Construction and Demolition Safety Program

NIST S 7101.31
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1. PURPOSE

The purpose of this program is to establish requirements and associated roles and responsibilities to protect NIST employees and covered associates who will be performing construction or demolition work.

2. BACKGROUND

Work associated with construction and demolition, like other activities performed at NIST, requires identifying potential hazards, implementing preventive measures, training workers on safe practices, and ensuring compliance with applicable occupational safety and health regulations, requirements contained in environmental permits, and building codes. While much of this type of work is conducted by the Office of Facilities and Property Management (OFPM) personnel, other organizational units (OUs) at NIST may also engage in construction and demolition work, such as fabricating and taking down structures and fixtures used in research activities. This program addresses the unique hazards and requirements that may not be apparent to all staff, and in particular, for those who do not regularly perform construction or demolition work activities.

3. APPLICABILITY

a. The requirements of this suborder apply to NIST employees and covered associates responsible for the planning, execution, and management of construction and demolition work performed by NIST staff at worksites owned and operated by NIST. This work includes, but is not limited to, the following types of activities:

(1) OFPM/facilities-related work inside of existing buildings[2] such as:

[1] Please see Appendix A for revision history.
[2] From the International Existing Building Code.

(a) Repair: Reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage;

(b) Alteration, Level 1: Removal, replacement, or covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose, *i.e.*, remodeling, renovation, or "replacement in kind";

(c) Alteration, Level 2: Reconfiguration of space or the addition or elimination of any door or window; and

(d) Change of Occupancy: A change in the use of space, *e.g.*, from a laboratory to an office or office-like space.

(2) OFPM/facilities-related work performed outdoors such as rehabilitation or renewal of any exterior area or utility service for the purpose of its maintenance or to correct damage.

(3) Research-related work such as the erection or removal of a temporary or permanent fixture (*e.g.*, shelving units, storage racks, ceiling-hung platforms) or structure (*e.g.*, observation platform or fabricated room for structural fire measurements)[3].

NOTE: More involved construction or demolition work (*e.g.*, erection or demolition of a building, alterations where the work areas exceeds 50% of the building area) is not performed by NIST staff.

b. The requirements of this suborder do not apply to work covered by inspection, testing, and preventative maintenance.

c. The provisions of this suborder do not apply to non-R&D contractors who perform construction or demolition work (please see NIST S 7101.28).

4. REFERENCES

a. 29 Code of Federal Regulations (CFR) 1910, Subpart F: Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms

b. 29 CFR 1926, Subpart CC: Cranes and Derricks in Construction

c. 29 CFR 1926, Subpart L: Scaffolds

[3] Please consult OSHE as needed to determine if research-related work is within scope of this program.

d. 29 CFR 1926, Subpart O: Motor Vehicles, Mechanized Equipment, and Marine Operations

e. 29 CFR 1926, Subpart P: Excavations

f. 29 CFR 1926, Subpart Q: Concrete and Masonry Construction

g. 29 CFR 1926, Subpart R: Steel Erection

h. 29 CFR 1926, Subpart T: Demolition

i. 29 CFR 1926.25: Housekeeping

j. 29 CFR 1926.251: Rigging equipment for material handling

k. International Existing Building Code, current edition

l. Manual on Uniform Traffic Control Devices

5. APPLICABLE NIST DIRECTIVES

a. NIST S 7101.20: *Work and Worker Authorization based on Hazard Reviews (Hazard Review)*

b. NIST S 7101.21: *Personal Protective Equipment*

c. NIST S 7101.22: *Hazard Signage*

d. NIST S 7101.23: *Safety Education and Training*

e. NIST S 7101.26: *Workplace Inspection*

f. NIST S 7101.28: *Non-R&D Contractor Safety Program* (under development)

g. NIST S 7101.29: *Medical Surveillance*

h. NIST S 7101.56: *Control of Hazardous Energy (Lockout/Tagout or LOTO)*

i. NIST S 7101.57: *Permit-Required Confined Space*

j. NIST S 7101.59: *Chemical Hazard Communication*

k. NIST S 7101.60: *Chemical Management*

l. NIST S 7101.63: *Walking and Working Surfaces*

m. NIST S 7101.64: *Electrical Safety*

n. NIST S 7101.65: *Machines, Tools, and Associated Equipment Safety*

o. NIST S 7101.66: *Ladder Safety*

p. NIST S 7101.67: *Fall Protection*

q. NIST S 7101.69: *Cranes, Hoists, Winches, and Rigging*

r. NIST S 7101.73: *Out of Service*

s. NIST S 7101.74: *Powered Industrial Trucks*

t. NIST S 7301.04: *Drinking Water at NIST-Gaithersburg*

u. NIST S 7301.05: *Drinking Water at NIST-Boulder*

v. NIST S 7301.06: *Chemical Waste Accumulation/Disposal at NIST-Gaithersburg*

w. NIST S 7301.07: *Chemical Waste Accumulation/Disposal at NIST-Boulder*

x. NIST S 7301.08: *Oil Storage and Handling at NIST-Gaithersburg*

y. NIST S 7301.09: *Oil Storage and Handling at NIST-Boulder*

z. NIST S 7301.10: *Stormwater Management at NIST-Gaithersburg*

aa. NIST S 7301.11: *Stormwater Management at NIST-Boulder*

bb. NIST S 7301.12: *Wastewater Management at NIST-Gaithersburg*

cc. NIST S 7301.13: *Wastewater Management at NIST-Boulder*

dd. NIST S 7401.01: *Fire Protection and Life Safety for Design and Construction*

ee. NIST S 7401.03: *Impairment of Fire Protection and Life Safety Systems*

ff. NIST S 7401.04: *Fire Prevention During Welding, Cutting, and Other Hot Works*

gg. NIST PR 2100.01: *Laboratory and Work Space Decommissioning*

hh. NIST PR 2103.06: *Utility Outages*

ii. NIST PR 7101.31: *Utility Marking, Excavation, and Trenching* (under development)

jj. NIST PR 7101.67: *Roof Access Safety and Health Considerations* (under development)

kk. NIST G 7101.77: *Heat Stress/Cold Stress*

ll. OFPM Procedure, CFMO–2010–001: *NIST Construction Site Coordination Procedure*

6. REQUIREMENTS

a. Construction Designs/Plans

(1) Designs/plans for construction work, including excavation and trenching activities, performed by OFPM shall comply with the requirements of:

(a) The permitting and authorization process established by OFPM; and

(b) NIST S 7401.01, as applicable.

(2) Designs/plans for construction work performed by non-OFPM OUs

(a) Free-Standing Shelving Units, Storage Racks, or Similar Fixture

i. In-house design of a shelving unit, storage rack, or similar fixture with total load less than or equal to 500 pounds **and** height less than or equal to 5 feet shall:

(i) Follow the manufacturer's guide for design;

(ii) Indicate how it will be anchored to prevent tipping;

(iii) Indicate if the location where the fixture will be positioned is adequate (*e.g.*, applied live loading of the floor); and

(iv) Be reviewed and approved by line management (or delegate).

ii. In-house design of a shelving unit, storage rack, or similar fixture with total load greater than 500 pounds or height greater than 5 feet shall:

(i) Require the review and approval (*i.e.*, stamp and seal) of a qualified third party[4] regarding design, anchoring, and adequate location of the fixture with respect to applied live load; and

(ii) Meet the requirements of NIST S 7401.01, as applicable.

iii. Pre-engineered packages for a shelving unit, storage rack, or similar fixture shall not require review or approval of the design/plan provided the package is erected and anchored per manufacturer's instructions.

(i) Section 6.a(2)(a)i or 6.a(2)(a)ii, whichever is applicable, shall apply if the manufacturer's instructions will not be followed

(b) Supplemental Engineered Support Systems (*e.g.*, ceiling-hung platforms or wall-hung shelving using Unistrut®, 80/20 T-Slot Building Systems®, or similar channel framing system)

i. All channel framing systems shall be designed per the manufacturer's published installation instructions and engineering guidelines for overhead or wall-supported applications.

(i) All support system configurations shall be verified against load ratings provided by the manufacturer to ensure the static and dynamic loads do not exceed published limits.

(ii) Lateral support shall be included per the manufacturer's directions or as deemed prudent.

[4] A registered professional engineer (P.E.) who has passed the structural engineering examination administered by the National Council of Examiners for Engineering and Surveying (NCEES).

ii. When channel framing systems are supported by the existing building's structural support members, OFPM shall be contacted for the material specifications, as installed and maintained.

(i) This data shall be documented and utilized in the design of the framing system.

iii. The design shall be reviewed and approved by line management (or delegate).

(c) Structures (*e.g.*, fabricated rooms for experiments, observation platforms, scaffolding)

i. In-house design of structures not to be occupied (*e.g.*, fabricated room for structural fire measurements but not for occupancy) shall:

(i) Follow design and construction industry best practices in accordance with NIST adopted codes and standards (please see NIST S 7401.01) unless there is a research-specific need not to follow NIST adopted codes and standards; and

(ii) Be documented, reviewed and approved by line management (or delegate).

ii. In-house design of a structure to be occupied (*e.g.*, observation platform) shall:

(i) Require the review and approval (*i.e.*, stamp and seal) of a qualified third party[5] regarding design, anchoring, and adequate location of the fixture with respect to applied live load; and

(ii) Meet the requirements of NIST S 7401.01, as applicable.

(d) All designs/plans shall ensure the new construction work:

i. Does not obstruct the view of a fire alarm device;

ii. Does not prevent the activation of a fire alarm device; or

[5] A registered professional engineer (P.E.) who has passed the structural engineering examination administered by the National Council of Examiners for Engineering and Surveying (NCEES).

iii. Maintains the appropriate clearance from existing electrical panels and junction boxes such that there is sufficient clearance for access and entry.

b. Demolition Plans

(1) Demolition plans shall comply with the regulations of 29 CFR 1926, Subpart T, to include, but not be limited to:

(a) A detailed, step-by-step demolition plan; and

(b) As necessary, an engineering survey, performed by a competent person, of the fixture or structure to determine structural integrity and the possibility of unplanned collapse of any portion of the fixture or structure.

(2) Demolition plans shall require the review and approval (*i.e.*, stamp and seal) of a qualified third party[6].

(3) Demolition plans shall not be required if there are no hazards associated with:

(a) Falls from heights; or

(b) Objects falling from heights.

c. General Work Planning

(1) Planning of construction or demolition work to be performed by NIST staff shall be done in accordance with the requirements of NIST S 7101.20 for:

(a) Work approval; and

(b) Worker authorization.

(2) Construction or demolition work may be covered under:

(a) One hazard review (HR) or job hazard analysis (JHA); or

(b) Multiple HRs or JHAs.

[6] A registered professional engineer (P.E.) who has passed the structural engineering examination administered by the National Council of Examiners for Engineering and Surveying (NCEES).

i. If multiple HRs or JHAs are used to cover distinct activities of the work, and the distinct activities will be performed at the same time in the same work location, potential interactions of the distinct activities shall be considered prior to the work being performed.

NOTE: Generic HRs or JHAs may be used for all or some of the work proposed.

(3) Consideration shall be made for regulations and/or requirements which must be met for the following environmental permits (Gaithersburg and Boulder campuses, respectively):

(a) Drinking water (NIST S 7301.04 and NIST S 7301.05);

(b) Stormwater management (NIST S 7301.10 and NIST S 7301.11); and

(c) Wastewater management (NIST S 7301.12 and NIST S 7301.13).

(4) HRs or JHAs covering construction or demolition work shall clearly specify the following for each project, phase, activity, task, or the manner in which the work is delineated:

(a) Scope of the work;

(b) Description of the work;

(c) Location where work will occur;

NOTE: If a generic HR or JHA is used, line management must take into consideration possible additional requirements or hazards for a given work location.

(d) Potential hazards associated with the work;

(e) Required controls to mitigate hazards of the work;

(f) Required personal protective equipment, per NIST S 7101.21, for:

i. Entering the worksite; and

ii. The specific work to be performed;

(g) Required training for each worker performing work;

(h) Required permits for the work, please see Section 6.d.(2);

(i) Requirements if the work is performed in shifts;

(j) Requirements for notifications of work, please see Section 6.e;

(k) Requirements for meetings or briefings, please see Section 6.f;

(l) Requirements for a given work location, and specifically, who may enter the worksite, please see Section 6.g;

(m) Requirements for worksite inspections, please see Section 6.h; and

(n) Emergency response procedures, to include necessary equipment (*e.g.*, eyewash station or spill kits), to cover events such as medical emergencies or spills, leaks, or other unplanned releases of hazardous/toxic materials.

(5) HRs and JHAs covering construction or demolition work shall be reviewed, revised, and re-approved:

(a) If there are changes to the work scope, conditions of the work site, and/or hazards; and/or

(b) On a regular basis, as defined within the HR or JHA, if the work will be conducted over an extended period of time (*e.g.*, one month).

(6) Should exposure, or the potential to be exposed, to an identified health hazard be determined in Section 6.c(4)(d), medical monitoring shall be required in accordance with the requirements of NIST S 7101.29.

d. Specific Work Planning

While all hazards, conditions, and activities shall be taken into account, as required by Section 6.c, the following shall be explicitly considered, as applicable.

(1) Review and Decommissioning of an Internal, Existing Workspace

(a) Review of historical building survey results shall be conducted to identify hazardous or toxic materials (*e.g.*, asbestos, lead, mercury) that may be present in the work location.

i. If a hazardous or toxic material is present, the appropriate abatement or control plan will be developed and implemented prior to commencement of work.

NOTE: If historical building survey results are not available, staff should work with OFPM and OSHE to determine if hazardous or toxic materials are currently found in the work location.

(b) For spaces previously used as laboratories or for other research activities, the requirements of NIST PR 2100.01 shall be followed for the evaluation, testing, and decontamination of the work location, supplies, and property prior to work commencement.

(2) Performing Permitted Work

(a) Work requiring a permit shall be identified in advance of the work being performed; such work may include, but is not limited to:

i. Modification of a fire protection and/or life safety system (per NIST S 7401.01);

ii. Impairment of a fire protection and/or life safety system (per NIST S 7401.03);

iii. Hot work (*e.g.*, burning, welding, or using fire- or spark-producing tools) or designated hot work area (per NIST S 7401.04);

iv. Permit-required confined space (per NIST S 7101.57);

v. Energized electrical work (per NIST S 7101.64);

vi. Roof access (per NIST PR 7101.67); and

vii. Excavation/trenching (per NIST PR 7101.31).

(b) The required work permit(s) shall be obtained in accordance with the requirements of the applicable suborder.

(c) Work permits shall be posted at the worksite in accordance with the requirements of the applicable suborder.

(d) Work requiring a permit shall be performed in accordance with the requirements of the applicable suborder.

(3) Securing Service Connections and Other Sources of Hazardous Energy

(a) All utilities (*e.g.*, electric, gas, water) and other sources of hazardous energy shall be properly controlled in accordance with the requirements of NIST S 7101.56.

i. Temporary electrical power shall be provided, and properly located and protected, in accordance with the requirements of NIST S 7101.64.

(b) The marking of utilities shall be performed in accordance with the requirements of NIST PR 7101.31.

(c) As necessary, utility outages shall be conducted in accordance with the requirements of NIST PR 2103.06.

(4) Use of Hand-Held Tools and Associated Equipment

(a) Power tools and associated equipment shall be used in accordance with the requirements of NIST S 7101.65.

(b) Staff shall inspect manually-powered hand tools prior to first use each day.

i. Defective manually-powered hand tools shall be taken out of service in accordance with the requirements of NIST S 7101.73.

(5) Fabrication using Channel Framing System

(a) To ensure structural integrity, safety, and long-term performance, fabrication using a channel framing system (*e.g.*, Unistrut®, 80/20 T-Slot Building Systems®, or similar) shall:

i. Be installed per the manufacturer's published installation instructions and engineering guidelines;

ii. Strictly adhere to the manufacturer's required and/or recommended means and methods for fabrication; and

iii. Use the manufacturer's proprietary channel framing components, structural hardware, and support components (*e.g.*, bolts, anchors, rods, brackets).

(b) All materials should be clearly labeled, traceable, and supported by documentation confirming compliance.

(c) All cutting, drilling, or modification of channel components shall be done using manufacturer-approved tools and processes, as applicable.

i. Field cuts shall be free of burrs.

(d) All bolts and fasteners should be torqued according to manufacturer specifications.
NOTE: Refer to manufacturer's torque chart for specific bolt diameters and materials.

(e) Channel nuts shall be:

i. Fully seated within the strut; and

ii. Aligned perpendicular to the channel.

(f) Final installation shall be plumb, level, and square, with all supports securely anchored to structural members capable of carrying anticipated loads, including applicable safety factors.

(g) Head bump protection shall be installed if objects protrude below 80 inches (2032 mm) where people must stand, walk, or work and there is a reasonable potential for head bumps.

(6) Use of Hazardous Material

(a) Management of hazardous materials shall be performed in accordance with the following requirements:

i. Use and storage – NIST S 7101.60;

ii. Waste accumulation, inspection, and disposal – NIST S 7301.06 (on the Gaithersburg campus) and NIST S 7301.07 (on the Boulder campus); and

iii. Spill prevention, response, and reporting – NIST S 7101.60 (both campuses), NIST S 7301.08 (on the Gaithersburg campus), and NIST S 7301.09 (on the Boulder campus).

(b) Information regarding the hazardous materials inventory and/or Safety Data Sheets shall be made available to workers either at the work location or in an area which is readily accessible to them, per the requirements of NIST S 7101.59.

(7) Working at Heights

(a) Ladders of any kind shall be used in accordance with the requirements of NIST S 7101.66.

(b) Scaffolding and scissor lift use shall comply with the regulations of 29 CFR 1926, Subpart L.

(c) Powered platform and aerial lift use shall comply with the regulations of 29 CFR 1910, Subpart F.

(d) Elevated work surfaces shall be maintained in accordance with the requirements of:

i. NIST S 7101.63; and

ii. NIST S 7101.67.

(e) Where appropriate, fall protection control measures shall be implemented in accordance with the requirements of NIST S 7101.67.

(f) Work involving access to a NIST building roof shall require a roof access permit, per NIST PR 7101.67.

(8) Use of Cranes, Hoists, or Other Mechanical Lifting Operations

(a) Crane, hoist, or other mechanical lifting operation shall comply with the regulations of 29 CFR 1926, Subpart CC and where applicable Subpart R.

(b) Use of rigging equipment associated with lifting operations shall comply with the regulations of 29 CFR 1926.251.

(9) Steel Erection

Steel erection shall comply with the requirements of 29 CFR 1926, Subpart R.

(10) Concrete/Masonry

Concrete and masonry work shall comply with the requirements of 29 CFR 1926, Subpart Q.

(11) Dust Control

(a) Dust suppression practices shall be implemented to the extent possible while performing work.

(b) Nuisance dust shall be controlled daily through regular cleaning up of the work area (*e.g.*, wiping down horizontal surfaces, HEPA vacuuming, picking up loose debris on the floor).

(c) When required, a Silica Exposure Control Plan shall be developed in accordance with the requirements of NIST S 7101.29.

(12) Operation of Heavy Equipment and Powered Industrial Trucks

(a) Operation of heavy equipment (*e.g.*, skid loader, front end loader, backhoe) shall comply with the regulations of 29 CFR 1926, Subpart O.

(b) Operation of powered industrial trucks (PITs) shall be in accordance with the requirements of NIST S 7101.74.

(c) Only trained and qualified staff ("operator") shall be authorized to operate heavy equipment and PITs.

(d) Staff authorized to operate heavy equipment shall:

i. Have a current, appropriate class, state driver's license in their possession;

ii. Wear a seatbelt/shoulder harness;

iii. Refrain from the following practices while operating the heavy equipment:

(i) Cell phone use while operating;
(ii) Wearing devices that restrict or impair hearing or vision;
(iii) Leaving an unattended vehicle running and/or with its keys in the ignition;
(iv) Transporting passengers;
(v) Exceeding posted speed limits;
(vi) Ignoring traffic signs; and
(vii) Committing any act that could result in the suspension or revocation of the required Commercial Driver's License.

(e) Prior to operating the heavy equipment or PIT, the operator shall check the overall vehicle condition, including but not limited to, inspecting for properly functioning:

i. Lights;

ii. Brakes;

iii. Audible reverse signal alarm;

iv. Windshield wipers;

v. Steering; and

vi. Tires.

(f) The operator shall check to ensure the vehicle has enough fuel such as diesel gas, propane, or battery charge.

(g) Heavy equipment and PITs believed to be unsafe and/or delinquent on necessary maintenance shall:

i. Not be used; and

ii. Removed from service in accordance with the requirements of NIST S 7101.73.

(h) A spotter shall be used for operating heavy equipment and PITs when:

i. The operator does not have full view of the working area;

ii. The work location is restricted due to obstacles (*e.g.*, trenches, parked cars, buildings);

iii. There is the potential to interact with pedestrians or motor vehicle traffic; or

iv. The operator requests a spotter for additional safety.

(i) Prior to moving a load, the operator shall verify the load is secure.

(13) Traffic Control

(a) When construction or demolition work is adjacent to a roadway

i. A site coordination request shall be required if there will be closure of a roadway (please see OFPM Procedure: CFMO–2010–001).

ii. As necessary and in accordance with Manual on Uniform Traffic Control Devices:

(i) A certified flag person shall be used to protect the work crew (*e.g.*, intermittently stop traffic or maintain continuous reduced-speed traffic past a worksite); and

(ii) Warning signs shall be erected on the approach in both directions to give a motorist positive direction in advancing through the work area.

(14) Performing Construction or Demolition Work Outdoors

(a) Stormwater management shall be performed in accordance with the requirements of NIST S 7301.10 (on the Gaithersburg campus) and NIST S 7301.11 (on the Boulder campus).

(b) Best practices shall be implemented to prevent against heat stress or cold stress, please see NIST G 7101.77.

(c) Adverse weather conditions shall be specified in the HR or JHA to indicate when work cannot be performed outside (*e.g.*, temperatures above or below a given value, wind speed above a given value, impending thunderstorm).

(15) Use of Safety Barriers

(a) Consideration shall be given whether physical barriers (*e.g.*, fencing, jersey barriers) are required to prevent unauthorized access to the construction or demolition site.

(b) As necessary, appropriate signage shall be posted to indicate access requirements.

e. Notification of Construction or Demolition Work

(1) Communications shall be required depending upon the scope of those who may be affected and/or length of the project.

(2) If deemed necessary, communications regarding construction or demolition work shall be sent to staff who may be affected by the work (*e.g.*, room-specific, building-specific, or NIST-wide).

NOTE: These communications are not intended for staff who will be performing the work, but rather, for those who may be affected by the work being performed.

(3) Communications shall be sent:

(a) At least one week prior to the work starting; and

(b) The day of work commencement.

(4) The communication shall detail the following information:

(a) Summary of work description and scope;

(b) Location where work will be performed;

(c) Anticipated work start and end date;

(d) Adverse conditions which staff may encounter due to the work being performed (*e.g.*, noise, odors, utility interruptions, egress impairment, side walk closure, traffic detour);

(e) Point of contact name(s) and contact information; and

(f) Emergency contact information.

(5) A copy of this communication shall be appropriately posted at the work location (*e.g.*, at room or building entrances, near the area where will occur outside):

(a) One week prior to work commencement; and

(b) While the work is being performed.

f. Meetings, Briefings, and Work Reviews

(1) Meetings and briefings shall be held commensurate to the complexity of the work and/or length of the project.

(a) These meetings or briefings may include:

i. A kick-off meeting;

ii. Walkthrough of the work location (whether at the start of the work, on a regular basis if work is performed over an extended period of time, or both);

iii. Daily briefings (*e.g.*, pre-task planning or plan of the day); or

iv. Reviews of specific work activity (*e.g.*, crane lift).

(b) For work occurring over an extended period of time (*e.g.*, one month or longer), line management should consider re-reviewing the HR or JHA during these meetings to help identify new or changed hazards.

(c) Minutes shall be taken for these meetings to include, but not be limited to, the following information;

i. Date, time, and location of the meeting;

ii. Individuals present;

iii. Topics discussed; and

iv. Outcomes, results, changes, *etc*., based upon the discussion.

(2) On a daily basis, authorized workers shall review the HR(s) or JHA(s) pertaining to the work to be performed that day to ensure they:

(a) Understand the work to be performed;

(b) Understand what hazards they may be exposed to while performing the work and the controls necessary to mitigate them;

(c) Understand any additional hazards that may be present due to the location where they are performing the work;

(d) Have the appropriate equipment, tools, and materials to perform the work;

(e) Have the required serviceable personal protective equipment to perform the work; and

(f) Understand emergency response procedures.

g. Work Location Requirements

(1) Area Access, as necessary

(a) Designated access points into the work location shall be identified for explicit use.

(b) Other access ways into the work location shall be closed off using the appropriate means (*e.g.*, locking access doors, installing physical barriers), please refer to Section 6.d(2)(a)ii.

(c) Designated access points into the work location shall be posted:

i. As authorized access only; and

ii. With personal protective equipment required for entry.

(d) Designated access points shall be inspected daily and maintained in a clean, safe condition.

(2) Signage, as necessary

(a) Signage shall be posted to direct, warn, or caution workers and others of the ongoing work and associated hazards, please see Section 6.e(5).

(b) The work site shall have appropriate hazard-specific signage in accordance with the requirements of the specific hazard-related suborder(s) to warn against potential hazards, to instruct the use of safe practices, or to caution against unsafe practices.

i. Signs shall meet the requirements of NIST S 7101.22.

(c) Signage within the work location shall be placed or posted in locations that are most visible to workers but not so that they interfere or distract as work is completed.

(d) Traffic control signage intended for hazard warning during hours of darkness shall be reflectorized and/or illuminated.

(3) Daily General Safety

(a) Proper illumination shall be maintained throughout the work location while work is being conducted.

(b) Walking surfaces shall be maintained in accordance with the requirements of NIST S 7101.63.

(c) Waste material and debris shall be:

i. Kept to a minimum on the walking surface throughout the day to minimize slip and trip hazards;

ii. Sufficiently cleaned up prior to the end of the work day;

iii. Appropriately stored at the work location; and

iv. Regularly removed from the work location.

h. Worksite Inspections

(1) Worksite inspections, separate and distinct from those required by NIST S 7101.26, shall be performed:

(a) On a daily basis by workers; and

(b) Periodically by line management (commensurate with the duration of the work).

(2) Line management shall develop appropriate inspection checklists for both types of inspections specified in Section 6.h(1).

(3) Line management shall review completed checklists to determine the effectiveness of the operational controls being implemented.

(4) As necessary, line management shall take action to remedy any deficiencies or improve currently implemented controls.

i. Conclusion of Work

(1) Work permits, per Section 6.d(2), shall be closed out in accordance with the requirements of the applicable suborders.

(2) Construction work performed by OFPM shall be evaluated and determined satisfactory in accordance with:

(a) OFPM policies and procedures; and

(b) NIST S 7401.01, as applicable.

(3) Construction work performed by non-OFPM OUs

(a) All construction work requiring the design be reviewed and approved by line management (or delegate) shall be evaluated and determined satisfactory by line management (or delegate).

(b) All construction work requiring the design be reviewed and approved by a qualified third party shall be evaluated and determined satisfactory:

i. By a qualified third party; and

ii. Per the requirements of NIST S 7401.01, as applicable.

(c) Pre-engineered packages (*e.g.*, shelving units or storage racks) shall be evaluated and determined satisfactory by line management (or delegate).

(4) Worksite where demolition occurred shall be free of hazards.

(5) Communications regarding completion of the construction or demolition work shall be sent to staff who have been affected by the work, as required.

j. Training Requirements

(1) Training pertaining to this suborder shall be documented in accordance with the requirements of the NIST S 7101.23.

(2) Program training on this suborder shall be completed by:

(a) Staff who participate in the development or review of HRs/JHAs pertaining to construction or demolition work;

(b) Line managers who approve HRs/JHAs pertaining to construction or demolition work; and

(c) Line managers who authorize staff to perform construction or demolition work.

(3) Training and competencies associated with performing specific work:

(a) Shall be identified as part of the work planning, per Section 6.c(4)(g); and

(b) Verified by line management as part of worker authorization, per Section 6.c(1)(b).

k. Records Required by this Directive

(1) Training shall be recorded in accordance with the requirements of the NIST S 7101.23.

(2) Records associated with specific NIST Directives shall be kept in accordance with the requirements of the directive.

(3) Records associated with construction designs/plans shall be incorporated into the hazard review or job hazard analysis associated with the work and kept in accordance with NIST S 7101.20.

(4) Records associated with demolition plans shall be incorporated into the hazard review or job hazard analysis associated with the work and kept in accordance with NIST S 7101.20.

(5) Records associated with construction meetings, briefings, or work reviews, per Section 6.f, shall be retained by the OU for the life of the structure or fixture.

(6) Records associated with demolition meetings, briefings, or work reviews, per Section 6.f, shall be retained by the OU for one year after the conclusion of the work.

(7) Records associated with worksite inspections, per Section 6.h, shall be retained by the OU for one year after the conclusion of the work.

7. DEFINITIONS

a. Alteration, Level 1 – Removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose, *i.e.*, remodeling, renovation, or "replacement in kind";

b. Alteration, Level 2 – Reconfiguration of space or the addition or elimination of any door or window.

c. Change of Occupancy – A change in the use of space, *e.g.*, from a laboratory to an office.

d. Construction

(1) The act of erecting a new structure or fixture.

(2) The act of altering/replacing all or part of or reconfiguring an existing structure.

(3) The act of repairing an existing structure, exterior area, or utility; for exterior work, this may include excavation or trenching.

e. Demolition

(1) The act of systematically dismantling, disassembling, or taking apart a structure or fixture.

(2) The removal of existing materials, elements, equipment, *etc.*, in a workspace.

f. Fixture – For the purposes of this suborder, a physical component used to store a load, such as a shelving unit or storage rack, which is not physically attached to a building and will not be occupied. Please contact the OSHE Program Manager for this suborder with questions regarding applicability of that which one would like to construct or demolish.

g. Repair – Reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.

h. Structure – For the purposes of this suborder, a temporary or permanent workspace, or component thereof, that may or may not be occupied (*e.g.*, observation platform or fabricated room for structural fire measurements). Please contact the OSHE Program Manager for this suborder with questions regarding applicability of that which one would like to construct or demolish.

8. ACRONMYMS

a. CFR – Code of Federal Regulations

b. HR – Hazard Review

c. JHA – Job Hazard Analysis

d. OSHE – Office of Safety, Health, and Environment

e. PIT – Powered Industrial Truck

f. SDS – Safety Data Sheet

9. ROLES AND RESPONSIBILITIES[7]

a. Line Management[8], the level of which is consistent with the approval process associated with Section 6.c of this directive and in accordance with the requirements of NIST S 7101.20, is responsible for:

(1) Ensuring the appropriate review and approvals are obtained for construction designs/plans;

(2) Ensuring the appropriate review and approvals are obtained for demolition plans;

(3) Ensuring the planning of construction or demolition work is conducted in accordance with the requirements of NIST S 7101.20;

[7] Responsibilities for environmental permitting are identified in the relevant NIST directive.
[8] If a line manager does not have the prerequisite competencies to perform some or all of these functions, they may assign them to a delegate who has the appropriate competencies.

(4) Ensuring the notifications are sent in a timely manner;

(5) Ensuring construction and demolition work is conducted in accordance with the HR or JHA developed for the work;

(6) Ensuring worksite inspections are performed per the requirements of the HR or JHA;

(7) Ensuring completed checklists are reviewed to determine the effectiveness of the operational controls being implemented;

(8) Ensuring actions are taken to remedy any deficiencies or improve currently implemented controls;

(9) Ensuring the appropriate evaluation is performed of construction work prior to the fixture or structure being used; and

(10) Ensuring records associated with this directive are maintained.

b. NIST staff performing construction or demolition work are responsible for performing the work in accordance with the HR or JHA developed for the work.

10. AUTHORITIES

None

11. DIRECTIVE OWNER

Chief Safety Officer

12. APPENDICES

Appendix A. Revision History

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Version	Document Approval	Effective Date	Description of Change
1	09/05/2025	04/01/2026	Initial document.