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1 PURPOSE:

By following this policy and operating lifting devices in a safe and responsible manner, injuries and property damage can be prevented.


2 SCOPE:

This policy applies to Gravity personnel operating cranes and hoists. The policy applies to all people who oversee a third party who operates cranes (e.g., mobile, stationery, overhead). The use of nonconventional equipment for lifting can only be performed if the attachments are correctly designed and approved components per the manufacturer.

3 RESPONSIBILITY:

3.1 Job Site Manager

- 3.1.1 Verify all lifting equipment is operated, inspected, and maintained in accordance with the manufacturer’s recommendations, applicable legal requirements, and Gravity standards.
- 3.1.2 Identify and mitigate the potential hazards associated with the lift, including environmental considerations and housekeeping.
- 3.1.3 Conduct a lift plan before starting work. The lift plan shall include, but not be limited to, the following:
 - Complete a Job Safety Analysis (JSA).
 - Pre-work discussion to determine if a Written Lift Plan is needed.

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- Verify escape routes and pinch points.
- Warning that personnel shall not be directly under load and non-essential personnel are not permitted in the fall zone.
- Specific crane and rigging equipment to be used.
- Assessment of the dimension, weight, and center of gravity.
- Verification of the rigging & equipment to be used is appropriate for the type of lift.
- Proper PPE is being worn.

3.2 Lift Operator

3.2.1 Shall meet training requirements prior to operating powered equipment. Safely rig a load and accurately determine weight of any load. Verify the load rating of each component of the rigging system. The load rating must meet or equal the weight of any load. Ensure proper load balance when lifting.

3.2.2 Shall review the lift plan and verify all required controls are in place and effective.

3.2.3 Shall ensure the following:


- The lifting device is properly positioned and not homemade.
- The equipment is properly configured.
- No overhead obstruction exists.
- Lift is executed in accordance with the developed lift plan.
- A clear pick-up and lay-down area is established prior to the lift and rigging equipment is removed after the load is securely in place and free of support from the crane.

3.3 Rigger

3.3.1 Shall guide the load into place and understand the line-of-fire hazards and where to go if load moves in an unexpected manner.

3.3.2 Shall be responsible for the following:

- Confirm that safety devices on lifting equipment are operational.
- Avoid having personnel under the load.
- Participate in the pre-lift meeting and sign the JSA.
- Use standard hand signals or verbal commands to the lift operator to help guide the load along a clear path from initial point to final resting point.
- Ensure labels are attached and legible.
- Sling, unslung, and guide loads under the direction of the Lift Operator.
- Conduct visual rigging inspection before and after each lift.

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- Walk the lifting area and stay in clear view of the operator and warn others of the operation taking place.
- Check the load for any dropped objects (e.g., hand tools).

4 Safe Operating Requirements


4.1 General Requirements

- 4.1.1 Personnel must ensure crane and hoist capable of hoisting over 2,000lbs are certified by a nationally recognized and accredited organization, in accordance with OSHA 29 CFR 1926.1427. Certificate must be current and must note type of capacity of equipment.
- 4.1.2 A Crane or hoist must not be loaded beyond its rated capacity for normal operations. A preventive maintenance program must be established based on hoist manufacturers recommendations. Hoisting equipment must meet the design specification of ASME B30.16 and B30.21. Overhead and gantry cranes must meet the design specification of ANSI B30.2.0-1967.
- 4.1.3 Select rigging equipment that is proper type, rating, and operating conditions. Inspect all rigging equipment in compliance with manufacturer recommendations. Load capacity limits must be stamped or affixed to all rigging components. Equipment must be engineered and certified for intended use.
- 4.1.4 Accurately determine weight of any load. The load rating of each component of the rigging system must exceed the weight of the load. Ensure all rigging system components are used in compliance with manufacturer recommendations. Ensure proper load balance when rigging any load.
- 4.1.5 A load that has a high Center of Gravity (CoG) with potential to become unstable, must be lifted only a few inches initially then stopped. Ensure the hoist is functioning properly and load is properly balanced.

4.2 Safe Lifting Practices for Slings

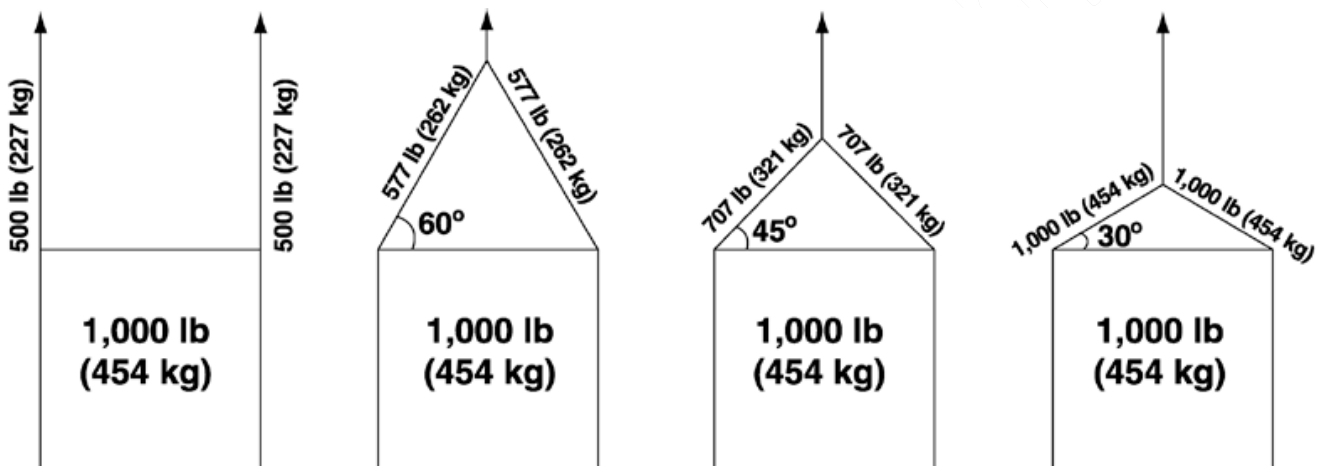
- 4.2.1 The correct type of sling shall be selected based on, but not limited to, the following:

- The characteristic of the load.
- The environmental conditions surrounding the lift.
- The size, weight, and CoG of the load.
- The rated capacity of the sling.
- The number of legs and the angle the sling makes with the horizontal line.

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- The sling angle has a dramatic effect on the rated capacity of the sling, as the angle decreases, the load on each leg increases.
- If possible, keep the sling angles greater than 45 degrees; sling angles approaching 30 degrees should be considered extremely hazardous and be avoided at all costs. Never use a sling at a sling angle not recommended.
- A sling with two legs that is used to lift a 1,000-lb (454-kg) object has a 500-lb (227-kg) load in each leg when the sling angle is 90°. The load in each leg increases as the angle is decreased, and at 30°, the load is 1,000 lb. (454 kg) in each leg. See Chart 1 below.

Chart 1 – Set Up




5 Lift Categories Definitions and Requirements

5.1 Routine Lifts are classified:

- Lifting over non-sensitive areas and suitable environment conditions.
- Load has known and evaluated weight, shape, and low center of gravity.
- Standard rigging arrangements and repetitive lifting operations using the same equipment.
 - A JSA is required.

5.2 Blind Lifts are classified:

- Crane operators cannot see the load during any part of the lift.
 - A JSA is required.
 - **Written Lift Plan is required.**

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5.3 Non Routine Lifts are classified :

- Lifts performed once a month.
- Requiring detailed planning and additional unusual safety precautions.
- Lifting operations or conditions which would merit additional engineering input.
 - A JSA is required.
 - Job Site supervisor at the lift area.
 - **Written Lift Plan is required.**

5.4 Complex Lifts are classified:

- No single point of hookup.
- Load has an offset or high CoG.
- The load is an awkward shape.
- The load is fragile.
- The load must be rotated or overturned.
- The load is lowered into or lifted from a confined space.
- Non-Standard rigging arrangements.
- The lift is in proximity to overhead power lines.
- The lift uses more than one crane and the use of a forklift.
- Any critical consideration the crane operator has because of safety concerns beyond normal lifting hazards.
 - A JSA is required.
 - Job Site supervisor at the lift area.
 - **Written Lift Plan is required.**


5.5 Heavy Lifts are classified:

- Any lift which is equal or greater than (>) 75% of the rated capacity as per the load chart
 - A JSA is required.
 - Job Site supervisor at the lift area.
 - **Written Lift Plan is required.**

6 Shop Lifts

6.1 Safe Shop Operation

- 6.1.1 For any lifts which meet the requirements of Non-Routine, Blind, Complex, or Heavy as described in the Lift Categories Definitions and Requirements a Written Lift Plan form shall be used. The Written Lift Plan will be kept at the branch for one year.

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Locally modified lifting and rigging equipment that has been fabricated, constructed, and altered outside of the original manufacturer's design shall not be used.

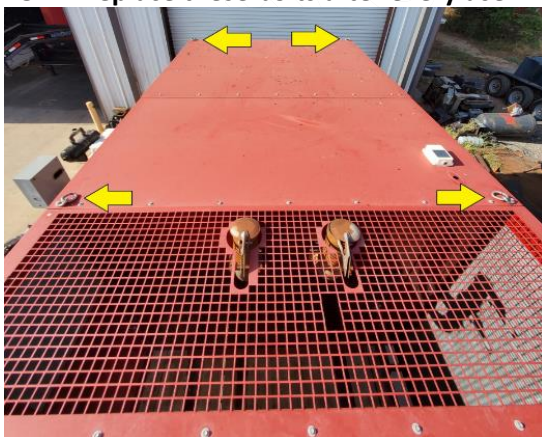
- 6.1.2 A proper hazard analysis shall be conducted on the shop lifting process. The analysis will assess and mitigate hazards associated with the relationship between the workers, the lift, the load, and the work environment.
- 6.1.3 The lifting team shall not conduct simultaneous operations (SIMPOS) at any point during the lift. When other operations are near the shop lift the site supervisor will define the restrictions and conditions under which the work can be performed safely.


6.2 Natural Gas Cabinet Removal

6.2.1 NG Cabinets are equipped with corner lifting ports, verify the weight and capacity, and utilize an engineered lifting frame or dual spreader bar assembly to accomplish a vertical lift. Figure 1 provides an example of acceptable vertical lifting arrangements.

- [4 qty. – OTC Lifting Brackets \(OTC 7100\)](#)
- [1 qty. – Adjustable Lifting Beam \(Caldwell 20-10-10\)](#)
- [2 qty. – Chain Sling \(3/8"x10' quad leg with sling hooks & adjusters – Grade 100\)](#)
- [4 qty. – 3/8" x 1 1/2" bolt w/ flat washer \(grade 8\)](#) **NOTE: Replace these bolts after every use.**

Figure 1 - **NOTE: Replace these bolts after every use.**



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6.3 Alternative Lifting Devices

6.3.1 When an alternative lifting device is installed the integrity of the installation, and its connection points shall be visually confirmed as well as function tested to ensure the connection points are secure.

6.3.2 A Chain Hoist (Fig 2) and Come-A-Longs (Fig 3) will have specific inspection and the manufacturer’s manual should be consulted. Pre-use inspections should only be required once per day when the hoist is operated.

Figure 2 Chain Hoist



Figure 3 Come-A-Long



6.3.3 Trolleys (Fig 4) mounted on beams with a chain hoist shall be inspected on a regular basis, daily. A load test shall be required every time an overhead trolley is disassembled and reinstalled. The load test shall be 15% above the expected load, not to exceed 100% rated capacity. Items to check include:


- Capacity markings.
- Assembly bolting.
- Load bar assembly.
- Steel frame condition.
- Wheels and wheel bearing.

Figure 4 Trolley Mount



Figure 5 Portable Lifting Frames



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6.3.4 Portable Lifting Frames (Fig 5) shall maintain an annual inspection by a qualified inspector. Documentation must be available to confirm a load test was successfully completed before operating.

7 Requirements for 3rd Party Handling Cargo at Gravity Facilities

7.1 Requirements

7.1.1 To ensure safe operation at our facilities, the following guidelines for contractors operating cranes will be enforced. Gravity will examine cargo and refuse to attach or lift any load judged to be unsafe. Vendors and Business Partners will be contacted to correct situations where their company is involved in improper crane operation or rigging practices.

7.1.2 Loads shall be transported “trucked” to their next location, not “pick and carried” by a crane or forklift.

7.1.3 Lifting and rigging operations shall be stopped if any of following occur:

- The lighting is within 10 miles of the work area. Work can resume 30 minutes after the last lighting strike.
- Wind speeds are greater than or equal to 35mph or exceed manufacturer recommendations.
- Lifting or rigging equipment is damaged or defective (i.e., bird caging, cut, frayed, burned, crimped.)
- The emergency stop signal is given.
- A non-essential worker enters the fall zone.
- An incident or near miss occurs (i.e., dropped objects)

7.1.4 The following information shall be visible to the crane operator within the cab:

- Rated load capacities of the crane.
- Lifting radius of the crane.
- The manufacturer recommended operating speeds.
- Labels on each control describe the function.
- Manufacturer operating guidelines (i.e., operations manual)

7.1.5 Working near energized power lines, for lifting and rigging operations, the minimum clearance distance to energized power line shall maintain as shown in Chart 2 below.


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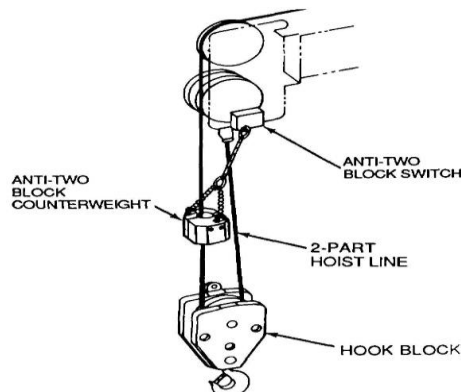
Chart 2: Minimum clearance distance to energized power lines


Voltage	Minimum clearance distance
0 to 50 kV	10 feet
51 to 200 kV	15 feet
201 to 350 kV	20 feet
351 to 500 kV	25 feet
501 to 750 kV	35 feet
751 to 1000 kV	45 feet
1001 kV and up	As specified by the utility owner/operator or registered professional engineer who is a Qualified Person with respect to electrical power transmission and distribution.

7.1.6 Before leaving the crane controls unattended for any period the 3rd Party Qualified Crane Operator will:

- Land any attached load.
- Disengage the master clutch, where applicable.
- Set all locking devices.
- Put controls in the off or neutral position.

7.1.7 Anti-Two Blocking devices will be installed and maintained on main blocks and auxiliary whip lines. Weight Indicators must be fitted equipment on cranes or weight must be determined by use of appropriate dynamometer (crane scale). The main hoist load block and auxiliary hoist headache ball will be painted with a highly visible paint, such as bright orange or green, for maximum visibility.



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The employee signature below represents signature on file, and indicate signatories have read, fully understand, and endorse this document and its contents.



Employee Signature *Date*

Employee Printed Name

8. VERSION HISTORY

Documents in draft form are versioned A, B, C, etc.; after publication, documents are versioned 1, 2, 3, etc.

Version	Date	Writer	Comments
1	12/1/2023	S. Bedell	Initial publication of approved document.

Table 1: Version History

Written Lift Plan: Confirm below are in place and verified prior to starting lift

Start Work Checks		Person(s) Performing Work (initial)	Job Site Manager (initial)
All exposed persons performing work must confirm each action below.			
1	Equipment operator and rigger are qualified to do the lifting and rigging task.		
2	Load weight is within the range of the equipment's safe working limit.		
3	Lifting and rigging equipment is certified, inspected, and rated for the task.		
4	Lifting and rigging equipment safety devices are in place and working.		
5	Communication plan is agreed by all workers involved.		
6	Plan is in place to prevent and mitigate: <ul style="list-style-type: none"> • Load shifts • Dropped objects • Load path obstructions • Overhead obstructions • Working under suspended loads 		
7	Lifting equipment is stable per manufacturer specifications.		
8	Written lift plan required? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes: All workers agreed to follow the written lift plan. Note: Written lift plan needed for Blind, Non-Routine, Complex, Heavy Lifts		
Work Location			
Date			
Step by Step Lift Plan			
Crane/Hoist to be used			
Total weight of load & rigging			
List pick up & set down location			
		Printed Name & Signature	
Job Sight Manager			
Crane Operator			