

# FIRE PREVENTION DURING WELDING, CUTTING, AND OTHER HOT WORK

NIST S 7401.04

Document Date: 04/25/2025

Effective Date:<sup>1</sup> 04/01/2020

## 1. PURPOSE

The purpose of this suborder is to establish the requirements and associated roles and responsibilities for performing activities involving hot work in NIST spaces.

## 2. BACKGROUND

- a. NIST Policy (P) 7400.00 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.
- b. The content of this suborder was derived primarily from Chapter 35 of the International Fire Code (IFC) and the National Fire Protection Association (NFPA) Standard for Fire Prevention During Welding, Cutting, and Other Hot Works (NFPA 51B).

## 3. APPLICABILITY

- a. The provisions of this suborder apply to all hot work activities performed in NIST spaces with the following exceptions:

(1) NIST activities involving cooking operations;

(2) NIST activities in laboratories or laboratory-owned shops involving candles<sup>2</sup>, Bunsen burners, alcohol burners, small hand-held torches, heat or temperature baths, hot plates, furnaces, ovens, small benchtop grinding wheels, or electric soldering irons;

- (a) This exception does not apply when such activities generate slag or more than incidental amounts of sparks; and

<sup>1</sup> For revision history, see Appendix A.

<sup>2</sup> The use of candles on NIST campuses is prohibited unless related to a laboratory experiment.

36 (3) NIST activities in laboratories and laboratory-owned shops where welding does not  
37 generate sparks or slag (or generates no more than incidental amounts of sparks) in open  
38 air, e.g., enclosed orbital tube welder, small electrical (electric resistance) or water-based  
39 spot welders.

40  
41 (4) Laboratory-related fire and combustion experiments conducted in the National Fire  
42 Research Laboratory.

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#### 45 **4. REFERENCES**

- 46 a. 29 CFR 1910, Subpart Q, [\*Welding, Cutting, and Brazing\*](#)  
47  
48 b. 29 CFR 1926, Subpart F, [\*Fire Protection and Prevention\*](#)  
49  
50 c. International Fire Code (IFC), Chapter 33- *Fire Safety During Construction and Demolition*,  
51  
52 d. IFC, Chapter 35-*Welding and Other Hot Work*  
53  
54 e. NFPA 51B, *Fire Prevention During Welding, Cutting, and Other Hot Work*  
55  
56 f. NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*,  
57  
58 g. ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*  
59  
60 h. NCNR-3.7, *Policy on Work Requiring a Cutting and Welding Permit*

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#### 63 **5. APPLICABLE NIST DIRECTIVES**

- 64 a. NIST P 7400.00: [\*Fire and Life Safety\*](#)  
65  
66 b. NIST O 7401.00: [\*Fire and Life Safety\*](#)  
67  
68 c. NIST S 7401.03: [\*Impairment of Fire Protection and Life Safety Systems\*](#)  
69  
70 d. NIST S 7101.20: [\*Work and Worker Authorization Based on Hazard Reviews \(“Hazard\*  
71 \[\\*Review”\\*\]\(#\)\)  
72  
73 e. NIST S 7101.21: \[\\*Personal Protective Equipment \\(PPE\\)\\*\]\(#\)  
74  
75 f. NIST S 7101.23: \[\\*Safety Education and Training\\*\]\(#\)](#)

76 g. NIST S 7101.61: [Compressed Gas Safety](#)

77

78 h. NIST S 7101.73: [Out of Service \(OOS\)](#)

79

80

## 81 **6. REQUIREMENTS**

82 a. Authorization of Work and Workers Performing Hot Work

83

84 (1) Hot work in NIST spaces shall be performed only in designated areas and permit-  
85 required areas approved for the hot work by a NIST Permit Authorizing Individual (PAI).

86

87 (2) For hot work to be performed by NIST employees and covered associates:

88

89 (a) The requirements established by the PAI in designated area certificates and hot work  
90 permits (for permit-required areas) shall be incorporated by the OU into the hazard  
91 review or job hazard analysis for the hot work; and

92

93 (b) The activity involving the hot work and those performing it shall be authorized by the  
94 OU in accordance with the requirements of this suborder and NIST S 7101.20.

95

96 (3) For hot work to be performed by non-R&D contractors in NIST spaces, the requirements  
97 established by the PAI in a designated area certificate or hot work permit shall be  
98 incorporated by the Contracting Officer's Representative (COR) into the non-R&D  
99 contractor's safety plan.

100

101 (4) The following additional requirements shall be incorporated into the hazard reviews of  
102 activities involving hot work performed by NIST employees and covered associates, or  
103 into the safety plans for hot work performed by non-R&D contractors, whichever is  
104 applicable:

105

106 (a) Hot work equipment shall be inspected per manufacturer's instructions by those  
107 performing the hot work each time prior to use to ensure that it is in safe operating  
108 condition.

109

110 i. Equipment with broken, loose, or missing components, which prohibit safe  
111 operation of the equipment, shall be placed out-of-service (refer to NIST S  
112 7101.73).

113

114

115

116 (b) Those performing the hot work and nearby personnel shall be suitably protected  
117 against dangers such as heat, sparks, slag, and fumes in accordance with the  
118 requirements of NIST S 7101.21 and [29 CFR 1910.252\(b\)](#).

119

120 b. NIST Permit Authorizing Individuals<sup>3</sup>

121

122 (1) Designated areas and permit-required areas related to research activities in NIST spaces  
123 (where a hazard review is required) shall be approved by an Office of Safety, Health, and  
124 Environment (OSHE) PAI.

125

126 (2) Designated areas and permit-required areas related to construction and maintenance  
127 activities in NIST spaces shall be approved by an Office of Facilities and Property  
128 Management (OFPM) PAI in Boulder and by an OSHE PAI in Gaithersburg.

129

130 (3) Designated areas and permit-required areas related to laboratory activities not requiring a  
131 hazard review can be approved by PAIs from any of the above-mentioned organizations.

132

133 (4) The NIST AHJ may approve the assignment of PAIs outside of the above-mentioned  
134 organizations (*i.e.*, within a laboratory OU), where special circumstances exist.

135

136 c. Process to Obtain a Designated Area Certificate

137

138 (1) For hot work to be performed by NIST employees or covered associates, a NIST  
139 employee from the OU owning the proposed designated area shall submit a request using  
140 the Safety Permit Application (SPA) to request an inspection of the area.

141

142 (2) For hot work to be performed by non-R&D contractors in NIST spaces, the COR shall  
143 submit a request using SPA to request an inspection of the proposed designated area.

144

145 (3) A designated area certificate (please see Appendix B) shall be issued by the PAI after  
146 inspection of the area and a determination that the requirements for a designated area  
147 (please see Appendix C) have been met.

148

149 (a) The PAI shall complete an inspection of the designated area within five (5) business  
150 days of the request.

151

152 i. Requests requiring urgency will be expedited by the PAI.

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<sup>3</sup> An individual must complete the PAI training module to be an approved PAI as indicated in Section 9.f.

155 (4) The designated area certificate shall be prominently displayed immediately outside of the  
156 designated area.

157

158 (5) A designated area certificate shall be valid for 1 (one) year.

159

160 (6) For reissuance of a designated area certificate for hot work to be performed by NIST  
161 employees or covered associates, an employee from the OU owning the designated area  
162 shall contact the PAI no later than one (1) month prior to the expiration date of the  
163 current designated area certificate to request a re-inspection of the area.

164

165 (7) For reissuance of a designated area certificate for hot work to be performed by non-R&D  
166 contractors, the COR shall contact the PAI no later than one (1) month prior to the  
167 expiration date of the current designated area certificate to request a re-inspection of the  
168 area.

169

170 (a) After re-inspection of the area and a determination that the requirements for a  
171 designated area (please see Appendix C) continue to be met, the PAI shall issue a new  
172 designated area certificate with a new issuance and expiration date.

173

174 d. Process to Obtain a Hot Work Permit (for Permit-Required Areas)

175

176 (1) For hot work to be performed by NIST employees or covered associates, a NIST  
177 employee from the OU owning the proposed permit-required area shall submit a request  
178 using SPA to request an inspection of the area.

179

180 (2) For hot work to be performed by non-R&D contractors in NIST spaces, the COR shall  
181 submit a request using SPA to request an inspection of the proposed permit-required area.

182

183 (3) A hot work permit (please see Appendix D) shall be issued by the PAI after inspection of  
184 the area and a determination that the applicable requirements for a permit-required area  
185 have been met.

186

187 (a) The PAI shall complete an inspection of the permit-required area within two (2)  
188 business days of the request.

189

190 i. Requests requiring urgency will be expedited by the PAI.

191

192 (3) The hot work permit shall be prominently displayed in the work area during the period of  
193 authorized work performance (*e.g.*, issuance to expiration).

194

195

- 196 (4) The PAI shall determine the length of time for which hot work permits are valid, but the  
197 time period shall be no longer than seven (7) calendar days.  
198
- 199 (a) If a hot work permit is going to be needed for longer than seven (7) calendar days, the  
200 PAI should consider the establishment of a designated area.  
201
- 202 (b) If the area cannot be designated as a designated area, a new hot work permit must be  
203 issued every seven (7) calendar days for the duration of the hot work.  
204
- 205 e. Training  
206
- 207 (1) Training shall be provided, documented, and recorded in accordance with the  
208 requirements of the NIST S 7101.23.  
209
- 210 (2) NIST employees and covered associates who are to perform hot work shall complete:  
211
- 212 (a) Training provided by OSHE on this program;  
213
- 214 (b) Activity-specific training, provided by the Organizational Unit (OU), required by  
215 applicable hazard reviews; and  
216
- 217 (c) Training provided, arranged, or approved by OSHE on the use of fire extinguishers  
218 (refresher training required annually for continuance of activity).  
219
- 220 (3) Official first-level supervisors of NIST employees and covered associates who are to  
221 perform hot work shall complete the training provided by OSHE on this program.  
222
- 223 (4) CORs for non-R&D contractors who are to perform hot work shall complete the training  
224 provided by OSHE on this program.  
225
- 226 (5) PAIs shall complete the PAI training module provided by OSHE on NFPA 51B and on  
227 this suborder.  
228
- 229 (6) NIST employees assigned to conduct fire watches shall complete:  
230
- 231 (a) Training provided by OSHE on this program; and  
232
- 233 (b) Annual training provided or approved by OSHE on the use of required fire  
234 extinguishers.  
235

236 **7. DEFINITIONS**

237 Definitions common to all NIST Fire and Life Safety suborders are delineated in NIST O  
238 7401.00. The definitions specific to this suborder are as follows.

- 239
- 240 a. Authority Having Jurisdiction (AHJ) – A qualified FPE<sup>4</sup> in OSHE designated by the NIST  
241 CSO to enforce<sup>5</sup> the NIST-adopted codes and standards relevant to fire, electrical, and life  
242 safety on NIST-owned and operated sites.
- 243
- 244 b. Designated Area – A specific area, such as a welding shop or a soldering station, in which  
245 hot work is regularly performed and which has been approved for such work by a PAI based  
246 on their inspection of the area against the requirements of Appendix C.
- 247
- 248 c. Designated Area Certificate – A document issued by a PAI pursuant to approving a location  
249 for the regular performance of hot work activities for a maximum of 1 year (please see  
250 Appendix C).
- 251
- 252 d. Fire Resistive – Refers to properties or designs to resist the effects of any fire to which a  
253 material or structure can be expected to be subjected (extracted from NFPA *Glossary of*  
254 *Terms*).
- 255
- 256 e. Fire Watch – The assignment of a person (or persons) to an area for the express purpose of  
257 notifying the fire department, the building occupants, or both of an emergency; preventing a  
258 fire from occurring; extinguishing small fires; or protecting the public from fire or life safety  
259 changes.
- 260
- 261 f. Hot Work – Work involving welding, brazing, open flame soldering, heat treating, grinding,  
262 thawing pipes, powder-driven fasteners, hot riveting, torch-applied roofing, or any other  
263 process requiring use of a spark, flame, or heat that is capable of initiating fires or  
264 explosions.
- 265
- 266 g. Hot Work Equipment – Electric or gas welding, cutting, and heating equipment used for hot  
267 work.
- 268
- 269 h. Hot Work Permit – A document issued by a PAI pursuant to approving a permit-required  
270 area.

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<sup>4</sup> See requirements for Office of Personnel Management [Fire Protection Engineering Series 0804](#).

<sup>5</sup> Nature of enforcement is dependent upon the severity of the violation, e.g., stop work, revoke permit, denial of use and occupancy, etc.

- 271 i. NIST Space – A space that is owned, operated, and under the control of NIST.  
272
- 273 j. Noncombustible – A material that, in the form in which it is used and under conditions  
274 anticipated, will not ignite, burn, support combustion, or release flammable vapors when  
275 subjected to fire or heat. Materials that are reported as passing ASTM E136 shall be  
276 considered noncombustible materials (extracted from *NFPA Glossary of Terms*).  
277
- 278 k. Non-R&D Contractor – A NIST associate who performs non-R&D work at a NIST  
279 workplace in accordance with the safety requirements of a contract or other legal  
280 arrangement, such as a Memorandum of Understanding, with NIST Non-R&D contractors  
281 include, but are not limited to, construction contractors; facilities contractors; equipment  
282 installation, service, and maintenance contractors; Health Unit contractors; contract cafeteria  
283 workers; and janitorial contractors.  
284
- 285 l. Official First-Level Supervisor (of Another Employee or of a Covered Associate) – The  
286 Rating Official on the performance plan of another employee or the supervisor of a covered  
287 associate.  
288
- 289 m. Permit Authorizing Individual (PAI) – An individual authorized to approve hot work requests  
290 by virtue of completing the training provided by OSHE on NFPA 51B and this suborder  
291
- 292 n. Permit-Required Area – Any location other than a designated area that has been approved for  
293 hot work by a PAI based on their inspection of the area against the requirements of Appendix  
294 C.  
295
- 296 o. Welding Blanket – A heat-resistant fabric designed to be placed in the vicinity of hot work  
297 operations. Intended for use in horizontal applications with light to moderate exposures such  
298 as that resulting from chipping, grinding, heat treating, sand blasting, and light horizontal  
299 welding. Designed to protect machinery and prevent ignition of combustibles such as wood  
300 located on the underside of the blanket. (Extracted from *NFPA Glossary of Terms*)  
301
- 302 p. Welding Curtain – A heat-resistant fabric designed to be placed in the vicinity of hot work  
303 operations. Intended for use in vertical applications with light to moderate exposures such as  
304 that resulting from chipping, grinding, heat treating, sand blasting, and light horizontal  
305 welding. Designed to prevent sparks from escaping the area. (Extracted from *NFPA Glossary  
306 of Terms*)  
307
- 308 q. Welding Pads – A heat-resistant fabric designed to be placed directly under a hot work  
309 operation such as welding or cutting. Intended for use in horizontal applications with severe  
310 exposures such as that resulting from molten substances or heavy horizontal welding.

311 Designed to prevent ignition of combustibles that are located to the underside of the pad.  
312 (Extracted from NFPA *Glossary of Terms*)

313  
314

## 315 **8. ACRONYMS**

- 316 a. AHJ – Authority Having Jurisdiction
- 317
- 318 b. ANSI – American National Standards Institute
- 319
- 320 c. CFR – Code of Federal Regulations
- 321
- 322 d. COR – Contracting Officers Representative
- 323
- 324 e. CSO – Chief Safety Officer
- 325
- 326 f. FPG – Fire Protection Group, Emergency Services Office
- 327
- 328 g. NFPA – National Fire Protection Association
- 329
- 330 h. OFPM – Office of Facilities and Property Management
- 331
- 332 i. OSHA – Occupational Safety and Health Administration
- 333
- 334 j. OSHE – Office of Safety, Health, and Environment
- 335
- 336 k. OU – Organizational Unit
- 337
- 338 l. PAI – Permit Authorizing Individual
- 339
- 340 m. SPA – Safety Permit Application
- 341

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## 343 **9. RESPONSIBILITIES**

344 Roles and responsibilities common to all NIST Fire and Life Safety suborders are delineated in  
345 NIST O 7401.00. The roles and responsibilities specific to this suborder are as follows:

346

- 347 a. OU Directors are responsible for ensuring OU activities involving hot work and those  
348 conducting that work are authorized in accordance with the requirements of this suborder and  
349 NIST S 7101.20.

350

351 b. Official First-Level Supervisors of NIST Employees and Covered Associates Performing Hot  
352 Work are responsible for:

- 353
- 354 (1) Ensuring the requirements established by PAIs in designated area certificates and hot  
355 work permits are incorporated into the hazard reviews of the activities involving hot  
356 work;
- 357
- 358 (2) Ensuring the requirements of Section 6.a(4) are incorporated into the hazard reviews of  
359 activities involving hot work;
- 360
- 361 (3) Ensuring the training specified in Section 6.e is completed prior to NIST employees and  
362 covered associates engaging in hot work;
- 363
- 364 (4) Completing the training required by Section 6.c;
- 365
- 366 (5) Ensuring designated area certificates are prominently displayed immediately outside the  
367 designated area; and
- 368
- 369 (6) Ensuring hot work permits are prominently displayed in the work area during the period  
370 of authorized work performance.

371

372 c. NIST Employees and Covered Associates Performing Hot Work are responsible for:

- 373
- 374 (1) Completing the training specified in Section 6.e; and
- 375
- 376 (2) Ensuring the requirements established by PAIs in designated area certificates and hot  
377 work permits are followed.

378

379 d. CORs are responsible for:

380

381 (1) Completing the training specified in Section 6.e;

382

383 (2) Submitting requests for designated areas and permit-required areas using SPA;

384

385 (3) Ensuring the requirements established by the PAI in designated area certificates or hot  
386 work permits are incorporated into the non-R&D contractor safety plans;

387

388 (4) Ensuring non-R&D contractors are aware of the hazards in the area where hot work will  
389 be performed;

390

- 391 (5) Ensuring non-R&D contractors are qualified to do the hot work; and  
392  
393 (6) Ensuring non-R&D contractors comply with the requirements of hot work permits and  
394 their safety plans.  
395
- 396 e. NIST AHJ is responsible for:  
397  
398 (1) Approving OSHE and OFPM PAIs based on their completion of training;  
399  
400 (2) Maintaining a current list of approved PAIs; and  
401  
402 (3) Annually auditing designated area certificates and hot work permits to ensure that  
403 program requirements are being met and records are being appropriately maintained.  
404
- 405 f. PAIs are responsible for:  
406  
407 (1) Completing the PAI training module provided by OSHE on NFPA 51B and this suborder;  
408  
409 (2) Inspecting requested designated areas and permit-required areas against the requirements  
410 of Appendix C;  
411  
412 (3) Upon determining that all applicable designated area or permit-required area  
413 requirements have been met, issuing designated area certificates and hot work permits;  
414  
415 (4) Maintaining electronic or hard copies of all designated area certificates and hot work  
416 permits for a minimum of one (1) year; and  
417  
418 (5) Making electronic or hard copies of all designated area certificates and hot work permits  
419 available to the AHJ upon request.  
420
- 421 g. NIST Employees Assigned to Conduct Fire Watches are responsible for:  
422  
423 (1) Completing the training provided by OSHE on this program;  
424  
425 (2) Completing annual training provided or approved by OSHE on the use of required fire  
426 extinguishers;  
427  
428 (3) Stopping hot work and notifying the PAI if unsafe conditions develop; and  
429

430 (4) Knowing how to summon emergency help.

431

432

433 **10. AUTHORITIES**

434 For authorities applicable to all NIST Fire and Life Safety suborders, see NIST O 7401.00.

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436

437 **11. DIRECTIVE OWNER**

438 Chief Safety Officer

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440

441 **12. APPENDICES**

442 A. Revision History

443 B. Designated area certificate

444 C. Requirements for Designated Areas and Permit-Required Areas

445 D. Hot Work permit

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**Appendix A. Revision History**

Version No.	Approval Date	Effective Date	Brief Description of Change; Rationale
1	09/30/17	04/01/2020	<ul style="list-style-type: none"> <li>None – Initial document</li> </ul>
2	01/12/21	01/12/21	<ul style="list-style-type: none"> <li>Updated CFR links and NIST Suborder links.</li> </ul>
3	04/25/25	04/25/25	<ul style="list-style-type: none"> <li>Reassigned responsibilities for Gaithersburg PAI from FPG to OSHE.</li> <li>Updated request procedure to reflect SPA website.</li> <li>Updated forms in Appendix B &amp; D to reflect visual differences on the SPA website forms.</li> </ul>

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### Appendix B: Designated Area Certificate

<b>NIST 388</b>	<b>Fire Protection and Life Safety Systems DESIGNATED (HOT WORK) AREA CERTIFICATE</b>	<b>DPG-00</b>			
<b>A. Request Information</b>					
<b>Location:</b>	<b>Status:</b>				
<b>Issue Date:</b>	<b>Expire Date:</b>				
<b>Start Date:</b>	<b>End Date:</b>				
<b>Contact Info:</b>	<b>Supervisor or COR Name:</b>				
<b>B. TYPE OF HOT WORK</b>					
<b>Uploaded file(s):</b>					
<b>C. PAI REVIEW INFORMATION</b>					
Precautions <input type="checkbox"/> Designated area is constructed of noncombustible or fire-resistive materials <input type="checkbox"/> Designated area is free of combustible and flammable contents including gases and liquids <input type="checkbox"/> No openings, holes, penetrations, or cracks are present in fire-resistive construction within the designated area <input type="checkbox"/> If enclosed, appropriate ventilation (with noncombustible ducting) is present in the designated area <input type="checkbox"/> A functional fire extinguisher is mounted in the immediate vicinity of the designated area <input type="checkbox"/> All combustibles are located at least <input style="width: 40px;" type="text"/> feet in all directions from the designated area					
<b>D. DECISION</b>					
On	<b>Permit Issued by</b>	as <b>PAI</b>			
<b>Last Comment:</b>					
<b>Date</b>	<b>Name</b>	<b>As</b>	<b>Status</b>	<b>Comments</b>	<b>Documents</b>
		PAI			
		Requestor			

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**Appendix C. Requirements for Designated Areas and Permit-Required Areas**

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a. Designated Areas

- (1) Designated areas shall be constructed of noncombustible or fire-resistive materials and shall be free of combustible and flammable contents.
- (a) All openings, holes, penetrations, or cracks in the fire-resistive construction shall be sealed with fire-rated or noncombustible material to prevent the passage of sparks to adjacent areas.
- (2) Designated areas shall also meet the requirements for permit-required areas listed below.
- (3) Enclosed designated areas shall have a working ventilation system. The ductwork must be noncombustible and not capable of transmitting sparks out of the area.
- (4) A fire extinguisher having the appropriate classification for the hazard shall be specified by the PAI for mounting immediately adjacent to the designated area.

b. Permit-Required Areas

- (1) Floors shall be swept clean for a radius of 35 feet<sup>6,7</sup> (11 meters) of the hot work site to ensure combustible material, such as paper clippings, wood shavings, or textile fibers, are not present.
- (2) Floors constructed of a combustible material (*e.g.*, wood) shall be kept wet, covered with damp sand, or protected by a listed or approved welding blanket, welding pad, or equivalent for a radius of 35 feet<sup>6,7</sup> (11 meters) of the hot work site.

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<sup>6</sup> In instances where the scope of work, tools used to conduct hot work, or size of the room/space in which hot work is conducted, are known to be incapable of generating or allowing slag, sparks, splatter, or similar mobile sources of ignition to travel farther than 35 feet (11 meters) from the hot work site, the PAI shall be permitted to reduce the distance. The approved distance shall be documented on the permit.

<sup>7</sup> In instances where the scope of work and tools used to conduct hot work may result in the possible travel of slag, sparks, splatter, or similar mobile sources of ignition farther than 35 feet (11 meters) from the hot work site, the PAI shall extend the distance. The approved distance shall be documented on the permit.

- 488 (3) Walls, partitions, ceilings, or roofs of combustible construction shall be protected from  
489 hot works occurring near them by a listed or approved welding curtain, welding  
490 blanket, welding pad, or equivalent.  
491
- 492 (4) Ducts and conveyor systems located within 35 feet<sup>6,7</sup> (11 meters) of the hot work site  
493 that might carry sparks to distant combustibles shall be shielded, shut down, or both.  
494
- 495 (5) Openings, holes, penetrations, or cracks in walls, floors, or ducts within 35 feet<sup>6,7</sup> (11  
496 meters) of the hot work site shall be covered or sealed with listed or approved fire-rated  
497 or noncombustible material.  
498
- 499 (6) All combustibles within 35 feet<sup>6,7</sup> (11 meters) of the hot work site shall be relocated.  
500
- 501 (a) If relocation of combustibles is impractical, combustibles shall be protected by a  
502 listed or approved welding curtain, welding blanket, welding pad, or equivalent.  
503
- 504 (b) To prevent the entrance of sparks or slag, the edges of covers at the floor shall be  
505 tight, including at the point at which several covers may overlap.  
506
- 507 (7) For hot work performed in close proximity to a wall, partition, ceiling, or roof,  
508 precautions shall be specified by the PAI to prevent ignition of combustibles that may  
509 be located on the other side of the wall, partition, ceiling, or roof.  
510
- 511 (8) For hot work performed in close proximity<sup>8</sup> to a fire protection device, precautions  
512 shall be specified by the PAI to prevent accidental operation of an automatic fire  
513 detection or suppression system<sup>9</sup>.  
514
- 515 (9) Fully charged and operable fire extinguishers appropriate for the type of possible fire  
516 shall be specified by the PAI and available in the work area (*e.g.*, within the 35-foot  
517 perimeter or limits of the room/space).  
518
- 519 (10) If existing hose lines are located within the hot work area defined by permit, they shall  
520 be connected and ready for service but shall not be required to be unrolled or charged.  
521  
522  
523

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<sup>8</sup> If sufficient heat, smoke, or particulate could be developed such that activation of fire protection devices would be likely, then the hot work would be deemed to be in “close proximity” to the fire protection devices.

<sup>9</sup> Where fire alarm or fire suppression system impairments are necessary, the requirements of NIST S7401.03 shall be followed.

524 c. Fire Watches

- 525
- 526 (1) The PAI may require a fire watch when hot work is performed under any of the
- 527 following circumstances:
- 528
- 529 (a) A fire protection system is impaired;
- 530
- 531 (b) A life safety system is impaired; or
- 532
- 533 (c) The requirements for a hot work permit are met, but the PAI is still concerned that
- 534 ignition from spark or slag could occur.
- 535
- 536 (2) A fire watch shall be maintained for a minimum of 30 minutes after completion of hot
- 537 work operations.
- 538
- 539 (a) The duration of a fire watch may be extended if the PAI determines the conditions
- 540 warrant an extension.
- 541
- 542 (3) The PAI shall determine the number of individuals needed to conduct a fire watch.
- 543
- 544 i. In some cases, it may be necessary to assign more than one employee to conduct
- 545 fire watch duties, *e.g.*, where multiple floors are affected.
- 546
- 547 (4) The PAI shall determine the location(s) of the fire watch.
- 548

549 d. Non-Permissible Areas

- 550
- 551 (1) Hot work shall not be performed in the following areas.<sup>10</sup>
- 552
- 553 (a) In sprinklered buildings where sprinklers are impaired, unless the requirements of
- 554 NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based*
- 555 *Fire Protection* are met and a fire watch is provided;
- 556
- 557 (b) In areas where explosive atmospheres may be present, *i.e.*, where mixtures of
- 558 flammable gases, vapors, liquids, or dusts with air exist;
- 559
- 560 (c) In areas where contaminated equipment, drums, tanks, or other containers that have
- 561 previously contained materials that could develop explosive atmospheres may be
- 562 present;

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<sup>10</sup> In such areas, techniques other than hot works must be utilized.

- 563 (d) On a partition, wall, ceiling, or roof with a combustible covering and/or insulation,  
564 or combustible sandwich-type panel construction; and  
565  
566 (e) On pipes or other metal that is in contact with combustible walls, ceilings, roofs, or  
567 other combustibles if the work is close enough to cause ignition by conduction.  
568

569

## Appendix D: Hot Work Permit

<b>NIST 387</b>	<b>Fire Protection and Life Safety Systems HOT WORK PERMIT</b>	<b>HPG-0</b>			
<b>A. Request Information</b>					
<b>Location:</b> <b>Issue Date:</b> <b>Start Date:</b> <b>Contact Info:</b>	<b>Status:</b> <b>Expire Date:</b> <b>End Date:</b> <b>Supervisor or COR Name:</b>				
<b>B. TYPE OF HOT WORK</b>					
<b>Uploaded file(s):</b> N/A					
<b>C. PAI REVIEW INFORMATION</b>					
Precautions Requirements within <input type="text"/> feet of hot work. <ul style="list-style-type: none"> <li><input type="checkbox"/> Flammable and combustible liquids, dust, lint, and oil deposits are removed</li> <li><input type="checkbox"/> Flammable and combustible gases are removed</li> <li><input type="checkbox"/> Floor is swept clean of combustible materials and trash</li> <li><input type="checkbox"/> Wall, ceiling, and floor openings are covered</li> </ul> Precautions Requirements for hot work on walls, ceilings, or roofs <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> N/A</li> <li><input type="checkbox"/> Construction is noncombustible and without combustible coverings or insulations</li> <li><input type="checkbox"/> Combustible materials on other side of walls, ceilings, or roofs is moved away</li> </ul> Precautions Requirements for hot work on enclosed equipment <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> N/A</li> <li><input type="checkbox"/> Enclosed equipment is cleaned of all combustibles</li> <li><input type="checkbox"/> Containers are purged of flammable liquid/vapor</li> <li><input type="checkbox"/> Pressurized vessels, piping, and equipment has been removed from service, isolated, and vented</li> </ul> Precautions Requirements for fire watch <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> N/A</li> <li><input type="checkbox"/> Fire watch is provided during and for a minimum of 30 minutes after hot work, including any break activity</li> <li><input type="checkbox"/> Fire watch is provided with a suitable extinguishment method</li> <li><input type="checkbox"/> Fire watch is trained in use of equipment and in sounding alarm</li> </ul> Special Provisions <ul style="list-style-type: none"> <li><input type="checkbox"/> Ductwork blanks required</li> <li><input type="checkbox"/> Overhead spark/slag collection required</li> <li><input type="checkbox"/> Combustible floor wet down required</li> <li><input type="checkbox"/> Welding pads, blankets, or curtains required</li> <li><input type="checkbox"/> Arc-welding screens required</li> <li><input type="checkbox"/> Additional ventilation required</li> <li><input type="checkbox"/> Fire protection system impairment required</li> <li><input type="checkbox"/> Fall protection required</li> <li><input type="checkbox"/> LOTO required</li> <li><input type="checkbox"/> Confined space entry required</li> <li><input type="checkbox"/> Fire watch is required in adjoining areas above and below hot work location</li> <li><input type="checkbox"/> Fire watch is extended beyond 30 minutes. (Fire Watch duration of <input type="text"/> minutes is required)</li> <li><input type="checkbox"/> Other</li> </ul>					
<b>D. DECISION</b>					
On _____, <b>Permit Issued</b> by _____ as PAI Last Comment: N/A					
<b>Date</b>	<b>Name</b>	<b>As</b>	<b>Status</b>	<b>Comments</b>	<b>Documents</b>
		PAI			
		Requestor			

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