

## 1.1 PURPOSE

- 1.1.1 The purpose of this policy is to communicate the requirements for TERRY R PITT CONSTRUCTION employees who perform duties related to rigging, equipment relevant to planning, inspection, examination, and marking of lifting equipment, maintenance, and recordkeeping.

## 1.2 RESPONSIBILITIES

### 1.2.1 Supervisor

- 1.2.1.1 Ensure operations are in compliance with relevant rules and regulations.
- 1.2.1.2 Ensure personnel are properly trained for their positions and responsibilities.
- 1.2.1.3 Provide appropriate equipment to secure safety and quality performance.
- 1.2.1.4 Conduct maintenance according to schedule
- 1.2.1.5 Hold inspections at appropriate intervals, which includes giving requirements for inspection, maintenance, removal of unsuitable equipment, and recordkeeping.

### 1.2.2 Employee

- 1.2.2.1 Understand and comply with applicable procedures including, but not limited to, risk assessment, fall protection, lift planning, and stop work authority.

### 1.2.3 Maintenance personnel

- 1.2.3.1 Perform annual maintenance and inspection of cranes and hoists, as well as ropes, slings, and other equipment that is not covered by preventative maintenance.
- 1.2.3.2 Conduct periodic and special load tests of cranes and hoists.
- 1.2.3.3 Maintain written records of inspections and tests, and provide copies of all inspections and test results to the safety manager.
- 1.2.3.4 Inspect and load test cranes and hoists following modification or extensive repairs (ex.: replaced a cable or hook or structural modification).
- 1.2.3.5 Schedule a non-destructive test and inspection for crane and hoist hooks at the time of the periodic load test, and test and inspect before the use of new replacement hooks and other hooks suspected of having been overloaded. Evaluation, inspection, and testing may include, but not be limited to, visual, dye penetrate, or magnetic particle techniques referenced in ASME B30.10 (hooks, inspection, and testing).
- 1.2.3.6 Maintain all manuals for cranes and hoists in a central file for reference.

### 1.2.4 Safety director

- 1.2.4.1 Ensure that training is conducted for all crane and hoist operators
- 1.2.4.2 Assist crane and hoist operators in obtaining licensing
- 1.2.4.3 Verify monthly test and inspection reports periodically.
- 1.2.4.4 Interpret crane hoist safety rules and standards.

## 1.3 GENERAL SAFETY RULES

- 1.3.1 Do not engage in any practice that will divert your attention while operating a crane.
- 1.3.2 Respond to signals only from the person who is directing the lift, or any appointed signal person. Obey a stop signal at all times, no matter who gives it.
- 1.3.3 Ensure that the rated capacity of a crane's bridge, individual hoist, or sling or fitting is not exceeded. Know the weight of the object being lifted.
- 1.3.4 Do not move a load over people. People will not be placed in jeopardy by being under a suspended load. Also, do not work under a suspended load unless the load is supported by blocks, jacks, or a solid footing that will safely support the entire weight. Have a crane or hoist operator remain at the controls or lock open and tag the main electrical disconnect switch.
- 1.3.5 Check that all controls are in the *OFF* position before closing the main line disconnect switch.
- 1.3.6 If spring-loaded reels are provided to lift pendants clear off the work area, ease the pendant up into the stop to prevent damaging the wire.
- 1.3.7 Avoid side pulls. These can cause the hoist rope to slip out of the drum groove, damaging the rope or destabilizing the crane or hoist.
- 1.3.8 To prevent shock loading, avoid sudden stops or starts. Shock loading can occur when a suspended load is accelerated or decelerated, and can overload the crane or hoist. When completing an upward or downward motion, ease the load slowly to a stop.
- 1.3.9 Fire extinguishers will be maintained in cranes in proper operating condition.
- 1.3.10 When a crane or material hoist has been stored and unused for a period of a month or more or has been exposed to weather conditions that reveal visible wear, rust, or other damage, the rope will be inspected by a certified third party. This individual will be required to provide to TERRY R PITT CONSTRUCTION a record of such inspection, including at a minimum, inspector's name and certification data, date, and purpose of inspection, identifier (ID) of the rope inspected, listing of noted deficiencies and recommendations, and signature of inspector.
- 1.3.11 This applies to all other ropes in use by TERRY R PITT CONSTRUCTION including *running ropes* and/or those ropes in frequent use. This record will be maintained by the crane or hoist operator in the cab compartment.

1.3.12 Rigging must be used and maintained in accordance with manufacturer's recommendations.

## 1.4 OPERATION RULES

1.4.1 Pre-operational test - At the start of each work shift, operators will do the following steps before making lifts with any crane or hoist:

1.4.1.1 Test the upper-limit switch. Slowly raise the unloaded hook block until the limit switch trips.

1.4.1.2 Rigging equipment utilized for material handling will be inspected before each work shift and as necessary to confirm the equipment is safe to use. Visually inspect the hook, load lines, trolley, and bridge as much as possible from the operator's station; in most instances, this will be the floor of the building. Rigging equipment deemed defective will be removed from service and will not be used.

1.4.1.3 If provided, test the lower-limit switch.

1.4.1.4 Test all direction and speed controls for both bridge and trolley travel.

1.4.1.5 Test all bridge and trolley limit switches, where provided, if operation will bring equipment in close proximity to the limit switches.

1.4.1.6 Test the pendant emergency stop.

1.4.1.7 Test the hoist brake to verify there is no drift without a load.

1.4.1.8 If provided, test the bridge movement alarm.

1.4.1.9 Lock out and tag for repair of any crane or hoist that fails any of the above tests.

1.4.1.10 Always watch out for and be aware of the presence of overhead power lines.

## 1.5 PROCEDURE

1.5.1 Only suitably trained and experienced personnel will work in lifting and rigging operations. They must successfully attend appropriate courses that ensure demonstrated competency in the safe use and operations of the equipment and techniques required to perform lifting operations in the expected environment.

1.5.2 All personnel will be required to attend and participate in the safety meetings and carry out pre-use inspections of the lifted object and lifting equipment. All personnel involved in the lifting operation, not limited to the lifting team, will have a responsibility to stop any operation if they are concerned about its safety.

1.5.3 Only employees who have attended an approved rigger course will be involved in rigging and slinging activities. Note: up to two trainees may work with management approval and assigned to a qualified person.

# Rigging/Material Handling

- 1.5.4 All signs, spreader bars, lifting clamps, lifting chains, and hooks will be color-coded in accordance with the approved schedule and color.
- 1.5.5 Use only engineered pad eyes for lifting purposes. Flame cut pad eyes are strictly prohibited.
- 1.5.6 Visual inspections of slings, wire ropes, shackles, loose lifting gear, etc. will be done prior to each use by competent personnel.
- 1.5.7 Detailed inspections of slings, wire ropes, shackles, loose lifting gear, etc. will be conducted by a qualified person nominated by the senior superintendent.
- 1.5.8 All slings, wire ropes, etc. will be handled, lubricated, and stored in such manner as to prevent kinks, rust, wires damage, or other hazardous effects, such as chemical solvents.
- 1.5.9 Slings will be padded or protected from the sharp edges of their loads. Use suitable packing to prevent damage to slings, chains, etc. when in contact with sharp edges.
- 1.5.10 The SWL of the rigging equipment being used must be known and this limit will not be exceeded. Slings and shackles will not be loaded in excess of their rated capacities as prescribed by the sling manufacturer on the identification markings permanently affixed to the sling.
- 1.5.11 Hands or fingers will not be placed between the sling and its load while the sling is being tightened around the load. Approved gloves must be worn when handling wire rope.
- 1.5.12 Defective equipment will be removed from the work area and quarantined, repaired, or disposed.
- 1.5.13 Retirement criteria for damaged slings will be defined within the *wire rope program*. Where damage is noted, a qualified wire rope inspector will inspect the sling prior to use.
- 1.5.14 Wire rope, chain, and fiber slings will be kept away from flame cutting and electric welding operations.
- 1.5.15 Lifting assemblies will be plainly marked with their designed working loads and should only be used for the purpose for which they were designed.
- 1.5.16 The hoist rope will not be wrapped around the load. The load should be attached to the hook by slings or other devices that are adequate for the load being lifted. Chain or wire rope slings will not be shortened with knots or bolts or other makeshift devices. Slings will not be kinked or knotted.
- 1.5.17 When using two or more slings on a load, ensure that all slings are made from the same material.
- 1.5.18 A wire rope will not be wrapped completely around a hook. The sharp radius will damage the sling.
- 1.5.19 Bending the eye section of a sling will be avoided.
- 1.5.20 When lifting rigid objects with slings having three or four legs, any two of the slings must be capable of supporting the total weight.

- 1.5.21 Slings used in a basket hitch will have the loads balanced to prevent slippage. When using choker hitches, the eye will not be forced down toward the load while tension is applied, as rope damage may result.
- 1.5.22 A sling will not be pulled from under a load when the load is resting on the sling and damage to the sling may result. Slings will be set to avoid slippage.

## 1.6 CRANE AND HOIST SAFETY DESIGN REQUIREMENTS

- 1.6.1 The design of all commercial cranes and hoists will comply with ASME/ANSI and Crane Manufacturer's Association of America standards.
- 1.6.2 Hooks and shackles will only be used in a manner recommended by the manufacturer. Hooks will not be painted or re-painted if previous paint applied by the manufacturer is worn off.
- 1.6.3 Crane pendants will have electrical disconnect switch or button to open the main line control circuit.
- 1.6.4 All crane and hoist hooks will have safety latches eliminating the hook throat opening. Hooks used on overhaul ball assemblies, lower load blocks, in connection between the hoist line and any personal platforms, or other attachment assemblies will be of a type that can be closed and locked, eliminating the hook throat opening, or closed and locked when so attached. Alternatively, an alloy anchor type shackle with a bolt, nut, and retaining pin may be used.
- 1.6.5 Crane bridges and hoist monorails will be labeled on both sides with the maximum capacity.
- 1.6.6 Each hoist-hook block will be labeled with the maximum hook capacity.
- 1.6.7 Directional signals indicating N-S-E-W will be displayed on the bridge underside and a corresponding directional label will be placed on the pendant.
- 1.6.8 All newly installed cranes and hoists or those that have been extensively repaired or rebuilt structurally, will be load tested at 125% capacity prior to being placed into service.
- 1.6.9 Devices such as an upper limit switch or slip clutch will be installed on building cranes and hoists. A lower limit switch may be required when there is insufficient hoist rope on the drum to reach the lowest point.
- 1.6.10 All cab and remotely operated bridge cranes will have a motion alarm to signal bridge movement.
- 1.6.11 If an overload device is installed, a load test to the adjusted setting will be required.
- 1.6.12 Personnel baskets and platforms suspended from any crane will be designed in accordance with the specifications in 29 CFR 1926.550(g).

## 1.7 CRANE AND HOIST OPERATIONS

- 1.7.1 TERRY R PITT CONSTRUCTION employees will ensure that all lifting apparatus equipment will be visually inspected for evidence of overloading, excessive wear, or damage prior to first use each day. Equipment found to be defective will be removed from service.
- 1.7.2 Equipment involved in hoisting or lifting operations will be proof tested and annually re-certified by testing the capability of lifting specified percentage loads based on manufacturer’s rated capacity.
- 1.7.3 After re-certification tests have been completed, a tag will be permanently affixed to the tested apparatus. The tag will contain equipment identification and safe working load, date of re-certification, and date of next re-certification.
- 1.7.4 The chart below shows equipment type, re-certification cycles, and proof load amount (Rated Capacity = RC).

EQUIPMENT	RE-CERTIFICATION CYCLE	PROOF LOAD
Slings	Annually 125% RC	200% RC
Chain	Annually 125% RC	200% RC
Wire	Annually 125% RC	200% RC
Metal mesh	Annually 125% RC	150% RC
Fiber/maximum field	Annually 125% RC	100% RC
Hooks	Annually 100% RC or to specifications of attached equipment	125% RC or to specifications of attached equipment
Hoist	Annually 100% RC	125% RC
Chain falls	Annually 100% RC	125% RC
Come-a-longs	Annually 100% RC	125% RC
Winches	Annually 100% RC	125% RC
Hoists and jib crane	Annually 100% RC	125% RC
Shackles, eyebolts, and attached equipment	Annually 125% RC	200% RC
Spreader bar and special rigging equipment	Annually 150% RC	150% RC

- 1.7.5 The requirement for annual re-certification/proof load tests does not apply to those slings not in use and placed in storage. However, such slings will be subjected to the required inspections and proof load test prior to any future use.
  - 1.7.5.1 Operating hoisting equipment safely.
  - 1.7.5.2 Conducting functional tests prior to using the equipment.
  - 1.7.5.3 Selecting and using rigging equipment appropriately.
  - 1.7.5.4 Having a valid operator’s license on their person while operating cranes or hoists.

## 1.8 WIRE ROPE CABLE

- 1.8.1 Employees will be required to participate in the medical certification program, as required.
- 1.8.2 A wire rope consists of a core member, around which a number of multi-wired strands are laid or helically bent. There are two general types of cores or wire rope
  - 1.8.2.1 Fiber cores
    - 1.8.2.1.1 May be made from natural or synthetic fibers
  - 1.8.2.2 Wire cores
    - 1.8.2.2.1 Can be an independent wire rope core, a strand core, or a *Tuf-flex* core
- 1.8.3 Purpose of the core is to provide support and maintain position of outer strands during operation.
- 1.8.4 Any number of multi-wired strands may be laid around the core. The most popular arrangements are six strands around the core, as this combination gives the best balance.
- 1.8.5 The number of wires per strand may vary from 3 to 91, with the majority of wire ropes falling into the 7-wire, 19-wire or 37-wire strand categories.

## 1.9 WIRE ROPE

- 1.9.1 Lay of a wire rope is simply a description of the way wires and strands are placed during component construction. Right lay and left lay refer to the directions of strands. Right lay means that the strands pass from left to right across the rope. Left lay means just the opposite.
- 1.9.2 Regular lay and lang lay describe the way wires are placed within each stand. Regular lay means that wires in the strands are laid opposite in direction to the lay of the strands. Lang lay means that wires are laid in the same direction as the lay of the strands.
- 1.9.3 Most of the wire rope used is right lay, regular lay. This specification has the widest range of applications and meets the requirements of most equipment. Other lay specifications are considered exceptions and must be requested when ordering.

1.9.4 Lang lay is recommended for many excavating and construction applications, including draglines, hoist lines, dredge lines, and other similar lines. Lang lay ropes are more flexible than regular lay.

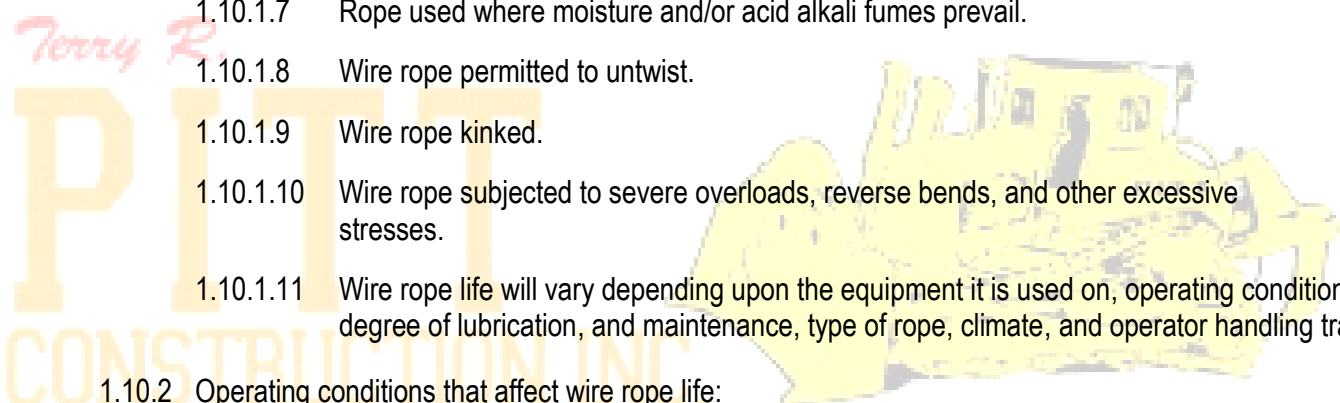
## 1.10 WIRE ROPE FAILURE

1.10.1 Some common cause of wire rope failure are as follows:

- 1.10.1.1 Wire rope allowed to drag over objects or rub against objects.
- 1.10.1.2 Wire rope not properly lubricated.
- 1.10.1.3 Wire rope over winding or cross winding on drums, side-pulls, the most common of lift cable damage, will cause cross winding or over winding. Side pulls are not permitted.
- 1.10.1.4 Wire rope operating over defective or out of alignment sheaves and drums.
- 1.10.1.5 Wire rope jumping sheave flanges.
- 1.10.1.6 Wire rope subjected to heat, moisture, or acid fumes, except stainless steel.
- 1.10.1.7 Rope used where moisture and/or acid alkali fumes prevail.
- 1.10.1.8 Wire rope permitted to untwist.
- 1.10.1.9 Wire rope kinked.
- 1.10.1.10 Wire rope subjected to severe overloads, reverse bends, and other excessive stresses.
- 1.10.1.11 Wire rope life will vary depending upon the equipment it is used on, operating conditions, degree of lubrication, and maintenance, type of rope, climate, and operator handling traits.

1.10.2 Operating conditions that affect wire rope life:

- 1.10.2.1 Bending stresses
- 1.10.2.2 Loading conditions
- 1.10.2.3 Crushing
- 1.10.2.4 Rope speeds
- 1.10.2.5 Abrasion
- 1.10.2.6 Corrosion
- 1.10.2.7 Equipment design
- 1.10.2.8 Portability
- 1.10.2.9 Materials handled





## 1.11 MOVING A LOAD

- 1.11.1 Center the hook over the load to keep the cables from slipping out of the drum grooves and overlapping and to prevent the load from swinging when it is lifted. Inspect the drum to verify that the cable is in the grooves.
- 1.11.2 Use a tagline, unless their use creates an unsafe condition, when loads must traverse distances or must otherwise be controlled. Manila rope may be used for taglines.
- 1.11.3 Suspended loads will be kept clear of all obstructions. Plan and check the travel path to avoid personnel and obstructions. All employees will be kept clear of loads about to be lifted and of suspended loads.
- 1.11.4 Lift the load only high enough to clear the tallest obstruction in the travel path.
- 1.11.5 Start and stop slowly.
- 1.11.6 Land the load when the move is finished. Choose a safe landing.
- 1.11.7 Never leave suspended loads unattended. In an emergency where crane or hoist is inoperative, if a load must be left suspended, barricade and post signs in the surrounding area, under the load, and on all four sides. Lock open and tag the crane or hoist's main electrical disconnect switch.

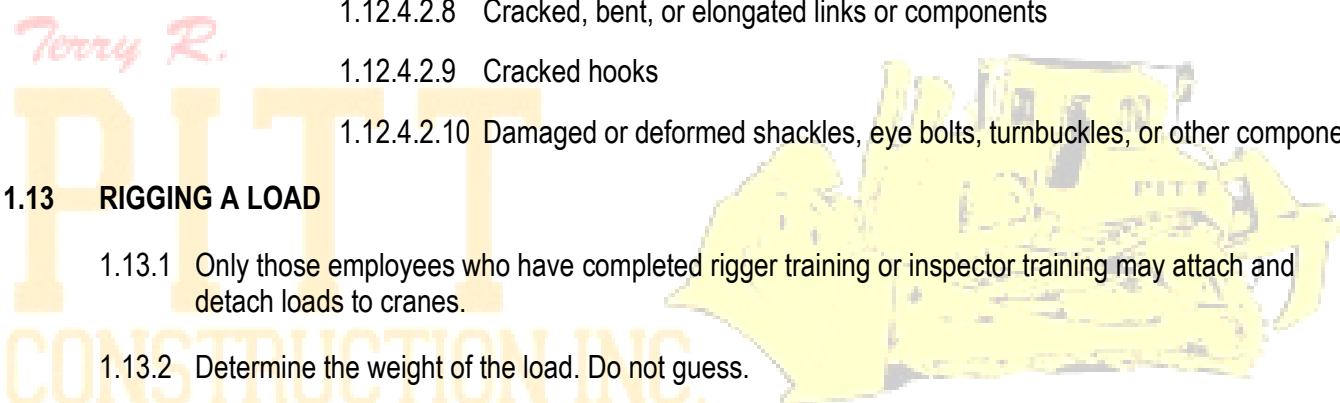
## 1.12 RIGGING

- 1.12.1 Rigging equipment for material handling will be inspected prior to use and on each shift and as necessary during its use to ensure that it is safe.
- 1.12.2 Select only that rigging equipment which is in good condition. Defective equipment is to be removed from service and destroyed to prevent inadvertent reuse. The load capacity limits will be legibly identified using identification marks that will be stamped or permanently affixed to all rigging components, and rigging equipment will not be loaded beyond its recommended safe working load as recommended by the manufacturer. TERRY R PITT CONSTRUCTION will not allow rigging from being loaded greater than the recommended safe working load as described on the identification markings. Rigging materials in which the identification markings are not present or not legible will also not be used. Riggers must have completed rigger training or are not allowed to perform rig-ups.
- 1.12.3 Rigging equipment not in use will be removed from the immediate work area so as not to present a hazard to employees.
- 1.12.4 TERRY R PITT CONSTRUCTION's policy requires a minimum safety factor of 5 to be maintained for wire rope slings. The following types of slings will be rejected or destroyed:
  - 1.12.4.1 Nylon slings with:
    - 1.12.4.1.1 Abnormal wear
    - 1.12.4.1.2 Torn stitching

- 1.12.4.1.3 Broken or cut fibers
- 1.12.4.1.4 Discoloration or deterioration
- 1.12.4.2 Wire-rope slings with:
  - 1.12.4.2.1 Kinking, crushing, bird-caging, or other distortions
  - 1.12.4.2.2 Evidence of heat damage
  - 1.12.4.2.3 Cracks, deformation, or worn end attachments
  - 1.12.4.2.4 Six randomly broken wires in a single rope lay
  - 1.12.4.2.5 Three broken wires in one strand of rope
  - 1.12.4.2.6 Hooks opened more than 15% at the throat
  - 1.12.4.2.7 Hooks twisted sideways more than 10° from plane of unbent hook
  - 1.12.4.2.8 Cracked, bent, or elongated links or components
  - 1.12.4.2.9 Cracked hooks
  - 1.12.4.2.10 Damaged or deformed shackles, eye bolts, turnbuckles, or other components

## 1.13 RIGGING A LOAD

- 1.13.1 Only those employees who have completed rigger training or inspector training may attach and detach loads to cranes.
- 1.13.2 Determine the weight of the load. Do not guess.
- 1.13.3 Determine the proper size for slings and components.
- 1.13.4 Do not use manila rope for rigging.
- 1.13.5 Make sure that shackle pins and shouldered eyebolts are installed in accordance with the manufacturer's recommendations.
- 1.13.6 Ordinary (shoulderless) eyebolts are threaded in at least 1.5 times the bolt diameter.
- 1.13.7 Use safety hoist rings (swivel eyes) as a preferred substitute for eyebolts whenever possible.
- 1.13.8 Pad sharp edges to protect slings. Remember that machinery foundations or angle-iron edges may not feel sharp to the touch but could cut into rigging when under several tons of load. Wood, tire rubber, or other pliable materials may be suitable for padding.
- 1.13.9 Do not use slings, eyebolts, shackles, or hooks that have been cut, welded, or brazed.



1.13.10 Install wire rope clips with the base only on the live end and the U-bolt only on the dead end. Follow the manufacturer's recommendations for the spacing for each specific wire size.

1.13.11 Initially lift the load only a few inches to test the rigging and balance.

## 1.14 CRANE OVERLOADING

1.14.1 Cranes or hoists will not be loaded beyond their rated capacity for normal operations. Any crane or hoist suspected of having been overloaded will be removed from service by locking open and tagging the main disconnect switch. Additionally, overloaded cranes will be inspected, repaired, load tested, and approved for use before being returned to service.

## 1.15 WORKING AT HEIGHTS ON CRANES OR HOISTS

1.15.1 Anyone conducting maintenance or repair on cranes or hoists at heights greater than 6 feet will use fall protection. Fall protection should also be considered for heights less than 6 feet when obstructions are present beneath the individual. Fall protection includes safety harnesses that are fitted with lifeline and securely attached to a structural member of the crane or building or properly secured safety nets.

1.15.2 Use of a crane as a work platform should only be considered when conventional methods of reaching an elevated worksite are hazardous or not possible. Workers will not ride a moving bridge crane without approval from safety department, who will specify, as a minimum:

1.15.2.1 Personnel will not board a bridge crane unless main switch is locked and tagged open.

1.15.2.2 Personnel will not use bridge cranes without a permanent platform (catwalk) as work platforms. Bridge catwalks will have permanent ladder access.

1.15.2.3 Personnel will ride seated on the floor of a permanent platform with approved safety handrails, wear safety harness attached to designated anchors, and be in clear view of the crane operator at all times.

1.15.2.4 Operators will lock and tag open the main (or power) disconnect switch on the bridge catwalk when the crane is parked.

## 1.16 SIGNALING

1.16.1 A signal person must be provided in each of the following situations:

1.16.1.1 Load travel or the area near or at load placement is not in full view of the operator.

1.16.1.2 When the equipment is traveling, the view in the direction of travel is obstructed.

1.16.1.3 The operator or person handling the load determines a signal person is necessary due to site-specific safety concerns.

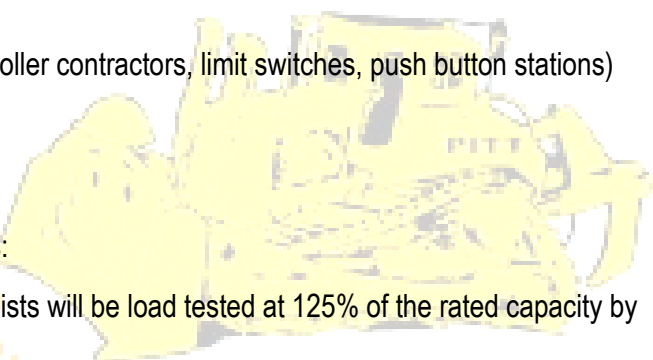
- 1.16.2 Signals to the operator will be in accordance with standard signals unless voice communication equipment is used. Signals will be discernible or audible at all times.
- 1.16.3 Signals to operators must use the hand, voice, audible method. Means of transmitting the signals (direct line of sight, radio, etc.) must be suitable and appropriate for the site conditions. Hand signals must follow 1926.1419(f) in Appendix A of Subpart CC.
- 1.16.4 Some special operations may require addition to or modification of the basic signals. For all such cases, these special signals will be agreed upon and thoroughly understood by both the person giving the signals and the operator and will not be in conflict with the standard signals.
- 1.16.5 Ability to transmit signals between the operator and signal person must be maintained. If the signal is interrupted at any time, the operator must safely stop operations requiring signals until communication is reestablished and a proper signal is given and understood.
- 1.16.6 Each signal person must:
  - 1.16.6.1 Know and understand the type(s) of signals used
  - 1.16.6.2 Be competent in the application of the type of signals used
  - 1.16.6.3 Have basic understanding of equipment operation and limitations, including crane dynamics involved in swinging and stopping and boom deflection from hoisting
  - 1.16.6.4 Demonstrate that he/she meets the qualification requirements through an oral or written test, and through a practical test
- 1.16.7 Only one person will give signals to a crane operator at a time, unless the emergency stop signal is given due to safety issues.
- 1.16.8 The device used to transmit signals must be tested on site before beginning operations to ensure that the signal transmission is effective, clear, and reliable.

## 1.17 INSPECTION AND MAINTENANCE

- 1.17.1 All tests and inspections will be conducted in accordance with the manufacturer recommendations.
- 1.17.2 All in-service cranes and hoists will be inspected monthly and the results documented on the *Crane Inspection Report*.
- 1.17.3 Defective cranes and hoists will be locked and tagged out of service until all defects are corrected. The inspector will initiate corrective action by notifying the operations manager.
- 1.17.4 The onsite employee will schedule and supervise annual preventative maintenance inspections of all cranes and hoists. The annual preventative maintenance and inspection will cover:
  - 1.17.4.1 Hoisting and lowering mechanisms
  - 1.17.4.2 Trolley travel or monorail travel

- 1.17.4.3 Bridge travel
- 1.17.4.4 Limit switches and locking and safety devices
- 1.17.4.5 Structural members
- 1.17.4.6 Bolts or rivets
- 1.17.4.7 Sheaves and drums
- 1.17.4.8 Parts such as pins, bearings, shafts, gears, rollers, locking devices, and clamping devices
- 1.17.4.9 Brake system parts, linings, pawls, and ratchets
- 1.17.5 Load, wind, and other indicators over their full range
  - 1.17.5.1 Gasoline, diesel, electric, or other power plants
  - 1.17.5.2 Chain-drive sprockets
  - 1.17.5.3 Crane and hoist hooks
  - 1.17.5.4 Electrical apparatus (ex. controller contractors, limit switches, push button stations)
  - 1.17.5.5 Wire rope
  - 1.17.5.6 Hoist chains
- 1.17.6 Load testing must be performed as follows:
  - 1.17.6.1 Newly installed cranes and hoists will be load tested at 125% of the rated capacity by designated personnel.
  - 1.17.6.2 Slings will have appropriate test data when purchased. It is the responsibility of the purchaser to ensure that the appropriate test data are obtained and maintained.
  - 1.17.6.3 Re-rated cranes and hoists will be load tested to 125% of the new capacity if the new rating is greater than the previous rated capacity.
  - 1.17.6.4 Fixed cranes and hoists that have had major modifications or repair will be load tested to 125% of the rated capacity.
  - 1.17.6.5 Cranes and hoists that have been overloaded will be inspected prior to being returned to service.
  - 1.17.6.6 Personnel platforms, baskets, and rigging suspended from a crane or hoist hook will be load tested initially, then re-tested annually thereafter or at each new jobsite.
  - 1.17.6.7 Mobile hoists will be load tested at intervals to be determined by a qualified individual.

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- 1.17.6.8 All cranes and hoists with a capacity greater than 3 tons should be load tested every four years to 125% of the rated capacity. Cranes and hoists with a lesser capacity should be load tested every eight years to 125% of the rated capacity.

## 1.18 LOAD BINDING POLICY

- 1.18.1 Failure to use load binders properly may result in serious injury or even death to an employee.
- 1.18.2 Do not operate a load binder while standing on the load. Keep all body parts clear.
- 1.18.3 Move the handle with caution.
- 1.18.4 Keep yourself out of the path of the moving handle and any loose chain lying on the handle.
- 1.18.5 You must be familiar with state and federal regulations regarding size and number of chain systems required for securing loads on trucks.
- 1.18.6 Always consider the safety of nearby workers as well as yourself when using load binders.
- 1.18.7 While under tension, a load binder must not bear against an object, as this will cause side load.
- 1.18.8 Do not use a handle extender (cheater pipe).
- 1.18.9 Do not attempt to close or open the binder with more than one person.
- 1.18.10 When using a lever type load binder:
- 1.18.10.1 Hook the load binder to the chain to operate it while standing on the ground. Position the load binder so its handle can be pulled downward to tighten the chain. Be aware of ice, snow, rain, oil, etc. that can affect your footing. Make certain footing is secure.
  - 1.18.10.2 Use of a handle extender (cheater pipe) is prohibited. If sufficient leverage cannot be obtained using the lever type load binder by itself, use a ratchet type binder.
  - 1.18.10.3 During and after tightening chain, check the load binder handle position. Be sure it is in the locked position and that its bottom side touches the chain link.
  - 1.18.10.4 Chain tension may decrease due to load shifting during transport. To be sure load binder remains in proper position, secure handle to chain by wrapping loose end of chain around the handle and the tight chain, or tie handle to the chain with soft wire.
  - 1.18.10.5 When releasing the load binder, remember there is a great deal of energy in the stretched chain. This will cause the load binder handle to move very quickly with great force when it is unlatched. Move the handle with caution. If you can whip – Keep all body parts clear.
  - 1.18.10.6 Never use a cheater pipe or handle extender to release the handle. Use a steel bar and pry under the handle and stay out of the path of the handle as it moves upward.

1.18.10.7 If you release the handle by hand, use an open hand under the handle and push upward. Do not close your hand around the handle. Always keep yourself out of the path of the moving handle.

1.18.11 When using a ratchet load binder:

1.18.11.1 Manually unscrew the end hoods to get enough reach.

1.18.11.2 Position ratchet binder so it can be operated from the ground

1.18.11.2.1 Ideal placement is between waist and chest high

1.18.11.3 Attach one hook close to an anchor point to minimize hood rotation.

1.18.11.4 Keep fingers and hands away from pawl and gear.

1.18.11.5 Take up as much slack as possible and hook chain to opposite end of load binder.

1.18.11.6 Set the pawl and start closing the load binder, use clean gloves.

1.18.11.7 Maintain a buffer zone from the end of the ratchet handle.

1.18.11.8 Secure footing and stroke handle until desired tension is achieved. Handle extensions are prohibited.

1.18.11.9 Loads can shift. Check tension of the load binder frequently and retighten as needed. They also have greater wearing surface than regular lay ropes.

## 1.19 TRAINING

1.19.1 Any worker who uses a crane or hoist or who applies rigging, will have authorization from the safety manager and current training/certification. This includes hands-on training.

1.19.2 To be qualified as a crane and hoist operator, the employee will have received hands-on training from a licensed crane and hoist operator and his supervisor must complete and sign the *Qualification Request Form* and *Crane Safety Checklist* and send them to the safety manager for review and approval.

1.19.3 Training for lifting operations will cover, at minimum, regulatory requirements along with:

1.19.3.1 Implication of environmental/weather conditions

1.19.3.2 Use of lifting equipment in restricted areas

1.19.3.3 Lifting SIMOPS or parallel activities

1.19.3.4 Visibility and communication during lifting operations

1.19.3.5 Proximity hazards such as electrical or changing conditions

1.19.3.6 Prevention of load striking any person or object

1.19.3.7 Pre-check of lifting equipment and identification of faults and defects and loose items

- 1.19.3.8 Attaching, securing and detaching loads
  - 1.19.3.9 Tagline operations
  - 1.19.3.10 Overloading and de-rating of lifting equipment
  - 1.19.3.11 Overturning, tilting, slipping, and dragging loads
  - 1.19.3.12 Not working under suspended loads
  - 1.19.3.13 Not leaving loads suspended
  - 1.19.3.14 Lifting of people
  - 1.19.3.15 Continuing integrity of lifting equipment and accessories
- 1.19.4 Training will incorporate familiarization with rigging, hardware, slings, and safety issues associated with rigging, lifting loads, and lift planning. Training will include classroom, hands on training, and exams. Hands-on should include proper inspection, use, selection, and maintenance of loose gears (lings, shackles, hooks, etc.)

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CONSTRUCTION INC.

