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**Section 01065 – Environment, Safety, and Health for Construction Contracts**

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Section 01065 – Environment, Safety, and Health for Construction Contracts

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**Change Log**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Changes Made By** | **Type** | **Change Description** |
| 3/29/22 | BE | Subst | * Updated spec numbers * Added to 1.1 “Summary” * Added TLVs to 1.2 “References” * Added to SCO responsibilities in 1.3 * Added to AHA and PTP in 1.4 * Added paragraph (under E) and other information to 1.6 * Added information to 1.7, including new “Review Frequency” paragraph, additional paragraphs under “Accident Scene Preservation” and “CSSP Documentation” * Moved “Emergency Events” up in 1.9 * Added to “Emergency Action” section under 3.2 * Under 3.4, added the following: sentence to “Excavation Permit” (C); FPIP information under “Fire Protection System Impairments” (G); significant paragraphs and information to “Hoisting, Rigging, and Load Handling” (R), including a new sub-section entitled “Use Cribbing and/or Blocking on a Forklift”; information to “Permit Required Confined Space” sub-section (S); new “Lighting System Protection” paragraph (T) * New appendices C, D, & E * Changed FESH to ES&H * Changes to formatting |
| 3/15/21 | EJ | Admin | * Updated SAND # |
| 3/4/21 | EJ | Subst | * Added the Contractor role to Section 1.3, Roles and Responsibilities * Added Behavior Based Safety (BBS) to Section 1.4, Definitions * Added more information to Section 1.7, Contract-Specific Space Plan, D, Site Control * Added Section 3.4, General Project Work Practices, W, Fall Protection * Updated Section 3.4 General Project Work Practices with information about placing active Fire Protection equipment in an impaired state * Performed various administrative edits |
| 2/4/21 | JS | Subst | * New summary (section 1) * Added Z7 to 1.2B * Major changes roles/responsibilities and definitions * Added to regulatory requirements section * Added to Pre-Task Planning and PPE requirements * Added to Elevated Work * Inserted Use of Sandia Owned Equipment for Contractor Personnel * Deleted Oversight Compliance Monitoring * Added Vehicle Safety * Minor changes throughout (e.g., terminology) |
| 08/20/20 | JS | Admin | * Removed disclaimer per former Classification Office guidance * Added signature block to bottom of Appendix B |
| 10/14/19 | JS | Admin | * Added paragraph on wall/ceiling/floor verification under Section 3.4 |
| 3/07/19 | JS | Admin | * Fixed some of the acronyms |
| 1/03/19 | JS | Admin | * Removed reference to ESH100.4.RPT.3, *Report Occurrence*, in Table 1-1; this reference # is no longer valid as the policy system has been updated |
| 9/26/18 | JS, GK, BE | Subst | Split Definitions section into Roles and Responsibilities and Definitions; added roles for Construction Manager, Sandia Construction Observer; added Activity Hazard Analysis under “Submittals”; made changes to “Quality Assurance” section; added information for Pre-Task Planning and High-Risk Work; added information on Digger-Derricks; added Appendix B; added information to Table 1.1; changed Sandia Project Lead to Sandia Project Manager and updated definition; changed Inspector to Sandia Construction Inspector in Section 1.3 |
| 8/28/2018 | GK and JS | Subst | Worked on formatting tables, added high-risk activities to Definitions, added NM Environment Dept under “References,” added CSSP requirements under “Quality Assurance,” added High-Risk Activities and Pre-Task Planning under Contract-Specific Safety Plan, added Pre-Work Evaluation of Subcontractor Work Team row for Table 1.1, added Hazard Awareness and Identifying and Controlling Energy Sources under “Expectations” for Table 1.1, added “Assessment of Pre-Task Plan” row to Table 1.1, added more information for Section 3.3, changed FMOC to Facilities, on pg. 5 and p. 27, changed to NTESS as I believe it’s talking about the entity rather than the facility |
| 12/7/2016 | JS | Admin | Per request of Mary St. Lawrence, changed Radiological Work Permit to radiological Technical Work Document |
| 10/12/16 | GK/JS | Subst | Made substantial additions to content; edited document and reformatted into correct document template. |
| 4/18/16 | TP | Subst | Updated formatting. |
| 5/5/14 | GK/CC | Subst | Under the ISMI section, the engineered safety requirements were added to Table 1.1 |
| 4/30/12 | KLB/GK/BB | Subst | Revised section 3.04.C, D, R, and T to better reflect current requirements regarding excavation and penetration permits, digging, hoisting and rigging, and electrical work. |
| 8/26/10 | DH | Subst | Corrected outdated attachments and provided reference to correct information. Removed Attachments A, B, and D and renumbered C to become Attachment A. |
| 6/22/10 | JCG | Admin | Added a sentence to the end of paragraph T in section 3.04 to satisfy a corrective action. Changed the cover and footer date to June 2010 and the Revision Number to 3. |
| 5/17/10 | JCG | Subst | Reformatted the specification to FMOC standards and edited for grammar and punctuation. Added section 3.02, "Medical/Health Protection" and Appendix A, "Occupational Medicine Services." |

# Part 1 – General

## Summary

* + 1. This section provides requirements and guidelines for performance of work while ensuring the protection of the environment, property, and the safety and health of Contractors, Sandia National Laboratories (SNL) and Department of Energy (DOE) employees, visitors to SNL, and members of the public. This document is also a tool to aid in developing a written Contract Specific Safety Plan (CSSP). A CSSP, approved by SNL personnel, is required for all construction contracts. This document includes elements of all CSSPs, sample language and templates, guidance, and additional resources to help contractors prepare CSSPs. Each company should tailor their safety plan and formulate safety procedures and rules applicable to their operations and work environments. The contractor CSSP shall incorporate elements of the Integrated Safety Management System (ISMS) and Engineered Safety as described in Section 1.11 of this section, including but not limited to safe-by-design intent, understanding of the operational and technical basis of the work, identifying and controlling hazards and energy sources, making risk assessments and eliminating unacceptable consequences, and engaging in positive verification. The Contractor shall flow down the requirements identified in this specification to all subcontractors and visitors for all tiers.
    2. Related Sections

Refer to the following sections for related work:

* + - 1. Section 01 74 19, “Construction Waste Management”
      2. Section 01 57 26, “Dust Control”
      3. Section 26 04 75, “Primary System Safety Requirements”

## References

A. American Conference of Governmental Industrial Hygienists

Threshold Limit Values (TLVs) for Chemical Substances, Physical Agents and Biological Exposure Indices (2016)

B. American National Standards Institute (ANSI)

|  |  |
| --- | --- |
| **Number** | **Title** |
| Z41 | Personal Protection - Protective Footwear |
| Z87 | Safety Glasses |
| Z49.1 | Sections 4.3 and E4.3 Welding, Cutting, and Allied Processes |
| Z88.2 | Practices for Respiratory Protection |
| Z89.1 | Industrial Head Protection |
| Z136.1 | Safe Use of Lasers |

C. American Society of Mechanical Engineers (ASME)

|  |  |
| --- | --- |
| **Number** | **Title** |
| B30.5 | Mobile and Locomotive Cranes |

D. Code of Federal Regulations (CFR)

|  |  |
| --- | --- |
| **Number** | **Title** |
| 29 CFR 1926 | Title 29-Labor, Part 1926-Safety and Health Regulations for Construction |
| 29 CFR 1910 | Title 29-Labor, Part 1910-Occupational Safety and Health Standards |
| 10 CFR 851 | Worker Safety and Health Program |

E. New Mexico Environment Department

|  |  |
| --- | --- |
| **Number** | **Title** |
| NMAC 20.9.2 | Title 20 Environmental Protection, Chapter 9 Solid Waste, Part 2 Solid Waste Management General Requirements |

F. Environmental Protection Agency (EPA)

|  |  |
| --- | --- |
| **Number** | **Title** |
| 832-R-92-005 | Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices |

G. National Fire Protection Association (NFPA)

|  |  |
| --- | --- |
| **Number** | **Title** |
| 70 | National Electrical Code |
| 70E | Standard for Electrical Safety Requirements for Employee Workplaces |

## Roles and Responsibilities

|  |  |
| --- | --- |
| **Sandia Subcontracting Professional (SSP)** | Also called the Buyer, the Sandia Subcontracting Professional (SSP) is the procurement professional who acts to fulfill a requester's requirement. Often working in consultation with the requester, the SSP obtains quotations, negotiates and awards subcontracts, and administers subcontracts after awards have been made. The SSP is authorized to act as official representative of SNL for the specific purpose of administering the Contract, including payment authorization and approval for change orders. The SSP is the only person who may legally obligate SNL for expenditure of funds, change scope, change level of effort, change terms and conditions, negotiate, and sign documents legally binding SNL commitment. Obligations or promises, implied or expressed, by SNL personnel other than the SSP do not bind SNL in any manner. |
| **Sandia Delegated Representative (SDR)** | Person in the Contract who is authorized to act as delegated SNL representative for the specific purpose of review, inspection, and acceptance of work, and to interpret plans, specifications, codes, and standards. The SDR shall not exercise supervision over Contractor's employees. |
| **Sandia Construction Manager (SCM)** | The SCM supports the project, performs behavior-based safety (BBS) and Contractor evaluation observations, and reviews and accepts the CSSP, providing written justification/authorization for energized electrical work, as well as helping to coordinate construction permits and outages with the Sandia Construction Inspector. The SCM is a daily point of interface with the Contractor on performance and schedule issues and helps resolve construction, environmental, and safety issues. The SCM also coordinates work with the customer and infrastructure teams. |
| **Sandia Construction Inspector (SCI)** | The SCI is the SDR’s contract field representative who monitors, documents, and reports on the progress and quality of construction work in accordance with contract specifications and plans and applicable codes. The SCI assists in coordinating outages for construction operations. The SCI shall not exercise supervision over Contractor's employees. |
| **Sandia Environmental, Safety, & Health Support Team** | Persons authorized to act as official representatives of SNL for the specific purpose of supporting SDRs, SCMs, SCIs, and Sandia Construction Observers (SCOs) with environment, safety, and health (ES&H) observations and resolution of issues/concerns associated with Contractor ES&H performance. The team has representation from SNL’s Safety Engineering, Industrial Hygiene, Environmental, Radiological Protection, and Asbestos programs. |
| **Sandia Project Manager (SPM)** | Person responsible for the overall project to include financial and schedule responsibilities. The SPM shall not exercise supervision over Contractor's employees. |
| **Sandia Construction Observer (SCO)** | Sandia ES&H organization personnel who conduct oversight of contractor activities to ensure requirements are understood, planned, and implemented. The group is composed of trained and experienced Safety Engineers, Industrial Hygienists, Environmental/Waste Specialists, and Health Physicists who support Facilities by ensuring Contractors have adequate mitigations in place to manage hazardous construction activities. SCOs review and concur on CSSPs, Activity Hazard Analyses (AHAs), work permits, and other job hazard plans. SCOs also conduct site visits to validate control implementation, attend weekly progress meetings to discuss and provide updates on safety, and support Quarterly Construction Safety Seminars. |
| **Contractor** | Per Section I and Section II of the contract, this entity is referred to as the “Subcontractor.” The Contractor is the entity that is contracted to NTESS to perform construction activities, per the contract documents. |

## Definitions

|  |  |
| --- | --- |
| **Activity Hazard Analysis (AHA)** | A documented process by which the steps (procedures) required to accomplish a work activity are outlined, the actual or potential hazards of each step are identified, and measures for the elimination or control of those hazards are developed. Activities are general classes of separately definable construction work (for example, excavation, foundations, structural steel, and roofing). Activities are not time- or location-specific. There are two conditions when an AHA is required, either as an addendum to an approved CSSP when the scope of the CSSP does not adequately address the hazards that could be encountered and/or when conducting any work that may result in serious injury (illness) or a fatality if performed improperly (i.e., high-risk work). The contractor’s process for describing how and when AHAs are used is a required section of the CSSP. |
| **Pre-Task Plan (PTP)** | A pre-task plan is a documented task planning tool developed in coordination with the site superintendent and work crews to discuss and focus on accomplishing the authorized and planned tasks, and to perform a step-by-step review of the planned work activities, applicable hazards, hazard communication, and hazard controls (following the hierarchy of controls). A task is a specific segment of a particular scope of construction work that is time-, condition-, worker-, and/or location-dependent. The day’s tasks, personnel, tools, and equipment that will be used to perform these tasks are listed in the PTP, along with the hazards posed and required safety and health procedures, as identified in the Contractor’s CSSP or applicable AHA or from the Job Site Hazard Evaluation (JSHE).  The use of a PTP promotes worker participation in the hazard identification and control process at the task level, while reinforcing the task-specific hazard and required safety and health procedures with the crew for each task. The process promotes open dialogue of a work crew to identify and document the potential hazards, as well as required controls to minimize the associated risks. This approach helps ensure that everyone involved in the job has a full understanding of the activities, the hazards associated with the planned activities, and required controls prior to initiating work. A PTP is developed at the start of each day, prior to beginning any work. The PTP shall be re-evaluated if the scope of work changes. Scope changes requiring PTP re-evaluation may include any of the following: modification of the planned work scope, use of different tools or equipment, new hazards identified, new personnel added to the work team, etc. Documents such as checklists or permits, or knowledge (such as training) that identifies and plans for the mitigation of hazards associated with a task, can be referenced to supplement a PTP but cannot be used in lieu of a PTP. Critical thinking shall be utilized during this part of the analysis. A focus on what could go wrong or how it could go wrong during the day, such as weather, and changes to the process and personnel, need to be evaluated regularly. |
| **High-Risk Work** | High-risk work is defined as work that may result in serious personal injury, illness, or a fatality if performed improperly. The increased risk is based upon characteristics inherent in the work task, location, materials, or proximity to other hazards. High-risk work activities include the following activities:   * Critical crane lifts * Excavation within five feet of known hazardous energy utilities (electrical, natural gas, other pressurized systems, etc.) or personnel entry into an excavation > 5′ in depth * Energized electrical work * Work within ten feet of aerial high voltage power lines (> 50kV) * Wall, floor, or ceiling penetrations where a site investigation cannot identify all potential hidden hazards * Permit Required Confined Space entry * Roof work within six feet of an edge not protected by standard guardrails, parapets, or similar physical barriers * Elevated work without the use of an approved ladder or engineered fall-protection system greater than six feet above a lower level or within 15 feet of an unprotected side or edge for all construction trades, excluding roofers. For roofers, the requirement is within six feet of an unprotected side or edge. |
| **Behavior Based Safety (BBS)** | Behavior-based safety is a process that creates a safety partnership between management and employees that continually focuses people's attentions and actions on theirs, and others’, daily safety behavior that reduces the occurrence of at-risk behaviors and conditions that contribute to injuries. BBS focuses on what people do, analyzes why they do it, and then applies a research-supported intervention strategy to improve what people do. |

## Submittals

A. Contract-Specific Safety Plan (CSSP)

Submit in accordance with Section 1.6, “Quality Assurance,” requirements for review and approval by the SDR prior to commencement of onsite work.

B. Safety Plan Addendum

Submit modification to CSSP if required to address activity hazards not previously identified in CSSP.

1. Activity Hazard Analysis

In accordance with Section 1.7.J, a task-specific AHA approved by SNL personnel shall be required for any work that may result in serious injury or a fatality if performed improperly. This type of work is defined as High-Risk Work.

D. Storm Water Pollution Prevention Plan

Submit in accordance with requirements of Quality Assurance article when required.

E. Fugitive Dust Control Permit

Complete an SNL-furnished application for a Fugitive Dust Control Permit when required.

## Quality Assurance

A. Regulatory Requirements

Comply with applicable ES&H laws, rules, and regulations, as amended, of the federal, state, and local governments, DOE, and SNL. Adhere to safety rules and regulations and access restrictions and emergency egress procedures that are unique to the Contractor’s work at SNL-controlled premises, as defined in the following sections of this specification, the Contract documents, and as determined through consultation with the SDR. SNL conducts routine work site observations to identify safety and environmental regulatory non-compliances and opportunities for improvement, and it reports non-compliances to improve safety program performance. These observations and the information gathered for trending and analysis are critical to the success of SNL’s construction program.

B. Flow Down of Requirements

The Contractor shall flow down the requirements identified in this specification to all subcontractors and visitors for all tiers. The Contractor is responsible for ensuring that all subcontractors are familiar with this specification and diligently execute work consistent with the requirements and guidance specified herein. The Contractor shall validate that these requirements are accurately and completely flowed down to all subcontractors through training, orientation, direct observation, and other performance assurance methods.

SNL personnel reserve the right to validate that subcontractors are knowledgeable about the CSSP requirements applicable to their work and that the work is being performed in accordance with a documented safety plan, as well as to stop work and resolve any non-compliance with applicable ES&H requirements for this contract and for subcontracts for all tiers associated with this contract.

* + 1. Contractor Safety Officer

The Safety Officer shall ensure compliance and implementation of requirements in the CSSP and may or may not be the designated “competent person” as prescribed by 29 CFR 1926. The proposed Safety Officer shall be subject to acceptance by SDR based on the scope of work, anticipated hazards, and training and experience that meet the following minimum requirements:

* + - 1. Education: Two-year degree with course work in occupational health and safety, industrial hygiene, environmental engineering, or related field. Documented experience in safety inspection and coordination may be substituted on a year-for-year basis in lieu of formal course work.
      2. Experience: Two years of documented experience in safety inspection and coordination.
      3. Shall be knowledgeable of the following:
         1. Principles and practices of industry and construction site safety
         2. Safety and occupational health laws and procedures
         3. Methods of assessing safety hazards and controls
         4. Hazardous material storage and transfer procedures
         5. Emergency preparedness activities
    1. Competent Person

When required by the Occupational Safety and Health Administration (OSHA) to provide a competent person, the following shall be completed prior to starting work requiring the competent person to:

* + - 1. Identify the competent person.
      2. Submit competent person’s credentials, which may include a Professional Engineering license when required by 29 CFR 1926.
      3. Be on site when duties are required.
    1. Contractor Superintendent or Delegate

Site supervision is critical to the safety and success of construction activities, a key role in the ISMS process, and a contract requirement. The core principle is that the SNL subcontractor owns the safety of the worksite, and the Superintendent job aid is used to support a pre-work evaluation of the activity and to ensure that delegation of that responsibility is formal and includes a pass-down of all safety-related considerations for the work. The process ensures promotion of hazard awareness, understanding, and work management as site conditions change to ensure work meets the expectations for safety and quality.

During periods of active construction, the Contractor must have a designated representative on the construction work site who has the following responsibilities:

* + - 1. Superintendent or Delegate shall be knowledgeable of the work activities they oversee and the project’s hazards and have full authority to act on behalf of the Contractor.
      2. The superintendent shall perform a daily pre-work evaluation of subcontractors using a tool such as the Facilities Superintendent Job Aid checklist provided in Appendix B to ensure the following:
         1. Knowledge of CSSP safety requirements that are applicable to their work.
         2. An evaluation of how these safety requirements will be implemented.
         3. Plan for how the requirements will be assessed, periodic management surveillances, supervisor pre-job briefs, and assessments.
      4. Superintendent or Delegate shall perform frequent and regular inspections of the construction work site to identify and correct any instances of non-compliance with the CSSP. Superintendent or Delegate shall document the inspections, including any non-compliance and corrective action taken. The CSSP shall describe the Contractor’s methods for performing and documenting these workplace inspections. An example of an acceptable documentation method would be documenting the inspection in the Superintendent’s daily logbook. The documented inspection shall be maintained for the duration of the contract and made available for review upon request by the SCM or SDR.

4. Workers of all tiers shall be instructed to report hazards not previously identified or evaluated to the Superintendent or Delegate. If immediate corrective action is not possible, or the hazard falls outside of project scope, the Superintendent or Delegate shall perform the following:

* + - * 1. Immediately notify affected workers.
        2. Post appropriate warning signs.
        3. Implement necessary interim control measures.
        4. Notify the SCO of the action taken.
      1. A Contractor responsible for high-risk work shall ensure that an evaluation of superintendent qualifications has been performed to ensure knowledge of the CSSP and contract requirements for safe execution of activity-level work. If the superintendent is changed during a project, the Contractor shall resubmit the superintendent qualifications for SNL review.

6. Contractor and subcontractors shall certify on the SNL/NM Facilities Contractor Badge/Clearance Request Form that employees have received the following training:

* + - * 1. 10-hour OSHA training
        2. Training for Standard Specification Section 01065, “ES&H for Construction Contracts”
        3. Contractor’s CSSP

Contractor is responsible for ensuring Subcontractors have received the above training prior to being authorized to perform work.

* + 1. Contractor Safety Program Self-Assessment

The Contractor shall perform one written self-assessment of one element of its safety program per quarter. Examples of elements for self-assessment are training compliance, ladder inspection, fall-protection program, BBS observations, and review of documented safety inspections. These self-assessments shall be made available for review upon request by the SCM or SDR.

* + 1. SNL Safety Oversight and Compliance Monitoring

SNL personnel have the authority to conduct reasonable observations and investigations for oversight purposes, including but not limited to ensuring compliance with applicable SNL, federal, and state regulations related to worker safety, as well as health and environmental regulatory compliance including but not limited to review of worker training records, environmental (area) sampling, and attachment of personal sampling equipment/devices, such as dosimeters, pumps, and badges, to construction contract personnel to monitor or measure exposures. Monitoring results shall be provided to the Contractor.

## Contract-Specific Safety Plan

A. General

The CSSP shall state the nature of the work, potential hazards anticipated, and how these hazards will be mitigated and how workers, including subcontractors, service providers, area/building occupants, site visitors, and/or pedestrians in the vicinity of the construction activities will be protected from hazards for each separately definable construction activity (e.g., excavation, foundations, structural steel, electrical, and roofing).

* + - 1. CSSP: Address OSHA CFR 1926, American Conference of Governmental Industrial Hygienists (ACGIH), and SNL-specific requirements. SNL requirements are identified in Section I and Section II (Standard Terms and Conditions) of the Contract, Uniform Construction Package (UCP), JSHE, and this Specification. All requirements and recommendations identified in the JSHE shall be considered part of the CSSP unless an alternate hazard control/mitigation for the identified hazards has been submitted by the Contractor and accepted by the SDR.
      2. The Contractor may incorporate subcontractors’ CSSPs into a single CSSP package and submit for review and approval (any differences between the Contractor’s safety plan and the subcontractors’ safety plans shall be addressed prior to submitting the package for review). Example: The General Contractor may want to include electrical subcontractor’s safety plan sections involving NFPA 70E arc flash and lockout/tagout (LOTO) for electrical hazards.
    1. Review Frequency

A CSSP shall be approved for a maximum of three years. A CSSP review period may be extended for up to one additional year by written approval of the SDR. An approved CSSP shall be reviewed and updated as needed when there is a significant change to the 01065 specification requirements impacting the adequacy of the CSSP. An approved CSSP shall be reviewed by the contractor annually and updated as needed to ensure the CSSP covers all planned work, associated hazards, and required hazard controls and to incorporate changes to the 01065 specification.

C. Hazard Mitigation or Protection

Conform to requirements of this specification as applicable to the work activity/task being performed. Mitigation or protection shall meet the intent of 29 CFR 1926 and 29 CFR 1910, as applicable. SNL ES&H requirements that exceed the requirements of 29 CFR 1926 or 29 CFR 1910 are identified in this specification.

* + - 1. Address hazards that exist at SNL project site where work will take place. Include hazards identified in the SNL JSHE, as well as hazards that are introduced to the project by the construction process. Include protective measures (e.g., scaffolding and shoring, as required) identified by a Professional Engineer or other professional.
      2. Contractors performing work at SNL facilities shall identify carcinogens that may be introduced to the project by the construction work. Carcinogens may be identified in the CSSP by including a listing of products or Safety Data Sheets (SDSs) that contain carcinogens.

D**.** Hazard Communication

Identify methods (including safety meetings) to inform workers, regardless of tier, of the nature of work, potential hazards anticipated, and how these hazards will be mitigated, or how workers will be protected from hazards, focusing on CSSPs, prior to commencement of work activities and/or tasks. Hazard communication to workers will include a clear link between the work activity/task, the hazards identified for the work activity/task, and the mitigation controls that will be implemented to protect personnel in the area, the worker performing the work activity/task, and the environment from the identified hazards. Documentation of hazard communication shall be maintained, identifying workers’ names, dates of communication, activities, and/or tasks, hazards, and controls identified.

1. Contractors shall provide an inventory of all chemicals or chemical products anticipated for use on the project. The Contractor shall describe how the chemical or chemical product will be used and the controls that will be established to ensure they do not present an exposure hazard to construction workers or collocated SNL Members of the Workforce. An exemption to this requirement is consumer products used in the same form, quantity, and concentration as a product packaged for distribution and use by the general public (such as Windex®, Simple Green®, and WD-40® in packages sold for use by the general public).

1. Site Control

The Contractor is responsible for the safety of personnel on the construction job site and shall ensure that persons working or visiting the job site comply with safety requirements identified in the CSSP. Ensure that Contractor and Subcontractor employees and visitors on the project job site wear the necessary personal protective equipment (PPE). Minimal PPE requirements for all SNL construction work areas are:

* ANSI Z87 Safety Glasses with Side Shields
* ANSI Z89.1 Head Protection
* ANSI Class 1 High Visibility Apparel, which shall be worn during all activities that perform traffic operations, heavy equipment movement, or for activities identified in the Contractor’s CSSP.
* Protective footwear that complies with 10 CFR 1926.96 shall be worn when the PTP hazard assessment identifies a foot hazard. Hazards could include injuries due to falling or rolling objects, objects piercing the sole, or when the use of protective footwear will protect the affected employee from an electrical hazard, such as a static-discharge or electric-shock hazard, that remains after the Contractor takes other necessary protective measures.

Contractor has responsibility and authority to deny access to any person entering a construction site if they do not have appropriate PPE. A 100 percent PPE usage rule is employed at all times during performance of work for SNL construction work, unless a written waiver is obtained from SDR. Visibly post the waiver at the job site or have the waiver in possession during performance of work.

* + - 1. **Disciplinary Process:** TheCSSP shall include how the Contractor and Subcontractor disciplinary processes apply to workers who fail to comply with the requirements of the CSSP.

1. Emergency Action

The Contractor shall be responsible for transporting personnel with non-life-threatening injuries that require medical attention to local medical facilities identified in the CSSP. Use form SF 2050-P*,* “Report of Occupational Injury/Illness.”

1. Accident Scene Preservation

Accident scene preservation shall be implemented following any accident or incident event that involves one or more personnel injuries, events that involve emergency or non-emergency notification (911 or 311 notifications), and events that activate local emergency response equipment (fire alarms, air monitoring equipment alarms, evacuations signals, and near miss accidents that could have resulted in injuries or damage to SNL equipment and facilities). Following an event, the Contractor shall safe the scene if they are trained and equipped to do so safely. Once in a safe configuration, all attempts shall be made to preserve the scene for investigation and development of lessons learned.

Personnel on the site shall make every effort to preserve the accident scene until the SNL Incident Commander (IC), Safety Engineer, SCO, or SDR arrives onsite to assume control of the area.

1. CSSP Documentation

The Contractor shall keep onsite a copy of the approved CSSP, AHA, JSHE, SDS, and any additional project-specific work planning documents required to plan and control foreseeable hazards on the project. Keep onsite documentation demonstrating personnel have received training on the CSSP to ensure all affected personnel are informed of foreseeable hazards and the requirement to follow protective measures. The CSSP shall be available to subcontractors, SCOs, and SNL construction safety personnel.

1. Safety Plan Addendum

Before work activity is performed that involves hazards that were not addressed in the original CSSP, submit an addendum to the CSSP in the form of a modification for acceptance. New hazards may result from changes to the scope of work or unexpected site conditions. The addendum shall identify mitigation or control for a new hazard as described in the “Contract-Specific Safety Plan” section above.

1. Pre-Task Planning

The PTP is a daily analysis tool for Contractors and Subcontractors to use to identify hazards and controls associated with the planned scope of work to be performed during the day. The PTP shall clearly define the planned scope of work and the sequence of activities needed to complete the planned scope of work. The PTP shall also identify the hazards and controls that will or may be encountered while performing planned activities. The PTP shall clearly associate hazards and their corresponding controls with the sequence of activities.

Special attention should be given to potential hazards not specifically covered in the CSSP and other pre-work planning, newly emerging hazards, or hazards resulting from a change in the scope of work. A PTP shall be conducted daily and revisited if conditions or personnel change. Documents such as checklists or permits, or knowledge (such as training) that identifies and plans for the mitigation of hazards associated with a task, can be referenced. A task is a specific segment of a particular scope of construction work that is time-, condition-, worker- and/or location-dependent.

Critical thinking shall be utilized during this part of the analysis. A focus on what could go wrong during the day, such as weather, and changes to the process and personnel, need to be evaluated regularly. The PTP shall be developed with participation by all workers on the activity and to ensure a common understanding of the authorized scope of work and how the tasks will be accomplished. The PTP development process should establish a shared accountability for safety among the work team (e.g., “see something, say something”). Contractors are required to notify the SNL construction team (SCO, SCM, SCI) in advance of performing high-risk activities. In the event the Contractor is performing a high-risk work evolution during the day, the SCM, SCI, SCO or alternate SNL representative shall review the PTP daily.

For work involving multiple tiers of Subcontractors, the Subcontractor shall review the authorized scope of work of each PTP to ensure it matches the contractually authorized scope of work. For time and material contract activities, the contractually authorized Statement of Work (SOW) shall be attached to the corresponding PTP to ensure the SOW on the PTP is authorized work and is approved by the Contractor Superintendent. Additionally, for time and materials contracts, the Contractor shall conduct oversight and assessment activities to include review and approval of all PTPs prior to initiating construction activities; maintain onsite oversight while construction activities are being performed; and conduct documented daily safety assessments.

1. High-Risk Work

High-risk work is defined as work that may result in serious personal injury or a fatality if performed improperly. The increased risk is based upon characteristics inherent in the work task, location, materials, or proximity to other hazards. High-risk work activities include the following:

* Critical crane lifts
* Excavation within five feet of known hazardous energy utilities (electrical, natural gas, other pressurized systems, etc.) or personnel entry into an excavation > 5′ in depth
* Energized electrical work
* Work within ten feet of aerial high voltage power lines (> 50kV)
* Wall, floor, or ceiling penetrations where a site investigation cannot identify all potential hidden hazards
* Permit Required Confined Space entry
* Roof work within six feet of an edge not protected by standard guardrails, parapets, or similar physical barriers.
* Elevated work without the use of an approved ladder or engineered fall-protection system greater than six feet above a lower level or within 15 feet of an unprotected side or edge for all construction trades, excluding roofers. For roofers, the requirement is within six feet of an unprotected side or edge. The use of an approved ladder or engineered fall-protection system shall be documented in the CSSP.

Work activities that have been determined to be high-risk activities require the Contractor to prepare and submit to SNL for approval a task-specific AHA. The task-specific AHA shall identify the appropriate hazard mitigation methods (e.g., engineering, administrative, PPE) for all work steps associated with the evolution. Controls should be based on the hierarchy of controls, as feasible. Any required supporting documents (e.g., permits, procedures, engineering calculations) shall be attached to the AHA and when a documented and approved safety plan is required for high-risk activities.

The Contractor Safety Representative shall provide oversight for the high-risk work and shall have specific training or experience for the type of high-risk work being performed. The AHA shall specify the level of oversight that is to be provided by the Contractor.

A minimum of two persons shall be present for high-risk work activities and shall have the ability to make notifications should an emergency response be needed. The individual providing oversight for high-risk work cannot be a worker for the high-risk work evolution.

## Jobsite Hazard Evaluation (JSHE)

A.General

This work site has been evaluated by SNL personnel for non-standard, industrial, ES&H concerns or conditions that preexist and may affect methods and procedures in the performance of work. Examples of pre-existing hazards may include but are not limited to laboratory chemicals, radiological material, asbestos, mold, beryllium, and lead.

* + - 1. A documented JSHE is included with contract documents for construction work when pre-existing, non-standard, industrial, ES&H concerns have been identified. The documented JSHE does not include hazards that may be introduced during execution of work necessary to meet Contract “Statement of Work.”
      2. Hazards introduced in performance of work shall be evaluated and mitigated in accordance with existing federal, state, and local regulations, including 29 CFR 1926, 29 CFR 1910, and applicable provisions of this Section.

B. Identified Pre-Existing Conditions

Take precautions for pre-existing conditions identified on the jobsite, per the JSHE attached in the Contract documents. Do not proceed without full knowledge and understanding of these conditions. If a corresponding description or identified paperwork or permit is not attached for the identified hazard, contact the SSP immediately. Additional requirements for work in radiological posted areas are found in Section 3.2E.

C.Unidentified Hazard

If a hazard is encountered during the performance of work that has not been identified, contact the SCO or SDR for specific requirements prior to performing work that might affect the condition or concern.

## Event Notification

1. Emergency Events

If the event is an emergency, call 911 on any SNL telephone or (505) 844-0911 on an outside/cellular telephone. After calling for emergency support, the Contractor shall contact the SCO, SCM, SDR, or SPM as soon as possible, but not later than 2 hours following the event. All calls must include person-to-person contact (a voice message is not sufficient).

1. Non-Emergency Events

If the event is not an emergency, the Contractor shall contact the SNL non-emergency number by calling 311 on any SNL telephone or (505) 844-0311 on an outside/cellular telephone. Contact the SCO, SCM, SDR, or SPM as soon as possible, but not later than 2 hours following the event.

1. General

When the Contractor becomes aware of an event that could adversely impact workers, the public, or the environment, or cause unplanned disruptions of normal operations, the Contractor shall barricade, as appropriate, to ensure workers and pedestrians in the area are not exposed to a hazard and notify the SCO, SCM, SDR, or SPM of the event (when in doubt, report it). Leaving a message on voicemail or sending a page does not meet this requirement of notification; the Contractor must speak to the SCO, SCM, SDR, or SPM.

To report an injury, regardless of OSHA recordability, use form SF 2050-P, “Report of Occupational Injury/Illness,” available on the Corporate Forms website.

1. Exposure

When the Contractor becomes aware of any monitoring results that indicate personnel exposure to chemical, biological, or physical hazards are above limits established by OSHA or ACGIH, the Contractor shall notify the SCO, SCM, SDR, or SPM as soon as possible. Leaving a message on voicemail or sending a page does not meet this requirement of notification; the Contractor must speak to the SCO, SCM, SDR, or SPM.

**Note:** Ensure barricading is installed as appropriate to provide awareness and protection to workers and pedestrian or vehicle traffic in the vicinity of the event.

## Suspension of Work

1. General

All employees, Contractors, and visitors have the responsibility and authority to suspend inappropriate or unsafe work activities/tasks when those activities/tasks present clear and imminent danger to employees, Contractors, visitors, the public, or the environment. Personnel may suspend activities/tasks they observe or in which they are a participant, if they believe the activities/tasks present an imminent danger. To conduct this properly, we must understand the design intent and technical basis for the activity and controls. Each Contractor shall communicate the unacceptable consequences for work at this site.

Upon receiving a suspension of work request (oral or written), immediately cease the activity/task and notify the SCI or SDR. Obtain the name and telephone number of the person requesting the suspension and the reason for the suspension of work. Work shall not continue on that activity/task until the issue has been resolved. The SCI or SDR may restart the activity/task only after review and approval of the oral or written response submitted by the Contractor.

1. Stop Work Order

A Stop Work Order that affects the crew for a period greater than 1 hour shall be followed by issuance of a formal written Stop Work Order. Work may be restarted only with written work release from the SSP. A Stop Work Order shall include the following information:

1. Date and time when work was stopped
2. Reason for work stoppage
3. Requirements for Contractor to resume work
4. Date and time when SNL expects corrective actions to be completed, if required
5. Work Release

SSP shall provide a written work release that includes the following:

* + - 1. Reference to the Stop Work Order
      2. Reason for work stoppage
      3. Conditions for restart of activity/task
      4. Specified date and time when work may resume

1. Hold Work Order

A Hold Work Order is a document issued through the contract that prevents work on some future task. This is a planning tool to require further evaluation of a condition or plan before a task is performed. For example, a Hold Work Order may be issued prohibiting the pouring of concrete until the rebar mat is inspected. A Contractor shall not perform the work described on the Hold Work Order until the signature of a Release Authority is obtained. Any Hold Work Orders issued shall be available onsite while applicable to the project being worked. The Hold Work Order does not affect any other restrictions listed elsewhere in this document. The Hold Work Order is not a Stop Work Order.

## Integrated Safety Management System

1. General

SNL personnel are committed to performing work safely and ensuring the protection of employees, the public, and the environment. To support these commitments, SNL personnel employ an ISMS, which provides the framework for this specification, and the requirements established for contracted construction work at SNL.

1. ISMS Guiding Principles

The following guiding principles are the cornerstone of an effective safety management program:

* + - 1. Contractor Management Responsibility for Safety: Contractor management is accountable for the protection of the public, workers, and environment.
      2. Clear Roles and Responsibilities: Clear and unambiguous lines of authority and responsibility for ensuring safety are established and maintained at all organizational levels within the company and its Subcontractors.
      3. Competence Commensurate with Responsibilities: Personnel possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.
      4. Balanced Priorities: Resources are effectively allocated to address safety considerations. Protecting the public, workers, and environment is a priority whenever work is planned and performed.
      5. Identification of Safety Standards and Requirements: Before work is performed, associated hazards are evaluated and an agreed-upon set of safety standards and requirements are established, which, if properly implemented, provide adequate assurance that the public, workers, and environment are protected from adverse consequences.
      6. Hazard Controls Tailored to Work Being Performed: Administrative and engineering controls to prevent and mitigate hazards are tailored to the work and associated hazards.
      7. Operations Authorization: Conditions and requirements to be satisfied for operations to be initiated and conducted are clearly established and agreed upon.

1. Apply the ISMS work cycle shown in Figure 1.1 at the task or activity level for construction assignments. Depending on the size and complexity of the work activity/task, some elements of the work planning phase may not be used formally.
   * + 1. Refer to Section I of the Contract for specific requirements for pre-bid visits and conferences. The Contractor has the responsibility to visit the project site and submit questions about ES&H-related issues that may affect Contractor cost or performance prior to bid.
       2. Table 1.1 provides requirements for demonstrating effective safety management during the execution phase of this Contract.

|  |  |
| --- | --- |
| star1 | * **Plan Work:** Contract requirements are translated into work, expectations are set, activities and/or tasks are identified and prioritized, and resources are allocated. * **Analyze Hazards:** Hazards associated with the work are identified, analyzed, and categorized. * **Control Hazards:** Applicable standards and requirements are identified. Controls to prevent or mitigate hazards are identified; CSSPs are developed and controls are implemented. * **Perform Work:** Contractor’s readiness to perform contract work is confirmed and work is performed safely. * **Feedback and Improve:** Feedback information on the adequacy of controls is gathered, opportunities for improving the definition of planning of work are identified and implemented, oversight is conducted, and when necessary, controls are modified to ensure a safe work environment. |

Figure 1.1 ISMS Work Cycle

*Table 1.1 Engineered Safety and ISMS Contractor Requirements*

| Work Cycle Phase | Contractor Requirements | Expectations |
| --- | --- | --- |
| **Plan Work** |  |  |
| Review of SNL Jobsite Hazard Evaluation Checklist | Understand existing conditions and controls that might affect worker safety and health. | Contractor will review JSHE and incorporate existing site hazards and controls into its CSSP. |
| Prebid Site Visit and Review Design Intent | Identify potential job and site hazards and hazard combinations. | Contractor will review its potential hazards and determine the effect on existing SNL hazards.  Contractor will document how the combination of hazards will be controlled in its CSSP. |
| Prebid Conference | Resolve emergency-preparedness responsibilities and other safety issues not identified in Request for Quote. | Contractor will identify emergency action plan and document it in the CSSP. |
| Bid Submission | Commit adequate level of resources for job conditions. | Contractor will ensure adequate competency and level of resources are available and provided as submitted in bid. |
| **Analyze Hazards** |  |  |
| Job Safety Analysis and Risk Assessment Approach | Evaluate job-specific activity/task and site-specific work requirements and hazards. | Contractor will review work requirements and hazard controls. Task hazard analysis shall be performed for high-hazard tasks (e.g., confined-space entry, critical lifts, hot work, excavation, penetration, energized electrical work, or respiratory protection). Ensure estimates of low probability of occurrence do not dominate early decision-making since human nature and external pressures tend to minimize the use of what would otherwise be sensible controls based on the severity of accident consequences. |
| SNL Hazard Information | Request and incorporate hazard identification and hazard control information supplied by SNL personnel. | Contractor will ensure that information from the JSHE is incorporated into its CSSP. |
| Job Task Analysis and Understanding the Technical Basis | Resolve job assignment and personnel fitness issues. | Contractor will ensure that workers have the appropriate training and skills for assigned tasks. The technical basis of an existing hazardous activity must be reconstructed sufficiently to ensure continued safe operations. The effort will be prioritized according to the severity of potential accident consequences. |
| Pre-work Evaluation of Subcontractor Work Team | Evaluate Subcontractor work group’s knowledge of CSSP safety requirements applicable to their work and how the requirements will be implemented. | Contractor will ensure that Subcontractor workers have the appropriate awareness of the CSSP safety requirements and can demonstrate how they will be implemented for assigned tasks. |
| **Control Hazards** |  |  |
| Safety Program and Define Unacceptable Consequences | Identify company safety management policies, processes, and procedures. Ensure there are clear responsibilities for accepting and suspending work. | Contractor’s Safety Program will be complete and contain its company-specific safety information. Unacceptable consequences include the following:   * Accidents that result in a serious occupational injury * Significant violation of environmental regulations * Unplanned facility outages or interruptions that significantly impact critical mission work |
| CSSP – Identify and Control Hazards | Address all contract-specific safety requirements and protective measures, including combined requirements and combined controls. | The CSSP will incorporate company-specific information from the company safety program as well as contract-specific requirements.  The CSSP will document how the combination of company-specific hazards and contract-specific hazards will be controlled.  The Subcontractor’s addenda will be incorporated into the Contractor’s CSSP.  The CSSP will identify methods used by the Contractor to perform oversight and self-assessment of compliance with the CSSP. |
| Preconstruction Meeting (as appropriate) | Participate in preconstruction meeting with intent of understanding conditions/restrictions identified on the hazard evaluation checklist. | The Contractor, Subcontractors, and workers are aware of their responsibility to review the Contractor’s safety program and CSSP prior to the start of work and as needed. |
| Hazard Awareness and Identifying and Controlling Energy Sources | Ensure employees, Subcontractors, and suppliers are informed of foreseeable hazards and protective measures associated with work activities, as appropriate, prior to initiating work. Ensure superintendent is qualified and has knowledge of the CSSP and contract requirements. | Supervisors are responsible for ensuring that work activities, work hazards, and work controls are clearly linked and flow down to all workers regardless of tier through documented training, safety meetings, toolbox talks, and pre-task meetings.  For all high-risk work, the Contractor shall submit PTPs to SNL personnel for daily review and approval as scope changes.  For projects that involve high-risk work, the Contractor shall submit evidence to SNL of the review of superintendent qualifications, ensuring they have knowledge of the CSSP and contract requirements for safe execution of activity-level work. If a superintendent is changed during a project, the Contractor shall resubmit evidence of superintendent qualification for SNL review.  For all high-risk projects, the contractor safety letter shall state that the Contractor will have a Contractor safety representative or delegate present the following topics at the pre-construction meeting:   1. A detailed list of activities that constitute the scope of the project. Emphasize that for any change in scope, the change may not be started until approved by the SCO. 2. When to pause or stop work, including pause/stop for scope changes. 3. The specific sections of the CSSP that apply to the project. 4. The high-risk activities to be performed during the project. 5. The PTP form, PTP requirements, and expectations for PTP use.   Subcontractors and their workers will be knowledgeable about the Contractor’s CSSP.  Workers attend documented safety meetings, toolbox talks, and pre-task meetings as required; positive verification is required.  Workers are familiar with the hazards and work controls that result in safe working conditions. Stored energy must be identified and controlled with appropriate engineered and administrative controls designed to prevent or mitigate the consequences of accidental release. Kinetic, potential, electrical, electro-mechanical, thermal, pressure, and chemical are examples of energy sources that can be released directly or in another form as the result of an accident. |
| Work Authorization | Ensure that safety plans/corrective action plans are reviewed, and work is authorized prior to initiating work or corrective actions. | The Contractor will obtain and follow all permits as required by SNL personnel. Permit information will be flowed down to Subcontractors and affected workers during documented toolbox talks, PTPs, and safety meetings.  Corrective actions will be completed as required. |
| **Perform Work** |  |  |
| Job Supervision and Positive Verification | Ensure that Contractor management provides appropriate safety supervision to all workers at all times. | Supervisors assume responsibility for the safety of the work site and workers. When unanticipated hazards or environmental risks are introduced, work will be paused until revised work planning, hazards, and environmental effects are analyzed and any additional controls are documented and approved, as appropriate. Positive verification requires that each team member affirm to the person in charge that their part of the system is in the state intended for safe operation. This can be done during pre-task analysis for less complex operations. If the team does not have concurrence, it should be assumed by the person in charge that it is not safe to proceed. |
| Safety Inspections | Conduct and document daily workplace inspections, with or without SNL personnel, to identify and correct hazardous conditions and instances of non-compliance with safety plan/requirements. | Supervisors are responsible for ensuring that daily inspections are documented, and immediate action is taken for all identified non-compliance issues. |
| Emergency Response | Ensure that all personnel at the work site can recognize abnormal or unsafe conditions and know how to respond (e.g., “what-if scenarios”). | Train workers to recognize abnormal or unsafe conditions and understand how to respond to the conditions by controlling and reporting the condition. Every worker understands they have the responsibility and authority to suspend an activity/task if the worker believes it presents an imminent danger. |
| Corrective Actions | Implement interim controls for unsafe or abnormal conditions, including notification to workers and SDR. | The Contractor has controls in place to immediately address unsafe or abnormal conditions. |
| **Feedback and Improve** |  |  |
| Self-Assessment | Identify opportunities for safety process and work performance improvements. | The Contractor will review daily inspection reports, lessons learned, and injury/illness reports to identify areas that require improvement. |
| Performance Reviews | Discuss performance strengths and weaknesses with employees and Subcontractors. | Information on strengths and weaknesses will flow down to Subcontractors and workers. |
| Assessment of Pre-Task Plans | Review and discuss the quality and effectiveness of in-process and completed PTPs with employees and Subcontractors. | The Contractor will review Subcontractor pre-work assessments, PTPs, etc. to determine if CSSP requirements are communicated to Subcontractor personnel. |
| SNL Feedback | Communicate suggestions for SNL improvements to the SDR. | The Contractor will provide updated information and/or suggestions to the SDR that will add value to ongoing improvement programs.  The Contractor will provide a means for workers to report unidentified or uncontrolled workplace hazards. |

## 

## Worksite Identification

1. Construction Safety Bulletin Board

Provide and maintain a weather-tight safety bulletin board in a visible location. The bulletin board shall be used only to post official announcements.

1. For projects under $50,000, provide and maintain a legible, durable, and weatherproof 8-⅛-inch by 11-inch sign in a visible location with the following information:

* + - * 1. Company Name
        2. Superintendent Name
        3. After-Hours Telephone Number
        4. SNL Contract Number
        5. SNL Contact Name and Telephone Number
        6. DOE-designated worker protection poster

2. For projects over $50,000, in addition to the information required above (Section 1.12A.1), the bulletin board shall also include the following:

* + - * 1. Equal Opportunity Posters
        2. Employment Standards
        3. Project Davis-Bacon Wage Decisions
        4. Contractor’s Accident Prevention
        5. Fire Prevention
        6. Emergency Phone Numbers
        7. First Aid Plan
      1. For all projects, an SNL-reviewed copy of Contractor’s CSSP must be readily available at project site.
    1. Hazard Identification Signage and Barricades

Provide appropriate hazard identification and barricades in accordance with 29 CFR 1926 to warn Contractor personnel and worksite visitors of specific work hazards and to communicate safe bypass information to non-construction personnel in the vicinity of the site. Prior to the start of work, ensure personnel onsite know and understand SNL signage that might be present onsite during performance of work.

* + - 1. Use flagging and tape barricades only for temporary or interior protection, unless otherwise accepted by the SCO. Use orange safety fencing or snow fencing around excavations and trenching. Fencing shall be a minimum of 4 feet high (1.2 meters high) and secured vertically every 10 feet (3 meters).
      2. Provide signage in compliance with 29 CFR 1926. Protect unattended sites with applicable signs and barricades at all times.
    1. Documentation

The following documents shall be available for review at each project site:

* + - 1. Project plans, specifications, and work authorizations
      2. All required permits
      3. CSSP
      4. SDSs for onsite chemicals

# Products (Not Used)

# Execution

## Coordination of Work Affecting Ongoing SNL Operations

1. Overhead Work

Schedule work required to be performed above occupied areas for non-standard hours, unless specific and approved precautions, including signage, barricades, occupant consent, and any other precaution deemed necessary by SNL, is provided in advance of operation. Final approval for work in occupied areas during normal work hours must be received from the SDR.

1. Utility or System Outages

Submit to the SCI an Outage Request Worksheet in advance of activity/task requiring utility or equipment shutdowns that affects ongoing SNL operations, observing the advance-notice requirements thereon.

1. Removal of Administrative Tags

SNL personnel may use locks and/or tags to prevent unauthorized use of or access to equipment or systems. These locks and/or tags are not used for LOTO purposes (protection during the maintenance and servicing of equipment). The Contractor shall obtain permission from the SCI prior to removing any administrative lock and/or tag.

1. Use of SNL-Owned Equipment or Personnel for Contracted Activities

When SNL-owned or operated equipment or SNL personnel are used in the execution of Contractor construction activities, a formal job plan authorized by the SNL SDR, SNL Facilities management, and other involved SNL management is required. The job plan shall identify oversight requirements when joint activities are conducted and shall include a review by Center 600 safety engineering subject matter experts (SMEs) as needed.

## Medical/Health Protection

A. Occupational Medicine Program

Contractors at all tiers who are onsite for more than 30 work days in a calendar year or have employees who are enrolled for any length of time in a medical or exposure-monitoring program required by the 10 CFR 851, Worker Safety and Health Program rule and/or any other applicable federal, state, or local regulation shall have an Occupational Medicine Provider (OMP). Please see Appendix A, Occupational Medicine Services for more information.

* + - 1. Contractors shall submit the name of a credentialed provider, including the company name, address, telephone number, and the name of a management contact for their OMP in their Safety Plan. Complete a “Declaration of Occupational Medicine Provider.”

1. Emergency Action

For life-threatening injuries or illnesses, immediately call for medical assistance by dialing 911 on an SNL telephone or (505) 844-0911 on an outside/cellular telephone at the Albuquerque site. Emergency medical transport is available, 24/7. Contractors are eligible to arrange for emergency medical transport and first-aid at the Sandia Medical Clinic, 7:30 AM – 5:00 PM weekdays. These arrangements must be planned in advance and incorporated in the contractor CSSP and/or workplace safety documents such as an AHA. When considering the use of Sandia Medical Clinic for first-aid contingency planning, be sure to account for your work schedule and the response time of the SNL paramedics and ambulance services.

* + - 1. Post medical and non-medical emergency telephone numbers conspicuously at the project site. Ensure that all employees are aware of medical and non-medical emergency telephone numbers. Placards with emergency telephone numbers can be obtained from the SNL construction office.
      2. Electrical Shock: Accompany any employee that receives an electrical shock above 50V and when a worker is exposed to arc-fault/arc-flash when not wearing the required PPE to the SNL medical facility during standard working hours for immediate medical attention, no matter how minor the shock appears. During non-standard hours, seek medical attention at an offsite facility. Notify the SCO or SDR immediately after transporting the individual to SNL Medical.
      3. Transport personnel with non-life-threatening injuries or illnesses that require medical attention to the Contractor’s identified medical facility.
      4. Notification of Accidents, Injuries, and Illnesses: Verbal notification to the SDR or SCO shall be performed as soon as possible. Submit form SF 2050-P, “Report of Occupational Injury/Illness” to the SDR within three days. The form is available on the Corporate Forms website.
      5. Other
         1. Non-Emergency Medical Incident: Notify the SCM, SPM, SDR, or SCO as soon as possible.
         2. Serious or Life-Threatening Accident or Illness: Notify the SDR, SCM, or SCO immediately after taking emergency action.

1. Contractor's Industrial Hygiene Program

Assess worker exposure to reduce the risk of work-related disease or illness. Assess worker exposure to chemical, physical, biological, or ergonomic hazards through appropriate workplace monitoring (including personal, area, wipe, and bulk sampling), biological monitoring, and observation. Monitoring results shall be recorded. Documentation shall describe the activities, tasks, and/or locations where monitoring occurred; identify workers monitored or represented by the monitoring; and identify the sampling methods and durations, control measures in place during monitoring (including the use of PPE), and any other factors that might have affected sampling results. The Contractor shall be informed of the precautionary measures that need to be taken to protect workers during normal operating conditions of the workplace and in foreseeable emergencies; that is, the identification of inherent chemical, physical, biological, or ergonomic hazards in the workplace and the established corresponding control measures through the JSHE process (reference Section 1.8).

* + - 1. **General:** Comply with the current edition of the ACGIH TLVs for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs) when the ACGIH TLVs and BEIs are lower (more protective) than OSHA permissible exposure limits (PELs).

a. Contractors must submit a Written Exposure Control Plan for silica exposure that meets the requirements of 29 CFR 1926.1153 (g). Contractors may use the guidance document provided in Appendix E to help guide control selection for silica control plans.

**Note:** Applicable OSHA-expanded health standards shall be complied with, even when ACGIH TVLs are used.

* + - 1. **Gases, Vapors, Fumes, Dusts, and Mists:** Use engineered, administrative, or PPE controls to keep employee exposures within prescribed limits.
         1. Controls must be evaluated to ensure the appropriate level of protection to the worker.
         2. Equipment and technical measures used to determine an occupational exposure shall be performed by a technically qualified person and conform to current analytical methods.
         3. For all welding, cutting, and brazing operations, the Contractor is required to submit a completed “Contractor Welding, Cutting, Brazing Exposure Assessment Form” (SF 2001-WLD) to the Division ES&H Customer Support Team Industrial Hygienist.

The Contractor or Contractor’s qualified health and safety representative shall identify hazards and select and implement effective controls to ensure worker safety and health. Control measures (e.g., full face air-purifying respirators or local exhaust ventilation) may be required.

* + - * 1. The Division ES&H Customer Support Team Industrial Hygienist documents concurrence with the proposed control measures on the “Contractor Welding, Cutting, Brazing Exposure Assessment Form” (SF 2001-WLD).
        2. No work shall proceed without concurrence with the proposed control measures by the Division ES&H Customer Support Team Industrial Hygienist.
        3. Engineering controls equipment, such as local exhaust ventilation (LEV) devices, shall be appropriate for their use and operated to manufacturer requirements. This may include incorporation of fire-prevention features for hot-work applications or processes or gauges to ensure high-efficiency particulate air (HEPA) filters are operating within the effective range. When the Contractor AHA requires LEV units, the manufacturer and the serial number of the unit shall be identified. The Customer Support Team Industrial Hygienist can provide further criteria and examples of acceptable LEV units to help ensure units meet applicable requirements.
      1. **Physical Hazards:** This includes noise (sound pressure levels), ergonomics, lasers, non-ionizing radiation, and thermal stress.
         1. **Noise, non-ionizing radiation, and thermal stress:** Comply with ACGIH TLVs.
         2. **Lasers:** Comply with ANSI Z136.1, *Safe Use of Lasers.*

1. Class 1, 2, and 3a lasers may be used.
2. Do not use Class 3b or Class 4 lasers without the written approval of the SNL/NM site Laser Safety Officer.
3. When used for operations such as leveling floors, roads, and sidewalks, the laser beam shall not be directed above the horizon, through navigable airspace, or toward aircraft ground operations. The laser beam shall be backstopped with a non-reflective surface that is opaque (non-transparent) to the laser’s beam.
4. All outdoor laser operations other than described in 3.b (third bullet) must be reported to the SDR for SNL approval prior to laser operations being performed.
   * + - 1. Comply with ANSI Z88.2, *Practices for Respiratory Protection.*
5. Substance Abuse Prevention and Testing

Use of drugs (including misuse of prescribed substances) or alcohol onsite shall be grounds for removal of the individual from the work site and may include other corrective action, including contract termination.

1. Radiological Safety

Employees may not enter an area that contains a posted radiological sign, as signified by a radiation symbol on a yellow background with black or magenta markings, without prior authorization and SNL-provided training appropriate for radiological hazards. Performance of work in all radiological posted areas, including controlled areas and radioactive material areas (RMAs) and all work in Technical Area V, requires the Contractor to have a **Customer Work Release** (form 338) signed by the SNL space owner prior to initiating work.

* + - 1. If work is required in a posted area, and specific written instructions have not been issued, do not enter the area. Contact the SDR or SCO for instructions.
      2. A JSHE is not required for work in controlled areas or RMAs unless:
         1. Additional hazards (chemicals, biohazards, etc.) have been identified
         2. The area is posted for additional radiation hazards (i.e., radiation area)
      3. For performance of work in radiological areas posted as a radiological buffer area (RBA), radiation area (RA), high radiation area (HRA), very high radiation area, airborne radioactivity area (ARA), contamination area (CA), or high contamination area (HCA), ensure the following:
         1. A JSHE for work activity/task performed in radiological areas is obtained.
         2. Employees understand and follow JSHE requirements.
         3. Obtain a radiological Technical Work Document (rTWD), when required by the SNL Radiation Protection Department, and understand and follow the provisions and requirements.
         4. Employees shall be current on radiological training required for site or activity/task (e.g., General Employee Radiation Training, Rad-Worker I, or Rad-Worker II).
         5. Employee shall be 18 years of age or older.
         6. Comply with Contract requirements for work in radiological areas.
         7. Comply with the CSSP for work as reviewed by SNL representatives.
      4. **Dosimetry:** Workers with appropriate training and who have elected to work in radiological areas may be required to participate in SNL’s external and internal dosimetry monitoring program. Contractors participating in the dosimetry monitoring program shall ensure their Thermoluminescent Dosimeters (TLDs) are current. TLDs must be returned to the SDR for exchange by the last day of the quarterly expiration date. Failure to exchange in a timely manner may result in loss of the TLD.
      5. Each project involving use of an accountable radioactive source or radiation-generating device requires prior approval by SDR and SNL’s Radiation Protection Department. Examples of such devices include but are not limited to soil testing densitometers and XRF analytical devices for lead detection.
      6. For clarifications, contact the Radiation Protection Department or refer to the *Radiological Protection Procedures Manual (RPPM)*.

## Waste Management and Disposal

1. General Requirements

Construction project non-hazardous non-regulated waste shall be managed in accordance with Section 01 74 19, “Construction Waste Management.” Property items and equipment that may be reused for their intended purpose are not considered waste and shall be managed as U.S. government property. Waste generated during construction operations may be classified as regulated or hazardous waste. This section describes commonly generated waste types. Details for waste management are contained in Section 01 74 19.

1. Construction and Demolition Debris

As defined by 20 New Mexico Administrative Code 9.1, “Construction and demolition debris” means materials generally considered to be not water soluble and non-hazardous in nature, including but not limited to steel, glass, brick, concrete, asphalt roofing materials, pipe, gypsum wallboard, and lumber from the construction or demolition of a structure project, and includes rocks, soil, tree remains, trees, and other vegetative matter that normally results from land clearing. If construction and demolition debris is mixed with any other types of solid waste, it loses its classification as construction and demolition debris. Construction and demolition debris do not include asbestos or liquids, including but not limited to waste paints, solvents, sealers, adhesives, or potentially hazardous materials.

1. Residue Material and Equipment

Intact and dismantled equipment and material removed while performing construction operations shall remain the property of the government. If the equipment and material is not reused in the performance of the project, the Contractor shall manage it as residue material and equipment. All residue material and equipment shall be staged by the Contractor and evaluated for hazardous and radioactive contamination by SNL personnel before being delivered to the reapplication yard.

1. Empty Containers

Containers that held non-regulated products shall not contain any free liquid in order to be disposed as construction and demolition (C&D) waste.

Containers that have free liquid or previously contained hazardous material shall be submitted to the hazardous waste management facility.

As a best business practice, use as much material that can be removed from containers. Place a small amount of floor dry absorbent material (kitty litter, vermiculite, etc.) to assist in the collection of any remaining material in containers.

Used aerosol cans that contain any amount of propellant or product must be managed as hazardous waste. At SNL/NM, if an aerosol can is empty of propellant and product, is no longer pressurized, and does not contain residue of an acute hazardous waste, it is considered an empty container and may be disposed of as regular trash.

* + Do not spray out the remaining contents of an aerosol can for the sole purpose of emptying it.
  + Never puncture an aerosol can.

1. Lamps

Fluorescent, sodium, and incandescent lamps shall be removed from light fixtures and managed as regulated waste, but not as C&D waste. These items shall be boxed and labeled to identify the contents. Notify the Construction Manager to coordinate waste pick up.

1. Light Ballasts

Remove ballasts from all light fixtures and submit the residue material for characterization by the SNL ES&H team.

* + - 1. Ballasts clearly labeled “No-PCBs” shall be placed in a container for disposal.
      2. Ballasts that are NOT clearly labeled “No-PCBs” shall be managed as waste polychlorinated biphenyls (PCBs). Place waste [PCBs](https://info-ng.sandia.gov/cps/environmental_safety_health/policy/processes/procedures/ESH100.2.ENV.3.html) and [PCB items](https://info-ng.sandia.gov/cps/environmental_safety_health/policy/processes/procedures/ESH100.2.ENV.3.html) in a container that is capable of preventing the spread of contamination unless the PCBs are completely contained by the item, such as totally enclosed electrical equipment. Place waste contaminated items, such as PPE and rags, in a sealed plastic bag with a minimum 6-mil thickness to prevent the spread of contamination.
      3. Light fixtures installed prior to 1980, with evidence of ballast leaks, shall be removed and treated as waste PCBs.
      4. All waste PCBs must be double bagged or double wrapped with the words “Removed from Service on \_\_\_\_\_\_\_ (supply the correct date).”
      5. Notify the Construction Manager to coordinate waste pick up within 30 days.

1. Oil-Containing Equipment

Equipment containing oil or other petroleum products shall be drained of oil and managed as residue material. Drained oil shall be managed as either used oil for recycle or chemical waste if contaminated. Notify the Construction Manager to coordinate waste pick up.

1. Chemical Waste/Hazardous Waste

At SNL chemical wastes are managed as regulated or hazardous wastes. This designation applies to all chemical wastes, used oil, asbestos-containing wastes, and PCB-containing wastes as examples. Because of regulatory liability, National Technology and Engineering Solutions of Sandia, LLC (NTESS) assumes responsibility for management and disposal of chemical wastes. Chemical wastes shall be managed as hazardous waste, unless specific guidance is provided in the Contract. Coordinate hazardous chemical waste disposal through SNL’s ES&H team. The procedure for disposal of chemical/hazardous waste is as follows:

Coordinate all waste management activities with the SNL Construction Manager and ES&H waste management support. The following actions are required, and the ES&H team will provide support in the following:

* + - 1. All items must be inventoried.
      2. All containers need labels, and labels shall include contents, project number or name, and contact phone number.
      3. Notify the SCM that waste is ready for pickup as soon as possible.
      4. SNL personnel pick up the waste and determine the appropriate disposal method.

1. NORM Materials

Naturally occurring radioactive materials (NORM) used in commercial products that have measurable radioactivity above SNL-established policy (which includes State of New Mexico established limits) shall be managed as radioactive waste when declared waste and is not deemed for Reapplication. Some examples are as follows:

* + - 1. Chemicals with NORM
      2. Ceramic insulators (with some exceptions)
      3. Glass-containing thorium or uranium for coloring purposes
      4. Smoke detectors

1. Radioactive Waste

Radioactive waste is not expected to be identified at this stage of the process. Radioactive hazards should be identified during the JSHE process. If material is discovered to be radioactive, then all work should be paused and the SNL ES&H team should be notified.

1. Mixed Waste

Mixed waste is not expected to be identified at this stage of the process. Mixed waste should be identified during the JSHE process. If material is discovered to be mixed during this activity, then all work should be paused and the SNL ES&H team should be notified. Mixed waste can only be generated with written SNL approval.

1. Transportation of Hazardous Waste

Facilities construction contractors are prohibited from transporting hazardous waste.

## General Project Work Practices

1. Significant Hazards

Significant hazards and activities including those defined as High-Risk Work that require a documented safety briefing, AHA, or both are listed in this section. Examples of documentation include but are not limited to the following:

* CSSP
* AHA
* Permits
* JSHE
  + - 1. Contractors will ensure that work is conducted by qualified and trained workers. When applicable, activities will be conducted by workers who are certified, registered, or otherwise documented as qualified by their trade/profession, or who are licensed to perform that activity by the appropriate government organization.
      2. JSHEs or AHAs and permits, such as confined space and radiological work, further address SNL-specific qualifications and training required for high-risk or high-rigor activities.
      3. Work control is built into numerous Facilities processes—for example, CSSP review; pre-job and other scheduled meetings; building permits; additional permits, such as hot work and cutting, welding, and brazing; and code and safety inspection by Facilities staff.
      4. Feedback on Facilities construction activities is provided to Contractors by several means, such as immediate, on-scene feedback by inspectors, quarterly meetings, and the monthly newsletter.

A focus on the potential consequence and severity for work is required. Oftentimes, significant risk is overlooked because personnel are frequently around the hazards and become familiar with the activity, which can give a false sense of safety. Attention to potential and kinetic energy is required for proper hazard analysis.

1. Hidden Hazards Penetration
   * + 1. General:SNL personnel have adopted a five-step approach to minimize the effects of hidden hazards when performing penetration or excavation operations. This process includes the following: (1) drawing review; (2) site investigation; (3) detection using instrumentation, as appropriate; (4) use of appropriate tools; and (5) PPE.
       2. Workers engaging in excavation or penetration operations shall use tools that are in good working condition and shall use PPE, electrically rated gloves, ground-fault circuit interrupter (GFCI) protection, and double-insulated tools, as appropriate.
       3. To mitigate risk, the Contractor shall ensure that adequate site investigation, using methods that would not penetrate hidden hazards (e.g., visual inspection or detection using instrumentation), is performed prior to any excavation or penetration operation. If hidden hazards cannot be identified through site investigation, the SDR shall be notified prior to excavation or penetration operations, and appropriate PPE shall be worn when performing excavation or penetration operations. (Refer to Section 3.4 C and D below for excavation and penetration permit requirements.)

Ground penetrating radar (GPR) is available for assessing proposed penetrations.

Wall, ceiling, and floor verification – Removal of energy sources or hazardous gases that pass through walls/floors/ceilings systems shall be managed. A one hundred percent positive verification shall be conducted prior to cutting the energy source or hazardous gas on the opposite side of the wall/floor/ceiling. A sleeve that is pushed through the system or the dismantling of a conduit are examples of positive means of verification.

1. Excavation Permit

Obtain permit from the SCI.

* + - 1. Obtain an excavation permit prior to the start of the following operations. The excavation permit shall be approved and on-site prior to beginning and during excavation activities as described below.
         1. Digging, saw-cutting, drilling, coring, or trenching into soil, concrete sidewalks, or asphalt to a depth greater than 12 inches
         2. Excavation of soil beneath concrete sidewalks, slabs, or asphalt to a depth greater than 2 inches
         3. Excavation into subsurface soil in buildings beneath the slab
         4. Scraping, blading, or excavation of any area previously undisturbed or that appears to be undisturbed, such as areas covered by native vegetation, and blading or improvements to previously unimproved roads or paths
      2. Area to be excavated shall be shown on drawing and identified in the field using white paint. Submit permit requests to the SCI no more than 14 days and no less than 6 days prior to start of excavation.
      3. The excavation permit process involves environmental, cultural, and ecological site review to determine if environmental site impacts will occur due to excavation operations.
      4. Confine excavation operations to those areas identified on permit.
      5. The Contractor’s CSSP shall specifically address hand digging. Potential materials such as poly, ductile iron, polyvinyl chloride (PVC), or concrete; the soil type; and the depth of potential utility shall be evaluated. Consider these factors when matching the selection of tools and force to ensure minimal or no impact to the utilities.

1. Penetration Permit

Obtain permit from the SCI.

* + - 1. Obtain penetration permit prior to the start of the following operations:
         1. Penetration into concrete slabs, floors, ceilings, roofs, or walls greater than 2 inches (50 mm) in depth (does not include precast concrete).
         2. Penetration into underground concrete duct banks. All duct-bank penetrations shall be reviewed by Facilities personnel for high-voltage hazards. If high-voltage hazards are identified on the penetration permit, the Supervisor authorizing the duct-bank penetration shall ensure that (1) a task-specific (each duct-bank penetration is considered a task) procedure is written and submitted to the duct-bank Penetration Coordinator (or SCO, SCM, or SPM) for review and acceptance, and (2) the Supervisor authorizing the duct-bank penetration shall attend and ensure attendance of the penetrator at the pre-task meeting that will be scheduled by the duct-bank Penetration Coordinator. The task-specific procedure shall be reviewed at the meeting.
         3. Penetrations where a site investigation cannot identify possible hidden hazards.
      2. Area to be penetrated shall be shown on the drawing. Submit permit requests to the SCI no more than 14 days and no less than 6 days prior to start of penetration. If the penetration is inside a building, an outage request shall be submitted with the permit.
      3. Permit is task specific. Confine penetration to those areas identified on the permit.
      4. Maintain a minimum of 1 inch from GPR markings. Any anomalies shall be treated as potential energized conductors.

GPR is available for assessing proposed penetrations.

1. Fire Safety

All construction operations in new and existing facilities shall, at a minimum, follow the requirements set forth in the International Fire Code (IFC) (ANSI Z49.1, Sections 4.3 and E4.3) and include the following:

* + - 1. Emergency vehicle access shall be provided as follows:
         1. Minimum 20-foot-wide vehicle pathway
         2. Must support weight of fire apparatus (75,000 lbs.)
         3. Minimum 13-foot, 6-inch vertical clearance
      2. A water supply for firefighting must be provided (either fire hydrants or water tanks of sufficient capacity shall be available onsite).
      3. **Access to fire hydrants:** Fire Department inlet connections or fire protection system control valves shall not be hampered. A minimum 3-foot clearance must be maintained around fire hydrants. Storage, vehicles, trash, or other materials or objects shall not be placed or kept near fire hydrants, Fire Department inlet connections, or fire protection system control valves. Any temporary fencing installed near fire hydrants or fire protection equipment shall be provided with a gate to allow emergency access.
      4. **Housekeeping:** All construction debris and trash shall be removed at least once per day at the end of the shift or more frequently if necessary.
      5. Flammable and combustible materials shall be stored in accordance with the IFC. These materials may not be stored near existing facilities, egress routes, emergency vehicle access points, or fire protection equipment.
      6. **Fire Protection Impairment Permit (FPIP):** Notify the SCI if work will impair or inadvertently activate a fire protection detection or suppression system already in service. The Contractor shall submit an FPIP for any fire protection system impairments. Reference standard construction specification 28 31 11, “Fire Alarm Systems,” for temporary signage requirements. Reference standard construction specification Section 21 13 13, “Automatic Sprinklers and Water-Based Fire Protection Systems,” for fire suppression system impairments.
      7. Protective clothing for welding, cutting, and allied processes shall be selected to minimize the potential for ignition, burning, trapping hot sparks, or electrical shock.

1. Hot Work Permit

Prior to cutting, welding, open flame burning, or use of tar kettles and roof solvents, obtain a Hot Work Permit from SNL Fire Protection Engineering. Display the issued permits in a prominent location at the work site.

* + - 1. If welding, brazing, or thermal cutting is performed, submit a completed “Contractor Welding, Cutting, Brazing Exposure Assessment Form” to the Industrial Hygienist supporting Facilities construction operations.
      2. Prior to receiving a site-specific Hot Work Permit, operators responsible for performing the hot work and personnel responsible for performing fire-watch duties annually shall view the training videos and read the accompanying literature provided by Fire Protection Engineering. These videos are approximately 1 hour in combined length.
      3. The operators responsible for performing the hot work and the personnel responsible for performing the fire-watch duties shall be trained in the use of portable fire extinguishers annually and shall have demonstrated proficiency through certification.
      4. Hot-work operations shall be suspended if in an area where a fire suppression system is impaired.
      5. A Fire Watch shall be provided during hot-work operations and shall continue for a minimum of 30 minutes after the conclusion of the work. Fire Protection Engineering or the SDR is authorized to extend the time required for the Fire Watch based on the hazards or work being performed (such as tar-kettle roofing operations).
      6. The Fire Watch shall include the entire hot-work area. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single individual shall have additional personnel assigned to Fire Watches to ensure that exposed areas are monitored.
      7. Individuals assigned to Fire-Watch duty shall be responsible for the safety of the welders in addition to that of the property, extinguishing spot fires, and communicating an alarm. Individuals assigned Fire-Watch duties must remain in the hot work area until hot work is completed and for 30 minutes afterwards and shall not have any other duties (e.g., not a runner).
      8. The Operator shall ensure that Fire Watch is present prior to beginning hot-work activities. If the operator is found to be performing hot-work activities without the Fire Watch present, the Operator forfeits the active Hot Work Permit, and their supervisor must apply for a new permit.
      9. The Operator (if no Fire Watch is required) shall perform a final area inspection, sign the Hot Work Permit, and return the permit to Fire Protection Engineering (MS 0909).
      10. The Fire Watch shall be present while the Operator is performing hot-work activities at all times. The Fire Watch shall not perform any additional tasks while on duty. If the Fire Watch is found delinquent in their duties, they forfeit the active Hot Work Permit, and the supervisor must apply for a new permit.
      11. The Fire Watch shall perform a final area inspection, sign the Hot Work Permit, and return the permit to Fire Protection Engineering (MS 0909).

1. Fire Protection System Impairments

Only SNL Fire Protection personnel are authorized to place active fire protection equipment in an impaired state.

Do not assume that an impaired fire protection system with an approved FPIP is in a condition that is safe for performing work. If electrical or mechanical isolation is required to perform work, SNL Fire Protection personnel will operate breakers or valves to set the isolation. It is the responsibility of the person performing work to verify that proper isolation is in place prior to beginning any work on the system.

When performing any work activity or task that affects the operation or functioning of a fire protection system (fire alarm and fire suppression systems), either directly or indirectly, the following actions shall be taken:

* + - 1. **Fire Protection Impairment Permit:** Prior to performing any work that generates heat, smoke, fumes, or dust (e.g., welding or cutting drywall) or when modifying or disrupting a fire protection system, complete and submit an FPIP to the SCI to request an impairment.
         1. Obtain the FPIP form from the SCI.
         2. Complete the FPIP and submit it to the Construction Manager (CM) for review and approval. The Work Description portion of the FPIP must include all work that will be performed while the system is impaired. If additional work is added after the FPIP is issued, either an additional FPIP that covers the additional work description must be approved (in which case there will be more than one active FPIP for the system) or a new FPIP that includes the entire work description must be approved and the original FPIP closed. This administrative procedure is necessary to ensure that all work is covered by an active FPIP
         3. Upon submission of the FPIP form by the CM to SNL Fire Protection, allow a minimum of 14 days for approval.
         4. Impairment requests may be canceled if the person performing work is not present at the building fire alarm control panel within 15 minutes of the impairment scheduled start time. The person performing work is required to sign Section 3 of the FPIP in the “Impairment Requestor” block and verify that the “Work Description” block of the FPIP includes all planned work.
      2. **Putting a Building Fire Alarm System on “NO ACTION”:** A fire alarm system put on “NO ACTION” operates in a standalone mode and does not transmit fire alarm signals to emergency responder workstations. Listed below are the requirements for placing a building on “NO ACTION” status:
         1. Submit the FPIP form to the CM requesting impairment.
         2. The FPIP requestor or designee shall remain in the impaired building for the duration of the “NO ACTION” to function as a Fire Watch to call 911 in an actual fire.
         3. If the “NO ACTION” extends into non-standard work hours, post signs at each ground-level building exit door informing building occupants that the fire alarm system is not in operation and to call 911 in case of fire. A Fire Watch is required during non-standard work hours.
      3. **Disabling Fire Alarm Devices and Zones:** Fire alarm devices and zones are frequently disabled (blocked out) to prevent accidental activation while performing work or to allow modification to occur on a fire alarm system. Listed below are the requirements for disabling fire alarm system devices or zones:
         1. Submit the FPIP form to the CM requesting impairment.
         2. The FPIP requestor or designee shall remain at the fire alarm control panel whenever notification appliance circuits (NACs) are disabled to restore operation of the NACs if an actual alarm occurs that requires building occupants to be evacuated. In Building 858 and at Technical Area V, SNL personnel are required to stay at the panel while the NACs are disabled.
         3. For manual pull stations that are non-operational because they are disabled or part of new construction, place a sign over the pull station stating, “OUT OF SERVICE.”
         4. If the fire alarm control panel will be non-operational during non-standard work hours, post signs at each ground-level building exit door informing building occupants that the fire alarm system is not in operation and to call 911 in case of fire. A Fire Watch is required during non-standard work hours.

1. Fugitive Dust Control Permit

For surface-disturbance operations affecting land area greater than ¾-acre, sandblasting, and other surface preparation or demolition of any building containing over 75,000 cubic feet of total volume, comply with the requirements of Part 1, Section 01 57 26, “Dust Control,” and the Fugitive Dust Control Permit issued by the City of Albuquerque.

1. Storm Water Control

For construction sites greater than 1 acre, develop and submit a Pollution Prevention Plan to the SDR for review prior to construction operations. The Pollution Prevention Plan shall follow the EPA’s National Pollution Discharge Elimination System (NPDES). This system addresses silt control and other possible storm-water effects. The NPDES requires inspections at least every 14 calendar days, and within 24 hours of the end of a storm event of 0.5 inches or greater. Inspections shall continue through the duration of the project. Contractors shall report spills and accidental releases to the storm sewer system immediately to the SDR. All documents associated with the Pollution Prevention Plan, including inspection documents and reports, shall be submitted to the SDR upon request of final payment.

1. Earth Fill and Borrow Areas

Project-specific fill and borrow areas shall not be near or on underground or aboveground utilities. If the Contractor has written authorization from the SPM or contract documents to use a designated borrow or fill area in a location other than the project site, the Contractor shall do the following:

* + - 1. Ensure that the CSSP adequately addresses the hazards identified in the designated area. If the designated area is located within the boundaries of a project site controlled by another Contractor, the visiting Contractor shall coordinate access with the controlling project site Contractor and comply with all requirements for that site.
      2. Obtain the required Fugitive Dust Control Permit through the SDR prior to disturbing the soil.

1. Bird Nesting Sites

Bird nesting sites are not to be disturbed. If nesting sites are discovered during the course of operations, contact the SCI for further direction.

1. Paved and Graded Roads

Contractors shall keep vehicles on paved or graded roads at all times unless prior approval has been obtained to travel into previously undisturbed areas.

1. Sanitary Sewer Discharge

Notify the SDR of planned discharges to the sanitary sewer system, other than routine sewage, prior to discharge. The SDR will review the planned discharge and coordinate authorization from the Sandia Water Quality organization. Report spills and accidental releases to the sanitary sewer system immediately to your SDR.

1. Surface Discharge

Notify the SDR of planned surface discharges prior to discharge. The SDR reviews the planned discharge and coordinates authorization from the Sandia Water Quality organization. Report spills and accidental releases immediately to the SDR.

1. Underground Storage Tanks

Underground storage tank (UST) installation and maintenance operations shall comply with New Mexico Environment Department (NMED), UST Bureau requirements. The NMED UST Bureau-Certified Contractor shall perform work activities/tasks on USTs. If an unanticipated UST is discovered during construction operations, contact the SCO for notification to SNL’s ES&H team.

1. Contractor’s Staging Area

The SDR shall approve staging area locations prior to use. Stored vehicles and equipment, intended for use on SNL property, shall be in serviceable and safe operating condition. Immediately repair or remove defective or unsafe equipment from SNL property until proper repairs are completed. The staging area shall not be used for storage of hazardous materials not intended for timely use (within 30 days) for work activity. Remove or dispose of excess hazardous material in accordance with the “Waste Management and Disposal” article.

1. Temporary Buildings/Storage Areas

Obtain approval from the SDR for location of temporary buildings and storage areas prior to scheduled delivery of building or material.

1. Hoisting, Rigging, and Load Handling

This section applies to all hoisting and rigging lifting operations involving but not limited to chain falls, bridge cranes, mobile cranes, forklifts, and all-terrain lifts. Adhere to DOE-STD-1090-2020 during hoisting and rigging operations. Perform a proper hazard analysis for all hoisting activities on a graded approach and in concurrence with the SNL construction team.

The Contractor shall submit a lift plan for all planned hoisting and rigging lifting operations 10 working days in advance of the operation. The SDR or SDR-appointed person shall determine if the lift is considered Ordinary or Critical per DOE STD 1090-2020. All critical lift classification forms, critical lift plans, documented ordinary lift plans requiring special consideration, and associated procedures, technical analyses, and inspection/load test reports shall be retained in project files for a minimum of two years. The Contractor shall provide these records to the SDR at the completion of the project.

* + - 1. **Mobile Cranes:** All crane lifts require documented review and approval. Notify the SCM 48 hours in advance of the scheduled mobile crane site arrival time and arrange for a Facilities crane inspection. The inspection shall include but not be limited to verification of license or training; load charts; inspection reports; and physical verification of ropes, slings, undercarriage, outriggers, and boom. Additionally, the SCI shall document the review of crane placement and lifting plan or sequence with the Contractor and Contractor’s crane operator, as appropriate. Review the site for underground utility vaults. Buildings or affected parts of the buildings shall be evacuated prior to lifts; this shall be conducted in conjunction with the SNL construction team. All crane lifts shall be submitted for review and approval.
         1. Provide proof of inspection and load tests in accordance with 29 CFR 1926 and ASME B30 series.
         2. Crane operators shall be properly trained and experienced in operation of the crane or hoisting device. The Crane operator shall have one of the following in possession during crane inspection and operation: valid State of New Mexico Crane Operator’s License or certification that indicates completion of a State of New Mexico recognized, in-house training course based on ASME B30 standards for hoisting operators and who is employed by the entity that taught the training course or contracted to have the training course taught.
      2. **Ordinary/Documented Lift Plan:**

Lift planning shall comply with ASME P30.1, “Planning for Load Handling Activities” and 48 CFR 970.5223‑1 “Integration of environment, safety, and health into work planning and execution”—a.k.a. Integrated Safety Management System (ISMS). The following additions and exceptions to the above cited standard should also be implemented.

* + - * 1. A written lift plan beyond normal site work planning and control documents is not required for ordinary lifts, other than crane operations. However, the Designated Leader may determine that a written plan is prudent.
        2. The Designated Leader shall ensure that in addition to the P30.1 “Standard Lift Plan” considerations, the following pre‑lift planning issues are addressed, as applicable, prior to the lift.

Identify the item to be moved, its intrinsic characteristics (e.g., load integrity, loose materials, liquids), weight, dimensions, center of gravity, ability to support imposed lifting forces (both the load and any lift points), and whether it contains any hazardous or toxic materials.

Validate the loads path and clearances.

Identify lifting equipment and rigging to be used by type and rated capacity.

Prepare rigging sketches, as necessary.

Evaluate the work area for conditions impacting crane setup operations (e.g., weather, soil bearing capacity, underground utilities, clearances to power lines and other structures).

Identify any special or site‑specific operating procedures and special instructions.

c. Ordinary Lifts That Require Special Consideration

Some ordinary lifts have additional risks that warrant special consideration. Such lifts shall have documented plans but do not require the technical rigor of a critical lift and do not have to be performed in a step-by-step sequence. If sequential actions are required because of the complexity of the lift or operation, then they must be noted in the lift plan. A written lift plan shall be created for lifts where any of the following conditions are present:

* + Load transfer, such as transferring a load in mid-air from one lifting device to another
  + Any load that its center of gravity might be relocated due to lifting operation, such as a tank filled with liquid
  + Use of multiple lifting devices, such as the use of more than one piece of lifting equipment in sharing the load (Ref. 29 CFR 1926.1432)
  + Use of complicated custom-designed rigging equipment or hardware
  + Working within the reach of the crane (the area 360 degrees around the crane equipment, up to the crane equipment's maximum erected/fully extended boom length) to the following electrical hazards

the specified clearance of power lines per 29 CFR 1926.1407-1411 or ASME B30.5 (2018).

the limited approach boundary of exposed energized electrical equipment as defined per NFPA 70E.

* + Multiple load line operation such as those referred to in 29 CFR 1926.1432.

3. **Critical Lift:**

a. The SDR or SDR-appointed person shall classify each lift/load handling activities (LHA) into one of the DOE categories (ordinary, special critical, personnel, or pre-engineered production) prior to planning the lift. A lift shall be classified critical if any of the following conditions are met:

* + 1. If loss of control of the item being lifted would likely result in the declaration of an emergency as defined by the facility’s emergency plan or construction site emergency plan (such as release of radioactive or hazardous material into the environment exceeding the established permissible environmental limits).
    2. The load item is unique and, if damaged, would be irreplaceable or not repairable and is vital to a system, facility, or project operation.
    3. The cost to replace or repair the load item, or the delay in operations of having the load item damaged, would have a negative impact on facility, organizational, or DOE budgets to the extent that it would affect program commitments.
    4. If mishandling or dropping of the load would cause any of the above noted consequences to nearby installations or facilities.
    5. The lift involves unique characteristics that warrant a critical lift. Examples may include loads requiring exceptional care in handling due to size, weight, close-tolerance installation, suspended load hazards, high susceptibility to damage, and/or lifts using multiple pieces of lifting equipment, as determined by the SDR.
    6. For steel erection, a lift shall be designated as a critical lift if:

The lift exceeds 75 percent of the rated capacity of the crane or derrick, ***or***

The lift requires the use of more than one crane or derrick (refer to 29 CFR 1926.751).

1. Further site-specific criteria may be developed to supplement those cited above and may include criteria imposed by site or project safety basis requirements as well as lifting loads which require exceptional care in handling because of size, weight, close-tolerance installation, or high susceptibility to damage, as well as lifts using multiple pieces of lifting equipment.
2. The critical lift plan must be followed in sequence as written unless noted otherwise.
3. Though lifting personnel may meet the above criteria, personnel lifts shall not be considered critical lifts and shall be conducted in accordance with 29 CFR 1926.1431 and ASME B30.23.

## Critical Lift Requirements

1. Ensure that the requirements are met for lifts specified in each section of this standard for each particular equipment category.
2. The operating organization shall appoint a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons (Lift Director). The Competent/Qualified Person/Lift Director shall be present at the lift site during the entire lifting operation.
3. The Lift Director shall:
4. Have the necessary knowledge and experience of the specific type of equipment and assigned lifting operations.
5. Understand the site rules and procedures addressing:
6. Administrative requirements for lifting operations.
7. Personnel assignments and responsibilities commensurate with job requirements.
8. Selection of proper slings, rigging hardware, and lifting equipment.
9. Recognition and control of hazardous or unsafe conditions.
10. Job efficiency and safety.
11. Critical‑lift determination and documentation.
12. The Competent/Qualified Person shall ensure that a documented pre‑job plan or procedure is prepared by qualified person(s) that defines the operation and includes the following:
13. Identify the item to be moved, its intrinsic characteristics (e.g., load integrity, loose materials, liquids), weight, dimensions, its center of gravity, its ability to support imposed lifting forces (both the load and any lift points), and whether it contains any hazardous or toxic materials.
14. Identification of operating equipment to be used by type and rated capacity (e.g., mobile crane, overhead crane, forklift).
15. Rigging sketches and/or descriptions that include (as applicable):
16. Identification and rated capacity of slings, lifting bars, rigging accessories, and below‑the‑hook lifting devices. Calculate and provide the rated capacity of equipment in the configuration in which it will be used.
17. Load‑indicating devices.
18. Load vectors.
19. Lifting points.
20. Sling angles.
21. Required lifting equipment movement (e.g., boom and swing angles, trolley and bridge motions).
22. Methods of attachment.
23. Crane orientations.
24. Other factors affecting equipment capacity (e.g., load path sketch, key point heights, floor or soil bearing capacity).
25. Operating procedures and special instructions to operators including rigging precautions and safety measures to be followed as applicable.
26. All rigging equipment used in critical lifts (i.e., slings, below‑the‑hook lifting devices, and rigging hardware) shall be proof load tested in accordance with applicable ASME standards.
27. Experienced operators who have been trained and qualified to operate the specific equipment to be used shall be assigned to make the lift.
28. Only designated, qualified signalers shall give signals to the operator. However, the operator shall obey a STOP signal at all times, no matter who gives the signal.
29. The procedure and rigging sketches shall be reviewed and approved by a qualified person (technical authority), the responsible manager (or designee), and the responsible oversight, which could include a competent safety person and qualified rigging engineer before the lift is made. Subsequent revisions shall be approved per site‑specific procedures.
30. A pre‑lift meeting involving participating personnel shall be conducted prior to making a critical lift. The critical lift plan/procedure shall be reviewed, and questions shall be resolved.
31. Prior to executing a critical lift, a qualified person shall verify that the as‑installed rigging matches the configuration in the approved lifting plan.
32. If required by the critical lift procedure, a practice lift shall be done before the critical lift. Conditions for a practice lift should closely simulate actual conditions involving weight, rigging selection and configuration, load movement path, and other relevant factors. Practice lifts should be performed by the same crew using the same lifting equipment that will be used in the lift. The crane/equipment should be operated through the full range of motion prior to performing the lift.
33. Although individual plans are generally prepared for critical lifts, multi‑use plans may be employed to accomplish recurrent critical lifts. For example, a multi‑use plan may be used to lift an item or series of similar items that are handled repeatedly in the same manner. However, if the lifting equipment or rigging must change to accomplish the lift, the critical lift plan must be revised and approved accordingly.

4. **Millwright/Moving:** The Contractor shall use properly rated equipment for millwright and industrial moving operations. Considerations shall be made for floor loading, building considerations, knowledge of the weight being moved, unstable loads, anchor points, tie-downs, chocks, struck-by, caught-between hazards, and training.

1. Use Cribbing and/or Blocking on a Forklift
   * + 1. Blocking or cribbing is defined as the use of wood or other material to support equipment or a component and distribute loads to the ground.
       2. Use only engineered cribbing (purpose built and approved for safely securing a load on the tines of a forklift) on a forklift.
       3. Use cribbing on a forklift only if written approval is provided by the manufacturer or by a professional engineer based on a safety analysis of the design.
2. Cribbing shall not extend above the load backrest.

**Note:** This excludes the use of single pallets, frames, or boxes designed for material handling, transporting, and storing of equipment and materials specifically intended for use with a forklift. Contact SDR and SNL Safety Engineering for support regarding the use of cribbing on a forklift.

5. **Digger-Derricks:**

1. The digger derrick is a multi-use piece of equipment. Generally, the 1910.269 standard applies to the use of a Digger-Derrick by a qualified electrical worker and operator.
2. For nonqualified electrical workers, refer to **1926.1408**.
   * 1. Determine if any part of the equipment, load line, or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line. If so, the employer must meet the requirements in Option (1), Option (2), or Option (3) of this section, as follows:
        1. **1926.1408(a)(2)(i)** *Option (1) – Deenergize and ground*. Confirm from the utility owner/operator that the power line has been deenergized and visibly grounded at the worksite.
        2. **1926.1408(a)(2)(ii)** *Option (2) – 20-foot clearance*. Ensure that no part of the equipment, load line, or load (including rigging and lifting accessories) gets closer than 20 feet to the power line by implementing the measures specified in paragraph (b) of this section.
        3. **1926.1408(a)(2)(iii)** *Option (3) – Table A clearance*.
        4. **1926.1408(a)(2)(iii)(A)** Determine the line's voltage and the minimum approach distance permitted under Table A (*see* § 1926.1408).
        5. **1926.1408(b)(5)** The requirements of paragraph (b)(4) of this section do not apply to work covered by subpart V of this part.

c. Qualified High Voltage Worker working on transmission and distribution systems.

1. 1926.960 – Electric Power Transmission & Distribution – Working on or near exposed energized parts

**Note:** Most of this section deals with qualified workers doing live-line barehand type work from aerial lifts on energized conductors. The only part that applies to the Digger Derrick crews is the two-man rule, if lines are potentially energized. Approach distances are calculated for live line work, not mechanical equipment.

1. Confined-Space Entry

Contractor work practices and procedures shall incorporate all applicable regulatory requirements and SNL specifications, and knowledge of the content of applicable regulatory standards should be considered fundamental for any Contractor who proposes to engage in confined space operations at SNL.

* + - 1. Types: There are three types of construction confined space entry operations recognized at SNL/NM—permit-required, non-permit, and telecommunications. The Contractor is responsible for developing confined-space entry programs and issuing confined space permits.
      2. Signage: In areas that appear to qualify as a confined space, absence of appropriate signage shall not be interpreted to mean that the area is not a confined space.
         1. Permit-Required Confined Space signs state DANGER – CONFINED SPACE – ENTER BY PERMIT ONLY or other similar language.
         2. Non-Permit Confined Space signs state CAUTION – CONFINED SPACE – CONTACT SPACE OWNER FOR PERMISSION TO ENTER or other similar language.
      3. Written Confined Space Program: The Contractor is responsible for developing confined space entry programs and issuing confined space permits.

**Note:** Telecommunication-confined space requirements are covered under number 6 of this section.

The Contractor’s written confined space program shall comply with 29 CFR 1926 Subpart AA and include at a minimum the following requirements:

* + - * 1. Define how spaces are classified:
  1. Permit-required confined space (PRCS)

2) Non-permit confined space (NPCS)

* + - * 1. Define alternate procedure/reclassification of PRCS (optional)

C5 alternate procedure (atmospheric hazard only)

C7 reclassification (non-atmospheric hazards)

* + - * 1. State training objectives/requirements for:
    1. Supervisor authorizing entry (SAE)
    2. Authorized entrant
    3. Attendant
       - 1. Implement measures that prevent unauthorized entry into PRCS
         2. Identify and evaluate the hazards of permit spaces
         3. Develop and implement procedures for safe permit space entry operations, including but not limited to the following:
    4. Define atmospheric monitoring requirements:

1. Instrument used for calibration and bump testing, hazards monitored, and documentation of results
2. Acceptable entry conditions specifying OSHA PEL or ACGIH TLV, whichever is most protective.
   * 1. Identify control measures including:

Communication: radio, voice, visual, etc.

Isolation

Cleaning

Purging

Inerting

Flushing

Ventilation

Protective equipment

Rescue equipment

LOTO of equipment

* + 1. State pre-entry briefing requirements:
    2. Frequency
    3. Items/safety issues covered
    4. Attendance requirement and documentation
    5. Address requirement for entrant protection from outside hazards as necessary via pedestrian, vehicle, or other barriers.
    6. Address verification procedures of conditions in the permit space as being acceptable for entry throughout the duration of an authorized entry.
    7. Provide provision for authorized entrant or their authorized representative to have the opportunity to observe any monitoring or testing of permit spaces.
    8. If C5 alternate procedures are incorporated into written plan, develop and implement requirements set forth in 1910.146(c)(5).
    9. If C7 reclassification is incorporated into the written plan, develop and implement requirements set forth in 1910.146(c)(7).

g. Identify non-entry rescue methods

1. Non-entry retrieval equipment
2. Extraction procedures

h. Develop and implement an Emergency Response Plan that has appropriate elements of the following:

Rescue of Personnel in Confined Spaces at SNL/NM. See Appendix C.

SNL Emergency Management Communications Center (EMCC) (505-844-0311):

Just prior to entry

After entry is terminated

If any emergency situation occurs

i. Includes forms for permit-required confined space entry

1. SF 2001-CSS, “Confined Space Permit Sign-In/Sign-Out Sheet for Emergency Response”
2. Contractor’s permit
3. Contractor’s C5 alternate procedure form, if implemented into written Confined Space Program
4. Contractor’s C7 reclassification form, if implemented into Contractor’s written Confined Space Program
   * + 1. Address method used to inform SDR of hazard(s) confronted or created in permit spaces through a debriefing or during entry operations.

4. **Permit Required Confined Space:** At SNL, PRCS entry is categorized as high-risk work. The Contractor must develop a task-specific AHA for entry and meet with representatives from the ES&H Support Team SMEs prior to entry to ensure that all hazards are adequately identified and that all entry requirements comply with applicable standards:

* + - * 1. 29 CFR 1910.146 and approved written Confined Space Program
        2. SAE, attendant, and authorized entrant(s) shall be current with training requirements
        3. Conduct a pre-entry briefing
        4. Fill out permit

1. Implement all controls noted on permit
2. Wear all PPE required for entry noted on permit
   * + - 1. Personnel making a confined space entry shall follow the procedures in Appendix C, “Rescue of Personnel in Confined Spaces at SNL/NM,” to establish their confined space entry plan.
         2. Notification requirements include the following:
3. Communication must be established with the SNL EMCC at the jobsite prior to entry. This can be accomplished via cell phone, if working outside of Limited Areas, or two-way radio. SCOs have radios that can be loaned to the Contractor for a confined space entry.

The Contractor shall identify the specific location of the confined space (building, room, space type; if the space is outside, indicate the direction [NW, SE, etc.] from the closest building).

The Contractor shall identify the individual serving as the SAE (for purposes of overseeing the entry), the company name, and number of entrants and attendants.

The Contractor shall identify the communication equipment used to contact EMCC and the means used to communicate between the attendant and entrants.

* + - * 1. SF 2001-CSS, “Confined Space Permit Sign-In/Sign-Out Sheet”: This form is used to maintain accurate, real-time tracking of entrants for emergency response. Use of this form only becomes necessary when different entrants other than those initially identified on the permit are involved in the entry.
        2. Atmospheric Monitoring: Perform atmospheric monitoring on a continuous basis for the duration of the entry. If monitoring indicates the presence of atmospheric contaminants above acceptable concentrations, NO ENTRY IS ALLOWED. If entry has already occurred when contaminants are detected, exit the space immediately and contact the SCO, SDR, and EMCC.

1. If C5 alternate procedures are allowed under the Contractor’s written Confined Space Program and are used, notification to EMCC is not required.
2. If C7 reclassification is allowed under the Contractor’s written Confined Space Program and is used to enter the PRCS, then the following apply:
3. Notification to SNL EMCC is not required.
4. Atmospheric monitoring is not done (no actual or potential hazardous atmosphere exists).
5. Verification of all non-atmospheric hazards have been eliminated prior to entry.
6. Completion/termination of permit entry:
7. Entry activity was completed safely and space returned to normal condition.
8. Notify EMCC that PRCS entry is terminated.
9. Debrief SDR of any problems during entry operations or suggestions for improvement.
   * + 1. **Non-Permit Confined Space:** This refers to a space that fits the definition of a confined space but lacks any inherent or introduced hazards. Entry into this type of space includes:
          1. Pre-entry briefing.
          2. If operations performed within and/or in close proximity to the confined space create additional hazards that impact safeguards and entry procedures, space shall be treated as a PRCS and follow the requirements of 29 CFR 1910.146 and the Contractor’s written Confined Space Program.
       2. Commissioned Telecommunication Manholes and Vaults: These must comply with the following:
          1. 29 CFR 1910.268
          2. Telecommunication manholes and vaults that have been newly constructed or are part of an ongoing construction project are not considered commissioned and shall comply with 29 CFR 1926 Subpart AA.
10. Electrical Safe Work Practices

Ensure that electrical work, equipment, and installations are in compliance with the National Electric Code (NEC); National Electric Safety Code (NESC); NFPA 70E, *Standard for Electrical Safety in the Workplace*; and OSHA standards. When conflicts exist between OSHA and NFPA 70E, the Contractor shall review the affected work with the SNL team prior to operations. Subcontractor and manufacturers’ representatives shall be managed to the above standards.

* + - 1. Training: Employees who face a risk of electrical hazard that is not reduced to a safe level by the applicable electrical-installation requirements shall be trained to understand the specific hazards of electrical energy and identify and understand the relationship between electrical hazards and possible injury. Retraining is required for qualified workers every three years.
      2. Documentation: The Contractor shall document that each employee has received the training on electrical hazards and controls necessary for their safety. Records shall be maintained for the duration of the employee’s employment and shall contain each employee’s name and dates of training.
      3. Lockout/Tagout: Lockout/tagout procedures shall be documented in the Contractor’s CSSP. The procedures shall be appropriate for the experience and training of the employees and the conditions that exist in the workplace. The procedure shall address employee and management responsibilities associated with LOTO, training, system/hazard communication, and energy control methods (e.g., types of locking devices, authorized testing equipment, and PPE). A lock must always be applied (Article 120) NFPA 70E.
      4. Arc-Flash Protection: Arc-flash-protection procedures shall be documented in the Contractor’s CSSP. At a minimum, documentation shall include requirements for (1) developing arc-flash boundaries; (2) requirements for protective clothing, hard hats, eye protection, face shields, hand and foot protection, and hearing protection based on hazard/risk category classifications; and (3) care and maintenance of arc-rated (AR) clothing, AR flash suits, and other PPE.

If the SNL electrical equipment/system to be worked on has an arc-flash hazard (AFH) warning label, contract employees wear PPE and establish flash boundaries specified in their employer’s CSSP for the hazard level/category identified on the label. If the electrical equipment is not provided with an AFH warning label, contract employees implement controls, wear PPE, and establish flash boundaries as identified in their employer’s CSSP for the hazard/risk categories specified below.

* + - 1. Shock Protection: Procedures shall be documented in the Contractor’s CSSP. At a minimum, documentation shall include requirements for the following: (1) developing limited shock approach boundaries, (2) requirements for voltage-rated gloves and insulated tools, and (3) maintenance and testing of PPE.
      2. Electrical Outage Requests: Prior to performing work on any live parts that are not placed in an electrically safe work condition (i.e., prior to performing energized work), the Contractor shall contact the Electrical SCI and request an electrical outage. Exemptions to this requirement include tasks such as testing, troubleshooting, and voltage measuring, assuming appropriate safe work practices and PPE are provided and used in accordance with NFPA 70E.
      3. GFCI Protection: Provide listed ground-fault circuit interrupter (GFCI) protection for 120-volt, single-phase, 15- and 20-ampere receptacle outlets on work sites that are not part of the permanent wiring of a building or structure and that are in use by employees.
      4. Lighting System Protection: Lighting systems may include independent secondary emergency lighting circuits. Construction projects in existing installations involving lighting system work shall identify all applicable electrical circuits and ensure that an outage plan includes that all applicable lighting systems be de-energized and, for work on 277 VAC lighting systems, require zero energy verifications measuring phase to phase and phase to ground—and as an additional de-energization verification, to measure neutral to ground.

1. Energized Electrical Work

This includes work performed on live parts that are not placed in an electrically safe work condition.

* + - 1. Energized work shall not proceed without written justification/authorization from the SNL Project Manager and Contractor’s written permit. Permit and authorization shall be available onsite during the energized work task. The Contractor’s written permit shall include, at a minimum, all items required by NFPA 70E.
      2. When working on or near energized parts in hallways, corridors, or other areas used for passage, maintain a working space barrier with caution tape and signage. The working space boundary for barriers shall be defined at the “limited-approach boundary.”
      3. Do not leave exposed energized parts unattended in areas occupied by those other than construction personnel. Do not leave exposed energized parts without providing working space barrier at the “limited-approach boundary.”
      4. Comply with the following when working on energized electrical parts:
         1. Notify the SCI before proceeding with work.
         2. Electrical work on energized electrical parts shall be performed by a qualified individual with a second qualified person available.
         3. Individual shall be knowledgeable and experienced in working with the specific type of electrical circuits on which energized electrical work is to be performed. See Section 26 04 75, “Primary Systems Safety Requirements,” for additional requirements.

1. Steel Erection Work

This includes any steel erection operations involved in construction, alteration, and/or repair of single- and multiple-story buildings, bridges, and other structures where steel erection occurs.

* + - 1. Each employee engaged in steel erection tasks that are on a walking working surface with an unprotected side or edge more than six feet above a lower level shall be protected from fall hazards.

1. Fall Protection

Control the methods used to protect employees from fall hazards, which may include administrative controls, PPE, and other controls necessary for fall restraint or fall arrest.

* + - 1. The CSSP shall identify administrative controls, fall-protection methods, or both to be used for all work that is more than six feet above a lower level or within 15 feet of an unprotected side or edge for all construction trades excluding roofers. The requirement is within six feet for roofers.
      2. Anchor points to be connected by drilling, welding, or attaching to SNL structures/buildings used for fall-protection purposes must be reported to the SDR/SCO for SNL approval prior to installation and use.

1. Asbestos Safety

Asbestos might be present in existing building materials, finishes, and mechanical systems.

* + - 1. Asbestos-containing building materials are identified as part of the JSHE. An Asbestos Work Release Permit is attached to the JSHE report.

Work may proceed only if the Contractor’s work activities do not damage or disturb the asbestos-containing materials. If worksite conditions or the scope of work changes, or if the Contractor is unsure if work activities will damage or disturb potential asbestos-containing building materials, the Contractor must stop work and contact the SNL Construction Observer or the SDR for further instructions.

If construction activities uncover hidden finishes or building systems that are suspected to contain asbestos, the Contractor must stop work and contact the SCO or the SDR for further instructions.

* + - 1. **Asbestos Work Release Permit:** This permit documents existing asbestos hazards and provides recommendations to control or eliminate the hazards. The Contractor must conduct a pre-work safety meeting with workers to review the Asbestos Work Release Permit guidance and follow the guidance exactly when performing the work.

Y. Vehicle Safety

All mobile equipment identified in 29 CFR 1926.1001 that are used on SNL project sites shall have roll-over protective structures (ROPS). There are no mobile equipment ROPS exemptions on SNL construction projects for those pieces of equipment.

Appendix A: Occupational Medicine Services

**A.1 Purpose**

All Contractors and their lower-tier Subcontractors must comply with the DOE’s Worker Safety and Health Program regulation, 10 CFR 851, *Worker Safety and Health Program* (WSHP). The WSHP enforces worker safety and health requirements, including but not limited to existing standards of OSHA, ANSI, and Workers Compensation Laws, as incorporated in the SNL WSHP.

To assist in ensuring Contractors meet the worker safety and health provisions of 10 CFR 851 in the occupational medicine functional area, SNL requires Contractors to provide a written declaration identifying their Occupational Medicine Providers (OMP), as applicable, prior to performing work.

**A.2 Applicability**

Contractors at all tiers who meet the applicability criteria below must establish and provide comprehensive occupational medicine services to workers employed at DOE-controlled premises. Occupational health personnel providing services must maintain current license, registration, or certifications as required.

**A.3 Criteria**

* Work on a DOE site for more than 30 days in a 12-month period

***or***

* Are enrolled for any length of time in a medical- or exposure-monitoring program required by this rule and/or any other applicable federal, state, or local regulation or other obligation.

**A.4 General Requirements Summary Information**

In accordance with New Mexico Workers Compensation Laws, OSHA, and DOE regulation (10 CFR 851, *Worker Safety and Health Program*), Contractors at all tiers must have an OMP for performing hazard-based medical monitoring and surveillance; qualification-based fitness-for-duty medical evaluations; and injury and illness case management. The Contractor is responsible for maintaining the appropriate documentation to demonstrate compliance with the administration of necessary medical and health care programs and may be subject to assessments and audits.

Hazard-based medical monitoring and surveillance programs include but are not limited to the following:

* OSHA-specifically-regulated substances (“Expanded Health Standards”), including but not limited to the following: asbestos, arsenic, cadmium, chromium, lead, and methylene chloride
* OSHA occupational noise exposure

Qualification-based fitness-for-duty evaluations include but are not limited to the following:

* OSHA/ANSI respiratory protection
* Department of Transportation (FMCSA) commercial driver’s license

Injury and illness case management includes but is not limited to the following:

* Determination of work-relatedness
* Work restrictions
* Rehabilitation
* Return to work

**A.5 Occupational Medicine Program Requirements**

Occupational medicine services must be under the direction of a graduate of a school of medicine or osteopathy. OMPs, such as physicians, nurses, physician assistants, nurse practitioners, psychologists, and employee-assistance counselors, must be licensed, registered, or certified as required.

Contractors shall make available to their OMP current activity-level hazard information, such as that listed in the CSSP and addenda. This information must include the following:

* Actual or potential work-related hazards (chemical, radiological, physical, biological, or ergonomic)
* Actual or potential work-site exposures
* Job functions
* Update information when a change to job functions, hazards, or exposures occurs

The following health evaluations shall be conducted when determined necessary by the OMP. The results of evaluations performed by the OMP must be communicated, as appropriate, to facilitate activity work controls and mitigation of hazards.

* Medical placement evaluation at the time of employment entrance or transfer to a job with new functions and hazards
* Hazard-based medical monitoring or qualification-based fitness-for-duty medical evaluations required by regulations and standards
* Medical diagnostic examinations to evaluate an employee’s injuries and/or illnesses for work-relatedness, applicability of medical restrictions, and referral for definitive care, as appropriate
* After a work-related injury or illness or an absence because of any injury or illness lasting 5 or more consecutive workdays, inform the OMP provider to determine if an evaluation is necessary
* General health evaluation at the time of separation from employment
* The purpose, nature, and results of evaluations and tests must be clearly communicated verbally and in writing to each worker provided with testing, and the results must be documented in the medical record of the worker.

Afford the OMP an opportunity to participate in worker safety and health meetings and committees, as well as an opportunity to conduct worksite visits. Worksite visits are conducted for an evaluation of job conditions and issues relating to the health of their workers. All site visits by the OMP to SNL-controlled premises must be coordinated with the SNL Inspector. The Inspector notifies a representative from Employee Health Services of the visit request.

The Contractor shall ensure the OMP establishes a record, including any medical, health history, exposure history, and demographic data collected for occupational medicine purposes, which is maintained for each worker receiving occupational medicine services. Documents shall be stored in a manner that ensures their long-term preservation and retrieval. Records must remain confidential and protected from unauthorized access. Any psychological records shall be maintained separately from medical records and in the custody of the designated psychologist. Access to the records shall be granted in accordance with DOE regulations implementing the Privacy Act and the Energy Employees Occupational Illness Compensation Program Act.

Contractors at all tiers are responsible for workers’ compensation administration and case management. The OMP shall monitor ill and injured workers to determine work-relatedness, facilitate their rehabilitation and safe return to work, and issue and/or remove restrictions as necessary. Ensure the OMP notifies the worker and the SDR for any issued and/or removed work restrictions and communicates results of health evaluations to management and safety and health protection specialists to facilitate the mitigation of worksite hazards.

The OMP must include measures to identify and manage the principal preventable causes of premature morbidity and mortality affecting worker health and productivity. The Contractor must include programs to prevent and manage these causes of morbidity when evaluations demonstrate their cost-effectiveness. If programs are implemented, Contractors must make available to the OMP appropriate access to information from health, disability, and other insurance plans (de-identified as necessary).

Submit Employee Assistance Programs to the OMP (EAP: Substance Abuse Rehabilitation Programs and Wellness Programs) for review and approval of the medical and behavioral aspects of these counseling and health promotional programs.

The Contractor shall ensure the OMP reviews the medical aspects of immunization as well as bloodborne pathogen and biohazardous waste programs to evaluate their conformance with applicable guidelines. The Contractor must determine the applicability and need for the specific programs based on work activities and actual or potential worksite exposures of each employee.

SNL shall provide the OMP the opportunity to review medical emergency response procedures in site emergency and disaster preparedness plans. Contact the SDR for assistance.

Appendix B: Facilities Superintendent – Job Aid

**Date: \_\_\_\_\_\_\_\_\_\_\_ Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*The superintendent role is critical to the facilities construction success. It is also a requirement under 10 CFR 851. Listed below are approaches that support effective superintendent interaction and discussion with the work team.*

|  |  |
| --- | --- |
|  | **Pre-work Planning**: Read the safety plan/CSSP and understand the specific elements that pertain to the project Scope of Work. Evaluate procedures to assure that adequate precautions exist for anticipated hazards. |
|  | **Permits:** Ensure all required and applicable permits (SWPPP, FDCP, Fire Impairment, Hot Work Permit, **Excavation Permit, Asbestos Work Release, Penetration Permit,** **Confined Space Entry Permit,** **Customer Work Release for Radiological Areas**, etc.) are on site **and posted** **at the appropriate location(s).** |
|  | **Train/communicate with the crew** on the CSSP, JSHEs, permits, and possible hold points. Facilitate a “what if” discussion. |
|  | **Increase awareness** of “high risk activities”; working near high-voltage lines or gas lines, working at heights and/or on ladders, performing excavations, encountering struck-by equipment, etc. |
|  | **Pre-Task Plan:** Ensure the pre-task plan is completed, and all workers understand the hazards, steps, and controls for the job at this time. They know that they must re-evaluate for changes. Assure the crew(s) knows that they must re-evaluate for changes **to the site conditions or work area**. **Maintain the PTP at the project site for access, review, and updating, by the crew(s).** |
|  | **Anticipate changes**: Take time to closely examine the project-specific hazards throughout the day and allow the project team to implement proper controls in advance to avoid or mitigate them. |
|  | **Lead by example**: Abide by safety rules and make time to be visible and challenge workers at the site to think about emerging and potential hazards. |
|  | **Understand interaction with all Contractors**: Communicate between crafts, within facilities, and with SNL personnel. |
|  | **Empower workers** to stop/pause work to address operational safety issues before an incident occurs. Ensure personnel look out for the safety of each other. Reward such behaviors. |
|  | **Barricading:** Is proper barricading for pedestrian, vehicle, and overhead work in place? |
|  | **Awareness of “scope creep”:** Identify when work transitions from one task to the next in the context of a PTP or an area of well-understood hazards to tasks exposing workers to unplanned hazards that have “crept” into the activity. **Do not perform activities that are not included in the approved scope of work.** |
|  | **Identify span of control issues**: Are work crews properly supervised, and is there always a person with stop-work authority? |
|  | **Identify the “critical thinkers”:** Empower critical thinkers to challenge the team, stop/pause work, rethink, and seek technical help when necessary. |
|  | **Reward safe actions:** Provide small awards for team members who identify, report, or work to avoid a safety issue or concern, and actively support site safety awareness. |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  |  |  | | --- | --- | --- | | **Superintendent Hand-off Signature** | **Date** | **Time** | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |

**Superintendent responsibilities include:**

Superintendent shall be knowledgeable of the project’s hazards and have full authority to act on behalf of the construction Contractor.

Superintendent shall perform frequent and regular inspections of the construction worksite to identify and correct any instances of non-compliance with the CSSP.

Superintendent or Delegate shall document the inspections, including any non-compliance and corrective action taken.

Superintendent shall perform a pre-work evaluation of Subcontractors using a tool such as the checklist provided in Appendix B to ensure the following:

* Knowledge of CSSP safety requirements that are applicable to their work.
* An evaluation of how these safety requirements will be implemented.
* Plan for how the requirements will be assessed, periodic management surveillances, supervisor pre-job briefs, and assessments.

Superintendent shall provide immediate direction to workers when hazards not previously evaluated and controlled are identified. If immediate corrective action is not possible, or the hazard falls outside of project scope, the Superintendent or Delegate:

* Immediately notifies affected workers.
* Posts appropriate warning signs.
* Implements necessary interim control measures.
* Notifies the SCO of the action taken.

Appendix C: Rescue of Personnel in Confined Spaces at SNL/NM

**General Requirements and Advance Notification**

The Contractor Entry Supervisor (also known as the Supervisor Authorizing Entry) is responsible for the following:

* Providing advance notification of the confined space entry activity to SNL Emergency Management Communications Center (EMCC) **PHONE: 844-0311 (24-hour duty phone)** to verify that rescue services are available. Advance notification must occur by phone on a daily basis for the duration of the entry activity.
* Providing an Emergency Response Plan that includes methods to notify SNL EMCC just prior to entry, after entry is terminated, and if any emergency occurs.
* The Emergency Response Plan must include:

1. Specific procedures for non-entry rescue and required Kirtland Fire and Emergency Services entry rescue.
2. Must be reviewed and approved by the SDR in construction with ES&H Support Team SME.
3. Any deviations from non-entry rescue must be re-evaluated and approved by SDR prior to implementation.

* Ensuring that the means for summoning emergency response/rescue personnel is operable, onsite, and readily available.
* Selecting appropriate retrieval equipment to initiate non-entry rescue.
* Identify alternate means for EMCC to contact the Entry Supervisor (cellular, pager, radio, etc.) in the event emergency services become unavailable during the entry period.
* Ensuring all equipment and instrumentation is inspected prior to use to ensure proper working condition. Equipment shall be maintained in accordance with manufacturer's requirements.
* Posting the entry permit at the entry site.
* If chemical materials are used in the confined space, the manufacturer's SDS must be attached to the permit.

**Non-Entry Extraction of Confined Space Entrant(s)**

Should it become necessary to extract personnel from a confined space, it is essential that all personnel involved know exactly what to do and what not to do. There have been several instances where persons who were trying to rescue an individual in a confined space also became victims because of failure to follow the proper procedures. The Attendant may retrieve a victim wearing a retrieval line from a confined space if this is possible without additional help **and does not require entry by the Attendant.** Typical retrieval/extraction equipment includes tripod, wincher (mechanical lifting device), retrieval line, and body harness. Retrieval equipment is not required for Non-Permit Confined Spaces; however, strong consideration should be given to spaces which present unique rescue difficulty due to location (such as remote areas), space configuration, or other elements.

The hazards associated with work in confined spaces include possible exposure to the following:

1. Oxygen deficient atmospheres (Less than 19.5%)
2. Oxygen enriched atmospheres (Greater than 23.5%)
3. Atmospheres containing flammable gas or dust
4. Atmospheres containing toxic substances or biological hazards
5. Mechanical or physical hazards
6. **CONFINED SPACE EMERGENCY: ENTRY RESCUE:** Kirtland Fire and Emergency Services provides entry rescue/responder service for confined spaces at SNL/NM.

* **PRIMARY: Contact: EMCC (24-hours, 7 days a week**) **PHONE: 844-0911 from a cellular phone; or 911 from an SNL phone**

**Note:** In Technical Areas or "limited access" areas where the use of cellular phones is prohibited, communication radios suitable for contacting emergency response services are available from the SCI.

Appendix D: Electrical Job Aid for Contractors

**Date: \_\_\_\_\_\_\_\_\_\_\_ Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*The purpose of the Electrical Job Aid is to assist contractor superintendents and foremen in ensuring readiness for application of electrical safety LOTO requirements by electrical contractors and manufacturer’s representatives. Use of the tool will promote hazard awareness, increased understanding of specific LOTO application requirements, and a questioning attitude at the work site, which will reduce the number and severity of electrical incidents.*

|  |  |
| --- | --- |
|  | **Qualified Person(s) is trained to NFPA 70E and the specific hazards and controls presented by the planned work.** |
|  | **Work scope is clear and aligned with outage documentation, as applicable.** |
|  | **SNL construction electrical inspection has been notified of the planned work.** |
|  | **Required documentation is available and onsite (e.g., outage notice).**   * **All sources that require LOTO have been verified.** |
|  | **The electrical subcontractor is knowledgeable and can determine Simple/Complex LOTO.** |
|  | **If Complex LOTO, is the required documentation onsite and filled out?** |
|  | **The electrical subcontractor is knowledgeable and can determine the PPE requirements per Arc Flash Labeling, Quick Reference Card, or approved method NFPA 70E. NOTE: If Arc flash label is missing, contact Electrical Safety group or Facilities Engineering for assistance.** |
|  | **The Pre-Task Plan is completed, and all workers understand the hazards, steps, and controls for the job at this time.** |
|  | **Required PPE and insulated tools are onsite.** |
|  | **The Limited Approach Boundary has been established and marked where required.**   * **Boundary established (e.g., barricades, signage, and attendees) where unqualified persons could be present.** * **Two-person rule/emergency plans understood.** |
|  | **The Qualified Person has established an** **Electrically Safe Working Condition (ESWC) with an approved tester reading zero volts (Live-Dead-Live is always required).**   1. **Required PPE is being donned.** 2. **Test a known energized source (test equipment verification).** 3. **Test exposed electrical circuiting within work boundary to verify zero voltage for ESWC.** 4. **Retest for zero voltage when conditions change that could impact LOTO integrity or the job location has been left unattended.** |
|  | **Pre-task plan enables work within the controls.**   * **Stay within the LOTO Safe Zone.** * **Watch for look-alike equipment.** * **Redo Integrated Safety Management for any scope change.** |
|  | **Instructions for re-energizing circuit: (Qualified Person)**   1. **Verify that the task is complete.** 2. **Verify that all tools are accounted for.** 3. **Make sure all protective covers are installed and secure.** 4. **Perform any housekeeping.** 5. **Ensure that the work boundary remains clear from personnel during re-energization.** 6. **Remove LOTO.** 7. **Wear required PPE.** 8. **Re-energize the electrical circuit.** 9. **Test for verification of correct voltage and operation.** |

|  |  |  |
| --- | --- | --- |
| **Name of the Electrical Subcontractor/Qualified Person** | **Date** | **Time** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Appendix E: Recommended Controls and Minimum Respiratory Protection Assigned Protection Factors When Performing Tasks that May Generate Airborne Respirable Crystalline Silica**

**Respirable Crystalline Silica in Construction Guide:**

**Recommended Engineering Controls, Work Practices, and Respiratory Protection**

This guide was developed by SNL Industrial Hygienists to comply with the 2016 ACGIH TLV of 25 ug/m3 for respirable crystalline silica—the DOE-adopted exposure limit. SNL Members of the Workforce are required to comply with this guidance.

SNL Construction Contractors are encouraged to follow this guidance or to explain how they will control silica dust, as well as how they selected respiratory protection for the task at hand. Use of this guide shall be noted on the Pre-Task Plan—include the numerical reference to the equipment and controls that will be used. Use of this guide will not require an AHA for silica controls unless the activity is *not* identified in the guide. This guide is based on Table 1 of the OSHA Construction Standard for *Respirable Crystalline Silica*, 29 CFR 1926.1153 but is more protective to meet the lower ACGIH TLV of 25 ug/m3.

All respiratory protection must be National Institute for Occupational Safety and Health (NIOSH) approved and maintained in accordance with manufacturer’s instructions. Filtering-facepiece respirators may be N/R/P and 95/99/100—all combinations meet APF 10 criteria (for example, an N95 or a P100 are both suitable selections). Comply with all requirements of the OSHA Respiratory Protection standard (29 CFR 1910.134) for the mandatory use of respirators (for SNL Members of the Workforce, see Chapter 22 of the *ES&H Manual*, MN471022)



Both are APF 10

Using a respirator with a higher assigned protection factor (APF) than that prescribed is always allowed. For example, it is acceptable to wear a full facepiece respirator (APF 50) where a powered air purifying respirator (APF 25) is prescribed.

It is critical that all dust engineering controls are properly maintained and working. Respiratory protection is in addition to these engineering controls and must not be used as the sole means of reducing exposures to respirable crystalline silica.

HEPA vacuums should be fitted with liner bags that can be closed and lifted out of the vacuum to avoid creating airborne dust. Vacuums should be emptied frequently. HEPA filters should be washed in water or replaced with new ones; never tap a filter to remove dust from it. Vacuums used by SNL Facilities must be tested by Cloverleaf to ensure that they meet capture-efficiency requirements.

OSHA requires a **Competent Person** to be identified for all work involving potential exposures to silica (indicate who this is on the Pre-Task Plan). The **Competent Person** has the training and experience to identify silica hazards in the workplace and the authorization to take prompt corrective measures to eliminate or minimize them. The **Competent Person** regularly inspects the job site, materials, and equipment to ensure that all engineering, work practice, and respiratory protection controls are effective in controlling exposures to crystalline silica.

| **Equipment/Task** | **Engineering and Work Practice Control Methods** | **SNL** | | |
| --- | --- | --- | --- | --- |
| **≤ 4 hr/shift** | **> 4 hr/shift** |
| 1. Stationary masonry saws | * Use saw equipped with integrated water delivery system that continuously feeds water to the blade * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions | **APF 10** | **APF 10** |
| 1. Handheld power saws (any blade diameter) | * Use saw equipped with integrated water delivery system that continuously feeds water to the blade * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions: |  |  |
| –When used outdoors | **APF 10** | **APF 10** |
| –When used indoors or in an enclosed area1 | **APF 10** | **APF 25** |
| 1. Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less) | * For tasks performed outdoors only: * Use saw equipped with commercially available dust collection system * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions * Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency | **None** | **APF 10** |
| 1. Walk-behind saws | * Use saw equipped with integrated water delivery system that continuously feeds water to the blade * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions: |  |  |
| –When used outdoors | **APF 10** | **APF 10** |
| –When used indoors or in an enclosed area2 | **APF 25** | **APF 25** |
| 1. Drivable saws | * For tasks performed outdoors only:   + Use saw equipped with integrated water delivery system that continuously feeds water to the blade * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions | **APF 10** | **APF 10** |
| 1. Rig-mounted core saws or drills | * Use tool equipped with integrated water delivery system that supplies water to cutting surface * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions | **APF 10** | **APF 10** |
| 1. Handheld and stand-mounted drills (including impact and rotary hammer drills) | * Engineering controls not required for installing screws or anchors in sheet rock, masonry, or concrete if hole size is 5/8inch or less and number of holes is less than 30. (Activity added by SNL) | **None** | **APF 10** |
| * Use drill equipped with commercially available shroud or cowling with dust collection system * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions * Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism * Use a HEPA-filtered vacuum when cleaning holes | **APF 10** | **APF 25** |
| 1. Dowel drilling rigs for concrete | * For tasks performed outdoors only:   + Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism | **APF 10** | **APF 50** |
| 1. Vehicle-mounted drilling rigs for rock and concrete | * Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector | **APF 10** | **APF 25** |
| OR |  |  |
| * Operate from within an enclosed cab and use water for dust suppression on drill bit | **None** | **APF 10** |
| 1. Jackhammers and handheld powered chipping tools | * Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact: |  |  |
| –When used outdoors | **APF 25** | **APF 50** |
| –When used indoors or in an enclosed area | **APF 50** | **APF 50** |
| OR |  |  |
| * Use tool equipped with commercially available shroud and dust collection system * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions * Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism: |  |  |
| –When used outdoors | **APF 25** | **APF 50** |
| –When used indoors or in an enclosed area | **APF 50** | **APF 50** |
| 1. Handheld grinders for mortar removal (*i.e.*, tuckpointing) | * Use grinder equipped with commercially available shroud and dust collection system * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions * Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism | **APF 50** | **APF 503** |
| 1. Handheld grinders for uses other than mortar removal | * For tasks performed outdoors only:   + Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface   + Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions | **APF 10** | **APF 10** |
| OR |  |  |
| * Use grinder equipped with commercially available shroud and dust collection system * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions * Dust collector must provide 25 cfm or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism: |  |  |
| –When used outdoors | **APF 10** | **APF 10** |
| –When used indoors or in an enclosed area | **APF 25** | **APF 25** |
| 1. Walk-behind milling machines and floor grinders | * Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions | **APF 10** | **APF 25** |
| OR |  |  |
| * Use machine equipped with dust collection system recommended by the manufacturer * Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions * Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism * When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes | **APF 10** | **APF 10** |
| 1. Small drivable milling machines (less than half-lane)\* | * Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant * Operate and maintain machine to minimize dust emissions | **APF 10** | **APF 10** |
| 1. Large drivable milling machines (half-lane and larger) | * For cuts of any depth on asphalt only:   + Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust   + Operate and maintain machine to minimize dust emissions |  |  |
| * Operator | **APF 10** | **APF 10** |
| * Tender (ground crew) | **APF 10** | **APF 25** |
| * For cuts of four inches in depth or less on any substrate:   + Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust   + Operate and maintain machine to minimize dust emissions | **APF 10** | **APF 10** |
| OR |  |  |
| * Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant * Operate and maintain machine to minimize dust emissions | **APF 10** | **APF 10** |
| 1. Crushing machines | * Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points) * Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions * Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote-control station | **APF 10** | **APF 25** |
| 1. Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (*e.g.*, hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials | * Operate equipment from within an enclosed cab | **None** | **APF 10** |
| * Some equipment used does not have enclosed cabs (Activity added by SNL) | **APF 10** | **APF 10** |
| * When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions | **APF 10** | **APF 10** |
| 1. Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demolishing, abrading, or fracturing silica-containing materials | * Apply water and/or dust suppressants as necessary to minimize dust emissions | **APF 10** | **APF 10** |
| OR |  |  |
| * When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab | **None** | **APF 10** |
| 1. Installing or removing drywall (gypsum board) (Activities added by SNL) | Applying Joint Compound   * Use low-silica joint compounds when available * Use a wet sponge sander or other wet method to smooth joint compound. | **None** | **APF 10** |
| Dry Sanding   * Position the body so that it is not below the area being sanded. * Use tool equipped with commercially available shroud and dust collection system   + Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions   + Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. | **APF 10** | **APF 10** |
|  | Cutting gypsum board (drywall)   * Use a sharp blade to score the drywall to break it along the score and then cut the backing with a sharp knife * Use a drywall hand saw to create cut outs. Mist water on the area to be sawed * If sawing overhead, position the body so that it is not below the area being sawed * Use a HEPA vacuum or wet methods to clean up the dust * If using a power tool, refer to the appropriate row in this table. | **APF 10** | **APF 10** |
| 1. Mixing mortar, plaster, or concrete (Activities added by SNL) | * When loading bulk bags into silos, use shrouds/aprons to contain dust as mix moves from the bag into the silo. Use shroud between the silo and the mixer * If adding bags of dusty material to a mixer that does not have a silo: Place bag on grate, tip bag up and slit bag, back away and stand upwind, leave on grate to gravity feed, carefully lift bag to remove, fold bag to cover slit, put in trash bag * Locate mixer so that it is downwind of jobsite to prevent dust from impacting other employees or people in the vicinity | **APF 10** | **APF 10** |
| 1. Demolition of plaster coatings and masonry walls using sledgehammers and other manual methods (Activity added by SNL) | * If using power tools or heavy equipment, follow the guidance for each tool or heavy equipment as provided in this table * For sledgehammers, wet down surfaces using hoses and sprayers |  |  |
|  | –When demolishing outer walls from the outside | **APF 10** | **APF 10** |
|  | –When demolishing walls inside or from the inside | **APF 10** | **APF 25** |

­­­1 Increased protection for > 4hr to match cart-mounted saw of same type.

2 DOE-prescribed APF 25 to both < 4 hr and > 4 hr

3Max sample result required use of APF1000 but SNL results supported APF 50

**END OF SECTION**