



## **Crane Rigging (The Hoisting Triangle)**

*Whenever discussing CRANE RIGGING, it is almost mandatory that some thought be given to the fact that when dealing with rigging equipment and cranes, those involved must never lose sight that the law of gravity is ever present. Complacency and lack of respect for what is going on can lead to disaster.*

### **Triangle**

**There are three elements** involved in any hoisting task that must be considered:

1. The Crane
2. The Operation of the Crane
3. The Rigging of the Crane

**The foundation of the “triangle”** is the crane itself, and its condition is paramount to assure it is ready to perform its task.

**A pre-operational inspection** is required:

- to verify proper condition and configuration,
- that any modification and repairs are sound
- that the controls and safety devices are working properly
- that wire ropes are in good condition
- that clutches and brakes are in good condition
- the rotating systems are working properly and
- the load blocks and reeving systems are adequate for the intended load

**The operator** of the crane must:

- fully understand the load chart
- assure the crane is properly set up
- must properly utilize outriggers when fitted
- consider his radius, quadrants to operate to minimize shock and dynamic loading
- take into consideration weather conditions and hazardous surroundings, and
- insist on proper signaling.

**And, the individuals attaching** the load must know:

- the weight of the load and its center of gravity
- allow for sling angles, and D/d ratios
- select and inspect all slings and rigging hardware
- apply a hitch that will hold and control the load and
- assist in maintaining proper load control

**All of this data** must be assembled in the minds of the crane operator, the flagger, the spotter, and anyone else on-site having anything to do with the crane operation itself. Once this is resolved, it is “time to go to work.”

### **Rigging Safety Rules**

**Controlling all** of this pre-construction operation is a set of industry-wide “**Rigging Safety Rules,**” as follows:

1. Know the Weight of the Load
2. Know the Center of Gravity of the Load
3. Make Load Attachments Above Center of Gravity
4. Select Hitch That Will Hold and Control Load
5. Know Rated Capacities of Slings and Rigging Hardware
6. Select Sling Best Suited for Load
7. Inspect All Rigging Gear Prior to Use
8. Protect Sling From Sharp Surfaces
9. Protect Load From Rigging If Necessary
10. Do Not Use Hand-Tucked Slings On Single Leg or With Swivel In System
11. All For Increased Tension Caused by Sling Angles
12. Allow For Low D/d Ratios ON Wire Rope
13. Equalize Loading On Multiple Leg Slings
14. Allow For Reductions When Using Choker Hitches
15. Allow For Sling Angles When Forcing Choker
16. Only Use Alloy Chains When Chain Is Used-Grade 8 (T) Chain
17. Attach Tag Lines Prior to Lift If Required
18. Keep Personnel Clear of Lift Area
19. Lift Load A Few Inches And Check Rigging
20. Know Limitations Of Hoisting Device
21. Start and Stop Slowly
22. Watch For Obstructions And Power Lines
23. Use Proper Hand Signals
24. Do Not Forget The Law of Gravity

**One final note:** One of the prime considerations in rigging is to know the rated capacity of the slings and other rigging hardware being utilized.

**All rigging equipment** should have rated capacity tags or other means to identify its rated capacity under different hitch configurations. However, many times this identification is either obliterated or lost during its use.

**The result being** that many times the field personnel utilizing rigging equipment is without any idea of the approximate capacity of the equipment.

**All of this data** is a pretty tall order for the crane operator, the rigger, the spotter, the flagger, and the ground crew to muster.

*Crane operation, and rigging, is a specialty in the construction industry. For the rest of us, we need to give their operations wide berth. In other words, avoid the radius of the crane, don't stand under the overhead loads, and keep all personnel away from all crane operations.*