

CRANE SAFETY AND INSPECTIONS

LEGAL RESPONSIBILITIES
INSPECTIONS
TRAINING
OPERATIONS
SAFETY

REVISED 11/2022



- ▶ *It is the responsibility of the owner/user to install, inspect, test, maintain, and operate a crane or associated lifting equipment in accordance with the applicable volume of the ANSI/ASME B30 Safety Standard, OSHA Regulations, and ANSI-NFPA 70, National Electric Code and local regulations and laws.*
- ▶ *If the crane or associated lifting equipment is installed as part of a total lifting system, it is also the responsibility of the owner/user to comply with the applicable ANSI/ASME B30 volumes that address other types of equipment used in the system.*

RESPONSIBILITIES

Daily Operator Crane or Hoist Inspection Requirements

- ☐ *CONTROL DEVICES*
- ☐ *BRAKES*
- ☐ *HOOK*
- ☐ *HOOK LATCH*
- ☐ *REEVING*
- ☐ *LIMIT SWITCHES*
- ☐ *OIL LEAKAGE*
- ☐ *UNUSUAL SOUNDS*



Control Devices

- ▶ Check that all motions agree with control device markings
- ▶ Check Up, Down, Forward, Reverse



DAILY OPERATOR INSPECTION REQUIREMENTS

Brakes (Travel)

Make sure that all motions do not have excessive drift and that stopping distances are normal (approx. 10% of high speed travel).

Hoist Brakes

No drift permitted



DAILY OPERATOR INSPECTION REQUIREMENTS

Hook – Check for:

- ▶ *damage,*
- ▶ *cracks,*
- ▶ *nicks,*
- ▶ *twist,*
- ▶ *deformity of the throat opening,*
- ▶ *wear on saddle or load bearing point,*

Refer to the manual furnished by the original manufacturer of the crane or hoist.



DAILY OPERATOR INSPECTION REQUIREMENTS

Hook Latch

- ▶ Check that hook latch, if provided, is not missing and that it operates properly.

DAILY OPERATOR INSPECTION REQUIREMENTS



Replace any wire rope or take the crane out of service if you observe any of the following conditions!

WIRE ROPE INSPECTION



Wire Rope

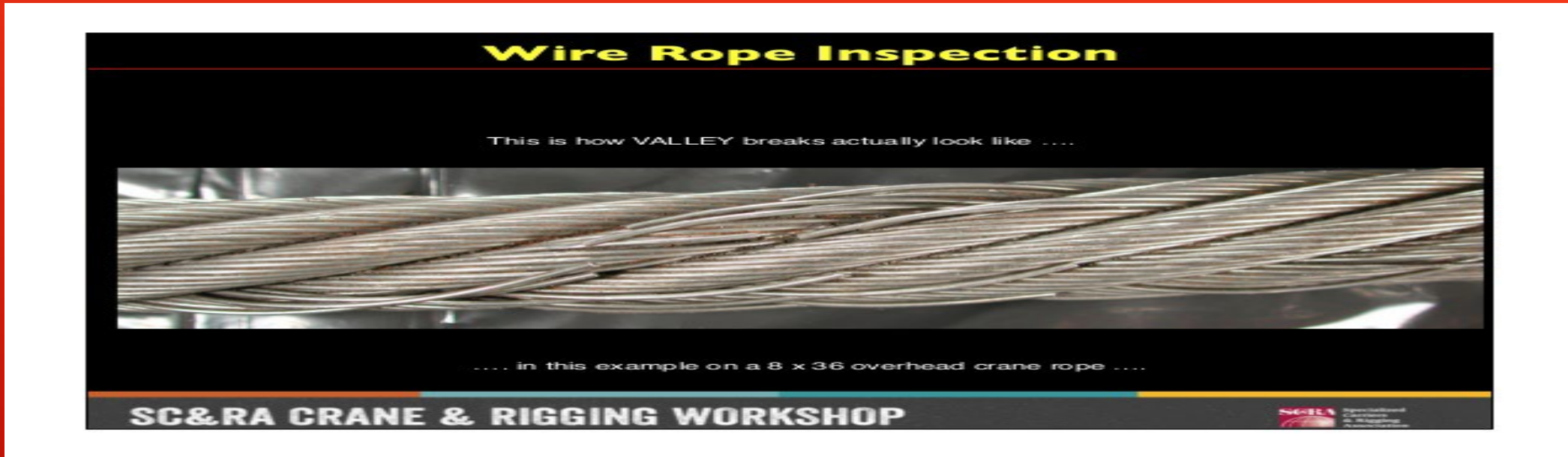
- ▶ Broken Wires
- ▶ Excessive Wear
- ▶ Kinks
- ▶ Crushing
- ▶ Stretching
- ▶ Birdcaging
- ▶ Rope Measurement



WIRE ROPE INSPECTION

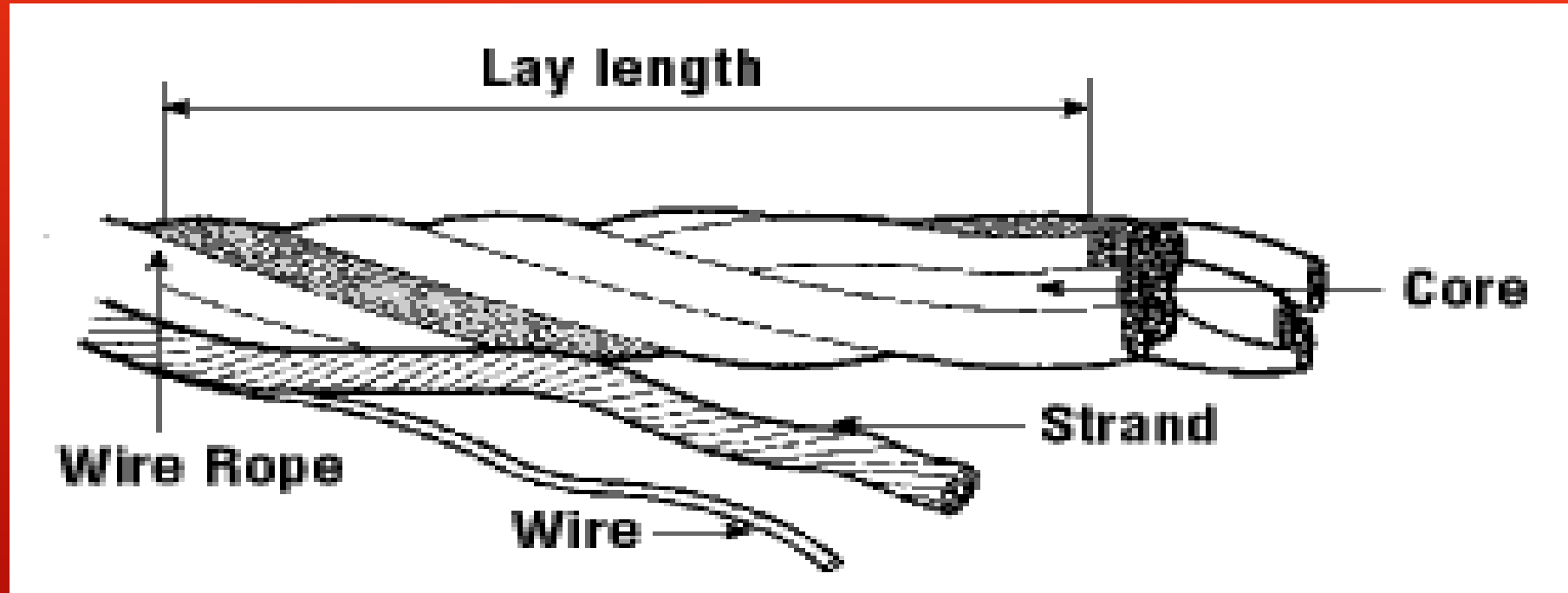
10 wires in one rope lay

5 wires in one strand in one rope lay



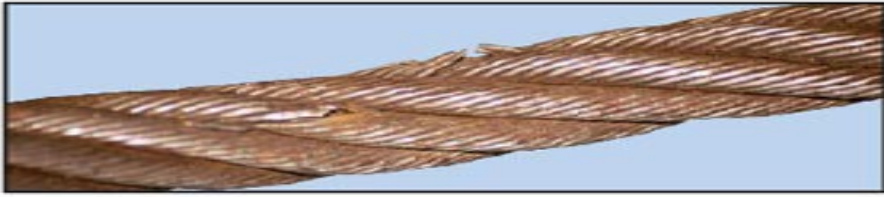
WIRE ROPE INSPECTION – BROKEN WIRES

Loss of 1/3 of the rope diameter of individual wires.



WIRE ROPE INSPECTION – EXCESSIVE WEAR

Broken Wires



Kinked Wire



Abraded/Worn Wire



Popped Core



Corrosion



Heat Damage



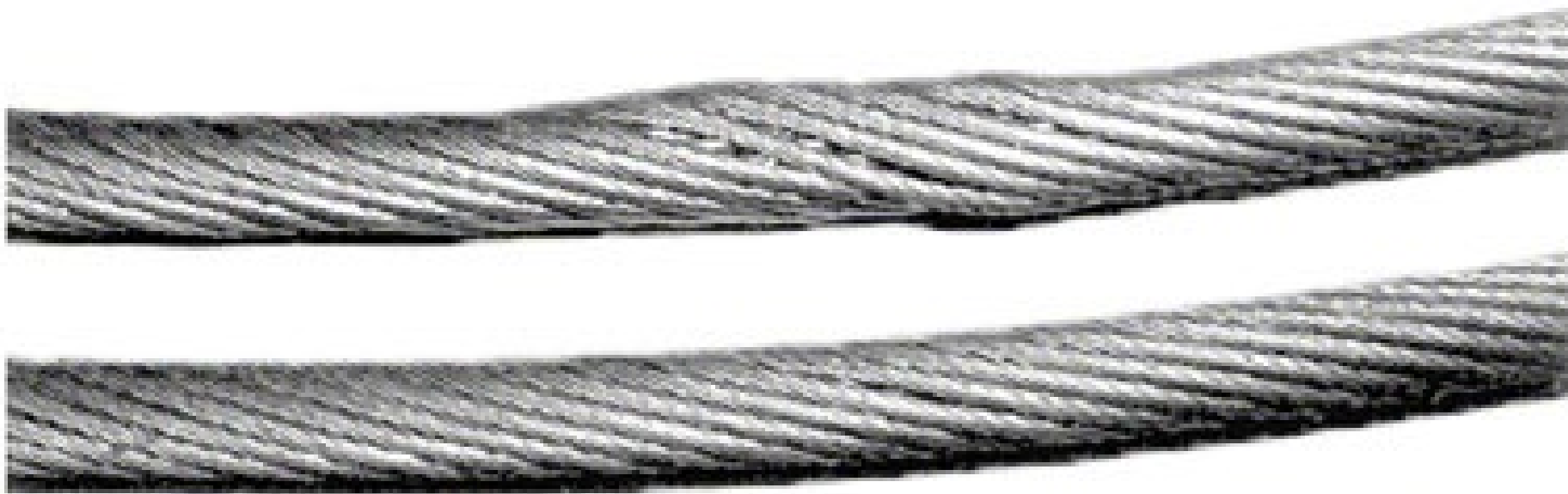
Bird Caging



Damaged Fittings



WIRE ROPE INSPECTION – KINKS



Drum crushing is one of the leading causes of early rope retirement. When installing a new rope, the foundation and all subsequent layers must be installed tightly and without gaps.

WIRE ROPE INSPECTION – CRUSHING



WIRE ROPE INSPECTION – STRETCHING

Birdcaging



WIRE ROPE INSPECTION – BIRDCAGING

The components of a wire rope each have a small but definite size tolerance.

*Therefore, the rope itself must have a diameter at least equal to the nominal, or catalog, size – **never smaller.***



WIRE ROPE INSPECTION – HOW TO MEASURE

Reeving – the configuration of the wire rope that lifts the hoist, including the drum, blocks, and pulleys.

Check that the wire rope or load chain is properly reeved and that rope or load chain parts are not twisted around each other.

Make sure wire rope is properly seated in drum grooves.

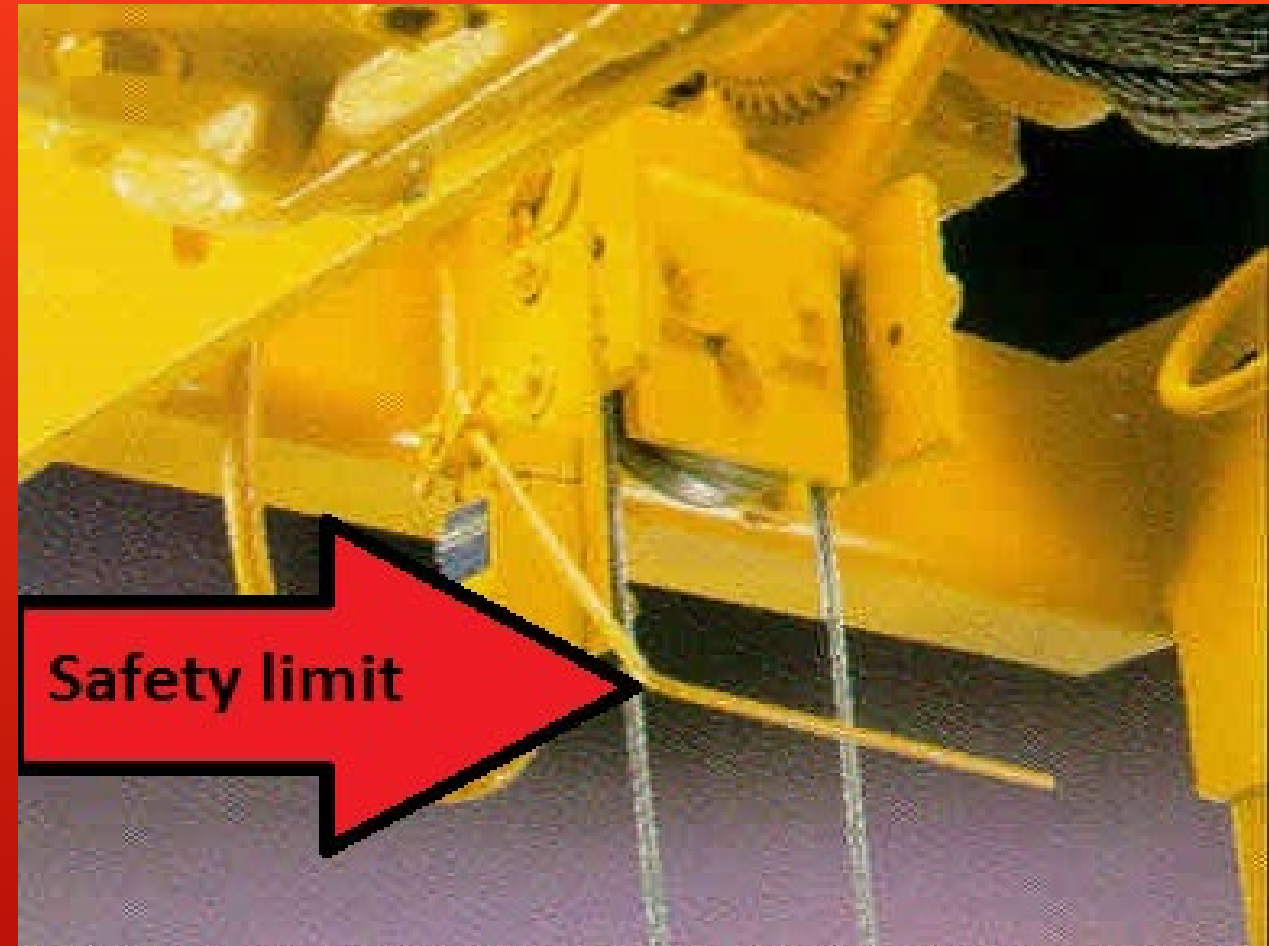


DAILY OPERATOR INSPECTION REQUIREMENTS

Limit Switches

Check that the upper limit device stops lifting motions of the hoist load block before striking any part of the hoist or crane.

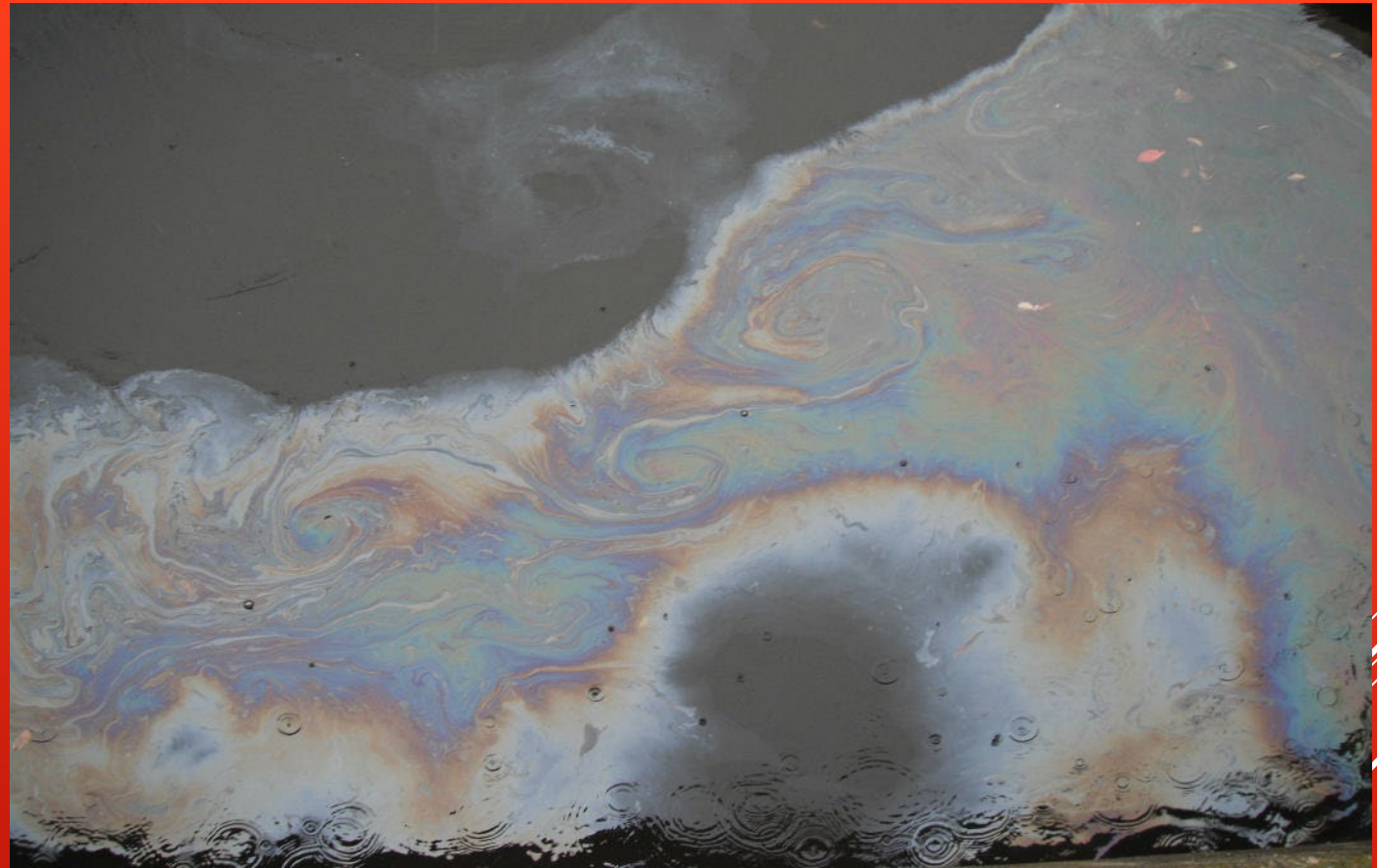
Caution: exercise extreme care during this test to avoid striking any part of the hoist or trolley with the hoist load block or lift beam in the event of a faulty limit switch.



DAILY OPERATOR INSPECTION REQUIREMENTS

Oil Leakage

Check for any sign of oil leakage on the crane and on the floor area beneath the crane.



DAILY OPERATOR INSPECTION REQUIREMENTS

Unusual Sounds

▶ □

- ▶ Squealing
- ▶ Grinding
- ▶ Unusual vibration from the crane or hoist mechanism while operating the crane and hoist.

DAILY OPERATOR INSPECTION REQUIREMENTS

Annual Inspections

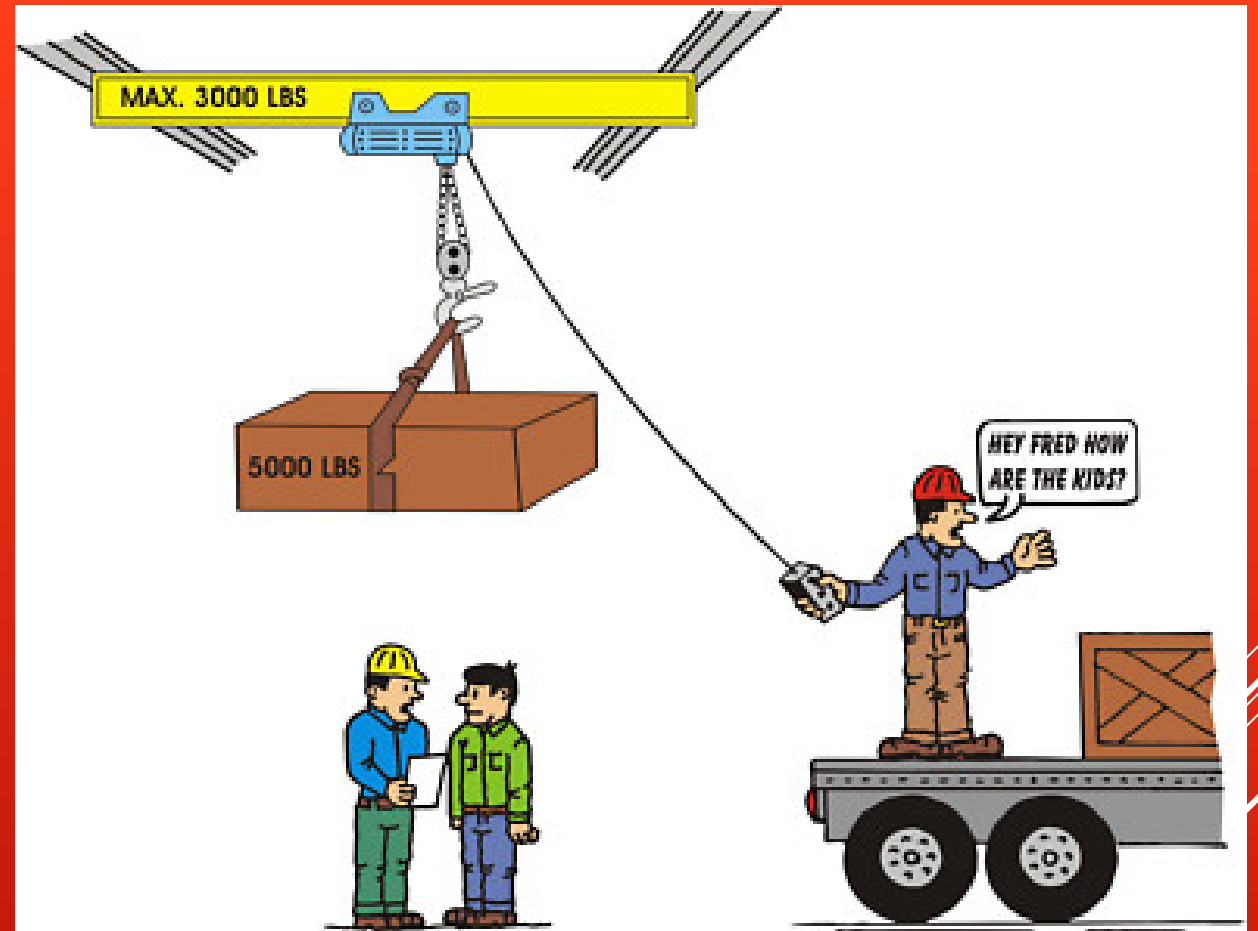
These are done by a certified crane inspector.

The annual inspection records are maintained in the office of the Maintenance Manager.

ANNUAL INSPECTIONS

Lifters must only be used by trained operators.

- ❑ *Do not allow yourself to be distracted.*
- ❑ *Pay attention to your work.*
- ❑ *Test operation of moving lifter parts and controls at the beginning of each shift.*



OPERATIONAL SAFETY – BEFORE LIFTING

Lifting:

- ❑ *To ensure load is balanced and stable, make a preliminary lift of a few inches.*
- ❑ *Do not overload lifter.*
- ❑ *Do not try to lift a load that is too big for the lifter.*
- ❑ *Do not pick up hot loads unless the lifter is specially designed for high temperature service.*



OPERATIONAL SAFETY – BEFORE LIFTING

Make sure hoist rope or chain is free from twists, knots and kinks.

Multiple part lines should not be twisted around each other.



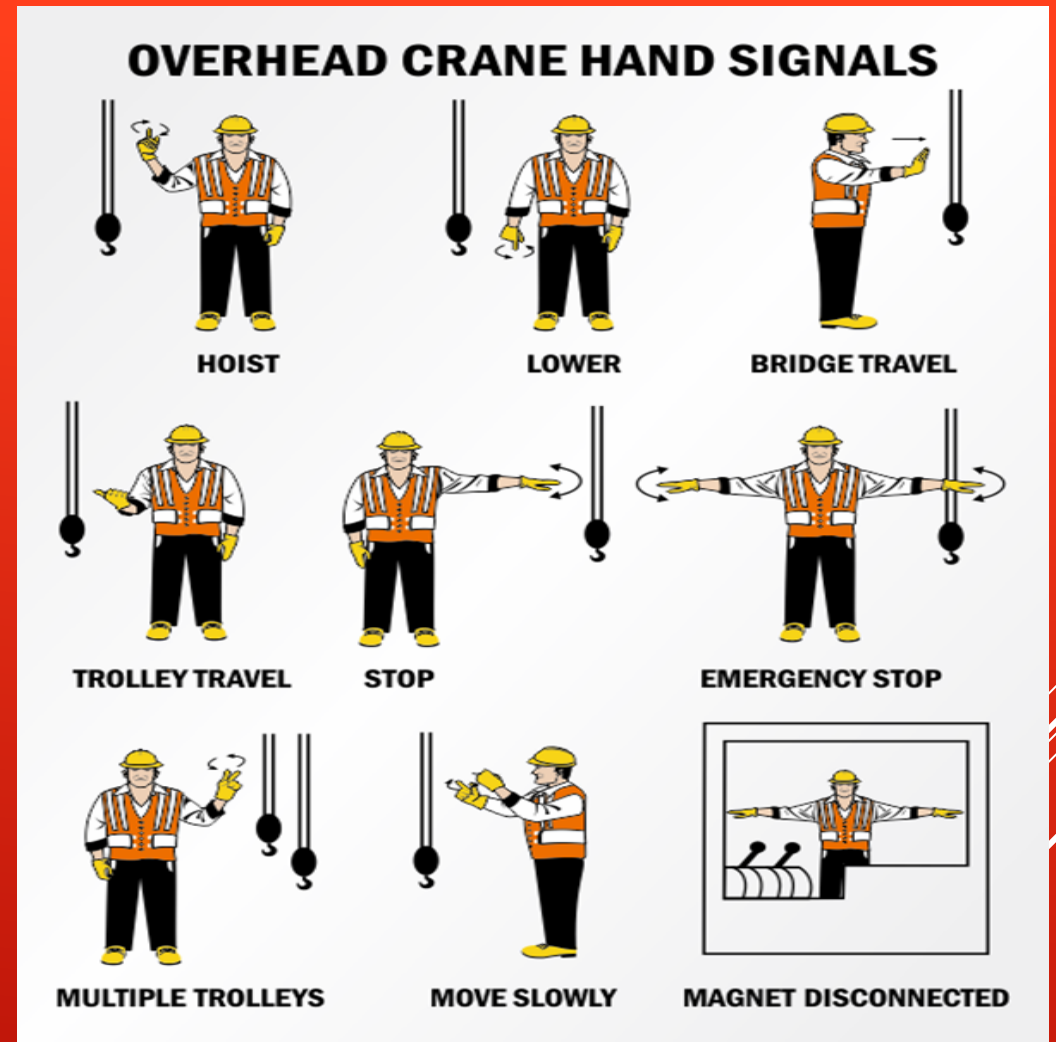
OPERATIONAL SAFETY – BEFORE LIFTING

- ❑ *Do not overload crane or hoist.*
- ❑ *Make sure the combined weight of the lifter and load does not exceed the rated load capacity of the crane or hoist.*
- ▶ *Refuse to make the lift if you are unsure of any issues.*
- ▶ *Do not proceed until all issues are resolved.*



OPERATIONAL SAFETY – BEFORE LIFTING

- ▶ *Take instructions only from the person designated to give signals.*
- ▶ *Do not ride or allow other people to do so.*
- ▶ *Do not lift the load higher than necessary to avoid obstructions in its path*



OPERATIONAL SAFETY – MOVING A LOAD

❑ *Do not allow loads to come in contact with other objects.*

❑ *Make sure the path of travel is free of obstructions before moving the load.*

❑ *Avoid sudden starts and stops. This prevents shock loading which can stress the system beyond its capacity.*



OPERATIONAL SAFETY – MOVING A LOAD

- ▶ *Do not lift loads over people.*
- ▶ *Stay out from under the load and make sure other people stay at a distance.*
- ▶ *Don't use your hands to push a load.*
- ▶ *Use a rod to push the load or a tag line to pull it.*
- ▶ *Stand clear while the load is moving.*

OPERATIONAL SAFETY – MOVING A LOAD



❑ *Do not allow load to swing.*

❑ *Exercise particular caution with sheet lifters.*

❑ *Be sure to keep the load level.*

❑ *Tilting the lifter could cause the load to slide off the lifter.*



OPERATIONAL SAFETY – MOVING A LOAD

- ❑ *Always lower load to ground and check its stability before leaving the area.*
- ❑ *Make sure the lifter is properly stored after use.*
- ❑ *Lifters are big and heavy and can cause personal injury or property damage if they fail. Some lifter require a specially designed stand. Others may be stored on a level surface.*

OPERATIONAL SAFETY – MOVING A LOAD

**Work safely so everyone goes home at
the end of the day.**

THE JOB IS DONE.

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