

# **THINK SAFETY - Protect Yourself AND the People Around You...**

## **CRANE SAFETY**

Fatalities and serious injuries can occur if cranes are not maintained, inspected and used properly...

Many fatalities can occur when the crane boom, load line, or the load, contacts electrical power lines and shorts electricity to ground. Other incidents happen when workers are struck by the load, are caught inside the swing radius or fail to assemble / disassemble the crane properly.

1. Cranes are to be operated only by qualified and trained personnel.
2. A designated competent person must inspect the crane and all crane controls before use.
3. Be sure the crane is on a firm / stable surface and that crane is setup level.
4. During assembly / disassembly do not unlock or remove pins unless components are blocked and fully secured.
5. Fully extend outriggers and barricade accessible areas inside the crane's swing radius; and, watch your tail-swing..
6. Watch for overhead electric power lines and maintain at least a 10-foot safe working clearance from these lines.
7. Inspect all rigging prior to use; do not wrap hoist lines around the load.
8. Be sure to use the correct load chart for the crane's current configuration and setup, the load weight and lift path.
9. Do not exceed the load chart capacity while making lifts.
10. Raise load a few inches, hold, verify crane capacity / balance, and test brake system before delivering load.
11. Do not swing / move loads over workers.
12. Be sure to follow signals and manufacturer instructions while operating cranes
13. Operate the machine as if every lift is a critical lift.
14. Equipment maintenance is crucial to crane-safe operations.

### **Things to REMEMBER..**

1. **SAFETY IS EVERYONE'S BUSINESS.. *think about it BEFORE you get into trouble***
2. **GET INTO THE HABIT OF DOING IT RIGHT AND YOU CANNOT GO-WRONG**
3. **PLAN-YOUR-WORK and WORK-YOUR-PLAN !**
4. **ARE YOUR PRIORITIES CORRECT?**

**PRIORITY No. 1 - SAFETY OF LIFE**

**PRIORITY No. 2 - SAFETY OF EQUIPMENT**

**PRIORITY No. 3 - EFFICIENT JOB PRODUCTION**

and the **BOTTOM LINE..**

Take the time and **READ the OPERATOR'S MANUAL**; and this is particularly critical if you are not-familiar with the machine.

# GUIDELINE for CRANE-SAFE OPERATIONS

***Following is a part of the Knowledge Requirement before you operate a Crane (NCCO information). Notes: NCCO is a program for the National Certification of Crane Operators developed in the USA and soon-to-be a part of WCB-BC standard for Certifications.***

## **PART 1: the JOBSITE (Crane Setup and Hazards)**

1. Know that the suitability of the supporting surface to handle the expected loads. Elements of concern include but are not limited to:
  - (a) weakness below the surface such as voids, tanks and loose fill;
  - (b) weakness on the surface such as retaining walls, slopes, excavations and depressions.
2. Know the proper use of mats, blocking or cribbing and outriggers or crawlers as they affect the supporting surfaces to handle the expected loads of the operation.
3. Know electric power line hazards, corresponding regulations and safety practices.
4. Know how to identify and evaluate hazards associated with:
  - (a) access to job site
  - (b) site hazards such as underground utilities
  - (c) transportation clearances
5. Know how to review lift requirements with site supervision to include determination of working height, boom length, load radius, load weight, crane capacity, travel clearance, extension of crawlers or outriggers / stabilizers and counterweights.

## **PART 2: OPERATIONS**

1. Know which federal regulations and industry standards affect safe operation of the crane, including but not limited to ASME B30.5, B30.10, B30.23, OSHA 1910.180, 1926.550.
2. Know how to conduct daily crane inspections for unsafe conditions / deficiencies and to notify supervision of these conditions.
3. Know how to pick, carry, swing and place the load smoothly and safely on rubber tires and on outriggers/stabilizers or crawlers (where applicable).
4. Know proper procedures and methods of reeving all wire ropes and methods of reeving multiple part lines and selecting the proper load block and/or ball.
5. Know standard hand signals as specified in ASME B30.5.
6. Know how to shut down and secure the crane properly when leaving it unattended, based on manufacture's recommendations in both normal and emergency conditions.
7. Know the manufacture's recommendations for operating in various weather conditions, and understand how environmental conditions affect the safe operation of the crane.
8. Know how to verify the weight of the load and rigging prior to initiation of the lift.
9. Know how to determine where the load is to be picked up and placed and, how to verify the radii.
10. Know basic load and rigging procedures.
11. Know how to perform daily maintenance and inspection.
12. Know how to use the following operator aids:
  - a) LMI,
  - b) anti-two block device (A-2-B),
  - c) boom angle indicator,

- d) rated load indicator,
  - e) boom length indicators.
13. Know which operations reduce crane capacity or require specific procedures or skill levels such as:
    - a) multi-crane lifts,
    - b) suspended personnel platforms, (c) duty cycle operations, (d) barge operations.
  14. Know the proper procedures for operating safely under the following conditions:
    - a) traveling with suspended loads,
    - b) approaching two-blocking condition,
    - c) operating near electric power lines,
    - d) using suspended personnel platforms,
    - e) lifting loads from beneath the surface of the water,
    - f) using various approved counterweight configurations,
    - g) handling loads out of the operators vision ("operating blind"),
    - h) using electronic communications techniques, such as radios,
    - i) extreme weather.
  15. Know the proper procedures for load control and the use of hand-held tag lines.
  16. Know how to react to:
    - a) electric power line contact,
    - b) loss of stability,
    - c) control malfunction,
    - d) block and / or line twisting,
    - e) carrier or travel malfunction.
  17. Know how to properly use the outriggers in accordance with manufacturer's specifications.
  18. Know alternative operating procedures when operator aids malfunction.
  19. Know the effects of dynamic loading on the boom from:
    - a) wind,
    - b) stopping and starting,
    - c) impact loading
    - d) moving load
    - e) traveling with the load (pick and carry).
  20. Know the effect of side loading the boom.

### **PART 3: TECHNICAL KNOWLEDGE**

1. Know the basic crane terminology and definitions.
2. Know the functions and limitations of the crane and attachments.
3. Know wire rope:
  - a) construction and breaking strength, inspection procedures,
  - b) replacement criteria and procedures,
  - c) capacity and when multi-part rope is needed,
  - d) maintenance and lubrication, relationship between line pull and safe working load.
4. Know rigging devices and their use, such as:
  - a) slings, including fabric, wire and chain
  - b) spreader bars and lifting beams,
  - c) wire rope fittings, such as clips, shackles and wedge sockets,
  - d) saddles (corner softeners),
  - e) clamps (pipe, CRB, etc.),
  - f) hook-blocks and hook-ball (overhaul balls).
5. Know the limitations of protective measures against electrical hazards.
6. Know the effects of load share and load transfer in multi-crane lifts.
7. Know the significance of the instruments, gauge readings and machine power system.

8. Know the requirements of pre-operation and inspection and maintenance.
9. Know the uses and limitations of all operational devices / aids.
10. Know how to calculate net capacity for the crane configuration using the applicable manufacturer's load chart.
11. Know how to use the manufacturer-approved attachments and their effect on the cranes operation.
12. Know the principles of backward stability - particularly when moving crane with full counterweights fitted.

#### **PART 4: MANUFACTURERS' LOAD CHARTS**

1. Know the terminology necessary to use load charts.
2. Know how to ensure that the load chart is the appropriate chart for the machine in its particular application.
3. Know how to use capacity load charts. This includes knowing:
  - (a) the operational limitations of load charts and footnotes,
  - (b) the difference between structural capacity and capacity limited by stability,
  - (c) what is included in load chart capacity,
  - (d) the range diagram and its relationship to the load chart,
  - (e) the work area chart and its relationship to the load chart,
  - (f) where to find and how to use the "parts-of-line" information,
  - (g) the safe working load of hoist line.
4. Know how to use the load chart together with the load indicators.

***..DO YOU THINK YOU ARE READY ??***