SANFORD UNDERGROUND RESEARCH FACILITY

SOUTH DAKOTA SCIENCE AND TECHNOLOGY AUTHORITY

Cranes and Hoists Standard

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Revision History

Rev	Date	Section	Paragraph	Summary of Change	Authorized by
04	2/24/2026	3, 4, 5 & 6	4.4.5, 4.5.7, 5.3, 5.4, 5.7 & 6.1-6.8	Updated document due to change to the document numbering of controlled documents due to the change from DocuShare system to SharePoint system	CCR 1227
05	3/6/2026	1, 2, 3, 4, 5 & 6	4.1-4.10.6, 5.1-5.7, 6.5, 6.6 & 6.9	Changes throughout document to align with DOE 1090	CCR 1234

1.0 Purpose

The purpose of this standard is to ensure that all hoisting and rigging equipment, design, installation, inspection, testing, maintenance, and operations activities at Sanford Underground Research Facility (SURF) are planned and conducted to protect workers, the public, and the environment against associated hazards, and to meet all applicable US codes and standards.

South Dakota Science and Technology Authority (SDSTA) references the following to fulfill this standard:

- 29 CFR 1910, Subpart N, OSHA General Industry Standards - Materials Handling and Storage.
- 29 CFR 1926 Subpart N, OSHA Construction Standard - Helicopters, Hoists, Elevators, and Conveyors
- OSHA 29 CFR 1926.1431(k)-(o).
- DOE-STD-1090 Hoisting and Rigging (latest revision).
- ASME B30 standards.

2.0 Scope

This standard applies to all personnel and equipment used to perform any crane and hoist activity at SURF. It applies to SDSTA-owned and third-party hoisting and rigging equipment and activities conducted on SURF property.

3.0 Definitions

Annual Inspection — A formal process that evaluates operational status of equipment. See ESH-10000-A- 001 Crane Operators Inspection Table. Documented periodic inspection, performed at least every 12 months by a Certified Inspector or other Qualified Person, which evaluates the operational and structural condition of equipment to determine if it is safe for continued service.

Certified Inspector — A person who has successfully passed a commercially recognized training course providing certification and who is designated by SDSTA as qualified to perform inspections and load tests.

Competent Person — A competent person is someone capable of identifying existing and predictable hazards in the workplace and who has the authority to take prompt corrective measures to eliminate them.

Crane — A device for lifting and lowering a load and moving it horizontally. Cranes may be driven manually, by power, or by a combination of both.

Critical Lift — A hoisting or lifting operation that has been determined to present an increased level of risk beyond normal lifting activities. (for specific classification, see DOE 1090)

- High value or potential impact of a high-value item.
- Significant impact on operations (budget, program commitments, schedule, etc.).
- Load out of view of the crane operator.
- Potential release of hazardous or radioactive material into the environment.
- Slung Loads.

- Hoisting of personnel from an overhead crane.
- Single lift involving more than one crane.
- Weight that exceeds 75% of the rated load.

Fall Zone — A controlled area where it is reasonably foreseeable that a partially or completely suspended material(s) could fall in the event of a failure. Including:

- The area directly beneath the load.
- The strike/impact zone and the resulting tip radius.
- The secondary effects of the load impacting anything unrelated to the lift, which in turn may create a larger exposure zone.

Frequent Inspection (Daily) — A pre-use visual inspection conducted by the operator at the beginning of each shift or before first use of the equipment, to identify obvious damage, malfunctions, or unsafe conditions. See Crane Operators Inspection Table.

Hoist — A mechanical device that is used for lifting or lowering a freely suspended load. Hoists may be integral to a crane or mounted in an affixed position, permanently or temporarily. Hoists may be hand-operated, air, or electric powered. Hoisting devices may include the following: Hoists, cranes, winches, tuggers, and come-a-longs.

Incidental Operator — Non-SDSTA personnel who operate SDSTA lifting devices or an SDSTA employee who operates a lifting device not owned or managed by SDSTA.

Inspection — An assessment of the condition of equipment to assure its ability to perform intended tasks. Inspection frequency and schedule are outlined in the Crane Operators Inspection Table.

Lift: To move a load vertically or horizontally with load handling equipment. (i.e., Ordinary, critical Pre-Engineered Production)

Lift Director — A Qualified Person designated by management with overall responsibility for the safe execution of a specific lift (ordinary or critical), including implementation of the lift plan, verification of equipment condition and configuration, and coordination of all personnel involved in the lift.

Lift Plan: Information and/or instruction, written or verbal, used in support of a load handling activity.

Load — The total weight superimposed on the load block or hook. This includes not only the material being lifted but also all the rigging equipment necessary to attach the load to the load block, i.e., lines, shackles, rigging, etc.

Load Handling Equipment (LHE): Equipment used to move a load vertically or horizontally.

Mobile Crane — A cable-controlled crane mounted on crawlers or rubber-tired carriers. May consist of a fixed-length boom, telescopic or lattice extensions, capable of being moved between operating locations by transport over the road.

Modified — A variation or alteration that changes the original configuration of the crane or adds other features not originally installed with the crane and impacts the crane's lifting capacity or load bearing components.

Ordinary Lift: A routine, non-critical, and non-complex lifting operation that carries low risk, involves standard rigging, and does not require a complex, documented lift plan**.**

Overhead/Bridge Crane — A crane with a movable bridge carrying a movable or fixed hoisting mechanism and traveling on an overhead fixed runway structure.

Periodic Inspection — Includes monthly and annual inspection requirements. See Crane Operators Inspection Table.

Proof Load Test — A non-destructive, controlled, and temporary application of a load exceeding the maximum working load to lifting equipment, rigging, or components. It verifies structural integrity, functionality, and ensures no permanent deformation, typically performed before initial use, after repairs, or at intervals to confirm safety and compliance.

Qualified Operator — A person who has successfully completed the training requirements outlined in this standard. Licensing or certification is required for mobile cranes with a lifting capacity above 2,000 lbs.

Qualified Person — A person who, by possession of a recognized degree, certificate or professional standing, or who, by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

Qualified Rigger — An individual responsible for rigging activities associated with a critical lift. One who has extensive experience, knowledge, or possesses a recognized degree or certificate.

Qualified Signaler- A person deemed competent by an employer or third-party evaluator to provide, understand, and use the correct hand or voice signals for crane operations.

Rated Load/Marking — The maximum load identifier for which a crane, hoist, or lifting device is designed and built by the manufacturer. The load shall not exceed 80% of the rated load test or specification.

Rated Load Test — A formal process utilizing a known weight to evaluate both the hoisting device and the supporting structure’s capability to safely establish the rated load.

Slung load- A load suspended under the conveyance in the shaft.

Suspended Platform — An engineered-designed conveyance which is attached below-the-hook. Serves as a Work Deck which may be raised and lowered by a crane.

4.0 Responsibilities

4.1. Director of Surface Operations and Utilities

4.1.1. Provides oversight to the Rigging Specialist.
4.1.2. Provides oversight of all cranes, hoisting, rigging and system maintenance programs.
4.1.3. Maintains certifications as crane inspector and master rigger.
4.1.4. Advises on classification of lifts (ordinary vs. critical) and on development and review of critical lift plans
4.1.5. Arranges for initial inspection of all new, modified or re-installed cranes, hoists, and monorails that are attached to supporting structure.
4.1.6. Maintains inventory of all hoisting devices.
4.1.7. Maintains load testing equipment.
4.1.8. Completes and documents all required maintenance.
4.1.9. Ensures annual inspections of hoisting devices are completed.
4.1.10. Maintains records by third-party inspections.
4.1.11. Establishes competency requirements for specific hoisting devices.
4.1.12. Evaluate hoisting devices to ensure for safe operations and compliance.
4.1.13. Maintains manuals and manufacturer information and records related to testing, lifting capacity, inspection, and repair of all hoisting devices.
4.1.14. Selects a qualified contractor to perform annual inspections, testing, maintenance and repair of cranes as needed.
4.1.15. Assists in an annual review of this standard.
4.1.16. Designates qualified operators, certified inspectors and qualified riggers and Lift Directors for ordinary and critical lifts.
4.1.17. Classify lifts before any planning begins.
4.1.18. Ensure all lifts are planned according to ESH-10000-FD-001 Lift Plan Flow Diagram.

4.2. Certified Inspector

4.2.1. Performs all periodic inspections on cranes and hoists.
4.2.2. Performs the rated load test.
4.2.3. Ensures that the inspection tag is completed and visible.
4.2.4. Provides all results to the Director of Surface Operations and Utilities.
4.2.5. Ensures equipment that does not meet inspection criteria is removed from service until repaired and re-inspected.

4.3. Environment, Safety, and Health (ESH) Department

4.3.1. Provides input regarding safety of operations.
4.3.2. Coordinates and schedules training.
4.3.3. Maintains training records.
4.3.4. Issues critical lift permits.
4.3.5. Reviews critical lift plans and associated work planning and control (WPC) documents (ESH-(2000-S)-73320 Work Planning and Controls Standard)
4.3.6. Reviews hoisting operations for compliance with the requirements of this document.
4.3.7. Coordinates with the Surface Operations and Utilities Department for development and implementation of training needs.
4.3.8. Reviews and approves deviations from the requirements of this standard.
4.3.9. Reviews and approves suspended platform WPC documents (Director of ESH).

4.4. Engineering Department

4.4.1. Reviews and approves crane modifications.
4.4.2. Evaluates support structures for load capacity.

4.4.3. Provides consultation and design of all new hoisting devices that are attached to the supporting structure. (The supporting structure must exceed the lifting capacity of the hoisting device.)
4.4.4. Maintains documentation of all structural support evaluations and modifications.
4.4.5. Establishes the design criteria for suspended work platforms.
4.4.6. Completes the ESH-10000-F-001 Load Test Form.

4.5. Supervisors

4.5.1. Ensure that personnel assigned to operate hoisting devices are competent or under the supervision of a qualified person.
4.5.2. Ensure that all hoisting devices within their areas of responsibility are inspected, tested, maintained, and repaired as required in this document.
4.5.3. Inspect all hoisting devices for defects before use.
4.5.4. Ensure that lift plans are submitted for all critical lifts.
4.5.5. Appoints a qualified Lift Director for critical lifts.
4.5.6. Arranges for the monthly and annual inspections of the hoisting equipment within their work areas.

4.6. Lift Director

4.6.1. Verifies lift has been identified as ordinary or critical.
4.6.2. Ensures that WPC documents and lift plans have been developed, approved, and communicated to all affected personnel.
4.6.3. Identifies the objective of the lift by defining what is being lifted, and the type of equipment being used to perform the lift.
4.6.4. Ensures that personnel involved understand how the lift is to be made.
4.6.5. Ensures that personnel involved are current in training and qualifications.
4.6.6. Surveys the lift site for hazardous/unsafe conditions.
4.6.7. Ensures that the lifting equipment, rigging, and other accessories are properly selected such that their rated capacities are not exceeded.
4.6.8. Checks all cranes/hoists to ensure that they are still within the inspection interval.
4.6.9. Checks that basic operating instructions of all lifting equipment, to include required charts, tables, or diagrams, are appropriately posted or otherwise available to the operator.
4.6.10. Ensures that a preoperational check of all lifting equipment and rigging is performed to validate compliance with the appropriate sections of this standard.
4.6.11. Ensures that equipment is properly set up and positioned.
4.6.12. Ensures that hoisting routes minimize exposure to personnel and critical equipment from the hoisted load and that only essential personnel are allowed within the fall zone.
4.6.13. Ensures that a signal person is assigned, if required, and is identified to the operator.
4.6.14. Ensures that the load hook is directly over the center of gravity of the load to the extent possible. Checks the load lines after a strain is put on them but before the load is lifted clear of the ground; if load lines are not plumb, reposition the slings or equipment so that the lines are plumb before continuing.

- Ensures the lifted item shall be capable of resisting the imposed loads as configured.
- Directs the lifting operation to ensure that the lift is completed safely and efficiently.
- Stops the job when any potentially unsafe condition is recognized.
- Directs emergency response if an accident or injury occurs.

4.6.15. Evaluates the integrity of the item to be lifted as rigged.

4.7. Qualified Operator

4.7.1. Executes the lift in accordance with the WPC documents.
4.7.2. Meets SDSTA training, qualification, and refresher requirements for the role.

4.7.3. Identifies hazards and mitigations associated with the task, including appropriate personal protective equipment (PPE).
4.7.4. Identifies trained individuals, if required, to participate in the lift. (The skill level of each participant in the lift shall be commensurate with the assigned duty.)
4.7.5. Performs a pre-lift inspection that includes the following:

- Lift site location
- Crane inspection
- Below-the-hook devices
- Rigging

4.7.6. Reports and documents all deficiencies.
4.7.7. Maintains current rigger/crane training.

4.8. Qualified Rigger

4.8.1. Performs rigging activities associated with a critical lift.
4.8.2. Meets SDSTA training, qualification, and refresher requirements for the role.
4.8.3. Coordinates with the Qualified Operator and the Lift Director.
4.8.4. Maintains current rigger/crane training.

4.9. Qualified Signaler

4.9.1. Meets SDSTA training, qualification, and refresher requirements for the role.
4.9.2. Performs signaling activities associated with cranes & hoisting.

4.10. Master Rigger

4.10.1. Performs rigging activities associated with a critical lift.
4.10.2. Meets SDSTA training, qualification, and refresher requirements for the role.
4.10.3. Coordinates with the Qualified Operator and the Lift Director.
4.10.4. Maintains current rigger/crane training.
4.10.5. Develop WPC documents associated with critical lifts.
4.10.6. Guides and directs critical lifts according to specific lift plans.

4.11. Certified Inspector

4.11.1. Maintains current training.
4.11.2. Meets SDSTA training, qualification, and refresher requirements for the role.
4.11.3. Performs monthly, annual, and periodic inspections on cranes.
4.11.4. Performs rated load tests.

5.0 Instructions

5.1. All listed equipment shall meet design, construction, marking, inspection, testing, and maintenance requirements. Equipment involved in lifting activities may include:

- Overhead/Bridge Cranes
- Mobile Cranes
- Ross and Yates Hoists
- Hoists (non-regulated MSHA hoist)
  - Electric winches (cable)
  - Air tuggers
  - Chainfall (mechanical)

- Chainfall (electrical)

- Hand winch
  - Come-a-long
  - PullzAll™

- Rigging hardware and accessories

5.2. Incidental Operator

- Third Party: May operate SDSTA cranes/hoists only when they have met the following conditions:
  - Permission to use an SDSTA crane is required from the associated department director.
  - The appointed SDSTA representative overseeing the work activity reviews the qualifications and training of the Incidental Operator.
  - Demonstrates to an SDSTA Qualified Operator their competency to operate the specific hoist.
  - Contractor use of cranes/hoists (regardless of whether the crane is owned by SDSTA or the Contractor) should be included in the contract or corresponding Science documentation.
- SDSTA personnel: May operate a third-party crane or hoist when they have met the following conditions:
  - Permission to use a third-party crane is required from the associated owner and SDSTA supervisor.
  - The appointed SDSTA representative overseeing the work activity reviews the qualifications and training of the Incidental Operator.
  - Demonstrate to an SDSTA Qualified Operator their competency to operate the specific hoist.
  - The SDSTA representative's review shall verify that Incidental Operators meet training and experience expectations equivalent to those established for SDSTA operators performing similar lifts.
  - Inspections, Deficiencies, and Repairs
- Frequent Inspection (Daily)
  - A pre-use visual inspection completed by the operator each shift to identify defects or conditions that could affect safe operation.
- Monthly Inspection
  - A visual inspection completed by the certified inspector. (ESH-10000-A-001 Crane Operators Inspection Table).
  - Shall be performed on a crane that has been idle for a period of one month or more.
  - Shall be annotated on an inspection tag attached to the controls or to the device.
    - New/Repaired/Adjusted Crane
    - Records are maintained in an electronic database.
- Running Rope Inspection
  - Any deterioration, resulting in loss of original strength, shall be carefully monitored and a determination made as to whether further use of the rope would constitute a safety hazard.

- Conditions that could result in loss of strength are shown in the ESH-10000-A-001 Crane Operators Inspection Table.
- Inspection must be documented by the certified inspector.

- Periodic Inspection (Monthly/Quarterly/Annual)
  - Only cranes and hoists that have been inspected by a certified inspector and have passed inspection within the past year may be operated.
  - Periodic inspections shall be scheduled based on service severity and manufacturer requirements.
  - Must be performed on all cranes (see ESH-10000-A-001 Crane Operators Inspection Table).
  - If a crane or hoist has not passed its inspection, it must be taken out of service. Inspection requirements must be met before the unit is placed back in service.
  - Records of inspections, repairs, and modifications shall be available for review.
  - Repairs to cranes or hoists may only be performed by qualified personnel.
- Chainfalls, PullzAll™, and Come-a-longs are inspected every quarter.
- Crane travel ways shall be visually inspected to ensure unobstructed and safe movement.
- Deficiencies and Repairs
  - Shall be isolated per ESH-7000-S-003 Lockout-Tagout Standard.
  - Shall be reported to the supervisor.
  - Incidents resulting in damage to a crane shall be reported to ESH.
- The crane shall not be returned to service until it has been repaired and appropriate acceptance testing is conducted.
- Equipment with deficiencies shall be tagged "Out of Service" and controlled to prevent use until repaired, inspected, and accepted criteria shall be tagged "Out of Service" and controlled to prevent use until repaired, inspected, and accepted.
- Running rope inspections shall use the removal-from-service criteria per the Crane Operators Inspection table.

5.3. New, Re-Installed, Altered, Repaired, and Modified Cranes and Hoists Operation Tests

- Prior to being placed into service, equipment shall be evaluated by a qualified person. Evaluation must consider:
  - New or re-installed cranes and hoists:
    - Are subject to the annual inspection requirements (ESH-10000-A-001 Crane Operators Inspection Table).
  - Repaired equipment:
    - Must be evaluated for functional reliability commensurate with repair.
  - Altered or modified cranes and hoists:
    - Modifications and the supporting structure are checked thoroughly for the new rated load by a qualified person or the equipment manufacturer. The crane shall have a rated load test performed and documented on the Load Test Form. The new rated load shall be displayed. Considerations shall be given to the following:
      - Design

- ◊ Quality Assurance/Quality Control (QA/QC) construction processes
- ◊ Pre-defined commissioning requirements

♦ Only qualified engineers may design and direct QA activities.

♦ Must be commissioned and are subject to the requirements of the annual inspection and Rated Load Test processes.

o Records are maintained in an electronic database.

o Operation and acceptance tests, including Rated Load Tests, for new, reinstalled, altered, repaired, or modified equipment shall be performed.

5.4. Rated Load Tests

- This test must be performed by a certified inspector.
- The test loads shall be between 100 and 125 percent of the rated load unless otherwise recommended by the manufacturer.
- The test reports (Load Test Form) shall be placed on file where readily available.
- Rated load tests do not meet the requirements of a critical lift.
- Load tests shall not exceed manufacturer limitations and shall follow the procedures and acceptance criteria.

5.5. Working from a Suspended Platform or on a Bridge Crane

- Using a crane platform may be a suitable alternative method to perform a task. Personnel hoisting and the use of suspended platforms shall only be conducted when conventional means of access are more hazardous or not possible. All platforms shall comply with the ASME B30.23

o At a minimum, the WPC documents shall consider:

♦ Suspended Platform

- ◊ Personnel may only work from within an engineered platform.
- ◊ Fall protection shall be used.
- ◊ Personnel suspended in a platform may only travel vertically. If horizontal movement is needed, personnel will go to the ground and the platform will be relocated to the desired location first.
- ◊ The platform shall not be moved until all employees on the crane are in locations where they will not be exposed to injury.
- ◊ A means of positive communication shall be established between the crane operator, the platform personnel, and any affected personnel.
- ◊ When two bridge cranes utilize the same runway, rail-stops, or other suitable methods shall be used to prevent contact.
- ◊ The area shall be guarded, barricaded, or other positive controls established to prevent access to overhead hazards.
- ◊ Lockout/Tagout shall be implemented, as appropriate.

♦ On a Bridge Crane

- ◊ Safe egress to and from a crane shall be provided.
- ◊ Verify the guardrail system is in place before commencing work.

- ◊ When two bridge cranes utilize the same runway, rail-stops, or other suitable methods shall be used to prevent contact.
- ◊ Lockout/Tagout shall be implemented, as appropriate.

5.6. Performing Lifts

- Must be performed in accordance with WPC. Deviations from the established lift planning must be reviewed by the qualified person, and the supervisor may be consulted as necessary.
- Must have a Lift Director overseeing the activity.
- Only trained, qualified, and authorized personnel will be allowed to rig loads or operate cranes or hoists.
- All required inspections for hoists, cranes, and hoisting and rigging hardware and accessories must be performed before the lift. (ESH-10000-S-002 Below the Hook Lifting Devices and Slings-Rigging Hardware Standard).
- Personnel must not place any part of their body under a suspended load within a fall zone. However, if no alternative exists and the work must be performed under a suspended load or in the fall zone, a qualified rigger is required, and critical lift requirements apply.
- Requires a Qualified Signaler when the operator's view is obstructed, the load is traveling outside the operator's direct line of sight, the operator or Lift Director determines it is necessary for safety or multiple cranes or complex lifts where coordination is critical.
- Ordinary Lifts
  - Ordinary Lifts shall follow the ESH-2000-S-001 Work Planning and Control Standard and DOE 1090 Hoisting and Rigging Standard.
- Critical Lifts
  - For Critical Lifts utilizing the Yates or Ross hoist, the ESH-10000-P-002 Critical Lift Permit is required and includes the following:
  - Rigging sketches and detailed descriptions.
  - For critical lifts utilizing Mobile Cranes, the ESH-10000-P-001 Mobile Crane Critical Lift Permit.
  - Must include load-indicating devices, load vectors, lifting points, sling angles, required equipment movements (e.g., boom/swing angles, trolley/bridge motions), methods of attachment, crane orientations, and other capacity-affecting factors (e.g., load path sketch, key point heights, floor/soil bearing capacity).
- Item/load intrinsic characteristics
  - Detailed analysis of load integrity, loose materials/liquids, dimensions, center of gravity (CG), ability to support imposed lifting forces, and hazardous/toxic contents
  - Proof load testing for rigging
  - All slings, below-the-hook devices, and hardware used in critical lifts must be proof-load tested per ASME standards.
  - Practice lift option if applicable
  - If required by the procedure, simulate conditions (weight, rigging, path) with the same crew/equipment; operate through full motion range.
  - Allows recurrent critical lifts (e.g., similar items) to use multi-use plans, with revisions if equipment/rigging changes.

- When lifting a load that exceeds 75% of the rated load requires exceptional care in handling because of its size, shape, close tolerance installation, a high susceptibility to damage, value, impact on operations, hoisting of personnel with an overhead crane or other unusual factors.

- A Lift Director shall be designated for each Critical Lift, separate from the operator where practicable.
- A Master Rigger shall provide guidance and direction for all critical lifts.
- WPC shall be utilized.
  - An ESH-10000-P-001 Critical Lift Plan Permit and number will be obtained from ESH.
  - A written lift plan will be developed that includes the following:
    - Identification of the Lift Director of the lift.
    - Detailed plan including equipment, PPE, and description of how critical connections will be made.
    - Pre-lift inspection of lift site location.
    - Pre-lift inspection of equipment.
    - Pre-lift meeting with participating personnel.
    - Rigging verification conducted by a qualified person to ensure rigging matches approved plan.
    - All lift plans shall be followed in sequential order.
- A post-lift review shall be conducted, and any lessons learned shall be documented.

- Critical Lifts Using Ross or Yates Hoists
  - The same criteria for determining if a lift qualifies as a critical lift applies to the hoists as to cranes.
  - Associated WPC documents will be followed where applicable.
  - An ESH-10000-P-002 Hoist Critical Lift Permit and permit number will be obtained from ESH.
  - A written lift plan will be developed that includes the following:
    - Identification of the person-in-charge of the lift.
    - Detailed plan including equipment, PPE, and description of how critical connections will be made.
    - Pre-lift inspection of lift site location.
    - Pre-lift inspection of equipment.
    - Landing the load at a specific underground level
  - Approved Critical Lift Plans and Permits may be reused for similar lifts of like material in similar conditions.
  - A pre-lift will be performed on all new materials that will be slung to evaluate how the item will hang, determine the center of gravity, and adjust as necessary to ensure the item will hang properly and remain between the guides when transporting down shaft.
  - Only authorized SDSTA personnel may perform critical lifts involving the hoists.

- During rigging activities, when materials are being lowered or raised under the conveyance:
  - Only authorized SDSTA personnel shall be allowed within 50 feet of rigging activities.
  - Signage shall be posted on all active level stations.
  - Rigging personnel will travel in the cage during the slung load and will watch the load through an observation opening in the cage floor.
- If the load is being transported for a third party (contractor), SDSTA personnel will land the load and then release to the third-party.
- A post-lift review shall be conducted, and any lessons learned shall be documented.

- Mobile Crane (less than 2000 lbs) Mobile crane setup, inspection, and operation shall conform to DOE-STD-1090 mobile crane requirements and applicable ASME B30.5 provisions.
  - Must submit an ESH-2000-F-002 Job Hazard Analysis Form prior to work being performed.
    - All individuals involved in a mobile crane lift or exposed to those activities must review and sign off on the Job Hazard Analysis (JHA).
    - The JHA must reflect the highest risk lift planned for daily activities.
- Mobile Crane (equal to or greater than 2000 lbs.) Mobile crane setup, inspection, and operation shall conform to DOE-STD-1090 mobile crane requirements and applicable ASME B30.5 provisions.
  - Must submit a JHA prior to work being performed.
  - All individuals involved in a mobile crane lift or exposed to those activities must review and sign off on the ESH-2000-F-002 Job Hazard Analysis Form.
  - The JHA must reflect the highest risk lift planned for daily activities.
- Require a licensed operator approved by a government-accredited crane operator testing organization.
- Pre-Engineered Production Lifts
  - Pre-Engineered Production Lifts shall follow the ESH-2000-S-001 Work Planning and Control Standard and DOE 1090 Hoisting and Rigging Standard.

5.7. Training

- SDSTA shall establish and maintain a documented hoisting and rigging training and qualification program for operators, riggers, master riggers, inspectors, supervisors, and Persons-in-Charge/Lift Director, consistent with DOE-STD-1090 and OSHA requirements. Training shall include classroom and practical (hands-on) components, evaluation of competence, and periodic refresher or requalification at intervals based on job assignment, equipment type, and performance. Training requirements are based on the complexity of specific equipment and processes used. Training may include:
  - Vendor provided training.
  - Regulatory requirements.
  - Training in accordance with the manufacture's direction.
  - Practical demonstration on hoisting devices.
  - Inspection requirements.

6.0 Documented Information/Related Documents

6.1. ESH-2000-S-001 Work Planning and Controls Standard
6.2. ESH-2000-F-002 Job Hazard Analysis Form
6.3. ESH-7000-S-003 Lockout-Tagout Standard
6.4. ESH-10000-S-002 Below the Hook Lifting Devices and Slings-Rigging Hardware Standard
6.5. ESH-10000-P-001 Mobile Equipment Critical Lift Plan Permit
6.6. ESH-10000-P-002 Critical Lift Permit
6.7. ESH-10000-A-001 Crane Operators Inspection Table
6.8. ESH-10000-F-001 Load Test Form
6.9. ESH-10000-FD-001 Lift Plan Flow Diagram