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FIRE PROTECTION & LIFE SAFETY FOR **DESIGN AND CONSTRUCTION**

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NIST S 7401.01

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1. PURPOSE

The purpose of this suborder is to provide the requirements for fire protection and life safety for new construction and additions or alterations to existing buildings. The codes and standards adopted within this suborder are the baseline fire and life safety standards for design and construction that will be enforced on all NIST-owned and operated sites. Where applicable, the suborder specifies changes to, additions to, and adoptions of more stringent codes and standards.

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The minimum fire and life safety requirements within the adopted codes and standards are wholly focused on the reduction or elimination of injuries and deaths related to fire. Property protection is a secondary benefit in some cases, however, it is not the focus or primary goal in most of the design standards referenced within the suborder. In cases where equipment is irreplaceable or the benefit-cost ratio is high, consideration should be given to other types of protection (e.g., early detection or specialty suppression systems) which go beyond the minimum requirements of the suborder.

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2. BACKGROUND

a. NIST Policy (P) 7400.00, Fire and Life Safety, articulates NIST's commitment to making fire and life safety an integral core value and vital part of the NIST culture, in part by complying with applicable laws, regulations, and other promulgated fire and life safety requirements.

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¹ For revision history, see Appendix A.

b. NIST Order (O) 7401.00, *Fire and Life Safety*, details the duties and powers of the NIST Authority Having Jurisdiction (AHJ)² with respect to fire protection and life safety requirements for new construction and additions or alterations to existing buildings.

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3. APPLICABILITY

The provisions of this suborder apply to all new construction and to additions and alterations of existing buildings involving modifications to one or more of the following:

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a. Fire alarm system components;

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45 b. Fire suppression system components;

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c. Fire-rated construction and smoke control features;

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d. Means of egress components (e.g., exit signs, emergency lighting, travel paths, travel
 distance, etc.); or

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e. Occupant loading or use and occupancy classification.

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In existing buildings, the following table in accordance with the IEBC shall be referenced for determination of IEBC classification and if a NIST AHJ review is required:

IEBC CLASSIFICATION	DEFINITION EXAMPLES	NIST-AHJ REVIEW & Work Permit
Repairs	The reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage. Repairs include the patching or restoration or replacement of damaged materials, elements, equipment or fixtures for the purpose of maintaining such components in good or sound condition with respect to existing loads or	No
Alteration – Level 1	performance requirements. Alterations include the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials,	No

² As detailed in Section 10, the NIST AHJ may delegate the authority to carry out any AHJ responsibilities to other Fire Protection Engineers (FPEs) in the Office of Safety, Health, and Environment (OSHE).

IEBC CLASSIFICATION	DEFINITION EXAMPLES	NIST-AHJ REVIEW & Work Permit
	elements, equipment or fixtures that serve the same purpose.	
Alteration – Level 2	Alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.	Yes
Alteration – Level 3	Alterations where the work area exceeds 50% of the building area.	Yes
Change of Occupancy	A change in the use of the building or a portion of a building. A change of occupancy shall include any change of occupancy classification, any change from one group to another group within an occupancy classification or any change in use within a group for a specific occupancy classification.	Yes
Additions	An extension or increase in floor area, number of stories, or height of a building or structure.	Yes

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4. REFERENCES

a. 29 Code of Federal Regulations (CFR) Part 1910. Subpart L, Fire Protection

60 61 62

b. 29 CFR Part 1926, Subpart F, Fire Protection and Prevention

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c. American Glovebox Society (AGS) Guideline for Gloveboxes

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d. AGS Standard of Practice for Glovebox Fire Protection

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e. American National Standards Institute (ANSI) A117.1, Standard for Accessible and Usable Buildings and Building

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f. Division 21,³ Fire Suppression Specifications

³ Divisions refer to divisions of construction information, as defined by the Construction Specifications Institute (CSI)'s MasterFormat. This is the most widely used standard for organizing specifications and other written information for commercial and institutional building projects in the United States.

73 74	g.	Division 28,4 Electronic Safety and Security Specifications
75 76	h.	Factory Mutual (FM) Data Sheet 1-53, Anechoic Chambers, April 2012 edition
77 78	i.	FM Data Sheet 1-56, Cleanrooms
79 80	j.	Federal Fire Prevention and Control Act of 1974
81 82	k.	International Building Code (IBC), 2015 edition
83 84	1.	International Existing Building Code (IEBC), 2015 edition
85 86	m.	International Fire Code (IFC), 2015 edition
87 88	n.	International Mechanical Code (IMC), 2015 edition
89 90 91	о.	NFPA 3, Recommended Practice for Commissioning of Fire Protection and Life Safety Systems, 2015 edition
92 93 94	p.	NFPA 4, Standard for Integrated Fire Protection and Life Safety System Testing, 2015 edition
95 96 97	q.	National Fire Protection Association (NFPA) 10, Standard for Portable Fire Extinguishers, 2013 edition
98 99	r.	NFPA 11, Low, Medium, and High-Expansion Foam, 2010 edition
100 101	S.	NFPA 12, Standard for Carbon Dioxide Extinguishing Systems, 2011 edition
102 103	t.	NFPA 13, Standard for Installation of Sprinkler Systems, 2013 edition
104 105	u.	NFPA 14, Standard for Installation of Standpipe and Hose Systems, 2013 edition
106 107	v.	NFPA 15, Water Spray Fixed Systems for Fire Protection, 2012 edition
108 109 110	w.	NFPA 16, Installation of Foam-Water Sprinkler and Foam-Water Spray Systems, 2011 edition
111	х.	NFPA 17, Standard for Dry Chemical Extinguishing Systems, 2013 edition
		⁴ Ibid.

112113	y.	NFPA 17A, Wet Chemical Extinguishing Systems, 2013 edition
114	7.	NFPA 45, Standard on Fire Protection for Laboratories Using Chemicals, 2011 edition
115	2.	1.1111 ie, sianaan a on 1 ii e 1 roiceiton for Eacoraion les esting enemieats, 2011 eation
116	aa.	NFPA 70, National Electrical Code, 2014 edition
117		
118	bb.	NFPA 72, National Fire Alarm and Signaling Code, 2013 edition
119		
120	cc.	NFPA 75, Standard for Fire Protection of Information Technology Equipment, 2013 edition
121		
122	dd.	NFPA 80, Fire Doors and Fire Windows, 2013 edition
123		NEDA 101 1:0 G C . G 1 2015 1:0
124	ee.	NFPA 101, Life Safety Code, 2015 edition
125 126	ff	NFPA 110, Standard for Emergency and Standby Power Systems, 2013 edition
127	11.	1011 A 110, Standard for Emergency and Standoy I ower Systems, 2013 Califoli
128	gg.	NFPA 115, Standard for Laser Fire Protection, 2012 edition
129	88.	2.12.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
130	hh.	NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants, 2010
131		edition
132		
133	ii.	NFPA 318, Standard for the Protection of Semiconductor Facilities, 2015 edition
134		
135	jj.	NFPA 750, Water Mist Fire Protection Systems, 2015 edition
136	1.1	
137	kk.	NFPA 801, Standard for Fire Protection of Facilities Handling Radioactive Materials, 2014
138		edition
139 140	11	NFPA 2001, Clean Agent Fire Extinguishing Systems, 2012 edition
141	11.	1011 A 2001, Clean Agent Fire Extinguishing Systems, 2012 cattion
142		
143	5.	APPLICABLE NIST DIRECTIVES
144	a.	NIST P 7400.00: Fire and Life Safety
145		
146	b.	NIST O 7401.00: Fire and Life Safety
147		
148	c.	NIST S 7401.02: <u>Inspection, Testing, and Maintenance of Fire Protection and Life Safety</u>
149		<u>Systems</u>
150	_	NAME OF TAXABLE AND TAXABLE OF TA
151	d.	NIST S 7401.03: <u>Impairment of Fire Protection and Life Safety Systems</u>

152 153	e.	NIST S 7401.04: Fire Prevention During Welding, Cutting and Other Hot Works
154	f.	NIST S 7101.60: <u>Chemical Management</u>
155 156 157 158	g.	NIST S 7101.72: <u>Laser Safety</u>
159	6.	REQUIREMENTS
160	a.	Design and Construction Criteria
161 162 163 164		(1) NIST shall adopt the following codes and standards as baseline fire and life safety requirements for design and construction activities ⁵ :
165 166 167		(a) The 2015 International Code Council (ICC) suite of codes, including the IBC, IEBC, IFC, and IMC;
168 169 170		(b) The reference standards within the ICC suite of codes; and the referenced standards listed in Section 4 of this document.
171 172 173		(2) For existing NIST buildings undergoing additions or alteration, the following shall be adhered to:
174 175		(a) IEBC; and
176 177		(b) Federal Fire Prevention and Control Act of 1974
177 178 179		(3) For Request for Variance (RFV) and Appeal of Denied Request
180 181		(a) See NIST O7401-00 Fire & Life Safety and Appendices E and F.
182 183 184		(4) The following requirements are in addition to the adopted codes and standards listed in Section 6a(1), or are provided for additional clarity or emphasis.
185 186		(a) Building Design and General Fire and Life Safety Features
187 188 189		i. Type of construction, fire resistance requirements, penetrations, allowable floor area, building height limitations, building separation distance requirements, and allowable fire areas shall be in accordance with the IBC.

⁵ A list of additional adopted codes and standards, to include those standards not referenced in this suborder but referenced in other FLS suborders, is provided in NIST O7401.00: Fire and Life Safety, Appendix B.

190	(i) Existing metal walls found in the NIST lab buildings are acceptable
191	for reconfiguration within the limits of the adopted codes and
192	standards.
193	
194	ii. Means of egress requirements shall comply with IBC, Chapter 10 and NFPA
195	101 ⁶ , <i>Life Safety Code</i> , for new and existing buildings.
196	
197	iii. Door openings in fire resistive construction shall be protected in accordance
198	with NFPA 80, Fire Doors and Fire Windows.
199	
200	(i) Approved fire doors and their frames shall not be modified in the field.
201	
202	b. Fire Suppression Systems
203	
204	(1) Any new fire suppression system or any alteration to an existing fire suppression system
205	shall require a NIST Work Permit.
206	
207	(2) All new construction shall have complete automatic sprinkler protection designed and
208	installed in accordance with the IBC and NFPA 13, Standard for the Installation of
209	Sprinkler Systems. The requirements for the installation of automatic sprinkler protection
210	in existing buildings undergoing renovations shall be in accordance with the IEBC.
211	
212	(a) Automatic sprinkler systems shall use equipment and devices listed by a <u>Nationally</u>
213	Recognized Testing Laboratory (a.k.a. "NRTL"), and shall be acceptable per the
214	NIST AHJ.
215	
216	(b) Automatic sprinkler systems shall provide for 100% coverage of the building, unless
217	otherwise permitted within NFPA 13.
218	
219	i. NIST buildings/areas deemed sensitive to water damage or areas with
220	irreplaceable equipment may be evaluated by the NIST AHJ for an exception
221	to the 100% fire sprinkler requirement by the NIST AHJ. However, an
222	alternative means for fire protection and life safety shall be provided.
223	
224	(c) Backflow preventers shall be installed on all new systems in accordance with NFPA
225	13 and manufacturer requirements. Hydraulic calculations shall include pressure

⁶ The requirements within Chapter 10 of the IBC supersede those requirements within NFPA 101 to the extent that the two codes conflict. In instances where additional requirements are provided within NFPA 101 that are not present in Chapter 10 of the IBC, those requirements shall be implemented unless otherwise deemed unnecessary by the NIST AHJ.

226	losses for backflow preventers, per manufacturer data sheets or a minimum of 5 PSI,
227	whichever is greater.
228	
229	(d) Fire sprinkler systems shall be designed using the Area/Density method from NFPA
230	13.
231	
232	(e) Fire sprinkler piping shall be designed and installed in accordance with NFPA 13 and
233	with the following NIST requirements:
234	
235	i. All fire sprinkler piping shall be Schedule 40 for sizes of 6 inches and smaller;
236	
237	ii. Fire sprinkler piping 6 inches or more may be exempt from the Schedule 40
238	requirements with prior NIST AHJ approval; and
239	
240	iii. Incoming fire sprinkler feeds shall be dedicated and provided with a locked
241	post indicator valve.
242	
243	(f) Hydraulic calculations shall include a minimum 10% factor of safety for residual
244	pressure.
245	
246	(g) Shop drawings and calculations (when required) for new fire suppression systems or
247	altered fire suppression systems shall be prepared by one of the following:
248	
249	i. National Institute for Certification in Engineering Technologies (NICET)
250	Level III for Automatic Sprinkler Systems;
251	
252	ii. NICET Level IV for Special Hazards Suppression Systems; or
253	
254	iii. A registered FPE.
255	
256	(h) Fire suppression systems shall be designed, fabricated, and installed by a qualified
257	person ⁷ .
258	
259	(i) All fire suppression systems shall be monitored unless otherwise permitted by the
260	NIST AHJ.
261	

⁷ The term "qualified" is defined in the NFPA Glossary of Terms as "A competent and capable person or company that has met the requirements and training for a given field acceptable to the authority having jurisdiction." The term "qualified person" is defined in the NFPA Glossary of Terms as "A person who, by possession of a recognized degree, certificate, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to perform the work."

262 263	(3) For water-based fire protection systems, water flow tests shall be conducted in accordance with NFPA 291, <i>Recommended Practice for Fire Flow Testing and Marking</i>
263 264	of Hydrants, to determine the available water supply.
265	
266 267	(a) The water flow test shall be witnessed by the NIST AHJ.
268 269 270	(b) Historical water supply information may be presented for reference, but it shall not be accepted as input information for new or modified water-based fire protection systems.
271	systems.
272	(4) Standpipe systems shall be designed and installed in accordance with NFPA 14,
273	Installation of Standpipe and Hose Systems.
274	(a) Class II and III standains systems are not normitted at NIST syymod and anomated
275 276	(a) Class II and III standpipe systems are not permitted at NIST-owned and operated
276	sites.
277	(5) Weter correct existence shall be designed and installed in accordance with NEDA 15. Weter
278 279	(5) Water spray systems shall be designed and installed in accordance with NFPA 15, <i>Water Spray Fixed Systems for Fire Protection</i> .
280	
281 282	(6) Water mist systems shall be designed and installed in accordance with NFPA 750, <i>Water Mist Fire Protection Systems</i> .
283	
284 285	(7) Foam systems shall be designed and installed in accordance with NFPA 11, Low, Medium, and High-Expansion Foam, and NFPA 16, Installation of Foam-Water
286	Sprinkler and Foam-Water Spray Systems.
287	
288 289	(8) Dry chemical extinguishing systems shall be designed and installed in accordance with NFPA 17, <i>Dry Chemical Extinguishing Systems</i> .
290	
291	(9) Carbon dioxide systems shall be designed and installed in accordance with NFPA 12,
292 293	Carbon Dioxide Extinguishing Systems.
294	(a) Total flooding systems are not allowed in normally occupied spaces, <i>i.e.</i> , in areas
295	where a pipe break/leak could make a normally occupied area unsafe for occupants.
296	a pipe of each route mane a normally overpres area amount for occupants.
297	(10) Wet chemical extinguishing systems shall be designed and installed in accordance with
298	NFPA 17A, Wet Chemical Extinguishing Systems.
299	

300	(11) Wetting agent	thre extinguishing systems and water additive fire controls shall be
301	designed and	installed in accordance with NFPA 18, Wetting Agents, and NFPA 18A,
302	Water Additiv	res for Fire Control
303		
304	(12) Clean agent fi	re extinguishing systems shall be designed and installed in accordance
305	with NFPA 20	001, Clean Agent Fire Extinguishing Systems.
306		
307	(a) With total	flooding and local application clean agent systems, consideration shall be
308	given to co	ompartment under/over pressurization that could occur during discharge.
309		
310	(13) Portable fire e	extinguishers shall be designed and installed in accordance with NFPA 45;
311	` '	Fire Protection for Laboratories using Chemicals, NFPA 101, Life Safety
312		PA 10, Portable Fire Extinguishers.
313	,	
314	(a) Fire exting	guishers may be installed in recessed or semi-recessed enclosed cabinets. I
315	` ′	due to building restrictions, fire extinguishers may be placed on hooks
316	•	ducing egress widths beyond acceptable limits.
317		
318	(14) Halon 1301 sv	ystems are prohibited at NIST-owned and operated sites.
319		1
320	c. Fire Detection Sys	tems
321	J	
322	(1) Any new fire d	letection system or alteration to an existing fire detection system shall
323	require a NIST	·
324	1	
325	(2) Fire alarm syst	ems shall be designed and installed in accordance with NFPA 72, Nationa
326	` ′	de, and NFPA 70, National Electric Code.
327		
328	(3) Duct smoke de	etectors
329		
330	(a) New and ex	xisting building construction requirements for duct smoke detectors shall
331	comply wit	
332	1 7	
333	(b) Duct detect	tor bypass capabilities shall be provided at the fire alarm control panel
334	` '	allow for exhausting of smoke via the AHU(s).
335	, ,	
336	(4) Fire alarm syst	em shop drawings and calculations (when required) shall be prepared by
337	one of the follo	
338		
339	(a) NICET Lev	vel III for Fire Alarm Systems; or
-	()	•

340 341	(b) A registered FPE.
342	(5) Fire alarm shop drawings and calculations (when required) shall satisfy the following
343	requirements:
344	requirements.
345	(a) Voltage drop calculations shall be limited to a 10% voltage drop; and
346	(n) 1
347	(b) Actual circuit lengths shall be utilized; and
348	
349	(c) Battery calculations shall provide a minimum safety factor of 20%; and
350	
351	(d) Batteries size shall be limited to 55 amp-hours. If calculations plus safety factor
352	require larger batteries, then multiple 55 amp-hour batteries will be provided, unless
353	otherwise approved by the NIST AHJ; and
354	() D (
355	(e) Battery shall be sized to provide a minimum of 36 hours of stand-by and 15 minutes
356 357	of alarm for Gaithersburg and 24 hours of stand-by and 15 minutes of alarm for Boulder.
357 350	Boulder.
358 350	(6) Fire alarm systems shall be designed, fabricated, and installed by a qualified person ⁸ .
359 360	(b) The alarm systems shall be designed, fabricated, and histalied by a qualified person.
361	(7) All fire alarm systems shall be monitored unless otherwise permitted by the NIST AHJ
362	(7) All the diarm systems shall be mointoired timess otherwise permitted by the 14151 Aris
363	(8) Fire Alarm System Components/Devices.
364	(b) The Marin System Components Bevices.
365	(a) The NIST fire alarm system shall be:
366	(a) The Trib I fire alarm system shall be.
367	i. Compatible with the Simplex brand on the Gaithersburg campus; or
368	in companies with the samples of the commercial and company of
369	ii. Compatible with the Notifier brand on the Boulder campus.
370	
371	(b) The NIST fire alarm systems shall be independent and stand-alone systems that are
372	not dependent on security systems, energy monitoring and control systems, or any
373	other systems.
374	

⁸ The term "qualified" is defined in the NFPA Glossary of Terms as "A competent and capable person or company that has met the requirements and training for a given field acceptable to the authority having jurisdiction." The term "qualified person" is defined in the NFPA Glossary of Terms as "A person who, by possession of a recognized degree, certificate, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to perform the work."

375 376	i. A fire alarm system may be combined with a building mass notification system or with a combination building mass notification and public-address
377	system.
378	
379	(c) The NIST fire alarm systems may be connected to security systems for monitoring
380	purposes only, but shall not rely on any components of the security system for
381	operation.
382	
383	(d) The NIST fire alarm system shall not be utilized to perform functions unrelated to fire
384	and life safety, e.g. building automation and/or mechanical and electrical system
385	monitoring.
386	
387	(e) Audio/Visual (AV) devices may be either wall or ceiling mounted devices, and shall
388	be selectable for 15/30/75/110 candela rating/s.
389	
390	(f) Wireless interior fire alarm systems are not allowed at NIST-owned and operated
391	sites without written approval of NIST AHJ.
392	
393	(g) Fire Alarm System Circuitry.
394	i NIST fine clarge circuits shall be Class A on the Caithaughung commus. Class
395 206	i. NIST fire alarm circuits shall be Class A on the Gaithersburg campus. Class B circuitry is acceptable on the Boulder campus.
396 397	B chedity is acceptable on the Boulder Campus.
398	ii. No T-taps are allowed.
399	n. 100 1-taps are anowed.
400	iii. Minimum wire gauge is 14.
401	III. IVIIIIIIIIIII WHE gaage is 11.
402	iv. All fire alarm circuits shall be in conduit.
403	
404	(i) Conduits filling shall conform to conduit fill requirements of NFPA
405	70, National Electrical Code.
406	
407	(9) The NIST fire alarm system shall report the following fire events/occurrences as follows:
408	
409	(a) Manual pull stations shall transmit a fire alarm signal to the NIST monitoring system.
410	The building notification devices shall be activated.
411	
412	(b) Water flow switches (where present) shall transmit a fire alarm signal to the NIST
413	monitoring system. The building notification devices shall be activated

415	(c) Heat, smoke, flame (IR), and beam detectors shall transmit a fire alarm signal to the
416	NIST monitoring system. The building notification devices shall be activated.
417	
418	i. Exception: Detectors located in compartmented, fire-rated mechanical rooms
419	shall transmit a supervisory signal to the NIST monitoring system.
420	
421	(d) Duct smoke detectors shall transmit a supervisory signal to the NIST monitoring
422	system. The respective air-handling unit (AHU) shall automatically shut down.
423	
424	(e) Tamper switches shall transmit a supervisory signal to the NIST monitoring system.
425	
426	(f) Local dedicated system control panels shall be monitored for alarm, supervisory, and
427	trouble signals, which shall be transmitted to the NIST monitoring system unless
428	deemed unnecessary by the NIST AHJ.
429	
430	i. The NIST AHJ shall have final decision over how specific actions from local
431	control panels are transmitted to the NIST monitoring system.
432	
433	d. Special Occupancies & Hazards
434	
435	(1) Laboratories Using Chemicals
436	
437	(a) All laboratory buildings, laboratory units, and laboratory work areas shall be
438	constructed and protected in accordance with NFPA 45, Fire Protection for
439	Laboratories Using Chemicals.
440	
441	(2) Data/Server Rooms
442	
443	(a) Electronic equipment rooms shall be constructed and protected in accordance with
444	IBC; NFPA 75, Protection of Information Technology Equipment; and NFPA 70,
445	National Electric Code.
446	
447	i. These areas include, but are not limited to, automatic data processing areas
448	(data/server rooms), communication centers, and battery rooms.
449	
450	ii. Incidental electronic equipment including, but not limited to, printers, desk
451	top computers, office automation systems, individual computer work stations,
452	telephones, video conference rooms, administration telephone rooms, and
453	reproduction equipment would not be required to comply with this section.
454	

455	(3) Battery Rooms
456 457 458	(a) Battery rooms shall be constructed and protected in accordance with NFPA 70, <i>National Electric Code</i> .
459	Translat Licente Coue.
460	(4) Anechoic Chambers
461	
462 463	(a) FM Global Data Sheet 1-53, <i>Anechoic Chambers</i> , should be consulted for design guidance.
464	
465 466	(b) Anechoic chambers shall be protected by either a water based sprinkler system in accordance with NFPA 13, or a clean agent system in accordance with NFPA 2001.
467 468	(a) A machair abambans construction shall use only noncombustible materials for
468 460	(c) Anechoic chambers construction shall use only noncombustible materials for structure, wall, floor, and ceiling panels.
469 470	structure, wan, moor, and centing paners.
471	(d) Fire suppression systems shall be controlled by dedicated U.L. listed control valve
472	assembly.
473	455411019
474	(e) Anechoic chambers shall be equipped with dedicated high sensitivity smoke detection
475	(HSSD) system.
476	
477	i. New anechoic chambers may be protected by expansion of an existing HSSD
478	system with prior approval from NIST AHJ.
479	
480	(f) Power shall be shunted to the anechoic chambers, and all equipment within the
481	chamber, upon activation of fire suppression or detection system.
482	
483 484	(5) Laser laboratories which are capable of producing beam ignition hazards and which utilize materials or components presenting a fire hazard shall be constructed and
484 485	protected in accordance with NFPA 115, Standard for Laser Fire Protection.
486	protected in accordance with NTTA 113, Standard for Easer Thre Trotection.
487	(6) Clean rooms shall be constructed and protected in accordance with FM Global Data
488	Sheet 1-56, unless otherwise approved by the NIST AHJ, where applicable, NFPA 318,
489	Standard for the Protection of Semiconductor Facilities and IFC Chapter 27
490	
491	(a) Clean rooms shall be protected by a complete fixed-based extinguishing system,
492	designed and installed in accordance with one of the nationally recognized standards
493	listed in Section 4.
101	

495	(b) Where airflow within the cleanroom is so
496	disrupted, such as in the case of downwa
497	evaluation must be performed to determi
498	provide adequate protection or an alterna
499	smoke detection apparatus (a.k.a. "VESI
500	
501	(7) Environmental chambers, such as temperatu
502	for testing electronics, biological materials,
503	by a complete fixed-based extinguishing sys
504	with one of the nationally recognized standa
505	
506	(a) Where the chamber is composed of non-
507	within a building protected by sprinklers
508	
509	i. Chambers shall be equipped with
510	suppression system is not utilized
511	
512	ii. Electrical shunting shall be coupl
513	
514	(b) Fire suppression and detection systems s
515	the range of environmental conditions th
516	
517	(c) Combustible gas detection and carbon m
518	alarm shall be provided in the chamber v
519	furnace.
520	
521	(8) Gloveboxes shall be protected in accordance
522	for Laboratories Using Chemicals, AGS Gu
523	Practice for Glovebox Fire Protection.
524	
525	(a) Where radioactive materials are utilized
526	NFPA 801, Standard for Fire Protection
527	Materials, shall also apply.
528	
529	
530	

- re and humidity controlled enclosures used or other industrial products, shall be protected stem, designed and installed in accordance rds listed in Section 4.
 - combustible materials⁹ and is not contained , fixed fire suppression may not be required.
 - an approved detection system if a fixed fire d to protect the chamber.
 - ed with fire detection.
 - should be designed and installed to withstand at may be present in the chamber.
 - onoxide detection equipped with a local where heat is provided by a gas-powered
- e with NFPA 45, Standard on Fire Protection ideline for Gloveboxes, and AGS Standard of
 - within gloveboxes, the requirements within of Facilities Handling Radioactive

uch that buoyant drive flows will be ard air flow or high flow velocities, an ine if standard ceiling mounted detection will ative detection mechanism, e.g., very early DA"), shall be provided.

⁹ The NFPA glossary of terms defined a "noncombustible material" as "a material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat. Materials that are reported as passing ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C, shall be considered noncombustible materials."

531 532	e.	Statements of Work (SOW's)		
533 534		(1) All SOWs involving NIST activities subject to the requirements of this suborder (see Section 3. APPLICABILITY), whether for external or internal work, shall specify		
535 536		compliance with:		
537 538		(a) NIST adopted codes, standards, amendments;		
539		(b) Other NIST Fire and Life Safety suborder requirements; and		
540 541 542	f.	A/E Design and Construction Submittals		
543 544		(1) A/E firms shall provide design submittal packages, as defined below, for 35%, 65%, and 95%.		
545 546 547		(a) Requirements for the design submittal phases may be altered with approval from the NIST AHJ for both design-bid-build and design-build projects.		
548 549 550		(b) The NIST AHJ shall review design submittals within the period designated in the contract.		
551 552 553		(c) All open comments shall be addressed prior to 100%/Issue for Construction (IFC) Set being issued to NIST AHJ office. The IFC set shall be submitted to the NIST AHJ		
554 555		office prior to start of construction.		
556 557		(2) 35% Basis of Design Narrative Submittal Package.		
558 559		(a) Building Code Submittal Package (35%)		
560 561		i. Project Summary;		
562 563		ii. Applicable codes/standards with referenced editions;		
564		iii. Occupancy classification;		
565 566		iv. Building construction type;		
567 568		v. Building height and allowable area calculations;		
569 570		vi. Building separation distances if applicable; and		

571	vii. Occupancy separations.		
572			
573	(b) Fire Alarm Submittal Package (35%)		
574			
575	i. Prelimi	nary design specifications from Division 28.	
576			
577	ii. One (1)	preliminary half-size drawing set with the following at a minimum:	
578			
579	(i)	General design & installation notes;	
580	(**)		
581	(ii)	Fire alarm zones; and	
582	(···)		
583	(111)	Preliminary device layout.	
584 505	(a) Fire Suppression	on Submittal Package (35%)	
585 586	(c) The Supplessic	on Submittal Package (55/0)	
586 587	i Prolimi	nery decign enegifications from Division 21: and	
587	i. Prelimi	nary design specifications from Division 21; and	
588 580	ii Ona (1)	proliminary half size drawing set with the following et a minimum:	
589	11. One (1)	preliminary half-size drawing set with the following at a minimum:	
590 501	(i)	General design & installation notes;	
591 592	(i)	General design & histaliation notes,	
592 593	(ii)	Flow test data, not to be over 12 months old from the time of	
593 594	(11)	submission;	
595		suomission,	
596	(iii)	Fire suppression zones;	
597	(111)	The suppression zones,	
598	(iv)	Hazard classifications identified per NFPA 13, Standard for	
599	(11)	Installation of Sprinkler Systems; and	
600		Installation of Sprinner Systems, and	
601	(v)	Preliminary hydraulic calculations to determine if a fire pump will	
602		be required.	
603		1	
604	(d) Life Safety Sub	omittal Package (35%)	
605	•		
606	i. One (1)	half-size drawing set with the following at a minimum:	
607	()		
608	(i)	Occupant load factors and calculated occupant loads;	
609		- · · · · · · · · · · · · · · · · · · ·	
610	(ii)	Maximum travel distance(s);	

611	(iii) Common path(s) of travel;
612	
613	(iv) Maximum dead-end travel;
614	
615	(v) Exit remoteness measurements;
616	
617	(vi) Required wall ratings; and
618	('') F ''
619	(vii) Exit capacity.
620	(2) (50/ D : 0.1 : 4.1
621	(3) 65% Design Submittal
622	() D '11'
623 624	(a) Building Code Submittal Package (65%)
625	i. All 35% comments addressed with revision clouds and notes referencing
626	appropriate comments; and
627	appropriate comments, and
628	ii. Updated basis of design narrative.
629	in opinion ones of woods in initially of
630	(b) Fire Alarm Submittal Package (65%)
631	
632	i. All 35% comments addressed with revision clouds and notes referencing
633	appropriate comments;
634	
635	ii. Updated design specifications from Division 28; and
636	
637	iii. One (1) updated half-size drawing set with the following at a minimum:
638	
639	(i) General design & installation notes;
640	
641	(ii) Fire alarm zones;
642	
643	(iii) Updated device layout;
644	
645	(iv) Sequence of operations;
646	
647	(v) Riser diagram; and
648	
649	(vi) Installation details.
650	

651	(c) Fire Suppression	n Submittal Package (65%)
652		
653	i. All 35%	comments addressed with revision clouds and notes referencing
654	appropri	ate comments;
655		
656	ii. Updated	design specifications from Division 21; and
657		
658	iii. One (1) i	updated half-size drawing set with the following at a minimum:
659		
660	(i)	General design and installation notes;
661		
662	(ii)	Flow test data, not to be over 12 months old from the time of
663		submission;
664		
665	(iii)	Fire suppression zones;
666		
667	(iv)	Fire suppression main sizes and locations;
668		
669	(v)	Fire suppression riser sizes and locations;
670		
671	(vi)	Fire suppression valve details;
672		
673	(vii)	Fire department connection locations and details;
674		
675	(viii)	Post indicator valve locations and details;
676		
677	(ix)	Fire suppression incoming size and location;
678		
679	(x)	Hazard classifications identified per NFPA 13, Standard for
680		Installation of Sprinkler Systems;
681		
682	(xi)	Detailed hydraulic calculations done with NIST AHJ approved
683		software; and
684		
685	(xii)	Manufacturer Product Data Sheets (design-build only).
686		
687	(d) Life Safety Subi	mittal Package (65%)
688		
689		comments addressed with revision clouds and notes referencing
690	appropri	ate comments.

691	ii. One (1) updated half-size drawing set with the following at a minimum:		
692			
693	(i) Occupant load factors and calculated occupant loads;		
694			
695	(ii) Maximum travel distance(s);		
696			
697	(iii) Common path(s) of travel;		
698			
699	(iv) Maximum dead-end travel;		
700 701	(x) Evit nom stances messyroments.		
701 702	(v) Exit remoteness measurements;		
702 703	(vi) Required wall ratings; and		
703 704	(vi) Required wan fatings, and		
705	(vii) Exit capacity.		
706			
707	(4) 95% Design Submittal		
708			
709	(a) Building Code Submittal Package (95%)		
710			
711	i. All 65% comments addressed with revision clouds and notes referencing		
712	appropriate comments;		
713			
714	ii. Final basis of design narrative; and		
715			
716	iii. Manufacturer Product Data for Penetrations and Underwriters Laboratory		
717	(a.k.a. "UL") Listed Assemblies (Design-Build only).		
718	4) 7: 11		
719	(b) Fire Alarm Submittal Package (95%)		
720	. A11 650/		
721 722	i. All 65% comments addressed with revision clouds and notes referencing		
722 722	appropriate comments;		
723 724	ii. Final design specifications from Division 28; and		
724 725	ii. Thiai design specifications from Division 28, and		
725 726	iii. One (1) final half-size drawing set with the following at a minimum:		
720 727	in. One (1) that half-size drawing set with the following at a millimum.		
728	(i) General design and installation notes;		
729	(1) Conclus design and installation notes,		
730	(ii) Fire alarm zones;		
	,		

731	(iii)	Updated device layout;
732		
733	(iv)	Sequence of operations;
734		
735	(v)	Riser diagrams;
736		
737	(vi)	Installation details;
738		
739	(vii)	Battery and voltage calculations (design-build only); and
740		
741	(viii)	Manufacturer Product Data Sheets (design-build only).
742		
743	(c) Fire Suppression	n Submittal Package (95%)
744		
745	i. All 65%	comments addressed with revision clouds and notes referencing
746	appropri	ate comments;
747		
748	ii. Final des	sign specifications from Division 21; and
749		
750	iii. One (1)	final half-size drawing set with the following at a minimum:
751		
752	(i)	General design and installation notes;
753		
754	(ii)	Flow test data, not to be over 12 months old from the time of
755		submission;
756		
757	(iii)	Fire suppression zones;
758		
759	(iv)	Fire suppression main sizes and locations;
760		
761	(v)	Fire suppression riser sizes and locations;
762		
763	(vi)	Fire suppression valve details;
764		
765	(vii)	Fire department connection locations and details;
766		
767	(viii)	Post indicator valve locations and details;
768		
769	(ix)	Fire suppression incoming size and location;
770		

771	(x)	Hazard classifications identified per NFPA 13, Standard for
772		Installation of Sprinkler Systems;
773		
774	(xi)	1
775		approved software; and
776		
777	(xii)	Updated manufacturer Product Data Sheets (design-build only).
778		
779	(d) Life Safety Sub	mittal Package (95%)
780		
781	i. All 65%	comments addressed with revision clouds and notes referencing
782	appropri	ate comments;
783		
784	ii. Final bu	ilding code summary; and
785		
786	iii. One (1)	final half-size drawing set with the following at a minimum:
787		
788	(i)	Occupant loads and occupant load factors;
789		
790	(ii)	Maximum travel distance(s);
791		
792	(iii)	Common path(s) of travel;
793		
794	(iv)	Maximum dead-end travel;
795		
796	(v)	Exit remoteness measurements;
797		
798	(vi)	Required wall ratings; and
799		
800	(vii)	Exit capacity.
801		
802	(5) 100%/IFC Set	
803		
804	(a) Building Code S	Submittal Package (100%)
805		
806	i. All prev	ious comments addressed and closed out; and
807		
808	ii. All revis	sion clouds and notes referencing appropriate comments deleted.
809		
810		

811	(b) Fire Alarm Submittal Package (100%/IFC Set)
812	
813	i. All previous comments addressed and closed out;
814	: All marrial and and mater referencing armonists armounts deleted.
815	ii. All revision clouds and notes referencing appropriate comments deleted;
816	Final lasion and Cardina from District 20, and
817	iii. Final design specifications from Division 28; and
818 819	iv. One (1) final half-size drawing set.
820	iv. One (1) final hair size drawing set.
821	(c) Fire Suppression Submittal Package (100%/IFC Set)
822	(e) The suppression suchmular ruckings (1007% if e sec)
823	i. All previous comments addressed and closed out;
824	
825	ii. All revision clouds and notes referencing appropriate comments deleted;
826	
827	iii. Final design specifications from Division 21; and
828	
829	iv. One (1) final half-size drawing set.
830	
831	(d) Life Safety Submittal Package (100%/IFC Set)
832	
833	i. All previous comments addressed and closed out; and
834 835	ii. All revision clouds and notes referencing appropriate comments deleted.
836	ii. An revision clouds and notes referencing appropriate comments defeted.
837	(6) Construction Submittals
838	(c) censulation cuchination
839	(a) Fire Alarm
840	
841	i. Submittals shall be in accordance with approved Division 28 specifications.
842	
843	(b) Fire Suppression
844	
845	i. Submittals shall be in accordance with approved Division 21 specifications.
846	
847	g. OFPM Work Order Submittals
848	
849	(1) OFPM shall submit work orders to the NIST AHJ for review in accordance with Section
850	3 (Applicability) of this suborder.

851	
852	(a) It is the obligation of the organization performing the work to ensure compliance with
853	the requirements of this suborder and to ensure that a NIST Work Permit is obtained
854	when required. If there is any uncertainty regarding the requirements for a permit, the
855	organization performing the work shall consult with the NIST AHJ.
856	
857	(2) All work orders shall contain the following information:
858	
859	(a) Building and room number;
860	
861	(b) OU Point of Contact
862	
863	(c) Description of work;
864	
865	(d) Work area plans and/or sketch; and
866	
867	(e) OFPM contact name and contact information.
868	
869	h. OU-Managed Projects
870	
871	(1) All contracts that involve work in accordance with Section 3 (Applicability) of this
872	suborder shall by reviewed by the NIST AHJ.
873	
874	(a) It is the obligation of the organization performing the work to ensure compliance with
875	the requirements of this suborder and to ensure that a NIST Work Permit is obtained
876	when required. If there is any uncertainty regarding the requirements for a permit, the
877	organization performing the work shall consult with the NIST AHJ. (b) All
878	submittals from contractors shall follow the applicable requirements set forth in
879	Section 6e and 6f.
880	
881	(2) All projects executed in-house, e.g. design and construction work performed by NIST
882	staff, that involve work in accordance with Section 3 (Applicability) of this suborder shall
883	be reviewed by the NIST AHJ.
884	
885	(a) It is the obligation of the organization performing the work to ensure compliance with
886	the requirements of this suborder and to ensure that a NIST Work Permit is obtained
887	when required. If there is any uncertainty regarding the requirements for a permit, the
888	organization performing the work shall consult with the NIST AHJ.
889	
890	(b) All submittals for projects executed in-house shall contain the following information:

891	
892	i. Building and room number;
893	
894	ii. Statement of work per Section 6b;
895	
896	iii. Work area plans and/or sketch, which when required by the NIST AHJ, shall
897	be reviewed and approved by a licensed professional engineer or other
898	qualified person;
899	
900	iv. Information on the individual(s) performing the specific work required:
901	
902	(i) Name;
903	
904	(ii) Training required to perform that work; and
905	
906	(iii)When required by the NIST AHJ, certifications indicating that the
907	individuals are competent to perform the work.
908	
909	v. OU contact name and contact information.
910	
911	i. NIST Work Permit
912	
913	(1) Work involving New construction and additions or alterations to existing buildings shall
914	not commence until a NIST Work Permit, when required, has been issued by the NIST
915	AHJ
916	
917	(2) The NIST AHJ shall issue a NIST Work Permit subsequent to:
918	
919	(a) Signing the 100% drawings and documents related to A/E firm design submittals; and
920	
921	i. The issuance of a NIST Work Permit prior to 100% drawing acceptance may
922	be approved by the NIST AHJ for design-build projects.
923	
924	(b) Approving the OFPM work order submittal; or
925	
926	(c) Approving the OU-managed project submittal.
927	
928	(3) The NIST Work Permit shall contain the following information (see Appendix B):
929	

930	(a)	Location where the work will be performed (e.g., specific location on campus or
931		building and room number);
932	(1.)	Description of the last
933	(b)	Description of work;
934	(-)	Waste name it association data 10
935	(c)	Work permit expiration date; 10
936	(1)	Cionatana of the NICT AIII, and
937	(a)	Signature of the NIST AHJ; and
938	(-)	Name and contact information for the Contraction Officer's Demonstrative and for
939	(e)	Name and contact information for the Contracting Officer's Representative and for
940		the OFPM, or OU contact, whichever is applicable.
941	(2) A	-1:4-
942	(3) Au	idits
943	(a)	The NIST ALL shall perform at minimum on annual qualit of all NIST 260 forms
944	(a)	The NIST AHJ shall perform, at minimum, an annual audit of all NIST 260 forms
945		submitted to OFPM to ensure compliance with the requirements of this suborder.
946 947	(b)	Failure to obtain a work permit, when required, may result in a Stop Work Order (see
948	(0)	NIST S 7101.03), revocation of a Use and Occupancy Certificate (see below), or
949		delay in issuance of a Use and Occupancy Certificate.
950		delay in issuance of a Ose and Occupancy Certificate.
	j. Consti	ruction Phase
952	j. Consu	detion i hase
953	(1) A1	l NIST Work Permits shall be prominently posted on the job site for the duration of
954	` '	ork being performed.
955	***	an demig periormen
956	(2) A1	l requests for information (a.k.a. "RFIs") involving work in accordance with Sections
957		-e (Applicability) of this suborder shall be submitted to the NIST AHJ in hard-copy or
958		ectronic format.
959	010	
960	(3) Ins	spections of fire and life safety construction activities shall be performed or witnessed
961	()	the NIST AHJ prior to close-ins.
962	J	1
963	(a)	The NIST AHJ shall be notified at least two (2) weeks prior to the requested
964	(3)	inspection date.
965		1
966	(b)	Shorter notification periods are acceptable for projects lasting less than 30 days.
967		

¹⁰ The expiration date for the work permit shall be coordinated with the project manager.

968		(c) A third party qualified company may perform inspections of fire and life safety
969		construction activities with prior approval by the NIST AHJ.
970		
971		(4) Acceptance Testing
972		
973		(a) Shall be in accordance with NFPA 3, Recommended Practice for Commissioning of
974		Fire Protection and Life Safety Systems.
975		
976		(b) Shall be in accordance with NFPA 4, Standard for Integrated Fire Protection and
977		Life Safety System Testing.
978		
979		(c) All fire alarm and fire suppression systems shall be acceptance tested per NFPA 72,
980		National Fire Alarm and Signaling Code, and NFPA 13, Standard for Installation of
981		Sprinkler Systems, respectively.
982		
983		(d) Pre-testing documentation shall be provided to the NIST AHJ at least one (1) week
984		prior to scheduling final acceptance testing.
985		
986		i. Shorter notification periods are acceptable for projects lasting less than 30
987		days.
988		
989		(e) The NIST AHJ shall be notified at least two (2) weeks prior to the requested final
990		acceptance testing date.
991		
992		i. Shorter notification periods are acceptable for projects lasting less than 30
993		days.
994		
995		(f) Where feasible, acceptance testing shall be conducted during normal business hours
996		(8:00 am to 5:00 pm), Monday through Friday.
997		
998	k.	Use and Occupancy (U&O) Certificates
999		
1000		(1) U&O certificates shall be issued by the NIST AHJ prior to occupancy of any newly
1001		constructed building, occupancy of an addition of an existing building, or change in
1002		occupancy of an altered space in an existing building.
1003		
1004		(a) U&O certificates shall be maintained in the possession of the OU responsible for the
1005		space.
1006		

1007 1008	(2) The NIST AHJ shall issue U&O certificates subsequent to being provided with the following:
1009	ionowing.
1010	(a) Final inspection report(s) for fire and life safety systems and/or components as
1011	conducted by NIST AHJ or approved third party company; and
1012	
1013	(b) Acceptance testing(s) documents in accordance with NFPA 3, 13, and 72.
1014	
1015	(3) The U&O certificate shall indicate the following, where applicable (see Appendix C):
1016	
1017	(a) Certificate number;
1018	
1019	(b) Date of issue;
1020	
1021	(c) Use & occupancy classification;
1022	
1023	i. Laboratory classification, as defined in NFPA 45, Standard on Fire Protection
1024	for Laboratories Using Chemicals; and
1025	
1026	(d) Building and room number(s).
1027	
1028	(4) Temporary U&O certificate shall indicate the following, where applicable (see Appendix
1029	D):
1030	
1031	(a) Date of issue;
1032	
1033	(b) Use & occupancy classification;
1034	
1035	(c) Deficiencies requiring correction prior to final U&O issuance.
1036	
1037	(d) Building and room number(s); and
1038	
1039	(e) Date of expiration.
1040	
1041	(5) Existing spaces not undergoing alterations shall be grandfathered from the requirement
1042	for a U&O certificate until such time that the space is inspected by the NIST AHJ.
1043	
1044	
1045	
1046	

1047 7. **DEFINITIONS**

a. Acceptable – Considered by the NIST AHJ as adequate for satisfying the goals, performance objectives, and/or performance criteria.

1050

b. Acting Authority Having Jurisdiction – A qualified¹¹ FPE in the Office of Safety, Health, and
 Environment (OSHE) designated by the CSO to be temporarily assigned all authorities,
 duties, and obligations of the NIST AHJ during the NIST AHJ's absence or in the event of
 position vacancy.

1055

1056 c. Addition – An extension or increase in floor area, number of stories, or height of a building or structure.

1058

d. Alteration – Any construction or renovation to an existing structure other than repair or addition. This would also include a change of occupancy.

1061

e. <u>Anechoic Chamber</u> – Any space designed and constructed to absorb sound or electromagnetic wave reflections.

1064

f. Appeal – A process by which a Division Chief or equivalent, or a higher-level manager, requests that the NIST CSO review a denial or rejection of an RFV by the NIST AHJ.

1067

g. <u>Authority Having Jurisdiction</u> – A qualified FPE¹² in OSHE designated by the NIST CSO to enforce¹³ the NIST-adopted codes and standards relevant to fire, electrical, and life safety on NIST-owned and operated sites.

1071

h. Change of Occupancy – A change in the purpose or level of activity within a building that involves a change in application of the requirements of this suborder, *e.g.*, modifying a laboratory space to an office space.

1075

i. <u>Compliance</u> – Meeting or exceeding all applicable requirements of the NIST adopted code(s)
 and standard(s).

1078

j. <u>Delegated Authority Having Jurisdiction</u> – A qualified engineer in OSHE designated by the
 NIST AHJ to enforce the NIST-adopted codes and standards that fall within their relevant
 discipline(s).

¹¹ See requirements for Office of Personnel Management <u>Fire Protection Engineering Series 0804</u>.

¹² See requirements for Office of Personnel Management Fire Protection Engineering Series 0804.

¹³ Nature of enforcement is dependent upon the severity of the violation, e.g. stop work order, revocation of work permit, denial of use and occupancy, etc.

k. Equivalency – A proposed alternative means of providing an equal or greater degree of 1083 safety than that afforded by strict conformance to prescribed codes and standards. 1084 1085 1. Existing Building – A building erected prior to the adoption of the appropriate code, or one 1086 1087 for which a NIST Work Permit has been issued. 1088 m. NIST Work Permit – A document issued by the NIST AHJ which indicates approval to begin 1089 work in a building or tenant space where alterations to fire, or life safety components will be 1090 performed/managed by OFPM, OU, or a contractor. 1091 1092 n. Performance-Based Approach – An approach that relies upon measurable (or calculable) 1093 outcomes to be met but provides more flexibility as to the means of meeting those outcomes. 1094 1095 1096 o. Repair – The reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage. 1097 1098 1099 p. Shall/Should/May – • Shall (Must or Will): Indicates that the performance of an item is mandatory. 1100 • Should: Indicates that the performance of an item is not mandatory, but the full 1101 implications of not performing that item must be understood and either justified or 1102 carefully weighed before choosing a different course. 1103 • May: Indicates that the performance of an item is at the discretion of the individual 1104 responsible for the action. 1105 1106 q. Use and Occupancy Certificate – A document issued by the NIST AHJ certifying that the 1107 building or space is compliant with the NIST adopted codes and standards. 1108 1109 1110 r. Variance – An equivalency or an exception (i.e. modification) from the code and/or suborder requirement(s). 1111 1112 1113 1114 8. ACRONYMS a. A&E – Architectural/Engineering 1115 1116 b. AGS – American Glovebox Society 1117 1118 c. AHJ – Authority Having Jurisdiction 1119

d. ANSI – American National Standards Institute

1120

e. CFR – Code of Federal Regulations f. CSO – Chief Safety Officer g. FM – Factory Mutual h. FPE – Fire Protection Engineer i. GPL – General Purpose Lab j. IBC – International Building Code k. ICC – International Code Council 1. IEBC – International Existing Building Code m. IFC – International Fire Code n. IMC – International Mechanical Code o. NCEES – National Council of Examiners for Engineering and Surveys p. NFPA – National Fire Protection Association q. NICET – National Institute for Certification in Engineering Technologies r. OFPM – Office of Facility and Property Management s. OSHA – Occupational Safety and Health Administration t. PE – Professional Engineer u. U&O – Use and Occupancy 9. RESPONSIBILITIES a. NIST AHJ or Delegated AHJ is responsible for: (1) Reviewing all A/E design submittals, within the timeframes specified in the contracts, to ensure compliance with the adopted fire and life safety codes and standards.

1163 1164 1165		(2) Reviewing all work orders within five (5) business days, and identifying necessary submittal documents.
1166 1167 1168		(3) Reviewing all design and construction documents for OFPM and OU-managed projects to ensure compliance with the adopted fire and life safety codes and standards;
1169 1170		(4) Issuing NIST Work Permits for OFPM and OU-managed projects when required.
1171 1172		(5) Inspecting fire and life safety system components prior to close-ins,
1173 1174		(6) Overseeing acceptance testing of fire protection and life safety systems;
1175 1176		(7) Issuing U&O certificates for newly renovated or newly constructed spaces; and
1177 1178 1179		(8) Inspecting existing, occupied spaces not undergoing alterations and issuing U&O certificates.
1180 1181	b.	OU Directors are responsible for:
1182 1183 1184		(1) Ensuring that the requirements of Section 6 of this suborder are met for OU managed project; and
1185 1186 1187 1188		(2) Ensuring that all newly renovated or newly constructed spaces owned by the OUs have a Use and Occupancy certificate prior to occupancy and that Use and Occupancy certificates are readily available upon the request of the NIST AHJ.
1189 1190		(3) For OU-managed projects:
1191 1192 1193 1194 1195 1196		(a) Ensuring that the NIST AHJ is consulted on all new construction, renovations, and alterations of spaces including alteration to fire alarm system components, suppression system components, fire-rated assemblies, life safety and means of egress components (<i>e.g.</i> , exit signage, emergency lighting, travel path, travel distance, <i>etc.</i>), occupant loading or U&O classification;
1197 1198 1199		(b) When appropriate, submitting design and construction documents to the NIST AHJ for review and approval through all submittal phases;
1200 1201 1202		(c) Ensuring that work is not started without NIST AHJ review to determine if a NIST Work Permit is required; and

1203 1204		(d) Ensuring the NIST Work Permits issued by the NIST AHJ are posted on the site during construction activities.
1205	0	Contracting Officer's Personattive/Project Manager is responsible for
1206 1207	c.	Contracting Officer's Representative/Project Manager is responsible for:
1207		(1) Submitting design and construction documents to the NIST AHJ for review and approval
1209		through all submittal phases
1210		unough un ouomitus phases
1211		(2) Ensuring that the NIST AHJ is consulted on all new construction, renovations, and
1212		alterations of spaces including alterations to fire alarm system components, suppression
1213		system components, fire-rated assemblies, life safety and means of egress components
1214		(e.g. exit signage, emergency lighting, travel path, travel distance, etc.), occupant loading
1215		or U&O classification.
1216		
1217		(3) Ensuring that work is not started without NIST AHJ review to determine if a NIST Work
1218		Permit is required.
1219		
1220		(4) Ensuring the NIST Work Permits issued by the NIST AHJ are posted on the site during
1221		construction activities.
1222		
1223		(5) Ensuring the As-built drawings are submitted by the contractors for project close-out.
1224		
1225	d.	<u>Chief Facility Maintenance Officer</u> is responsible for:
1226		
1227		(1) Ensuring that the requirements of Section 6 of this suborder are met for all A/E and
1228		OFPM projects; and
1229		
1230		(2) Ensuring As-built drawings for fire systems are managed and updated as needed.
1231		
1232	10	AUTHODITIES
1233		. AUTHORITIES The NIST Authority Herring Invisediction many delegate the outhority to come out only AIII.
1234	a.	The NIST Authority Having Jurisdiction may delegate the authority to carry out any AHJ responsibilities to FPEs in the Office of Safety, Health, and Environment.
1235 1236		responsibilities to FFEs in the Office of Safety, Health, and Environment.
1237		
1237	11	. DIRECTIVE OWNER
1239		nief Safety Officer
1239	CII	ner surery officer
1240		
1242		
·- ·-		

1243	12. APPENDICES
1244	A. Revision History
1245	
1246	B. NIST Work Permit Form
1247	
1248	C. Certificate of Use and Occupancy
1249	
1250	D. Temporary U&O Certificate
1251	
1252	E. Request for Variance Form
1253	
1254	F. Request for Appeal Form

Appendix A. Revision History

1256 1257

Revision No.	Approval Date	Deployment Start Date	Effective Date	Brief Description of Change; Rationale
0	09/30/17	05/01/18	10/01/18	None – Initial document
1	01/12/21	April Camenisch		Updated NIST suborder links.

NIST-XXX				NATIONAL INSTITU	U.S. DEPARTMENT OF COMMERCE TE OF STANDARDS AND TECHNOLOGY
	NIST			PERMI	T
		OSHE	<u>-۲۲۵</u>	o G	
A. PERMIT DETAIL Permit Number	Building Number	Room Number		Date of Issue	Date of Expiration
1 Citilit (Valido)	Building Humbon	1 Com Number		Date of 1994	Date of Expiration
B. CONTACT INFORMA	TION				
Name			Phone N	lumber	
C. DESCRIPTION OF W	ORK				
D. DECISION					
Approved			Comme	nts	
Not Approved					
Name (Print)	Phone Nur	nhar	Title		
I IVAIIIC (FIIIIL)	Frione Nur	IIDEI			
			Authorit	y Having Jurisdiction (AH	J)
			<u> </u>		
Signature	<u> </u>		Date		

Appendix C. Certificate of Use and Occupancy

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Federal Building Owned by the National Institute of Standards & Technology Department of Commerce

Certificate No:	
Permit No:	
Date of Issue:	
Building:	
Room:	
Primary Occupancy Use:	
Contact Name & Title:	
Contact Phone Number:	

This certifies that the above facility conforms to the approved plans on file with the National

Institute of Standards and Technology Office of Facilities and Property Management and complies

with all building, safety, and fire codes adopted by NIST and required by Federal law and

regulations for the use and occupancy designated above as of the date of final inspection and

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approval.

Title Name Signature Date

Director - OFPM

Division Chief - OFPM,
Design & Construction

Authority Having
Jurisdiction - OSHE

Group Leader (min.) OSHE

1276

Appendix D. Temporary Certificate of Use and Occupancy

Federal Building Owned by the National Institute of Standards & Technology Department of Commerce

Certificate No:	
Permit No:	
Date of Issue:	
Date of Expiration (If applicable):	
Building:	
Room:	
Primary Occupancy Use:	
Contact Name & Title:	
Contact Phone Number:	
Outstanding Deficiencies:	

This certifies that the above facility conforms to the approved plans on file with the National Institute of Standards and Technology Office of Facilities and Property Management and complies with all building, safety, and fire codes adopted by NIST and required by Federal law and regulations for the use and occupancy designated above as of the date of final inspection and approval.

Title	Name	Signature	Date
Director - OFPM			
Division Chief – OFPM,			
Design & Construction -			
Authority Having			
Jurisdiction – OSHE			
Group Leader (min.) –			
OSHE -			

NIST-XXX				NATIONAL INST	U.S. DEPARTMENT TITUTE OF STANDARDS AN			
REQUEST FOR VARIANCE								
		OSHE	-FFS	SG				
A. REQUESTER								
Name	Division	Building		Room	Phone			
B. PROJECT INFORMA	TION			•	•			
Project Title			Work Order Number (If applicable)					
Building			Room					
Description of Variance								
Drocerinting Poguiroment/o	from which Vorignes is Sough	. •						
Prescriptive Requirement/s from which Variance is Sought								
Alternative Means for Presc	riptive Requirement							
D. TO BE COMPLETED BY AHJ								
Assigned Variance Number:	:			roved Approved				

Comments		
Name (Print)	Phone Number	Title Authority Having Jurisdiction (AHJ) Acting AHJ
Signature		Date
Name (Print)	Phone Number	Title OSHE Program Manager
Signature		Date

NIST-XXX				NATIONAL INS	U.S. DEPARTMENT OF TITUTE OF STANDARDS AND T		
	DEALI	EQT E					
REQUEST FOR APPEAL							
OSHE-FFSG							
A. REQUESTER	T =	T =		I –			
Name	Division	Building		Room	Phone		
B. PROJECT INFORMA	ATION						
Project Title	Project Title		Variance Number				
Building			Room	Room			
Supporting Information for A	Appeal						
	BY CHIEF SAFETY OFF	ICER		Amanassad			
Approved			Not	Approved			
Comments							

Name (Print)	Phone Number	Title
		Chief Safety Officer
Signature		Date