

OVERHEAD BRIDGE, CRANES AND HOIST SAFETY

PURPOSE

- 1) This written Overhead Bridge Crane and Hoist Safety Program establishes guidelines to be followed whenever any employees work with or near cranes or hoists at the company.
- 2) This program is established to:
 - a) Provide a safe working environment
 - b) Govern operator use of cranes and hoists
 - c) Ensure proper care and maintenance of this equipment
- 3) This program establishes uniform requirements designed to ensure that crane and hoist safety training, operation, and maintenance practices are communicated to and understood by affected employees.
- 4) These requirements are also designed to ensure that procedures are in place to protect the health and safety of all employees.
- 5) It is our intent to comply with the requirements of 29 CFR 1910.179.

ADMINISTRATIVE DUTIES

- 1) Projects, Environmental, & Safety Manager (PESM) is responsible for the developing and maintaining UMA's written Crane & Hoist safety program and has full authority to make necessary decisions to ensure the success of this program.
- 2) The PESM has appropriate training and experience that is commensurate with the complexity of the program and is capable of identifying existing and predictable hazards to employees and taking prompt corrective measures to eliminate the hazards.

CRANES & HOISTS IN THE WORKPLACE

- 1) Cranes and hoists covered by this program meet all design specifications and construction criteria found in 29 CFR 1910.179.
- 2) This written program covers the following bridge, trolleys and hoists:

Type and Quantity:	Make, Model, and Serial Number:	Major Hazards:	Purpose and Location:
Bridge & Trolley	Snap Trac Kundel 1/2 Ton capacity	Pinch Areas, Overhead Hazard, Weight Limits	Mold Repairs, Metal Press
Hoist/Crane	CM 1/2 Ton Capacity	Pinch Areas, Overhead Hazard, Weight Limits	Mold Repairs, Metal Press
Shop Constructed Bridge and Trolley	N/A, 1/2 Ton Capacity	Pinch Areas, Overhead Hazard, Weight Limits	Mold Cleaning, Seal Wash
Hoist/Crane	CM, 1/4 Ton Capacity	Pinch Areas, Overhead Hazard, Weight Limits	Mold Cleaning, Seal Wash
Bridge & Trolley	Harrington, 1 Ton Capacity	Pinch Areas, Overhead Hazard, Weight Limits	Mold Cleaning, Peening room
Hoist/Crane	Harrington, 1 Ton Capacity	Pinch Areas, Overhead Hazard, Weight Limits	Mold Cleaning, Peening room
Hoist/Crane	Coffing, 1/2 Ton (certified to 625 lbs)	Pinch Areas, Overhead Hazard, Weight Limits	Stock Cafeteria with food products
Bridge, Trolley and Hoist	R&M 3 Ton Capacity	Pinch Areas, Overhead Hazard, Weight Limits	Plastic Mold Maintenance

OVERHEAD BRIDGE, CRANES AND HOIST SAFETY

INSTALLATION, ASSEMBLY, AND DISASSEMBLY

- 1) Failure to adequately address hazards associated with installation, assembly, and disassembly is a significant cause of injuries and fatalities in the U.S. therefore, our company follows procedures that address these hazards.

- 2) **Modification**

- a) Modifications or additions which affect the capacity or safe operation of a crane or hoist are prohibited, unless:
 1. The modifications or additions are reviewed by the equipment manufacturer or a qualified engineer
 2. The crane is tested in accordance with the Testing section of this written program
 3. The load charts, procedures, instruction manuals, and instruction plates/tags/decals, including the rated load marking, are modified as necessary to accord with the modification or addition.

- 3) **Testing**

- a) Prior to initial use of all new and altered cranes a third party contractor shall conduct tests to ensure compliance with the regulations and with the following functions:

1.

Crane and Hoist type:	Functions:
-----------------------	------------

- b) In addition, rated load test shall be conducted for cranes as follows:

1.	Crane Type:	Test loads shall not be more than the following unless otherwise recommended by the manufacturer:
	Overhead or Gantry Crane	125 percent of the rated load
	Crawler, Locomotive, or Truck Crane	110 percent of the rated load at any selected working radius

- 4) **Inspection**

- a) The company seeks to prevent equipment-failure-related injuries and fatalities by establishing an inspection process that identifies and addresses crane and hoist safety concerns.
- b) The inspections are based on the nature of the critical components of our cranes and hoists and the degree of their exposure to wear, deterioration, or malfunction.
- c) Any deficiencies discovered during inspections will be carefully examined by depending on the extent of the damage to a crane or hoist either maintenance or competent third party maintenance activity and this person will determine whether they constitute a safety hazard.
- d) If so, these deficiencies will be repaired, or defective parts replaced, before equipment can be used.

- 5) **Initial Inspection**

- a) Our company inspects all cranes & hoists to ensure they are capable of safe and reliable operation when initially set or placed in service and after any major repairs, adjustments, or design modification.
- b) UMA will have a third party complete these inspections.

- 6) **Pre-Operational Inspection**

- a) Inspection of all cranes, hoists, and related equipment will be made at the start of each shift to make sure they are in safe operating condition.
- b) This frequent inspection is the responsibility of a qualified or competent person.

- 7) **Periodic Inspection**

- a) Periodic inspections include both monthly and annual inspections. These inspections may be performed more frequently depending upon the activity, severity or service, and environment.

OVERHEAD BRIDGE, CRANES AND HOIST SAFETY

1. Monthly Inspection
 - a. The monthly inspection interval may vary depending on crane use and site conditions.
 - b. This inspection, performed by maintenance, includes those items listed for frequent inspections, as well as, but not limited to:
 - i) The pre-use Operational Checklist
 - ii) Lifting hooks have serviceable safety latches
 - iii) No deformation on lifting hooks
 - iv) Chains and/or slings in good condition
 - v) Chains and slings free of oil and grease
 - vi) Storage in manner to deter damage
 - vii) Load rating markings
2. Annual Comprehensive Inspection
 - a. The annual inspection performed at least once every 12 months promotes safety by ensuring that a thorough, comprehensive inspection of equipment is performed to detect and address deficiencies that might not be detected in a daily or monthly inspection.
 - b. This inspection must be performed by a third party non biased qualified inspector. In addition to the frequent and monthly inspection items listed above, this inspection includes, but are not limited to, the following:
 - i) Deformed, cracked or corroded members.
 - ii) Loose bolts or rivets.
 - iii) Cracked or worn sheaves and drums.
 - iv) Worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices.
 - v) Excessive wear on brake system parts, linings, pauls, and ratchets.
 - vi) Load, wind, and other indicators over their full range, for any significant inaccuracies.
 - vii) Excessive wear of chain drive sprockets and excessive chain stretch.
3. Rope Inspection
 - a. Many hoists use wire rope to lift and support their loads and parts of the equipment. If the rope is worn or damaged, it can break, causing the equipment to fail and/or the load to fall, which can kill or injure employees.
 - b. To prevent this from happening, our company performs thorough inspections of all ropes in use.
 - c. A checklist for rope inspection includes, but is not limited to, the following:
 - i) Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.
 - ii) A number of broken outside wires and the degree of distribution or concentration of such broken wires.
 - iii) Worn outside wires, corroded or broken wires at end connections and/or corroded, cracked, bent, worn, or improperly applied end connections.
 - d. These inspections are performed by maintenance.

If any deterioration, resulting in appreciable loss of original strength is observed, Maintenance/PESM determines whether further use of the rope would constitute a safety hazard.

 - i) If it does, the defective rope is replaced before use.

OVERHEAD BRIDGE, CRANES AND HOIST SAFETY

4. Inspections for Cranes and Hoists Not in Regular Use

- a. Cranes which have been idle for one month or more must be inspected as follows:

Crane or Hoists Type:	Perform:
Cranes and hoists idle for one month or more	<ul style="list-style-type: none">• Applicable frequent inspections listed above• An idle rope inspection as specified below.
Cranes and hoists idle for over six months	<ul style="list-style-type: none">• Applicable frequent and periodic inspections listed above• An idle rope inspection as specified below.
Standby cranes and hoists	<ul style="list-style-type: none">• Applicable frequent inspections listed above• An idle rope inspection as specified below.

- b. All rope which has been idle for a period of a month or more due to shut down or storage of a crane or hoist on which it is installed must be given a thorough inspection before it is used.
- c. This inspection must be performed by the operator, and this person must approve the rope before it can be used again.

POWER LINE SAFETY PROCEDURES

- 1) Although no UMA hoists operate near power lines, any overhead power line must be considered energized until the person owning the line or the electric utility authorities indicate that it is not energized and has visibly grounded it.
If assembly, disassembly, transit, or hoisting activities are to be performed near overhead power lines, as may be the case with mobile cranes, then before these activities are started:
 - a) Safety must be notified that these activities are to be performed near overhead power lines
 - b) Safety in conjunction with Maintenance will make arrangements to ensure that:
 1. The lines are de energized and visibly grounded at the point of work
 2. Protective measures, such as proper guarding, isolating, or insulating, are provided
 3. Safe clearances between the lines and any crane, hoist, conductive materials, tools, equipment, or any part of an employee's body are maintained
- 2) When power lines remain energized during these activities, all cranes and hoists must be operated so that a Minimum Safe Approach Distance (MSAD) of 10 feet is maintained between their structures and energized power lines.
- 3) If the voltage is higher than 50kV, the clearance must be 10 feet plus 4 inches for every 10kV over that voltage.
- 4) However, under certain conditions listed at 1910.333(c)(3)(iii), the clearance may be reduced, but any decision to reduce clearances must be approved by a qualified electrician through PESM.
- 5) If a crane capable of having part of its structure elevated near energized overhead power lines is intentionally grounded, employees working on the ground near the point of grounding are not allowed to stand at the grounding location
- 6) Work and Clearance Areas
 - a) To prevent employees from entering the hazard areas of a crane UMA will place an authorized personnel sign up before starting work.
 - b) If an employee must enter a hazard area of a crane the employee or someone instructed by that employee must ensure the operator is informed that he or she is going to that location.
 - c) In such situations for cranes with a rotating superstructure, the operator must not rotate the superstructure until the operator is informed that the employee is in a safe position.
 - d) Where designated passageways or walkways are provided near cranes, they must be of adequate width and height at all times.
 - e) Obstructions must not be placed in designated passageways or walkways so that the safety of employees will be jeopardized by movements of a crane or hoist.

OVERHEAD BRIDGE, CRANES AND HOIST SAFETY

SAFE WORK PRACTICES

- 1) While employees are using crane ladders, their hands must be free from encumbrances.
- 2) Articles which are too large to be carried in pockets or belts must be lifted and lowered by a hand line.
- 3) Necessary clothing and personal belongings must be stored in such a manner as not to interfere with cab access or operation.
- 4) Tools, oil cans, waste, extra fuses, and other necessary articles must be stored in a toolbox and will not be permitted to lie loose in or about the cab.
- 5) Refueling with small portable containers must be done with an approved safety-type can and equipped with an automatic closing cap and flame arrester.
- 6) Approved cans are listed in the definition at 1910.155(c)(3).
- 7) Equipment must not be refueled with the engine running.
- 8) Crane guards must be securely fastened.
 - a) Exposed moving parts, such as gears, ropes, setscrews, projecting keys, chains, chain sprockets, and reciprocating components, constitute a hazard if not guarded.

MAINTENANCE

- 1) Any crane, or component deficiencies determined to constitute safety hazards are serviced, adjusted, or repaired, or defective parts are replaced, promptly and before continued use.
- 2) However, no modifications or additions that affect the capacity or safe operation of the equipment may be made without the manufacturer's written approval.
- 3) If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals must be changed accordingly.
- 4) In no case may the original safety factor of the equipment be reduced.
- 5) PESH/Maintenance are responsible for ensuring the cranes and hoists are capable of safe and reliable operation after any major repair or design modification.
 - a) Testing and initial inspection as described earlier in this written plan will be followed for such purposes.
- 6) While defective parts may be found, we prefer to invest time and effort into the proper upkeep of our equipment, which results in day-to-day reliability.
- 7) Keeping up with the manufacturer's recommended maintenance schedules, and completing the proper records, will also increase our equipment's longevity and enhance resale values.
- 8) Maintenance department completes any recommended "breaking-in" maintenance whenever our company purchases cranes.

SAFETY EQUIPMENT

- 1) Proper fire extinguishers are kept in the immediate vicinity of each crane.
- 2) Maintenance is in charge of fire extinguisher maintenance.
- 3) Carbon tetrachloride extinguishers must not be used for overhead and gantry cranes.
 - a) *Carbon dioxide, dry chemical, or equivalent fire extinguishers must be selected for hoists and crawler, locomotive, and truck cranes.*
- 4) Any employee walking and stepping on crane or hoist surfaces four or more feet above the floor or ground surface where proper guardrails are not provided must use personal fall arrest or fall restraint systems, anchored to any apparently substantial part of the crane and wear a hard hat.

TRAINING

- 1) Operator Training
 - a) It is the policy of this company to permit only trained personnel to operate cranes and hoists.
 - b) Supervisors will identify all new employees in the employee orientation program and make arrangements with department management to schedule training.

OVERHEAD BRIDGE, CRANES AND HOIST SAFETY

- c) Trained Personnel include: Maintenance and Technicians.
- 2) Pre-Requisites to Training
 - a) Before we begin training a new employee, the PESM determines if the potential crane or hoist operator is capable of performing the duties necessary to be a competent and safe operator.
 - b) This based upon his/her physical and mental abilities to perform the job functions that are essential to the operation of the crane or hoist.
- 3) Initial Training
 - a) Crane and hoist trainees receive classroom instruction using: PowerPoint Presentation.
 - b) Trainees also receive practical training in the following format: Observation.
 - 1. All crane and hoist operators are trained on the equipment they will be operating before beginning work / job.
- 4) Each type of crane or hoist has a different "feel" to it, and that makes operating it slightly different from operating other cranes or hoists.

Company work areas where these cranes or hoists are being used also present particular hazards.
- 5) For these reasons, it is impractical to develop a single "generic" training program that fits all of our cranes and hoists.
- 6) Accordingly, during initial training, our company covers the operational hazards of our specific cranes and hoists, including:
 - a) Hazards associated with the particular make and model of the crane and hoist the operator will be authorized to use.
 - b) Hazards of our workplace and the loads to be hoisted
 - c) General hazards that apply to the operation of all or most cranes and hoists used in our workplace.
- 7) Each operator-in-training who has received training in any elements of our training program for the types of cranes or hoists which that employee will be authorized to operate and for the areas of the workplace in which the cranes or hoists will be operated need not be retrained in those elements before initial assignment in our workplace if we receive written documentation of the training and if the employee is evaluated to be competent.
- 8) Training Certification
 - a) After an employee has completed initial training, the PESM will determine whether the potential operator can safely perform the job.
- 9) Performance Evaluation
 - a) Each crane operator is evaluated to verify that the operator has retained and uses the knowledge and skills needed to operate safely.
 - b) This evaluation is done by the PESM.
 - c) If the evaluation shows that the operator is lacking the appropriate skills and knowledge, the operator is retrained.
 - d) When an operator has an accident or near miss or some unsafe operating procedure is identified, Retraining is performed.

PROGRAM EVALUATION

- 1) The PESM is responsible for evaluating and, as necessary, updating the written program to maintain effectiveness.
- 2) Any questions, concerns, or suggestions can be directed to the PESM.