



Tailgate/Toolbox Safety Training

Safety Services Company-Safety Meeting Division, PO Box 6408 Yuma, AZ 85366-6408 Toll Free (866) 204-4786



Company Name: _____ Job Site Location: _____

Date: _____ Start Time: _____ Finish Time: _____ Foreman/Supervisor: _____

Topic 361: Requirements for Wire Rope (Cranes, Hoisting, & Rigging)

Introduction: Wire rope is widely used for heavy lifting with cranes, hoists, derricks, and winches. Wire rope is durable and meets the need for strength and flexibility required for heavy material handling. However, wire rope is often used beyond its rated capacity. Following is OSHA § 1910.178 - requirements for wire rope:

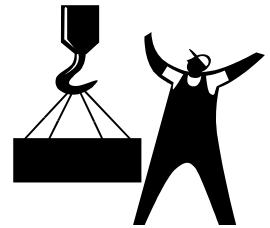
Wire Rope Inspection:

- **A thorough inspection** of all running ropes in use must be made at least once a month and a certification record, which includes the date of inspection, the signature of the person who performed the inspection, and an identifier for the ropes, must be made and kept on file.
- **All inspections** must be performed by an appointed or authorized person. Any deterioration resulting in an appreciable loss of original strength must be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.
- **Inspect non-rotating** rope, and ropes at equalizer sheaves, sheaves where rope travel is limited, or rope in contact with saddles carefully.
- **All rope which** has been idle for a period of a month or more due to shutdown or storage of a crane on which the wire rope is installed must be given a thorough inspection before it is used. This inspection will be for all types of deterioration and performed by an authorized person whose approval is required prior to use of the rope. A certification record, which includes the date of inspection, the signature of the person who performed the inspection, and an identifier for the rope inspected, must be prepared and kept available.



Wire Rope Requirements:

- **Wire rope and replacement wire rope** must be of the same or better size, grade, and construction as originally furnished by the equipment manufacturer or specified in the design, unless otherwise recommended by the manufacturer.
- **Wire rope with** an independent wire-rope center or other heat-resisting center must be used as hoisting rope wherever exposed to excessive temperatures such as ingot-pouring, ladle cranes, and similar operations.
- **Running wire ropes** must be guarded if within 7 feet of the floor or platform.
- **Care must be taken** to prevent friction of ropes with other objects which will cause chafing or breaking of wires.
- **Wire rope must** be taken out of service when any of the following conditions exist:
 - ★ In running ropes - six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.
 - ★ Wear of one-third the original diameter of outside individual wires. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
 - ★ Evidence of any heat damage.
 - ★ Reductions from nominal diameter of more than 1/64-inch for diameters up to and including 5/16-inch, 1/32-inch for diameters 3/8-inch up to and including 1/2-inch, 3/64-inch for diameters 9/16-inch up to and including 3/4-inch, 1/16-inch for diameters 7/8 up to 1-1/8 inches inclusive, 3/32-inch for diameters 1-1/4 up to 1-1/2 inches inclusive;
 - ★ In standing ropes -more than two broken wires in one lay in sections beyond end connections, or more than one broken wire at an end connection.
 - ★ Corroded, damaged, or improperly applied end connections.
- **Wire rope safety factors** must be in accordance with American National Standards Institute B30.5-1989 or SAE J959-1966, *Lifting Crane, Wire-Rope Strength Factors*.
- **When U-bolt wire rope clips** are used for form eyes, the table shown here shall be used to determine the number and spacing of clips:
- **When used for eye splices**, the U-bolt must be applied so that the "U" section is in contact with the dead end of the rope.
- **The use of** cable clips or clamps for splicing lines is prohibited.
- **All cable** must be kept lubricated as conditions require.
- **The use of cable clips or clamps** is acceptable only when used in locations where they are readily accessible and subjected to frequent inspection. Clips and clamps must be of the correct size and properly applied. Allowance must be made for the reduced strength of the line.



NUMBER AND SPACING OF U-BOLT WIRE CLIPS

Improved Plow Steel Rope Diameter (Inches)	Number of Clips		Minimum spacing (Inches)
	Drop Forged	Other Material	
1/2	3	4	3
5/8	3	4	3-3/4
3/4	4	5	4-1/2
7/8	4	5	5-1/4
1	5	6	6
1-1/8	6	6	6-3/4
1-1/4	6	7	7-1/2
1-3/8	7	7	8-1/4
1-1/2	7	8	9

Conclusion: Equipment used for hoisting is only as safe as the wire rope used. Keep your wire ropes in good, safe working condition.

Work Site Review

Work-Site Hazards and Safety Suggestions: _____

Personnel Safety Violations: _____

Employee Signatures: _____ (My signature attests and verifies my understanding of and agreement to comply with, all company safety policies and regulations, and that I have not suffered, experienced, or sustained any recent job-related injury or illness.)

Foreman/Supervisor's Signature: _____

These guidelines do not supersede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.