders. Firefighters are outfitted with NFPA approved structural firefighter PPE, SCBA, and PASS. NPS employees must meet NFPA 1001, *Standard for Fire Fighter Professional Qualifications,* and be certified either through the NPS or the state in which service is being provided. Personnel must comply with agency medical and fitness requirements and are fit tested for SCBA use. Consult supporting chapters for details.

Service:

The service relies upon a joint response by the park and the surrounding communities to handle its structural fire and emergency needs.

2. Responsibilities

2.1. National Structural Fire Management Office

- Establish servicewide suppression guidelines and requirements for NPS parks or units which participate in fire suppression activities or response to all risk/all hazard incidents.

- Work to ensure the availability of servicewide technical expertise to assist the regional offices and parks in maintaining their fire suppression capabilities.

- Ensure that all Level 4 and 5 suppression operations are thoroughly reviewed on a routine basis. Common deficiencies identified during the review process are used to assist with prioritization of structural fire operations program goals and funding.

- With the support of the regional offices, identify training needs and develop an annual training schedule to agency fire suppression operations.

- Provide structural fire training that meets the standards necessary to support NPS fire suppression operations.

- Establish standard operating policies that provide consistency between the parks and foster the concept of a single fire department.

- Administer and maintain the Structural Fire Data Management System (SFDMS).

2.2. Regional Structure Fire Manager (RSFM)

- Ensure fire suppression operations in the parks meet the requirements set forth in RM 58.

- Identify region-wide fire suppression training needs and relay this information to the national office.

- Support Superintendents with technical expertise regarding the service level the park has chosen and ensure that their fire suppression needs are provided for.

- Ensure that all parks within their region are reporting structural fire events and incidents, including false alarms into IMARS.

2.3. Park Superintendents

- Determine the fire suppression operation level for the park and reflect that decision in the park's Structural Fire Management Plan.

- Ensure that park structural fire suppression operations are in compliance with Director's Order and Reference Manual 58.

- Support operational reviews. Address deficiencies identified during these reviews in a timely manner and report their progress with addressing the deficiencies to the Regional Structural Fire Manager (RSFM).

- Comply with nationally issued SOP's and developed park specific SOP's to cover areas of park necessity or to strengthen national standards which promote efficiency, safety, and fire ground effectiveness.

- Ensure that all structural fire and all hazard incidents, including false fire alarms, dispatched runs that are cancelled, and agency response to incidents outside NPS boundaries by agency personnel or apparatus are reported to IMARS. For details, consult Chapter 3, *Incident Reporting*.

3. Engine Company Operations

3.1. General

3.1.1.

The protection of human life is the primary objective for the NPS and supersedes all other operations. Structural fire is one of the greatest threats to human life with its potential for death, disabling injury, and tremendous emotional and psychological distress. As such, life safety will be the primary responsibility of NPS structural firefighters and structural fire commanders. The following structural fire objectives have been adopted to provide appropriate structural fire planning, training, and response:

- Life Safety – Prevent injury and the loss of human life
- Incident Stabilization – Prevent or reduce damage and destruction of real property and cultural and natural resources. Most fire emergencies will continue to get worse until steps are taken to mitigate the emergency.
- Property Conservation – To the extent possible and with all means necessary without putting firefighters into danger, the NPS fire operations is committed to minimizing the damage to property as much as possible.

3.1.2

Currently, the NPS operates its structural fire suppression program as a mostly "volunteer department." The majority of participants is employed to provide some other service to the agency and is not dedicated solely to structural fire duties and assignments. As such, the National Fire Protection Association (NFPA) standard 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*, clearly identifies the desired operation for NPS structural fire engine companies and therefore will be used as the guiding document when conducting Level Four (Wildland Urban Interface Operations) or Level Five (Engine Company Operations) fire suppression operations within the NPS.

3.1.3.

The Engine Company is the basic unit of a fire district. It provides the primary firefighting agent — water — and the personnel to suppress structural fires. To safely supply and apply water properly, the firefighter must have considerable skill and knowledge.

3.1.4.

The objectives of any fire suppression operations are to:

- Rescue victims
- Confine the fire
- Overhaul the fireground
- Protect exposures
- Extinguish the fire
- Salvage operations

- Provide for ventilation

All of these objectives are carried out in an atmosphere of flame, heat, and/or smoke, which can quickly disorient someone working in this atmosphere and can quickly cause a building's structural elements to deteriorate and collapse. Therefore, it is essential that firefighters understand the nature of fire and the factors that affect its spread, including building construction, type of occupancy, and types of fuel available to the fire.

3.1.5.

Engine company apparatus and equipment are complicated pieces of machinery that require intimate familiarity in order for firefighters to function effectively and quickly. Through consistent training and experience, engine company personnel must acquire knowledge, skill, and judgment in performing the following eight basic operations of fire engine companies:

- Rescue
- Use of initial attack fire hose lines
- Exposure protection
- Support of protective systems
- Ventilation
- Water supply
- Use of backup fire hose lines
- Heavy water stream deployment
- Overhaul
- Forcible entry

It is through regularly scheduled training and real world experience that fire personnel can make the decision on which of these operations need to be accomplished, in what order, and how many personnel will be required to do so.

3.2. Program Requirements

Operating a fire engine company safely and within the requirements identified by the NPS requires establishing and maintaining a complex program. The following standards are based upon NFPA 1720 – *Standards for the Organization and Deployment of Fire Suppression Operations by Volunteer Fire Departments.*

3.2.1.

Organization and Operation

Fire suppression operations shall be organized to ensure that park engine company suppression capabilities include sufficient personnel, equipment, and resources to efficiently, effectively, and safely perform so that response is commensurate with the types of incidents and hazards found in the park. Engine company operations must be clearly identified as an essential function within the park's Structural Fire Management Plan (SFMP [RM 58 Chapter 4]). It is also essential that parks with engine companies meet the following:

- Establish a dedicated financial account to provide annual program support for suppression operations.

- Identify in writing one qualified employee that has the primary duty of overseeing and supervising the program with a clearly defined succession of command responsibilities.

- Each fire engine company is to be organized on a permanent basis and capable of staffing the engine company with the minimum number of trained personnel required to safely respond to a structural fire or any other all hazard incident.

- Each fire engine company must have a defined response area.

3.2.1.1.

Incident Commander (IC)

One individual shall be assigned as the IC. The assumption and identification of this command shall be communicated to all units responding to or involved in the incident. The responsibility for assigning fire companies at an emergency belongs to the IC, who establishes priorities and assigns units based on identified objectives. Once the initial command responsibilities are completed, the IC should begin to obtain progress reports from operating units and evaluate efforts. The initial action plan should then be revised or refined as necessary.

The initial IC shall remain in command, until command is transferred or the incident is terminated. In the event that the IC is not familiar with structural fire suppression tactics, and does not have a clear understanding of fire ground priorities, operational command should be assigned to the engine company officer or the most experienced engine company member on scene.

The IC shall be responsible for the overall safety, coordination, and direction of all activities for the duration of the incident. The IC will ensure that a personnel accountability system is utilized to rapidly account for all personnel at the incident scene.

3.2.1.2.

Safety Officer

Whenever staffing permits, a safety officer should be appointed. The safety officer should be an experienced firefighter or a person with significant knowledge of the type of incident being handled by the emergency providers. The safety officer has the authority to stop any unsafe activities without consulting the incident commander. The safety officer shall report any stoppage of unsafe activity to the incident commander immediately following the action.

The incident commander is responsible for the functions of the safety officer until one is assigned. The safety officer is appointed by the incident commander and should not only be knowledgeable of the functions assigned with that position, but also have the experience and training to recognize unsafe conditions and practices during a fire event or an emergency incident. The safety officer shall be responsible for monitoring conditions throughout the incident, actively engaged with an ongoing risk assessment, and ensuring that personnel adhere to contemporary firefighting safety practices.

3.2.1.3.

Company Officer (or engine captain)

Every NPS engine company or crew shall have a company officer. The company officer shall meet NFPA 1021, *Standard for Fire Officer Professional Qualifications,* standards or be the most experienced member of the engine company. The company officer shall at all times be aware of the identity, location, and activity of each member assigned to the company they are responsible for. In turn, each member of the company shall be aware of the identity of the company officer.

3.2.1.4.

Standard Operating Procedures (SOP's)

The structural fire management office will develop a set of written standard operating procedures that will serve as a foundation to help assure consistent and safe practices and procedures for engine company operations. These SOP's will target specific subjects in detail so that park program managers and firefighters clearly understand critical fire ground procedures designed to enhance emergency and fire ground safety, answer common questions, and provide clarification.

Within the SOP's when the terms "will" and "shall" are used, it means that the guideline must be followed as specified. Variances from the procedures could result in injuries or worst. Terms such as "should" and "could" indicate a desired practice. Individual parks or engine company operations may develop more stringent guidelines that work in conjunction with these SOP's, but they cannot develop or operate from guidelines which are less stringent than those developed by the National Office.

Variance from the nationally developed SOP's is allowed in emergency circumstances. Should operations result in a variance from the established SOP's, the involved parties may be required to explain their actions as the SOP's are based upon NPS directives, which are vetted through nationally recognized and accepted industry practices.

It is the responsibility of every employee, partner, or associate who suppresses structural fires for the NPS to be familiar with the SOP's and any updates that have been issued. It is the responsibility of the park Fire Chief or Engine Company program manager to ensure that park developed additions to the nationally developed SOP's are reviewed and updated.

Nationally issued SOPs can be accessed on the Structural Fire Program web pages on InsideNPS for quick and immediate access to all NPS employees.

3.2.2.

Alcohol Policy

Fire emergencies can occur during times when park employees, partners, or associates are off duty and permitted to consume alcoholic beverages. Because alcoholic beverages can affect judgment and impairment, the NPS has a zero tolerance towards alcohol consumption when responding to or operating on the fireground. This is especially critical with the operation of fire apparatus. The incident commander will have the authority to keep incapacitated members or members that they suspect are incapacitated from participating and shall have the authority to have such persons removed from the scene.

3.2.3.

Pre-incident Plans and Planning

Pre-incident plans are written (or electronic) documents that are designed to provide responders with information that might affect future emergency operations in a building both positively and negatively. Information gathered in pre-incident plans allows firefighters to develop operational plans to address the emergency quickly and minimize building deficiencies and maximize their strengths. Parks are encouraged to have pre-incident plans for all target hazards that have been identified. Pre-incident plans are to be shared with mutual aid departments and should include walkthroughs with mutual aid forces annually.

3.2.3.1.

Target hazards are structures whose building materials and/or contents are combustible, whereby if a fire were to start, a significant loss or damage to the structure or its contents or loss of life could occur. Target hazards are frequently high value, historic, buildings with collections or overnight accommodations. Frequently, these are buildings that if lost or severely damaged, they would represent a significant cultural or historic loss or may have a negative impact to the park's continuity of operations.

3.2.3.2.

The jurisdictions and resources requested to respond to an incident shall be determined by a risk analysis and documented on pre-incident plans.

3.2.3.3.

Park SOP's and pre-incident plan procedures shall clearly state the succession of command responsibilities to help assure a seamless command structure is in place during interagency incidents.

3.2.4.

Staffing

3.2.4.1.

Configuration

The standard operating unit for the NPS is the engine company. An engine company refers to a group of trained and certified firefighters, driver operators, and company officers assigned to a particular piece of apparatus and/or pre-determined response area. Personnel responding to fires and other emergencies shall be properly trained and organized into company units and shall be provided with the apparatus and equipment necessary for their assignments. Basic organizational principles of unity of command, span of control, division of labor, and discipline shall be applied.

3.2.4.2.

Minimum Staffing Requirements for Operations

NPS units operating engine company(s) must ensure that they have a sufficient number of personnel within their program to deploy fire suppression and all hazard resources efficiently, effectively, and safely. Parks can augment their overall staffing needs by integrating their program with local resources, ensuring that the minimum staffing requirements for incident response can be met, i.e. an NPS engine arrives on scene with 3 firefighters and are met by 2 volunteer firefighters from a nearby community. At minimum, parks must have the following:

- Level 1 and 2 Service Operations – levels are determined by the local or state agencies providing service.
- Level 3 Service Operations – 2 firefighters (per assignment or hose line).
- Level 4 and 5 Service Operations – 1 certified engine company fire officer, 1 fire apparatus driver operator, and 2 firefighters.

3.2.4.3.

Minimum Staffing Requirements for Incidents

Engine company staffing requirements are frequently dictated by events occurring in the field and the type of incident involved. For example, a successful response to a reported dumpster fire may be accomplished with a three person engine company.

It is recommended that the minimum staffing level necessary to provide response to residential or building fires is a crew of four personnel. This determination is based upon

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Table 4.3.2 Staffing and Response Time

Demand Zone[a]	Demographics	Minimum Staff to Respond[b]	Response Time (minutes)[c]	Meets Objective (%)
Urban area	>1000 people/mi^2	15	9	90
Suburban area	500–1000 people/mi^2	10	10	80
Rural area	<500 people/mi^2	6	14	80
Remote area	Travel distance ≥ 8 mi	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

[a] A jurisdiction can have more than one demand zone.
[b] Minimum staffing includes members responding from the AHJs department and automatic aid
[c] Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table.

recommendations from NFPA 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments,* and outlined in the following table:
These staffing requirements constitute only the minimum levels necessary to operate safely and effectively. Minimum engine company staffing levels can include members from the involved NPS site and personnel responding to the incident through mutual or automatic aid. The recommended staffing level represents the minimum required to conduct interior operations. Defensive operations may involve a crew less than 4 people.

3.2.4.4.

Initial Attack Time

Once on scene, the assembled engine company members should be able to safely commence initial attack within 2 minutes for 90% of their calls.

3.2.4.5.

Staff Performance Requirements

NPS employees, partners, or associates participating in suppression activities must comply with training, medical, and fitness requirements identified in Reference Manual 58.

3.2.5

Program Management Readiness Reviews

3.2.5.1

Director's Order 58 states, "Regional and park structural fire programs will be periodically reviewed for quality and effectiveness as required in RM-58." Many of the agencies essential evaluation tools and processes have been consolidated into *Chapter 5*, *Program Evaluations, Audits, Reviews and Investigations.*

Program reviews and assessments will help the agency examine anomalous fire or accident incidents to determine cause, contributing factors, and where applicable, recommend corrective actions. Others emphasize cohesion with agency policy and administrative procedures. All evaluation tools, regardless of type, will assist the service with identification of program shortfalls or weaknesses, reevaluation of agency policy and consider revision, enhance employee safety and provide protection to the resources we have been charged to safeguard.

3.2.5.2

Because of the inherent dangers and liability associated with fire suppression activities, parks which engage in fire suppression activities will be audited at a least, every (7) years. Program audits may be initiated at either the regional or WASO level.

3.2.5.3

Because of the high risk/low frequency nature of structural fire events within the NPS, parks engaged in the suppression of structural fires shall have a fourth program element

(in addition to audit, assessment and analysis) to their audit, a drill assessment. The drill assessment contains a series of skill proficiency drills which must be demonstrated by park firefighters. The purpose of this special assessment is to assess the parks ability to provide basic response and safety in the event of an actual fire emergency. As the purpose of the drill is to evaluate employee performance, training evolutions which are used to evaluate performance will be provided to the park 30 days prior to the schedule program review. Findings from the skill proficiency review will be included in the final report.

3.3.

Fire Suppression Operations

Despite our best efforts to prevent fires, they continue to occur. To save lives and protect property, the following incident priorities in section 3.1.1 are established to help direct suppression operations.

The need to save lives is always the first consideration, however it may not always be the first action required. In some cases, the best way to protect the occupants of a burning building is by mounting a rapid and effective fire attack that knocks the fire down, thereby assisting rescue personnel in searching the structure for occupants.

3.3.1.

Initial Firefighting Operations

- Fire suppression efforts will be coordinated with ventilation to help control fire growth and improve conditions within the building to support fire ground operations.

- When smoke and or fire is showing, a reliable water source should be established through the use of a hydrant, drafting from a static water source, or a tanker shuttle operation. This will not prohibit parks from implementing “fast attack” operations without an established water supply, provided the park or engine company has a SOP to supply the initial attack engine with water should tank water be insufficient for extinguishment.

- An attack line of a minimum of 1 ½” double jacket hose shall be deployed for all structural fires, including vehicle, trash and dumpster fires. If the structure is larger than 3,000 square feet, deployment of a 2 ½” double jacket hose as soon as resources allow is encouraged. A backup or safety line of sufficient size should be deployed for working fires, as soon as resources permit.

- Personnel accountability shall be maintained by the incident commander or designee, see section 3.5, *Firefighter Accountability*.

- The first engine company officer who arrives on scene shall be the incident commander and shall establish command. The engine company officer shall remain in command, until command is transferred or the incident has been terminated. Whenever command is transferred, it shall be announced over all fire ground frequencies and communicated to dispatch.

- The fire officer on the first arriving engine shall conduct an initial size-up and will give a report on conditions. The incident size-up will include a 360 degree walk around. In addition to establishing command and conducting the initial size-up report, the fire officer shall determine the initial strategic mode, which will either be offensive or defensive. Whenever fire command (incident commander) determines that fire ground operations need to transition from one strategic mode to another, it shall be announced on all fire ground frequencies and communicated to dispatch, i.e. switching from offensive to defensive mode.

- If the building is equipped, support fire suppression systems, i.e. sprinkler systems, with adequate water supply and pressure at the earliest possible opportunity.

3.3.2.

Defensive Operations

3.3.2.1.

Defensive operations are intended to isolate or stabilize an incident and keep it from expanding. Frequently, these types of operations are performed from the exterior of the structure and are based on a determination that the risk to personnel exceeds the potential benefits for offensive actions or the resources on hand are insufficient. Sometimes defensive operations occur within the threatened or involved structure, as firefighters or emergency response teams (ERT) attempt to control fire spread or are performing evacuations, while initial attack resources are in transit. Defensive operations may include limiting fire spread, evacuation, indirect attack from the exterior of the structure, exposure protection, or may be part of strategic transition between offensive and defensive operations because of rapidly changing fire conditions that threaten firefighter safety. Other factors which may necessitate a defensive operation include:

- No threat to life or the occupants are not savable
- Property is not salvageable
- Danger of structural collapse

3.3.2.2.

Personnel, including employees, partners, AD hires, or agents of the service who are engaged in defensive operations must comply with the standards established within RM-58, *Structural Fire Management*, including Chapter 10, *Training and Certification*. Personnel engaged in defensive operations, including ERT's, shall be equipped with the appropriate PPE, SCBA and PASS devices. In addition, personnel engaged in Level 3 services must comply with standards identified in section 3.3.5, *Hose Boxes, Portable Pumps, and Fixed Systems.*

3.3.3.

Offensive Operations

Offensive operations used in structural firefighting usually mean deploying resources for interior operations to accomplish incident priorities. Rescue and fire extinguishment are

typically the priority objectives, and in many cases, these objectives are done simultaneously. Offensive operations shall be organized to ensure that at least four members are assembled before interior fire suppression operations are initiated. Two firefighters can engage in offensive actions, while the other two can serve as the Rapid Intervention Crew (RIC), which is positioned outside the IDLH. Interior operations may be permitted with less than 4 people, if there is a reasonable belief that the structure is occupied and a potential rescue could be made, preventing loss of life or serious injury. See section 3.4, *Rapid Intervention Crews*. While working within a hazardous area, employees will work in teams of two.

3.3.4.

Sustained Operations

Most NPS structural fire suppression operations and engine companies are limited in capability to provide only for initial attack and lack the human and equipment resources necessary for sustained operations. It is essential for parks that engage in fire suppression activities to develop and maintain agreements with local departments to ensure that adequate personnel and resources can be obtained to provide for sustained operations. Parks or NPS units operating fire suppression programs are strongly encouraged to regularly train with their local partnerships to support coordinated operations that are efficient, effective, and safe during emergency incidents.

3.3.5.

Hose Boxes, Portable Pumps and Fixed Systems

Agency response is generally limited to fires that threaten structures which have fixed systems (i.e. stand pipes), are close to fire hydrants, or due to the lack of fire apparatus, can easily be supported with portable pumps which may be used to limit fire growth, conduct exterior fire operations with limited personnel, or assist with building evacuations. Decisions to implement such systems are usually supported by the remote location of park assets and the delayed response by local fire departments, which could result in the loss of life or extensive property damage. Participating agency personnel or partners could also transition and support responding firefighters.

3.3.5.1.

In addition to other specific requirements listed in 3.3.5.2 and 3.3.5.3, parks using systems like these must comply with the following:

- Employees and partners engaging in said activity must comply with Chapter 10, *Training and Certification,* Chapter 11 A and B, *Medical and Fitness Standards,* and be fit tested for the SCBA being used.

- Employees and partners shall be equipped with appropriate personnel protective equipment, as identified in section 5.3, *Personal Protective Equipment*.

- Fire hoses must be double jacketed structural fire hose that is at least 1 ½" diameter. In compliance with NFPA 1962, *Standard for the Care, Use, Inspection, Service*

Testing and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances, hoses shall be inspected and tested annually.

- Nozzles which are used for structural fire suppression shall meet NFPA 1964, *Standard for Spray Nozzles*, and must be adjustable for a 1 ½" hose capable of flowing 95 gallons per minute (GPM at 100 psi).

- When engaged in the suppression of structural fires, involved personnel must have an established communication system in place.

- Firefighters working within an area immediately around or inside the incident shall work in teams of two or maintain communication with someone outside that area who has the capability to call for assistance, if necessary.

- Parks shall have a standard operating procedure (SOP) for said operations in place and include or reference the SOP in the park Structural Fire Management Plan.

3.3.5.2.

Hydrants/Hose Boxes

Exterior hose boxes (or houses) have historically been used in many parks for exterior or defensive fire suppression operations. Along with the following requirements, the availability of sufficient water supply and pressure are critical to ensure that fire streams are effective and for the safety of firefighters. Water supply and pressure usually restricts operations to the exterior of the building because both elements could diminish to unsafe levels, due to the use of longer hose lines that are necessary for interior operations.

- Hose houses shall comply with NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances* (Chapter 8: Hose Houses and Equipment). This includes the proximity of the hose house to the hydrant, construction of the house, and marking.

- Hose houses shall contain all the required tools (hydrant spanner wrench, couplings, reducers and gated wye). Items must be stored in such a manner that they are protected from the elements and kept serviceable.

- Parks shall have a record of current NFPA 291, *Recommended Practice for Fire Flow Testing and Marking of Hydrants*, which show that hydrants meet the performance requirements.

- Parks shall have FMSS work orders and associated preventive maintenance plans in place for annual hydrant flushing, inspection, and maintenance.

3.3.5.2.

Portable Pumps and Fixed Systems

Portable pumps or fixed systems are typically temporary systems providing limited capabilities, until fire apparatus can arrive on scene and provide the water pressure and

supply for sustained operations. Along with the following requirements, the availability of sufficient water supply and pressure are critical to ensure that fire streams are effective and for the safety of firefighters. Water supply and pressure usually restricts operations to the exterior of the building because both elements could diminish to unsafe levels due to the use of longer hose lines that are necessary for interior operations.

- Water delivery systems must be capable of flowing 95 gallons per minute (GPM at 100 pounds of pressure per square inch (psi).

- Interior operations are not permitted, unless hand lines are supported by NFPA 1901 compliant pumps with an adequate water supply and only when the pump is staffed by an operator who is in communication with fire personnel utilizing fire hoses being supported by the pump.

3.3.6.

Fireground Specific Guidelines

3.3.6.1.

Search and Rescue

A primary and secondary search shall be completed on structures in all involved and exposed occupancies to insure that all occupants have exited the building. Upon the completion of any search assignment, the results will be reported to the Incident Commander. Search and rescue efforts should be extended in the following order:

- Areas most severely threatened by the fire
- The largest number of potential victims
- The remainder of the fire area
- Exposed areas

3.3.6.2.

Exposures and Confinement

Suppression measures shall be initiated that will limit the progression of the fire. Exposures may be considered as uninvolved structures in danger of fire spread or uninvolved areas within the fire building that are in danger of fire spread. Exposure lines shall be deployed as necessary to prevent or limit fire spread. Master streams may be prepared in the event that defensive operations are required. Master streams will not be used on structures when there are fire personnel within the structure.

3.3.6.3.

Property Conservation

After assigning rescue and fire control tasks, it shall be standard practice to keep property loss to a minimum. Salvage operations shall commence as soon as manpower is sufficient. Early salvage operations allow the best chance to protect property.

3.3.6.4.

Ventilation

Ventilation of smoke and heat from exposed areas is a critical fireground function. Proper and timely ventilation will increase survivability of victims, improve visibility, reduce heat conditions and flashover potential, and allow for more expedient fire control. The determination to use vertical, horizontal, positive pressure, or hydraulic ventilation techniques, or any combination thereof, will be dictated by fireground conditions, and by the IC and/or crews assigned to ventilation tasks. Ventilation will be coordinated with fire suppression activities.

3.4. Rapid Intervention Crews (RIC)

3.4.1.

General Rule

It is the agency's policy that whenever employees are operating in a hazardous, oxygen deficient, or IDLH atmosphere that a RIC be established and in place, prior to initiating interior operations. This is more commonly referred to as the OSHA Two In – Two Out requirement. The purpose of the RIC is to have a dedicated team of personnel whose sole mission is to provide quick response to those operating within the IDLH atmosphere, should an emergency occur.

3.4.1.1.

Personnel who have been assigned RIC responsibilities shall be positioned outside the IDLH atmosphere and shall be equipped with the appropriate tools and equipment that would contribute to firefighter rescue. The RIC must actively monitor the status of firefighters operating within the IDLH. While doing this, the RIC may be assigned additional duties, so long as they are able to immediately perform assistance or rescue activities, if called upon. Examples of appropriate additional activities may include:

- Initial incident command
- Stretching hose lines
- Ground level exterior ventilation
- Equipment retrieval
- Control of outside utilities
- Exposure protection and exterior fire attack (if appropriate)
- Placement of ground ladders

3.4.1.2.

When fireground size up has determined that the fire event can be safely and effectively handled with the resources on hand, the driver operator may be counted towards meeting the 2 in 2 out requirement. The officer and engineer must be confident in their water supply and engine performance to support two lines with an engine operating automatically (unattended) for the duration of the potential rescue. The driver operator and the second firefighter must be dressed in full PPE with SCBA, tools, and a charged

hose line at the ready. The engineer may remain at the panel, until the RIC has been requested.

3.4.1.3

Personnel assigned to the RIC report directly to the IC. Depending on the size and complexity of the incident, the IC shall establish one or more RIC.

3.4.2. Exceptions to the RIC Requirement

There are two basic exceptions to the RIC requirement – fire is in the incipient stage or rescue operations are necessary to prevent loss of life or serious injury.

3.4.2.1.

Incipient Stage

The incipient stage is present when fire size is limited to that which could be reasonably controlled by a portable fire extinguisher. These conditions could present themselves early in fire development or following an exterior or defensive operation that has successfully reduced fire development to conditions similar to those found during the incipient stage.

3.4.2.2.

Immediate Action to Prevent Death or Serious Injury

If upon the arrival of the initial attack engine, the company officer or IC reasonably believes that the structure involved may be occupied, and a potential rescue could be made preventing loss of life or serious injury before RIC can be assembled, firefighters may enter the structure to perform a primary search. If at the conclusion of the search, no one has been found and the RIC has not yet been established, the team is to exit the building and conduct exterior operations, until the fire has been knocked down or until a RIC can be established.

This determination must be based on reasonable and justifiable indicators that are present and not general assumptions. Where initial arriving personnel believe a life-threatening situation is present, they may act without a RIC by following these parameters:

- The IC shall notify dispatch that interior operations are being conducted without a RIC and state the reason. For example – “Engine 4 is on scene with a two-story house fire showing, report of occupants on 2nd floor, Engine 4 is going interior without a RIC.”

- Dispatch shall notify all responding companies that entry is being made without a RIC. For example – “Dispatch to all responding companies, Engine 4 is on scene, going to the 2nd floor, attempting rescue without a RIC.”

Should interior operations be enacted prior to having a RIC in place, the IC shall establish a RIC as soon as possible.

3.5. Firefighter Accountability

All NPS sites that utilize personnel to fight structural fire events or have personnel who operate in IDLH atmospheres shall have an employee accountability system in place. Furthermore, parks required to have an accountability system shall train with it annually. The incident commander or operations chief shall utilize the established accountability system so that he/she can maintain an awareness of the location and assignment of all personnel operating at the incident. Overall responsibility for managing firefighter accountability during an incident belongs to the Incident Commander.

In addition to an established accountability system, the following guidelines are also recommended to enhance firefighter safety and accountability:

- The minimum size team when operating in an IDLH shall be two people.
- All teams operating in an IDLH area should go in together, stay together, and come out together.
- Team members working in an IDLH environment should be in contact with each other through voice, vision, touch, or radio.

A call for accountability should be requested whenever one of the following has occurred:

- Any report of a missing or trapped firefighter
- Any change from offensive to defensive
- Any sudden hazardous event, i.e. collapse, explosion, back draft.
- After a building evacuation
- When the fire is declared under control
- Every 30 minutes of elapsed time

3.6. Emergency Evacuation and Mayday

3.6.1.

Evacuations

3.6.1.1.

The emergency evacuation policy is intended for use in situations where a collapse, explosion, or other unintended event requires personnel to immediately leave an area. An emergency evacuation should not be confused with an orderly transition from an offensive to a defensive mode of operation or other non-critical readjustment of personnel or assignments. When an order to evacuate is broadcasted, all personnel on the fire scene shall withdraw to a safe position. For structure fires, this shall be the outside of the building and away from collapse zones. Other types of incidents will require distance for safety, this distance shall be determined by the IC or incident safety officer (ISO). Failure to respond to this message may result in serious injuries or death.

3.6.1.2.

Because of the very nature of this procedure, it is imperative that the evacuation order be used with considerable caution and discretion. Inappropriate use of this message may

result in unnecessary evacuations, delayed operations, potential injuries, and a reduction in the efficiency of operations. In the event of any danger or change in tactics that requires the evacuation of personnel from a structure or to immediately notify all fireground personnel of a high-risk hazard/event that is either about to occur or has occurred, the IC shall do the following:

- Make an “emergency traffic” announcement over the radio broadcasting the evacuation. This order will be repeated several times, i.e. “emergency traffic – evacuate the building.”

- The Incident Commander shall direct one or all of the fire apparatus on scene to sound the evacuation signal, which will consist of a continuous 20 second blast on all air horns.

All personnel SHALL immediately evacuate the structure or area. Under no circumstance shall anyone remain in the hazard area. Following the evacuation, an accountability report shall be taken to ensure that all members are accounted for. When all members have been accounted for and attack plans formulated, operations can be reinitiated.

3.6.2.

Maydays

3.6.2.1.

The rescue of lost or trapped firefighters in a burning building is especially time sensitive. There is a very narrow "window of survivability" for a firefighter who is out of air or trapped. Firefighters who have become lost, trapped, disoriented, or need emergency assistance shall immediately call for a “MAYDAY.” In turn, company officers shall not delay reporting a lost firefighter or inability to account for one of their crewmembers. Until the firefighter is located, the IC should assume that the missing firefighter is lost in the involved building.

3.6.2.2.

The term "MAYDAY" shall be used in the following situations:

- By personnel who are lost, trapped, or in trouble while working in the IDLH area.

- By the company officer, division/group officer, or other member who cannot account for an assigned firefighter who is operating in a hazard zone.

- By a member who witnesses or has confirmed that a firefighter is lost or in trouble.

3.6.2.3.

The term “MAYDAY” is not to be confused with “emergency traffic.” Mayday is reserved for personnel who need to be rescued from the IDLH environment or hazard zone. The term "emergency traffic" shall be used to report other emergencies or high-risk hazards.

3.6.2.4.

The person reporting a mayday shall repeat the term “MAYDAY” three times over the radio. Upon receipt of their MAYDAY report, the firefighter shall, if possible, provide a LUNAR report. At the conclusion of the LUNAR report, the firefighter shall activate their PASS alarm.

- (L) What is your location?
- (U) What is your unit?
- (N) What is your name?
- (A) What is your air supply?
- (R) What rescue/resources do you need?

3.6.2.5.

As resources are being brought to locate the firefighter, it is imperative that fire suppression efforts are not reduced or terminated, as this will only allow the fire to spread and make conditions worse. Personnel on the fireground should maintain their positions or assignments unless directed otherwise by the IC.

3.7. Individual Air Management Program

3.7.1.

Air Management Program

Smoke is filled with numerous life threatening substances, including what are commonly called the toxic twins – hydrogen cyanide and carbon monoxide. In an effort to avoid lasting health issues and reduce firefighter fatalities, the Service has established the following standards:

1. NPS employees, partners, or associates are not to breath smoke from structural fire events, unless absolutely unavoidable. Furthermore, employees are not permitted to enter an area that has smoke or an IDLH atmosphere without first donning an SCBA. If smoke is present, employees are to wear an SCBA.

2. A fit test shall be performed on employees and partners prior to using an SCBA. The fit test will be performed on the unit the employee or partner will be using and shall comply with OSHA Standards, 29 CFR 1910.134.

3. When wearing an SCBA, it is the responsibility of the wearer to manage the unit’s air supply and to thoroughly know the SCBA they are using. The SCBA should be checked prior to use, immediately following use, and at least quarterly throughout the year. It is the responsibility of the person using the SCBA to check the unit’s air supply whenever:

- Your assignment requires you to move to another floor in the structure,
- You move to another room or area inside the structure,
- You pause during your assignment to take a rest break,
- You are about to give a progress report.

4. When filling an SCBA bottle for use at a later time, remember that the bottle is not to be considered full, until the bottle is cool to the touch and reads full.

5. It is the policy of the NPS to have an alarm free fire ground. All low air alarms will be immediately investigated to ensure that no one is in trouble.

6. Parks with SCBAs will provide training to those employees and partners ensuring that they are familiar with the SCBA, its function, and emergency components associated with its use.

3.7.2.

Rules of Air Management (ROAM)

As a part of an overall air management program, and to show compliance with NFPA 1404, *Individual Air Management Program*, the NPS will do the following:

1. When a low air alarm goes off, it notifies the employee, the crew, and everyone on the incident that someone is now consuming air from their reserve air supply.

2. Employees, partners, or associates serving the NPS will exit an IDLH atmosphere before the consumption of reserve air supply begins. As such, you are required to actively manage your air during the event.

3. Activation of the reserve air alarm requires immediate action for the individual and the team. The individual and the crew will immediately take action to ensure that the person with the low air alarm is removed from the IDLH atmosphere. All actions are communicated with the incident commander.

3.8. Fire Service Vehicle Operation

3.8.1.

General

3.8.1.1.

Drivers of fire apparatus shall be directly responsible for the safe and prudent operation of the vehicle under all conditions. When the driver is under the direct supervision of an officer, that officer shall also assume responsibility for the driver's actions. Drivers of structure fire apparatus in the NPS are called Fire Apparatus Driver Operators (FADOs).

3.8.1.2.

FADOs shall obey all traffic control signals and signs and all laws and rules of the road of the jurisdiction that vehicle operates within.

3.8.1.3.

Backing fire apparatus should be avoided whenever possible. Should it be necessary to

back an engine, a spotter shall always be used.

3.8.1.4.

If the apparatus must be backed where other vehicle traffic exists, the apparatus emergency lights shall be operating and the spotter shall wear an approved traffic safety vest.

3.8.1.5.

When backing the engine, the spotter shall provide the operator with directions. Directions should be understood by all parties. Directions can be communicated by radio, voice, or hand signals.

3.8.1.6.

NFPA 1500, *Standards on Fire Department Occupational Safety and Health Program,* requires all FADOs to participate in a medical examination program to ensure that they are medically fit to operate the engine. Anyone operating structural fire engines shall comply with Chapter 11a, *Structural Fire Medical Standards*.

3.8.1.7.

Employees, partners, or associates who are under the influence of alcoholic beverages or drugs shall not operate department vehicle under any circumstance. The NPS has a zero tolerance policy in regards to this issue.

3.8.2.

License

3.8.2.1.

FADO's of NPS structural fire apparatus are required to possess a valid state driver's license for the class of vehicle being operated.

3.8.2.2.

Some states grant exceptions to firefighters with regards to the commercial driver license requirement. NPS operators who do not obtain a state commercial driver license must successfully complete either a state or National Park Service NFPA 1002, *Standard for Fire Apparatus Driver Operator Professionals,* driver program prior to operating structural fire engines.

3.8.2.3.

Employees or partners who are attending a FADO training class may operate engines and apparatus associated with the class as a "trainee," as they are under the direct supervision of a qualified driver.

3.8.3.

Operation

3.8.3.1.

FADOs shall not move fire apparatus, until all persons on the vehicle are seated and secured with seat belts in approved riding positions. The company officer or the driver shall confirm that all personnel and riders on the engine are properly attired and seat belted before the vehicle is permitted to move.

3.8.3.2.

Seat belts shall not be released or loosened for any purpose, while the vehicle is in motion, including the donning of respiratory protection equipment or protective clothing.

3.8.3.3.

Standing or riding on tail steps, sidesteps, running boards, or in any other exposed position is prohibited. One exception to this requirement is when supply hose is being loaded onto the engine. The engine may be operated at slow speeds with personnel riding on the outside of the engine loading hose. This exception can only be utilized with a spotter; the spotter must be able to communicate directly to the driver.

3.8.4.

Emergency Response

3.8.4.1.

FADOs must clearly understand that the safe arrival of their engine and its crew at the emergency scene is their first priority.

3.8.4.2.

During an emergency response, fire apparatus shall not exceed 10 mph over the posted speed limit. Within developed areas, it is recommended that apparatus only exceed the speed limit by 5 mph. During periods of inclement weather, the driver/operator must evaluate changing road conditions and drive at a safe and reasonable speed, which may in fact be slower than the posted speed limit.

3.8.4.3.

During emergency response, FADOs shall bring the vehicle to a complete stop and shall not proceed, until it is confirmed that it is safe to do so:

- At all stop signs, red traffic lights, or when directed to stop by a law enforcement officer.
- When encountering a stopped school bus with flashing warning lights.

- Blind intersections or intersections where the operator cannot see all lanes of traffic.
- All unguarded railroad crossings.

3.8.4.4.

Drivers shall obey all railroad crossing signals and shall not drive around railroad crossing gates.

3.8.4.5.

Overtaking and passing other vehicles during emergency response shall be accomplished with extreme caution. Whenever possible, drive to the left and pass to the left. When operating on multi-lane roadways, drive in the furthest left lane to increase your visibility. Driving as such gives the appearance that you are wishing to pass.

3.8.4.6.

When responding to an emergency, the driver/operator shall coordinate their intended response routes to other departments who are responding as part of mutual aid. This is to prevent collisions at intersections and to coordinate on site arrival with the incident commander or fire command.

3.8.5.

Vehicle On Scene

3.8.5.1.

When stopped at the scene of an incident, fire apparatus should be placed in such a manner that the engine can help protect personnel who are working in the street. The vehicles emergency lights should be activated. At night, the vehicle's mounted floodlights should be used to illuminate the scene.

3.8.5.2.

Personnel working around the engine or near traffic lanes should wear high visibility vests.

4. Special Operations

4.1. Vehicle Fires

Vehicle fires are extremely common with one being reported every 146 seconds. Fires of this type cause approximately 400 deaths and result in more than 1 billion dollars in property damage annually. Because of the extreme dangers these types of fires present to firefighters and the public at large, employees or agents of the park may not engage in the suppression of vehicle fires without complying with the engine, equipment, and training standards identified in RM-58, *Structural Fire Management*.

Vehicle fire suppression and rescue operations shall be considered appropriate for Service Level 4 and 5 parks under the following conditions:

- Personnel are qualified for the positions or assignments given. These standards are set forth in Chapter 10, *Training and Certification*.

- SCBA and PPE for structural firefighting are utilized and suppression personnel are trained and certified in their use. This requirement also stands for personnel engaged in fire salvage and overhaul operations.

- Attack lines shall consist of double jacket structural fire hose and be at least 1 ½" in diameter. Booster lines or wildland fire hose is prohibited. Combination nozzles flowing at least 95 gpm will be used to ensure that fire personnel could protect themselves in the event of an emergency.

- The fire engine must ensure an operating water pressure of at least 100 psi at the nozzle.

- Firefighters are to attack working vehicle fires from the side or oblique whenever possible and from the uninvolved to the involved.

4.2. Trash Piles and Dumpster Fires

The possibility of exposure to toxic and carcinogenic products of combustion and materials in these types of fires is extreme. In addition, the presence of explosive or chemical materials makes fires of these types extremely dangerous and requires strict adherence to agency policies and standards. As a result, trash container fires will be considered appropriate for Service Level 4 and 5 parks, under the following conditions:

- Personnel are qualified for the positions or assignments given. These standards are set forth in Chapter 10, *Training and Certification*.

- SCBA and PPE for structural firefighting are utilized and suppression personnel are trained and certified in their use. This requirement also stands for personnel engaged in fire salvage and overhaul operations.

- Attack lines shall consist of double jacket structural fire hose and be at least 1 ½" in diameter. Booster lines or wildland fire hose is prohibited. Combination nozzles flowing at least 95 gpm will be used to ensure that fire personnel could protect themselves in the event of an emergency.

- The fire engine must ensure an operating water pressure of at least 100 psi at the nozzle.

- Master stream devices may be used, but this technique may present containment problems, as the water used to fill the container may become contaminated with a hazardous substance.

- Parks that utilize wildlife resistant dumpsters are encouraged to train on and

implement a method of safely opening those dumpsters without exposing firefighters to the flames and toxins of the fire.

4.3. Wildland Fires

4.3.1.

General

Wildland fire operations and its associated equipment are significantly different from equipment used to fight structural fires. Wildland fire operations must be carried out in strict accordance with Director's Order and Reference Manual 18, *Wildland Fire Management*, and the Interagency Standards for Fire and Fire Aviation Operations (Red Book).

All engine company members who participate in wildland fire response must possess a current Incident Qualification Card (Red Card) for the position(s) they are assigned to and have the appropriate personal protective equipment (PPE). Arduous duty wildland fire positions will require participation in the Department of Interior Wildland Firefighter Medical Standards Program (DOI-MSP).

4.3.2.

Interface Fire Engine Staffing and Associated Requirements

In addition to those elements identified in section 4.3.1, should a park wish to make their structural fire engine available to support interagency response to wildland/urban interface fire events, the following requirements shall be met:

- Interagency Standards for Fire and Fire Aviation Operations have determined that the minimum staffing requirements for a Type I engine is 4 and for either a Type II or III engine is 3 people. In all cases, one of the firefighters shall be qualified as fire apparatus driver operator.

- All apparatus used shall conform to the laws and regulations of the United States and the authority having jurisdiction.

- All personnel riding on the apparatus shall be provided with seatbelts.

In addition, the park or regional FMO may require the engine to be outfitted with various types of equipment and hose, so that vehicles can work together. Equipment and hose requirements should be based on current NWCG engine typing.

Although structural firefighter PPE can be used during wildland fire incidents for short periods of time, it is designed primarily for interior fire suppression and hazardous material responses and may be heavy and cumbersome. As a result, structure firefighters shall also be equipped with PPE that meets the performance characteristics of NFPA 1977.

4.4. Hazardous Materials

Upon arrival at or dispatch to a hazardous materials incident, trained personnel are expected to recognize the presence of dangerous conditions, protect themselves and the public, secure the area, and call for assistance as soon as conditions permit. Because of the complexity of these types of incidents, all parks are strongly encouraged to have agreements in place, ensuring adequate response, contact information, and an intimate understanding of who the primary responders are for their local or regional area.

Fire suppression personnel who have been assigned hazardous materials response duties may only carry out those duties under the following conditions:

- All engine company members have been properly trained and are issued the appropriate safety gear for the specific operation.

- All methods, procedures, and equipment used to contain, manage, or monitor hazardous spills must be in strict accordance with 29 CFR 1910.120: *Hazardous Waste Operations and Emergency Response,* Director's Order 30B: *Hazardous Spill Response Training, and* NFPA 472: *Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents.*

4.5. Vehicle Extrication

4.5.1.

General

Vehicle extrication is the most common type of rescue performed by fire departments throughout the United States. Because a victim may be trapped within or by a vehicle, and may be seriously injured, proper extrication procedures are essential to prevent further injury, provide assistance with expedited patient's removal and care, and quickly mitigate fire hazards and life safety conditions. Priorities for all vehicle extrications will always be:

- Scene size up
- Stabilize the vehicle
- Gain access to the victim(s)
- Disentanglement and patient management

4.5.2.

Minimum Equipment

- Personnel engaged in vehicle extrication activities must be outfitted with structural firefighting PPE and have SCBAs readily available.

- If no fire is present, personnel participating in vehicle extrication activities must be equipped with two 20 pound ABC dry chemical extinguishers. If smoke or fire is present, then a fire engine capable of flowing water at a minimum of 100 psi to the nozzle through a double jacket structural fire hose must be present. The nozzle must be an adjustable combination or automatic constant pressure flow nozzle.

4.5.3.

Training

Personnel wishing to perform vehicle extrication activities must be certified through either the state they are providing service in or through the NPS National Office as a Firefighter II or a Firefighter I with successful completion of a vehicle extrication course. In addition, the employees involved must be certified in Hazardous Materials Awareness and Operations through either the NFPA or OSHA.

4.6. Boat and Marina Fires

4.6.1.

Training Standards

4.6.1.1.

Motorboat Operators Certification Course (DOI-MOCC)

The DOI-MOCC provides the training required to permit operation of DOI-owned watercraft. The training program reviews minimum requirements for safe operation of motorboats and includes a review of legal requirements, navigation, operations, emergency procedures, rescue, self-rescue, fire suppression and basic seamanship. This course is required for all NPS boat operators, including those who operate fireboats.

4.6.1.2.

Firefighters who work on fireboats or from docks and marines should undergo supervised immersion training in their firefighting gear, including SCBA.

4.6.1.3.

NPS employees, partners, associates, or concession employees who serve as firefighters engaged in boat and marina fires shall be certified through the state in which they are providing service or through the NPS National Office as either a Firefighter I or Firefighter II. Personnel not meeting this standard are not permitted to engage in or respond to structural fire suppression activities.

4.6.1.4.

Parks with marinas and small boat operations should develop site specific training and written and practiced SOPs and/or pre-incident plans that accomplish the following:

- Provides employees with the general knowledge of the vessel types and facilities located within the park or those in which park personnel respond to. Identification of site-specific hazards associated with those marine facilities and vessels.

- Basic boarding and climbing techniques to access boats or structures. Moving conscious and unconscious victims from vessels, moving subjects on ladders and gangways, and on or off boats.

- Water supply for fire pumping operations; connecting hoses to fire boats or stretching hoses from land based engines over docks or water. Connecting hose and apparatus to marine facility water supply sources and deploying fire attack lines for suppression or exposure protection.

- The effects of conducted, convection, and radiated heat on marine facilities or vessel exposures and how to protect them from the fire source.

- Controlling vessel movement with regards to fire suppression activity and the effects of wind and nozzle reactions.

- Develop an initial action plan for a boat or marina fire and coordinate a simulated response with the agency's providing mutual aid support.

- Evacuate a vessel or exposure with the utilization of an accountability system, so that all nonessential personnel are removed from the hazard area.

4.6.2.

Fireboats

4.6.2.1.

NPS fire boats, or those authorized by the NPS, shall be outfitted with hoses, nozzles, and associated gear to suppress said fires and protect the personnel on the vessel. Fireboat pumps must be able to generate 100 psi at the nozzle, so that in the event of an emergency, there is enough water pressure to protect the firefighters on the boat.

4.6.2.2.

Personnel operating from fire boats shall be outfitted with NFPA compliant PPE and SCBAs.

4.6.2.3.

Personal Flotation Devices (PFD)

DOI/NPS policies require all personnel working on watercraft to wear a personal flotation device. Personnel who are engaged in structural firefighting in a marina environment are not required to wear a PFD as the device is not NFPA compliant for heat and fire resistance and will interfere with the employee's ability to wear a SCBA in an IDLH atmosphere. In the event that a firefighter falls into the water, their structural fire PPE and SCBA will have a limited floatation period. Fire personnel working on docks or from fire boats are encouraged to have personnel assigned as lookouts whose responsibility is to maintain surveillance of personnel working from a boat or along docks, so that in the unlikely event a firefighter falls into the water, assistance can be provided immediately. Fire personnel working from a boat should wear a PFD, until such time that they enter the IDLH atmosphere.

4.6.3.

Respiratory Protection for Fire Ground Support Personnel in a Marina Environment

Boat operators or deck hands that are not firefighters, but are providing fire ground support by operating equipment must comply with section 4.9, *SCBA Use-Fireground Support,* when working in an IDLH atmosphere.

4.7. Confined Space Rescue

These operations must be undertaken in accordance with the following conditions:

- The park has identified this as a possible incident scenario within the park and it is identified in the Structure Fire Management Plan.

- The park has written SOPs on these types of incidents and the SOPs and pre-incident plans are kept current and exercised at least once annually.

- Methods, procedures, training, and equipment used in confined space entries or rescue complies with 29 CFR 1910.146.

- Personnel performing confined space entry and rescue are trained and outfitted with personal protective equipment that comply with 29 CFR 1910.146 and NFPA 1951: *Standard on Protective Ensemble for USAR Operations,* and NFPA 1500: *Fire Department Occupational Safety and Health Program.*

- Rapid Intervention crews (RICs) shall be identified and put in place whenever there is a potential for park employees to be entering an Immediately Dangerous to Life of Health (IDLH) atmosphere, including an environment that may be oxygen deficient. Clear guidance for activation is to be spelled out in the park's SFMP.

4.8. Emergency Medical Service

The methods and procedures used during any emergency medical response shall be in accordance with the following:

- Director's Order and Reference Manual 51, *Emergency Medical Services*
- 29 CFR 1910, *Occupational Safety and Health Standards*
- Local or interagency protocol deemed appropriate by the park's EMS authority.

4.9. SCBA Use – Fire Ground Support

4.9.1.

General

4.9.1.1

The following standards are being implemented with the goal of preventing occupational deaths, injuries, or illnesses. As a result, the NPS is establishing training, education, and professional development standards for NPS employees, partners, or associates who are

supporting structural fire suppression activities, but are not directly engaged in the suppression of those fires. Personnel engaged in these types of activities are frequently boat deck hands or boat operators, or are personnel assigned to supportive fire ground roles or are assisting with evacuations. For operations involving confined space rescue, consult your site-specific confined space plan.

4.9.1.2.

Employees, partners, or associates who are using SCBAs under this section shall be fit tested for each type of SCBA facepiece assigned to them or used. Facial hair is permitted, as long as it does not come between the sealing surface of the SCBA facepiece and the face or interfere with the valve function of the mask. Employees and partners must comply with OSHA 29 CFR 1910.134, *Facepiece Seal Protection Standards*.

4.9.2.

Training

4.9.2.1.

Employees, partners, or associates who are required to work in an IDLH atmosphere must be compliant with and have the knowledge and required skills as identified in NFPA 1001, *Standard for Fire Fighter Professional Qualifications, section 5.3.1, Use of SCBA During Emergency Operations.*

4.9.2.2.

Associated skills that the employee must demonstrate competence include:

Donning/doffing of SCBA, inspecting an SCBA for use at an emergency incident, performing emergency operation procedures for an SCBA, and changing an SCBA cylinder (one and two person methods). NPS curriculum skill sheets for Firefighter I and II are to be used.

4.9.2.3.

Completed copies of the associated skill sheets must be documented and kept in either the employees personnel file or with the Fire Chief.

5. Firefighting Equipment

5.1. Fire Apparatus

Fire apparatus are expensive and complicated pieces of equipment. It shall be the responsibility of every NPS site that has fire apparatus to establish a preventative maintenance plan for their apparatus. Records shall be maintained by the park and be kept readily available for program audits or site visits. Each vehicle shall have its own separate log that will document inspections, all maintenance, and repairs. Any fire

apparatus found to be unsafe or non-complaint with NFPA 1911, *Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Fire Apparatus*, shall be immediately taken out of service, until written documentation of its readiness can be provided.

5.1.1.

Inspections

Fire apparatus shall be inspected at least monthly. It is imperative that all apparatus and equipment remain in full operational and ready status at all times. Monthly checks assist the park with identifying and taking corrective actions on any malfunctions, prior to the emergency use of the apparatus or the equipment.

5.1.2.

Fire apparatus shall be returned to full readiness status immediately after returning from a call.

5.1.3.

The National Structural Fire Management Office has created a servicewide database (Structural Fire Data Management System or SFDMS) to maintain fire apparatus inspections; parks are encouraged to use this system. In the event that the park chooses to utilize another system, the park will be required to maintain those files and have them readily available upon request.

5.1.2. Pump Testing

All apparatus that are used to suppress structure fires, including vehicle, dumpster, and trash fires, shall have an annual pump performance test in accordance with NFPA 1911, *Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Fire Apparatus*. Records of these tests will be maintained by the park. It is recommended that a pump test should also be performed whenever the pump is disassembled for repairs or when it is deemed necessary by the park.

5.1.3.

Purchase

5.1.3.1.

Fire engines and associated equipment must be purchased, operated, equipped and maintained in accordance with NFPA 1901, *Automotive Fire Apparatus,* and this reference manual.

5.1.3.2.

Structural fire engines that have been purchased through either a park or regional equipment replacement program are to be disposed of in accordance with the region's policies for excess capital equipment.

5.1.3.3.

Engines that have been purchased and placed in service by the National Office may be removed or relocated by the National Office, as deemed necessary, to best meet the needs of the Service.

5.1.4.

Refurbishment

5.1.4.1.

Occasionally an engine can be refurbished to extend its service life. If the park and the Regional Structural Fire Manager determine that refurbishment of an engine is necessary to meet the park's structural fire suppression needs and associated NFPA standards and it is cost effective, the engine can be sent to a certified re-builder for all necessary improvements to make the engine fully compliant with the current edition of NFPA 1901: *Automotive Fire Apparatus*.

5.1.4.2.

Engines that have been manufactured prior to 1991 shall not be considered for refurbishment, as they are not in compliant with NFPA 1901, *Standard for Automotive Fire Apparatus*.

5.1.4.3.

Engines that are older than 15 years and have been properly maintained and are still in good condition may be upgraded in accordance with NFPA 1912, *Standard for Fire Apparatus Refurbishing*. Engines that fall into this category shall be inspected by a certified fire mechanic.

5.1.5.

Disposal or Reassignment

5.1.5.1.

Engines will be disposed of in accordance with regional policies. In 2003, a ruling gave the NPS the authority to sell surplus fire engines at a "Firm Fixed Price, Negotiated Sale" to a department that qualifies under the Rural Fire Assistance program. Any proceeds from these sales shall be returned to the regional engine replacement program.

5.1.5.2.

Engines that have been manufactured prior to 1991 should be retired and replaced with new apparatus. NFPA standards state that engines older than 1991 could be placing our employees at risk and should not be used as first-line service engines.

5.1.5.3.

The Service may assign a NPS owned engine to a firefighting program not owned or operated by the Service. Persons other than park employees may be assigned to operate these engines. An approved agreement must be in place before the engine is transferred. The agreement must include:

- Who is authorized to operate the engine
- The certification and licensing requirements of engine operators
- Who is responsible for the maintenance and operating costs
- Who is responsible for damages incurred
- A legally reviewed hold harmless agreement waiving any government responsibility
- Restrictions on where or how the equipment is to be used
- Who is responsible for equipment carried on the engine
- The length and terms of the agreement

5.2. Fireboats

Like fire engines, fire boats are expensive and complex pieces of equipment designed to support the transportation of personnel and equipment to the suppression of fires on the water. Any vessel whose primary mission is fire-fighting and pumping operations, including emergency operations, will be considered to be a fire-fighting vessel. These types of apparatus have unique requirements and, although components of these operations are similar to fire engines, their operation, associated training, and tactics require specialized skills and standards.

5.2.1.

Inspections

Fireboats shall be inspected at least quarterly. It is imperative that all apparatus and equipment remain in full operational and ready status at all times. Quarterly checks assist the park with identifying and taking corrective actions on any malfunctions prior to emergency use of the apparatus or the equipment.

5.2.2.

Fire boats shall be inspected within 24 hours after being used in an emergency response.

5.2.3.

The National Structural Fire Management Office has created a servicewide database (Structural Fire Data Management System or SFDMS) to maintain fire vessel and apparatus inspections; parks are encouraged to use this system. In the event that the park chooses to utilize another system, the park will be required to maintain those files and have them accessible for program audits.

5.2.2.

Pump Testing

All vessels that are used to suppress structural fires shall have an annual pump performance test. Records of these tests will be maintained by the park. It is recommended that a pump test should also be performed whenever the pump is disassembled for repairs or when it is deemed necessary by the park.

5.2.3.

Purchase

5.2.3.1.

Fireboats and associated equipment should be purchased, operated, equipped and maintained in accordance with NFPA 1925, *Standard on Marine Fire-fighting Vessels.*

5.2.3.2.

Fire boats that have been replaced through the regional Equipment Replacement Program are to be disposed of in accordance with the region's policies for excess capital equipment. Vessels which have been purchased and placed in service by the National Office may be removed or relocated by the National Office as deemed necessary, in consultation with the affected RSFM's, to best meet the needs of the Service. The park has the responsibility of assuring the vessel is maintained in safe operating condition at all times and is responsible for all associated costs.

5.2.4.

Inspection, Testing, and Maintenance

5.2.4.1.

Parks operating firefighting vessels shall develop a maintenance schedule which will specify the maintenance or inspection interval and what is to be done to maintain each piece of equipment, including oil and other fluids recommended for use. The inspection, testing, and maintenance of fireboats shall be conducted in accordance with:

- NPS Engine Company Standard Operating Procedures and
- NFPA 1925: *Vessel Maintenance (and Testing)*.

Parks utilizing fireboats should berth the vessel in such a way that it meets NFPA 303, *Fire Protection Standard for Marinas and Boatyards*. As identified and classified by boat type, NPS fire boats should be equipped with the necessary tools and materials, as outlined by NFPA 1925, *Standard on Marine Fire-fighting Vessels.*

5.3. Personal Protective Equipment (PPE)

5.3.1.

PPE

Firefighters shall be provided with protective ensembles and ensemble elements to protect them from the hazards associated with fighting structural fires and all hazard incidents. At a minimum, protective equipment shall include firefighter turnouts, boots, helmet, hood, gloves, and eye and ear protection. Firefighter PPE shall comply with NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting.*

5.3.1.1.

Protective Clothing

5.3.1.1.1.

Firefighter PPE shall be inspected annually. Inspections shall be documented and kept by the park. Equipment that is damaged, stretched, or worn to such an extent that it no longer complies with NFPA standards or cannot serve its designated purpose shall be disposed of.

5.3.1.1.2.

When new protective clothing or protective equipment is purchased, it shall meet the requirements of the most current edition of the respective NFPA standard. In accordance with NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, under no circumstance will structural fire clothing be in service for more than ten years from the date of manufacture.

5.3.1.1.3.

It is recommended that all personnel don appropriate PPE prior to mounting the fire apparatus for response to an emergency scene. Whether kept at the station, within a response vehicle or in a locker, firefighter PPE must be kept in a response ready condition.

5.3.1.1.4.

When responding to a structural fire incident, employees, partners, or associates are not permitted to wear personal clothing, accessories, or equipment that is not suitable and appropriate to protect them from the hazard they have been called upon to handle. Law enforcement officers are not permitted to wear their firearm or carry spare ammunition,

chemical agents, or electronic control devices under, over, or within their PPE.

5.3.1.1.5.

Structural fire responders shall be provided with proper eye protection. Helmet face shields shall not be considered or used as primary eye protection. An SCBA facepiece shall constitute eye protection when worn.

5.3.1.1.6.

Personnel shall be provided with hearing protection when exposed to noise levels in excess of 90 dBA. Noise sources to be considered include, but are not limited to, the fire apparatus, power tools, generators, and extrication equipment.

5.3.1.1.7.

Whenever possible, parks are to provide washers and dryers, so that firefighting PPE can be washed and taken care of properly. This will help to minimize the transfer of hazardous substances or materials deposited on turnouts from being taken home and contaminating other items or people not associated with the incident.

5.3.1.2.

Helmets

5.3.1.2.1.

Firefighters will be provided with NFPA approved helmets. Helmets issued to Fire Chiefs or Chief Officers shall be white. It is recommended that Captains wear red helmets and firefighters and fire apparatus driver operators wear either yellow or black. Parks that utilize personnel who are certificated as Firefighter I shall equip them with a helmet color different from that of company officers, fire apparatus driver operators, and Firefighter II's. This visual requirement is in place to help fire officers distinguish Firefighters I from other personnel on the incident to ensure that they are provided with the necessary supervision. In the event that a park does not wish to follow the recommendations, they shall develop a local policy which will be reviewed and approved by the RSFM.

5.3.1.2.2.

Helmets shall not be worn by firefighters, while the apparatus is in motion.

5.3.2.

SCBA

5.3.2.1.

SCBAs shall be inspected at least quarterly; inspections must be documented. Consult NFPA 1852, *Standard on Selection, Care, and Maintenance of Open-Circuit Self*

Contained Breathing Apparatus, for assistance. During the inspection, each of the following components will be evaluated:

- Facepiece
- Cylinder
- Regulator
- Hose
- Backpack frame and harness assembly
- Hose
- Accessories

5.3.2.2.

SCBA bottles shall be hydro-tested and retired according to manufacturer's guidelines. All SCBA regulators shall be flow tested annually. Flow tests can only be performed by properly trained and manufacturer certified service care technicians.

5.3.2.3.

Every firefighter should conduct a visual inspection and operational check of the SCBA that they will be wearing prior to entering any hazardous environment and immediately after each use.

5.3.2.4.

SCBA air cylinders that are kept on fire apparatus shall have their pressure checked as a part of the monthly inspections. Air cylinders shall be kept at their recommended capacity. Any air cylinder that drops below 90% of its recommended capacity shall be refilled or topped off.

5.3.3.

Personal Alert Safety System (PASS) Device

5.3.3.1.

Pass alarms shall be inspected at least monthly; inspections must be documented. In addition, pass alarms should be tested annually by a manufacturer certified service care technician.

5.3.3.2.

All employees or partners providing structural fire suppression operations (Level 3 Service or greater) shall be equipped with a NFPA approved PASS device, which shall be attached to the firefighters SCBA.

5.3.4.

Breathing Air Compressors

5.3.4.1.

Compressed air used for filling SCBA cylinders shall be tested annually or in accordance with manufacturer guidelines. Testing shall be conducted by an independent testing firm. A certificate shall be issued by the testing firm that certifies that the air quality meets OSHA 29 CFR 1910.134 specifications and grade D breathing air, as described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989.

5.4. General

5.4.1.

Fire Hose

5.4.1.1

Hose selection, maintenance, and testing must comply with NFPA 1961, *Fire Hose.* Fire hose that is stored on fire apparatus shall not be kept in the same compartment as petroleum products or other items which could damage the hose. Hose which is loaded in apparatus cross lays or in hose beds should be unloaded, rotated, and reloaded twice a year to prevent the setting of permanent folds in the rubber lining. Spare hose which is stored in the fire station or support structure should be kept on racks and out of direct sunlight.

5.4.1.2.

Each length of hose shall be tested annually. This includes supply bed, pre-connects, hose bundles, and rolls. To facilitate this, each length of hose should be assigned a unique identification number that is used to track testing, repair, and ownership. The identification number should be marked on the same location for every section of hose for easy reference, i.e. all identification numbers are at the female end. The total length of any hose line test shall not exceed 300 feet, except for 5 inch diameter hose (LDH).

5.4.1.3.

Personnel shall not straddle a hose line during testing. Consult NFPA 1962, *Standard for Care, Use, and Service Testing of Fire Hose Including Couplings and Nozzles,* for assistance.

5.4.2.

Fire Ladders

5.4.2.1.

Ladders shall be visually inspected and cleaned after each use or at least quarterly. Inspections shall be noted on the apparatus maintenance log. Ladders which have been found to have defects shall be removed from service for repair or replacement.

5.4.2.2.

Fire ladders shall be tested annually in accordance with NFPA 1932, *Standard on Use, Maintenance, and Service Testing of In-Service Fire Department Ground Ladders*. Records of ladder testing shall be maintained by the park.

6. Acronyms and Abbreviations

IDLH	**Immediately Dangerous to Life or Health:** A term which is commonly used to identify conditions which are likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment.
ERT	**Emergency Response Team:** A group of employees or partners who are tasked with containing fire spread to adjoining compartments or tasked with prompt emergency actions during a structural fire with the capability to save lives.
Target Hazards	Frequently defined as those structures or occupancies indicating a greater than average life hazard or complexity of firefighting operations.
Fast Attack	A fast attack is used on a fire when it is obvious that it will either facilitate a rescue or knock down a small fire before it has a chance to grow. A fast attack mode should not last more than a couple of minutes and may be performed using the water provided by the engine (tank water).

TRAINING AND CERTIFICATION

1. Introduction

1.1.1.

If parks are to meet their mission responsibilities, it is essential that the Structural Fire Program recognizes that the National Park Service (NPS) has a widely diverse structural fire and all hazard response need. To serve this capability and to provide parks with the necessary skills, the service has created a multi-tiered training and certification system for varied levels of suppression response. These levels correspond to national standards of certification, which have been established by the National Fire Protection Association (NFPA).

1.1.2.

In addition, these policies and requirements have been established to help the service meet this diverse need for several other important reasons:

- Assure the NPS training standards are aligned with and meet national fire service industry standards, specifically the National Fire Protection Association (NFPA).
- Provide parks with multiple levels of an emergency response capability that is commensurate with the known and unknown risks and complexities of park operations.
- Develop a certification program which is able to measure the level of knowledge, skills, and abilities obtained by firefighters and to ensure these individuals meet nationally recognized standards.
- Provide competency-based standards which permit long term, consistent, and standardized evaluation of the training program and promote uniformity in firefighting.

1.1.3.

The Structural Fire Branch Chief (SFBC) of the NPS retains AHJ authority for training standards and certification. *See Section 2.1, Structural Fire Branch Chief*. This authority may be delegated to the Structural Fire Operations Program Manager (SF-OPM).

1.1.4.

The NPS certification program is a mandatory program for all employees, partners, associates, or volunteers[1] seeking certification through the NPS. The certification program establishes a consistent means to measure the proficiency of firefighters, regardless of

[1] The use of volunteers within the Structural Fire Program is extremely common. Volunteers may not be used to respond to fire or other hazardous activities without first being picked up as an emergency hire in an approved Administratively Determined (AD) position. AD positions have been developed for all fire ground positions, including firefighter, fire apparatus driver operator, and fire officer.

their park affiliation, whether paid, concessionaire, or volunteer. As of January 1, 2016, no individual park or park entity may issue any type of structure fire training "certification" without the authorization of the SFBC or his/her designee. This does not preclude a park from obtaining firefighter certifications through their associated state; this only precludes parks from issuing NPS certifications or course completion certificates at the park level. The NPS only recognizes structure fire training certifications issued by the National Structural Fire Program Office.

1.1.5.

The Structure Fire Program has established a Structural Fire Certification and Advisory Board (SFCAB) to serve as the accreditation body for the NPS and for all employees, partners, associates, or volunteers seeking structure fire suppression certification through the NPS and National Board on Fire Service Professional Qualifications (Pro Board). This shall not preclude the NPS from issuing certificates for fire suppression training courses not certified Pro Board.

1.1.6.

Personnel wishing to participate in the suppression of structural fires or respond to all hazard incidents, as an employee or agents of the NPS, may choose to receive their training through either the NPS or through the state in which the park is located. All personnel seeking NPS certification will be considered for Pro Board certification, if they successfully complete the NPS program and pass the required written examination and skills assessments. NPS employees who have obtained their certification through a state must comply with that state's certification requirements and are not eligible for Pro Board certification through the NPS, unless they formally challenge the associated certification. Pro Board certification can be obtained by successfully passing the written exam and the associated skill sheets as explained in *Section 10, Certification Challenge Process*.

Personnel, who have obtained their certification from one state and have since moved to another state, may not participate in structural fire suppression response, until they have obtained reciprocity for their certification. See *Section 3.3, Reciprocity,* for details.

1.1.7.

It is the intention of the NPS to have all of its core performance positions and certification programs Pro Board accredited. This shall not preclude the NPS from issuing certificates for courses not certified by Pro Board.

1.2. Purpose

1.2.1

Measure the level of knowledge, skills, and abilities required of firefighters and ensure that these individuals meet nationally recognized structural firefighter training standards.

1.2.2

Achieve the following goals and objectives:

- Understand and implement current structural firefighting principles and practices.

- Establish and promote structural fire suppression in the NPS as a professional service.

- Improve the overall performance and coordination of fire suppression and fire prevention activities through the development of minimum performance standards for all applicants.

- Develop more competent all risk/all-hazard response personnel through the adoption of professional qualification standards.

- Establish and maintain vetted procedures that measure specific levels of skills, abilities, and knowledge consistent with standards approved and adopted by the SFCAB.

- Establish a servicewide and standardized testing procedure that will ensure all knowledge and practical skills are evaluated consistently the same way every time.

- Adopt NFPA professional qualifications as minimum standards for the NPS.

- Seek third party approval of our certification program through an internationally accredited association to assure that the program is fair, equitable, and consistent in its application to all fire personnel and ensure it meets nationally recognized industry standards.

- Continually monitor and assess the training curriculum and keep current on changes in industry standards to assure the NPS is utilizing and implementing the latest technologies, techniques, and protocols for a safe and cost effective structure fire suppression and all hazard training curriculum.

- Establish and implement an all hazard/structural fire suppression certification program for the NPS that will ensure complete impartiality and confidentiality that is designed to safeguard against misuse and abuse.

- Ensure that all accredited levels of certification are administered with strict adherence to the requirements and recommendations of Pro Board.

- Establish procedures for discipline, denial, revocation, limitation, and suspension of an individual's firefighter certificate and/or an accredited academy's recognition.

2. <u>Responsibility</u>

2.1. Structural Fire Branch Chief

2.1.1.

The Structure Fire Branch Chief (SFBC) is the Fire Chief for the National Park Service and reports directly to the Fire and Aviation Management Division Chief which is under the Associate Director for Visitor and Resource Protection.

2.1.2.

As the Fire Chief for the NPS, the SFBC directs the overall training and certification program for the NPS and retains AHJ authority. As such, no individual park or NPS unit may issue training certifications or establish agency based training curriculum without the authorization of the SFBC. This authority may be formally delegated to the Structure Fire Operations Program Manager.

2.2. Structural Fire Operations Program Manager (SF-OPM)

2.2.1.

The SF-OPM works for the SFBC. SF-OPM is primarily responsible to assist with policy development and provide oversight for implementation, management, and monitoring of structural fire operations servicewide. SF-OPM provides support and technical guidance to the Regional Structural Fire Program Managers (RSFMs).

2.2.2.

The SF-OPM shall be the final authority in all matters pertaining to the governing of the certification programs and in all appeals and in any other business related to the operation of the NPS Structural Fire Certification and Advisory Board (SFCAB).

2.2.3.

The SF-OPM works closely with the SFCAB and other parties within the NPS to develop training curriculum and standards that comply with national standards, agency initiatives, and this chapter.

2.2.4.

The SF-OPM proposes and develops annual training schedules, locates instructors, ensures compliance with certification standards, maintains agency certification records, and serves as the agencies representative with Pro Board.

2.2.5.

The SF-OPM directs fire suppression training program for the NPS.

2.3. Structure Fire Certification and Advisory Board

2.3.1. Purpose

2.3.1.1.

This chapter establishes the administrative authority, responsibility roles, and procedures for the NPS SFCAB, as it pertains to the certification program for structural firefighter training and certification program.

2.3.1.2.

The role of the SFCAB is to:

- Advise and assist the SF-OPM with establishing a fire suppression education and training program;
- Advise and assist the SF-OPM with establishing minimum standards for fire suppression and all hazard response training and certification;
- Advise and assist the SF-OPM on establishing procedures for determining if structural firefighters meet those minimum standards;
- Advise and assist the SF-OPM on certifying applicants who meet the established minimum standards.

2.3.1.3.

The SFCAB has the general responsibility for the following:

- Establish standardized and minimum standards for NPS structural fire certifications.
- Ensure quality and uniformity in the development and long term application of a structural fire suppression certification system.
- Ensure there is no adverse impact to any specific group represented within the agency's certification process and make sure that testing and certifying services are available to all fire service members without regard to race, sex, creed, or ethnic origin.
- Make rulings, issue approvals, and conduct evaluations of documentation submitted by employees seeking NPS certification or Pro Board accreditation. Verify and approve certification of NPS structural fire service members.
- Review appeals, reciprocity, and reinstatement applications.
- Revoke, suspend, or deny certifications.
- Adopt performance standards for each certification area.
- Audit testing processes conducted by agency approved personnel.

2.3.1.4.

The SFCAB will also support the agency's structure fire suppression training and certification program by performing the following roles:

- Approve individuals for instructor status and for live fire-training authorization.

- Identify and draft policies and procedures that will support the structural fire suppression training and certification program.

- Identify and establish processes for the validation of curriculum and evaluation instruments.

- Identify and develop training and certification standards for proctors.

2.3.1.5.

It shall be the responsibility of each individual park to ensure their training programs adequately prepare personnel for the appropriate certification program. The SFCAB shall not oversee individual training programs or the training policies of any park. Rather, the SFCAB's responsibility is for the governance of the agency's certification program. Each park shall follow all certification policies and guidelines established by the SFCAB for certification programs.

2.3.2. Board Organization

2.3.2.1.

The SFCAB will be comprised of (5) members, who are selected by the SFBC and SF-OPM. The SFCAB will include:

- Regional Structural Fire Program Manager
- Fire Chief or Chief Ranger
- Structural Fire Program Coordinator, Manager, or Park Chief Officer
- NPS Structural Fire Instructor or Trainer
- Engine Company Member

2.3.2.2.

In the event of an absence in one of the above positions in which the actions of the board would be adversely impacted, the SF-OPM may vote.

2.3.2.3.

The SF-OPM will attend SFCAB meetings and provide technical knowledge and support. The SF-OPM will serve as an advisory to the board only; with the exception mentioned in 2.3.2.2, the SF-OPM cannot participate in any vote regarding a decision, action, or recommendation.

2.3.2.4.

If a SFCAB member chooses to withdraw from the SFCAB committee, it is requested that the member notify the SF-OPM in writing, informing them of their resignation as soon as possible, so a new qualified SFCAB member can be sought and appointed.

2.3.2.5.

SFCAB members will serve for a period of five years. Serving members can be reappointed to serve, if agreed upon by the SF-OPM and other members of the SFCAB.

2.3.2.6.

At a minimum, meetings of the SFCAB shall be held annually or when called upon by the SF-OPM. Webinars, teleconferences, conference calls, and face-to-face meetings will be scheduled as government restraints and workload requires.

2.3.2.7.

The SF-OPM shall appoint a Chair for the SFCAB; a Recorder of Decision can also be appointed to support the advisory group, if necessary.

2.3.2.8.

The SFCAB Chair shall have the following responsibilities:

- Establish meeting agendas.
- Conduct and chair all SFCAB meetings, maintain order, and follow rules of order.
- Schedule calls and meetings as needed.
- Represent SFCAB at various conferences and meetings when appropriate.
- Ensure timely dissemination of all SFCAB actions and business.
- Handle other duties as needed and appropriate

2.3.2.9.

Each SFCAB member shall have the following general responsibilities:

- Attend scheduled meetings.
- Stay informed of all SFCAB matters and issues.
- Conduct assigned duties promptly and professionally.
- Represent the best interests of the SFCAB at all times.
- Stay informed on pertinent structural fire service training issues, including NFPA standards and Pro Board policies.
- Maintain ethical standards and confidentiality in all SFCAB business.

2.3.3. Board Administration

2.3.3.1.

All test banks, curriculum, manuals, and forms which are developed or adopted by the SFCAB for use with its certification programs shall be the property of the NPS Structural Fire Program.

2.3.3.2.

At all scheduled meetings or calls by the SFCAB, no vote shall be cast and no policy decision made without a majority quorum of members present. Issues may be discussed for information purposes only. If no quorum in present, issues must be carried over for

vote until the next SFCAB meeting or call when a majority quorum is present. A quorum shall exist when a simple majority of voting members is present, 3 or more.

2.3.3.3.

Each SFCAB member and other specified individual(s) shall be notified in writing of a meeting no less than five (5) business days prior to each meeting. The notification shall include date, time, location, and agenda of the meeting, in addition to any other information required for conducting the meeting. It shall be the responsibility of the SF-OPM to make the appropriate notifications.

2.3.3.4.

All meetings of the SFCAB shall have recorded/written minutes. The minutes shall be posted on a Structural Fire Program website after review and approval by the SF-OPM.

2.3.3.5.

If it is discovered that any SFCAB member violates any rules or regulations of the board, it is to be brought to the attention of the SF-OPM immediately. The matter will be reviewed by the SFCAB. If a removal is sought, it requires a majority vote of the remaining SFCAB members.

2.3.4. Board Certification, Oversight, and Management

2.3.4.1.

The SFCAB shall ensure compliance with performance standards for each certification area, such as Firefighter I, Firefighter II, Fire Apparatus Driver/Operator, Fire Instructor, Engine Company Officer, and Live Fire Instructor. The standards shall be based upon the corresponding professional qualifications standard of the NFPA.

2.3.4.2.

All decisions rendered by the SFCAB shall be in accordance with all policies and procedures as written in all 2006 Department of Interior Management Policies and Director's Order and Reference Manual 58: *Structural Fire Management.*

2.3.4.3.

The SFCAB has the authority to amend any existing NFPA professional qualifications standard that is specific to fire suppression positions, as it deems appropriate. However, the SFCAB may not adopt any amendment, which reduces or diminishes the requirements set forth in the NFPA standard. Amendments can only enhance or increase the professional requirements of any given standard.

2.3.4.4.

The SFCAB shall develop administrative policies for each certification level. The policies shall be used for the administration of that certification program. A majority vote of the SFCAB is required for development of the certification policies.

2.3.4.5.

The policies for each certification level shall be added to Reference Manual RM-58.

2.3.4.6.

The SFCAB may establish a performance standard when one does not exist for that specific professional area, i.e. establish performance standards for NPS marine firefighter position as the established NFPA standard does not meet NPS requirements.

2.4. Regional Structural Fire Program Managers (RSFMs)

2.4.1.

Ensure that personnel with structural fire suppression responsibilities are in compliance with this chapter.

2.4.2.

Monitor and convey regional structural fire suppression training needs to the SF-OPM annually.

2.4.3.

Ensure that training records identified in this chapter are maintained by the parks and that the said records are readily available for program audits. See *Section 11, Record Management*.

2.5. Park Superintendents

2.5.1.

Park superintendents are responsible for verifying that all personnel that are responding to all hazard incidents (structure, vehicle, dumpster fires, smell of gas, etc.) and emergencies inside or outside of the park boundaries are in compliance with this chapter. Employees, volunteers or affiliates working on behalf of the NPS who are not in compliance with this chapter shall not be permitted to be dispatched or respond to an all hazard emergency, either actual or potential, until certification can be verified.

2.5.2.

Ensure that employee training records and requirements identified in this chapter are documented and readily available in the event of a program audit.

2.6. Structural Fire and All Hazard Certified Positions

2.6.1. Level 1 – Structural Firefighter I (SFF1)

2.6.1.1.

Description

A person operating as a SFF1 is minimally trained to function safely and effectively as a member of a structural firefighting team under direct supervision of a firefighter who has obtained certification at the Firefighter II level or greater. A person obtaining this level is by no means considered a "complete" firefighter, until they have met the objectives set forth in Firefighter II (SFF2). An SFF1 is considered a "defensive firefighter" and is not permitted to engage in interior operations, unless absolutely necessary for the rescue of occupants or as part of an emergency response team whose primary purpose is directing building evacuation and/or making a defensive fire attack in which the only fire suppression activities taken are limited to those required to keep a fire from extending from one area to another.

2.6.1.2.

Required Experience and Certification

2.6.1.2.1.

To perform as a SFF1, the employee must have obtained certification through the state in which they are providing service or through the NPS Structural Fire Training Program. In either case, the certification must comply with NFPA 1001, *Standard for Fire Fighter Professional Qualifications*. Employees who complete the agency's SFF1 training program, but have not yet completed all of the associated courses listed below, are considered to be "trainees" and cannot respond to fire events, until all of the associated courses have been completed. As a trainee, the participant may attend park drills and training exercises.

2.6.1.2.2.

Persons that can provide all of the required documentation and/or who have successfully completed the NPS program requirements and have documentation showing completion of a NFPA 472, *Hazardous Materials Awareness and Operations,* course will be submitted for Pro Board certification.

2.6.1.3.

Required Training[2]

- Completion of either a state or NPS Firefighter I training course
- I-100 Introduction to Incident Command System
- I-200 Basic ICS for Single Resources and Initial Action Incidents
- FEMA IS-700 National Incident Management System (NIMS), An Introduction

[2] Agency wildland fire components can also be fulfilled by completing Department of Homeland Security crosswalk class G-130.

- For Pro Board certification, Hazardous Material Awareness and Operations (NFPA 472); for agency only certification, Hazardous Material Awareness and Operations, commonly called HazWoper (OSHA 1910.120).

2.6.1.4.

Physical Fitness Requirements

Employees are required to comply with either the arduous duty physical fitness standards for wildland firefighters (pack test) or pass the agency's law enforcement Physical Evaluation Battery (PEB) examination. For details, consult Chapter 11b*, Fitness Standards*.

2.6.1.5.

Medical Requirements

Employees must comply with the medical standards set forth in NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*. For details, consult Chapter 11a*, Medical Standards*.

2.6.1.6.

Currency Requirements:

- Every two years, successful completion of an annual 24-hour NPS Structural Firefighter Refresher course. See *Section 8, Biannual Refresher*.

- Annually, complete 24 hours of continuing education units (CEU) for structural firefighting related training. See *Section 9, Annual Training Requirements*.

2.6.1.7.

Recommended training to support associated knowledge and skills:

- S110 Basic Wildland Fire Orientation

- S130 Firefighter Training

- S190 Introduction to Wildland Fire Behavior

- S215 - Fire Operations in the Wildland Urban Interface

- S212 – Wildland Fire Chain Saws

2.6.2. Level II – Structural Firefighter II (SFF2)

2.6.2.1.

Description

A person with certification as a SFF2 is considered a fully functional structural firefighter capable of providing a broad range of functions on the fireground, including the performance of operations within an immediately dangerous to life or health (IDLH) environment, consisting, but not limited to, search and rescue, vertical ventilation assignments, rapid intervention crew assignments, and interior fire suppression to save lives and protect property. The SFF2 may operate under general supervision and may be expected to lead a group of equally or lesser trained personnel through the performance of specific tasks, as defined in NFPA 1001, *Standard for Fire Fighter Professional Qualifications.*

2.6.2.2.

Required Experience and Certification

2.6.2.2.1.

To perform as a SFF2, the employee must have obtained certification through the state in which they are providing service or through the NPS Structural Fire Training Program. In either case, the certification must comply with NFPA 1001, *Standard for Fire Fighter Professional Qualifications.* Employees who complete the agency's SFF2 training program, but have not yet completed all of the associated courses listed below, are considered to be "trainees" and cannot respond to fire events, until all of the associated courses have been completed. As a trainee, the participant may attend park drills and training exercises.

2.6.2.2.2.

Personnel who have successfully completed the NPS program requirements and have documentation showing completion of a NFPA 472-*Hazardous Materials Awareness and Operations* course will be submitted for Pro Board certification. For detailed information on the SFF2 course, refer to Appendix 2 (SFF2 – Structural Firefighter). Personnel who have completed NPS program requirements and have completed an OSHA 1910.120 *Hazardous Materials Operations* or HazWoper training course will be awarded agency certification.

2.6.2.3.

Required Training[3]

- Completion of either a state or NPS Firefighter II training course
- I-100 Introduction to Incident Command System
- I-200 Basic ICS for Single Resources and Initial Action Incidents
- FEMA IS-700 National Incident Management System (NIMS) - *An Introduction*

[3] Agency wildland fire components can also be fulfilled by completing DHS crosswalk classes G-130.

- For Pro Board certification, NFPA 472 - *Hazardous Material Awareness and Operations*; for NPS only certification, OSHA 1910.120 *Hazardous Materials Operations* or *HazWoper*

2.6.2.4.

Physical Fitness Requirements

Employees are required to comply with either the arduous duty physical fitness standards for wildland firefighters (pack test) or pass the agency's law enforcement Physical Evaluation Battery (PEB) examination. For details, refer to Chapter 11b*, Fitness Standards*.

2.6.2.5.

Medical Requirements

Employees must comply with the medical standards set forth in NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*. For details, consult Chapter 11a*, Medical Standards*.

2.6.2.6.

Currency Requirements

- Every two years, successful completion of an annual 24-hour NPS Structural Firefighter Refresher course. See *Section 8, Biannual Refresher*.

- Annually, complete 24 hours of continuing education units (CEU) for structural firefighting related training. See *Section 9, Annual Training Requirements*.

2.6.2.7.

Recommended training to support associated knowledge and skills:

- S110 Basic Wildland Fire Orientation

- S130 Firefighter Training

- S190 Introduction to Wildland Fire Behavior

- S215 - Fire Operations in the Wildland Urban Interface

- S212 – Wildland Fire Chain Saws

2.6.3. Small Boat and Marine Firefighter (SBMF)

2.6.3.1

Description

A person operating as a SBMF has a special understanding of the complications experienced combating small boat and marina fires utilizing land and water based operations. Due to special and unique suppression operations challenges, and the dangers associated with marine based fires, this position requires a Firefighter II certification.

2.6.3.2.

Required Experience and Certification

2.6.3.2.1.

To perform as a SBMF, the employee must have obtained certification through the state in which they are providing service or through the NPS Structural Fire Training Program. In either case, the certification must comply with NFPA 1001, *Standard for Fire Fighter Professional Qualifications*.

2.6.3.2.2.

Employees wishing to obtain NPS certification as a SBMF must have obtained Firefighter II certification in compliance with NFPA 1001, *Standard for Fire Fighter Professional Qualifications*.

2.6.3.3.

Required Training

Same as *Section 2.6.2.7.*

2.6.3.4.

Physical Fitness Requirements

Employees are required to comply with either the arduous duty physical fitness standards for wildland firefighters (pack test) or pass the agency's law enforcement Physical Evaluation Battery (PEB) examination. For details, refer to Chapter 11b*, Fitness Standards*.

2.6.3.5.

Medical Requirements

Employees must comply with the medical standards set forth in NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*. For details, refer to Chapter 11a*, Medical Standards*.

2.6.3.6.

Currency requirements:

- Same as SFF2, see *2.6.2.6.*

2.6.3.7.

Recommended training to support associated knowledge and skills:

- Motorboat Operator Certification Course (MOCC)

2.6.4. Fire Apparatus Driver Operator (FADO)

2.6.4.1.

Description

A person operating as a FADO is considered a rank between a firefighter and company officer. The FADO must not only be able to safely transport firefighters to the scene of an emergency and be capable of operating the apparatus with adequate water flow, in the absence of an Engine Company Fire Officer, they may be required to supervise and direct other firefighters in the performance of their duties. FADOs who only have a SFFI certification may not direct firefighters on the fireground, as they lack the basic training requirements to complete all tasks as a fully functional firefighter.

2.6.4.2.

Required Experience and Certification

2.6.4.2.1.

To perform as a FADO, the employee must have obtained certification through the state in which they are providing service or through the NPS Structural Fire Training Program. In either case, the certification must comply with NFPA 1002, *Standard for Apparatus Driver/Operator Professional Qualifications.*

2.6.4.2.2.

Employees wishing to obtain NPS certification as a FADO must have obtained either a Firefighter I or Firefighter II certification.

2.6.4.3.

Employees who complete the agency's FADO training program, but have not yet completed all of the associated courses listed below, are considered to be "trainees" and cannot respond to fire events until all of the associated courses have been completed. As a trainee, the participant my attend park drills and training exercises.

2.6.4.4.

Required Training

- Completion of either a state or NPS Fire Apparatus Driver Operator training course.

2.6.4.5.

Physical Fitness Requirements

Employees are required to comply with either the “moderate” duty physical fitness standards for wildland firefighters (pack test) or pass the agency’s law enforcement Physical Evaluation Battery (PEB) examination. For details, consult Chapter 11b, *Fitness Standards.*

2.6.4.6.

Medical Requirements

Employees must comply with the medical standards set forth in NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*. For details, refer to Chapter 11a, *Medical Standards*.

2.6.4.7.

Currency Requirements

- Every two years, successful completion of an annual 24-hour NPS Structural Firefighter Refresher course. See *Section 8, Biannual Refresher*.

- Annually, complete 24 hours of continuing education units (CEU) for structural firefighting related training. See *Section 9, Annual Training Requirements*.

2.6.4.8.

Recommended training to support associated knowledge and skills:

- ICS 300 – Intermediate Incident Command System (ICS) for Expanding Incidents

2.6.5. Engine Company Fire Instructor (ECFI)

2.6.5.1.

Description

A fire service instructor is a person who has demonstrated the knowledge and ability to deliver instruction effectively from prepared lesson plans, including aids and evaluation instruments, and is someone who also has the ability to adapt lesson plans to the unique needs of the students. ECFIs are there to support park fire suppression training programs, so employees, partners, volunteers, and associates can comply with agency standards. ECFIs may also aspire to become members of the NPS instructional cadre and support agency servicewide training and certification efforts.

This position is limited to class room instruction and delivering hands on skill evolutions. This is not an active fire suppression position, nor is the ECFI authorized to deliver live fire training exercises. See *Section 2.6.7, Live Fire Instructor*.

2.6.5.2.

Required Experience and Certification

2.6.5.2.1.

To perform as an ECFI, the employee must have obtained certification through the state in which they are providing service or through the NPS Structural Fire Training Program. In either case, the certification must comply with *NFPA 1041, Standard for Fire Service Instructor Professional Qualifications.*

2.6.5.2.2.

Employees wishing to obtain NPS certification as an ECFI must be a certified SFF2.

2.6.5.3.

Required Training

- Completion of either a state or NPS Fire Instructor I class.

2.6.5.4.

Recommended training to support associated knowledge and skills:

- *NFPA 1041, Standard for Fire Service Instructor Professional Qualifications* for Fire Instructor.

2.6.6. Engine Company Fire Officer (ECFO)

2.6.6.1.

Description

The ECFO is a level of certification by the NPS for an individual who uses an ICS system to respond, direct, and supervise on all hazard and emergency incidents. This level of certification requires the person to rapidly assess an emergency situation, quickly develop a safe tactical plan, and deploy qualified resources to mitigate the incident and maintain operational responsibility of the incident, until the incident is safely and completely mitigated.

2.6.6.2.

Required Experience and Certification

2.6.6.2.1.

To perform as an ECFO, the employee must have obtained certification through the state in which they are providing service or through the NPS Structural Fire Training Program. In either case, the certification must comply with NFPA 1021*, Standard for Fire Officer Profession Qualifications.*

2.6.6.2.2.

Employees wishing to obtain NPS certification as an ECFO must have obtained a Firefighter II and Fire Apparatus Driver/Operator certifications.

2.6.6.3.

Required Training

- Completion of either a state or NPS Fire Officer I and a Fire Instructor I Class.

2.6.6.4.

Physical Fitness Requirements

Employees are required to comply with either the arduous duty physical fitness standards for wildland firefighters (pack test) or pass the agency's law enforcement Physical Evaluation Battery (PEB) examination. For details, refer to Chapter 11b*, Fitness Standards*.

2.6.6.5.

Medical Requirements

Employees must comply with the medical standards set forth in NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments.* For details, refer to Chapter 11a*, Medical Standards*.

2.6.6.6.

Currency Requirements

- Successful completion of the 24-hour NPS Structural Firefighter refresher course every two years (live fire exercises). For details, refer to *Section 8, Biannual Refresher*.

- 24 hours of continuing education units (CEU) for structural firefighting related training annually; *Section 9, Annual Training Requirements*.

2.6.6.7.

Recommended training to support associated knowledge and skills:

- Fireline Leadership (L-380).

2.6.7. Live Fire Instructor (LIFI)

2.6.7.1.

Description

The live fire instructor is an advanced and experienced instructor who is capable of conducting live fire training evolutions in compliance with NFPA 1403 - *Standard for Live Fire Training Evolutions*. The live fire instructor ensures that all structure fire suppression training is conducted in strict compliance with agency policies and standards and ensures that all trainees are qualified and certified to safely participate in the training being conducted. Additionally, live fire instructors are to verify that all participants in the training are medically and physically fit and cleared to participate in all training sessions before the training exercises commence.

LIFIs are to utilize practices, preparations, training aids, and evolutions to maximize the learning experiences of the firefighters participating in the exercise. This position can also help the park provide live fire drills to support their continuing education training program, comply with the semiannual live fire refresher requirements, and develop personnel to become agency instructors.

2.6.7.2.

Required Experience and Certification

2.6.7.2.1.

To perform as a live fire instructor, the employee must have obtained certification through the state in which they are providing service, the NPS, or a recognized program, such as the International Society of Fire Service Instructors (ISFSI), which complies with NFPA 1403, *Standard for Live Fire Training Evolutions.*

2.6.7.2.2.

Participants are required to submit two letters of recommendation from agency recognized instructors.

2.6.7.3.

NPS employees wishing to obtain NPS certification as a live fire instructor must have obtained certification to the Engine Company Fire Officer level.

2.6.7.4.

Required Training

- I-300 Intermediate ICS
- NFPA 1041 Fire Instructor I or NWCG 410 Facilitative Instructor

2.6.7.5.

Physical Fitness Requirements

Employees are required to comply with either the arduous duty physical fitness standards for wildland firefighters (pack test) or pass the agency's law enforcement Physical Evaluation Battery (PEB) examination. Instructors, who no longer work for a park with a structural fire suppression responsibility and are not engaged in firefighting duties at the state level, must pass the Wildland Firefighter WCT – moderate field test or pass the Law Enforcement PEB test. For details, consult Chapter 11b*, Fitness Standards*.

2.6.7.6.

Medical Requirements

Employees must comply with the medical standards set forth in NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*. For details, refer to Chapter 11a*, Medical Standards*.

2.6.7.7.

Currency Requirements

- In addition to the currency requirements stated in SFF1 or SFF2, LIFI must supervise, instruct/co-instruct, or direct a minimum of one live fire training event every three years. For details, refer to *Section 7*, *Live Fire Training.*

- All NPS live fire instructors must attend an SF-OPM approved live fire training update/refresher every five years following initial certification.

2.6.7.8.

Recommended training to support associated knowledge and skills:

- Fire Instructor II and Fire Instructor III

2.6.8. Other

There are numerous fireground positions and training classes, which are not referenced within this chapter. Employees, partners, volunteers, and associates can, and are encouraged to attend these trainings through their states or other organizations. Courses may be applied to meet annual training or biannual refresher requirements. Course completion should be documented in accordance with *Section 11, Record Management.*

3. Certification Requirements

3.1.1.

The NPS structural firefighter certification program is mandatory for all employees, partners, associates, or volunteers seeking certification through the NPS.

3.1.2.

Each park with personnel engaged in structural fire suppression activities is responsible to ensure compliance with the standards set forth in RM 58, specifically chapters 8, 9, 10, and 11. If any component is missing, the personnel engaged in this activity are no longer qualified and cannot participate further in these activities.

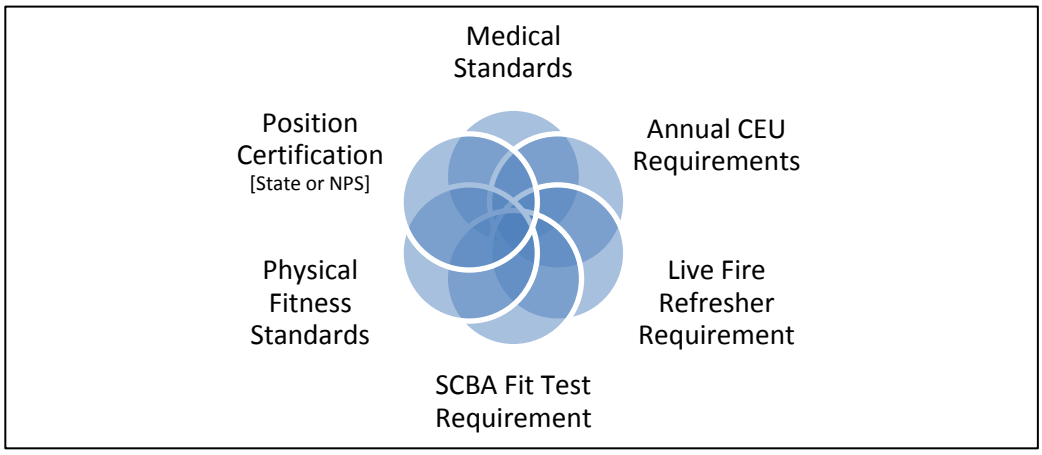


Figure 1: Firefighter Certification Requirements

3.1.3.

Participants in the agency's structural fire operations program must be a minimum of eighteen years of age, prior to the issuing of any certification by the SFCAB.

3.1.4.

Personnel engaged in structural fire response and suppression activities shall be tested on the written and manipulative skill performance objectives, as outlined for each level of certification. Applicants must meet or exceed established cognitive and psychomotor performance objectives, prior to consideration for Pro Board certification.

3.2. Incumbents

3.2.1.

Incumbents are employees, partners, volunteers, or associates of the NPS who are currently participating in structural fire suppression and all hazard incident activities who have already obtained certification for various fireground positions (i.e. firefighter, fire apparatus driver operator, or engine company fire officer).

3.2.2.

State certifications which have been issued to NPS employees, partners, volunteers, or associates will be honored, provided that the certification is from the state in which the employee is providing service. For details, consult *Section 3.3*, *Reciprocity.* Personnel

with state certifications must still comply with NPS refresher and annual CEU training requirements. Refer to *Sections 8* and *9* of this chapter.

3.2.3.

Certifications issued by the NPS prior to January 1, 2012 will be honored, provided that the participant has maintained their annual training (*Section 9*) and live fire refresher requirements (*Section 8*). If the participant has not met the requirements, the employee must apply for reinstatement (*Section 3.5*). Certificates issued to employees, partners, and volunteers who are in this category are not eligible for Pro Board accreditation, unless they challenge the curriculum (*Section 10*).

3.2.4.

Employees, partners, volunteers, or associates of the NPS who have attended Firefighter I or Firefighter II through the NPS National Fire Academy since January 1, 2012 are not considered certified and may not perform structural fire suppression duties, unless they have been issued a formal certification from the National Structure Fire Program Office. Certification shows that the subject has successfully completed all of the associated materials, the agency's position task book, and passed the required examinations. Participants may serve as "trainees," while working to obtain their required position associated courses.

3.2.5.

Employees, partners, volunteers, or associates of the NPS who have been issued state certifications and are conducting firefighting activities in a state other than the issuing state must obtain reciprocity by January 1, 2016 (*Section 3.3, Reciprocity*). As of that date, the NPS will no longer honor those certifications and employees participating in structural fire suppression activities will be considered as operating outside policy and will not be covered by the NPS.

3.2.6.

Employees, partners, volunteers, or associates of the NPS who have been issued NPS certifications by individual parks (other than those issued by the National Structure Fire Program Office) have until January 1, 2016 to obtain a wavier or a new certification from the SFCAB. Participants in this category must submit a copy of their certification and show compliance with agency annual and live fire refresher training requirements to the SF-OPM who will then submit the employee's package to the SFCAB for review and authorization. As of that date, the NPS will no longer honor those certifications and employees participating in structural fire suppression activities will be considered operating outside policy and will not be covered by the NPS.

3.3. Reciprocity

3.3.1.

General

3.3.1.1.

Reciprocity refers to honoring or recognizing certifications granted by organizations or states other than the NPS. Reciprocity may only be granted following a review of certifications and firefighter experience by the SFCAB. Employees, partners, volunteers, or associates who receive certification from a state other than the one in which they currently work must seek reciprocity from the new state in which they are providing services or from the NPS.

3.3.1.2.

The NPS will issue certifications to participants granted reciprocity. NPS certifications shall be honored by all NPS sites regardless of state affiliation. State issued certifications are valid only in the state from which they were issued, unless reciprocity by either the state or the NPS is granted.

3.3.1.3.

The SFCAB may enter into standing reciprocity agreements with another state or entity that by law regulates and supervises the quality of fire service training and firefighter certification. Such agreements must be approved by the SFBC prior to implementation and be made part of the reference manual as either an attachment or a specific section in future editions.

3.3.2.

Pro Board or IFSAC Certification Accreditation

3.3.2.1.

Employees, partners, volunteers, or associates who have received certifications containing either a Pro Board or IFSAC certification will be granted reciprocity. The participant must submit Pro Board or IFSAC certifications to the SF-OPM for review and confirmation.

3.3.3.

Non Pro Board or IFSAC Certification Accreditation

3.3.3.1.

Employees, partners, volunteers, or associates who received certification(s) from a state or facility that is not Pro Board or IFSAC accredited, who seek reciprocity, must be able to provide copies of all relevant training records and certifications to assure they comply with all the knowledge and performance standards for the NFPA position for which they seek reciprocity. This may require a letter on department letterhead from the training director who provided the initial certification, stating all NFPA knowledge and performance standards for the position were met.

3.3.3.2.

In addition, the applicant is required to submit documentation showing completion of specific skills for particular positions, including but not limited to the following:

- Live Fire Suppression Verification Form - Firefighter I (Attachment 2)
- Live Fire Suppression Verification Form - Firefighter II (Attachment 3)

3.3.3.3.

When reciprocity is sought from a non Pro Board or IFSAC accredited program, the involved party shall submit their request to the National Structure Fire Program Office who will forward it to the SFCAB. The SFCAB will review the request and supporting documentation and will make a determination. Should the involved party wish to appeal the decision of the SFCAB, they need to follow the same process as identified in *Section 4.9 Appeals.*

3.3.3.4.

Subjects seeking reciprocity can contact the National Structure Fire Program Office for assistance. Employees seeking reciprocity will need to also submit the following:

- Reciprocity Nomination (Attachment 6)
- Copies of all related certifications and fire related training they have completed in the last two years; a detailed explanation of fire related experience, including call volume, incident complexity, and subject's role (involvement) in the incident.
- Letter of reference from the park structural fire program manager indicating the participant is an active member of the park structural fire program and actively engaged in suppression training.

3.3.3.5.

Personnel seeking reciprocity are required to participate in a 24-hour live fire refresher training session within one year so that they can demonstrate their skills and competencies.

3.3.3.6.

Participants in this category may challenge the NPS position curriculum to obtain Pro Board accreditation.

3.4. Inactive Status

3.4.1.

Employees engaged in structural fire suppression activities may request to have their certifications placed into an inactive status, if it will be impossible for them to obtain the required number of CEU hours or live fire training to comply with currency requirements. Excused absences include, but are not limited to, military assignment or deployment, law enforcement selection to basic training, investigator school, or FTEP assignment.

3.4.2.

When an employee desires inactive status, the employee or the employee's park shall inform the SF-OPM. The SF-OPM will place the affected certifications into an inactive status on the agency's Structural Fire Data Management System (SFDMS).

3.4.3.

Employees on inactive status do not need to comply with medical, fitness, annual, or biannual training requirements. Upon reactivation, the employee must comply with medical and fitness requirements and must obtain the required number of CEU hours necessary for the upcoming year. Employees returning to active status should be re-acclimated to suppression operations at the park level. This should include demonstration of proficiencies during training held in the park or attendance at a live fire refresher.

3.4.4.

If the subject involved has been on an inactive status for longer than two years, the employee must apply for reinstatement (*Section 3.5, Reinstatement*).

3.5. Reinstatement

3.5.1.

General

3.5.1.1.

Reinstatement refers to certifications which have already been granted, but due to any number of reasons, the involved party has been unable to maintain the certification according to agency policy. The most common reason for reinstatement is when an employee has transferred to a suppression oriented park after working at a non-suppression park in which they have been unable to maintain currency requirements.

3.5.1.2.

When seeking reinstatement, the involved party must submit their request to the National Structural Fire Management Office who will forward it to the SFCAB. SFCAB will review the request and all supporting documentation and will make a determination. Should the involved party wish to appeal the decision of the SFCAB, they are to follow the process identified in *Section 4.9, Appeals*.

3.5.2.

Less Than Three Years

Employees, partners, volunteers, or NPS affiliates who have let their certifications become inactive for a period of less than three years may regain active status by accomplishing the following:

- Personnel working towards reinstatement may serve as an active member to the suppression program, while working towards reinstatement. In consultation with the park, the SF-OPM, SFCAB, and the park structural fire program manager will determine if an assessment of the employees skills and knowledge are required and, if required, develop a personalized training program which will need to be completed prior to responding to any incidents.

- Reviews engine company response protocols, SOP's, aid agreements, and pre-incident plans to ensure operational compliance at the park site.

- Must successfully complete a 24-hour live fire refresher within one year from application for reinstatement.

3.5.3.

More Than Three Years

Employees, partners, volunteers, or NPS affiliates who let their certifications become inactive for a period of more than three years may regain active status by accomplishing the following:

- Personnel awaiting reinstatement may only serve as a "trainee" and may not engage in the suppression of uncontrolled fires, until all of the conditions for reinstatement have been met.

- Must successfully complete the NPS 24-hour live fire refresher.

- Must successfully complete subject matter curriculum the SF-OPM or SFCAB identifies based upon the individual's need or changes in curriculum that have occurred in the interim.

- Submit copies of all of their certifications, past training, experience, and education towards maintaining their certifications, skills, knowledge and abilities.

3.6. Position Task Books (PTBs)

3.6.1.

The task book method of evaluating personnel for certification may be used to evaluate job performance requirements, requisite knowledge, requisite skills, or objectives to standards. The task book is intended to measure the candidate's performance with respect to specific job performance requirements (JPR) or objectives.

3.6.2.

Although PTBs were frequently used by the National Structural Fire Management Office for a variety of fire related positions, they have been replaced with skill sheets and other evaluation methods more commonly used and recognized by Pro Board and other training/certification agencies. Task books are still used for the LIFI course, as participants must repeatedly demonstrate skill proficiency under varied conditions to show mastery of

course elements. Employees who have completed the agency's training programs, but have not yet completed all of the PBT elements, are considered to be "trainees."

3.6.3.

Any outstanding PTBs for SFF1 and SFF2 must be completed by January 1, 2016. After that date, they are invalid. Employees, partners, volunteers, or associates with PTBs which have become invalid can either challenge the positions curriculum for certification or must retake the class.

3.7. National Board on Fire Service Professional Qualifications (Pro Board) Accreditation

3.7.1.

In an effort to come into alignment with national and accepted industry standards, the NPS structural fire training program has undergone 3rd party program accreditation through the National Board on Fire Service Professional Qualifications – Pro Board. As such, participants are now tested to ensure that they meet or exceed the minimum standards in place for the associated fireground positions. It is the intention of the NPS to have all of its core performance positions and certification programs Pro Board accredited. This shall not preclude the NPS from issuing certificates for courses not certified by Pro Board.

3.7.2.

All personnel seeking NPS certification will be considered for Pro Board accreditation, if they successfully complete the associated program and pass the required written examination and skill assessments.

3.7.3.

Participants who have obtained their certification through a state are not eligible for Pro Board Certification, unless they successfully challenge the associated position standards (*Section 10, Certification Challenge Process*).

3.7.4.

Employees not seeking Pro Board certification may retain their agency certification and serve the agency as a non Pro Board member. Should the candidate seek promotion to the next higher level and that level is part of the agency's Pro Board approved curriculum, the employee will not be able to seek Pro Board recognition for that level without upgrading their existing position to Pro Board certification (i.e. NFPA, 1001, Firefighter I and Firefighter II). The candidate may successfully complete the promotional class and maintain the NPS level certifications, if they choose. All course materials and evaluations will be recorded in the event that the employee seeks Pro Board recognition at a later date.

3.7.5.

At any time, employees, partners, volunteers, or associates may challenge any NPS Pro Board accredited program for certification. This includes employees who have allowed

their park issued certifications to fall out of agency compliance or subjects who have failed to obtain reciprocity for state certifications, as required (*Section 10, Certification Challenge Process).*

4. Training (Testing and Evaluation)

4.1. Testing Ethics

4.1.1.

During a written or manipulative skill examination, candidates will be held to the highest degree of conduct. Observed unethical behavior during any examination will not be tolerated. Should a proctor observe unethical behavior during any examination, the proctor will remove the candidate from the examination. The candidate will be informed of the observation and be requested to leave the test site.

4.1.2.

The proctor observing the unethical conduct will report the action to the lead instructor. Depending on the circumstances, the lead instructor may require the proctor to document their observations as soon as practical. Upon reviewing the incident and speaking with the involved parties, the lead instructor has the following options:

- Refer the situation to the SFCAB.
- Allow the student to retest, using a different test or with conditions established by the lead instructor.

4.1.3.

At the conclusion of the incident, the lead instructor will submit a written statement on the incident and the actions they took. This statement will be submitted to the SF-OPM who will report the event to the SFCAB for investigation. Should the incident be referred to the SFCAB, the subject's testing materials and supporting documentation will be sent to the SF-OPM for review by the SFCAB. The SFCAB will conduct an investigation into the allegations and will render a decision. Should the student wish to appeal the SFCAB decision, they can follow the guidelines identified in *Section 4.9, Appeals*.

4.2. Testing Integrity

4.2.1.

The lead instructor shall brief all assisting instructors, proctors, and support staff on specific safety precautions and procedures for all skills. Individuals involved with the testing or certification process who observes a potentially hazardous condition shall report the condition to the lead instructor or safety officer.

4.2.2.

All personnel, including candidates, evaluators, instructors, and support staff, shall wear appropriate protective clothing when involved in practical skills.

4.3. Test Security

4.3.1.

Students will not be permitted to leave the supervised testing area during the certification process (for either skill or written exams), including bathroom breaks without the authorization of the proctor or lead instructor. In the event of an emergency, the student may request permission to leave the testing area; permission can only be granted by the lead instructor or proctor. Failure to obtain permission could result in the student failing the ongoing examination, requiring a retest (see *Section 4.5.12. and 4.6.12.*).

4.3.2.

If permission is granted to leave the testing location during a written exam, the student is required to put their answer sheet inside their test booklet before leaving and turn materials upside down so no answers are visible. They can also give them to the written proctor. The student is not permitted to take anything with them outside of the room, nor bring anything back into the test location.

4.3.3.

During evaluations, students shall not be allowed access to skill evaluation sheets. All records are kept by the proctors delivering the skills assessments.

4.3.4.

Written proctors are to ensure adequate supervision is provided to maintain test security and safety during the administration of certification tests. Electronic devices, including cell phones, are prohibited. If calculators are necessary for mathematical questions, they will be provided by the proctor.

4.3.5.

All tests, answer sheets, and note pages are controlled by the written proctor; said materials are never permitted to leave the room. Students are provided with multiple test versions and are seated apart from each other.

4.4. Facilities and Equipment Standards

4.4.1.

Agency program managers, instructors, proctors, or SFCAB members will conduct periodic site inspections and verifications to ensure that facilities and equipment at testing locations are adequate for the full completion of job performance requirements, requisite knowledge, and skills to be tested.

4.4.2.

Prior to an agency sponsored certification class, the lead instructor is required to complete the Facilities and Equipment Necessary for the Certification of Candidates (Attachment 4), ensuring that there is sufficient equipment (which complies to program needs and agency safety standards) to complete the program and all associated examinations.

4.4.3.

Prior to the administration of any written exam, the written proctor will also complete the Facilities and Equipment Necessary for the Certification of Candidates (Attachment 4), ensuring that there is a comfortable location with adequate lighting, ventilation, and security to ensure administration of the exam.

4.4.4.

Certification programs or assessments which contain “live fire” requirements must comply with *Section 7, Live Fire Training*. In addition to the Facilities and Equipment Necessary for the Certification of Candidates (Attachment 4), instructors and proctors shall conduct student briefings and walkthroughs prior to ignition. Unless stated otherwise in *Section 7*, *Live Fire Training,* all live fire activities are conducted in compliance with NFPA standard 1403, *Live Fire Training Evolutions*.

4.5. Written Test Procedures

4.5.1.

Written examination shall be conducted for all certification levels, regardless of whether the course has been validated by Pro Board. NPS certified proctors shall administer written exams.

4.5.2.

Written examination questions will be referenced from manuals for each performance level as approved by the SFCAB. Certification tests shall be analyzed for validity and reliability whenever a new test has been generated.

4.5.3.

Test banks will be validated whenever new versions of test banks are used, NPS questions are incorporated, or applicable NFPA standards are changed.

4.5.4.

Written test questions found to be unreliable shall be corrected or removed from the test bank. Questions which are removed from the test bank should be replaced with a similar question to ensure that there are a sufficient number of questions representing every NFPA objective in the test bank. There shall be at least 3 questions for each NFPA objective within the test bank.

4.5.5.

Written examinations shall be randomly generated from the NPS certification test bank, using the “blue print” approved by the SFCAB and agency subject matter experts. At least

two (2) versions of the written examination shall be utilized for each level of certification being offered.

4.5.6.

New versions of written examinations will be generated, at least once a year, or any time an examination has been lost or compromised.

4.5.7.

Paper copies of the test bank and written examinations shall be locked in a secure location at the National Structure Fire Program Office, unless they are in use, under review by personnel approved by the SFCAB, or have been shipped to the testing site.

4.5.8.

When testing materials need to be sent to a testing location, the test materials will be packaged and sealed securely with tape in such a way that a broken seal will be an indication that tampering has occurred. Controlled test materials will be hand-delivered or sent by certified mail or commercial carrier. The cover of the package will clearly identify who is authorized to open the package and will be marked “CONFIDENTIAL.” An individual other than the addressee may open a package of controlled test materials, if authorized beforehand by the SF-OPM or lead instructor.

4.5.9.

When testing materials have been received by the park, the assigned proctor who received the examination documents is to inspect the envelope to make sure that the seal has not been tampered with or broken. Should the seal be broken or tampered with, the proctor shall notify the SF-OPM as soon as possible. A conference between the lead instructor, proctor, and SF-OPM will occur and a decision will be made as to whether a new test will need to be generated. A record of the decision will be kept in the class file. The proctor will then verify that the materials enclosed are correct and secure them until testing. The proctor will also review all the directions or instructions sent with the testing materials. Upon completing the examination, the testing materials will be re-sealed with tape, marked “CONFIDENTIAL,” and sent to the SF-OPM at the National Interagency Fire Center (NIFC) in Boise, Idaho. The tests will be re-inventoried with results documented on the test log.

4.5.10.

Electronic copies of the test bank or written examinations shall be locked with a password or other security measures, which will deny unauthorized access.

4.5.11.

Written examinations shall not be reproduced outside the national office.

4.5.12.

Minimum passing score for all examinations shall be 70%. Candidates who fail the written exam are offered another opportunity to retake the exam following a 30-day waiting

period. The retest exam cannot be the same test the candidate first took. Should the candidate fail the second exam, they are offered a third and final attempt to retest following a 90-day waiting period. Applicants who have failed three successive examination attempts must repeat the class in order to retest.

4.5.13.

Students will be informed of their scores or test results in person, by telephone, or by encrypted email. Should the candidate fail either the written or skill portion of the certification process, making certification unattainable, the candidate's supervisor or the park's Fire Chief/Engine Company Manager will be informed of failing scores and the implications it has on the candidate's ability to serve on the engine company. The supervisor or Fire Chief will also be informed of any actions being taken to address the deficiency or discuss if remediation efforts are possible.

4.5.14.

Prior to the administration of any written exam, the proctor giving the exam shall read out loud the candidate instructions for the exam.

4.6. Manipulative Skill Evaluation

4.6.1.

Manipulative skill examinations shall be conducted for all appropriate certification levels.

4.6.2.

All practical examinations shall be referenced to NFPA standards. Each skill will be validated for content, accuracy, and currency and reside in a booklet of skill sheets. Each skill is broken down into smaller tasks, which are awarded points or pass/fail elements. Candidates must obtain the designed number of points and pass all critical elements, which are pass/fail. Proctors must also complete the agency certification training.

4.6.3.

Proctors will use performance skill sheets developed by the NPS, which have been validated by agency SMEs. Each skill sheet is divided into elements, which are awarded either points and/or life safety pass/fail elements. When asked to demonstrate the task, the proctor uses the skill sheet and records the points the student has obtained from the list and notes if the student passes all of the critical life safety elements. The student must pass all critical elements and obtain 80% of the assigned points to pass the skill element. If the student fails any critical (life safety pass/fail) element, the student fails the practical exercise, regardless of their overall score.

4.6.4.

Manipulative testing for Firefighter I and II is divided into two phases. Phase I testing consists of a series of live burns and other evolutions near the end of the course. Phase II testing consists of a random section of manipulative skills, which is conducted at the end of the class.

4.6.5.

In consultation with the SFCAB and the instructors at the training, the SF-OPM shall select the skills, which will be used for the random examination.

4.6.6.

In preparation for testing, students will be provided with a skill performance packet. This packet will consist of all the associated skill sheets for the position being tested. Each skill is broken down into a sequence of steps, which have been developed for each level.

4.6.7.

To ensure consistency among evaluators, all proctors must refer to their skill sheets checklist and determine if the students followed the steps and techniques listed in order to pass the skill.

4.6.8.

Manipulative skills drawn for the “random” examination shall consist of 15% of the total skills for the level being tested. These skills will be chosen prior to the written exam in order to allow the proctor’s time to review the skill sequence. No prior notification of the skills being tested will be given to the students. No training, teaching, or coaching are allowed during the formal testing process provided by authorized agency skill proctors.

4.6.9.

Practical skill stations will be arranged to prevent the students from skipping stations they have not yet completed. At no time are candidates permitted to handle the evaluation skill checklists, except to sign for their test results.

4.6.10.

Prior to administration of a skill examination, proctors shall read out loud any associated instructions for the skill. The proctor will then review the skill sheet with the students, ensuring their complete understanding of the task, time, and skill requirements. This will ensure consistency and accuracy with their evaluation.

4.6.11.

The student’s success or failure on each skill should be indicated on their skill sheet immediately following their demonstration of that skill. The evaluators shall mark pass or fail on the signature page and will also record the total number of points the applicant earned on the evaluation side. In addition to achieving the minimum number of points for the skill, the student must also pass all the critical elements, which are identified as pass/fail.

4.6.12.

Candidates who receive less than a passing score on any practical evaluation will be offered the opportunity to retake the examination that same day; the candidate may request another proctor, provided that the new proctor has not taught the skill being

evaluated. Should the candidate fail the second examination, they are offered a third and final opportunity following a 30-day waiting period.

4.7. Examination Schedules

4.7.1.

Exams, both manipulative and written, are a function of the academy classes and are presented as a portion of the class. Participants are made aware of examination periods through the program agenda and the instructors.

4.7.2.

Requests for all examinations other than those provided through the academy classes will be scheduled by the SF-OPM with the involved park or employee.

4.7.3.

All examinations, whether conducted at the academy or off-site, will only be performed by agency recognized proctors.

4.8. Exam Grading and Scoring

4.8.1.

Students will be informed of their scores or test results in person, by telephone, or by encrypted email. Should the candidate fail either the written or skill portion of the certification process, making certification unattainable, the student will be informed on procedures for retesting.

4.8.2.

In the event of a failing mark which delays certification, the training coordinator and the appropriate proctor at the employee's work site will be informed so that retesting can be scheduled and to provide any necessary guidance or direction to support the employee with developing the knowledge to master the deficient skill or knowledge section.

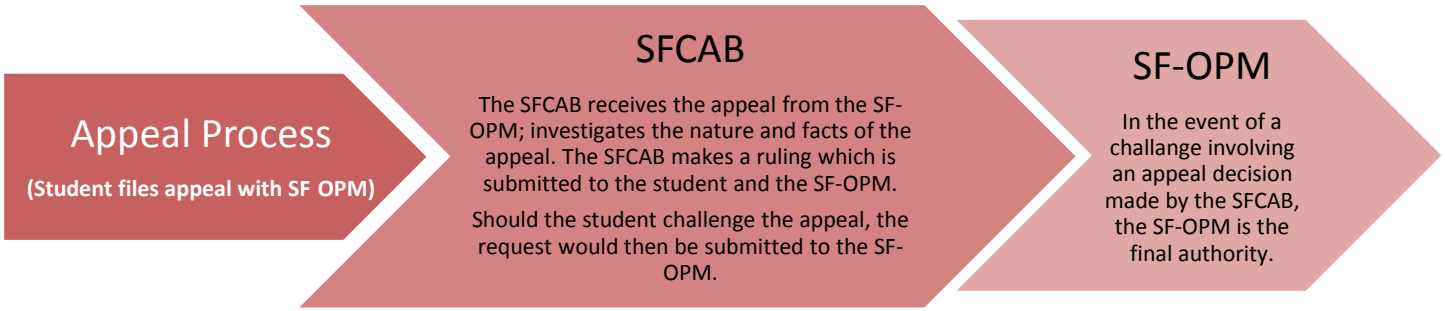
4.8.3.

As candidates for certification are employees of the agency, the park fire chief and/or training officer will be informed of the candidate's status and progress to ensure that the employee does not engage in engine company operations at a level they are not authorized or certified to perform. All efforts will be made to assist the employee with developing and mastering the required skills or knowledge requiring improvement.

4.9. Appeals

4.9.1.

Should a candidate be denied certification as a result of failed testing, whether academic or practical, the candidate can submit their appeal to the SF-OPM who will then forward it to the SFCAB. The appeal must clearly outline any issues with times, dates, witnesses, and curriculum sources. Any alleged violation of certification policies must identify specific policies. It shall be the sole responsibility of the candidate to initiate the appeals process. Candidates who do not file their appeal within 12 months of the initial finding will need to re-take the class, unless a significant reason, such as medical absence or military assignment overseas, prevented the appeal from being submitted.



4.9.2.

The SFCAB shall submit their response, in writing, to the appellant within thirty (30) business days, following the last meeting concerning the appeal. All responses will be sent by certified mail or electronically encrypted email.

4.9.3.

A copy of the SFCAB response shall be filed within the National Structural Fire Program Office along with the original appeal.

4.9.4.

Should the candidate wish to appeal a decision made by the SFCAB, the subject shall submit their appeal directly to the SF-OPM who is the final authority.

4.10. Issuing Certifications

4.10.1.

Candidates meeting or exceeding the standards of the written and manipulative skills behavioral performance objectives will be issued certificates, identifying them as certified at the level being requested.

4.10.2.

Copies of certificates will be uploaded in the agency's national database for reference, validation, and access.

4.10.3.

The NPS currently maintains a duel track certification system (i.e. Pro Board and NPS only). Personnel who have met all of the requirements for either certification will be recognized as stated in *Section 4.10.1*. NPS certifications issued by the National Fire Program Management Office will be recognized and honored by all NPS sites. As such, employees cannot be denied participation in NPS suppression operations, be required to retest, or be forced to attend state certification courses. Employees who have successfully met all of the conditions for Pro Board certification will have their names submitted to Pro Board by the SF-OPM. All associated fees for Pro Board certification will be paid for by the National Office.

4.11 Accident and Injuries

4.11.1

All accidents and injuries associated with academy courses will be immediately reported to the lead instructor. Participants who experience a training-related injury or illness shall report the event in the Safety Management Information System (SMIS). This report will automatically be routed to the employee's supervisor, who will review it per normal supervisory process.

4.11.2

The Lead instructor shall notify SF-OPM of the injury and the name of the employee. The SF-OPM or his/her designee will review the report and change the Organization Code from the employee's default code to the Division of Fire and Aviation Management (9560).

4.11.3

Accidents occurring outside national fire academy courses will be reported and documented in SMIS in accordance with agency policy and guidelines. SMIS reports on these types of injuries will remain on the employee or park default code.

5. <u>Certification Evaluators or Proctors</u>

5.1. General Procedures

5.1.1.

Members of the SFCAB, SF-OPM, or senior instructors for the agency's training program will periodically audit proctors to verify performance and conformity to regulations, regarding the administration of written and skill exams. Records of such audits will be uploaded into the agency's reporting system under the proctor's name for future reference.

5.1.2.

Any proctor who fails to abide by the established proctor process shall be dismissed from the program. Any certification issued by the NPS Structural Fire Program, including

proctor certification, may be denied, suspended, summarily suspended, revoked, or limited for good cause in proceedings pursuant to denial, revocation, suspension, limitation, or modification of certification.

5.1.3.

Whenever possible, proctors are used that have no direct involvement with the instruction of the examination materials (presented at the course in which the employee is seeking certification). If that is not possible, prior to skill or written test assessment, agency instructors and proctors shall meet and review their activities, ensuring that no conflict of interest is present when skill assessment assignments are given. Instructors are not permitted to evaluate skills, which they instructed to the employee. A record of the instructor/proctor assessment meeting will be kept and placed into the class file for review and audit.

5.1.4.

Certification proctors or evaluators shall return all testing materials to the SF-OPM within five (5) days of test completion.

5.1.5.

Upon successful completion of the agency's proctor training program, the employee must sign a proctor affidavit (Attachment 5) ensuring that they will comply with the standards established by the service and to ensure impartiality for testing and assessment.

5.2. Written Examination Proctors

5.2.1.

Prior to becoming recognized as a proctor for a written test, the individual must submit a proctor application (Attachment 6) and then complete the agency's written proctor training program. This program has been established to ensure consistency and integrity in presenting the written portion of the exam and to guarantee fairness to all students. Once completed, the individual is reviewed by the SFCAB and the SF-OPM. Upon approval, a certification is presented and the subject is entered into the agency's database.

5.3. Manipulative Skill Proctors

5.3.1.

Proctors who participate in the evaluation of skills and abilities are required to have been certified to the position level that they are evaluating or higher.

5.3.2.

Prior to becoming recognized as a proctor for skill examinations, the subject must submit a proctor application and then complete the agency's skill proctor training program. This program has been established to ensure consistency and integrity with presenting the

written portion of the exam and to guarantee fairness to all students. Once completed, the individual is reviewed by the SFCAB and the SF-OPM. Upon approval, a certification is presented and the subject is entered into the agency's database.

6. Revocation, Suspension, or Denial of Certification

6.1. General

The SFCAB may revoke, suspend, or deny certification for:

- Participants who make intentional misstatements on the certification application.
- Parks or individuals who falsify training records or signatures.
- Parks or individuals who intentionally misrepresent or violate NPS policies and procedures.
- Parks or individuals who intentionally violate a test proctor's instructions.

6.2. Procedures for Revocation, Suspension, or Denial of Certification

6.2.1.

The SFCAB will investigate all suspected or reported violations identified in *Section 6.1*.

6.2.2.

Following an investigation, if the SFCAB believes that grounds exist for the revocation, suspension, or denial of certification, the participant involved, the SF-OPM, and the park Fire Chief (PSFC) will be given written notification of an intention to hold a hearing. The written notification shall include the time, date, location, and basis for the hearing.

6.2.3.

The revocation, suspension, or denial of certification shall require a quorum of the committee's members.

6.2.4.

Any participant who has lost and/or been denied a certification pursuant to *Section 6* may reapply for certification one (1) year after the date of the board's action, unless otherwise specified by the SFCAB.

6.2.5.

Any participant who has lost and/or been denied a certification by the SFCAB may appeal the decision to the SF-OPM, following the guidelines identified in *Section 4.9*. The party must request the appeal within ten (10) days after the notice of denial.

7. Live Fire Training

7.1. General

7.1.1.

This section contains the minimum requirements for training under live fire conditions, including but not limited to: vehicle, structure, vessels, fire simulators and props, trash piles and containers. Just like actual structural fires, training fires contain many hazards, including rapid-fire development, toxic products of combustion, and the physiological stress of firefighting itself. These conditions require a high degree of situational awareness and decision making. Live fire instructors have the responsibility for the safety and health of all the participants in these training activities. Numerous injuries and fatalities have occurred during live fire training, often the result of rapid changes in fire conditions, and in some cases, the lack of technical skill, which have been compounded by inappropriate individual or organizational attitudes towards risk management. All training shall comply with NFPA 1403, unless stated otherwise in this section.

7.1.2.

Live fire training is restricted to the use of props, such as the propane tree, vehicle, dumpster, or pan fires, and structural fires involving fixed structures which have been constructed to serve specifically as a burn building. Employees are not permitted to perform live fire training exercises in “acquired structures” without approval from the SF-OPM.

7.1.3.

All live fire instructors and safety officers shall be trained and certified to the requirements contained in this standard. As a general rule, the minimum number of “live fire instructors” required to conduct live fire training is as follows. Variances to these standards may be granted by the SF-OPM:

7.1.3.1.

Line of Sight Training Situations (propane tree, dumpster, vehicle, and flash pans) require two live fire instructors with one of them being the safety/backup line instructor.

7.1.3.2.

Established Burn Structures (gas-fired or non-gas-fired) require three live fire instructors with one of them being the safety/backup line instructor. Under some conditions, the size of the structure or the experience of the crews involved, a waiver requiring the use of only 2 fire instructors may be obtained from the SF-OPM. Whenever a waiver is requested, the IAP must also be approved by the SF-OPM.

7.1.3.3.

Acquired Structures require four or more live fire instructors.

7.1.3.4.

Instructor/Participant Ratio:

There shall be one instructor for each functional attack crew, which shall not exceed five students. The one exception to this requirement is a dual line attack on a propane fire in which the instructor maintains physical contact with both lines. The instructor/participant ratio may then go to one instructor with 8 students (4 students per line).

7.1.4.

All live fire drills are to have an intended purpose other than simply throwing water on flames. Learning objectives and desired outcomes are to be developed and incorporated into the fire plan and understood by all participants.

7.1.5.

Only those employees, partners, or park associates who have a firefighter certification through the state from which they are currently providing service or the National Structure Fire Program Office may participate in live fire training.

7.1.6.

These standards do not apply to fire extinguisher training and the use of live fire in flash pans for extinguishment.

7.2. Minimum Training for Participation in Live Fire Training

7.2.1.

NPS Requirements

7.2.1.1.

In order to ensure safe operations during live fire training, all participants must have received the minimum training to meet the job performance requirements for Firefighter I, as specified in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, *Section 5.1.1*:

Safety	Ladders	Ventilation
Fire behavior	Fire hose, appliances, and streams	Forcible entry
Portable extinguishers	Overhaul	Building construction
Personal protective equipment	Water supply	

7.2.1.2.

Participants attending NPS structural fire certification courses may participate in live fire training and observation burns, while the job performance requirements associated with Firefighter I and Firefighter II are being developed, but only under the direct supervision of recognized live fire instructors.

7.2.2.

Participants from Other Agencies Attending NPS Live Fire Training

Firefighters from other agencies or departments, who wish to participate in live fire training presented by the NPS, or off-site programs managed by NPS personnel, shall not be permitted to participate without first presenting written evidence that they have successfully completed the minimum training levels specified in *Section 7.2.1.1*. Written evidence can include copies of firefighter certifications, which show compliance with NFPA 1001, or a letter from the Department Fire Chief stating that the employee has met the job performance requirements specified in *Section 7.2.1.1*. All documentation should be made part of the final record.

7.3. Minimum Qualifications for Instructor Certification

7.3.1.

General

The SFCAB, with support from the SF-OPM, is responsible for the recognition and certification of park employees and associates with Live Fire Instructor designation.

7.3.1.1.

NPS instructors who are certified as state instructors and are presenting state courses for certification must comply with state requirements for live fire training. Whenever these same employees are providing live fire training outside of state course certification requirements, i.e. engine company drills or in compliance with agency live fire refresher training requirements (regardless of the location where the training is being presented), they must comply with *Section 7.3, Minimum Qualifications for Instructor Certification.*

7.3.1.2.

The SF-OPM will be responsible for maintaining training records for all NPS fire instructors, including training experience and roles served, as well as assuring each instructor is currently certified to teach NPS training courses.

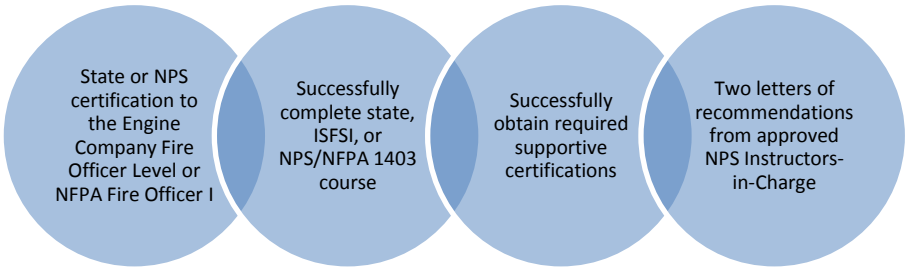
7.3.1.3

NPS employees who have been acting or serving as fire instructors must come into compliance with this standard by January 1, 2017. As of that date, the NPS will no longer permit these employees to serve in the role of “fire instructor.” Employees who fall into this category can either provide two letters of recommendation, as mentioned in *Section 7.3.2*, or they can obtain a letter from the SFBC or SF-OPM.

7.3.2.

NPS Employees

NPS employees who wish to instruct live fire training must successfully complete the instructor certification process outlined below.



7.3.3.

Non-NPS Employees

7.3.3.1.

When state, partner, or contract instructors are used to present live fire training, these instructors shall meet the same standards set forth for NPS employees or shall meet the following requirements and qualifications:

- Provide evidence of current certification as a Fire Officer I in accordance with NFPA 1021, *Standard for Fire Officer Professional Qualifications*, and Fire Instructor I in accordance with NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications.*

- Provide evidence of successfully completing NFPA 1403, *Standards on Live Fire Training Evolutions,* training.

- Provide a letter from their fire department which shows that they have been assigned instructor responsibilities by the Fire Chief, Chief Fire Official, or Chief Training Official.

- Provide at least three written references from local, state, or federal fire agency Directors, Fire Chiefs, or Chief Training Officers regarding their performance as a live fire instructor and their safety record with live fire instruction.

7.3.3.2.

Non-NPS live fire instructors shall be responsible for meeting all requirements of NFPA 1403, *Standards on Live Fire Training Evolutions*.

7.3.3.3.

Non-NPS live fire instructors will be responsible for incorporating NPS Operational Leadership principles during live fire training exercises.

7.3.4.

Instructor Currency Requirements

7.3.4.1.

All NPS live fire instructors, regardless of origin of certification, must comply with NPS currency requirements. Instructors must supervise, instruct, or co-instruct no less than one live fire training event every three years in order to maintain their instructor certification with the NPS. All NPS live fire instructors must attend a SF-OPM approved live fire training update/refresher every five years following initial certification.

7.3.4.2.

In the event that an instructor has failed to meet currency requirements, they may reapply for instructor status by submitting their application to the NPS Structural Fire Certification and Advisory Board (SFCAB) through the SF-OPM.

7.4. Instructors and the Instructor-In-Charge

7.4.1.

General

7.4.1.1.

Instructors are to comply with standards set forth in NFPA 1403, *Standards on Live Fire Training Evolutions,* unless otherwise specified in this chapter.

7.4.1.2.

An “instructor-in-charge” means an employee, partner, or contractor who has obtained certification at the “instructor” level and meets the position requirements, as described in this chapter; see *Section 7.4.2*.

7.4.1.3.

An “instructor” means an employee, partner, or contractor who meets the position requirements as described in this chapter and has been granted in accordance with *Section 7.3.1*.

7.4.1.4.

Every live fire training exercise shall have a designated instructor-in-charge.

7.4.2.

Instructor-in-Charge (IIC)

7.4.2.1.

The IIC has overall authority and responsibilities for all live fire training sessions. The individual in this position is responsible for ensuring that the evolution is conducted safely, that the training structure and props comply with NFPA 1403, and that fireground activities are monitored, ensuring that there are enough properly trained and qualified live fire instructors involved (see *Section 7.4.2.3*) and all training evolutions are conducted in accordance with agency policies and standards.

7.4.2.2.

The IIC must be skilled and knowledgeable of fire behavior conditions that pose a significant safety concern for participants. These conditions could lead to rapid, uncontrolled burning. Throughout the training session involving live fire evolutions for interior firefighting, the IIC must ensure that heat release characteristics of materials and combustibility are all carefully monitored and the structure is continually evaluated for safety, integrity, and soundness.

7.4.2.3.

The IIC is responsible for ensuring that there are enough live fire instructors to meet the following primary positions:

- One instructor for each functional crew which shall not exceed 5 students or participants.
- One instructor for a backup hose line.
- One additional instructor for each additional functional assignment (typically associated with interior structural fire attacks or complex live fire training evolutions).
- Additional instructors shall be designated when factors such as extreme temperatures or large groups are present and when classes of long duration are planned.

7.4.2.4.

The IIC must work closely with the training safety officer to ensure that operations are conducted properly and that a Go/No Go sequence is conducted prior to the initiation of live fire training evolutions. Furthermore, the IIC shall ensure that NPS Operational Leadership principles are utilized.

7.4.2.5.

In the event that props are used as part of a live fire evolution, the IIC is responsible for ensuring that instructors have been trained to utilize the prop and are familiar with how it works prior to its use.

7.4.3.

Instructors

7.4.3.1.

Instructor status is awarded by the SFCAB. Instructors participating in live fire training exercises work for the IIC. Instructor assignments for any given exercise should be rotated.

7.4.3.2.

Instructors are to ensure that prior to ignition, personal protective clothing and equipment is properly worn by participants. Furthermore, instructors shall take a personal accountably report (PAR) of all participants entering and exiting any structure or fire prop, prior to each fire attack evolution.

7.4.3.3.

Instructors shall monitor and supervise all assigned students during live fire evolutions.

7.4.4. Instructor Trainees

7.4.4.1.

An instructor trainee is someone who has completed the NPS/NFPA 1403 class and is actively working towards completing the other associated requirements, including the position task book.

7.4.4.2.

The instructor trainee can perform many of the assignments of a “certified” live fire instructor, but only under the direct supervision of an instructor authorized by the SFCAB.

7.5. Safety Officer and Fire Training Safety

7.5.1.

General

7.5.1.1.

During live fire training, no person should be allowed to breathe smoke, toxic vapors or fumes, products of combustion, or be exposed to an oxygen-deficient atmosphere. These requirements must also be considered for support personnel, such as fire apparatus driver operators who may be exposed to smoke due to wind direction.

7.5.1.2.

Participants involved in the live fire training should be instructed to report to a predetermined location for a roll call, if the evacuation of the burn building or acquired structure is signaled. Instructors should immediately report any personnel not accounted for to the instructor-in-charge.

7.5.1.3.

Prior to conducting a live fire training exercise, a pre-burn briefing shall be conducted for all participants. The briefing will discuss all facets of each evolution to be conducted and assignments for all personnel participating in the training session.

7.5.1.4.

To help maintain safety during training evolutions, the IIC shall conduct a run-through of the attack with no fire present and no water flowing (dry run). The purpose of the dry run is to ensure that the crew works together and they are familiar with all elements of the training event. For fires involving propane, a second run-through involving water with no fire should also be considered, so participants practice the exercise elements, including hose line movement and nozzle pattern prior to fire being added to the equation.

7.5.1.5.

When burn structures are used, instructors shall have participants verbally identify escape routes that would be used in the event of an emergency or an evacuation. Identification of escape routes will be included in the burn plan.

7.5.1.6.

Because of the extreme potential for accidents, injuries, or unanticipated fire growth and development, the use of multiple fires at the same time in a burn building or acquired structure is prohibited.

7.5.2.

Safety Officer

7.5.2.1.

The safety officer shall have the authority, regardless of rank, to intervene and stop any aspect of the operation when they feel that there is a potential danger, actual danger, or when an unsafe condition exists. The safety officer must be trained to the fire instructor level.

7.5.3.

Accountability

7.5.3.1.

Instructors must be able to maintain accountability for all participants throughout the entire evolution. This is extremely important when engaged in “interior” operations. Instructors shall conduct a Personnel Accountability Report (PAR) prior to entry and upon exiting any structure utilized during live fire exercises.

7.5.3.2.

At any time when a participant cannot be accounted for, it will be immediately reported to the instructor-in-charge. If a structure is used for live fire burns, all participants must immediately evacuate the building and all live fire training is to be stopped, until the unaccounted participant is found.

7.5.4.

Personal Protective Equipment (PPE)

7.5.4.1.

PPE is the firefighter's first line of defense against fire and heat. As such, instructors and the safety officer are required to ensure that all participants wear NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting,* clothing that is in serviceable condition.

7.5.4.2.

PPE shall consist of a protective coat, trousers, hood, footwear, helmet, gloves, SCBA, and a Personal Alert Safety System (PASS) device.

7.5.4.3.

Personnel participating in live fire training exercises are not permitted to wear firearms, chemical agents, electronic control devices (ECD), or bullet proof vests.

7.5.5.

Communication

7.5.5.1.

Communication is a critical component to any live fire training exercise. This includes communication between the instructors, attack and backup lines, driver operators, command, and logistical staff. All live fire exercises shall have a communication plan. It is recommended that a dedicated radio channel be used during live fire operations.

7.5.5.2.

The communication plan must clearly define the method for the IIC to contact a dispatch center, as well as on scene personnel.

7.5.5.3.

When burn buildings or acquired structures are used, building evacuation signals shall be defined and demonstrated to all participants prior to ignition. The evacuation signal must

be included in the overall burn plan. Examples of an evacuation signal that could be used include a whistle, apparatus air horn, or high–low electronic siren.

7.5.6.

Emergency Medical Service

7.5.6.1.

During live fire training, the instructor-in-charge (IIC) shall ensure that basic life support (BLS) services are on site to handle any possible injuries. If approval has been granted for the use of an acquired structure, the ICC must ensure that the BLS service on-site has the ability to transport patients.

7.5.6.2.

Designated ambulance or emergency medical vehicle parking and staging shall be reflected in the pre-burn plan. These services should be located where they can provide prompt response to an injury or medical emergency on the fireground.

7.5.6.3.

Fire plans should include global positioning satellite (GPS) coordinates for potential landing zones in the event that air transportation of patients is necessary.

7.5.6.4.

All injuries which occur as a result of live fire training are to be documented and reported according to agency reporting requirements. All lost time accidents or injuries and all fatalities are to be reported to the SF-OPM, as soon as possible.

7.5.7.

Incident Scene Rehabilitation (ISR)

7.5.7.1.

Because of the physical, physiological, and emotional stress of firefighting, all live fire training exercises are to include a formal ISR program in their pre-burn plan and on the fireground. The ISR should address the following:

- Relief from climatic conditions
- Rest and recovery
- Active and/or passive cooling or warming, if necessary
- Rehydration
- Calorie and electrolyte replacement
- Medical monitoring

7.5.8.

Spectators, Media, and Visitors

7.5.8.1.

The instructor-in-charge and/or the safety officer can authorize and are responsible for directing non-participants to an area where they are not exposed to potential dangers, like toxic gases and smoke. Visitors allowed within the operations area must be escorted at all times and must be equipped with and wear appropriate PPE.

7.6. Facilities and Equipment Associated with Live Fire Training

7.6.1.

General

7.6.1.1.

Instructors are to be intimately familiar with all equipment and/or facilities to be utilized prior to their use.

7.6.1.2.

Whenever LP gas is used, the instructor-in-charge shall visually inspect and operate the LP prop prior to the training exercise to assess burn conditions.

7.6.2.

Acquired Structures

7.6.2.1

Consult NFPA 1403, Section 1.11 for details.

7.6.2.2.

On rare occasions, a building may be requested to be completely burned down to assist the park in permanently removing the structure. This request must be identified at the very beginning of the training planning stage and all policies associated with the use of the acquired structure must be complied with.

7.6.3.

Gas-Fired or Non-Gas-Fired Structures

7.6.3.1.

Live fire structures shall be visually inspected for damages prior to each evolution. All doors, windows, shutters, roof scuttles, or other building systems shall be checked and operated to ensure that they operate correctly. Conditions and safety concerns about the structure will be identified and documented. In the event that a condition exists with the structure which is severe enough to adversely affect the safety of the participants, the IIC in consultation with the safety officer shall not allow the training to occur until the situation has been corrected.

7.6.3.2.

Live fire structures shall be left in a safe condition upon completion of the training event. In the event that the structure has been damaged or made unsafe as a result of the exercise, the IIC shall ensure that the structure is closed and the agency managing the facility is notified.

7.6.3.3.

Burn structures that have been established and put in place for repeated trainings, whether at the park or at the national training site, shall have a structural evaluation every (3) years, if the structures have received less than 30 days of use each year. Structures for live fire that receive more than 30 days of live fire use each year are to be evaluated every two years or as the conditions warrant. Personnel performing structural integrity evaluations should understand the structural system that is being evaluated and where damage is most likely to occur and should involve NPS facilities or fire department personnel familiar or experienced with assessments of buildings' structural integrity.

7.6.3.4.

Facilities that are owned, managed, or operated in partnership with the NPS shall have the policies and procedures for the live fire training structure in writing and clearly posted.

7.6.3.5.

Burn structures are to be properly vented prior to subsequent burn exercises to reduce the chances of a flashover or unexpected burn event.

7.6.3.6.

When gas-fired structures are utilized, the IIC shall ensure full compliance with NFPA 1403.

7.7. Fire Control Teams

7.7.1.

All fires involving structures (acquired or constructed "burn" buildings) or props which utilize fuel systems, such as propane, are required to have a fire control team. The purpose and principal function of a fire control team is to observe the ignition officer, while

he/she is igniting or maintaining the fire, and to recognize, report, or respond to any unexpected conditions.

7.7.2.

A fire control team shall consist of a minimum of two people. One person from the fire control team shall be appointed as the “ignition officer.” The ignition officer cannot be a student or the safety officer. The team shall wear full personal protective equipment, including SCBA, when performing their assignment. Furthermore, the team must be equipped with a charged hoseline whenever the team is igniting or tending to the fire.

7.7.3.

The decision to ignite the training fire shall be made by the instructor-in-charge and shall be coordinated with the incident safety officer. No fire shall be ignited without the ignition officer visually confirming that the fire area is clear of personnel being trained.

7.8. Water Supply

7.8.1.

NFPA 1403 requires water to be supplied and delivered from two separate water supply and delivery systems. This is an added safety precaution to help prevent the simultaneous loss of water to both the attack and backup firefighter lines in the event of a pump, water supply, or delivery failure. If one system goes down, there is a completely separate water supply to assist with firefighter safety on the training grounds.

7.8.2.

The instructor-in-charge (IIC) shall ensure that there is enough room around fire props and within burn structures so that there is space for all attack and backup lines to operate freely.

7.8.3.

The IIC and the safety officer shall determine the rate and duration of water flow necessary for each individual live fire training exercise, including the water necessary for control and extinguishment of the training fire, the water necessary for backup lines to protect personnel, and any water needed to protect other exposures. Knowledge of the hoseline sizes, types of nozzles, type of fire stream to be utilized, and principles of fire attack and deployment aid in determining the necessary flow rates.

7.8.4.

A minimum flow rate of 95 gpm is required for each hoseline (a higher flow rate is recommended).

7.8.5.

Backup lines shall be provided during live fire exercises to provide additional protection of personnel on the attack lines.

7.9. Fuel Materials

7.9.1.

General

7.9.1.1.

Past injuries and deaths within the fire service during live fire training exercises indicate that fire growth dynamics were not considered or were inaccurately assessed prior to the beginning of the exercises. Fuel types, quantity, site placement, preheating of combustibles, and hazards associated with fuel types are some of the most serious safety concerns with live fire training. As such, it is extremely important that all instructors are familiar with fuel requirements specified in NFPA 1403.

Flammable or combustible liquids **shall not** be used in interior live fire training evolutions under any circumstances. Unidentified materials, such as debris found in or around a structure that could burn in unanticipated ways, react violently, or create environmental or health hazards shall not be used.

7.9.1.2.

The instructor-in-charge can authorize restocking or refueling a fire, if necessary. Should restocking be required, it will only be performed when a fire control team is present to provide safety and rapid intervention. Restocking should not be performed, while students or participants are in the structure. Additional fuel for restocking must not be kept in the hallway or in an adjacent burn room.

7.9.1.3.

The instructor-in-charge and the safety officer shall ensure that all possible sources of ignition other than those directly under their supervision have been removed from the area of operations.

7.9.2.

Burn Buildings

7.9.2.1.

Acceptable fuels include pine excelsior, wooden pallets, straw, hay, and other wood-based products. Low-density combustible fiberboard has been found to rapidly spread fires, which have resulted in fatalities. Low-density combustible fiberboard or pressure-treated wood may only be used in small quantities and in burn structures where the instructor-in-charge and the interior fire instructors have personal experience with how these fuels affect fire behavior and only when adequate safety precautions have been identified and put in place.

7.9.2.2.

Excessive fuel loading is to be avoided as it can contribute to conditions that create unusually dangerous fire behavior. These conditions increase the amount of thermal

energy (the heat release rate of the fire) that is being transferred by conduction, convection, and radiation to any firefighters in the compartment, which can lead to the degradation of protective equipment and injury or death.

7.9.3.

Gas Fired Props and Burn Buildings

7.9.3.1.

All props that use pressure gases to move fuel to the fire shall be equipped with a remote fuel shutoff outside of the safety perimeter, but within sight of the prop and the entire field of attack on the prop.

7.9.3.2

During live fire exercises in which a prop is used, the remote shutoff shall be continuously attended by those personnel that have been officially assigned and have been trained in its operation and who have direct communication with the safety officer and the instructors. The safety person at the remote shutoff has the authority to shut off the fuel supply to the prop when, in their judgment, the prop has malfunctioned, the fire has gone dangerously out of control, or participants are perceived to be in any kind of jeopardy.

7.9.4.

Vehicle Props and Fires

7.9.4.1.

For fires utilizing burn vehicles, the following items are to be removed prior to the exercise: bumper compression cylinders, struts, shock absorbers, and batteries. The oil pan, transmission, and differential drain plugs shall be removed and the fluids drained and disposed of. Fuel tanks can either be removed or punctured with all fluids removed.

7.10. Fire Plans and Briefing

7.10.1.

With so many parts needing to come together to ensure that a live fire training evolution is viable and safe, a pre-burn plan shall be completed and approved prior to any live fire training exercise.

7.10.2.

Because of the inherent dangers associated with live fire training exercises, pre-burn plans must be reviewed by the instructors and approved by the following personnel:

- For acquired structures, the SF-OPM with concurrence from the park Chief Ranger (or his/her deputy).

- For gas-fired and non-gas-fired structures, the Park Fire Chief or Chief Ranger (or his/her deputy).
- For nonstructural training props, the Park Fire Chief or Chief Ranger (or his/her deputy).
- For NPS Fire Academy classes, the plan shall only require the approval from the Lead Instructor with concurrence from the IIC.

7.10.3.

Pre-burn plans must include all of the following sections; in the event that one section is not relevant to the overall plan, the section must still be referenced in the plan. Although all sections are required, many sections have components that require additional attention, i.e. emergency plans include identification of rapid intervention crews, building evacuation plans, and personnel accountability reporting process.

Learning Objectives	Emergency Plans	Staffing and Organization
Participants List	Weather	Safety Officer
Water Supply Needs	List of Training Evolutions (Order-of-Operations and the Go/No Go Sequence)	Staff and Participant Rotation
Apparatus Needs	Order of Operations	Personal Protective Equipment Use
Building and Site Plan	Emergency Medical Plan	Agency Notification Checklist
Parking and Areas of Operation	Communications Plan	Demobilization Plan

7.10.4.

For pre-burn plans involving acquired structures, it is required that the plan be entered into Planning, Environment, and Public Comment (PEPC). Only the internal side of PEPC shall be used as it provides the live fire staff a centralized system for posting the plan and support documents for internal review, while allowing simultaneous access by all training team members to retrieve information, review and enter comments, and approve the proposed plan. By using PEPC, it allows the instructor-in-charge to centralize and store burn plan information in one place, rather than having it spread among individual offices, and creates a formal review process.

It is strongly encouraged that PEPC also be used for live fire training sessions, regardless of where the training is occurring.

7.10.5.

If PEPC is not used, the pre- burn plan shall be written and have concurrency and approval lines.

7.11. Acquired Structures

7.11.1.

For the purpose of this chapter, an "acquired structure" is a building that is owned, operated, or controlled by the NPS (or its agents or partners) or is a privately owned building that is donated either to the NPS or another agency in which the NPS is serving as the lead agency with managing, directing, and/or coordinating the live fire exercise.

7.11.2.

Acquired structures require the use of experienced instructors who must prepare the structure and conduct a thorough inspection to ensure that all hazards are removed prior to the training exercise. The use of acquired structures for live fire training is prohibited, unless prior approval has been obtained from the SF-OPM.

7.11.3.

When a live fire training exercise involving an acquired structure has been approved, the instructor-in-charge shall ensure compliance with the most recent edition of Chapter 5, Acquired Structures, of NFPA 1403, *Standard on Live Fire Training Evolutions.*

7.11.4.

NPS employees are permitted to participate in live fire training events involving acquired structures outside of NPS jurisdiction provided that the organization presenting the exercise assumes all liability.

7.12. Off-site Training

7.12.1.

NPS employees, partners, and associates may participate in live fire training exercises that are sponsored by local, state, federal agencies, or private training facilities provided they have a certification at the Firefighter I level or higher from the state or the National Structure Fire Program Office (see *Section 7.2.1.*).

7.13. Additional Considerations

7.13.1.

Because of life safety issues, reduced visibility, and difficulty with maintaining accountability, live fire training exercises within NPS parks or units should not occur during nighttime periods.

7.13.2.

The use of people to serve as victims during live fire drills and exercises is prohibited.

7.13.3.

Absolutely no furniture, equipment, or other debris, which could cause an entrapment, will be placed in any structure where interior live fire training is occurring.

8. <u>Biannual Refresher</u>

8.1. General

8.1.1.

The biannual (every other year) firefighter refresher with live fire recertification is required for all NPS fire suppression positions. Failure to meet this requirement is addressed in *Section 6, Revocation, Suspension, Annulment, or Denial of Certification*.

8.1.2.

Annual firefighter refresher will have a 24-month currency and will consist of 24 hours of training materials, including at least 8 hours of live fire training.

8.1.3.

A significant component of the biannual firefighter refresher is the maintenance of critical skills and live fire recertification. Just like actual fires, live fires for training involve many hazards, including rapid fire development, toxic products of combustion, and the physiological stress of firefighting. These conditions require a high degree of situational awareness and decision making. All instructors who are providing live fire training must be in compliance with *Section 7, Live Fire Training*.

8.2. Course Requirements

8.2.1.

The hours required for the biannual refresher may be completed in a single session or in increments throughout the two years. If completed incrementally, it is the responsibility of the employee and the park program manager to document all training sessions to ensure compliance with this standard. For details, see *Section 11, Record Management*. In addition, if completed incrementally, training hours earned towards meeting the biannual refresher requirements cannot be applied to meet the employee's annual continuing education requirement (24 hours annually). For example, within one refresher period, which is two years in length, an employee will need to complete 48 hours of continuing education (24 hours each year) with an additional 24 hours to comply with the firefighter refresher requirements (for a total of 72 hours).

8.2.2.

If completed in a single session, a course certificate can be issued, if all the required core topics were included in the program.

8.2.3.

No more than eight hours of non-interactive training utilizing distance learning media (video, magazines, and internet) may be credited toward the minimum 24-hour biannual refresher requirement. Supervisors are responsible for assuring the dynamic quality of training in a non-classroom environment.

8.3. Course Contents

8.3.1.
A firefighter refresher is comprised of 16 hours of mandatory (or core) topics with an additional 8 hours of electives.

Mandatory (Core) Topics	Hours	Electives	Hours
Personal Protection and SCBA	1 Hour		
Fire Behavior	2 Hours		
Fire Control and Ventilation	2 Hours		
Search and Rescue (including RIC)	1 Hour		
Firefighter Safety and Survival	1 Hour		
Live Fire Training – Vehicle Fires	3 Hours		
Live Fire Training – Building Fires	4 Hours		
Live Fire Training – Other (LP gas, dumpster, fire extinguisher]	2 Hours		
Total	16 Hours		8 Hours

8.3.2.

Electives should consist of other structural fire related topics, such as building construction, ropes and knots, forcible entry, water supply, fire streams, loss control, fire detection, alarms and suppression systems, protecting fire scene evidence, communication, ICS, foam, ladders, strategy and tactics, and hose deployment/handling to mention a few.

8.3.3.

First aid, CPR, blood borne pathogens, wildland fire refresher, and other subjects not specifically related to the suppression of structural fires may not be credited toward the 24-hour requirement.

8.3.4.

For personnel who are certified at either the Fire Apparatus Driver Operator or Engine Company Fire Officer level, a minimum of 4 hours of training specifically targeting specialized skills specific to those positions is required. When documenting hours to comply with this standard, specialized hours targeting these positions must be clearly identified. These specialized hours count toward the annual 24-hour requirement (see table in *Section 8.3.1.*).

9. <u>Annual Training Requirements</u>

9.1. General

9.1.1.

The increasing complexity of the art and science of firefighting requires that firefighters continually sharpen their skills and increase their knowledge of potential hazards. The firefighter annual training requirement reflects this need and is required for all fire suppression positions.

9.1.2.

Structural fire suppression personnel must obtain 24 hours of continuing education each calendar year, including at least 10 hours of mandatory or core topics. Furthermore, a critical component to the annual training requirement is participation in company level operations and drills, which involve the deployment of hoses, establishment of water supply, and pertinent fireground operations. At least 12 hours of an employee's annual training must come from company level operations and drills. For parks which do not operate their own engine company, training must be coordinated with the partnering agency and comply with the standards of this section.

9.1.3.

The 24 hours of continuing education training may be completed in a single session or in increments throughout the year. All sessions will be documented to ensure compliance with this standard. Annual training hours are in addition to the employee's biannual refresher requirements outlined in *Section 8*.

9.1.4.

A maximum of 8 hours of non-interactive training utilizing distance learning media (videos, magazines, and internet) may be credited towards the annual training requirements. Supervisors are responsible for assuring the dynamic quality of training in non-classroom environments.

9.2. Training Contents

9.2.1

Firefighter annual training will be comprised of 10 hours of mandatory (or core) topics with an additional 14 hours of electives.

Mandatory (Core) Topics	Hours	Electives	Hours
Personal Protection and SCBA	1 Hour		
Fire Behavior	1 Hour		
Fire Control	2 Hours		
Ventilation	1 Hour		
Search and Rescue (including RIC)	1 Hour		
Firefighter Safety and Survival	1 Hour		
Extrication and Roadway	1 Hour		

Safety			
Fire Hose and Fire Streams	2 Hour		
Total	10 Hours		14 Hours

9.2.2.

Electives can consist of additional hours from the mandatory topics or other structural fire related topics, such as building construction, ropes and knots, forcible entry, water supply, fire streams, loss control, fire detection, alarms and suppression systems, protecting fire scene evidence, communication, ICS, foam, ladders, strategy and tactics, and hose deployment/handling.

9.2.3.

First aid, CPR, blood borne pathogens, wildland fire refresher, and other subjects not specifically related to the suppression of structural fires may not be credited toward the 24-hour requirement.

9.2.4.

A maximum of 8 hours of training from other associated all hazard programs can be applied towards meeting the structural firefighter continuing education requirement. These associated areas must have skills directly related to functions performed by structural firefighters, i.e. hazardous materials, high angle or swift water rescue, confined space, or emergency vehicle operations.

9.2.5.

Engine company level operations and drills should include scenario based exercises, which can contain many elements or topics. Scenario based training should include simulated vehicle crashes, structural fires, and interagency response to all risk/all hazard events.

9.3. Continuing Education Requirements by Position

9.3.1.

The NPS recognizes three principle positions which are actively engaged in structural fire suppression. Basic skills and knowledge for the positions vary. Therefore, annual training requirements will also vary.

	Annual Hours Required by Position		
	Firefighter	FADO	ECFO
Firefighter Skills	24 Hours	20 Hours	16 Hours
Fire Apparatus Driver Operator (FADO) Skills	--	4 Hours	4 Hours
Engine Company	--	--	4 Hours

Fire Officer (ECFO) Skills			

9.4. Instructor Qualifications

9.4.1.

Instructors who provide training must be experienced, proficient, and knowledgeable in their field of instruction. Therefore, anyone providing training to fire suppression personnel must be certified in the position they are providing training for, before they can train others at that position level. For example, driver operator training can only be presented by an instructor certified as a driver operator; company officer training can only be presented by an instructor certified as a company officer.

10. Certification Challenge Process

10.1 Overview

The challenge process is a process in which participants can assess their knowledge and skills for the various NFPA positions (i.e. NFPA 1001, Standard for Fire Fighter Professional Qualifications) and obtain certification. The NPS certification challenge process has been developed for the following reasons:

- To provide a mechanism for employees, partners, and volunteers, previously certified through the NPS, to obtain Pro Board recognition.

- To establish a process for employees, partners, and volunteers who have received their certifications from state organizations to seek reciprocity through the NPS or Pro Board.

10.2. Challenge Requirements and Requirements to Obtain Pro Board Certification

10.2.1.

The participant must have already obtained a certification from either the NPS or a non-Pro Board recognized government body. Certifications which carry either the Pro Board or IFSAC seal will be granted reciprocity; see *Section 3.3* for details.

10.2.2.

The participant is required to comply with all the NPS prerequisites for the designed position, including medical, fitness, and associated courses (NFPA 472 and required NWCG classes).

10.2.3.

Individuals who wish to challenge a position level for certification must submit a Structural Fire Certification Challenge Application (Attachment 1) to the SF-OPM.

10.2.4.

Applicants seeking certification through the challenge process for either Firefighter I or Firefighter II must also submit the associated Live Fire Suppression Verification Forms for the certifications being sought.

10.3. Challenge Requests

10.3.1.

Upon receiving the Challenge Application, the SF-OPM will contact the involved park and work with park managers to determine a test schedule and location. All examinations performed as part of the challenge will be conducted by recognized NPS proctors. See *Section 5*, *Certification Evaluators or Proctors*.

10.4. Testing Process

10.4.1.

The testing process consists of two parts, a written and manipulative examination. The actual testing will be conducted in the same manner as those identified in *Section 4*, *Training (Testing and Evaluation)*.

10.5. Certification

10.5.1.

Employees, partners, and volunteers who have successfully passed the certification challenge process, but have not met all of the live fire competency requirements in the NFPA 1001 standard for Firefighter I and Firefighter II, will be required to comply with those requirements prior to certification or responding to emergencies as an NPS engine company member.

10.5.2.

Prior to certification, participants must show completion of all associated requirements necessary for agency certification and those necessary for Pro Board recognition, if being sought. Missing or incomplete documentation will delay certification.

11. <u>Record Management</u>

11.1. Certification and Pro Board Records

11.1.1.

In accordance with Pro Board accreditation, the National Structural Fire Management Office shall maintain a database to identify all employees, partners, volunteers, or associates who have been certified by the NPS. Personnel who have successfully passed Pro Board examination for accreditation shall provide the SF-OPM with the last four digits of their social security number, so a formal certificate with an agency generated

certification number and the Pro Board seal can be generated. Data will be uploaded into the Structural Fire Data Management System (SFDMS).

11.1.2.

Unless there are a sufficient number of names available for an immediate posting, the SF-OPM shall submit employee records for inclusion into the Pro Board certification registry at least semiannually.

11.1.3.

Employees, partners, volunteers, or associates who have met Pro Board standards can review their certifications on the Pro Board certification registry at:

http://theproboard.org/default.htm.

11.1.4.

Electronic certification records will be kept by WASO-SFMO indefinitely. Backup paper copies of class records will be kept for 10 years. Class materials which are no longer necessary, or are older than 10 years, will be destroyed. A record of destruction will be kept on file.

11.1.5.

WASO-SFMO will enter all NPS issued firefighter position certifications into SFDMS.

11.1.6.

Park program managers are required to enter all state issued position certifications into SFDMS. This will enable the service to know how many firefighters it has and who has issued the employee's initial performance certifications from. Once entered, state issued certifications cannot be transferred between states, or parks, without compliance with *Section 3.3*, *Reciprocity*.

11.2. Training Records

11.2.1.

The National Structural Fire Management Office has created a servicewide database (Structural Fire Data Management System or SFDMS) to maintain personnel training and certification records; parks are encouraged to use this system. Some parks may wish to use a more robust data collections systems. Parks desiring to use data systems other than SFDMS to track employee training must request to do so from their RSFM. These records shall be available for program reviews, evaluations, and audits. Questions should be referred to the SF-OPM.

11.3. All-Hazard Incident Qualification Certification Card

11.3.1.

The NPS currently has four firefighter positions included in the DOI Incident Positions Qualifications Guide (November 2013) – Defensive Firefighter (or Firefighter I as defined by this chapter), Structural Firefighter Type 1 (Firefighter II as defined by this chapter), Structural Fire Apparatus Driver-Operator, and Structural Fire Line Officer (Engine Company Fire Officer as defined by this chapter). All position requirements and standards between the Incident Positions Qualifications Guide and this chapter are in alignment.

11.3.2.

The Qualification Certification Card will be issued by the WASO National Office once the SF-OPM has verified the applicant's qualifications and certification as a structural firefighter. The SF-OPM will mail Qualification Certification Cards to the individual.

12. Forms

Certification Challenge Application

Live Fire Suppression Verification Form – Firefighter I

Live Fire Suppression Verification Form – Firefighter II

Facilities and Equipment Certification of Candidates Report

Reciprocity Nomination

Proctor Application

Proctor Affidavit (written exam)

Proctor Affidavit (practical exam)

Medical Standards

1. Introduction

1.1. General

1.1.1.

The NPS structural fire medical standards will be administered and conducted in accordance with the requirements set forth here. All NPS employees, partners, AD (administratively determined), or EFF (emergency fire fighters) must 1) adhere to the structural firefighter medical standards, 2) report for medical examinations as directed, and 3) notify their Park Structural Fire Management official of any significant health changes that may affect their ability to safely perform the essential duties of a NPS structural firefighter.

1.1.2.

NPS employees who serve as **volunteers** for local fire departments are exempt from these standards, but must comply with the standards set forth in the state where service is rendered.

1.1.3.

NPS employees who respond to structural fire events as a member of a local volunteer fire department, which are paid by the NPS (salary and/or benefit status), must comply with the standards outlined in this policy.

1.2. Definitions

1.2.1.

Incumbent

This is a person who is currently recognized as a structural firefighter and has previously undergone a medical examination.

1.2.2.

Applicant

This is a person who is applying for a structural firefighter position in the NPS or an employee who has never performed structural firefighting duties before and is now taking on the responsibilities of a collateral duty firefighter.

2. Responsibilities

The following positions are responsible for administering the medical standards for the structure fire program:

2.1. Structural Fire Branch Chief (SFBC)

The SFBC, or his/her designee, shall be responsible for the oversight and management of the agency's structural fire medical standards program.

2.2. Structural Fire Operations Program Manager (SF-OPM)

The SF-OPM is the primary point of contact between the park and the Medical Review Officer (MRO). The SF-OPM will serve as the Structural Fire Management Official (SFMO) for the parks and will coordinate the development of waivers or risk mitigations with the Park Structural Fire Management Official (PSFMO) and the Medical Review Officer (MRO).

2.3. Park Structural Fire Management Official (PSFMO)

The PSFMO is the person who is responsible for overseeing the park's structural fire suppression program, such as the Fire Chief, Chief Ranger, or Park Structural Fire Coordinator. The PSFMO participates in the Level 1 and Level 2 risk assessment processes.

2.4. Structural Fire Management Official (SFMO)

The SFMO is responsible for making the final decision in Level 1 of the risk assessment process. For parks, the SFMO is the SF-OPM. For regional positions, the Regional Director or their designee is the SFMO. For WASO positions, the SFMO is the Associate Director for Resource and Visitor Protection or their designee.

2.5. Medical Review Officer (MRO)

The MRO is a medically licensed and qualified individual who is able to evaluate the findings for all structural fire pre-placement, initial, or periodic medical examinations. The MRO reports his/her findings to the SF-OPM.

2.6. Medical Evaluation Official (MEO)

The MEO is a board certified physician who is either contracted or appointed by the SFBC to serve as the subject matter expert on the Medical Review Board (MRB).

2.7. Medical Review Board (MRB)

A committee of subject matter experts responsible for providing a second level of individualized, fact based, case by case review for an applicant/incumbent whose medical condition was found to be disqualifying and/or the applicant/incumbent disagrees with the conditions established to mitigate any risks identified by the first level reviewer. The MRB functions as the second and final level of review. The MRB shall consist of 4 members to include the SHRO, MEO, SFMO, and a subject matter expert who understands fireground performance requirements. The MRB operates under the direction of the SFBC and will meet as required.

2.8. Servicing Human Resources Office (SHRO)

The SHRO will be the Human Resources Officer, Specialist, or Employee Relations Specialist in the employee's servicing human resources office. The SHRO is responsible for full participation in the Level 1 risk assessment process and serves on the MRB. The SHRO will ensure the process and time frames are met and will be responsible for correspondence between the agency and the employee.

3. Medical Standards

3.1. Medical standards set forth in this policy are based upon *NFPA 1582, Standard on Comprehensive Occupational Medical Program for Structural Fire Departments.* This standard will be used as the baseline for determining an individual's ability to safely perform the full range of functions required of a structural firefighter.

3.2. No medical condition and/or physical impairment listed in NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments,* is automatically disqualifying. Each of the medical standards listed is subject to clinical interpretation and application by the MRO. The MRO must rely upon their knowledge of the job requirements and environmental conditions in which structural firefighters may be expected to work and factor this into their assessment. Assessments must be made on a case-by-case basis to determine an individual's ability to meet the medical standards and perform the essential functions of the position in a safe manner, with or without reasonable accommodations, despite any medical condition/physical impairment that may be present.

3.3. *NFPA 1582* is the baseline for NPS structural firefighter medical standards. A detailed comparison between NFPA 1582 and the NPS Law Enforcement Officer (LEO) medical examination processes was performed. In a memorandum issued by Dr. Jay Paulsen, a contracted physician for the Department of Interior Medical Standards Program, states that it has been determined that law enforcement medical standards are sufficiently consistent with those of the NFPA and the NPS will accept an individual's medical clearance as an LEO to be valid as a clearance for work as a collateral duty structural firefighter. *See 4.3, Acceptable Medical Examinations,* for details.

4. Medical Examinations

4.1. AD employees, partners and concessionaires personnel who are supporting park fire suppression activities as agents or partners to park base operations are required to comply with the medical standards and examination processes outlined in this policy or the medical standards and examination processes in place for the state in which they are providing service. This provision does not apply to personnel (non-NPS employees), which are serving on other fire departments who are supporting park suppression activities through agreements.

4.2. Reciprocity

For NPS employees and AD hires wishing to be a member of a NPS engine company, the results of medical examinations or standards from agencies other than the NPS will only be permitted if they are in accordance with the most recent version of NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments.*

4.3. Acceptable Medical Examinations

The following medical exams are acceptable for a NPS employee wishing to be a member of a NPS engine company operation.

4.3.1.

NPS Law Enforcement Medical Exams

If the employee's primary position with the agency is as a commissioned Law Enforcement Officer or agent, the medical examination process required for that position is deemed sufficient for them to be medically cleared as a collateral duty structural firefighter.

If the employee is granted a medical waiver, variance, or if special mitigations have been established to help the employee meet the medical standards for their position, then those waivers, variances or mitigations must be submitted to the SFMO, so that they can be reviewed by the MRO.

The MRO will review those special accommodations and will determine if they have an adverse impact on the employee's ability to perform structural fire duties as a collateral duty structural firefighter.

4.3.2.

NPS Wildland Firefighter (WLFF) Medical

In 2013, a "side by side" comparison of the current wildland fire medical exam and process was conducted by the DOI Medical Standards program office. DOI has determined that the wildland fire medical standards can no longer be used as an equivalency for structural firefighting medical requirements. Currently only the NPS-NFPA 1582 or Law Enforcement medical examination can be used to comply with the standards established by this chapter. As a result, wildland firefighters will be required to undergo a structural firefighter medical.

4.3.3.

NPS-NFPA 1582 Medical

If the employee is in any primary position other than that of a commissioned LEO, then that individual must undergo a NFPA 1582 medical exam. This standard is also in force for all permanent or seasonal structural firefighters who have suppression responsibilities included in their position descriptions. See *Appendix 1, NPS-NFPA 1582 Medical Exam.*

4.4. Clinic Type and Location

4.4.1.

Medical examinations can be completed at a facility utilized by the park for similar type exams or a medical facility can be selected from the following website:

Parks may also contact the SF-OPM for assistance.

4.4.2.

Although employees are not required to use facilities referenced in the link provided, they are required to confirm that they have chosen a facility capable of performing the exam and all of the associated tests in its entirety. Failure to ensure full compliance with exam requirements will likely delay medical clearance and all subsequent costs for follow-up assessments and exams will not be covered by the NPS.

4.5. Frequency (Periodicity) of Medical Exams

4.5.1. Applicants (Baseline Exams)

Medical evaluations and determinations must occur prior to appointment or, for first time collateral duty firefighters, prior to performance or participation in NPS sponsored or sanctioned training courses.

4.5.2. Incumbents (Periodic Exams)

Periodic exams must be performed every 3 years from the last medical exam date. For example, if the date of the employee's last exam was February 1, 2012, the next exam is due within 30 days of February 1, 2015. The next exam after that will be due within 30 days of February 1, 2018, and so on.

4.5.3. Structural Firefighter Health Screen Questionnaire (SF-HSQ)

All employees engaged in structural firefighting activities are required to complete a SF-HSQ during those years between the applicant (or baseline) examination and incumbent (periodic) examinations. For example, if the date of an employee's last medical exam was February 1, 2012, the employee would have to complete a SF-HSQ within 30 days of February 1, 2013 and within 30 days of February 1, 2014. A SF-HSQ would not be required in 2015 because the employee would be required to obtain a periodic medical examination. See Section 4.9*, Structural Firefighter Health Screen Questionnaire*.

4.6. Cost

4.6.1.

Costs for NPS-NFPA 1582 medical examinations for collateral duty firefighters will be covered by the SF-WASO. Any additional tests or exams required by the MRO to determine an individual's medical fitness to serve as a structural firefighter will also be covered by the SF-WASO.

The costs of any waivers, variances, mitigations, corrective action or follow-up treatments identified or determined necessary as a result of the medical exams or the Health screen questionnaire is the responsibility of the applicant/incumbent or the park.

4.6.2.

It is the responsibility of the park or regional office to cover examination costs for employees whose primary position is within structural fire protection and prevention job series (081).

4.6.3.

Exam costs for AD hires, concessionaires, interns, or other non-NPS employees are the responsibility of the park, the individual, or the employee's employer.

4.6.4.

Prior to attending a medical appointment, the applicant/incumbent must ensure that their park has either previously arranged for payment with the clinic or the employee has a government issued credit card to pay at the time the exam is administered. For those applicants/incumbents who are collateral duty firefighters, contact the SF-OPM for an account number, which will be used to cover the exam costs. Exam costs covered by SF-WASO shall be charged to a government purchase card and billed to an account provided by the SF-OPM.

4.6.5.

Guidelines and directions for the payment of approved medical exams may be downloaded from the structure fire operations website:

https://sites.google.com/a/nps.gov/nps_policy/

4.7. Results

4.7.1.

The results of a NPS-NFPA 1582 medical examination are to be mailed from the examining clinic directly to the MRO at the following address through the use of a self-addressed envelope the examinee has brought with them. The park or the employee is to make the self-addressed envelope and bring it with them to the medical facility.

US Mail Only
Medical Officer
Office of Occupational Safety and Health
U.S Department of the Interior
P.O. Box 25007-D115
Denver, CO 80225
Fax: 303-236-7336

FEDEX Mail Only
Medical Officer
Office of Occupational Safety and Health
U.S. Department of the Interior
#1 Denver Federal Center
Building 25 Room 2400
Denver, CO 80225

4.7.2.

Upon receiving the medical the MRO will review the exam results and make a determination or finding regarding the employees or partners medical qualifications to serve as a structural firefighter. See Section 4.8, *Findings*. In the event that the MRO cannot make a clearance determination based on the medical information provided, or the MRO requires additional information from the examinee, the MRO will send a request to the SF-OPM who will coordinate

with the park and the examinee on how the issue can be resolved. **The SF-OPM will be the primary point of contact between the employee and the MRO. Neither the park nor the examinee are to contact the MRO directly.**

4.7.3.

The MRO will report employee findings to the SF-OPM through the submission of a Clearance Determination Report (CDR). The SF-OPM will then notify the employee, the employee's SHRO, and the PSFM and provide a copy of the CDR to each.

4.7.4.

Once a final medical determination has been made, all correspondence and documentation, including the clearance form, will be sent back to MRO for official filing.

4.8. Findings

4.8.1.

Based upon his/her review of the results of the medical examination the MRO will issue one of the following findings. See Appendix 4, *NPS Clearance Determination Report (CDR).*

4.8.1.1.

No Findings

Individual meets the Department's medical standards and functional requirements of the position of structural firefighter for the NPS.

4.8.1.2.

Medical Findings

The individual does not meet the agency's medical standards and functional requirements for the safe and efficient performance of the duties of the position. A request for waiver of the standard(s), or reasonable accommodation, may be initiated by the employee according to agency's established protocols. Applicants/incumbents who have medical findings will have the opportunity to participate in a risk assessment process. Personnel in this category are not to perform firefighting duties or participate in any NPS training sessions prior to the completion of the risk assessment process; see Section 5.0, *Risk Assessment Process*.

4.8.1.3.

Pending Further Evaluation

A clearance determination could not be made based on the medical information provided, i.e. test results were missing, incomplete, or inconclusive and require further information or additional testing. The requested information should be provided to the SF-OPM who will forward to them to the MRO. Final recommendations cannot be made until this has been completed. The participant cannot perform firefighting duties until the issue has been resolved.

4.8.1.4.

Not Cleared Non-Responsive

The participant has not resolved issues, which were identified in the pending further evaluation, and more than 90 days has gone by.

4.9. Structural Fire Health Screen Questionnaire (SF-HSQ)

4.9.1.

NFPA standard 1582 requires that structural firefighters obtain annual medicals. In an effort to reduce redundancy of medical examinations, the Department of Interior has granted the NPS a waiver to this requirement provided that the Service uses a SF-HSQ. The SF-HSQ helps employees and supervisors identify any significant changes to the incumbent's health and medical history.

4.9.2.

SF-HSQ results are to be maintained by the park. Any "yes" answer on the form will require a medical examination before the employee can participate in structure fire training. See Appendix 3, *Structural Fire Health Screen Questionnaire*. The SF-HSQ form can also be downloaded from the following site:

https://sites.google.com/a/nps.gov/nps_policy/

4.9.3.

The SF-HSQ is not a substitute for the wildland fire health screening questionnaire work capacity test (HSQ-WCT). Employees required to take the wildland fire Work Capacity Test (WCT) will still be required to do so.

5. Risk Assessment Process

5.1. General

5.1.1.

The NPS Structural Fire Program has developed a two-level Risk Mitigation/Waiver process for applicants and incumbents who do not meet one or more of the NPS Structural Firefighter Medical Standards. The purpose of a two-level Risk Mitigation/Waiver Process is to provide the applicant/incumbent with an opportunity to request a secondary review in the event that the employee does not agree with the findings of the first evaluation. The tier mitigation process is based upon the following:

- 5 CFR Part 339 Medical Qualification Determination

This standard requires agencies *to "waiver a medical standard or physical requirement…when there is sufficient evidence that an applicant or employee, with or without reasonable accommodations, can perform the essential duties of the position without endangering the health and safety of the individual or others."*

- American with Disabilities Act Amendment of 2008

The standard prohibits employment discrimination against people with disabilities and requires employers to provide *"reasonable accommodation"* to employees with disabilities.

Details and guidance on the risk assessment process can be found at the following site:

https://sites.google.com/a/nps.gov/nps_policy/

5.1.2.

Granting a Risk Mitigation/Waiver confirms that the medically disqualified firefighter can perform the essential functions of the structural firefighter, including functions which they may rarely, if ever, be required to perform.

5.1.3.

Until the appropriate medical review boards (level 1 or 2) have reached an informed, individualized, fact based, case by case decision, and the Risk Mitigation/Wavier Process ends, the applicant/incumbent is prohibited from performing structural firefighter duties and training. Applicants/incumbents with an existing Risk Mitigation Waiver or Waiver with restrictions will be allowed to perform the full range of structural firefighter duties and participation in training; see Section 6.0, *Management Official's Decisions*.

5.2. Risk Assessment Factors

During the risk assessment process, the following elements will be reviewed and analyzed.

5.2.1.

Medical Condition and Ability to Safely and Efficiently Perform the Tasks Required of a Structural Firefighter

Given the medical condition or physical limitation which does not meet the medical standards, describe with convincing evidence how the applicant/incumbent can perform the essential functions of the job efficiently and safely, without hazard to themselves or others.

5.2.2.

Qualifications, Experience, and Training

Describe the individual's relevant employment history, qualifications, experience, and training in structural firefighting. Include all satisfactory performance indicators in the same/similar type of job tasks with similar physical and environmental demands.

5.2.3.

Significant Threshold Shifts

If known, describe any changes in the individual's health status, since any medical conditions/physical impairments were last assessed.

5.2.4.

Medical Condition is Static and Stable

If known, describe whether or not the medical condition is static and stable or has stabilized with or without medication. Include any known a) drug side effects; b) drug reactions; c) drug-drug interactions; d) medical complications associated with long term drug use; and/or e) any problems with patient compliance.

5.2.5.

Work Conditions

Describe whether the work conditions (e.g. working alone, 24 hour on call; remote, desolate geographic and rural locations; no ready access to food, water, shelter or medical facilities; irregular, protracted, and extended hours of work; exposure to extreme heat and environmental contaminants; inhalation exposures to smoke and the products of combustion; carrying heavy equipment, and life threatening situations that require maximum physical exertions without warning) are –

a) Likely to aggravate, accelerate, exacerbate, or permanently worsen the pre-existing medical condition and/or

b) Exceed the limitations of any medical or assistive device (e.g. insulin pump).

5.2.6.

Body Stature and Personal Protective Equipment

Describe whether or not an individual's stature or body symmetry exceeds the limitations of any personal protective equipment (e.g. turnouts, SCBA, helmet, boots, handlines and nozzles) that they are required to use or wear.

5.2.7.

Physical Limitations

Describe whether or not any physical defect, physical limitation, or physical abnormality materially interferes with the individual's ability to perform the full range of structural firefighting tasks safely and efficiently.

5.3. Level 1 Review Committee

A Level 1 Review Committee is composed of the park Fire Chief (or person in charge of the park suppression program), a representative from the Servicing Human Resources Office, and the applicant/incumbent. The findings and recommendations of the Level 1 Review Committee will be forwarded to the SFMO for a decision that is to be made in consultation with the MRO. This process should be completed within 65 calendar days.

5.4. Level 2 Medical Review Board

If the applicant/incumbent disagrees with the decision of the level 1 review they may request a Level 2 review by a Medical Review Board. The process should be completed within 95 calendar days. The findings of a Level 2 Medical Review Board are final.

6. Management Official's Decision

6.1. Based on the outcome and recommendations of the Level 1 or Level 2 risk assessment, the SFMO will issue one of the following decisions:

- Waiver – the medical condition/physical impairment presents an acceptable risk without conditions or mitigation
- Acceptable Risk with Conditions – the medical condition/physical impairment presents an acceptable risk when specific conditions are established to mitigate the risk
- Unacceptable Risk – the medical condition/physical impairment presents an unacceptable risk and is therefore disqualifying

6.2. If the SFMO's decision in a Level 1 Risk Assessment is to issue a waiver or the risks are mitigated with conditions, the applicant/incumbent will be qualified to perform the essential functions of the position. The incumbent will be returned to full duty. If the MRB decision in the Level 2 risk assessment is unacceptable, then the incumbent will not be allowed to be a member of any NPS engine company operation.

7. Existing Waiver or Risk Mitigation with Conditions

7.1. General

NPS structural firefighters may have been issued or obtained medical waivers or risk mitigation with conditions through a number of ways –

- Through other approved medical exam processes, i.e. law enforcement medical.
- Based upon findings made through the structural fire medical examination process.

7.2. Law Enforcement Waivers or Risk Mitigation with Conditions

7.2.1.

Medical waivers or risk mitigations which have been issued to NPS law enforcement rangers and investigators must be submitted to the SF-OPM for review and consultation with the MRO to ensure that the waiver or condition does not adversely impact the employee's ability to serve as a structural firefighter and to ensure that corrective actions proposed in the waiver or mitigation apply equally to the duties of a structural firefighter.

7.2.2.

It is the responsibility of the PSFMO and SHRO to notify the SF-OPM of any law enforcement medical waivers and to seek application of that waiver for the employee to serve as a structural firefighter.

7.2.3.

To assist the MRO with determining if the previously issued medical waiver or risk mitigation is appropriate to structural firefighting, the results will be compared to the essential functions and work conditions for the job matrix for NPS structural firefighters. See Appendix 2, *Essential Functions and Work Conditions for the Job.*

7.3. Structural Fire Waivers or Risk Mitigation with Conditions

7.3.1.

Structural firefighters who have been issued waivers or cleared with mitigation will have those conditions reviewed by the MRO whenever there is a significant change that could affect the employee's ability to safely and efficiently perform the essential duties and responsibilities of a NPS structural firefighter.

7.3.2.

If the annual SF-HSQ indicates any significant change to the employee's overall medical condition, the condition will be brought to the attention of the SF – OPM. A significant change would be considered any "yes" response to the SF-HSQ or a change in the medical issue associated with the waiver, which involves a significant deviation in treatment or places the employee at new levels of risk. See section 4.10, *Structural Fire Health Screen Questionnaire*. The SFMO and the MRO will review the changes and will provide the park with a written response.

8. Documentation

8.1. Law Enforcement Medicals for Collateral Duty Structural Firefighters

The burden of ensuring documentation for granted medical clearance for structural firefighting through the law enforcement medical examinations (either pre-placement baseline exam or periodic exam) is the responsibility of the PSFMO. For law enforcement each park has an assigned CAS administrator who can obtain a printed copy of the medical determination which can be kept.

8.2. NPS-NFPA 1582 Medicals

All medical examination records for employees or partners who are utilizing NPS-NFPA 1582 medical standards will be maintained by the MRO or designated health care professional. This includes both permanent and collateral duty structural firefighters.

8.3. Risk Assessment Process

All documentation for the Level 1 Review Committee will be maintained at the SHRO level; all documentation for the Level 2 Medical Review Board will be maintained by SF-WASO.

9. Forms

NPS Baseline and Periodic Medical History and Exam for Structural Firefighters

Essential Functions and Work Conditions for the Job

Structural Fire Health Screen Questionnaire (SFHSQ)

NPS Clearance Determination Report (CDR)

10. References

10.1 DOI Structural Fire Medical Waiver

10.2 Dr. Paulson's Memorandum on Medical Examination Comparison

10.3 Risk Assessment Process

Fitness Standards

1. Introduction

1.1 The Service has recognized the need for a physical fitness standard and requirement for structural firefighters, so firefighters can safely and efficiently perform the rigorous duties associated with this profession. Employees, partners and volunteers conducting structural firefighting duties within the NPS will be in compliance with Directors Order #57 and Reference Manual #57, *Occupational Medical Standards, Health, and Fitness*.

1.2 All employees who perform rigorous and/or hazardous duties are required to participate in the NPS physical fitness program and any associated fitness testing programs. *Mandatory participation* positions identified in DO/RM #57 include structural firefighters.

1.3 5 CFR 339.203 authorizes agencies to establish physical requirements for positions with physically rigorous duties. The NPS has established the following criteria for its *mandatory participation* fitness program and fitness testing for all emergency service personnel:

- The continual maintenance of the physical fitness level required to safely perform rigorous duties is a responsibility of the individual employee.
- All employees who are assigned rigorous duties are *required* to participate in an individual fitness program.
- Prior to beginning a physical exercise/physical fitness program and prior to any physical fitness testing, employees must be cleared to participate by the Medical Review Officer (MRO) via the medical examination program.

1.4 All parks and units employing park rangers or other employees assigned to firefighting duties may provide each employee up to 3 hours of mandatory participation physical fitness/ exercise time per workweek.

1.5 An *applicant* who does not meet the OPM or Departmental medical standards established for such work may not be appointed to a position designated for enhanced firefighter retirement. This applies to career, career-conditional, term, and temporary appointments.

1.6 An *employee* may not be admitted to firefighting training that requires the *regular or frequent* performance of rigorous duties, unless s/he meets the physical fitness standards established for persons performing such duties.

2. Responsibilities

The following positions are responsible for administering the physical fitness standards for the Structural Fire Program:

2.1. Structural Fire Branch Chief

- Establishes and maintains a structural firefighter fitness standard program.
- Ensures fitness requirements are compliant with federal laws and Department and Agency requirements and applied equitably and with utmost confidentiality.
- Informs the Regional Structural Fire Managers (RSFM) about the requirement to assess structural firefighter physical fitness levels in order for them to be able to better enforce these standards.

2.2. Structural Fire Operations Program Manager (SF-OPM)

- Maintains physical fitness database for structural firefighters and monitors physical fitness exam compliance and deadlines.
- Coordinates structural firefighter fitness processes and standards with other NPS programs as needed.

2.3. Regional Structural Fire Program Managers (RSFMs)

- Ensure that information regarding structural fire physical fitness issues is clearly communicated to parks and the Structural Fire National Program Office.
- Monitor and ensure that parks are adhering to policies and procedures regarding structural firefighter physical fitness standards.
- Provide clear agency and program policy guidance to parks on NPS structural firefighter physical fitness standards.

2.4. Park Superintendents

- Ensure that current and accurate information regarding structural fire physical fitness requirements are communicated to all trained and qualified employees involved with structural firefighting.
- Ensure that all park personnel that are assigned structural firefighting responsibilities comply with policies and directives regarding physical fitness standards and that they are met.
- If engine company members do not meet the physical fitness requirements, the park superintendent is to prohibit the employee from responding as a member of the engine company, until physical fitness compliance can be obtained.
- Ensure that issues regarding firefighter physical fitness standards are communicated to park management, the RSFM, and the SF-OPM in a timely manner.

3. Fitness Standards

3.1. The Physical Efficiency Battery (PEB) and the Work Capacity Test (WCT) series will be threshold tests and baseline fitness measures for the NPS Structural Fire Program. As such, the Service will not place persons failing to pass either the PEB or the Work Capacity Test Series into firefighter positions or training that requires the regular performance of rigorous duties.

3.1.1.

Fitness Standards for Fireground Positions

3.1.1.1.

Firefighter I

Must annually pass the Wildland Firefighter WCT - arduous pack test or pass the NPS Law Enforcement Physical Efficiency Battery (PEB) test.

3.1.1.2.

Firefighter II

Must annually pass the Wildland Firefighter WCT - arduous pack test or pass the NPS Law Enforcement Physical Efficiency Battery (PEB) test.

3.1.1.3.

Fire Apparatus Driver Operator

Must annually pass the Wildland Firefighter WCT – moderate field test or pass the NPS Law Enforcement Physical Efficiency Battery (PEB) test.

3.1.1.4.

Engine Company Fire Officer

Must annually pass the Wildland Firefighter WCT - arduous pack test or pass the NPS Law Enforcement Physical Efficiency Battery (PEB) test.

3.1.1.5.

Live Fire Instructor

Instructors who are supporting fire suppression efforts at the park level must annually pass the Wildland Firefighter WCT - arduous pack test or pass the NPS Law Enforcement Physical Efficiency Battery (PEB) test. Instructors, who no longer work for a park with a structural fire suppression responsibility, and are not engaged in firefighting duties at the state level, may pass the Wildland Firefighter WCT – moderate field test or pass the Law Enforcement PEB test.

3.1.1.6.

Fire Command Staff

For all other fire positions, regardless of their official position description or title, who actively perform any of the assignments noted above, individuals must comply with the physical fitness standards for that position. For example, if a Fire Chief is required to don a SCBA and lead or direct crew members on a structure fire or an all hazard incident, he/she must meet the medical and fitness standards of the role that they are serving (i.e. Firefighter I/II, Fire Apparatus Driver Operator, or Engine Company Fire Officer).

Fire command positions that work primarily outside the hot zone, or the IDLH environment, and may only occasionally engage in fire suppression activities or work within the IDLH, may pass the Wildland Firefighter WCT – moderate field test or pass the Law Enforcement PEB test. If fire command positions are routinely called or potentially called to enter the IDLH environment, then they must meet the medical and physical fitness requirements for the role that they are serving (i.e. Firefighter I/II, Fire Apparatus Driver Operator, or Engine Company Fire Officer).

4. Fitness Standards (non-compliant)

4.1. Employees who engage in the response and suppression of structure fires can comply with this standard by either passing the Wildland Firefighter WCT or the NPS Law Enforcement PEB tests. Employees who use the PEB to comply with this standard must pass the PEB and not merely participate in the examination. Employees can take either or both tests and need only pass one of them.

4.2. Failure to Meet Fitness Standards

4.2.1.

Firefighter fitness is essential, since structural firefighting is one of the most physically demanding and dangerous jobs of all civilian occupations. Not only is the employee's safety at risk, but also the safety of their fellow firefighters.

- If the fitness examination is for an employee seeking their initial appointment (or baseline) to a structural firefighter position and that employee fails either the WCT or the PEB, they are not permitted to begin serving as a firefighter, until they pass either the WCT or the PEB. They may take either or both exams as often as they wish, but they must pass one of them to begin serving as a structural firefighter.

- If the employee taking either the PEB or the WCT is an incumbent and fails either examination, they are granted a 2-month grace period to retake either exam. During the grace period, the employee may continue to perform as a firefighter. They may take either or both exams as many times as they wish. If at the end of the grace period the employee still cannot pass either the WCT or the PEB, they are no longer permitted to serve as a firefighter.

4.2.2.

Personnel who have failed to comply with the physical fitness standards, but still have certifications for any of the designated fireground positions, can again perform in those positions once they have successfully met the physical fitness standards. Employees working towards complying with the standard, but have not yet met the standard, may request to have their certifications placed into inactive status, see Chapter 10, *Training and Certification*, *Section 3.4*, *Inactive Status*. Employees can continue to work towards meeting their continuing education and live fire training requirement, but only if they are medically qualified.

5. Record Management

5.1.

The National Structural Fire Management Office has created a servicewide database (Structural Fire Data Management System or SFDMS) to maintain medical and fitness records; parks are encouraged to use this system. Parks desiring to use data systems other than SFDMS to track employee fitness must request to do so from their RSFM. These records shall be available for program reviews, evaluations, and audits. Questions should be referred to the SF-OPM.

6. Definitions

6.1. Work Capacity Tests

6.1.1.

Arduous

Duties involve fieldwork requiring physical performance calling for above-average endurance and superior conditioning. These duties may include an occasional demand for extraordinarily strenuous activities in emergencies under adverse environmental conditions and over extended periods of time. Requirements include running, walking, climbing, jumping, twisting, bending, and lifting more than 50 pounds; the pace of work typically is set by the emergency situation.

6.1.2.

Moderate

Duties involve fieldwork requiring complete control of all physical faculties and may include considerable walking over irregular ground, standing for long periods of time, lifting 25-50 pounds, climbing, bending, stooping, squatting, twisting, and reaching. Occasional demands may be required for moderately strenuous activities in emergencies over long periods of time. Individuals usually set their own work pace.

6.1.3.

Light

Duties mainly involve office type work with occasional field activity characterized by light physical exertion requiring basic good health. Activities may include climbing stairs, standing,

operating a vehicle, and long hours of work, as well as some bending and stooping or light lifting. Individuals almost always can govern the extent and pace of their physical activity.

6.2. Physical Efficiency Battery (PEB)

The passing standard on the three performance events – the agility run, 1.5 mile run, and the bench press is the 25th percentile for the employee's age and gender. Flexibility and body composition measures of the PEB shall be recorded only to assist in the continuing review and evaluation of the policy and standard.

STRUCTURAL FIRE INVESTIGATIONS

1. Introduction

All structural fires and/or explosions that occur on park property must be investigated. The immediate reporting and thorough investigation of structural fires is an agency requirement and also an important element in preventing future fires. The purpose of investigations is to determine the origin and cause of incidents. Proper determination of the cause of a fire is an essential part of preventing future incidents, as well as compiling meaningful fire-related statistics. Accurate statistics are then used to form fire prevention codes, standards, and training.

A fire/explosion investigation is a complex endeavor requiring many skills. The fire scene examination must be accomplished objectively and truthfully. The scientific methodology of the fire investigation is a systematic approach, with attention to all relevant details in accordance with NFPA 921, *Guide for Fire and Explosion Investigations.* Fire/explosion investigations may not accomplish the desired results, unless the evidence is properly collected, information is recorded properly, and the report is accurate in every detail.

2. Responsibilities

2.1. National Level

- Establish Servicewide guidelines and procedures for regions and parks to follow for all structure fire incidents to ensure they are investigated properly.

- Ensure that all structure fires are properly investigated in accordance with established agency investigation standards.

- Ensure that Regional Structural Fire Management Officers (RSFMs) are notified of all structure fire incidents that occur within the region. This is to ensure that structural fire incident information reported directly to the national office is forwarded promptly to the regions.

- Ensure that fire investigation reports are completed in accordance with accepted practices regarding the rules of evidence and NPS policies and procedures.

- Ensure that credible fire investigative resources are available to the agency.

- Ensure that all NPS fire incident reports are entered into the Incident Management Analysis and Reporting System (IMARS).

2.2. Regional Level

- Ensure the Branch Chief of Structure Fire is notified of significant structure fire losses as soon as possible.

- Determine the primary point of contact (park liaison) for these types of incidents.
- Ensure all incidents are entered into the Incident Management Analysis and Reporting System (IMARS).
- Ensure that the national program office is notified of any request made to the ATF or any outside agency for assistance in investigating structural fire incidents.
- Ensure that all investigation protocols and procedures within Reference Manual 50B, section 1.6, and associated appendices are followed and met.
- The Regional Structural Fire Manager will work in conjunction with the park, Regional Chief Ranger, and Park Superintendent to determine who will perform the investigation.

2.3. Park Level

- Ensure that after a structural fire or explosion is extinguished, the scene is secured for investigation.
- Ensure that the Regional Chief Ranger and Regional Structural Fire Manager (RSFM) are immediately notified of all structural fire and/or explosion incidents.
- The Park Superintendent will work in conjunction with the Regional Structural Fire Manager, Regional Chief Ranger, and the park to determine who will perform the investigation.
- Ensure the park liaison requested by the region facilitates communication between the regional office and park management regarding further action or needs following an incident.
- Ensure that all completed investigation reports are transmitted to the Regional Structural Fire Management Officer in a timely manner.

3. Notification Procedures

Reference Manual 50B, *Occupational Safety and Health Program*, section 1.6, provides comprehensive information regarding procedures and required actions to be taken after accidents/incidents. After any structural fire or explosion, these notification procedures are to be followed:

- The reporting party will notify park management (Chief Ranger, Superintendent).
- Park management will notify the Regional Chief Ranger and the Regional Structural Fire Manager.
- The Regional Chief Ranger will notify the Associate Regional Director, Operations.

- Collaboratively, the Park, Regional Chief Ranger and Regional Structural Fire Manager will determine if, and which, other agencies are to be contacted.

4. Procedures Following a Fire

After a fire has been extinguished, the incident commander, along with park personnel, should focus on securing and preserving the fire scene. No one, including park employees, should enter the fire/explosion scene, unless directed by the lead fire investigator. It is imperative that the structure and surrounding areas are sealed off, until the investigation team arrives. Overhaul and salvage procedures should be postponed if possible, but if required, they should be performed with care and effort not to destroy evidence. Parks are to follow the sequence and procedures listed below, after a structural fire or explosion is extinguished.

- Park law enforcement resources must secure the scene and surrounding area of any fire or explosion until the fire investigator(s) arrive. All structural fires and explosions must be treated as potential crime scenes and handled accordingly. As with any incident or possible crime scene, the scene must be protected to ensure that evidence is not compromised.

- Photograph the scene and surrounding area after, and if possible, during the loss.

- Photograph all bystanders at the scene.

- Record license plates of vehicles in the area.

- Identify the person who reported the fire and any other potential witnesses.

- Follow park incident notification procedures.

- The Regional Structural Fire Manager will work in conjunction with the park, Regional Chief Ranger and Park Superintendent to determine who will perform the investigation.

- Establish a clear line of communication by assigning a park employee, as requested by the region, to act as liaison for the fire investigation team and the regional office.

- Begin an investigation as soon as possible.

- The investigator is responsible for conducting a complete investigation and fully documenting the loss through photographs, statements, diagrams, evidence collection, and a detailed written report. The report should specify whether a fire was incendiary, providential, accidental, or undetermined. Investigations of incidents with the potential for subrogation (those that may be the result of a faulty product or contractor error) should include sufficient evidence to be used in the case of litigation seeking compensation for the loss.

5. Structural Fire Incident Review Team

Regional Structural Fire Incident Review Teams will be mobilized under the following conditions:

- When assistance is requested by a Park Superintendent after a structural fire/explosion incident.
- When serious injuries are reported in conjunction with a structural fire/explosion incident. "Serious" injury is defined as one that requires advanced life support and/or leads to overnight hospitalization.
- When a fatality occurs as a result of the fire or explosion.
- When there is either a significant loss or an incident that is considered controversial or unusual.

Teams will be established in accordance with procedures outlined in Reference Manual 50B, *Occupational Safety and Health Program*, section 1.6. Teams report to the Regional Chief Ranger or their designee and are made up of the following:

- Regional Structural Fire Manager
- Regional Safety Officer
- Regional Law Enforcement Specialist/Criminal Investigator
- Park unit representative(s)
- Any other specialists as needed to adequately review the incident.

Functions of a Regional Structural Fire Incident Review Team include:

- Providing assistance to the park in the area of structural fire investigation.
- Reviewing the incident, including how the notification, response, suppression, salvage, and investigation were handled. The park's fire prevention plan and the inspection, maintenance, and/or testing records for any systems involved in the incident will also be evaluated as part of this process.
- Ensure that plans are developed and action is taken to prevent future fires of a similar cause.

6. Investigation Resources

6.1. Local Fire Investigators

A local fire investigator may assist in fire/explosion investigations, but he or she must investigate fires/explosions as part of their regular duties and must have testified in court as an expert witness regarding the cause of fires/explosions. In most cases, individuals on volunteer fire departments and small full-time fire departments do not have the expertise required.

6.2. State Fire Marshal

A representative from the State Fire Marshal's office may assist in fire/explosion investigations, but he or she must investigate fires/explosions as part of their regular duties and must have testified in court as an expert witness in regards to the cause of fires/explosions.

6.3. Bureau of Alcohol, Tobacco, and Firearms (ATF)

Requests made to the ATF for assistance in investigating significant structural fire/explosion incidents must be placed through the regional office. A representative from the Bureau of Alcohol, Tobacco, and Firearms may assist in fire/explosion investigations, but he or she must investigate fires/explosions as part of their regular duties and must have testified in court as an expert witness regarding the cause of fires/explosions.

FIRE SAFETY FOR COMMERCIAL SERVICES

This chapter is currently under development.

AGREEMENTS AND CONTRACTS

1. Introduction

Agreements and contracts are used to obtain outside services or resources to meet National Park Service (NPS) structural firefighting objectives. Properly executed agreements and/or contracts are essential to providing comprehensive structural fire prevention and protection where available resources within a park are insufficient to meet park needs. Support from neighboring fire organizations is encouraged and Superintendents should enter into appropriate contracts or agreements whenever possible to enhance a park's firefighting capabilities.

Agreements allow the NPS to work cooperatively with other federal, state, nonprofit, and for-profit organizations to further the NPS mission. Agreements are generic instruments used to document a wide range of mutually agreed upon policies, procedures, objectives, understandings, and/or relationships between the NPS and other federal or non-federal entities. Contracts refer to that subset of agreements involving the acquisition of goods or services for the direct benefit of the NPS.

The first step in acquiring goods and services is to determine whether the needs should be met using agreement or acquisition (contract) procedures. In selecting the type of agreement or contract to be used, one must determine if "legal authority" exists and identify the nature and type of relationship anticipated between the NPS and the potential partner or supplier. This decision should be made in consultation with acquisition and program personnel before any discussions are held with potential partners or suppliers.

As an agency of the Federal Government, the NPS has the authority to enter into agreements and contracts and is responsible for ensuring that all agreements and contracts are managed responsibly and in accordance with law and regulations. Drafts of all agreements and contracts for fire services shall be submitted to regions and, where appropriate, to field solicitors for review prior to implementation.

2. Responsibilities

2.1. National Level

- Ensure that current information and direction for developing and maintaining agreements and contracts for structural fire services is available servicewide.
- Ensure the coordination and resolution of all agreement and contracting issues with the Office of Business Services.
- Assess, coordinate, and facilitate training related to agreements and contracts for structural fire services.

2.2. Regional Level

- Provide review and direction for all new proposals for structural fire service agreements and contracts.
- Ensure existing structural fire service agreements and contracts are accurate and current.
- Convey and coordinate regional training needs related to structural fire agreements and contracts with the National Office.

2.3. Park Level

- Initiate the development and updating of agreements and contracts for structural fire services.
- Coordinate the development of new agreements and contracts with the Regional Structural Fire Manager.
- Coordinate the review of agreements and contracts with the Regional Structural Fire Manager.
- Identify and convey park training needs regarding agreements and contracts to the Regional Structural Fire Manager.

3. Types of Agreements

Agreements allow the NPS to work cooperatively with other federal, state, nonprofit, and for-profit organizations to further the NPS mission. The *NPS Agreements Handbook*, which supplements *Director's Order 20*, provides detailed guidance to all who have a role in the development, administration, and closeout of agreements.

There are numerous types of agreements commonly used in meeting structural fire objectives. These include memoranda of understanding, cooperative agreements, memoranda of agreement, interagency acquisition agreements, mutual aid agreements, and emergency assistance agreements.

Procurement contracts are a unique type of agreement governed separately by the *Federal Acquisition Regulation* and are, therefore, addressed below under separate headings.

3.1. Memoranda of Understanding

A Memorandum of Understanding (MOU) is a stand-alone agreement between two or more entities that documents policies and procedures of mutual concern, provides mutual assistance, or exchanges results for the promotion of common endeavors. It documents a "handshake" agreement by the parties. This type of agreement may establish an administrative framework under which a future cooperative agreement may

be entered into, but they must not commit current or future NPS funding, future non-competitive contracts, or circumvent any of the procurement laws and regulations. This agreement must not commit the NPS to provide financial assistance in any form, such as furnishing NPS property, goods, or services. It does not require the signature of a contracting officer.

Some examples of situations that would require a memorandum of understanding are as follows:

- Participation in the activities of a cooperating association within a park unit.
- Sharing patrol responsibilities with an adjacent federal landowner.
- Cooperation with another federal agency on the reciprocal use of radio frequencies.
- Cooperation with adjacent landowners in wildlife management activities.
- Receipt of assistance from park groups for search and rescue activities (also could be a memoranda of agreement).
- Cooperation with other federal, state, local, and/or private interests in the operation, development, and maintenance of national scenic and national historic trails.

3.2. Memoranda of Agreement

A Memorandum of Agreement (MOA) allows a non-federal entity to reimburse the NPS for supplies, property, or services. It documents the receipt of funds, goods, and/or services by the NPS from non-federal entities (see 3.3 for receipts from federal entities). This type of agreement also may establish the administrative framework for entering into subsequent agreements that allow for the expenditure of funds, but such an agreement never is used to transfer funding to another party. Memoranda of agreement do not require the signature of a contracting officer. However, review is strongly encouraged. In some instances, it may be desirable to have the agreement signed by a contracting officer.

Some examples of situations that would require memoranda of agreement are as follows:

- Receipt of assistance from an outside organization to seek donations on behalf of the NPS as part of a fundraising campaign. (See *Director's Order 21*.)
- Any type of funding document when the NPS is in receipt of funds from a non-federal entity.

3.3. Interagency Acquisition Agreements

An Interagency Acquisition Agreement is between two or more federal agencies in which one federal agency (servicing agency) provides goods, property, or services to the other agency (the requesting agency). Such agreements are typically entered into under the

authority of the Economy Act. Interagency acquisition agreements also are used for transfers between DOI bureaus and offices. This type of agreement is often used to obtain assistance with local federal fire departments for joint fire suppression where there is an exchange of services and equipment.

3.4. Mutual Aid Agreements

Mutual Aid Agreements are a type of Memoranda of Understanding (MOU). As the name implies, they are used primarily for areas in which a park can assist a local department (a fire department, for example) and, in turn, the local department also assists the park. Funds are not to be transferred under this type of agreement.

The agreement should lead to positive interaction among the participating parties, by covering areas of beneficial interaction other than crisis operations. The agreement should also address cooperation and coordination in Structural Fire Management Programs. In addition to the specific requirements of *Director's Order 20,* the agreement shall address the following:

- Cooperation in fire prevention, preparedness, suppression, and management operations.
- Coordinating the development of Structural Fire Management Plans, including management strategies, tactics, and methods.
- Clear identification of parties responsible for implementing various aspects of the agreement.
- Guidelines for resolving differences in training standards for fire suppression.
- Establishment of joint training and exercises.
- Procedures for notification, initial attack, and transition into more complex incidents.
- Fire operations specific to suppression, salvage, and overhaul at historic structures and curatorial facilities.
- Incident management responsibilities, including unified command within the ICS framework and resolution of command responsibilities in particular situations.

Any agreement that obligates federal funds or commits anything of value must be signed by the appropriate warranted contracting officer. Specifications for funding responsibilities shall include billing procedures and schedules for payment.

All Mutual Aid Agreements must receive an annual review, as well as a full joint review by all parties at least every five years and as appropriate for revision. All agreements must be subject to an appropriate legal review before they are finalized.

3.5. Emergency Assistance

A city, county, or rural fire department may have a policy in place that allows them to render assistance in case of a fire on federal property. A federal law allows reimbursement for costs that a local fire service entity incurs during operations on federal property (see 44 CFR 151). However, be advised that some state and local fire departments will not provide assistance to neighboring jurisdictions without a completed written agreement. The need for such an agreement and the form it should take must be determined and addressed long before a park requires emergency services.

Superintendents may assist other agencies with emergencies outside of parks, as authorized by 16 USC 1b(1). To the extent practicable, and in accordance with *Director's Order 20,* written agreements with other agencies must first be in effect. NPS employees who are outside the area of their jurisdiction and who are directed by their supervisors to provide emergency assistance to other agencies will be considered to be acting within the scope of their employment. NPS personnel assigned "arduous" or qualifying "hazardous duty" fire or rescue assignments off park property must meet the same physical fitness standards that would be required if the incident were on park property.

4. Contracts

A procurement contract is the correct legal instrument to use when there is a need to acquire by purchase, lease, or exchange any goods or services for the direct benefit of the Federal Government. The Federal Government uses procurement contracts to establish quality of work standards, to require compliance, and to have the unilateral right to initiate corrective action when the work is not performed (such as construction projects). Procurement contracts may be terminated for convenience or for default. Refer to the *Federal Acquisition Regulation* and your contracting officer for further guidance on procurement contracts.

4.1. Contracted Protection

When a Park does not have its own engine company and relies totally on a local fire department, an agreement for "Contracted Protection" may be used. Contracts may be negotiated when they are determined to be the most cost-effective means for providing the best possible fire protection that meets NPS established standards. A contract, however, does not absolve the Park Superintendent of the responsibility for creating or managing the park's own Structural Fire Management Plan. A valid park SFMP (see Chapter 4, *Structural Fire Management Plans*, for further details) must be in place at all times and must include a definition of the contractor's role in the overall program.

Contracted Protection Agreements shall be developed and administered in accordance with *Federal Acquisition Regulations*. The contracts should cover items such as:

- Pre-incident meetings.
- Amounts to be paid for the protection, including whether it is a single, annual payment for all incidents, a payment "per incident," or some combination of these.

- Any special needs the park has, such as protection of collections, historic structures, etc.

- Notification procedures.

4.2. Local Protection

Park units may be located within an established fire department response area, such as a city or fire district, making it unnecessary for a separate, specific contract. This does not eliminate the need for a documented agreement and proper pre-incident planning and communications with the applicable department. The responding units must be aware of any special needs and concerns that the park may have. These needs and concerns shall be communicated before an emergency situation ever arises and must be kept current.

Issues that must be clearly defined and understood by all parties are:

- How the local fire department handles responses on federal lands.

- How the park will be billed, if necessary.

If the department is going to bill the park, then a Contracted Protection Agreement (see 4.1 above) is required.

5. References

- The *Agreements Handbook* (April 13, 2004) covers policy, procedures, samples, and formats for NPS Agreements and can be located at:

  http://classicinside.nps.gov/documents/Agreements%20Handbook.pdf

- 44 CFR 151 - *Federal Fire Prevention and Control Act of 1974*, provides that "each fire service that engages in the fighting of a fire on property which is under the jurisdiction of the United States may file a claim with the Director of the Federal Emergency Management Agency for the amount of direct expenses and direct losses incurred by such fire service as a result of fighting such fire."

- *Departmental Manual Series Emergency Delegation*, Part 296 Interior Emergency Operations, Chapter 1, Fire Protection and Assistance (01-03-79)

- *Departmental Manual Series Federal Assistance Programs*, Part 505 Grants Administration,

  Chapter 2, *Procurement Contracts, Grants and Cooperative Agreements*

  Chapter 3, *Grants and Cooperative Agreements with State and Local Government*

- 16 USC 1 – Sec. 1b. Secretary of the Interior's authorization of additional activities, administration of National Park System. (January 2004)

  "In order to facilitate the administration of the National Park System, the Secretary of the Interior is authorized to carry out the following activities, and he may use applicable appropriations for the aforesaid system for the following purposes: (1) Emergency assistance rendering of emergency rescue, fire fighting, and cooperative assistance to nearby law enforcement and fire prevention agencies and for related purposes outside of the National Park System."

- U.S.C. §1856a (a), *Reciprocal Fire Protection Agreements*, authorizes each agency head charged with the duty of providing fire protection for any property of the United States to enter into a reciprocal agreement with any fire organization maintaining fire protection facilities in the vicinity of such property for mutual aid in furnishing fire protection for such property and for other property for which such organization normally provides fire protection. Each such agreement will include a waiver by each party of all claims against every other party for compensation for any loss, damage, personal injury, or death occurring in consequence of the performance of such agreement. Any such agreement may provide for the reimbursement of any party for all or any part of the cost incurred by such party in furnishing fire protection for or on behalf of any other party.

6. <u>References</u>

Aid Agreement Example

General Agreement Example

General Agreement Template

Cooperative Agreement Template

Memorandum of Understanding Example

Memorandum of Understanding Template

SCOPE OF WORK FOR PROJECTS

1. Introduction

The design and installation of fire protection systems are often complex and deserve close attention by all parties involved to ensure every aspect of a project is completed as designed; the needs of the park are met; and small, but often important, operational details are not overlooked. As with most projects within the NPS, a *Scope of Work* statement and *Task Orders* are required to provide a clear, concise description of the project. The intent behind these documents is to ensure that even the smallest details are clear to both the government and the contractor for each project and that every project is completed in a timely, cost effective, and professional manner. Projects involving the purchase of goods or service must be conducted in accordance with guidelines detailed in RM 58, Chapter 14, *Agreements and Contracts*.

2. Responsibilities

2.1. National Level

- Provides coordination with the WASO contracting office on issues related to scopes of work and task orders related to structural fire projects.
- Establishes and maintains a library of resources and examples that can assist parks in writing scopes of work and task orders for structural fire related projects.
- Identifies servicewide training needs related to project development, scopes of work, and task orders and develops and provides training where needed.

2.2. Regional Level

- Assists parks in developing clear, understandable and precise scopes of work and task orders for structural fire related projects.
- Notifies the national office of problems or other issues related to scopes of work and task orders.
- Develops checks and balances within the scopes of work that assure proper installation and testing of fire and life safety systems are accomplished with all means available.
- Surveys field units to establish training needs related to project development, scopes of work, and task orders and relays this information to the national office.

2.3. Park Level

- The Park Structural Fire Coordinator (PSFC) is notified of all new, remodel or rehabilitation projects within the park to ensure a review of related fire and life safety

concerns is performed. If the PSFC lacks the expertise or qualifications to conduct the review, they are to seek assistance from the regional office.

- Advises the unit manager and contracting office of proposed projects.
- Drafts the scopes of work and task orders for structural fire projects.
- Provides draft scopes of work and task orders for structural fire related projects to the regional AHJ for review.
- Writes the final scope of work and submits it to contracting.
- Communicates closely with the Regional AHJ for the length of project and advises of problems and issues.

3. Scope of Work (SOW)

The SOW is a clear and concise description of the project to be undertaken. Developing an effective SOW is critical to ensuring that all parties understand what, how, and when a project is to be accomplished. Sufficient care is needed when writing an SOW, so that an effective and superior end product can be obtained.

3.1. SOW Writing Tips

- **Hold the service provider accountable.** The SOW must hold the service provider accountable for results. Results and performance should be the focus, not the procedure or process. Work requirements should be written in a results-oriented manner and clearly define all performance objectives, work expectations, and project milestones, so that services received can be properly compared and evaluated against results requested.

- **Be precise.** The more precision in the SOW, the more likely the stakeholders will be satisfied with the end product. A well-written SOW includes performance requirements that are reviewed periodically throughout the project to allow the Contracting Officer's Technical Representative (COTR) or designated project inspector to easily determine if a project is being completed in accordance with the SOW and is on track for timely completion.

- **Use active voice and task-oriented statements.** The clearest way to indicate who is responsible for the work is to use the active voice. Precede requirements with "The Contractor shall" or "The Agency shall." Use of the passive voice obscures who is responsible. For example, say, "The service provider shall (or must) provide X" rather than "X will be provided." Ambiguous provisions are generally misinterpreted against the drafting party.

- **Avoid abbreviations and acronyms.** To prevent misunderstandings, abbreviations and acronyms are to be avoided as much as possible. When used, they should be defined either in the definition section of the contract, the Request for Proposal

(RFP), or the first time the abbreviation or acronym is used in the document.

- **Avoid using ambiguous words and phrases**. Avoid using ambiguous words and phrases in the scope of work that can be left up to interpretation. For example, say, "The service provider shall keep driveways clear of snow so that the depth does not exceed two inches" or "The service provider shall maintain grass between two and three inches high", instead of the more ambiguous "clear snow as required", or "mow grass as necessary."

- **Use consistent terminology.** Use consistent terminology throughout the SOW to minimize confusion. The same word should be used throughout the SOW to refer to a single object, action, or concept. If necessary, define the word, particularly when referring to requirements that are technical in nature.

- **State due dates.** Due dates for formal written reports should be stated as well as any timelines for required oral progress reports or other service deadlines. Also include contract-monitoring requirements. For example, regular meetings should be scheduled to review standards, evaluate progress, and identify problem areas and to determine actions to be taken by parties to resolve problems.

3.2. SOW Minimum Content Requirements

- **Project description and background.** This is probably the most critical portion of an SOW and detailed attention is required. The person writing the SOW statement must not overlook seemingly small items that may have a monetary or other lasting negative affect on the project's overall effectiveness.

- **Timeline.** The start and finish dates should be defined and realistic. They may be influenced by many factors, including the project's size, workforce availability, time of year, and park operations. The timeline for periodic inspections and reviews of the project ought to be included. This assures the COTR or project inspector that the project is on track and assists in detecting any potential problems early, preventing them from becoming bigger problems later in the project.

- **Deliverables.** This portion of the SOW must include an identification of existing conditions. An inspection report should be required before the design process begins. The project's progress must be monitored through the contractor's regular submission of review documents, drawings and specifications, as outlined and required in the SOW. Depending on the complexity of the project, monetary penalties for non-conformance and adherence to the SOW can, and should, be considered.

- **Name(s) of technical contact(s).** The need for additional or outside technical assistance specific to fire protection must be included in the SOW, where applicable. Guidance and input from the Regional AHJ is critically important, especially in the early stages of most projects. Failure to clarify this need with the contractor may unnecessarily delay or compromise the project. The names of all technical experts must be listed in the document.

- **The level of effort expected of the contractor(s).** Defining the number of labor hours expected enables the agency and the contractor to have a shared understanding as to the effort expected to achieve the desired results.

- **The number and nature of meetings involved.** Interim meetings facilitate communication between the agency and the contractor and provide a forum for discussing project status, addressing unforeseen obstacles, and reasserting expectations. The number and nature of meetings planned, as well as meeting participants and/or times and dates, are recommended components of the SOW.

- **Lists of government-furnished materials.** Any and all project materials to be provided by the government are to be clearly identified in the SOW to avoid both material shortages and excess, as well as to clarify the type and specifications of provided material.

4. Task Orders

Task Orders are orders for individual tasks within the SOW. Task orders are not stand-alone documents and must always reference the initial SOW. Task orders should only include information relevant to a specific task, and are to address additional terms and conditions not found in the initial SOW. They are not intended to repeat criteria already specified in the SOW.

5. References

Agreements Handbook, NPS

ATTACHMENTS

Structural Fire Operations:

- Certification Challenge Application *(under development)*
- Certification/Proctor Guide Book: Written Test, Practical Test
- Clearance Determination Report *(under development)*
- Daily Apparatus Inspection Form
- Dr. Paulson's Memorandum on Medical Examination Comparison
- DOI Structural Fire Medical Waiver *(under development)*
- Essential Functions and Work Conditions for the Job *(under development)*
- FLA Sample Delegation of Authority
- Functional Requirements by Position *(under development)*
- IMARS Code Classification List
- Live Fire Suppression Verification Form – Firefighter I *(under development)*
- Live Fire Suppression Verification Form – Firefighter II *(under development)*
- Medical and Physical Fitness Requirements *(under development)*
- NPS Baseline and Periodic Medical History and Exam for Structural Firefighters
- NPS Standard Operating Guidelines *(under development)*
- NPS Structural Firefighter Basis for Standards DRAFT *(under development)*
- NPS Structural Firefighter Medical Standards DRAFT *(under development)*
- Proctor Affidavit (written exam)
- Proctor Affidavit (practical exam)
- Proctor Application
- Risk Assessment Process *(under development)*
- Reciprocity Nomination *(under development)*
- Report of Hazard (Form RH-1) *(under development)*
- Serious Incident Notification web page
- Structural Firefighter Code of Ethics *(under development)*
- Structural Fire Incident Report
- Structural Fire Incident Reporting Memorandum

Structural Fire Prevention:

- Agreements Handbook, NPS
- Aid Agreements: Example 1, Example 2
- Annual Fire Inspection Job Plan
- Annual Fire & Life Safety Inspection
- Certificate of Occupancy
- Fire Protection Systems Installation and ITM Guidance
- Hot Work Permit (Form HW-1)
- NFPA Codes Online

- Park Structural Fire Management Plan Responsibilities
- Structural Fire Management Plan Template