



CONFINED SPACE ENTRY

Introduction: Cranes are essential equipment on many construction sites, used for lifting and moving heavy materials. However, improper crane operation and unsafe rigging practices can result in catastrophic accidents, including property damage, serious injuries, and fatalities. Ensuring safe crane operations and proper rigging techniques is crucial to preventing incidents on the job site. By following established guidelines and staying aware of potential hazards, workers can reduce risks associated with crane operations.

Key Hazards in Crane Operations:

- **Overloading the Crane:** Lifting loads beyond the crane's rated capacity can lead to tipping, structural failure, or a boom collapse.
- **Rigging Failures:** Incorrect rigging, poor load balance, or damaged slings can cause dropped loads and severe injuries.
- **Boom or Crane Contact with Power Lines:** Electrocutation is a significant risk if the crane or load comes into contact with live electrical lines.
- **Improper Ground Conditions:** Cranes require stable, level ground to operate safely; uneven or soft surfaces can lead to instability or tipping.
- **Inadequate Communication:** Miscommunication between the crane operator and the rigging crew can result in unsafe movements and accidents.

Safe Crane Operation:

Conduct a Pre-Operation Inspection:

- **Crane Inspection:** Ensure the crane is in good working condition by checking all components, including the boom, cables, hooks, brakes, and outriggers. Verify that all safety systems, such as load indicators and limit switches, are functional.
- **Ground Conditions:** Inspect the ground to ensure it's stable and level. Set up the crane on firm ground, and use outrigger pads or mats to distribute the weight if necessary.

Verify Load Capacity:

- Always know the crane's load chart and understand the lifting capacity based on the boom angle, length, and configuration.
- Never exceed the crane's rated lifting capacity, as overloading can lead to tipping or structural failure.
- Ensure the load is properly calculated, including the weight of the rigging gear (slings, shackles, etc.).
- **Plan the Lift:** Assess the environment to identify hazards such as overhead power lines, nearby structures, and changing weather conditions (wind, rain). Develop a clear lift plan that includes the crane operator, signal person, and riggers. Everyone involved in the lift should understand their role and the sequence of actions.
- **Use Proper Communication:** Ensure there is a designated signal person who is in clear view of the operator at all times or maintains radio contact. The signal person must use standardized hand signals to communicate with the crane operator. Establish clear lines of communication among all workers involved in the lift, especially in noisy or congested environments.
- **Set Up the Crane Properly:** Use all necessary counterweights and ensure outriggers are fully extended to provide stability. Check that the boom is set at the correct angle for the intended lift and that the load will not swing or cause side loading.

Rigging Practices:

Inspect Rigging Equipment:

- **Slings:** Inspect slings for cuts, fraying, corrosion, or broken wires. Damaged slings should be removed from service immediately.
- **Hooks:** Check hooks for signs of wear or damage. Ensure safety latches are functional and not bent or broken.
- **Shackles and Chains:** Verify that shackles and chains are free of cracks, deformations, or wear
- **Choose the Right Rigging Equipment:** Select slings, shackles, and lifting devices that are appropriate for the load's weight and shape. Different types of slings (wire rope, synthetic, or chain) are suitable for specific tasks. Ensure that rigging equipment is rated for the weight of the load being lifted.
- **Ensure Proper Load Balance:** The load should be evenly distributed and balanced to prevent tipping or swinging during the lift. Center the load under the crane's hook, and avoid side-loading, which could cause the crane to tip or the load to swing unexpectedly.
- **Secure the Load:** Use the appropriate hitches (vertical, basket, or choker hitches) depending on the load's size, shape, and stability. Make sure all rigging is tight and secure before beginning the lift, and check that the load is stable once lifted.

Avoid Hazardous Practices:

- Never lift loads over workers, and ensure the area below the load is clear.
- Never stand or walk under a suspended load.
- Do not leave suspended loads unattended, and always lower the load to the ground when not in motion.

Emergency Procedures:

- In case of power line contact or crane malfunction, stop all operations immediately and notify the supervisor.
- Operators and workers should be familiar with emergency procedures, including lowering the load safely in the event of equipment failure.

Common Crane Types and Uses:

- **Mobile Cranes:** Commonly used for moving heavy loads across construction sites.
- **Tower Cranes:** Used for high-rise building construction with the ability to lift large loads vertically.
- **Overhead Cranes:** Typically used in industrial settings for lifting loads across work areas.

Discussion Topics:

- What types of loads are commonly lifted on this site, and what precautions do you take to ensure safe rigging?
- Have you encountered any issues with crane stability or ground conditions on this job?
- Do you have the necessary rigging equipment in good condition, and is everyone on-site trained to use it safely?
- What steps do you follow to ensure safe crane operations and communication with the team?

