

Crane, Sling and Hoist Program

Contact: Director of Risk Management

1. Rogue Community College is committed to the safety of all employees regarding the use of Cranes, Slings and Hoist in the workplace. Rogue Community College is also committed to complying with all applicable federal, state and local health and safety codes and regulations. To ensure that all affected employees are provided with the necessary information and training, the following Crane, Sling and Hoist Program has been established. All employees of Rogue Community College will participate and comply with all sections of the Crane, Sling and Hoist Program. The written Crane, Sling and Hoist Program will be reviewed, updated and maintained by the Rogue Community College Risk Management Department. A printed copy of the program is available at the Risk Management office and online at <https://web.roguecc.edu/risk-management/campus-occupational-safety>.
2. References
 - a. OSHA Publication – Sling Safety - #3072
 - b. OSHA Standard – Overhead and Gantry Cranes – 29 CFR 1910.179
 - c. OSHA Standard – Slings – 29 CFR 1910.184
 - d. ANSI/ASME B30.2 – Overhead and Gantry Cranes
 - e. ANSI/ASME B30.9 – Slings
 - f. ANSI/ASME B30.10 – Hooks
 - g. ANSI/ASME B30.11 – Monorails and Underhung Cranes
 - h. ANSI/ASME B30.16 – Overhead Hoists (Underhung)
 - i. ANSI/ASME B30.17 – Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)
 - j. HMI (Hoist Manufacturers Institute) – Manually Lever Operated Hoist Inspection and Hoist Maintenance Personnel Manual
 - k. OAR Division 2 Subdivision N – Material Handling and Storage.
3. Responsibilities
 - a. Employer
 - i. Rogue Community College will evaluate, develop and implement each area of the Crane, Sling and Hoist Program as required by OAR Division 2 Subdivision N – Material Handling and Storage.
 - b. Risk Management
 - i. Ensure cranes, slings and hoists acquired and used for operations meet appropriate design and construction standards, and are maintained to provide safe operation. All new cranes constructed and installed on or after August 31, 1971, shall meet the design specifications of the

American National Standard Safety Code for Overhead and Gantry Cranes, ANSI B30.2.0-1967.

- ii. Ensure that each crane, sling and hoist operator is competent to operate a crane, sling and hoist safely, through successful training and by evaluating the operator's performance.
- iii. Investigate for all accidents and near miss incidents to stop them from happening again.
- iv. Develop, administer and update the RCC Crane, Sling and Hoist Program.
- v. Administer an on-line and in person safety training course in crane, sling and hoist safety.
- vi. Provide assistance and advice to RCC departments on crane, sling and hoist safety.
- vii. Perform annual maintenance and inspection of all cranes, slings and hoists.
- viii. Maintain written records of inspections and tests.
- ix. Maintaining all manuals, testing results, and lists of authorized operators for cranes, slings and hoists for reference.

c. Employee

- i. All employees of Rogue Community College will comply with each area of the Crane, Sling and Hoist Program while employed at Rogue Community College.
- ii. Operate a crane, sling and hoist only if trained and authorized.
- iii. Operate in accordance with this procedure and safe operating practices.
- iv. Inspect the equipment and complete an inspection checklist at the beginning of each shift when the crane, sling and hoist is used.
- v. Immediately report any problems or unsafe conditions to their immediate supervisor and to Risk Management. Mark the equipment "Out of Service" and de-energize until repairs are made using Lockout/Tagout procedures.
- vi. Only operate equipment that is in safe operating condition.
- vii. Report all accidents, regardless of damage or injury, immediately to their supervisor and Risk Management.

4. Program Overview

- a. The Crane, Sling and Hoist Program applies to all operations that involve the use of cranes, slings, hoists and/or rigging installed in or attached to buildings. Mobile equipment is not included in this procedure. It applies to all campus employees, including: faculty, staff, students, visitors, contractors, and subcontractor personnel who use such devices. In addition to the roles and responsibilities established in other safety programs and procedures, this program establishes crane, slings and hoist specific safety responsibilities. Risk

Management shall ensure that competent persons are trained in crane, sling and hoist safety aspects by having completed the required training class.

- b. No person shall operate a crane or hoist owned or leased by Rogue Community College or on College premises without appropriate training and qualification.
- c. Many types of cranes, slings, hoists, and rigging devices are used for lifting and moving materials by various departments at Rogue Community College. The mission of the Risk Management Department is to maintain a safe and healthful environment for faculty, staff, students and visitors; therefore, it cannot be overemphasized that only competent persons shall be designated to operate these devices.

5. Records Retention

- a. Risk Management shall maintain the following records to meet the requirements of this program:
 - i. A listing of all applicable cranes, slings and hoists.
 - A. Automotive
 - B. Diesel
 - C. Welding
 - ii. A record of training which includes:
 - A. Name of trainer.
 - B. Name of operator.
 - C. Date of training (classroom, hands-on training, hands-on evaluation).
 - iii. Risk Management will maintain the following records to meet the requirements of this program:
 - A. Copies of all frequent inspection records for one year after completion.
 - B. Copies of periodic and annual inspection records for at least four years.
 - C. Copies of repair records for the life of the equipment.
 - D. Copies of load test results for the life of the equipment.
 - iv. Risk Management is responsible for auditing the required records to ensure that the requirements of this program are met.
 - v. Risk Management will receive and retain training records for training they have provided.

6. Training

- a. Training must be completed prior to any use of a crane, sling or hoist. Training of crane, sling and hoist operators at RCC is a two-step process for most cranes, slings and hoists which consists of classroom instruction & hands-on training.
- b. Classroom instruction, hands-on training and operator evaluations can be conducted by either a competent trainer in the department, the equipment

manufacturer, or a vendor who specializes in crane, slings or hoist training. Documentation of these trainings will be forwarded to Risk Management.

- c. In addition to the above requirements, a documented operator evaluation is required for operators of Bridge Cranes.
- d. Training must be specific to the type of equipment being used.
- e. Training shall include the following:
 - i. Characteristics of safe crane, sling and hoist operation;
 - ii. Inspection procedures;
 - iii. Basic load handling considerations;
 - iv. Operator responsibilities;
 - v. Communication used during crane, sling and hoist operation; and
 - vi. Hands-on equipment training.
- f. Trainees must successfully complete hands-on training before being allowed to operate the equipment independently. Trainees will be given adequate supervision and time to learn basic operating skills.
- g. Refresher training in relevant topics will be provided to a crane, sling or hoist operator when any of the following occur:
 - i. The operator has been observed using the equipment in an unsafe manner.
 - ii. The operator has been involved in an accident or a near-miss incident.
 - iii. The operator is assigned to operate a different type of equipment.
 - iv. A condition in the workplace changes in a manner that could affect safe operation of the equipment.
 - v. The crane, slings and hoists standards are updated and conflict with this program.

7. Certification

- a. RCC shall certify that each operator has been trained and evaluated as required by this program. Certification must include:
 - i. the operator's name
 - ii. training date
 - iii. evaluation date
 - iv. the name of the person(s) providing training or evaluation

8. Operating Safety Rules

- a. A personal protective equipment (PPE) hazard assessment must be performed for the task. PPE considerations should include a hardhat, safety glasses and safety shoes.
- b. Rated load capacities, recommended operating speeds, special hazard warnings and/or instructions, shall be conspicuously posted on all equipment. Instructions or warnings shall be visible to operators while they are at their control stations.

- c. Do not exceed the rated load capacity of the crane, sling or hoist, or other components. (Keep in mind that the hoist may be higher rated than the rail/beam or vice versa).
- d. Persons operating the crane, sling or hoist shall inspect all machinery and equipment prior to each use to make sure it is in safe operating condition.
- e. Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains or other reciprocating, rotating, or other moving parts or equipment shall be guarded if such parts are exposed to contact by users, or otherwise create a hazard.
- f. No modifications or additions which affect the capacity or safe operation of the equipment shall be made without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.
- g. Disconnect power to a crane, sling or hoist that is unsafe or in need of repair and tag "Out of Service, Do Not Use."
- h. Never operate a crane, sling or hoist that in your opinion is UNSAFE TO OPERATE.

9. General Maintenance Safety Rules

- a. All controllers should be in the OFF Position.
- b. The main power source should be disconnected, de-energized and locked, tagged, or flagged in the de-energized position. All other sources of energy should be neutralized so that they are in a state of energy isolation.
- c. WARNING or OUT OF ORDER signs should be placed on the crane, sling or hoist, on the floor beneath, or on the hook where they are visible from the floor.
- d. Trained, competent, and authorized personnel shall be provided to work on energized equipment when adjustments and tests are required. After all repairs have been completed, guards shall be reinstalled, safety devices reactivated, and maintenance equipment removed before restoring crane, slings or hoists to service.

10. Testing.

- a. At the start of each work shift (on a day when the crane, sling and/or hoist will be used), operators shall do the following steps before making lifts with any crane, sling or hoist:
 - i. Test the upper-limit switch. Slowly raise the unloaded hook block until the limit switch trips.
 - ii. Visually inspect the hook, load lines, trolley, and bridge as much as possible from the operator's station; in most instances, this will be the floor of the building.
 - iii. If provided, test the lower-limit switch.

- iv. Test all direction and speed controls for both bridge and trolley travel.
- v. Test all bridge and trolley limit switches, where provided, if operation will bring the equipment in close proximity to the limit switches.
- vi. Test the pendant emergency stop.
- vii. Test the hoist brake to verify there is no drift without a load.
- viii. If provided, test the bridge movement alarm.
- ix. Lock out and tag for repair any crane, sling or hoist that fails any of the above tests. Do not return to service until necessary maintenance is completed.

11. Moving the Load

- a. The operator shall not engage in any activity that will divert his/her attention from the task.
- b. The operator shall respond to signals from a designated person only. However, the operator shall obey a stop signal at all times, no matter who gives it.
- c. The operator shall make sure the load and hoist will clear all obstacles before moving or rotating the load.
- d. A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.
- e. The operator shall inch powered hoists and cranes slowly in engagement with a load, but should avoid unnecessary inching and quick reversals of direction.
- f. A load shall not be lifted more than a few inches until it is well balanced in the sling or lifting device.
- g. When lifting loads at or near capacity, brake action shall be tested by lifting the load a few inches off the surface to verify that the brakes are holding.
- h. On rope hoists, the load shall not be lowered below the point where less than two wraps of rope remain on each anchorage of the hoist drum, unless a lower limit device is provided. In this case no less than one wrap may remain on each anchorage of the hoist drum.
- i. Loads shall not be suspended over personnel, unless unit is specifically designed.
- j. All users shall be kept clear of loads about to be lifted and of suspended loads.
- k. Under no circumstances may anyone ride the hook or load.
- l. Directional movement should be made smoothly and deliberately to avoid swing.
- m. Never pull a hoist by the controller cable.
- n. Contact between trolleys (on two trolley cranes) or between trolleys and stops should be avoided.
- o. The operator shall not use the upper (or lower, if provided) limit device(s) as a normal means of stopping the hoist. These are emergency devices only

12. Placing the Load

- a. Never leave the controls unattended while a load is suspended. If it becomes necessary to leave the controls, lower the load to the floor.
- b. The load block should be positioned above head level when the hoist is not in use.
- c. Care shall be exercised when removing a sling from under a landed and blocked load.

13. Slings

- a. Slings shall be inspected prior to each use to make sure they are in safe operating condition.
- b. Slings that are damaged or defective shall not be used.
- c. Slings shall not be shortened with knots or bolts or other makeshift devices.
- d. Sling legs shall not be loaded more than their rated capacities.
- e. Slings used in a basket hitch shall have the loads balanced to prevent slippage.
- f. Slings shall be securely attached to their loads.
- g. Slings shall be padded or protected from sharp edges of their loads.
- h. Suspended loads shall be kept clear of all obstructions.
- i. Hands and fingers shall not be placed between the sling and its load while the sling is being tightened around the load.
- j. Shock loading is prohibited (abrupt starting or stopping of the load).
- k. A sling shall not be pulled from under a load when the load is resting on the sling.
- l. Slings shall be properly stored when not in use so that they are not subject to mechanical damage, moisture, corrosives, extreme temperature or kinking.

14. Inspections

- a. Inspection classification. Initial inspection.
 - i. Prior to initial use all new and altered cranes shall be inspected to insure compliance with the provisions of this policy / procedure.
 - ii. Inspection procedure for cranes in regular service are divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as "frequent" and "periodic" with respective intervals between inspections as defined below:
- b. Frequent inspection - Monthly intervals.
 - i. At RCC this shall be performed at least at monthly. The frequent inspections will be performed only by designated persons. The frequent

inspection will be performed using the "Crane Inspection Checklist" in Appendix B.

- c. Periodic inspection - 1 to 12-month intervals.
 - i. At RCC this shall be performed at 12-month intervals. The periodic inspections will be performed only by qualifiedly crane, sling and hoists technicians. This inspection shall be arranged by Risk Management in coordination with the department that operates the equipment.
- d. Frequent inspection. The following items shall be inspected for defects on a monthly basis, including observation during operation for any defects which might appear between regular inspections. All deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:
 - i. All functional operating mechanisms for maladjustment interfering with proper operation.
 - ii. Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems.
 - iii. Hooks with deformation or cracks. Visual inspection daily; monthly inspection with a certification record which includes the date of inspection, the signature of the person who performed the inspection and the serial number, or other identifier, of the hook inspected.
 - iv. Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations. Visual inspection daily; monthly inspection with a certification record which includes the date of inspection, the signature of the person who performed the inspection and an identifier of the chain which was inspected.
 - i. All functional operating mechanisms for excessive wear of components.
 - ii. Rope reeving for noncompliance with manufacturer's recommendations.
- e. Periodic inspection. Complete inspections of the crane shall be performed at intervals as generally defined, depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of this program and in addition, the following items. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:
 - i. Deformed, cracked, or corroded members. Loose bolts or rivets.
 - ii. Cracked or worn sheaves and drums.
 - iii. Worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices.
 - iv. Excessive wear on brake system parts, linings, pawls, and ratchets.
 - v. Load, wind, and other indicators over their full range, for any significant inaccuracies.

- vi. Gasoline, diesel, electric, or other powerplants for improper performance or noncompliance with applicable safety requirements.
 - vii. Excessive wear of chain drive sprockets and excessive chain stretch.
 - viii. Electrical apparatus, for signs of pitting or any deterioration of controller contactors, limit switches and pushbutton stations.
- f. Cranes not in regular use. A crane which has been idle for a period of 1 month or more, but less than 6 months, shall be given an inspection conforming with requirements Frequent Inspection described above.
 - g. A crane which has been idle for a period of over 6 months shall be given a complete inspection conforming with requirements of Frequent Inspection and Periodic Inspections before placing in service.
 - h. Standby cranes shall be inspected at least semi-annually in accordance with requirements of Frequent Inspection described above and Other Ropes.
 - i. All inspection and maintenance records shall be retained by the department with administrative control of the crane, sling or hoist (A copy of these records shall be forwarded to the Director of Risk Management.)

15. Maintenance

- a. Anyone conducting maintenance or repair on cranes, slings or hoists at heights greater than (6 ft) shall use fall protection. Fall protection should also be considered for heights less than (6 ft). Fall protection includes safety harnesses that are fitted with a lifeline and securely attached to a structural member of the crane or building or properly secured safety nets. Belts are not permitted for fall protection.
- b. Neglecting maintenance or failing to make repairs and adjustments in accordance with the manufacturer's instructions may make operating a crane, sling or hoist very hazardous. Risk Management shall make sure there are maintenance facilities (on or off premises), trained personnel, and detailed procedures for crane, sling and hoist maintenance as described in this program.
 - i. Only authorized persons, may maintain, repair, adjust, and inspect cranes, slings and hoists and in accordance with manufacturer's specifications.
 - ii. Risk Management will make sure the designated person has parts manuals and maintenance manuals.
 - iii. Follow the manufacturer's recommendations to schedule maintenance, lubrication and inspection.
 - iv. Designated persons must conduct crane and hoists inspection to detect damage, failure, deformation, etc. which might impair safe use.
 - v. Remove a defective crane, slings or hoists from service and do not use it unless it is satisfactorily repaired and tested by the manufacturer or an expert of equal competence.

c. Preventive maintenance.

- i. A preventive maintenance program based on the crane, sling or hoist manufacturer's recommendations shall be established.
- ii. Before adjustments and repairs are started on a crane, sling or hoist the following precautions shall be taken:
 - A. The crane, sling or hoist to be repaired shall be run to a location where it will cause the least interference with other cranes, slings or hoists operations in the area.
 - A. All controllers shall be at the off position.
 - B. The main or emergency switch shall be open and locked in the open position.
 - C. Warning or "out of order" signs shall be placed on the crane, sling or hoist, also on the floor beneath or on the hook where visible from the floor.
 - D. Where other cranes, slings or hoists are in operation on the same runway, rail stops or other suitable means shall be provided to prevent interference with the idle crane, sling or hoist.
 - E. After adjustments and repairs have been made the crane, sling or hoist , they shall not be operated until all guards have been reinstalled, safety devices reactivated and maintenance equipment removed.
 - F. Adjustments and repairs. Any unsafe conditions disclosed by the inspection requirements shall be corrected before operation of the crane, sling or hoist is resumed. Adjustments and repairs shall be done only by designated personnel. Adjustments shall be maintained to assure correct functioning of components. The following are examples:
 - a. All functional operating mechanisms
 - i. Limit switches
 - ii. Control systems
 - iii. Brakes
 - iv. Power plants
 - G. Repairs or replacements shall be provided promptly as needed for safe operation.
 - H. Crane hooks showing defects shall be discarded. Repairs by welding or reshaping are not generally recommended. If such repairs are attempted they shall only be done under competent supervision and the hook shall be tested to the load requirements.
 - I. Load attachment chains and rope slings showing defects.

- J. All critical parts which are cracked, broken, bent, or excessively worn. Pendant control stations shall be kept clean and function labels kept legible.
- d. Cranes, slings or hoists may be modified and rerated provided such modifications and the supporting structure are checked thoroughly for the new rated load by a qualified engineer or the equipment manufacturer.

16. Definitions

- a. ANSI means the American National Standards Institute.
- b. Bridge means that part of a crane consisting of girders, trucks, end ties, foot walks, and drive mechanism which carries the trolley or trolleys.
- c. Bumper [buffer] is an energy absorbing device for reducing impact when a moving crane or trolley reaches the end of its permitted travel; or when two moving cranes or trolleys come in contact.
- d. Competent Evaluator is a person in the department/work area who is experienced and competent with the crane, and is familiar with the equipment and its safe operation. The classroom portion of the crane/hoist training must have been successfully completed to be considered competent in regard to conducting the evaluation portion of the crane training. The competent evaluator could be, but is not limited to, a certified operator, supervisor/manager or safety officer.
- e. Competent Person is anyone who by knowledge, training and experience has demonstrated the ability to solve problems and perform functions relating to the subject matter and work.
- f. Competent Trainer is a person who has demonstrated familiarity with the type of crane/hoist in their work area. A contractor or equipment vendor who has experience training, crane/hoist operation and is familiar with the equipment is also permitted to be a Competent Trainer
- g. Crane is a machine for lifting and lowering a load and moving it horizontally, with the hoisting mechanism an integral part of the machine. Cranes whether fixed or mobile are driven manually or by power.
- h. Designated means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.
- i. Drum is the cylindrical member around which the ropes are wound for raising or lowering the load.
- j. Floor-operated crane means a crane which is pendant or nonconductive rope controlled by an operator on the floor or an independent platform.
- k. Gantry crane means a crane similar to an overhead crane except that the bridge for carrying the trolley or trolleys is rigidly supported on two or more legs running on fixed rails or another runway.

- l. Hoist: A suspended machinery unit that is used for lifting or lowering a freely suspended (unguided) load.
- m. Latch Hook: A type of hook with a mechanical device to close the throat opening of the hook
- n. Limit switch is a switch which is operated by some part or motion of a power-driven machine or equipment to alter the electric circuit associated with the machine or equipment.
- o. Load means the total superimposed weight on the load block or hook.
- p. Monorail: A trolley suspension crane hoist, whose trolley is suspended from a single rail. This type of crane hoist is used to move a load horizontally.
- q. Overhead crane means a crane with a movable bridge carrying a movable or fixed hoisting mechanism and traveling on an overhead fixed runway structure.
- r. Rated load means the maximum load for which a crane or individual hoist is designed and built by the manufacturer and shown on the equipment nameplate(s).
- s. Responsible Person is a person that is accountable for the duties as assigned above. This person could be a Principal Investigator (PI) or manager of the area.
- t. Rope refers to wire rope, unless otherwise specified.
- u. Trolley is the unit which travels on the bridge rails and carries the hoisting mechanism.
- v. Wall crane means a crane having a jib with or without trolley and supported from a side wall or line of columns of a building. It is a traveling type and operates on a runway attached to the side wall or columns.

17. Examples

- a. Cranes and Hoists
 - i. Jib Crane
 - ii. Wall Crane
 - iii. Gantry Crane
 - iv. Semi Gantry crane
 - v. Monorail
 - vi. Switching Monorail
 - vii. Bridge Crane
 - viii. Winches
 - ix. Electric Chain hoist
 - x. Lever hoist, Chain Fall hoist, Come Along Hoist
 - xi. Pneumatic Chain hoist
 - xii. Electric Wire Rope Hoist
 - xiii. Pneumatic Wire Rope Hoist
 - xiv. Engine Hoist
- b. Slings

- i. Allow Steel Chain
- ii. Wire Rope
- iii. Metal Mesh
- iv. Natural and Synthetic Fiver Rope
- v. Synthetic Web

18. Crane and Hoist Frequent Inspection Checklist

- a. Full inspection Checklist can be found at [Risk Management Forms | Rogue Community College \(roguecc.edu\)](https://www.roguecc.edu/risk-management/forms)

19. Crane and Hoist Periodic Inspection Checklist

- a. Full inspection Checklist can be found at [Risk Management Forms | Rogue Community College \(roguecc.edu\)](https://www.roguecc.edu/risk-management/forms)

20. Sling Periodic Inspection Checklist

- a. Full inspection Checklist can be found at [Risk Management Forms | Rogue Community College \(roguecc.edu\)](https://www.roguecc.edu/risk-management/forms)