

Environmental Health and Safety

Campus Hoist and Crane Safety

Section I: Contractors

Overview

All vendors/parties who are responsible for the use of cranes and hoists (referred to generically as “cranes” in this document) on Northern Arizona University (NAU) property or work sites are required to comply with Subpart CC of 29 CFR 1926 1400 (et al.) and any other applicable safety standards.



Scope and Applicability

The following sections include general requirements and responsibilities for crane use and operation on the NAU campus. In addition to ensuring vendor compliance, these requirements are intended to ensure that procedures are in place to protect the health and safety of all site employees, entrants and passers-by. This safety policy is not intended to replace part or all of any vendor safety program, or local, state, or federal regulations. The vendor is responsible for adhering to any applicable safety regulations, which may include requirements that are above and beyond the scope of this policy.

Environmental Health and Safety

Table of Contents:

Responsible Parties	3
Lift Plans	3
Crane Operators	4
Crane and Wire Rope Inspections.....	4
Cranes	4
Wire Rope.....	4
Crane Operations	4
Swing Radius/Work area.....	6
Signals.....	6
Fall Protection.....	6
Crane Maintenance.....	7

Environmental Health and Safety

Responsible Parties

The responsibility for compliance with applicable local, state, or federal crane safety standards and campus safety policies falls upon the contractor in control of the job site and/or the individual crane contractor. This responsibility extends to regulating site entrants, including NAU employees who enter the site for inspections, meetings, or other purposes.

The contractor must designate/provide all legally required competent or certified persons needed to safely operate a crane on NAU property.

Note: OSHA clearly defines the roles and responsibilities of specific crane operation positions.

Lift Plans

A lift plan must be provided to the NAU Project Manager and/or Environmental Health and Safety (EHS) department for approval prior to performing any lifting operations. The lift plan must include:

- The type, size, model, lifting capacity, certification date and serial number of the crane to be used.
- A list of items to be lifted/moved, including a description of each item's weight, dimensions, center of gravity, and presence of hazardous toxic materials.
- The plan may include sketches showing lifting points, methods of attachment, sling angles, load vectors, boom and swing angles, crane orientations, related capacities, and other factors affecting the equipment and lifting operation.
- The name(s) of the Operator, Rigger and Competent Person(s).
- Rigging to be used as well as precautions and safety measures.
- Process for communicating the lift plan to affected personnel before the lift.



In addition to basic lift plans, a Critical Lift Plan or Checklist must be submitted to NAU for review prior to lifts where any of the following conditions exist:

- The load exceeds 75 % of the crane's load chart
- Whenever the load and/or travel radius is expected to travel over any portion of an occupied building
- The load exceeds 100 tons

Environmental Health and Safety

- The lift involves multiple cranes (In this case the plan must include system coordinate operations)
- The crane is being used to lift personnel
- NAU otherwise determines that a plan is necessary

Crane Operators

Crane operation shall only be conducted by properly licensed operators. Before operating on any NAU worksite, the contractor shall provide the NAU project manager with current documentation to verify that operators are properly trained and licensed in the operation of the crane which they are intending to operate.

The contractor shall ensure that crane operators cannot be engaged in activities that distract their attention while operating the equipment, i.e. cell phones (unless used for signaling), iPods etc.

Crane and Wire Rope Inspections

Crane Inspections

Crane inspection records must be kept on-site and be available for review by NAU or regulatory personnel. Inspections must meet all applicable regulatory criteria for initial, daily, periodic, annual, and other inspections. All cranes must also meet the design, construction, and testing criteria as set forth in 29 CFR 1926.1433 through 1926.1441. If manufacturer's inspection criteria exceed the requirements defined by OSHA, inspections must meet the manufacturer criteria. Prior to beginning work on the site, the contractor must verify the following inspections:

Wire Rope Inspections

The contractor must keep records of all required daily, periodic, annual, or other regulatory wire rope inspections for any equipment used on NAU property. Inspections must satisfy all applicable regulatory requirements.

*Deficiencies identified in any crane or wire rope inspection must be documented, categorized, and corrected before any work may proceed.

Crane Operations

The contractor shall ensure that crane operators are familiar with and follow manufacturer operating procedures for safe crane operation. In addition, the crane shall be operated in accordance with all local, state, and federal crane safety regulations, and Federal Aviation Administration (FAA) guidelines. Proper permitting and notifications, if applicable, are the responsibility of the contractor.

Written information regarding known underground hazards (such as steam lines, underground vaults, voids, tanks, utilities, underground building encumbrances, etc.) will be supplied by

Environmental Health and Safety

NAU upon request, marked by NAU Blue Stake services, or will be identified in drawings, documents, soil analyses, or construction documents. Requesting information and determining the ground conditions of the area where the crane is installed/operated is the responsibility of the contractor. Minimum ground conditions must meet the conditions identified by the manufacturer or the OSHA standard (whichever is most stringent) prior to assembly / disassembly of the crane.

The contractor will ensure that assembly/disassembly and operation of cranes is supervised by a person who meets all regulatory competency and/or certification standards to perform the work in question.

Prior to assembling the crane, the contractor must determine if any part of the equipment, load line, or load (including rigging and lifting accessories) can come closer than 20 feet to a power line. If so, the contractor must meet the requirements set forth in 29 CFR 1926.1407 through 29 CFR 1926.1411. For electric transmission and distribution lines rated 50 kV or less, a minimum distance of 10 feet must be maintained from any part of the crane or its load unless the lines are de-energized and visibly grounded. For lines rated over 50kV, the clearance distance should be increased in accordance with Table A in 29 CFR 1926.1408 which provides minimum clearance distances when working in proximity to power lines.

Prior to operation, the contractor must ensure that cranes have all safety devices and operational aids installed and functioning in a manner to satisfy OSHA and other applicable regulatory standards.

The contractor shall ensure that the operators manual, maintenance manual, load charts, and current annual inspection are available in the cab/operator's station. ANSI's *Standard Hand Signals for Lifting* or an acceptable equivalent shall be posted on the crane or in a nearby conspicuous location.

The contractor is responsible for ensuring that crane operators cease operations when deficiencies are identified, or when wind or weather conditions could affect the safe operation of the crane. Contractors shall ensure that operators have authority to stop operations based on safety concerns and may refuse to perform lifts until a qualified person determines that it is safe to proceed. And ensure that any person can give an emergency stop signal.

The contractor must ensure that swinging loads do not pass over workers or bystanders. It is the responsibility of the contractor to use appropriate precautions (barricades, horns, spotters) to maintain a clear load path. At no time are workers permitted to stand beneath suspended or swinging loads.

The contractor shall ensure that no lifting occurs until a qualified person and/or engineer have approved the lift plan, all requirements of OSHA and other applicable standards have been met and no potential safety hazards exist. NAU reserves the right to review and cancel any lift plan/operation to use a crane to lift personnel if it does not meet regulatory or University standards or if other campus considerations warrant cancellation.

Environmental Health and Safety

Swing Radius/Work Area

The contractor shall ensure that employees working in or near the crane are adequately trained to avoid hazards which may be encountered.

The contractor shall identify the boundary of the hazard area and take appropriate steps to keep untrained individuals outside the area.

The contractor shall have a plan for employee entry into the hazard area and communication with the operator while in the hazard area. Employees must be able to notify the operator of their presence any time that they have gone to a location inside the hazard area that may be outside the view of the operator. The operator must know of the presence of employees in order to avoid rotating the equipment until the employee indicates that they are in a safe position.

The contractor shall ensure that no employees enter the fall zone (whether the crane is moving or not) except for employees who are engaged in lifting or crane operations

The rigging of all equipment shall be performed by a qualified rigger. The rigger shall inspect all rigging equipment prior to each lift, and any equipment found to be worn, damaged, or defective shall be removed from service immediately. Appropriate composition slings shall be used for the specific load and conditions. Softeners shall be provided where necessary to protect slings, regardless of type, against sharp edges.

Signals

The contractor shall ensure that a single, accepted communication system is used when:

- The point of operation is not in full view of the operator.
- The equipment is traveling, and the view in the direction of travel is obstructed.
- The operator or person handling the load determines the site specific safety concerns warrant a signal person or system.

If hand signals are utilized, the contractor shall maintain documentation that both the operator and the signal person are trained in the selected method of hand signaling (“Standard Method” hand signals as can be found in Appendix A of OSHA’s crane standard).

If radios or cell phones are used to communicate, the contractor must ensure that they are tested prior to operations. They must be transmitted through a dedicated channel unless there are multiple cranes and shared communications are required for coordination.

Fall Protection

The contractor must ensure that appropriate fall protection is provided any time employees are exposed to fall hazards greater than 6 feet. Anchor points as well as training in the use of fall protection systems must meet OSHA Title 29, subpart M requirements and criteria.

Environmental Health and Safety

Crane Maintenance

The contractor's crane safety plan must provide for limited operation by maintenance, inspection, and repair personnel which does not exceed requirements to perform required tasks. Such operation must be performed by appropriately qualified workers or under supervision of a properly licensed or qualified operator.