SAFETY MEETINGS

Rigging Safety
Rigger Role

Assist the crane operator by properly attaching and detaching loads the crane

- Know how to safely connect and disconnect loads
- Discuss any potentially unsafe lifts with your supervisor
- Do not make the lift if the hazardous situation cannot be resolved
- Note unsafe weather
  - High sea conditions, high wind conditions, etc.
  - These conditions make the lift unsafe
Rigger Role

- Use proper hand signals at all times
- Know the working load limit (WLL) of sling chains, wire rope, etc., to avoid overloading the equipment
- Understand how to incorporate features such as unbalanced center of gravity (CG), sling angles, and hitch configurations
- Inspect all equipment for damage and defects before use
- Do not use knots; they weaken rope, sling, or line
- Double check the connection prior to making the lift
Pre-lift JSA

Anytime an overhead lift is made, workers must perform a JSA

- Discuss potential hazards
- Discuss any required specialized rigging techniques
- Communicate the weight of objects to be lifted
- Identify the CG for unusually shaped objects
- Verify the capacity of all rigging involved
- Discuss any unusual conditions that can affect the safety of the lift
- Verify that all equipment has passed inspection
Body Positioning

- Stay out from under loads
- Avoid turning your back to a moving load or block
- Have someone spot the block
- Keep the crane operator’s line of sight clear
- Keep hands, feet, and body clear of pinch points
- Make sure the equipment is free to be lifted before attempting to move the equipment
- Make sure you are away from the swing path of the binder when it is released
Electrical Lines

Electricity can arc to a metal boom or wire without actual contact

- Assume all overhead electric lines are energized
- Never bring any conductive object within 10 feet of an unguarded line with a current of 50 kV
  - Crane booms
  - Slings
  - Wires
  - Taglines
Electrical Lines

As a best practice, stay at least 20 feet away from any unguarded, energized overhead powerlines.
Personal Protective Equipment

PPE that must be worn around rigging operations

• Hard hats
• Safety glasses
• Foot protection
  – Steel toe boots
  – Metatarsal protection
• Hand protection
  – Wear cotton dot or multi-purpose gloves for rigging
  – Wear leather gloves to inspect wire ropes
Slings

A sling is a device that attaches the load to the crane block hook

• Attach all loads to the crane with a set of slings

• Do not attach loads directly to the crane hook
Types of Slings

- Fiber Rope
- Synthetic Web
- Wire Rope
- Chain
Sling Inspection

Carefully inspect slings for use

• Take slings out of service if they are damaged in any way
• If the sling does not have a legible tag, do not use it
• Proof test slings once per year
• Replace any damaged slings
Replacement of Wire Rope Slings

Replace if any of the following conditions occur

- Broken wire
- 10 randomly distributed broken wires in a lay length
- 5 broken wires in one strand of one lay length
- 1 or more broken wires within lay length to an end fitting
- Kinking
Replacement of Wire Rope Slings

Replace if any of the following conditions occur

• Crushed or flattened wire rope
• Broken core
• Bird cages
• Tension breaks from overloading
• Corrosion
• Heat damage
• Abrasion
Replacement of Chain Slings

Replace if any of the following conditions occur:

• The chain is not grade 8 or 10 alloy
• More than 10% wear
• Nicks, cracks, breaks
• Stretching or bending
• Extreme temperatures
• Improper functioning of hardware
• Missing or illegible tag
Replacement of synthetic slings

Replace if any of the following conditions occur

• Significant cuts, tears, and abrasions
• Red core fiber is exposed
• Heat damage
• Busted stitches
• Illegible identification
• Chemical or UV exposure
• Knots of any kind
Replacement of Polyester Slings

Replace if any of the following conditions occur:

- Missing or illegible tag
- Melting, charring, or weld splatter
- Holes, tears, cuts, abrasion, or broken stitches
- Embedded particles
- Knots
End Attachments and Fittings

Make sure end attachments are the right size and capacity for the rope and load

• Inspect each end attachment before use
  – Corrosion, broken parts, cracks, nicks, distortion, stretching, heat damage, malfunction
End Attachments and Fittings

Make sure end attachments are the right size and capacity for the rope and load

• “Never saddle a dead horse”
  – Never put the saddle of the wire rope clip on the dead end of the wire rope
  – Always put the saddle on the live side of the wire rope that has the pull on it
Hand Signals

• When verbal communication with the crane operator is not possible, hand signals must be used
• Use only the ASME standardized hand signals
• If the crane operator does not understand the signals, stop the lift
• Review each hand signal on the accompanying handout
Taglines

A rope attached to the load to offer the rigger control of the load without putting the rigger in a position to be injured

• Attach before load is lifted
• Should be long enough to protect the riggers
• When lifting a heavy or wide load, use two taglines
• Should be strong enough to control the load but be able to break if they get caught on an object
Taglines

• No knots should be on the tagline
• Taglines must be made with nonconductive material
• Watch for pinch points or entrapment and use taglines to stay out of these danger zones
• Preplan the escape route
• Never wrap taglines around any part of your body
Weight

Always determine the exact weight of the load, never estimate

- The weight should be marked on the load
- The boat should have a bill of lading stating the weights of equipment
- Consult the manufacturer to determine weight
- Use rigging books and calculators as a last resort
- Never guess or estimate the weight of a load

Knowing the weight of an object is critical to using a lift chart and making a safe lift.
Center of Gravity

- Lifts must be made with the block directly over the CG or balance point.
- To determine the CG of asymmetrical objects:
  - Slowly lift the asymmetrical object a few feet off the ground.
  - If the load shifts more than 5° it should be landed and re-rigged.
- Most loads that are transported offshore will be pre-slung from the dock with the CG determined since this cannot be done on a boat in rough seas.