DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

GENERAL INDUSTRY SAFETY AND HEALTH STANDARD

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 16 and 21 of 1974 PA 154, MCL 408.1016 and 408.1021, and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445.2011, 445.2025, and 445.2030)

GENERAL INDUSTRY SAFETY AND HEALTH STANDARD
PART 18. OVERHEAD AND GANTRY CRANES

R 408.11801 Scope.

Rule 1801. (1) This standard covers the equipment, installation, maintenance, and operation of top running overhead and gantry single and multiple girder cranes in, about, and around places of employment in order to safeguard employees.

(2) This standard does not apply to any of the following:

(a) Monorails.

(b) Railway or truck cranes.

(c) Mine hoists.

(d) Conveyors.

(e) Shovels.

(f) Drag-line excavators.

(g) Equipment used on construction jobs.

(h) Systems used to transport people.

History: 1979 AC; 2002 AACS; 2018 AACS.

R 408.11803 Definitions; B to D.

Rule 1803. (1) "Brake" means a device used for retarding or stopping motion by friction or power means.

(2) "Bridge" means that part of a crane consisting of girders, trucks, end ties, footwalks, and the driving mechanism which carries the trolley or trolleys.

(3) "Bumper" means an energy-absorbing device for reducing impact when a moving crane or trolley reaches the end of its permitted travel, or when 2 moving cranes or trolley come in contact.

(4) "Cab" means an operator compartment located on a crane bridge or trolley.

(5) "Cab operated crane" means a crane controlled by an operator in a cab located on the bridge or trolley.

(6) "Catwalk" means a walkway with handrail and toeboards which are attached to the bridge or trolley, or both, for access purposes.

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(7) "Competent person" means a person who has the necessary experience of the crane and equipment used in the lifting operation to carry out the function satisfactorily, who is capable of identifying an existing or potential hazard in surroundings, or under working conditions, that are hazardous or dangerous to an employee, and who has the authority and knowledge to take prompt corrective measures to eliminate the hazards.

(8) "Collector shoe" means a contacting device for collecting current from runway or bridge conductors.

(9) "Conductors, bridge" means the electrical conductors located along the bridge structure of a crane to provide power to the trolley.

(10) "Conductors, runway" means the electrical conductors located along a crane runway to provide power to the crane.

(11) "Controller" means a device or group of devices that serves to govern, in a predetermined manner, the power delivered directly to the apparatus to which it is connected.

(12) "Crane" means a top running overhead or gantry crane.

(13) "Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

(14) "Drag brake" means a brake that provides retarding force without external control.

History: 1979 AC; 2002 AACS.

R 408.11804 Definitions; F to M.

Rule 1804. (1) "Floor-operated crane" means a top running overhead crane that is controlled by an operator on a floor or independent platform.

(2) "Footwalk" means a walkway which has a handrail and which is attached to the bridge or trolley for access purposes.

(3) "Frequent inspection" means a visual examination by the operator or other designated personnel, with written records required.

(4) "Gantry crane" means a crane similar to an overhead crane, except that the bridge for carrying the trolley or trolleys is rigidly supported by 1 or more legs running on a fixed rail or other runway.

(5) "Hoist" means a system of power-driven drums, gears, cables, chains, or hydraulic cylinders capable of lifting and lowering a load.

(6) "Hooker" means an employee who by using predetermined lift points attaches the load to the hook, in hoisting or setting the load or both.

(7) "Hot metal crane" means a crane that transports molten metal.

(8) "Limit switch" means a switch that is operated by some part or motion of a power-driven machine or equipment to alter the electric current associated with the machine or equipment.

(9) "Load" means the total superimposed weight on a load block or hook.

(10) "Load block" means the assembly of hook and shackle, swivel bearing, sheaves, pins, and frame, suspended by the hoisting ropes or chain.

(11) "Magnet" means an electromagnetic device carried on a crane hook that picks up the load magnetically.

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(12) "Main switch" means a switch on a crane controlling the entire power supply to the crane, except that a magnet and convenience outlet circuit may bypass the main switch.

(13) "Modified" means a change in design or rating.

History: 1979 AC; 2002 AACS.

R 408.11805 Definitions; O to R.

Rule 1805. (1) "Overhead crane" means a top running crane that has a movable bridge carrying a movable or fixed hoisting mechanism for lifting and lowering, moving horizontally and traveling on an overhead fixed runway.

(2) "Periodic inspection" means the inspection of the equipment in place by a designated person, making written records of conditions.

(3) "Power-operated crane" means a crane that has its mechanism driven by electric, air, hydraulic, or internal combustion means.

(4) "Preformed" means to permanently shape wire rope before fabrication into helical form.

(5) "Pulpit" means an operator compartment for a crane located at a fixed position remote from the crane.

(6) "Qualified person" means a person who, through attainment of a recognized degree or certificate of professional standing or by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

(7) "Rail stop" means a device attached to a rail to stop the movement of a crane beyond a fixed point.

(8) "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 or nameplates.

(9) "Remote-operated crane" means a crane controlled by an operator not in a pulpit or in the cab attached to the crane, by any method other than pendant or rope control.

(10) "Rigger" means an employee who prepares heavy equipment or loads of materials for lifting.

(11) "Rope" means wire rope, unless otherwise specified.

(12) "Running sheave" means a sheave that rotates as the load block is raised or lowered.

(13) "Runway" means an assembly of rails, beams, girders, brackets, and framework on which a crane or trolley travels.

History: 1979 AC; 2002 AACS.

R 408.11806 Definitions; S to W.

Rule 1806. (1) "Safety factor" means the ratio of the breaking strength of a piece of material or object to the actual load or stress when in use.

(2) "Seizing" means to bind the end of a wire rope with a soft annealed iron wire.

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(3) "Side pull" means to pull a load with a hoist, chain or cable other than vertically.

(4) "Stop device" means a device to limit travel of a trolley or crane bridge. It is normally attached to a fixed structure and normally does not have energy-absorbing ability.

(5) "Storage gantry crane" means a gantry type crane of long span usually used for bulk storage of materials. The bridge girders are supported on 1 or more legs. It may have 1 or more fixed or hinged cantilever ends.

(6) "Swaged socket" means a fitting into which wire rope is inserted and attached by cold forming.

(7) "Switch" means a device for making, breaking, or for changing the connections in an electric circuit.

(8) "Trolley" means a unit that travels on the bridge rails and carries the hoisting mechanism.

(9) "Trolley travel" means the trolley movement at right angles to the crane runway.

(10) "Truck" means the unit consisting of a frame, wheels, bearing, and axles that supports the bridge girders or trolleys.

(11) "Wall crane" means a crane which has a jib with or without trolley and which is supported from a sidewall or line of columns of a building. It is a traveling type and operates on a runway attached to the sidewall or columns.

History: 1979 AC; 2002 AACS.

R 408.11807 Adopted and referenced standards.

Rule 1807. (1) The following standards are adopted by reference in these rules and are available from HIS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179 or via the internet at web-site: www.global.ihs.com, at a cost as of the time of adoption of these rules, as stated in this subrule:

(a) American National Standard Institute ANSI/ASME B30.2, "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)," Standard, 1996 edition. Cost: $60.00.

(b) ANSI/ASME B30.2.0, "Overhead and Gantry Cranes," Standard, 1967 edition. Cost: $60.00.

(c) ANSI/ASME B30.17, "Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)," Standard, 1998 edition. Cost: $60.00.

(2) The standards adopted in these rules are available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143.

(3) Copies of the standards adopted in these rules may be obtained from the publisher or may be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in this rule, plus $20.00 for shipping and handling.

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(4) The following Michigan Occupational Safety and Health Administration (MIOSHA) Standards are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Licensing and Regulatory Affairs, MIOSHA Regulatory services section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143 or via the internet at website: www.michigan.gov/mioshastandards. For quantities greater than 5, the cost, at the time of adoption of these rules, is 4 cents per page.

(a) Construction Safety Standard Part 10 "Cranes and Derricks," R 408.41001 to R 408.41099.

(b) General Industry Safety and Health Standard Part 2 "Walking-Working Surfaces," R 408.10201 to R 408.10241.

(c) General Industry Safety Standard Part 7 "Guards for Power Transmission," R 408.10701 to R 408.10765.

(d) General Industry Safety and Health Standard Part 33 "Personal Protective Equipment," R 408.13301 to R 408.13398.

(e) General Industry Safety Standard Part 39 "Design Safety Standards for Electrical Systems," R 408.13901 to R 408.13905.

(f) General Industry Safety Standard Part 49 "Slings," R 408.14901 to R 408.14965.

(g) General Industry Safety Standard Part 85 "The Control of Hazardous Energy Sources, (Lockout/Tagout)," R 408.18501 to R 408.18599.

History: 2002 AACS; 2005 AACS; 2013 AACS; 2018 AACS.

R 408.11808 Employer responsibilities.

Rule 1808. (1) An employer shall comply with the manufacturer's specifications and limitations applicable to the operation of cranes. If a manufacturer's specifications are not available, then the limitations assigned to the equipment shall be based on the determination of a qualified engineer who is competent in the field of equipment limitations, and the determination shall be appropriately documented and recorded. Attachments that are used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.

(2) An employer shall designate a qualified person to perform all inspections of cranes as required by this standard.

(3) An employer shall limit the use of a crane to the following entities:

(a) An employee who has been trained and qualified to operate the type of crane to which he or she is assigned.

(b) A learner who is under the direct supervision of a designated operator.

(c) Designated maintenance personnel while performing their duties.

(4) An employer shall maintain a crane and its accessories in a condition that will not endanger an operator or other employees.

(5) The original safety factor of the equipment shall not be reduced if modifications or changes are made to the equipment. Modifications or changes shall be certified by a qualified registered engineer. The capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly to reflect any modifications or changes.

(6) An employer shall comply with all other applicable requirements of this standard.

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(7) The manual provided by the crane manufacturer shall be readily accessible for the crane operator's reference at the work site.

History: 2002 AACS; 2018 AACS.

CONSTRUCTION, INSTALLATION AND EQUIPMENT

R 408.11821 Certification; modification; guards; adoption of standards by reference.

Rule 1821. (1) A top running or gantry crane consisting of a top running bridge with single or multiple girders and a top running trolley hoist, erected or modified after June 24, 1973 and before April 9, 2002, shall be certified by a crane manufacturer or an engineer knowledgeable in crane construction, that the new construction or installation, or modification conforms to the ANSI/ASME B30.2.0 "Overhead and Gantry Cranes," Standard, 1967 edition, as adopted in R 408.11807.

(2) A top running or gantry crane consisting of a top running bridge with single or multiple girders and a top running trolley hoist, erected or modified after April 9, 2002, shall be certified by a crane manufacturer or an engineer knowledgeable in crane construction, that the new construction or installation, or modification conforms to the ANSI/ASME B30.2 "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)," Standard, 1996 edition, as adopted in R 408.11807.

(3) A top running or gantry crane consisting of a top running bridge with a single girder and an underhung hoist, erected or modified after August 31, 1971 and before April 9, 2002, shall be certified by a crane manufacturer or an engineer knowledgeable in crane construction, that the new construction, installation, or modification conforms to the ANSI/ASME B30.2.0 "Overhead and Gantry Cranes," 1967 edition, as adopted in R 408.11807.

(4) A top running or gantry crane consisting of a top running bridge with a single girder and an underhung hoist, erected or modified after April 9, 2002, shall be certified by a crane manufacturer or an engineer knowledgeable in crane construction, that the new construction, installation, or modification conforms to the ANSI/ASME B30.17 "Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)" Standard, 1998 edition, as adopted in R 408.11807.

(5) Gears, couplings and other means of power transmission, except shafts, where exposed to contact, shall be guarded as prescribed in General Industry Safety Standard Part 7 "Guards for Power Transmission," as referenced in R 408.11807.

(6) A top running or gantry crane consisting of a top running bridge with single or multiple girders and a top running trolley hoist may be modified or rerated if the modifications and the supporting structure are checked thoroughly by a qualified engineer or the equipment manufacturer and conform to the ANSI/ASME B30.2 "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)," Standard, 1996 edition, as adopted in R 408.11807.

(7) A top running or gantry crane consisting of a top running bridge with a single girder and an underhung hoist may be modified or rerated if the modifications and the

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supporting structure are checked thoroughly by a qualified engineer or the equipment manufacturer and conform to the ANSI/ASME B30.17 "Overhead and Gantry Cranes (Top Running Bridge, Single Girder, Underhung Hoist)" Standard, 1998 edition, as adopted in R 408.11807.

History: 1979 AC; 2002 AACS; 2005 AACS; 2018 AACS.

R 408.11822 Marking rated capacity; classifications; clearances.

Rule 1822. (1) The rated capacity of a crane shall be legibly marked on each side of the crane. Markings shall be legible from the ground or floor.

Each load block of the hoisting units of the crane shall be legibly marked with its individual rated capacity.

(2) Each crane designed and manufactured after January 1, 1971 shall have a service class rating as prescribed in "CMAA #70--Specifications for Top Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes," 1970 edition, as shown in Appendix B. Additionally the service class rating shall be legibly marked on each crane.

(3) Clearance from obstructions shall be a minimum of 3 inches overhead and 2 inches laterally between the crane and any obstruction.

(4) Runways of parallel cranes that do not have an intervening wall or structure shall have adequate clearance between the 2 bridges.

(5) The cab of a crane shall be located to afford a minimum of 3 inches clearance from all fixed structures within its area of possible movement.

History: 1979 AC; 2002 AACS; 2005 AACS.

R 408.11823 Safety factor for hoisting cables.

Rule 1823. The designed safety factor for the hoisting cable is as follows:

(a) A hot metal crane shall be not less than 8.

(b) Any other crane shall be not less than 5.

History: 1979 AC; 2018 AACS.

R 408.11824 Wire rope.

Rule 1824. (1) A wire rope used on a crane shall be repaired or replaced in any of the following circumstances:

(a) One third or more of the original diameter of the outside individual wires is worn.

(b) There is kinking, crushing, bird-caging, or any other damage that results in distortion of the running portion of the wire rope structure.

(c) The wire rope shows heat or corrosive damage.

(d) In running ropes, there are 6 randomly distributed broken wires in 1 lay or 3 broken wires on 1 strand in 1 lay. In rotation-resistant ropes, 2 randomly distributed

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broken wires in 6 rope diameters or 4 randomly distributed broken wires in 30 rope diameters.

(e) There are reductions from nominal diameter of more than the following:

(i) One sixty-fourth of an inch for a diameter to and including 5/16 of an inch.

(ii) One thirty-second of an inch for a diameter 3/8 of an inch to and including 1/2 of an inch.

(iii) Three sixty-fourths of an inch for a diameter 9/16 of an inch to and including 3/4 of an inch.

(iv) One sixteenth of an inch for a diameter 7/8 of an inch to and including 1 1/8 inches.

(v) Three thirty-seconds of an inch for a diameter 1 1/4 inches to and including 1 1/2 inches.

(f) In standing ropes, there are more than 2 broken wires in 1 lay in sections beyond end connections or more than 1 broken wire at an end connection.

(2) Wire rope discarded from a crane under subrule (1) of this rule shall not be used for any other load-carrying service.

(3) Wire rope for a crane bent to form an eye shall be equipped with a metal thimble.

(4) A wire rope end fitting shall be a clamp, swage, or a zinc or equivalent poured socket. Before cutting wire rope, seizings shall be placed as follows:

(a) One seizing on each side of the cut on preformed wire rope;

(b) Two seizings on each side of 7/8 inch size or smaller nonpreformed wire rope.

(c) Three seizings on each side of 1 inch or larger size nonpreformed wire rope.

(5) Wire rope that has an independent wire rope core shall be used on all molten metal applications and in an area where the environmental atmosphere will cause deterioration of a hemp center.

(6) Wire rope shall be stored in a manner to prevent damage or deterioration.

(7) The unreeling or uncoiling of wire rope shall be done as recommended by the rope manufacturer and with care to avoid kinking or inducing a twist.

(8) Rope clips attached with u-bolts shall have the u-bolts on the dead or short end of the rope. Spacing and number of all types of clips shall be in accordance with the clip manufacturer's recommendation. Clips shall be drop-forged steel in all sizes manufactured commercially. When a newly installed rope has been in operation for an hour, all nuts on the clip bolts shall be retightened. See Appendix A.

(9) Replacement rope shall meet or exceed the original specifications set forth by the crane manufacturer.

(10) If a load is supported by more than 1 part of rope, then the tension in the parts shall be equalized.

History: 1979 AC; 2002 AACS; 2018 AACS.

R 408.11825 Hooks; load blocks.

Rule 1825. (1) A crane hook shall be discarded if either of the following provisions applies:

(a) The throat opening is more than 15% greater than the manufactured size.

(b) The hook has more than a 10-degree twist from a vertical center line drawn through the hook socket.

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(2) A hook shall be equipped with a latch, unless the application makes the use of a latch impractical as determined by a qualified person. When required, a latch shall be provided to bridge the throat opening of the hook for the purpose of retaining slings, chains, or other equipment, under slack conditions.

(3) Load blocks shall be of the enclosed type and shall be guarded against rope jamming during normal operations.

History: 1979 AC; 2002 AACS.

R 408.11826 Rescinded.

History: 1979 AC; 2002 AACS.

R 408.11827 Sheaves.

Rule 1827. (1) Sheave grooves shall be smooth and free from defects that could cause rope damage.

(2) Sheaves carrying ropes that can be momentarily unloaded shall be provided with close fitting guards or other suitable devices to guide the rope back into the groove when the load is applied again.

(3) Sheaves in the bottom block shall be equipped with close fitting guards that will prevent ropes from becoming fouled when the block is lying on the ground with ropes loose.

(4) Pockets and flanges of sheaves used with hoist chains shall be of dimensions that the chain does not catch or bind during operation.

(5) All running sheaves shall be equipped with means for lubrication.Permanently lubricated, sealed, or shielded bearings meet this requirement

History: 2002 AACS.

R 408.11831 Rescinded.

History: 1979 AC.

R 408.11832 Trolley stops.

Rule 1832. (1) Stops shall be provided at the limits of travel of the trolley.

(2) The stops shall be fastened to resist the forces applied when contacted.

(3) A stop engaging the tread of the wheel shall be of a height not less than that of the wheel radius. A stop which engages other parts of the crane is preferable.

History: 1979 AC.

R 408.11833 Bridge bumpers; trolley bumpers; rail sweeps.

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Rule 1833. (1) A crane shall be provided with bumpers or other automatic means providing equivalent effect, unless the crane travels at a slow rate of speed and has a faster deceleration rate due to the use of sleeve bearings, is not operated near the ends of bridge and trolley travel, is restricted to a limited distance by the nature of the crane operation and there is no hazard of striking any object in the limited distance, or is used in similar operating conditions. The bumpers shall be capable of stopping the crane, not including the lifted load, at an average rate of deceleration of not more than 3 feet/s/s (per second, per second) when traveling in either direction at 20% of the rated load speed. Bumpers shall meet both of the following requirements:

(a) A bumper shall have sufficient energy-absorbing capacity to stop the crane when traveling at a speed of not less than 40% of rated load speed.

(b) A bumper shall be mounted so that there is no direct shear on bolts.

(2) Bumpers shall be designed and installed to minimize parts falling from the crane in case of breakage.

(3) A trolley shall be provided with bumpers or other automatic means of equivalent effect, unless the trolley travels at a slow rate of speed, is not operated near the ends of bridge and trolley travel, is restricted to a limited distance of the runway and there is no hazard of striking any object in the limited distance, or is used in similar operating conditions. The bumpers shall be capable of stopping the trolley, not including the lifted load, at an average rate of deceleration of not more than 4.7 feet/s/s (per second, per second) when traveling in either direction at 1/3 of the rated load speed. Trolley bumpers shall meet both of the following requirements:

(a) When more than 1 trolley is operated on the same bridge, each shall be equipped with bumpers or equivalent on their adjacent ends.

(b) Bumpers or equivalent shall be designed and installed to minimize parts falling from the trolley in case of broken or loosened mounting connections.

(4) Bridge trucks shall be equipped with rail sweeps that extend below the top of the rail and project in front of the truck wheels.

History: 1979 AC; 2002 AACS.

R 408.11835 Ladders; foot-walks; stairways; escape devices.

Rule 1835. (1) Access to crane. Access to the car or bridge walkway shall be by a conveniently placed fixed ladder, stairs, or platform requiring no step over any gap exceeding 12 inches (30 cm). Fixed ladders shall comply with General Industry Safety and Health Standard Part 2 "Walking-Working Surfaces," as referenced in R 408.11807.

(2) A foot-walk or a cat-walk for or on a crane shall have a guardrail system as prescribed in General Industry Safety and Health Standard Part 2 "Walking-Working Surfaces," as referenced in R 408.11807. A foot-walk shall be of rigid construction and designed to sustain a distributed load of not less than 50 pounds per square foot, and shall have an anti-slip surface.

(3) An employer shall ensure that a safe method of escape is provided in case of fire or other emergency situation on a cab-operated crane.

(4) A gantry crane shall have fixed ladders or stairways extending from the ground to the foot-walk or cab platform.

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(5) Toeboards and handrails for foot-walks. Toeboards and handrails shall comply with General Industry Safety and Health Standard Part 2 “Walking-Working Surfaces,” as referenced in R 408.11807.

(6) Ladders shall be permanently and securely fastened in place and constructed in compliance with General Industry Safety and Health Standard Part 2 “Walking-Working Surfaces,” as referenced in R 408.11807.

History: 1979 AC; 2002 AACS; 2018 AACS.

R 408.11837 Rescinded.

History: 1979 AC; 2002 AACS.

R 408.11841 Brakes and restraints.

Rule 1841. (1) An overhead or gantry crane bridge which is powered shall be equipped with an operable brake, non-coasting mechanical drive, or other braking means. The brake or drive shall be capable of stopping the bridge within a distance, in feet, equal to 10% of the full load speed in feet per minute when traveling at full speed with full load.

(2) A trolley of a crane shall meet the requirements of subrule (1) of this rule.

(3) A crane that is being used out-of-doors shall have a positive mechanical restraint, such as, but not limited to, an automatic rail clamp, to secure the crane against wind movement while parked. If clamps act on the rail heads, beads or weld flash on the rail heads shall be ground off. A positive mechanical restraint shall be utilized when the crane is parked in an area where the potential exposure to wind is prevalent.

History: 1979 AC; 2002 AACS.

R 408.11843 Controls.

Rule 1843. (1) A pendant, radio, cab, pulpit control station, and a controller in a cab operated crane shall be permanently identified by function and direction. Control boxes shall be constructed to prevent electrical shock.

(2) Rope controls for a floor-operated crane shall be equipped with an arrow attached to the rope showing the direction of travel when the rope is pulled.

(3) A pendant, radio, cab, or pulpit control station shall be equipped with a positive stop device, colored red, to disconnect all motors.

(4) A crane shall be equipped with a main switch which can be locked out. An employer shall establish a written lockout procedure which shall be used in connection with R 408.11872 and R 408.11875. Lockout shall conform to the requirements prescribed in General Industry Safety Standard Part 85 “The Control of Hazardous Energy Sources, (Lockout/Tagout),” as referenced in R 408.11807.

(5) A controller on a rope, pendant, or radio-controlled crane, when released from the "on" position, shall automatically return to the "off" position.

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(6) A transmitter for a radio-controlled crane shall be stored in a locked cabinet or in a supervised storage area when not in use.

(7) All cranes shall have an operable over-travel limit switch in the hoisting direction. The switch shall be located so that it is tripped under all conditions to prevent contact of the hook or block with the hoist.

(8) A crane that is not equipped with spring return controllers or momentary contact push buttons shall have a device which will disconnect all motors from the line if power fails and which will not permit restarting until the controller handle is brought to the off position or a reset switch or button is operated.

(9) The control circuit voltage shall not be more than 600 volts for A.C. or D.C. current.

(10) The voltage at pendant push-buttons shall not be more than 150 volts for A.C. and 300 volts for D.C.

(11) If multiple conductor cable is used with a suspended push-button station, then the station shall be supported in a manner that will protect the electrical conductors against strain.

(12) Cab-operated cranes shall have lever-operated manual controllers and master switches that have a spring-return arrangement, off-point detent, or off-point latch. The controller operating handle shall be located within reach of the operator and, as far as practicable, the movement of each controller handle shall be in the same general directions of the resultant movements of the load.

(13) Equipment and wiring shall be as prescribed in General Industry Safety Standard Part 39 "Design Safety Standards for Electrical Systems," as referenced in R 408.11807.

(14) The control for the bridge and trolley travel shall be located so that the operator can face the direction of travel.

(15) Push buttons in pendant stations shall return to the above position when released by the operator.

(16) Automatic cranes shall be designed so that all motions will failsafe if any malfunction of operation occurs.

(17) A remote-operated crane shall function so that if the control signal for any crane motion becomes ineffective, the crane motion shall stop.

History: 1979 AC; 2002 AACS; 2018 AACS.

R 408.11844 Equipment.

Rule 1844. (1) Electrical equipment shall be located or enclosed so that live parts are not exposed to accidental contact under normal operating conditions.

(2) Electric equipment shall be protected from dirt, grease, oil, and moisture.

(3) Guards for live parts shall be substantial and located so that they cannot be accidentally deformed to make contact with live parts.

(4) Enclosures for resistors shall have openings to provide adequate ventilation and shall be installed to prevent the accumulation of combustible matter too near to hot parts. Resistor units shall be supported to be free as possible from vibration.

(5) The power supply to the runway conductors shall be controlled by a switch or circuit breaker that is located on a fixed structure, is accessible from the floor, and is

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capable of being locked in the open position. A switch or circuit breaker that is of the enclosed type and is capable of being locked in the open position shall be provided in the leads from the runway conductors on a cab-operated crane. A means of opening the switch or circuit shall be located within reach of the operator. A switch or circuit breaker that is of the enclosed type and is capable of being locked in the open position shall be provided in the leads from the runway conductors on a floor-operated crane. The disconnect shall be mounted on the bridge or foot-walks near the runway conductors. One of the following types of floor-operated disconnects shall be provided:

(a) Nonconductive rope attached to the main switch.

(b) An under-voltage trip for the main circuit breaker operated by an emergency stop button in the pendant push button in the pendant pushbutton station.

(c) A main line contactor operated by a switch or pushbutton in the pendant pushbutton station.

(6) A crane using a lifting magnet shall have a separate magnet circuit switch that is of the enclosed type and is capable of being locked in the open position. Means for discharging the inductive load of the magnet shall be provided.

(7) Runway conductors of the open type mounted on the crane runway beams or overhead shall be located or guarded so that persons entering or leaving the cab or crane foot-walk will not come into contact with them. On the effective date of this rule, open type conductors shall not be installed on cab-operated runway beams.

(8) When a service receptacle for an extension lamp is provided in the cab or on the bridge of a cab-operated crane, it shall be a grounded 3-prong type permanent receptacle and shall not be more than 300 volts.

History: 2002 AACS; 2013 AACS; 2018 AACS.

R 408.11845 Warning devices.

Rule 1845. (1) A crane, shall be equipped with a warning device, such as a flashing light, horn, bell, or siren. An operator shall use a warning device before starting and intermittently while traveling in an occupied area.

(2) A wind-indicating device shall be provided on an outdoor storage gantry type crane and on an outdoor overhead crane. The device shall give a visual or audible alarm to the operator at a predetermined wind velocity to be determined by the employer in accordance with the manufacturer's recommendation or design.

History: 1979 AC; 2002 AACS.

R 408.11847 Tool storage, housekeeping, and fire extinguishers.

Rule 1847. (1) Tools and other necessary articles shall be stored in a secured container and not allowed to be loose, in or about a crane.

(2) A class "C" or multipurpose fire extinguisher shall be provided and maintained accessible to the crane operator of a cab-operated crane a carbon tetrachloride extinguisher shall not be used.

(3) An employer shall ensure that the crane operator is knowledgeable in the operation of the fire extinguishers.

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(4) Good housekeeping shall be maintained at all times. The crane operator shall keep the access area and the crane cab clear of all loose objects such as tools, bolts, boards, rags, or other materials.

History: 1979 AC; 2002 AACS.

OPERATORS AND OPERATIONS

R 408.11851 Qualifications.

Rule 1851. An employer shall be able to demonstrate that an employee is trained and qualified to operate a crane prior to authorizing the employee to operate a crane.

History: 1979 AC; 1988 AACS; 2002 AACS; 2013 AACS.

R 408.11852 Training.

Rule 1852. (1) An employer shall train a prospective operator before the employee's assignment as an operator of a crane. An employer shall ensure that a designated individual authorized by the employer to perform the training has the knowledge, training, and experience to train and to evaluate the competence of the prospective operator and to provide refresher training to an operator when it is required. Training shall include all of the following:

(a) Capacities of equipment and attachments.

(b) Purpose, use, and limitation of controls.

(c) How to make daily checks.

(d) The energizing sequences, including pneumatic, hydraulic, and electrical sequences.

(e) Start-up and shutdown procedures.

(f) Emergency shutdown procedures.

(g) General operating procedures.

(h) All basic signaling procedures, including hand, radio, or telephone signals, where required.

(i) Knowledge of this standard and other applicable MIOSHA standards, and company rules and regulations.

(j) Practice in operating the assigned equipment through the mechanical functions necessary to perform the required task.

(k) Maximum rated capacity of the crane.

(2) Training shall consist of a combination of formal instruction, practical training, and testing of the operator's performance, as required in R 408.11853.

(3) Refresher training in relevant topics shall be provided to an operator under any of the following conditions:

(a) An operator has been observed to operate the crane in an unsafe manner.

(b) An operator has been involved in an accident or a near-miss incident.

(c) An operator has received an evaluation that reveals that the operator is not operating the crane safely.

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(d) An operator is assigned to a different type of crane.

(e) A condition in the workplace changes that could affect safe operation of the crane.

(4) Maintenance personnel, crane inspectors, and all other users of the crane shall be trained as required in subrule (1) of this rule.

(5) A rigger shall be trained in all of the following:

(a) The requirements of this standard.

(b) Knowledge of General Industry Safety Standard Part 49 "Slings," as referenced in R 408.11807.

(c) Knowledge of General Industry Safety and Health Standard Part 33 "Personal Protective Equipment," as referenced in R 408.11807.

(d) Maximum capacity of the crane.

(e) Rigging procedures.

(f) Company rules and regulations.

History: 1979 AC; 2002 AACS; 2018 AACS.

R 408.11853 Testing.

Rule 1853. (1) An employer shall test the knowledge and ability of an employee before authorizing him or her to operate a crane. The test shall determine all of the following with respect to the employee:

(a) Ability to operate the equipment through its functions necessary to perform the required jobs.

(b) Knowledge of equipment.

(c) Knowledge of daily checks and inspection requirements.

(d) Knowledge of applicable MIOSHA standards and company rules and regulations.

(2) A performance test shall be given to determine that the employee can operate the assigned crane or cranes through the functions necessary to perform the required task.

History: 1979 AC; 1989 AACS; 2002 AACS.

R 408.11854 Permits.

Rule 1854. (1) An employer shall provide an employee with a permit to operate a crane only after the employee meets the requirements prescribed in R 408.11852, and R 408.11853.

(2) An employee being trained is exempt from the permit requirement for a period of not more than 30 calendar days if the employee is under the supervision of an individual who is authorized by the employer and who has the knowledge, training, and experience to train operators and to evaluate their competence, and if the training period does not endanger the trainee or other employees.

(3) A permit shall be carried by an operator or be available upon request of a department representative at all times during working hours.

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(4) A permit shall indicate the type of crane or cranes an operator has been trained on and is qualified to operate, as required in R 408.11852.

(5) A permit to operate a crane is valid only with the employer who issued the permit, and the permit shall be issued for a period of not more than 3 years.

(6) A permit shall contain all of the following information (see sample permit):

(a) Firm name.

(b) Operator's name.

(c) Operator I.D. number, if any.

(d) Name of issuing authority.

(e) Type or types of crane authorized to operate.

(f) Operator restrictions, if any. The permit shall state the nature of the restriction.

(g) Date issued.

(h) Date expiring.

(7) A sample permit is set forth as follows:

SAMPLE PERMIT
CRANE OPERATOR PERMIT *(Firm Name)* Operator's Name Operator's Number Is Authorized To Operate:(*Insert Type of Crane(s)* *Authorized)* Restrictions:(*Explanation of Restrictions)* Date Issued: (Month – Day – Year) Date Expiring: (Month – Day – Year) By Issuing Authority: _____ Title

History: 2002 AACS; 2018 AACS.

R 408.11855 Limitations on use of cranes.

Rule 1855. (1) An employer shall limit the use of a crane to the following persons:

(a) An employee who is trained and is qualified to operate the type of crane to which he or she is assigned.

(b) A learner under the direct supervision of a designated operator.

(c) Designated maintenance personnel while performing their duties.

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(2) An employer shall establish and enforce a safe procedure, applicable to authorized employees, for boarding and leaving an overhead cab-operated crane.

(3) An employer shall assure that an unauthorized employee does not enter a crane cab or pulpit.

(4) An employer shall limit the use of a crane to its maximum rated capacity, except during rated load test as prescribed in R 408.11874.

History: 1979 AC; 2002 AACS; 2005 AACS.

R 408.11857 Reporting defects.

Rule 1857. An operator shall report any defects in a crane to the supervisor.

History: 1979 AC; 2002 AACS.

R 408.11859 Personal protective equipment.

Rule 1859. (1) An operator and an employee directing a lift shall use the personal protective devices required in the area.

(2) If the top of the load is not lifted to a height of more than 5 feet, then the load is not considered an overhead hazard.

History: 1979 AC; 1983 AACS; 2002 AACS; 2013 AACS.

R 408.11861 General conduct of operators.

Rule 1861. (1) An operator, when starting on duty shall comply with both of the following provisions:

(a) Shall not close the main switch or emergency contactor until checking to see if anyone is on the crane and if a warning sign is on the crane, hook, or main switch.

(b) Shall test all controls, limit switches, and brakes. When a load approaches the rated load, the operator shall test the hoisting brakes by raising the load a few inches and applying the brakes.

(2) A hoisting limit switch on a crane or hoisting means shall not be used as an operating control unless the crane is also equipped with a backup limit switch.

(3) A load shall not be lowered below a point where less than 2 full wraps of wire rope remain on the hoisting drum.

(4) If there is doubt concerning the safety of a crane or hoisting means, then an operator shall stop the crane and report the condition creating the doubt to the supervisor.

(5) In case of power failure, an operator shall place all controllers in the "off" position.

(6) An operator leaving a crane unattended shall land any attached load, place the controllers in the "off" position, and open the main switch. Before closing a main switch, an operator shall make sure all controllers are in the "off" position. The main switch need not be opened on a pendant-controlled crane if the crane is left unattended for short periods.

Courtesy of www.michigan.gov/orr

History: 1979 AC; 2002 AACS.

Editor's Note: An obvious error in R 408.11862 was corrected at the request of the promulgating agency, pursuant to Section 56 of 1969 PA 306, as amended by 2000 PA 262, MCL 24.256. The rule containing the error was published in *Annual Administrative Code Supplement*, 2002. The memorandum requesting the correction was published in *Michigan Register*, 2013 MR 21.

R 408.11863 Signals.

Rule 1863. An operator shall respond to signals only from the employee directing a lift. However, he shall obey at all times an emergency stop signal from any employee. The signals given an operator shall conform to Table 1. When 2 or more cranes are used to lift a load, a designated employee shall give all signals.

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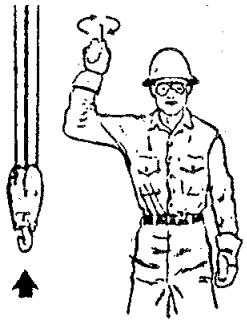
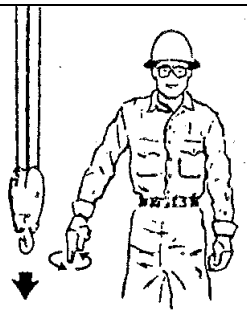
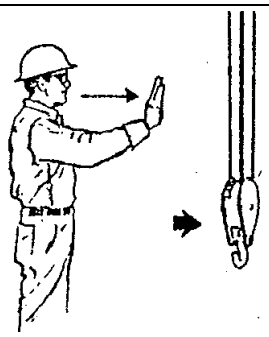
STANDARD HAND SIGNALS FOR CONTROLLING OVERHEAD AND GANTRY CRANES
Table 1



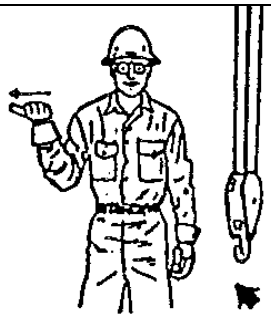
HOIST.
With forearm vertical, forefinger pointing up, move hand in small horizontal circle.



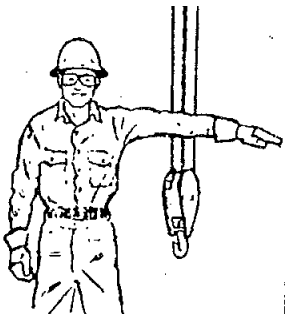
LOWER.
With arm extended downward, forefinger pointing down, move hand in small horizontal circles.



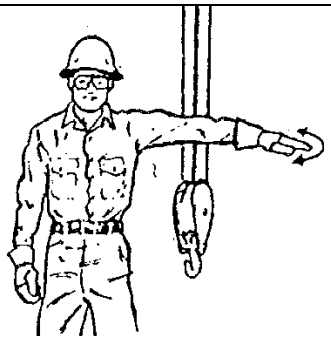
BRIDGE TRAVEL.
Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.



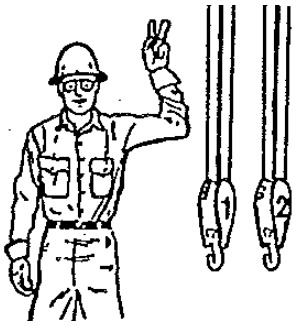
TROLLEY TRAVEL.
Palm up, fingers closed, thumb pointing in direction of motion, jerk hand horizontally.



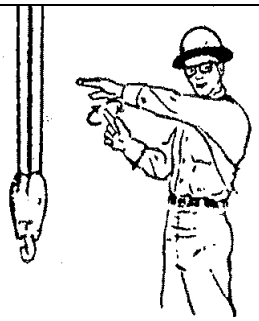
STOP.
Arm extended, palm down, hold position rigidly.



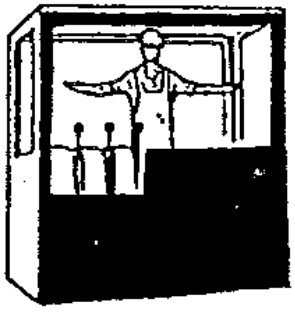
EMERGENCY STOP.
Arm extended, palm down, move hand rapidly right and left.



MULTIPLE TROLLEYS.
Hold up one finger for block marked "1" and two fingers for block marked "2", Regular signals follow.



MOVE SLOWLY.
Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as



MAGNET IS DISCONNECTED.
Crane operator spreads both hands apart – palms up.

Courtesy of www.michigan.gov/orr

STANDARD HAND SIGNALS FOR CONTROLLING OVERHEAD AND GANTRY CRANES Table 1		
	example.)	

History: 1979 AC; 2018 AACS.

R 408.11865 Lifting.

Rule 1865. (1) An operator of a crane shall not carry a load over an employee.

(2) A crane shall not be used to make a side pull, except where it has been specifically established by a qualified person who has determined all of the following:

(a) Various parts of the crane will not be overstressed.

(b) The hoist rope will not bear or rub against other members of the crane, such as the girders or trolley frame, except members specifically designed for such contact.

(c) A side pull will not cause the hoist rope to be pulled out of the sheaves or across drum grooves.

(d) A side pull will not result in excessive swinging of the load block or load.

(3) Compressed gases shall be lifted only by a cradle or enclosed platform.

(4) An employee shall not ride a hoisting device, such as a magnet, hook, ball, or load, except on a work platform. The work platform shall meet all of the requirements as prescribed in Construction Safety Standard Part 10 "Cranes and Derricks," as referenced in R 408.11807.

(5) The work platform shall be suspended from the top 4 corners and fastened to the structural floor member and shall have the point of suspension at the hook fixed so that it cannot be accidentally disengaged.

(6) When attaching or moving a load, the operator, rigger, or hooker shall make sure of all of the following:

(a) The hoisting rope or chain is free of kinks or twists and not wrapped around the load.

(b) The load is attached to the load block hook by means of a sling or other approved device.

(c) The sling and load will clear all obstacles or obstructions.

(d) The load is balanced and secured before lifting the load more than a few inches.

(e) Multiple lines are not twisted around each other.

(f) The hook is brought over the load in a manner to prevent swinging.

(g) There is no sudden acceleration or deceleration of the moving load.

History: 1979 AC; 2002 AACS; 2018 AACS.

R 408.11871 Initial and shift inspections.

Rule 1871. (1) New, reinstalled, altered, repaired, and modified cranes shall be inspected by a designated person before initial use to verify compliance with applicable provisions of these rules. Inspection of altered, repaired, and modified cranes may be limited to the provisions affected by the alteration, repair, or modification, as determined by a qualified person.

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(2) At the beginning of each shift during which a crane is used, visual inspections shall be made in accordance with Table 2. A visual inspection shall be limited to that which can be made from a cat-walk or other safe observation point. Any defects shall be reported to a supervisor.

TABLE 2 SHIFT/OPERATOR INSPECTION CHECKS	
INSPECTION ITEM	DESCRIPTION OF INSPECTION CHECK POINTS
Tagged Crane or Hoist	Check that crane or hoist is not tagged with an out-of-order sign.
Control Devices	Test run that all motions agree with control device markings.
Brakes	Check that all motions do not have excessive drift and that stopping distances are normal.
Hook	Check for damage, cracks, nicks, gouges, deformations of the throat opening, wear on saddle or load bearing point, and twist. Refer to the manual furnished by the original manufacturer of the crane.
Hook Latch	If a hook latch is required, check for proper operation.
Wire Rope	Check for broken wires, broken strands, kinks, and any deformation or damage to the rope structure.
Reeving	Check that the wire rope is properly reeved and that rope parts are not twisted about each other.
Limit Switches	Check that the upper limit device stops lifting motion of the hoist load block before striking any part of the hoist or crane.
Oil Leakage	Check for any sign of oil leakage on the crane and on the floor area beneath the crane.
Unusual Sounds	Check for any unusual sounds from the crane or hoist mechanism while operating the crane and hoist.
Warning and Safety Labels	Check that warning and other safety labels are not missing and that they are legible.
Housekeeping and Lighting	Check area for accumulation of material, trip or slip hazards, and poor lighting.

History: 1979 AC; 2002 AACS; 2018 AACS.

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R 408.11872 Frequent and periodic inspections.

Rule 1872. (1) Inspections shall be made as designated in this subrule and Table 3.

(a) An employer shall establish an inspection schedule based on usage and classification as described in this subrule and Appendix B.

(b) The inspection procedure for cranes in regular service is divided into 2 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 its exposure to wear, deterioration, or malfunction. The 2 general inspection classifications are designated as frequent and periodic, with respective intervals between inspections as specified in this rule.

(c) Each crane designed and manufactured prior to January 1, 1971 shall be inspected at least monthly. The inspection schedule may be modified based on documented inspection and repair history and a qualified person's recommendations.

(2) Frequent inspection includes examinations by a designated person who makes required records, as follows:

(a) Monthly to quarterly (class C) or at intervals of 100 hours of use, whichever comes first. Frequent inspection includes observations during operation and of items listed in Table 3.

(b) A designated person shall determine whether conditions found during the inspection constitute a hazard and whether a more detailed inspection is required.

(3) Periodic inspection includes inspection of the equipment in place by a designated person who makes records as listed in Table 3 and as follows:

(a) Annually or at intervals of 500 hours of use, whichever comes first. Periodic inspections include observations during operation and of items listed in Table 3.

(b) Conditions of extreme duty cycle, heat, and corrosive or climatic extremes indicate a need for more frequent inspections before use.

(c) Cranes with multiple service classifications shall be inspected in accordance with the highest rated duty classification.

(d) A designated person shall determine whether conditions found during an inspection constitute a hazard and whether disassembly is required for additional inspections.

(4) A crane which is used in infrequent service, that is, which has been idle for a period of 1 month or more, shall be inspected before being placed in service.

TABLE 3
FREQUENT – PERIODIC MANDATORY INSPECTION CHECKLIST

Frequent – F - Periodic - P

BRIDGE STRUCTURAL				TROLLEY STRUCTURAL		
Guards & Covers	F	P		Steel Frame		P
Bumpers	F	P		Connection Hardware		P
Rail Sweeps	F	P		Load Beam		P
Cat-walk & Railings		P		Maintenance Platform		P
General Structure & Welds		P		Handrails		P

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TABLE 3
FREQUENT – PERIODIC MANDATORY INSPECTION CHECKLIST

Frequent – F - Periodic - P

Capacity Signs	F	P		Rail Sweeps	F	P
Hand Rails		P		Bumpers	F	P
Trolley Rail & Stops	F	P		Guards & Covers	F	P
BRIDGE MECHANICAL				Alignment & Tracking		P
Motor	F	P		TROLLEY MECHANICAL		
Brake & Hydraulics	F	P		Motor	F	P
Gear Case	F	P		Brake	F	P
Couplings	F	P		Gear Case		P
Line Shaft Bearings	F	P		Couplings	F	P
Wheels	F	P		Wheels	F	P
Wheel Gearings	F	P		TROLLEY ELECTRICAL		
Wheel Bearings	F	P		General Wiring & Conduits	F	P
BRIDGE ELECTRICAL				Motor	F	P
Lights	F	P		Control Panels	F	P
Electric Control Brake	F	P		Control Operations	F	P
Master Switches	F	P		Motor Resistors	F	P
Runway Collectors	F	P		Soft Start or Inverter	F	P
Trolley Conductors	F	P		Hoist/Trolley Conductors	F	P
Resistors	F	P		Limit Switch(s)	F	P
Soft Start or Inverter	F	P		Electric Control Brake(s)	F	P
HOIST STRUCTURAL				HOIST MECHANICAL		
Steel Frame Condition		P		Motor	F	P
Capacity Markings	F	P		Brake Drum	F	P
Guards & Covers	F	P		Holding Brake	F	P
Connection to Trolley	F	P		Mechanical Load Brake	F	P
HOIST ELECTRICAL (MAIN)				Gear Case	F	P
General Wiring & Conduits	F	P		Coupling(s)	F	P
Motor(s)	F	P		Upper Sheave(s)	F	P
Control Panel	F	P		Rope Drum		P
Motor Resistors	F	P		Wire Rope	F	P
Limit Switch(s)	F	P		Bottom Block Assembly	F	P
Soft Start or Inverter	F	P		Hook & Latch	F	P
Electric Control Brake(s)	F	P		Equalizer Sheave	F	P
Overload Guard		P		TEST RUN		
Brake Coil	F	P		Bridge	F	P
Power Limit Switch	F	P		Trolley	F	P
Cable Reels	F	P		Main Hoist	F	P
Control Cables	F	P		Auxiliary Hoist	F	P
MAIN POWER SUPPLY				VERIFICATION		
Main Line Conductors	F	P		Inspection Accepted/Date	F	P
Main Line Collectors	F	P		Customer Signature	F	P

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TABLE 3
FREQUENT – PERIODIC MANDATORY INSPECTION CHECKLIST

Frequent – F - Periodic - P

HOIST STRUCTURAL (AUXILIARY)				MISCELLANEOUS		
Steel Frame Condition		P		Warning Tag	F	P
Capacity Markings	F	P		Capacity Markings	F	P
Guards & Covers	F	P		Wind Indicators	F	P
Connection to Trolley	F	P		Rail Clamps	F	P
HOIST ELECTRICAL (AUXILIARY)				Hour Meter Readings		P
General Wiring & Conduits	F	P		Operator Instruction Manual		P
Motor(s)	F	P		Maintenance Manual		P
Control Panel	F	P		Runway, Rails, Clips, Bars	F	P
Motor Resistors	F	P		Proper License		P
Limit Switch(s)	F	P		Warning Devices	F	P
Soft Start or Inverter	F	P		Spare Batteries	F	P
Electric Control Brake(s)	F	P		Recharging Unit	F	P
Overload Guard		P		Transmitter Storage Location	F	P
Brake Coil	F	P		HOIST MECHANICAL (AUXILIARY)		
Power Limit Switch	F	P		Motor	F	P
Cable Reels	F	P		Brake Drum	F	P
Control Cables	F	P		Holding Brake	F	P
RADIO CONTROL ELECTRICAL				Mechanical Load Brake	F	P
Conduits & Fittings	F	P		Gear Case	F	P
Wiring & Connections	F	P		Coupling(s)	F	P
Control Panels	F	P		Upper Sheave(s)	F	P
Radio/Manual Switch	F	P		Rope Drum		P
Receiver Antenna	F	P		Wire Rope	F	P
Transmitter Functions	F	P		Bottom Block Assembly	F	P
Transmitter Emergency Stop	F	P		Hook & Latch	F	P
TROLLEY CONTROL PANELS				Equalizer Sheave	F	P
Contactors	F	P		PENDANT CONTROL		
Arch Shields	F	P		Push Button Festoon Condition	F	P
Wiring	F	P		Push Button Pendant Condition	F	P
Grounds	F	P		Push Button Legend Markings	F	P
Resistors	F	P		Push Button Strain Relief	F	P
Doors Closed	F	P		Cable Reel(s)	F	P
AUXILIARY HOIST CONTROL PANELS				Pendant Balancer	F	P
Contactors	F	P		Operation of E-Stop	F	P
Arch Shields	F	P		Warning Tag on Push Button	F	P
Wiring	F	P		BRIDGE CONTROL PANELS		
Grounds	F	P		Line Contactor & Knife	F	P

Courtesy of www.michigan.gov/orr

TABLE 3 FREQUENT – PERIODIC MANDATORY INSPECTION CHECKLIST						
Frequent – F - Periodic - P						
				Switch		
Resistors	F	P		Bridge Contactors	F	P
Doors Closed	F	P		Arch Shields	F	P
Overload Relays		P		Wiring	F	P
SAFETY				Grounds	F	P
Fire Extinguisher	F	P		Resistors	F	P
Clearance Crane/Obstruction		P		Doors Closed	F	P
General Condition & Housekeeping	F	P		MAIN HOIST CONTROL PANELS		
TROLLEY POWER SUPPLY				Contactors	F	P
Trolley Conductors	F			Arch Shields	F	P
Trolley Line Collectors	F			Wiring	F	P
FESTOON SYSTEM POWER SUPPLY				Grounds	F	P
Trolley Pusher Arm	F			Resistors	F	P
Festoon Span Conductors	F			Doors Closed	F	P
Festoon Trolleys	F			Overload Relays	F	P

History: 1979 AC; 2002 AACS; 2005 AACS; 2018 AACS.

R 408.11873 Operational tests.

Rule 1873.(1) Before a new or modified crane is put into operation or if a crane has not been used in the past 12 months, the equipment shall be tested by a designated person to ensure compliance with this standard, including all of the following functions:

(a) Hoisting and lowering.

(b) Trolley travel.

(c) Bridge travel.

(d) Travel limiting devices.

(e) Locking, limiting, and indicating devices, if provided.

(2) The trip setting of a hoist limit switch shall be determined 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 time to prevent contact of the hook or hook block with any part of the trolley.

(3) When a crane is given a load test, the test load shall be not more than 125% of the rated load. The test reports shall be maintained on a file within the premises where the crane is located.

History: 2002 AACS; 2005 AACS; 2018 AACS.

R 408.11874 Rated load test.

Courtesy of www.michigan.gov/orr

Rule 1874. Before initial use, all new, extensively repaired, and altered cranes shall be tested and inspected by or under the direction of a designated or authorized person and a written report which confirms the load rating of the crane shall be furnished by the person. The load rating shall not be more than 80% of the maximum load sustained during the test. 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.

History: 2002 AACS.

R 408.11875 Maintenance.

Rule 1875. (1) An employer shall maintain a crane and its accessories in a condition that will not endanger an operator or other employee. A preventative maintenance program shall be established and the program shall be based on the manufacturer's recommendations and for the application as reviewed by a qualified person.

(2) An unsafe condition on a crane determined by an inspection shall be corrected by a designated trained employee or a qualified crane service company before the crane is put into operation. Designated repair personnel shall have a thorough background in either mechanical or electrical operating systems, or both, and shall also have a permit to operate the type of crane that is being serviced.

(3) Before adjustments or repairs are commenced on a crane, all of the following precautions shall be taken:

(a) A crane to be repaired shall be moved to a location where it will cause the least interference with other moving equipment on the track or rails and operations in the area.

(b) Controllers shall be placed in the "off" position.

(c) The main switch shall be placed in the "off" or "open" position and locked out, except where power is necessary to adjust or service the crane.

(d) A warning sign or "out of order" sign shall be placed at the operator control station.

(e) Illumination of not less than 15 footcandles intensity shall be provided while maintenance is performed on a crane.

(4) If any other crane uses the same runway, then a protective device shall be used to prevent interference with the idle crane undergoing repairs. If the protective device is impracticable, then a signal person shall be placed at a visual vantage point to warn the operator of the active crane when it reaches the limit of safe distance from the idle crane.

(5) A crane that has been adjusted or repaired shall not be returned to normal operation until all guards have been replaced, locks removed by those who installed them, or their supervisor, safety devices reactivated, and the maintenance equipment removed.

(6) Manual lubrication on a crane shall comply with subrule (3)(c) of this rule.

(7) An accumulation of dirt on a crane that would create a hazardous condition shall be removed.

History: 1979 AC; 2002 AACS.

Courtesy of www.michigan.gov/orr