HOIST OPERATIONS FACT SHEET
Inspection, Maintenance and Licensing

This fact sheet was developed to respond to the several inquiries I have received regarding the State and Federal requirements of licensing, testing and maintenance of hoists. Each DLC has the ownership responsibility of the hoists within the DLC.

Training for hoist operators is available (spring and fall) through the EHS Office. Any untrained operators should be referred to the Training Need Assessment Registry. The next session will be scheduled shortly.

Any hoisting equipment within your DLC area should be listed in the Space Registry.

A fully documented SOP is in the process of being developed. If you have any questions, please contact the EHS Office.

MA Regulations (520 CMR 6.00)
1. All hoisting machinery will be operated according to manufactures specifications.
2. All equipment for handling hoisting and moving materials shall at all times be operated by a designated trained person under the direction of a duly licensed person.
3. Maintenance, repair and refueling shall be done when the machine is inoperable and secure.
4. Prior to starting any hoisting equipment, the operator must make a complete walk around the equipment to verify people are clear of the equipment and that it is in a safe condition.
5. Visual inspections shall be made daily of wire ropes, bearings, gears, friction clutches, brakes, chain drives, and other parts subject to wear.
6. A written daily log of inspections shall be maintained and available for examination by Dept. of Public Safety (DPS) personnel.
7. A thorough inspection shall be made at intervals of not more than 90 days by a duly licensed person. A written and signed record of this thorough inspection shall be kept and made available to DPS personnel for examination.
8. Inspection and repair of booms shall be made only when the boom is lowered and adequately supported.
9. In the event that a piece of equipment has not been used for 90 days or more, the above “thorough inspection” need not be performed until the day that the equipment is put back into use.
10. The operator shall be responsible for those operations under their direct control. When there is any doubt as to the safety of any action, the operator shall have the authority to stop and refuse to handle loads until safety has been assured.
11. All controls shall be tested by the operator prior to operating the hoisting equipment. If any controls are found to be functioning improperly, they shall be adjusted or repaired before the equipment is used.
12. All operators shall respond to signals only from a trained signal person.
13. The operator will be responsible in securing any unattended hoisting equipment in accordance with applicable standards.
14. If power fails during operation of any hoisting equipment, the operator shall secure the
machine and comply with 520 CMR 6.04(9) (see #13 above) prior to leaving the equipment.
When practical, suspended loads shall be landed under brake control.
15. At no time shall a person work under a boom or a load suspended thereon.
16. The operator shall not engage in any practice which will divert their attention while actually
engaged in operating the hoisting equipment.
17. When an operator is physically or mentally unfit, they shall not engage in the operation of
hoisting equipment.

MA Licensing
1. All applicants must be at least 18 years of age.
2. All applicants must possess a valid and current driver’s license to operate a motor vehicle.
3. Applicants for a hoisting operator license shall be required to pass a written examination. At
the inspecting engineer’s discretion, it may be deemed necessary that a practical examination
will also be administered for the specific type of equipment for which they have applied to
operate.
4. Applicants taking the practical examination must:
   a. Demonstrate the ability to operate the equipment for which they are being examined.
   b. Demonstrate the ability to comprehend and interpret all placards, operator’s manuals,
safety codes, and other information pertinent to safe hoisting operations.
   c. Demonstrate the ability to communicate in applicable language, when signals and
      instructions are by radio.
   d. Possess knowledge of emergency procedures.
   e. Possess knowledge of Massachusetts General Laws and regulations as they relate to hoisting
      equipment.
5. All applicants shall possess DOT certificate documents demonstrating that they meet the
criteria for a DOT medical examination.
6. All licenses required by law shall be carried by the operator for inspection by any person
lawfully entitled to such inspection.
7. Signal people of hoisting and material handling equipment shall be properly trained.

OSHA Requirements 1910.179
1. A hoist is an apparatus which may be part of a crane, exerting a force for lifting or lowering.
2. A gantry crane is 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 other
runway.
3. Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for
aisles, at loading docks, through doorways and wherever turns or passage must be made.
Aisles and passageways shall be kept clear and in good repair, with no obstruction across or in
aisles that could create a hazard. Permanent aisles and passageways shall be appropriately
marked. (.176-a)
4. Where passageways or walkways are provided obstructions shall not be placed so that safety
of personnel will be jeopardized by movements of the crane. (.179-b-6-ii)
5. Only designated personnel shall be permitted to operate a crane covered by this document. (.179-b-8)

6. The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or marked on its load block and this marking shall be clearly legible from the ground or floor. [.179-b-5]

7. Cranes 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. The crane shall be tested in accordance with paragraph 1910.179(k)(2). [see section 7 below] The new rated load shall be displayed as in (6) above.

**OSHA Inspection**

1. Prior to initial use all new and altered cranes shall be inspected to insure compliance with 29 CFR 1910.179. [.179-j-1-i]

2. *Frequent inspections.* Daily to monthly intervals. All deficiencies shall be carefully examined and determination made as to whether they constitute a safety hazard.
   a. All functional operating mechanisms for maladjustment interfering with proper operation shall be inspected daily.
   b. Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems shall be inspected daily.
   c. Hooks shall be visually inspected daily for deformation or cracks.
   d. Hooks shall be inspected and measured for deformation and cracks monthly. A certified record shall be maintained which includes: date of inspection; signature of the inspecting person; serial number or other means to identify the hook.
   e. Hooks with cracks or having deformation of more than 15% in excess of normal throat opening, or more than 10% twist from the plane of the unbent hook, shall be discarded and replaced. [.179-j-2-iii] [.179-l-3-iii-a]
   f. Hoist chains shall be visually inspected daily for excessive wear, twist, or distorted links.
   g. Hoist chains shall be inspected monthly for excessive wear, twist distorted links with a written record maintained which includes the date of inspection, the signature of the inspector, and an identifier of the chain which was inspected.
   h. All functional operating mechanisms shall be inspected for excessive wear of components.
   i. Rope reeving shall be inspected for noncompliance with manufacturer’s recommendations.

3. *Periodic inspections.* 1 to 12 month intervals. All deficiencies shall be carefully examined and determination made as to whether they constitute a safety hazard. Items to be investigated:
   a. Deformed, cracked, or corroded members;
   b. Loose bolts or rivets;
   c. Cracked or worn sheaves and drums;
   d. Worn, cracked or distorted parts such as pins, bearing, shafts, gears, rollers, locking and clamping devices.
   e. Excessive wear on brake system parts, linings, pawls and rachets;
f. Load, wind, and other indicators over their full range, for any significant inaccuracies;
g. Gasoline, diesel, electric, or other powerplants for improper performance or noncompliance with applicable safety requirements;
h. Excessive wear of chain drive sprockets and excessive chain stretch;
i. Electrical apparatus, for signs of pitting or any deterioration of controller contractors, limit switches and pushbutton stations.

4. Cranes not in regular use
   a. A crane that has been idle for a period of one month or more, but less than six months, shall be given an inspection conforming with item 2 above and a complete rope inspection.
   b. A crane which has been idle for a period of over six months shall be given a complete inspection conforming with requirements of item 2 and 3 above and a complete rope inspection.
   c. Standby cranes shall be inspected at least semi-annually in accordance with requirements of section 2 and a complete rope inspection.

OSHA Required Testing
1. Prior to initial use all new and altered cranes shall be tested to insure compliance with this section including the following functions:
   a. Hoisting and lowering;
   b. Trolley travel;
   c. Bridge travel;
   d. Limit switches, locking and safety devices.
2. The trip setting of hoist limit switches shall be determined by tests with an empty hook traveling in increasing speeds up to the maximum speed. The actuating mechanism of the limit switch shall be located so that it will trip the switch, under all conditions, in sufficient time to prevent contact of the hook or hook block with any part of the trolley.
3. Test loads shall not be more than 125% of the rated load unless otherwise recommended by the manufacturer. The test reports shall be placed on file where readily available to appointed personnel.

OSHA Required Maintenance
1. A preventive maintenance program based on the crane manufacturer’s recommendations shall be established.
2. Before adjustments and repairs are started on a crane the following precautions shall be taken:
   a. The crane to be repaired shall be run to a location where it will cause the least interference with other cranes and operations in the area.
   b. All controllers shall be in the off position.
   c. The main or emergency switch shall be open and locked in the open position. Lockout / tagout procedures shall be utilized.
   d. Warning or “out of order” signs shall be placed on the crane, also on the floor beneath the crane or on the hook visible from the floor.
e. Where other cranes are in operation on the same runway, rail stops or other suitable means shall be provided to prevent interference with the crane.

f. After adjustments and repairs have been made the crane shall not be operated until all guards have been reinstalled, safety devices deactivated and maintenance equipment removed.

Adjustments and Repairs

1. Any unsafe conditions disclosed by the inspection shall be corrected before operation of the crane is resumed. Adjustments and repairs shall be done only by designated personnel.

2. Adjustments shall be maintained to assure correct functioning of components. Such as but not limited to:
   a. All functioning operating mechanisms.
   b. Limit switches.
   c. Control systems.
   d. Brakes.
   e. Power plants.

3. Repairs or replacements shall be provided promptly as needed for safe operations. Such as but not limited to:
   a. Crane hooks
   b. All critical parts which are cracked, broken, bent or excessively worn.
   c. Load attachment chains and rope slings showing defects.

4. Pendant control stations shall be kept clean and function labels kept legible.

Rope Inspection

1. A thorough inspection of all ropes shall be made at least once a month and a certification record which includes the date of inspection, the signature of the person who performed the inspection and an identifier for the ropes which were inspected shall be kept on file where readily available to appointed personnel. Any deterioration, resulting in appreciable loss of original strength, shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.
   a. Some of the conditions that could result in an appreciable loss of strength are the following:

2. Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.

3. A number of broken outside wires and the degree of distribution or concentration of such broken wires.

4. Worn outside wires.

5. Corroded or broken wires at end conditions.

6. Corroded, cracked, bent, worn, or improperly applied end connections.

7. Severe kinking, crushing, cutting, or unstranding.

8. All rope which has been idle for a period of a month or more due to shutdown or storage of a crane on which it is installed shall be given a thorough inspection before it is used.
   a. This inspection shall be for all types of deterioration and shall be performed by an appointed person whose approval shall be required for further use of the rope.
b. A certification record shall be available for inspection which includes the date of
inspection, the signature of the person who performed the inspection, and an identifier
for the rope which was inspected.

9. A copy of the manufacturers’ operating and maintenance manual shall be readily available.

Note: There are other requirements pertaining to the operation of the hoist. This document is intended
as a quick guide for inspection, maintenance, and licensing.