

## NIH POLICY MANUAL

**1370- Fire Protection and Life Safety Building Permit Process**  
**Issuing Office: OD/OM/ORS/DFM- Telephone: 301-496-0487**  
**Release Date: 3/11/2008**

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### 1. Explanation of Material Transmitted:

This new chapter outlines policies and procedures, and describes individual and organizational responsibilities for obtaining approval from the NIH Division of the Fire Marshal (DFM) before beginning any construction, renovation or major equipment installation in any NIH facilities located at the NIH Bethesda, Maryland; NIHAC Poolesville, Maryland; NCI-Ft. Detrick Frederick, Maryland; NIEHS Research Triangle Park, North Carolina; and Rocky Mountain Laboratories Hamilton, Montana campuses. This chapter does not apply to NIH leased space and facilities.

### 2. Filing Instructions:

**Insert:** NIH Manual Chapter 1370 dated 3/11/2008

**PLEASE NOTE:** For information on:

- Content of this chapter, contact the issuing office listed above.
- NIH Manual System, contact the Office of Management Assessment, OM, on (301) 496-4606.
- Online information, enter this URL: <http://www1.od.nih.gov/oma/manualchapters/>

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### A. PURPOSE

This chapter ensures all NIH facilities are designed and constructed to meet the International Building Code (IBC), the National Fire Codes, the NIH Design Requirements Manual, other nationally recognized codes and standards (e.g., The Joint Commission standards for the accreditation of the NIH hospital) and the Public Buildings Amendments of 1988 (Public Law 100-678), "Compliance with Nationally Recognized Codes."

### B. BACKGROUND

Proper fire protection and life safety is ensured in construction projects, renovations or major equipment installations through oversight by the local fire safety "Authority Having Jurisdiction" (AHJ) at various stages of the project. The NIH Division of the Fire Marshal (DFM), Office of Research Services (ORS), as the designated AHJ for all fire-safety matters at the NIH, accomplishes this mission through: (1) design reviews, (2) fire protection construction submittal reviews and (3) construction inspections, both in-progress and at the completion of the project.

### C. POLICY

This policy establishes the requirement for any individual or organization planning construction, renovation, or major equipment installations to obtain the approvals outlined below before any work commences for any and all covered projects. Specific fire protection requirements for the design or planning phase, the construction phase, and the project completion phase are outlined in Appendices 1-5.

Violations of this policy may result in disciplinary action, the severity of which will vary depending upon the nature of the infraction.

### D. REFERENCES

1. International Building Code (IBC): available in hard copy in DFM, ORS.
2. National Fire Protection Association (NFPA), National Fire Codes: available in hard copy in DFM, ORS.
3. NIH Design Requirements Manual  
([http://orf.od.nih.gov/PoliciesAndGuidelines/DesignPolicy/.](http://orf.od.nih.gov/PoliciesAndGuidelines/DesignPolicy/))
4. Public Buildings Amendments of 1988 (Public Law 100-678), "Compliance with Nationally Recognized Codes."

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([http://www.gsa.gov/gsa/cm\\_attachments/GSA\\_BASIC/PUBLIC%20BUILDINGS%20ACT%20OF%201959\\_R2F-a9-m\\_0Z5RDZ-i34K-pR.doc](http://www.gsa.gov/gsa/cm_attachments/GSA_BASIC/PUBLIC%20BUILDINGS%20ACT%20OF%201959_R2F-a9-m_0Z5RDZ-i34K-pR.doc)).

5. NIH Manual Chapter 1743, "Keeping and Destroying Records," Appendix 1, NIH Records Control Schedule:  
<http://www1.od.nih.gov/oma/manualchapters/management/1743/>

#### E. DEFINITIONS

1. Authority Having Jurisdiction (AHJ): The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure. At the NIH the AHJ has been designated as the Director, Division of the Fire Marshal or his/her designee.
2. Design Review: The process of review and approval of the scope of work, plans and specifications for construction, alteration and renovation.
3. Fire Protection Construction Submittal Review: The process of review and approval of a contractor's working drawings, calculations and material data for fire protection related system and equipment installations.
4. Major Equipment Installation: The installation of a new piece of equipment that may have an adverse impact on existing features of fire safety. This includes equipment that requires a new penetration be made through existing fire rated walls and floors for piping and conduit; equipment that may impair or block existing sprinkler protection due to the size and location of the equipment with respect to existing sprinkler heads; and equipment that may increase ambient noise to a level where existing fire alarm indicating devices can no longer be heard.

#### F. RESPONSIBILITIES

1. The Director, Division of the Fire Marshal will:
  - a) Serve as the designated local fire safety AHJ for the NIH regarding all fire safety matters. In the absence of the Director, he/she may designate another senior DFM staff member to serve as the AHJ. The AHJ is responsible for granting approval before any construction, renovation or major equipment installation is begun in any NIH facilities located at the NIH Bethesda, Maryland; NIHAC Poolesville, Maryland; NCI-Ft. Detrick Frederick, Maryland; NIEHS Research Triangle Park, North Carolina; and Rocky Mountain Laboratories Hamilton, Montana campuses. This chapter does not apply to NIH leased space and facilities.

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- b) Review and approve design documents, Statements of Work, and fire protection construction submittals for construction, renovation, or major equipment installations in accordance with Section G. Reviews will be completed by the DFM within 14 calendar days from the date the complete review package is received by the DFM. If design documents, Statements of Work, and fire protection construction submittals are disapproved by the DFM, the DFM will provide a reason to support this determination.
  - c) Conduct pre-occupancy/final inspections for compliance with the IBC, the National Fire Codes, and the NIH Design Requirements Manual in accordance with Section G.
  - d) Establish and maintain fire safety policies and procedures for the NIH.
  - e) Assess and enforce equivalent fire protection systems or measures in existing facilities when activities for construction create code deficiencies.
2. The Office of Research Facilities Development and Operations will:
- a) Submit for DFM review and approval design documents, Statements of Work, and fire protection construction submittals for construction, renovation, or major equipment installations in accordance with Section G.
  - b) Ensure the IC and/or OD Offices do not occupy newly constructed or renovated space prior to having the DFM conduct a pre-occupancy/final inspection in accordance with Section G.
3. All Institutes/Centers (ICs) and OD Offices will:
- a) Submit for DFM review and approval design documents, Statements of Work, and fire protection construction submittals for construction, renovation, or major equipment installations in accordance with Section G.
  - b) Ensure they do not occupy newly constructed or renovated space prior to having the DFM conduct a pre-occupancy/final inspection in accordance with Section G.

## G. PROCEDURES

### 1. Design or Planning Phase

Any individual or organization including but not limited to the Office of Research Facilities Development and Operations, the Center for Information Technology or other

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Institute or Center personnel engaged in construction, renovation, or major equipment installation must submit design and/or planning drawings, specifications, and Statements of Work for review to the DFM based on the size and scope of the project as described below.

- a) **Projects having an estimated cost of construction over \$25,000.** All design submissions must be reviewed by the NIH DFM.
- (1). Per the NIH Design Requirements Manual all designs for new structures (including designs for new wing additions or other additions to existing structures that modify the height and area or change the use group) and modifications, renovations, and alterations that include the addition or modification of fire protection systems or egress components must have a "Fire Protection Engineering Analysis" performed by a registered Fire Protection Engineer at the concept and final design phase.
  - (2). All final design submissions must be approved by the NIH DFM prior to being released for bid.
  - (3). The review process is valid for only one year. Thus, a previously approved project that has not been activated for more than one year must be sent for a new review by the DFM to ensure compliance with current codes and the NIH Design Requirements Manual before it is considered for release. Reviews of previously approved projects will be expedited by the DFM and will be completed within 7 calendar days from the date the complete review package is received by the DFM. If the design documents are disapproved by the DFM, the DFM will provide a reason to support this determination.
  - (4). If a design is amended during the advertisement/award period, the DFM must review the scope of the amendment and provide written verification that the amendment does not adversely impact fire protection or life safety and will not result in a code compliance issue.
  - (5). Only DFM approved final design documents must be used on the construction site. DFM final design approval will consist of a signed stamp on the cover sheet of the final design documents.
  - (6). To assist the Project Officer in complying with this policy, a list of the usual project elements reviewed by the DFM to ensure code compliance (but not a complete list) is included in Appendix 1.
- b) **Projects having an estimated cost of construction under \$25,000.** The Statement of Work or design documents (if any) must be reviewed by the DFM if the project includes any of the project elements described below:

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- (1). Construction, demolition or removal of walls. The DFM will ensure compliance with the NFPA 101 Life Safety Code and will determine any impact on sprinkler systems;
- (2). Removal or installation of doors. The DFM will ensure compliance with the NFPA 101 Life Safety Code and will determine if any doors must be fire rated;
- (3). Relocation, removal or installation of sprinklers and standpipes. The DFM will ensure compliance with NFPA 13 and NFPA 14;
- (4). Relocation, removal or installation of fire alarm devices. The DFM will ensure compliance with NFPA 72;
- (5). Penetration of walls or floors. The DFM will determine if required fire barriers are being penetrated and if fire stopping is required;
- (6). All final Statements of Work or final design documents that require a DFM review based on the aforementioned elements must be approved by the DFM prior to procurement or being released for bid; and
- (7). Only the DFM approved Statement of Work or final design documents must be used on the construction site. DFM final Statement of Work approval will consist of a signed stamp on the cover sheet of the final Statement of Work.

## 2. Construction Phase

- a) **Change Orders:** Any individual or organization including but not limited to the Office of Research Facilities Development and Operations, the Center for Information Technology or other Institute or Center personnel engaged in construction, renovation, or major equipment installation, must submit to the DFM for review any proposed change order affecting the project elements identified in Appendix 1. Change order reviews will be expedited by the DFM and will be completed within 7 calendar days from the date the complete change order package is received by the DFM. If the change order is disapproved by the DFM, the DFM will provide a reason to support this determination.
- b) **Required Fire Protection Construction Submittal Reviews:** Any individual or organization including but not limited to the Office of Research Facilities Development and Operations, the Center for Information Technology or other Institute or Center personnel engaged in construction, renovation, or major equipment installation, must provide to the DFM fire protection construction submittals concerning the project elements outlined in Appendix 2.

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- (1). All fire protection construction submittals must be reviewed and approved by the DFM prior to installation; and
  - (2). Only the DFM approved fire protection construction submittals including but not limited to sprinkler and fire alarm shop drawings must be used on the construction site. DFM fire protection construction submittal approval will consist of a signed stamp on the cover sheet of the shop drawings and/or product data.
- c) **Required In-Progress Construction Inspections:**
- (1). Any individual or organization including but not limited to the Office of Research Facilities Development and Operations, the Center for Information Technology or other Institute or Center personnel engaged in construction, renovation, or major equipment installation must request DFM construction inspections for all projects that contain any of the project elements outlined in Appendix 3. These items must be inspected prior to “close-in.”; and,
  - (2). Depending on the scope of the project there may be many “in-progress” inspections before the final inspection.
- d) **Required Fire Protection System Inspections and Acceptance Tests:** Any individual or organization including but not limited to the Office of Research Facilities Development and Operations, the Center for Information Technology or other Institute or Center personnel engaged in construction, renovation, or major equipment installation must request DFM construction inspections for all projects which contain any of the project elements outlined in Appendix 4. These items must be inspected and tested prior to scheduling a final inspection of the entire project.

### 3. Project Completion Phase

- a) **Required Fire Protection Pre-Occupancy/Final Inspection:** Any individual or organization including but not limited to the Office of Research Facilities Development and Operations, the Center for Information Technology or other Institute or Center personnel engaged in construction, renovation, or major equipment installation must obtain a DFM pre-occupancy/final inspection approval memorandum for all projects prior to final payment to the construction contractor. (See Appendix 5).

## H. RECORDS RETENTION AND DISPOSAL

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All records (e-mail and non-e-mail) pertaining to this chapter must be retained and disposed of under the authority of the NIH Manual Chapter 1743, "Keeping and Destroying Records," Appendix 1, NIH Records Control Schedule, Section 2600 Procurement, Property and Supply Management, B. Public Buildings and Space including all other items that apply.

**NIH e-mail messages:** NIH e-mail messages (messages, including attachments, that are created on the NIH computer systems or transmitted over the NIH networks) that are evidence of the activities of the agency or have informational value are considered Federal records. These records must be maintained in accordance with current NIH Records Management guidelines. Contact your IC Records Officer for additional information.

All e-mail messages are considered Government property, and if requested for a legitimate Government purpose, must be provided to the requester. Employees' supervisors, the NIH staff conducting official reviews or investigations, and the Office of Inspector General may request access to or copies of the e-mail messages.

E-mail messages must also be provided to the Congressional Oversight Committees, if requested, and are subject to the Freedom of Information Act requests. Since most e-mail systems have back-up files that are retained for significant periods of time, e-mail messages and attachments are likely to be retrievable from a back-up file after they have been deleted from an individual's computer. The back-up files are subject to the same requests as the original messages.

## I. MANAGEMENT CONTROLS

The purpose of this chapter is to provide guidance to NIH personnel for obtaining the required NIH Division of the Fire Marshal approvals before beginning any construction, renovation or major equipment installation projects.

1. **Office Responsible for Reviewing this Chapter:** Through this manual issuance, the DFM is responsible for ensuring that management controls are implemented and working.
2. **Frequency of Review:** Ongoing.
3. **Method of Review:** The DFM will maintain oversight and ensure compliance with this policy by assessing documentation obtained through their routine fire protection and life safety surveys of NIH facilities as well as by monitoring DFM monthly performance data in conjunction with the ORFDO project status database.
4. **Review Reports:** Reports are sent to the Associate Director for Research Services; Associate Director for Research Facilities Development and Operations; and the

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Deputy Director for Management, NIH. Issues of special concern will be brought immediately to the attention of the Associate Director for Research Services.

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**APPENDIX 1  
PROJECT ELEMENTS EXAMINED DURING DESIGN REVIEWS**

<b>PROJECT ELEMENT</b>	<b>AREA OF DFM REVIEW</b>
New or Modification of an Existing Fire Pump	Submit preliminary design calculations, equipment location, piping diagrams.
Building Structure	DFM must verify the structural fire resistance meets the requirements of the International Building Code (IBC) based on the IBC's height and area limits. DFM will verify the adequacy of fire resistive materials proposed for application to structural steel.
Fire Suppression Systems: Sprinkler work involving the alteration or addition of sprinklers; or new (or modified) wet chemical (kitchen hood), CO <sub>2</sub> , or other suppression systems.	Submit preliminary design calculations, points of tie-in, equipment specifications.
Fire Alarm System modification or addition	Submit system and device layout diagrams, riser diagram, equipment specifications and catalog data.
Underground Fire Mains and/or Fire Hydrants	Submit points of tie-in, equipment specifications, design piping layout diagrams.
Fire Extinguisher(s)/Cabinet(s)	Review Fire Extinguisher(s) size and type of agent as well as placement (travel distance) per NFPA 10 and NIH DP&G requirements.
Fire Door(s)/Assembly(ies)	Review Fire Door(s)/Assembly(ies) ratings as well as proper hardware per NFPA 80.
Fire Damper(s)	Review Fire Damper(s) ratings as well as proper installation details per NFPA 90A.
Exterior Site Work	Review exterior site work to ensure fire hydrant and fire department connection locations are accessible and fire department access routes/fire lanes are not impeded.

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**APPENDIX 1**  
**PROJECT ELEMENTS EXAMINED DURING DESIGN REVIEWS**  
 (continued)

PROJECT ELEMENT	AREA OF DFM REVIEW
Floor plan modifications and/or additions which affect required <i>means of egress and exit</i> requirements, the addition, deletion, moving or penetration of smoke or fire barriers and rated shafts, as well as, changes in occupancy use groups.	Submit floor plans with rated barriers identified and occupancies shown. As a practical guide only, submit all projects involving: new structures/additions, wing/floor renovations, multiple lab module renovations, lab/office conversions, and renovations where walls or shafts are added/moved/removed.
HVAC Modifications	Submit system layout diagrams, riser diagrams, fire/smoke damper locations to ensure proper duct enclosure and/or equipment to maintain fire barrier ratings.  Any revisions to a smoke control system must be reviewed.
Temporary enclosures which affect required <i>means of egress or exit</i> requirements.	Submit floor plans with required <i>means of egress or exit</i> requirements shown to ensure proper egress is maintained. As a practical guide only, submit all projects involving temporary structures which affect required <i>means of egress or exit</i> requirements. This includes temporary construction walls, asbestos abatement enclosures, temporary exits and doors.
Revised or new lighting plans.	Submit lighting plans to ensure proper emergency illumination of the egress paths, including exit signs.

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**APPENDIX 2  
CONSTRUCTION PHASE PROJECT ELEMENTS**

PROJECT ELEMENT	CRITERIA FOR APPROVAL
Fire stopping Material	Underwriters Laboratories (UL) listed fire stopping material and products cited must be specifically listed for the intended use and have the proper hourly rating.
Spray-On Fireproofing Material	UL listed cementitious material with the proper application thickness shown for the intended fire resistance rating.
Fire Door(s)/Assembly(ies) - existing installations/ replacements. (New installations are reviewed for location)	UL listed, the DFM will verify: a) proper hourly rating for intended use. b) hardware is UL listed or meets NFPA 80. c) certification for fire rated glazing and maximum size.
Fire Damper(s)	UL listed, the DFM will verify: a) does not exceed the maximum listed size. b) leakage rating (if combination fire/smoke type). c) proper listed application. d) installation details are in accordance with SMACNA®.
Fire Wall System(s)	Meets UL listed design criteria (shown on approved contract drawings).
Flammable Liquids Cabinet(s)	UL listed and provided in every laboratory module.
Fire Pump(s) and Fire Pump Controller(s)	UL listed. Submit catalog data, shop drawings, calculations, piping diagrams, and certified pump curve(s).
Fire Suppression and Standpipe Systems - Sprinkler work involving the alteration or addition of four or more sprinklers, standpipes, wet chemical, and/or CO <sub>2</sub> , .	Submit equipment, piping plans and hydraulic calculations per NFPA 13, NFPA 14, NFPA 17A, and NFPA 12 (as applicable).

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**APPENDIX 2  
CONSTRUCTION PHASE PROJECT ELEMENTS  
(continued)**

<b>PROJECT ELEMENT</b>	<b>CRITERIA FOR APPROVAL</b>
Fire Alarm System(s)	Submit equipment catalog data, shop drawings of point to point wiring diagrams and device installation drawings indicating conduit runs and wiring color code scheme on a floor plan location drawing. Include backup battery calculations.
Underground Fire Main(s) and Fire Hydrant(s)	Submit equipment and piping layout drawings.
Smoke Control System modifications	Submit proposed changes.

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**APPENDIX 3  
IN-PROGRESS INSPECTION**

PROJECT ELEMENT	SCOPE/FOCUS OF DFM IN-PROGRESS INSPECTION
Fireproofing Material	Inspect conformance to listed installation instructions including verification of proper depth of material before wall installation or other construction that covers the fireproofing. DFM's inspection is concerned with the area of coverage and the removal of material for attachments to the steel – the contractor is required to engage an independent testing company to check depth and adhesion of the fireproofing. (Material which will not be concealed can be inspected at the final inspection but the P.O. should allow time for corrective actions for any deficiencies found.)
Firestopping Material	Inspect conformance to listed installation instructions including verification of proper depth of material before wall installation or other construction that covers the firestopping. (Material which will not be concealed can be inspected at the final inspection but the P.O. should allow time for corrective actions for any deficiencies found.)
Sprinklers and Standpipes	Inspect sprinkler piping for proper size, spacing, hangers before the ceiling is installed. This inspection will normally be performed after the as-built sprinkler drawings have been received. (If done after ceiling installation the contractor will have to remove tiles near every sprinkler head to permit this verification.)
Fire dampers	Fire dampers installed at duct penetrations of shafts must be initially inspected before the shaft is closed in since there are items within the shaft which would not be accessible after the shaft is closed up. (The damper drop test, however, must be performed after all work is complete.)
Shaft wall systems	The inner layer of core board must be inspected before the outer layer(s) of sheetrock are installed.
Underground piping	Thrust blocks must be inspected before they are buried.

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**APPENDIX 4**

**REQUIRED FIRE PROTECTION SYSTEM INSPECTIONS AND ACCEPTANCE TESTS**

<b>PROJECT ELEMENT</b>	<b>SCOPE/FOCUS OF DFM INSPECTION AND TESTING</b>
Sprinklers and Standpipes	<p>If there was new underground piping installed the DFM must witness the flushing required by NFPA 24. Fire hydrants must be flow tested.</p> <p>The DFM must be invited to witness the flushing of the sprinkler and standpipe piping required by NFPA 13 and 14 but if not available the test can be witnessed by the P.O. or a P.O. designee.</p> <p>The DFM must be invited to witness the hydrostatic testing of the sprinkler and standpipe piping required by NFPA 13 and 14 but, if not available, the test can be witnessed by the P.O. or a P.O. designee.</p> <p>For a pre-action or other sprinkler system involving an interface with the fire alarm system, the suppression system must not be tested until the fire alarm system is being tested.</p>
Fire Alarm	<p>The DFM must witness a test of every new/relocated device impacted by the project. The test will include all new/relocated sprinkler alarm and supervisory devices.</p> <p>The test must include interface with other systems controlled by the fire alarm system such as duct detector shutdown of an air handler.</p> <p>The test will also verify proper interaction with security hardware/systems if this is part of the project.</p> <p>The fire alarm as-built drawings must be provided to the DFM before the test for verification.</p> <p>The P.O. must not schedule this test until the contractor has performed their own initial, preliminary test of the system.</p>

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**APPENDIX 4  
REQUIRED FIRE PROTECTION SYSTEM INSPECTIONS AND ACCEPTANCE TESTS  
(continued)**

<b>PROJECT ELEMENT</b>	<b>SCOPE/FOCUS OF DFM INSPECTION AND TESTING</b>
Fire Pump	<p>The DFM must witness a test of every new/relocated fire pump in accordance with the requirements of NFPA 20, with the test being performed by a manufacturer's representative.</p> <p>The P.O. must not schedule this test until the contractor has performed their own initial, preliminary test of the fire pump.</p>
<b>PROJECT ELEMENT</b>	<b>SCOPE/FOCUS OF DFM INSPECTION AND TESTING</b>
Kitchen Fire Suppression System	<p>Simulated discharge of the agent must be part of the test (usually a gas cylinder discharging with balloons placed over the discharge nozzles).</p> <p>Shut off of power and fuel supplies must be verified.</p> <p>Monitoring by the fire alarm system must be verified.</p>
Gaseous Fire Suppression System	<p>A room integrity (leakage) test must be performed before the final acceptance test is scheduled. This test must be witnessed by the DFM.</p> <p>Simulated discharge of the agent must be part of the test (usually a gas cylinder discharging with balloons placed over the discharge nozzles).</p> <p>Shut off of power and any other required actions must be verified.</p> <p>Monitoring by the fire alarm system must be verified.</p>

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**APPENDIX 5  
REQUIRED FIRE PROTECTION PRE-OCUPANCY/FINAL INSPECTION**

<b>INSPECTION ELEMENT</b>	<b>SCOPE/FOCUS OF DFM INSPECTION</b>
Fireproofing Material	Inspect conformance to listed installation instructions including verification of proper depth of material.
Fire Wall System(s)	Inspect conformance to listed installation instructions.
Flammable Liquid Cabinet(s)	Inspect conformance to listed installation instructions and presence of one or more in all laboratories using chemicals.
Fire Extinguisher(s)/Cabinet(s)	Inspect item(s) for conformance to NFPA 10 requirements as well as NIH DP&G requirements.
Fire Doors/Frames	Proper installation and operability per the requirements of NFPA 80.
Fire Dampers	Proper installation and successful drop test.
Sprinkler Systems	All escutcheons installed, no sprinklers painted. Validation of as-built record drawings, hangers - if not performed earlier – usually for labs with no ceiling.
Exit signs	Installed per contract, not obstructed by other equipment.
Emergency lighting	Installed per contract, verify not on any switches.
Interior finishes	Comply with the NFPA 101 Life Safety Code.
Electrical wiring	Comply with NFPA 70.
Exits and exit access	Required width, door swing per the NFPA 101 Life Safety Code.