## 1.0 Purpose

1.1 To establish the requirements, responsibilities, and procedures for the selection of cranes and personnel that are associated with each crane operation. Furthermore, the purpose of this policy is to ensure compliance with the Federal and State Regulations.

## 2.0 Definitions

* 1. **Articulating Boom Crane**- A crane whose boom consists of a series of folding, pin connected structural members, typically manipulated to extend or retract by power from hydraulic cylinders.
	2. **Assembly/Disassembly Director**- A supervisory person that oversees the assembly and disassembly of the crane. This person must meet the criteria for both a competent person and a qualified person or be a competent person who is assisted by one or more qualified persons.
	3. **Anti-Two-Block Device**- A device that when activated, disengages all crane functions whose movement can cause two-blocking.
	4. **Blocking**- (also referred to as "cribbing") Is wood or other material used to support equipment or a component and distribute loads to the ground. It is typically used to support lattice boom sections during assembly/disassembly and under outrigger and stabilizer floats.
	5. **Boom**- (Equipment other than tower crane) Means an inclined spar, strut, or other long structural member which supports the upper hoisting tackle on a crane or derrick. Typically, the length and vertical angle of the boom can be varied to achieve increased height or height and reach when lifting loads. Booms can usually be grouped into general categories of hydraulically extendible, cantilevered type, latticed section, cable supported type or articulating type.
	6. **Certified Operator**- A crane operator certified by the National Commission for the Certification of Crane Operators (NCCCO) or other recognized training course certified by the state of the operator.
	7. **Certified Rigger**- A crane rigger certified by the National Commission for the Certification of Crane Operators (NCCCO).
	8. **Competent Person**- Means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
	9. **Critical Lift**- Any lift that meets one or more of the following: 1) A lift that is equal to or greater than 75 percent of the crane’s chart capacity; 2) When the pick requires using two lines, or a multiple crane lift; 3) Hoisting personnel; 4) Hoisting hazardous materials (explosives, highly volatile substances, etc.) Recommended to follow critical lift procedures for any lift that goes over a public area or occupied building or has any high impact capability (i.e. long lead time, or expensive items).
	10. **Dedicated Spotter (power lines)** - A person whose sole responsibility is to watch the separation between the power line and the equipment, load line and load (including rigging and lifting accessories), and ensure through constant communication with the operator that the applicable minimum approach distance is not breached.
	11. **Derrick**- An apparatus consisting of a mast or equivalent member held at the end of guys or braces, with to without a boom, for use with a hoisting mechanism and operating ropes.
	12. **Engineered Lift**- Any lift that meets one or more of the following criteria: 1) any lift that is equal to or greater than 90 percent of the crane’s chart capacity; 2) The load exceeds 60,000 lbs.; 3) A lift deemed engineered by project management.
	13. **Fall Zone**- The area (including but not limited to the area directly beneath the load) in which it is reasonably foreseeable that partially or completely suspended materials could fall in the event of an accident.
	14. **Functional Testing**- The testing of a crane, typically done with a light load or no load, to verify the proper function of a crane’s primary function (i.e. hoisting, braking, booming, swinging, etc.) A functional test is contrasted to testing the crane’s structural integrity with heavy loads.
	15. **Jib-** An extension attached to the boom point to provide added boom length for lifting specified tasks.
	16. **Lifting Device**- Any machine or device used to lift a load, including but not limited to a crane, hoist, chain fall, come-along, jack, jacking system, derrick, monorail hoist, gantry crane, or pulley system.
	17. **Lift Director**- A supervisory person that oversees the work being performed by a crane and the associated rigging crew. This person must meet the criteria for both a competent person and a qualified person or be a competent person who is assisted by one or more qualified persons.
	18. **Mobile Crane**- A lifting device incorporating a cable suspended latticed boom or hydraulic telescopic boom designed to be moved between operating locations by transport over the road.
	19. **Operational Aid**- An accessory that provides information to facilitate operation of a crane or that takes control of particular functions without action of the operator when a limiting condition is sensed. Examples include but are not limited to: anti-two blocking device, rated capacity indicator, load indicator and wind speed indicator.
	20. **Overhead/bridge and Gantry Crane**- Includes cranes on monorails, cantilever gantry, under hung cranes and similar equipment, irrespective of whether it travels on tracks, wheels, or other means.
	21. **Rigging**- Any material used to attach loads including but not limited to: chain, wire rope, synthetic slings, and miscellaneous hardware.
	22. **Site Supervisor**- Controlling organization supervisor that has control over the work site that the crane is being used in and over the work that is being performed at the site.
	23. **Standard Lift**- Crane operations that do not exceed 75 percent of the cranes chart capacity or any of the other critical lift triggers.
	24. **Tower Crane**- A type of lifting structure which utilizes a vertical mast or tower to support a working boom (jib) in an elevated position. Tower base may be fixed in one location or ballasted and movable between locations. Loads are suspended from the working boom, which may be a fixed type of have luffing capacity. Working boom can always rotate to swing loads, either by rotating on the top of the tower or by the rotation of the bottom slewing.
	25. **Two-Blocking**- A condition in which a component that is uppermost on the hoist line such as the load block, hook block, overhaul ball, or similar component, comes in contact with the boom tip, fixed upper block or similar component. This binds the system and continued application of power can cause failure of the hoist rope or other component.
	26. **Qualified Person**- A person who by possession of a recognized degree, certificate or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems relating the subject matter, the work, or the project.
	27. **Qualified Rigger**- A person that is within the fall zone and hooking, unhooking, guiding a load, or doing the initial connection of a load to a component or structure who understands and demonstrates knowledge of the hazards and controls associated with rigging operations.
	28. **Qualified Signalman**- A person that is giving any signals to a crane/derrick operator and that has met the qualification requirement in the latter part of this policy.

## 3.0 Personal Qualifications and Responsibilities

1. The Following Roles must be assigned and documented on attachment 36-B prior to any lift.
	* 1. **Site Supervisor**- Exercises supervisory control over the worksite on which a crane is being used and over the work that is being performed on that site.
		2. **Lift Director-** Directly oversees the work being performed by a crane and the associated rigging crew.
		3. **Crane Owner-** Has custodial control of a crane by virtue of lease or ownership.
		4. **Crane User-** Arranges the crane's presence on a worksite and controls its use there.
		5. **Crane Operator-** Directly controls the crane's functions.
		6. **Rigger/Signalperson(s)-** Oversees rigging and signaling crane picks.
	1. Site Supervisor
		1. Ensure crane, operator, and certified rigger/signalman lift director and assembly director meets all regulatory requirements prior to arriving on site (i.e. current annual crane inspection, operator’s/rigger/signalman certification, etc.).
		2. Ensure all documentation associated with the pre-mob plan is current and available on site prior to mobilization, crane set up and operation. See Attachment AISH 36-A Pre-Mob Checklist.
		3. Ensure that crane operations are coordinated with other job site activities that will be affected by or will affect lift operations.
		4. Ensure that the area for the crane is adequately prepared, (i.e. access roads, sufficient room for assembly/disassembly, site is level and stable, traffic control plans when necessary, etc.) before crane operations commence.
		5. Ensure a Lift Director and an Assembly/Disassembly Director are assigned to supervise the assembly/disassembly of the crane. Supervisor may act as Lift Director if he/she meets the requirements of a qualified person.
		6. Ensure that work involving the assembly and disassembly of a crane is supervised by an assembly/disassembly director.
		7. Ensure that conditions which may adversely affect crane operations are addressed (i.e. poor soil condition, wind, fog, artificial lighting, etc.).
		8. Addressing and controlling crane operations near electric power lines.
		9. Acquiring permits for special lifting operations (i.e. multiple crane lifts, lifting personnel, mobile/articulating cranes operating on barges, etc.).
		10. Ensure that work performed by the rigging crew is supervised by a qualified rigger.
		11. Ensure that crane maintenance is performed by a qualified person.
		12. Stop crane operations if alerted to an unsafe condition affecting those operations.
		13. Determining if additional regulations are applicable to crane operations before initial site usage
	2. Lift Director
		1. Site Supervisor may be the designated Lift Director if he/she meets the requirements of a qualified person.
		2. See Section 3.1 Site Supervisor Responsibilities. In addition to those responsibilities, Lift Director must:
		3. Must be on site and overseeing the lifting operation at all times.
		4. Ensure that the preparation of the area needed to support crane operations has been completed before crane operations commence.
		5. Ensure necessary traffic controls are in place to restrict unauthorized access to the crane’s work area.
		6. Ensure that personnel involved in crane operations understand their assigned duties and the associated hazards.
		7. Address safety concerns raised by the operator or other personnel and decide if it is necessary to overrule those concerns and direct the crane operations to continue. In all cases, the manufacturer’s criteria for safe operation must be adhered to. **When safety issues are overruled, crane operations will not continue without approval from Division Corporate Safety Manager.**
		8. Ensure precautions are implemented when hazards are associated with special lifting operations are present. (i.e. multiple crane lifts, lifting personnel, mobile/articulating cranes operating on barges, etc.).
		9. Assigning qualified signal person(s) and conveying that information to the operator.
		10. Allowing crane operation near electric power lines only when requirements of Apollo Over Head Electrical Hazards Procedure (AISH 37) and any additional requirements determined by the site supervisor have been met.
		11. Inform the crane operator of the weight of the loads to be lifted, as well as the lifting, moving and placing locations for these loads.
		12. Obtain the crane operator’s verification that this weight does not exceed the crane’s rated capacity.
		13. Ensure cranes load rigging is performed by a qualified rigger.
		14. Ensure the load is properly rigged and balanced before it is lifted more than a few inches.
	3. Assembly/Disassembly Director
		1. Ensure the assembly/disassembly of the crane complies with the manufacturer’s procedures.
		2. Must meet the criteria of both a qualified and competent person.
		3. Where assembly/disassembly is being performed by only one person, that person must meet the criteria for both a competent person and a qualified person.
		4. Inspect and document all crane/derrick components and attachments prior to and post assembly/disassembly completion. This inspection must include a visual inspection to ensure that the components and attachments are of sound physical and functional within manufacturer’s recommendation.
		5. Conduct a pre-assembly/disassembly meeting with crew members involved that covers their tasks, the hazards associated with their tasks, and hazardous positions/locations they need to avoid. Must conduct another meeting covering the same information before crew member takes on a new/different task, or when adding personnel during operations.
		6. Address and control specific hazards associated with the assembly/disassembly process including but not limited: site and ground bearing conditions; blocking material; proper location of blocking; verifying assist crane loads; boom and jib pick points; center of gravity; stability upon pin removal; snagging; struck by counterweight; boom hoist brake failure; loss of back stability; Wind speed and weather; weight of components; component and configuration; shipping pins; cantilevered boom sections).
		7. Protect assembly/disassembly crew members out of operator’s view.
	4. Crane Owner (in some situations the owner and user may be the same entity, the user may however lease or rent a crane from the owner with supervisory, operational, maintenance, support personnel, or services from the owner.
		1. Provide a crane that meets all manufacturer, regulatory, and job specific requirements defined by the user.
		2. Provide all applicable load/capacity chart(s) and diagrams.
		3. Ensuring inspection, testing, and maintenance is performed in accordance with Regulatory, and Manufactures’ requirements, and informing the crane user of these requirements.
	5. Crane User
		1. Complying with all regulatory, job specific and manufacturer requirements.
		2. Using supervisors for crane activities that meet applicable requirements.
		3. Ensuring that the crane is in proper operating condition prior to initial use at the worksite by providing documentation that all requirements are met and performing inspections.
		4. Ensuring that all designated personnel meet applicable requirements for assigned duties on the crane.
		5. Ensuring that all inspection, testing, and maintenance as required are followed.
	6. Operator
		1. Possess a current certification by an accredited (a nationally or State recognized accrediting agency) crane/derrick operator testing organization (i.e. NCCCO Certification) and a current medical card.
		2. Review the lift plan with Lift Director and/or Site Supervisor prior to operation to review the requirements for the crane; identify site conditions that could adversely affect the operation (i.e. power lines, ground conditions, etc.); confirm the net capacity for all crane configurations are correct using load/capacity chart(s); ensure the load and rigging weights have been provided.
		3. Consider all factors known that might affect the crane capacity and inform the lift director of the need to make appropriate adjustments.
		4. Understand and apply the information contained in the crane manufacturer’s operating manual.
		5. Know how to travel the crane.
		6. Conduct meeting with designated certified signal person to ensure both parties understand the hand signals that are going to be used during crane operation.
		7. Perform the daily visual crane inspection.
		8. Before starting the engine, operator must verify that all controls are in the proper starting position and that all personnel are in the clear.
		9. Follow applicable Lock-Out-Tag-Out procedures and Apollo Overhead Hazards Procedure (AISH 37).
		10. Promptly report any deficiencies from the crane inspection to the appropriate person.
		11. Operator obtains the right to “Stop Work Authority” and has the ability to stop any lift and refuse a load if there are any safety concerns.
		12. Test the crane function controls prior to using the crane and operate crane in a smooth and controlled manner.
		13. Know and understand the procedures specified by the manufacturer for assembly, disassembly, setting up, and reeving the crane.
		14. Observe each outrigger during extension, setting, and retraction.
		15. Does not engage in any practice that will divert their attention while actually operating the crane controls.
		16. Operate cranes functions, under normal operating conditions, in a smooth and controlled manner.
		17. Must be in good physical and mental health.
		18. Be certified with correct crane category designation for the crane on site.
		19. Follow Safety Procedures if power fails and before leaving the crane unattended
	7. Qualified Rigger
		1. Refer to AISH 35 Rigging, Signaling and Materials Handling.
	8. Qualified Signalman
		1. Refer to AISH 35 Rigging, Signaling and Materials Handling.

## 4.0 General Requirements

* 1. This procedure applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to:
		1. Articulating cranes (such as knuckle-boom cranes); Mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); Multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; Mechanic trucks with a hoisting device; Tower cranes (such as a fixed jib, i.e., "hammerhead boom"), luffing boom and self-erecting); Overhead and gantry cranes; Derricks; and Variations of such equipment.
	2. All cranes and derricks must be certified annually by an accredited certifier. A copy of the annual inspection must be displayed in the cab of the crane and a copy obtained by the Lift Director prior to crane arriving on site.
	3. Operator must meet the requirements listed in subsection 3.9 of this procedure.
	4. The Operator must not participate in any practice or activity that diverts his/her attention while actually engaged in operating the crane/derrick.
		1. The Operator must not leave the controls while the load is suspended.
	5. The following will always be readily accessible in the cab while in operation:
		1. A copy of the current annual inspection
		2. A copy of the operating manual, written in English
		3. Load chart
		4. Crane log book for operator to record operating hours
		5. All inspections, test, and maintenance records
		6. Rated capacity charts that includes but is not limited to: Manufacturer’s rated capacities for all approved operating radii, boom angles, work areas, boom lengths and configurations; alternate ratings for use and nonuse of optional equipment which affects rated capacities; and work area figure
		7. A portable fire extinguisher (minimum rating of 10 BC) must be installed in the cab
		8. Windshields clear of cracks
		9. Working seat belt
	6. If there is a warning (tag-out or maintenance/do not operate) sign on the crane/derricks starting controls or any other switch or control, the operator must not activate or start the crane/derrick until the sign has been removed by a person authorized to remove it, or until approval from the Apollo Divisional Safety Manager has been granted.
	7. No employee shall travel under a suspended load.
	8. When the operator has a stationary suspended load, no employee is allowed to be within the fall zone except those engaged in hooking, unhooking or guiding the load or are engaged in the initial attachment of the load. Only employees needed to receive a load are permitted to be within the fall zone when a load is being landed.
	9. Site Supervisor will take steps to prevent employees from entering swing radius by training employees assigned to work on or near the crane to recognize struck-by and pinch/crush hazard areas. Employees will also be trained how to erect and maintain control lines, warning lines or other distinguishable boundaries.
	10. No modifications or additions which may affect the capacity of the crane shall be performed by Apollo without the manufacturer’s written approval.
	11. On wheel-mounted cranes, loads must not be lifted over the front area, except as permitted by the crane manufacturer.
	12. Crane supports (i.e. timbers, cribbing, etc.) for individual stabilizer/outrigger pads must be level, extended and set per manufacturer’s specifications, strong enough to prevent crushing and of such width and length as to completely support the pad.
	13. Before installing any signage on the boom of a crane that may alter the performance of the crane, attain the signage engineering specifications, and letter of approval from crane manufacturer.
	14. Before erecting tower cranes, discuss with Safety Department.
	15. **Prior to erecting and using crane suspended work platforms, contact Apollo Safety Department.**

**5.0 Assembly and Disassembly**

* 1. Crane assembly and disassembly will be in accordance with the manufacturer’s specifications and procedures.
	2. Assembly/Disassembly director (A/D Director) will supervise all Assembly/ Disassembly (A/D) activities and identify specific hazards including but not limited to:

5.2.1 Site conditions; overhead hazards; Blocking material (the size, amount, condition and method of stacking the blocking must be sufficient to sustain the loads and maintain stability); Proper location of blocking; Verifying assist crane loads; Boom and jib pick points; Center of gravity; Identify and barricade off areas where people have the potential to be struck by counterweights; and wind speed and weather; Stability upon pin removal; Snagging; Boom hoist brake failure; Loss of backward stability; weight of components; Components and configuration; Shipping pins.

* 1. A Pre-lift meeting will be conducted with all personnel involved prior to every assembly/disassembly operation that includes their tasks, hazards associated and controls for those hazards. Before a new crew member takes on a different task or when adding new personnel during the operations a new Pre-lift meeting must be conducted.
	2. Crane will be set up on firm and stable ground and level within 1 degree.
	3. When pins (or similar devices) are being removed, employees must not be under the boom, jib, or other components.
	4. When the load to be handled and the operating radius require the use of outriggers or stabilizers they must be fully extended and set to remove the equipment weight from the wheels.
	5. During all A/D operations, a qualified person will take actions to prevent unintended dangerous movement and prevent collapse of any part of the equipment; Provide adequate support and stability of all parts of the equipment; and position employees involved in the A/D operation so that their exposure to unintended movement or collapse of a part or all of the equipment is minimized.

## Inspection and Maintenance

* 1. Inspection
		1. Annual- Crane must be inspected every 12 months. Copy of certificate to be kept in cab of crane and on file in the office.
		2. Initial/prior to each shift- Operator shall visually inspect all parts of the crane to assure that it is configured in accordance with manufacturer equipment criteria upon the completion of assembly and prior to each use. Inspection includes a functional test/test pick.
		3. Once a month the crane will be inspected, and records of such inspections will be kept for the duration of the job.

NOTE: Cranes that have been idle for three months or more must be inspected by a qualified person prior to use unless the three months overlap the previous 12-month period. In such case, an annual inspection from an accredited agency will be conducted.

* + 1. If any deficiency is identified, an immediate determination must be made by a qualified person as to whether the deficiency constitutes a safety hazard. If a deficiency with a safety device or operational aids is identified, the crane will be tagged out of service until deficiency is corrected.
		2. Cranes that have had modifications, additions, and significant repairs must be inspected by an accredited crane certifier after such modifications/additions/repairs have been completed.
	1. Maintenance
		1. A preventative maintenance program must be established based on the recommendation of the manufacturer.

## 7.0 Operation

* 1. When planning a lift, Site Supervisor and Lift Director shall determine what category it will falls into:
		1. Standard Lift (Complete AISH 36-B)
		2. Critical Lift (Complete AISH 36-C)
		3. Engineered Lift (Complete AISH 36-C and Contact Corporate Safety Manager Mike Ellis or Jeff Grade)
	2. Prior to starting lift the operator and rigger shall check that:
		1. The hoist rope is not kinked;
		2. Multiple-part lines must not be twisted around each other;
		3. The hook must be brought over the load in such a matter as to minimize swinging;
		4. That all slack in the rigging is removed; and
		5. Load is not caught or attached to anything
	3. The operator must verify that the load is within the rated capacity of the crane.
	4. The operator must not leave the controls while the load is suspended.
	5. Tag lines must be used when rotation or swinging of the load is hazardous or if the load needs guidance.
	6. Safety Devices
		1. The following are required on all cranes (except tower cranes) and must be in good working order:
			1. Crane level indicator
			2. Boom stops (except for derricks and hydraulic booms)
			3. Jib stops (if a jib is attached), except for derricks
			4. Equipment with foot pedal brakes must have locks
			5. Hydraulic outrigger jacks and hydraulic stabilizer jacks must have an integral holding device/check valve
			6. Equipment on rails must have rail clamps and rail stops, except for portal cranes
			7. Horn
		2. Safety Devices must not be used as a substitute for the exercise of professional judgment by the operator.
		3. If a safety device stops working properly during operations, the operator must safely stop operations. If any of the devices listed are not in proper working order, the equipment must be taken out of service and operations must not resume until the device is again working properly.
	7. Operational Aids
		1. The following are required on all cranes (except tower cranes) and must be in good working order:
			1. Boom hoist limiting device (except for derricks with base mounted drum)
			2. Luffing jib limiting device
			3. Anti-two-blocking device
			4. Boom angle or radius indicator
			5. Jib angle indicator (if the crane has a luffing jib)
			6. Boom length indicator (if the crane has a telescopic boom)
			7. Load weighing and similar devices
			8. Outrigger/stabilizer position sensor/monitor (if the crane has outriggers or stabilizers)
			9. Hoist drum rotation indicator (if the crane has a hoist drum and is not visible from the operator’s station)
		2. Operations must not begin unless the listed aids are in proper working order, except where more protective alternate measures can be implemented while it is being repaired.
		3. If operational aids are inoperative or malfunctioning, the crane and/or device manufacturer’s recommendations for continued operations or shutdown of the crane must be followed until problems are corrected. If a replacement part is no longer available, the use of a substitute device that performs the same type of function is permitted and is not considered a modification. Recalibration or repair of the operational aid must be accomplished as soon as possible.
	8. Testing
		1. An accredited crane certifier shall conduct an operational test in accordance with the manufacturer’s recommendations prior to the initial pick.
		2. Proof load tests will be completed on all hoist lines to at least 100%, but not to exceed 110% as configured.
		3. Proof testing will be selected in a safe area where all unauthorized personnel, traffic and equipment must be cleared. Test area will be roped off.
		4. Rigging gear must be inspected prior to proof test.
		5. Personnel must remain clear of suspended loads and areas where they could be struck in the event of boom failure.
		6. Proof testing must not exceed manufacturer’s specifications
		7. Testing documentation must be sent to regulatory agency within 10 days of test.
	9. Communication
		1. Standard communications such as hand, voice, and audible will be used in all crane operations and will be discussed and understood by both the operator and the signal person prior to crane operation. They do not need to meet again to discuss voice signals unless another employee is added or substituted, there is confusion about the voice signals, or a voice signal is to be changed.
		2. Each voice signal must contain the following 3 elements, given in the following order: function (such as hoist, boom, etc.) and direction; distance and/or speed; function stop.
		3. Where a signal person(s) is in communication with more than one crane/derrick, a system for identifying the crane/derrick for which each signal is intended must be used.
		4. Radio or telephone communication shall be used when the distance between the operator and the signal person is more than 100 feet or if they cannot see each other. The operator’s reception of signals must be made by a hands-free system.
		5. Only one person gives signals to the operator at a time unless an emergency stop signal is given (which may be given by anyone and must be obeyed by the operator).
		6. There must be constant communication (Radio or Hand Signal) between the operator and rigger while a load is in motion.

## 8.0 Critical Lifts

* 1. Critical lift plans shall be developed by a qualified person and shall include the operator, lift supervisor, site supervisor, and rigger/signalman. Plan will be signed by all involved personnel prior to lift. See Attachment AISH 36-C.
	2. Plan will include:
		1. Specific make and model of the crane
		2. Exact size and weight of the load to be lifted and all crane and rigging components that add to the weight
		3. Specify the lift geometry and procedures including crane position, height of the lift, load radius, boom length/angle
		4. Shall designate the crane operator, lift supervisor, certified rigger/signalman and include their credentials
		5. Describe ground conditions and environmental conditions under which the lift will be stopped
		6. Specify coordination and communication that will be used
	3. All Critical Lifts will be approved by the Safety Department.
	4. Engineered Lift
		1. No engineered lifts shall be performed without the authorization of Corporate Safety Manager Mike Ellis or Jeff Grade.
	5. Hoisting Personnel
		1. The use of cranes and derricks to hoist employees is prohibited. Contact Corporate Safety Manager Mike Ellis or Jeff Grade if lifting personnel on platforms is the **only** possible way to accomplish the work that needs to be done and all other options have been explored. See AISH 21 Crane Suspended Work Platforms.

## 9.0 Environmental Conditions

* 1. Ground Conditions
		1. Lift Director is responsible for determining if ground conditions (slope, compaction, firmness) are adequate for supporting crane operations.
		2. Site Supervisor will identify the location of hazards beneath the equipment set-up area (such as voids, tanks, utilities) based on site drawings, as-built drawings, and/or soil analyses and communicate them with Lift Director and Operator prior to crane assembly. Cribbing must not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met.
	2. Overhead Hazards
		1. Refer to AISH 37 Overhead Power Line Safety.
	3. Wind
		1. Crane operations will not be conducted if wind velocities exceed manufacturer’s recommendations. At wind speeds of 20 mph, crane operations shall be ceased and the lift director will evaluate the conditions and determine if the lift shall proceed.
	4. Night Operation
		1. Provide lighting adequate to illuminate the working area without interfering with the operator’s or rigger’s vision.

## 10.0 Rigging and Signaling

10.1 Refer to AISH 35 Rigging, Signaling and Material’s Handling

## 11.0 Training

* 1. Employees involved in all crane operations shall be trained in:
		1. Overhead Power lines
		2. Crush/pinch points
		3. Lock-out-tag-out
		4. Qualifications for the rigger, signalman and operator are required and will be sufficient to satisfy the training requirements
	2. Refresher training will be provided in relevant topics based on the conduct of the employee and/or an evaluation of their knowledge and at a minimum annually.

## 12.0 Record Keeping

12.1 Copies of the all crane inspections will be kept on the job site for a minimum of 3 years

## 13.0 Attachments

AISH 36-A Crane Pre-Mob Checklist

AISH 36-B Crane Standard Pre-Lift Plan (See Forms)

AISH 36-C Crane Critical/Engineered Lift Permit (See Forms)

## 14.1 References

29 CFR 1926.1400 (Nov 2010), Occupational Safety and Health Standards (OSHA) WAC 296-155 Part L, Occupational Health Standards (WISHA)

EM385-1-1, US Army Corps of Engineers Overton Safety Training, Inc.

**Attachment 36-A**

**Apollo Pre Mob Checklist**

|  |  |  |  |
| --- | --- | --- | --- |
| **CRANE PRE-MOB CHECKLIST** | **YES** | **NO** | **N/A** |
| **SITE CONDITIONS** |
| **Are overhead hazards present** |  |  |  |
| **Are underground hazards present** |
| **Is ground level firm and supportive** |  |  |  |
| **Is cribbing requires?** |
|  |  |  |  |
| **POWER LINE HAZARD** |
| **Are overhead power lines present? (Obtain Voltage)** |  |  |  |
| **Is there 20’ clearance distance from the working radius of the crane? (If not refer to power line operations checklist)** |  |  |  |
|  |  |  |  |
| **PERSONNEL** |  |
| **Who is the Site Supervisor?*****Name*** |  |  |  |
| **Who is the Assembly /Disassembly Director?*****Name*** |  |  |  |
| **Who is the Crane Owner?*****Name*** |  |  |  |
| **Who is the Crane User?*****Name*** |  |  |  |
| **Who is the Lift Director?*****Name*** |  |  |  |
| **Who is the Qualified Rigger?*****Name*** |  |  |  |
| **Who is the Qualified Signal person?*****Name*** |  |  |  |
| **Who is the Dedicated Spotter?*****Name*** |  |  |  |
| **Who is the Operator?*****Name*** |  |  |  |
|  |
| **DOCUMENTATION CHECKLIST** |  |
| **Copy of the Annual Certification for all cranes being used (date )** |
| **Copy of the Crane Operators Certification (date )** |  |  |  |
| **Copy of the Crane Operators Medical Certification(date )** |
| **Copy of the Riggers Card or Certification (date )** |  |  |  |
| **Copy of Signal Person Card or Certification (date )** |
| **Copy of the Wire Rope Certification** |  |  |  |
| **Copy of the Crane Load Rating Chart (with notes pages identifying deductions such as block, jib, etc…)** |
| **Copy of load weight verification (Manufacturer specs, freight weights etc..)** |  |  |  |
| **Copy of any spreader bar Information** |
| **Lift Plan – (Standard, Critical or Engineered)** |  |  |  |
|  |
| **OTHER** |
|  |
|  |
|  |

Attachment 36-B

APOLLO STANDARD

CRANE PRE-LIFT PLAN

Job:

Job #: Date(s):

1. Lift Director: 12. Longest planned radius of

|  |
| --- |
|  |
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|  |
|  |

the lift (ft):

1. Certified Crane Operator:
2. Qualified Signalman:
3. Qualified Rigger:
4. Description ofload(s):
5. Load weight (lb):
6. Crane capacity at longest planned radius:
7. Percentage of crane capacity listed (11 ÷ 13):

**15. Is the percentage > 75%, (need a critical liftplan):**

1. How was the weight of the load obtained: ***CREW SIGNATURES (REQUIRED BEFORE PICK IS MADE)***

 Print Name Signature

1. Crane to be used Make:

Model: Updated Certs(Y/N)?:

1. Total deductions for crane (jib, wire rope, block, ball, ect.):

|  |
| --- |
|  |
|  |
|  |

1. Total weight of all rigging

(slings, shackles, bars, ect.):

1. **Total lifted load(6+9+10):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Yes | No | **Pre-Lift Checklist** | Yes | No |
| Matting Acceptable |   |   | Tag Line Used |   |   |
| Outriggers Fully Extended |   |   | Windy Conditions |   |   |
| Daily Crane Inspection Complete |   |   | Function Testcomplete |   |   |
| Swing Radius Barricaded |   |   | Radius Verified |   |   |
| Communicationbetween Operator |  |  | Head Room Checked |   |   |
| and Rigger Verified |   |   |  |  |  |

**Lift Director Signature:**  **Date(s):**

Attachment 36-C

**APOLLO MOBILE CRANE LIFT PLAN WORKSHEET**

* 1. **PROJECT ADMINISTRATIVE INFORMATION**

**Project Name Project # Superintendent Project Manager Engineer**

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| --- |
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* 1. **LIFT PLAN ADMINISTRATIVE INFORMATION**

**Load Description Sub-Contractor Plan Prepared by Crane Operator Date Plan Submitted**

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**Date Review Completed Planned Lifting Date**

* 1. **EARLY DOCUMENTATION CHECKLIST** (Each item below must be initialed by the verifying party)

***(All documentation below shall be submitted a minimum of two weeks prior to planned pick date)***

**Copy of Operators NCCCO Card** *(Card is current with retraining in the past 5 years, copy on file)*

**Copy of Annual 3rd Party Crane Inspection** *(Inspection current within one year of planned pick date)* **Copy of Crane Load Charts & Notes Pages** *(Chart must be copy of the actual chart to be used during pick)* **Copy of Insurance Certificate** *(Check with Risk Management Department if any questions)*

* 1. **PICK ANALYSIS**

***CRANE INFO***

Type of Crane Model Number / Series



|  |
| --- |
|  |
|  |
|  |

Crane Manufacturer Unit Number

Crane Counterweight **lbs** Serial Number

***CRANE CONFIGURATION***

Pick Configuration Boom Tip Height ft

ft

deg

|  |
| --- |
|  |
|  |
|  |
|  |
|  |
|  |

Boom Length Boom Angle

Hoist Cable Type Hoist Cable Size

Jib Configuration Hoist Cable Weight lbs/ft

Jib Length

Jib Offset Angle

N/A N/A

ft Single Line Pull lbs

deg Required Parts of Line

Outrigger / Track Configuration Maximum Line Pull

*(Tires must be completely free of the ground)* Pick Will Be

Blocking/Pads/Mats Used?  Crane Ground Bearing Pressure

*(Crane Pad Must Be Level Within 1%)* Max Allowable Soil Bearing Pressure

Pick Type  **Wind SpeedShutdown**

*(Two Crane Picks Must Be Engineered)*

***LOADINFORMATION***

Description of Load Original Load Weight

Structural Steel? How Determined

0 lbs

**25** mph

***PICK WEIGHTS***

Original Load Weight

Rigging Weight (See Section 5) Hoist Wire Rope Weight

**Total Load Weight**

0 lbs Auxiliary Boom Tip / Sheave lbs

0

0

0 lbs Additional Deductions lbs

0 lbs Allowance for Extra Weight lbs

**0 lbs**

***PICK CALCULATION***

**Pick Radius**

**PER PLAN EXTENDED RADIUS ALLOWANCE**

ft

lbs

-

ft

ft

lbs

lbs

-

-

**Crane Chart Capacities**

**% of Crane Chart Capacity**

*(Total Load / Crane Chart Capacity)*

Weight Allowance Engineered Over Capacity

**0** lbs Minimum Pick Radius ft

**0** lbs *(REQUIRED TO KEEP LOAD AWAY FROMBOOM)*

**Telescopic**

|  |  |  |  |
| --- | --- | --- | --- |
| Standard Lift | 0% | - | 74% |
| Critical Lift Engineered Lift | 75%90% | -- | 89%100% |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. **RIGGING INFORMATION** |  | **Rigging** |  | **Rigging** |  | **Rigging** |  |  |
| **Quantity** | ( | **Size**Individual Piece | Size) | **Weight**(Individual Piece Weight) | Single | **Capacity** | Combined |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
|  |  |  |  | lbs |  | lbs | 0 | lbs |
| **Total Rigging Weight** |  | **0** | **lbs** |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Max Rigging Capacity** |  | 0 | **lbs** |  |  |  |  |  |

***(The lowest weight capacity shown here is your constraint or Max Rigging Capacity)***

Sling



|  |  |
| --- | --- |
| Main Block Aux. Block Headache Ball Aux. Ball Spreader(s) Shackle(s)Other |  |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
|  |
| 0 |
| Other | 0 |
| Other | 0 |
| Other | 0 |

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**Rigging Diagram**

1. **SETUP INFORMATION**

Is the site graded / drained / level for crane set-up. ***(Crawler matts may be required)(Outrigger pads are always required)***

|  |
| --- |
|  |
|  |
|  |
|  |

Underground hazards present? (Y / N) If Yes, explain.

Overhead hazards present (Y / N) If Yes, explain.

Fire or explosive hazards within reach (Y / N) If Yes, explain.

Electrical hazards within reach (Y / N) If Yes, explain.

**DIAGRAM OF PICK AREA / CRANE SET UP LOCATION**

1. **PLAN REVIEW SIGNATURES**

***ALL PICKS***

**SUPERINTENDENT LIFT DIRECTOR *CRITICAL***

**SAFETY SUPERINTENDENT LIFT DIRECTOR *ENGINEEREDPICKS***

**SAFETY SUPERINTENDENT**

**LIFT DIRECTOR ENGINEER**

1. **MOBILIZATION CHECKLIST**

(Each item below must be initialed by the verifying party)

**Crane Model and Serial Number** (Verifynumbersmatchsubmittedinformation)

**Copy of Annual 3rd Party Crane Inspection** (This included Telescopic / Hydraulic / Rubber Tire Cranes)

**Site 3rd Party Inspection / Load Test for Lattice Boom** (Copy on file)

* **Company Performing Inspection**
* **Inspector Certification**

**Copy of Crane Load Charts with Notes Pages** (Verify that the chart in the cab of the crane matches the one submitted) **Copy of Operators NCCCO Card** (Verify that the card submitted is for the actual Operator who will run the crane) **Qualified Rigger / Signal Person** (Verification of qualified rigger / signal training)

**Power Line Safety Plan submitted / reviewed / accepted prior to mobilization** (if within a booms length) **Pre-Lift meeting held and plan discussed with all affected parties prior to start of pick Assembly / Disassembly Plan submitted / reviewed / accepted prior to crane mobilization**