

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
1926.550(a) Scope, Application and Definitions	General requirements.	<p>This standard is applicable to the design, construction, load rating, installation, erection, inspection, maintenance, repair, modification, testing, and operation of cranes including the following types</p> <p>articulating boom; auger or drill when crane attached or wire rope suspended; crane attached personnel platforms; derrick; floating; gantry; locomotive; mobile including all terrain, commercial truck mounted [including boom truck], crawler, industrial [carry deck], rough terrain and service truck; mechanic truck with hoisting device; monorail; pedestal; portal; tower and overhead/bridge.</p> <p>Notation-Each type above needs consistent definition with B30 & B56 including locomotive & pictures</p> <p>(1) This standard only applies to equipment manufactured and rated by the manufacturer above 2,000 pounds.</p> <p>(2) Machines within the scope of paragraph (a), and equipped with hooks, magnets, grapples, clamshell buckets, orange peel buckets, pile driving equipment, and other devices intended to connect or attach the tackle [the crane] to the load for the purpose of hoisting/lifting or lowering a suspended load, are considered [as regulated under this Subpart.] to be in hoisting (lifting) service.</p> <p>(3) This standard does not apply to:</p> <p>(i) machines within the scope that have been converted or adapted for uses not considered to be hoisting (lifting) services. These conversions and applications include power shovels, excavators, concrete pumps.</p> <p>(ii) hydraulic and cable-operated excavating equipment, such as power shovels and backhoes/excavators;</p> <p>(iii) automotive wreckers and tow trucks used to clear wrecks and haul vehicles;</p> <p>(iv) side boom tractors, as used in pipeline work, to which ASME Standard B-30.14 applies [possible conflict with current(a)(18)];</p> <p>(v) Service trucks with mobile lifting devices designed specifically for use in the power line [referenced 1926.952(c)(1)] and electric service industries, such as digger derricks (radial boom derricks) intended for auguring holes and to set power and utility poles;</p> <p>(vi) vehicle mounted aerial devices and self-propelled elevating work platforms;</p> <p>(vii) stacker cranes;</p> <p>(viii) powered industrial trucks (forklifts);</p>	Revised

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		(ix) mechanic's truck with hoisting devices – exclusion only applies when the crane is employed in the activities related to equipment maintenance. [controversial – boom length & lifting capacity will possibly effect if the crane is excluded]	
1926.550(a)(1) Manufacturers Compliance	The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a qualified engineer competent in this field and such determinations will be appropriately documented and recorded. Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.	Employers shall comply with all manufacturer instructions, warnings, specifications, and limitations applicable to the assembly, operation, and dismantling of equipment covered by this subpart. Where manufacturer's specifications do not exist are not available or inapplicable, the instructions, warning, specifications, and limitations for the assembly, operations, and dismantling shall be based on the determinations of a qualified person and such determinations shall be documented and recorded. Attachments used with equipment covered by this subpart shall not exceed the capacity, rating, or scope recommended by the manufacturer.	Revised
1926.550(a)(2) Capacity	Rated load capacities, and recommended operating speeds, special hazard warnings, or instruction, shall be conspicuously posted on all equipment. Instructions or warnings shall be visible to the operator while he is at his control station.	Rated load capacities, and recommended operating speeds, special hazard warnings, or instruction, shall be conspicuously posted on all equipment. Instructions or warnings shall be visible to the operator while he is at his control station.	Per Current Standard
1926.550(a)(3)	[Reserved]	[Reserved]	Per Current Standard
1926.550(a)(4) Signals	Hand signals to crane and derrick operators shall be those prescribed by the applicable ANSI standard for the type of crane in use. An illustration of the signals shall be posted at the job site.	<p>Signals to crane operators shall be either visible/hand verbal or audio.</p> <p>Standard hand signals described in Appendix. shall be applicable whenever hand signals are used. Standard voice signals described in Appendix.... shall be applicable whenever voice signals are used. Standard audible signals described in Appendix.... shall be applicable whenever audible signals are used.</p> <p>Signal Person Qualifications Prior to signaling crane operations, all signal persons shall be qualified. The qualifications shall include but not be limited to the following:</p> <p>(a) Standard hand signals described in Appendix. whenever hand signals are used. (b) Standard voice signals described in Appendix....whenever voice signals are used.</p> <p>Hand signal charts shall available at the jobsite; posting is recommended if conditions permit.</p> <p>Radio Signals for Cranes:</p> <p>Two-way radios are utilized for signaling crane operators. This permits the crane operator to maintain eye contact with the load, boom and load path of travel and not on the signal person. This</p>	Revised

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		<p>method of signaling is most often used when the operator cannot see the load on the hook or the signal person. The operator must depend on the signal person to be his eyes and communicate in a clear understandable language what direction and distance to move the load.</p> <p>Safety Rules for Basic Radio Signals for Cranes: Most cranes have the capabilities of doing two or more operations at the same time (e.g. Swing Right and Up on Hoist, Swing Left and Down on Hoist, etc.). These commands should be used with caution and only when the load is in full view of the operator or with an empty hook.</p> <p>Site specific conditions will respond to operator/signal person communications requirements.</p> <p>If the operator sees a problem with the lift and needs to communicate with the signal person, the operator must stop the operation.</p> <p>Anyone seeing a problem can stop the lift by alerting the operator or signal person or by giving the emergency signal stop signal.</p> <p>At the completion of each command, the signal person will stop the operation by saying, "All Stop."</p> <p>Voice Signals. Prior to beginning lifting operations using consistent voice signals, the signals shall be discussed and agreed upon by the crane operator, the appointed signal person and the lift supervisor [the crane operator may be the lift supervisor]</p> <p>(a) The telephones, radios, or equivalent shall be tested before the lift is begun. If the system is battery powered, extra batteries should be on hand. A method should be in place to prevent outside communication from interfering with the lift.</p> <p>(b) Prior to commencing a lift the operator and signal person shall contact and identify each other. The signal person shall begin each instruction by calling operators by name. This is even more important when two or more cranes are used in the lifting operation. The operator shall respond by acknowledging the signal person by name.</p> <p>(c) All directions given to the crane operator by the signal person shall be given from the operator's direction perspective, i.e. swing right. The signal person should always give the approximate distance the load will be moved.</p> <p>(d) Each voice signal shall contain three essential elements in the following order: 1. Direction</p>	

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		<p>2. Distance and/or speed</p> <p>3. Stop command</p> <p>(e) Before permitting multiple simultaneous crane functions the lift supervisor shall consider the complexity of the lift, the capabilities of the particular crane, and the experience and skill of the operator and signal person.</p> <p>(f) During all crane movements communication between the crane operator and signal person shall be maintained. If at any time communication is broken, the operator shall stop all crane functions until communication is reestablished and a proper signal is given and understood.</p> <p>(g) If the operator has a safety concern or needs to communicate with the signal person he or she shall stop all crane movement. Crane movement shall not resume until the operator and signal person agree that the issue at hand has been resolved.</p> <p>(h) Before permitting multiple simultaneous crane functions the signal person shall consider the complexity of the lift, the capabilities of the particular crane, and the experience and skill of the operator and signal person</p>	
1926.550(a)(5) Periodic Inspection	The employer shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired, or defective parts replaced, before continued use.	<p>The employer shall designate a competent person who shall inspect all machinery and equipment prior to each shift that the crane is to be used, [possibly use wording from subpart R for consistent wording] or if the crane is reconfigured to make sure it is in safe operating condition. Any components added to the crane shall be inspected to insure there are no deficiencies and that the components are properly installed.</p> <p>Any deficiencies shall be examined by a competent person & determination made as to whether they constitute a hazard. If so, repairs must be made prior to returning the unit to service:</p> <p>Documentation of inspection is required. Most current inspection is to be available.</p> <p>This is defined as a frequent inspection.</p>	Revised
1926.550(a)(6) Annual Inspection	A thorough, annual inspection of the hoisting machinery shall be made by a competent person, or by a government or private agency recognized by the U.S. Department of Labor. The employer shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment.	<p>A thorough, annual inspection of the hoisting machinery shall be made by a competent person. If the machinery is modified [altered, replaced or repaired, subject to incident such as power line contact] another annual inspection must be made and a new annual inspection schedule set up. The employer shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment. Any deficiencies shall be examined by a competent person & determination made as to whether they constitute a hazard. If so, repairs must be made prior to returning the unit to service:</p> <p>The employer shall prepare a written record which</p>	Revised

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		<p>includes the</p> <ol style="list-style-type: none"> 1) date the crane items were inspected; 2) the signature of the person who inspected the crane items; 3) and a serial number, or other identifier, for the crane inspected. <p>The most recent written record shall be maintained on file until a new one is prepared.</p>	
1926.550(a)(7) Wire Rope	Wire rope shall be taken out of service when any of the following conditions exist:	<p>Wire rope used on equipment included in the scope of this standard shall be inspected, maintained, and replaced in accordance with the following standard ASME 30.5-2000, Section 5-2.4. [DO NOT USE REFERENCE]</p> <p>Wire rope used on equipment included in the scope of this standard shall be inspected, maintained, and replaced in accordance with the following standard ASME 30.5-2000, Section 5-2.4. [DO NOT USE REFERENCE]</p>	Revised
1926.550(a)(7) (i)	In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay;	<p>Inspection Frequent Inspection * No records required CHECKLIST DEVELOPMENT All running ropes in service shall be inspected once each working day. Visual inspection shall consist of observation of all rope that can reasonably be expected to be in use during the day's operations. These visual observations should be concerned with discovering gross damage such as listed in B30.5 2000, Section 5-2.4.2(a) [DO NOT USE REFERENCE]</p> <p>Periodic Inspection * CHECKLIST DEVELOPMENT This inspection shall be performed at least annually, OR MORE FREQUENTLY AS DESCRIBED BELOW.</p> <p>The inspection frequency shall be determined by a qualified person and shall be based on such factors as expected rope life as determined by:</p> <ul style="list-style-type: none"> § experience on the particular installation or similar installation, § severity of environment, § percentage of capacity lifts, § frequency rates of operation, § exposure to shock loads. <p>Inspections need not be at equal calendar intervals and should be more frequent as the rope approaches the end of its useful life. This inspection shall be performed at least annually.</p> <p>A dated report of rope condition at each periodic inspection shall be kept on file until such time it is replaced by a more current inspection report. These inspections should include but not be limited to all</p>	Revised

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS																						
		<p>items listed in B30.5 2000 Section 5-2.4.2(b). [DO NOT USE REFERENCE]</p> <p>A qualified person shall perform the periodic inspection. The inspection shall cover the entire length of rope. Only surface wires of the rope need be inspected. No attempt should be made to open the rope.</p>																							
1926.550(a)(7)(ii)	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;	<p>Rope Replacement</p> <p>Wire rope shall be taken out of service when any of the following conditions exist:</p> <p>If in standard running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay;</p> <p>If in rotation resistant ropes, two randomly distributed broken wires in six rope diameters or four randomly distributed broken wires in thirty rope diameters;</p> <p>If one outer wire broken at the point of contact with the core of the rope that has worked its way out of the rope structure and protrudes or loops out from the rope structure;</p> <p>If a single broken wire protruding from the inside of a swaged or compacted rope;</p> <p>If wear of one-third the original diameter of outside individual wires;</p> <p>If kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure;</p> <p>If evidence of any heat damage from any cause; including rope that conducted electricity resulting from welding, power line contact, lightning, or any electrical source;</p> <p>If reductions from nominal diameter as shown in Table A are experienced then the wire rope must be replaced.</p> <p style="text-align: center;">TABLE A</p> <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Nominal diameter</td> <td style="text-align: center;">Reduction</td> </tr> <tr> <td style="text-align: center;"><5/16" to 5/16" [$<8\text{mm}$ to 8mm]</td> <td></td> </tr> <tr> <td style="text-align: center;">1/64" [0.4mm]</td> <td></td> </tr> <tr> <td style="text-align: center;">3/8" to 1/2" [9.5mm to 13mm]</td> <td style="text-align: center;">1/32"</td> </tr> <tr> <td style="text-align: center;">[0.8mm]</td> <td></td> </tr> <tr> <td style="text-align: center;">9/16" to 3/4" [14mm to 19mm]</td> <td></td> </tr> <tr> <td style="text-align: center;">3/64" [1.2mm]</td> <td></td> </tr> <tr> <td style="text-align: center;">7/8" to 1-1/8" [22mm to 28.5mm]</td> <td></td> </tr> <tr> <td style="text-align: center;">1/16" [1.6mm]</td> <td></td> </tr> <tr> <td style="text-align: center;">1-1/4" to 1-1/2" [32mm to 38mm]</td> <td style="text-align: center;">3/32"</td> </tr> <tr> <td style="text-align: center;">[2.4mm]</td> <td></td> </tr> </table> <p>In standing ropes, more than two broken wires in one</p>	Nominal diameter	Reduction	<5/16" to 5/16" [$<8\text{mm}$ to 8mm]		1/64" [0.4mm]		3/8" to 1/2" [9.5mm to 13mm]	1/32"	[0.8mm]		9/16" to 3/4" [14mm to 19mm]		3/64" [1.2mm]		7/8" to 1-1/8" [22mm to 28.5mm]		1/16" [1.6mm]		1-1/4" to 1-1/2" [32mm to 38mm]	3/32"	[2.4mm]		Revised
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		<p>lay in sections beyond end connections or more than one broken wire at an end connection.</p> <p>Manufacturer's recommendations supersede above</p> <p>Material that is currently being used in pendant needs to be addressed in inspection section</p>	
1926.550(a)(7)(iii)	Evidence of any heat damage from any cause;	<p>Rope Maintenance</p> <p>Unreeling or uncoiling of rope shall be done as recommended by the rope manufacturer and with care to avoid kinking or inducing twist. Rope should be maintained in a well-lubricated condition. Lubricant applied as part of a maintenance program shall be compatible with the original lubricant. The manufacturer should be consulted. Lubricant applied shall be of a type that does not hinder visual inspection.</p>	Revised
1926.550(a)(7)(iv)	Reductions from nominal diameter of more than one-sixty-fourth inch for diameters up to and including five-sixteenths inch, one-thirty-second inch for diameters three-eighths inch to and including one-half inch, three-sixty-fourths inch for diameters nine-sixteenths inch to and including three-fourths inch, one-sixteenth inch for diameters seven-eighths inch to 1 1/8 inches inclusive, three-thirty-seconds inch for diameters 1 1/4 to 1 1/2 inches inclusive;	<p>General Wire Rope Use</p> <p>The ropes shall be of a construction recommended by the or</p> <ol style="list-style-type: none"> 1. crane manufacturer 2. rope manufacturer 3. a qualified person for that service. <p>Rotation resistant rope and fiber core rope shall not be used for boom hoist revving.</p> <p>CONSIDERATION OF ELIMINATION OF 19x7 USE - SAY AWARE OF CURRENT B30 WORK ON THIS ISSUE</p> <p>Socketing shall be done in the manner specified by the manufacturer of the wire rope or fitting.</p> <p>Wire rope clips used in conjunction with wedge sockets shall be attached to the unloaded dead end of the rope only. This does not preclude the use of devices specially designed for dead-ending rope in a wedge socket.</p> <p>Wire rope safety factors shall be in accordance with American National Standards Institute B 30.5-2000 or SAE J959-1966.??? [DO NOT USE REFERENCE]</p> <p>General Wire Rope Use</p> <p>Wire rope used for boom hoists, luffing hoists and load hoists must meet crane manufacturer's specifications [continue to evaluate]</p> <p>Socketing shall be done in the manner specified by the manufacturer of the wire rope or fitting.</p> <p>Wire rope clips used in conjunction with wedge sockets shall be attached to the unloaded dead end of the rope only. This does not preclude the use of devices specially designed for dead-ending rope in a wedge socket.</p>	Revised

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		<p>Wire rope safety factors shall be in accordance with American National Standards Institute B 30.5-2000 or SAE J959-1991[may be updated in 2002 but may be the same as 1991]</p> <p>Wire rope safety factors shall be in accordance with American National Standards Institute B 30.5-2000 or SAE J959-1966.??? [DO NOT USE REFERENCE]</p>	
1926.550(a)(7)(v)	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.	None	
1926.550(a)(7)(vi)	Wire rope safety factors shall be in accordance with American National Standards Institute B 30.5-1968 or SAE J959-1966.	Wire rope safety factors shall be in accordance with American National Standards Institute B 30.5-1968 or SAE J959-1966.	Per Current Standard
1926.550(a)(8)	Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or other moving parts or equipment shall be guarded if such parts are exposed to contact by employees, or otherwise create a hazard. Guarding shall meet the requirements of the American National Standards Institute B 15.1-1958 Rev., Safety Code for Mechanical Power Transmission Apparatus.	None	
1926.550(a)(9)	Accessible areas within the swing radius of the rear of the rotating superstructure of the crane, either permanently or temporarily mounted, shall be barricaded in such a manner as to prevent an employee from being struck or crushed by the crane.	None	
1926.550(a)(10)	All exhaust pipes shall be guarded or insulated in areas where contact by employees is possible in the performance of normal duties.	None	
1926.550(a)(11)	Whenever internal combustion engine powered equipment exhausts in enclosed spaces, tests shall be made and recorded to see that employees are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmospheres.	None	
1926.550(a)(12)	All windows in cabs shall be of safety glass, or equivalent, that introduces no visible distortion that will interfere with the safe operation of the machine.	None	
1926.550(a)(13)	Where necessary for rigging or service requirements, a ladder, or steps, shall be provided to give access to a cab roof.	None	

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
1926.550(a)(13)(i)			
1926.550(a)(13)(ii)	Guardrails, handholds, and steps shall be provided on cranes for easy access to the car and cab, conforming to American National Standards Institute B30.5.	None	
1926.550(a)(13)(iii)	Platforms and walkways shall have anti-skid surfaces.	None	
1926.550(a)(14)	Fuel tank filler pipe shall be located in such a position, or protected in such manner, as to not allow spill or overflow to run onto the engine, exhaust, or electrical equipment of any machine being fueled.	None	
1926.550(a)(14)(i)	An accessible fire extinguisher of 5BC rating, or higher, shall be available at all operator stations or cabs of equipment.	None	
1926.550(a)(14)(ii)	All fuels shall be transported, stored, and handled to meet the rules of Subpart F of this part. When fuel is transported by vehicles on public highways, Department of Transportation rules contained in 49 CFR Parts 177 and 393 concerning such vehicular transportation are considered applicable.	None	
1926.550(a)(15) Crane Operation Near Electrical Power Lines	Except where electrical distribution and transmission lines have been deenergized and visibly grounded at point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery, have been erected to prevent physical contact with the lines, equipment or machines shall be operated proximate to power lines only in accordance with the following:	<p>Cranes shall not be used to handle materials stored under electric power lines unless any combination of boom, load, load line, or machine component maintains the clearances specified in Table 1.</p> <p>Crane operators shall not rely on the coverings of wires for their protection.</p> <p>Durable signs shall be installed at the operators station and on (both sides of) the outside of the crane warning that electrocution or serious bodily harm may occur unless minimum clearances, as specified in Table 1 are maintained between the crane or the load being handled and energized power lines.</p> <p>Load control, when required, shall utilize tag lines of a non-conductive type.</p> <p>The crane operator shall not operate the crane with or without a load over or under an energized electric power lines.</p> <p>CRANE OPERATION NEAR DE-ENERGIZED AND GROUNDED ELECTRIC POWER LINES.</p> <p>The following steps shall be taken to assure the de-energization of the power lines.</p> <p>A qualified representative of the power company or</p>	Revised.

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		<p>owner of the power lines shall de-energize the power lines and shall verify in writing such condition at the job site.</p> <p>The power lines shall be visibly grounded to avoid electrical feedback and appropriately marked at the jobsite location by a qualified representative of the power company.</p> <p>The qualified representative of the power company shall verify in writing</p> <ol style="list-style-type: none"> 1. The power line is de-energized 2. That ground straps have been properly installed 3. The duration of the outage, including expiration. <p>Crane operation within the erected/fully extended boom length of the prohibited zone, with the power lines energized.</p> <p>The following steps shall be taken to minimize the hazard of electrocution or serious injury as a result of contact between the energized power lines and the crane, load line, or load.</p> <p>An on-site meeting between qualified persons representing the contractors involved in the hoisting operation, qualified representative of the owner of the power lines shall take place to establish the procedures to safely complete the hoisting operations.</p> <p>The specified clearance in Table 1 between the power lines and the crane AND ALL PARTS AND COMPONENTS, load line, and load shall be maintained at all times.</p> <p>No one shall be permitted to touch the crane or the load unless the signal person indicates it is safe to do so.</p> <p>Devices such as ribbons, balls, etc., shall be attached, by a qualified person to the power line to improve visibility, or equivalent means employed to aid in the location of the prohibited zone. Qualified signal person(s) posted to observe safe clearances shall be deemed to be a safe alternative to placing ribbons or balls when their installation cannot be safely accomplished.</p>	
1926.550(a)(15)(i)	For lines rated 50 kV. or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet;	SEE TABLE 1 BELOW	
1926.550(a)(15)(ii)	For lines rated over 50 kV., minimum clearance between the lines and any part of the crane or load shall be 10 feet plus	SEE TABLE 1 BELOW	

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
	0.4 inch for each 1 kV. over 50 kV., or twice the length of the line insulator, but never less than 10 feet;		
1926.550(a)(15)(iii)	In transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 kV., and 10 feet for voltages over 50 kV., up to and including 345 kV., and 16 feet for voltages up to and including 750 kV.	<p>OPERATIONS IN TRANSIT WITH NO LOAD AND BOOM LOWERED</p> <p>While in transit with no load and boom and boom support system lowered, the clearances as specified in Table 1 shall be maintained.</p> <p>The employer must ensure that the effects of speed and terrain on boom and crane movement are considered and that the clearances specified in Table 1 are maintained at all times.</p>	
1926.550(a)(15)(iv)	A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means;	A qualified signal person(s), whose sole responsibility is to verify that the required clearance is maintained, shall be (in) constant contact with the crane operator.	Revised. A qualified signal person(s), whose sole responsibility is to verify that the required clearance IS CONTROVERSIAL AND IS NOT A CONSENSUS OPINION. NOR IS IT ACCEPTED THAT A SIGNALPERSON WOULD MAKE ANY DIFFERENCE DURING LONG TERM OPERATIONS.
1926.550(a)(15)(v)	Cage-type boom guards, insulating links, or proximity warning devices may be used on cranes, but the use of such devices shall not alter the requirements of any other regulation of this part even if such device is required by law or regulation;	If cage-type boom guards, insulating links, or proximity warning devices are used on cranes, such devices shall not be a substitute for the requirements in Table 1.. Instructions on the electrical hazard involved, operating conditions for the devices, limitations for such devices, and testing requirements prescribed by the device manufacturer, if used, shall be understood by the crane operator, crew, and load handling personnel. Compliance with Table 1 is required in determining proximity of the crane and its protuberances, including load, to electrical power lines.	
1926.550(a)(15)(vi)	Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded;	Any overhead wire shall be considered to be an energized power line unless and until the person owning such power line indicates in writing that it is not an energized power line, Further, the written document must indicate the duration of the outage.	

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
1926.550(a)(15)(vii)	Prior to work near transmitter towers where an electrical charge can be induced in the equipment or materials being handled, the transmitter shall be de-energized or tests shall be made to determine if electrical charge is induced on the crane. The following precautions shall be taken when necessary to dissipate induced voltages:		
1926.550(a)(15)(vii)(a)	The equipment shall be provided with an electrical ground directly to the upper rotating structure supporting the boom; and		
1926.550(a)(15)(vii)(b)	Ground jumper cables shall be attached to materials being handled by boom equipment when electrical charge is induced while working near energized transmitters. Crews shall be provided with nonconductive poles having large alligator clips or other similar protection to attach the ground cable to the load.		
1926.550(a)(15)(vii)(c)	Combustible and flammable materials shall be removed from the immediate area prior to operations.		
1926.550(a)(16) Modifications	No modifications or additions which affect the capacity or safe operation of the equipment shall be made by the employer without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.	No modifications or additions which affect the capacity or safe operation of the equipment shall be made by the employer without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.	Per Current Standard
1926.550(a)(17)	The employer shall comply with Power Crane and Shovel Association Mobile Hydraulic Crane Standard No. 2.		
1926.550(a)(18)	Sideboom cranes mounted on wheel or crawler tractors shall meet the requirements of SAE J743a-1964.		
1926.550(a)(19) Clearance	All employees shall be kept clear of loads about to be lifted and of suspended loads.	All employees shall be kept clear of loads about to be lifted and of suspended loads.	Per Current Standard
1926.550(b) Crawler, locomotive, and truck cranes	None	articulating boom; auger or drill when crane attached or wire rope suspended; locomotive; mobile including all terrain, commercial truck mounted [including boom truck], crawler, industrial [carry deck], rough terrain and service truck; mechanic truck with hoisting device; monorail; portal; and overhead/bridge.	New
1926.550(b)(1)	All jibs shall have positive stops to	All jibs shall have positive stops to prevent their	Per Current

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
Jibs	prevent their movement of more than 5 deg above the straight line of the jib and boom on conventional type crane booms. The use of cable type belly slings does not constitute compliance with this rule.	movement of more than 5 deg above the straight line of the jib and boom on conventional type crane booms. The use of cable type belly slings does not constitute compliance with this rule.	Standard
1926.550(b)(2)	All crawler, truck, or locomotive cranes in use shall meet the applicable requirements for design, inspection, construction, testing, maintenance and operation as prescribed in the ANSI B30.5-1968, Safety Code for Crawler, Locomotive and Truck Cranes. However, the written, dated, and signed inspection reports and records of the monthly inspection of critical items prescribed in section 5-2.1.5 of the ANSI B30.5-1968 standard are not required. Instead, the employer shall prepare a certification record which includes the date the crane items were inspected; the signature of the person who inspected the crane items; and a serial number, or other identifier, for the crane inspected. The most recent certification record shall be maintained on file until a new one is prepared.		
		<p>(1) The frequent inspections shall include the following items as a minimum and additional items as specifically indicated by the manufacturer or a qualified person.</p> <p>(a) All control mechanisms for maladjustment interfering with proper operation;</p> <p>(b) All control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter;</p> <p>(c) All operational aids for malfunction;</p> <p>(d) All hydraulic hoses, and particularly those that flex in normal operation of crane functions, should be visually inspected once every working day;</p> <p>(e) Hooks and latches for deformation, chemical damage, cracks, and wear;</p> <p>(f) Rope revving for compliance with crane manufacturer's specifications; [INSPECT WIRE ROPE AS REQUIRED FOR FREQUENT INSPECTION IN THE GENERAL SECTION PARAGRAPH_____]</p> <p>(g) Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation;</p> <p>(h) Hydraulic system for proper oil level; and</p> <p>(i) Tires for recommended-inflation pressure.</p>	
		<p>(2) The annual inspections shall include the following items as a minimum and additional items as specifically indicated by the manufacturer or a qualified person.</p>	

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		<p>(a) All items included in frequent inspections paragraph above;</p> <p>(b) Inspect all items as required in Section 1926.550(a) xxx.x.x General Requirements;</p> <p>(c) All deformed, cracked, or corroded members in the crane structure and entire boom;</p> <p>(d) Loose bolts or rivets;</p> <p>(e) Cracked or worn sheaves and drums;</p> <p>(f) Worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers, and locking devices;</p> <p>(g) Excessive wear on brake and clutch system parts, linings, pawls, and ratchets;</p> <p>(h) (p) Operational aids for any significant inaccuracies;</p> <p>(i) (q) Gasoline, diesel, electric, or other power plants for performance and compliance with safety requirements;</p> <p>(j) Excessive wear of chain drive sprockets and excessive chain stretch;</p> <p>(k) Crane hooks inspected for cracks;</p> <p>(l) Travel steering, braking, and locking devices, for malfunction;</p> <p>(m) Excessively worn or damaged tires;</p> <p>(n) Hydraulic and pneumatic hose, fittings, and tubing inspection:</p> <p>(1) evidence of leakage at the surface of the flexible hose or its junction with the metal and couplings;</p> <p>(2) blistering or abnormal deformation of the outer covering of the hydraulic or pneumatic hose;</p> <p>(3) leakage at threaded or clamped joints that cannot be eliminated by normal tightening or recommended procedures; and/or</p> <p>(4) evidence of excessive abrasion or scrubbing on the outer surface of a hose, rigid tube, or fitting - means shall be taken to eliminate the interference of elements in contact or otherwise protect the components.</p> <p>(o) Hydraulic and pneumatic pumps and motors:</p> <p>(1) loose bolts or fasteners;</p> <p>(2) leaks at joints between sections;</p> <p>(3) shaft seal leaks;</p> <p>(4) unusual noises or vibration;</p> <p>(5) loss of operating speed;</p> <p>(6) excessive heating of the fluid; and/or</p> <p>(7) loss of pressure.</p> <p>(p) hydraulic and pneumatic valves:</p> <p>(1) cracks in valve housing;</p> <p>(2) improper return of spool to neutral position;</p> <p>(3) leaks at spools or joints;</p> <p>(4) sticking spools;</p> <p>(5) failure of relief valves to attain correct pressure setting; and/or</p> <p>(6) relief valves shall be checked as specified by the manufacturer.</p>	

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		(q) hydraulic and pneumatic cylinders: (1) drifting caused by fluid leaking across the piston; (2) rod seals leakage; (3) leaks at welded joints; (4) scored, nicked, or dented cylinder rods; (5) dented case (barrel); and/or (6) loose or deformed rod eyes or connecting joints.	
1926.550(c) Hammerhead tower cranes	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
1926.550(d) Overhead and gantry cranes	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
1926.550(e) Derricks.	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
1926.550(f) Floating cranes and derricks	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
1926.550(g) Crane or derrick suspended personnel platforms	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
Training and Qualification Requirements	None	This section supplements and clarifies the requirements of § 1926.21 (b)(2) as these relate to hazards of work on or around cranes. Additionally, this section contains requirements relating to the qualification of individuals who operate, maintain, repair, assemble, disassemble, inspect and control equipment covered by this subpart.	New
Safe Operation	None	<p>Prior to permitting an employee to operate a crane (except for training purposes), the employer shall ensure that each person employed in the operation of equipment covered by this subpart is trained and qualified by the successful completion of the training and qualification activities specified in paragraphs 2 and 3 of this subpart. The employer may accept verifiable documentation provided by the prospective operator that documents their ability to meet the requirements as stated in paragraphs 2 of this section.</p> <p>After verifiable documentation of training and qualification is determined to be adequate by the employer, it shall additionally be the responsibility of the employer to insure that the operator successfully demonstrates familiarity and ability to safely operate each specific crane prior to utilizing the crane.</p> <p>Supervisors that direct crane operators shall be</p>	New

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		<p>competent in the safe operating procedures of a crane.</p> <p>The operator shall be responsible for those operations under the operator's direct control. Whenever there is any doubt as to safety, the operator shall have the authority to stop and refuse to handle loads until safety has been assured.</p>	
Qualifications	None	<p>Individuals who operate equipment covered by this subpart must:</p> <p>Successfully pass a physical examination. Physical examinations shall be required not less than once every three (3) years. The U.S. Department of Transportation physical examination requirements contained in 49 CFR 391.41 through Section 391.49 will meet the physical examination requirements.</p> <p>Successfully pass, with negative results, a substance abuse test. Test results must be confirmed by a recognized testing laboratory service. Testing procedures conducted pursuant to the provisions of 49 CFR 382.105 will meet minimum requirements. [NOTE: Para. 382.105 Testing Procedures: Each employer shall ensure that all alcohol or controlled substances testing conducted under this part complies with the procedures set forth in part 40 of this title. The provisions of part 40 of this title that address alcohol or controlled substances testing are made applicable to employers by this part.]</p> <p>Successfully complete a valid and reliable written examination every five years. The examination shall test knowledge identified as necessary for safe crane operations and shall at, a minimum, include the following:</p> <p>The operational characteristics, controls, and knowledge of procedures for responding to: fire, power line contact, loss of stability, or control malfunction, as well as characteristic and performance questions appropriate to the type of crane for which qualification is sought; and</p> <p>The ability to read, write, comprehend and exhibit arithmetic skills and load/capacity information usage; and</p> <p>Load/capacity information usage that covers a selection of the configurations for the type of crane to be operated; and</p> <p>The applicable sections of:</p> <p>(i) This Subpart;</p> <p>(ii) 29 CFR 1910.180 (if crawler or locomotive crane is being utilized);</p>	New

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		<p>(iii) Power Crane and Shovel Association (PCSA) # 4; and</p> <p>(iv) The applicable American Society of Mechanical Engineers (ASME) standard associated with the equipment that they will be operating (e.g. : B30.3C Hammerhead Tower Cranes; B30.5C Mobile and Locomotive Cranes; B30.6C Derricks; B30.8C Floating Cranes and Floating Derricks; and B30.22C Articulating Boom Cranes).</p> <p>Successfully complete a valid and reliable practical examination. The examination shall test skills identified as necessary for safe crane operation and shall at, minimum include the following:</p> <ol style="list-style-type: none"> 1) Pre-start and post start inspection; 2) Operational and maneuvering skills; 3) Load chart familiarization; and 4) Shut-down, and securing procedures; <p>Maintenance, inspection and repair workers must be familiar with the operation and characteristics of the crane type being maintained, inspected or repaired or a qualified operator must be present if crane operation is required.</p> <p>Cranes shall be assembled and disassembled only under the direct supervision of a competent person qualified in crane assembly and disassembly. Experienced and trained employees selected for such work by the competent person shall be familiar with the manufacturers guidelines for assembly and disassembly of the specific crane type additionally a qualified operator must be present if crane operation is required.</p>	
Training Program Implementation	None	<p>The employer shall provide a training program for each crane operator. Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, videotape, and written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace. The training program shall enable each operator to recognize the hazards associated with cranes and shall train each operator in the procedures to be followed to minimize these hazards.</p> <p>All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train crane operators and</p>	New

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		<p>evaluate their competence.</p> <p style="text-align: center;">Apprentices/Trainees may operate a crane only:</p> <p>Under the direct supervision of operators who have the knowledge, training, and experience to train operators and evaluate their competence. The term direct supervision means the supervising operator is in the immediate area of the trainee and within visual sighting distance and able to effectively communicate with the trainee; and</p> <p style="text-align: center;">Where such operation does not endanger the trainee or other employees.</p> <p style="text-align: center;">Training program content. Crane operators shall receive initial training in the following topics:</p> <p>The operational characteristics, controls, and knowledge of procedures for responding to: fire, power line contact, loss of stability, or control malfunction, as well as characteristic and performance questions appropriate to the type of crane for which qualification is sought; Load/capacity information usage that covers a selection of the configurations for the type of crane to be operated;</p> <p>Applicable sections of this subpart;</p> <p>29 CFR 1910.180 (if crawler or locomotive crane is being utilized);</p> <p>Power Crane and Shovel Association (PCSA) # 4; and</p> <p>The applicable American Society of Mechanical Engineers (ASME) standard associated with the equipment that they will be operating (e.g. : B30.3C Hammerhead Tower Cranes; B30.5C Mobile and Locomotive Cranes; B30.6C Derricks; B30.8C Floating Cranes and Floating Derricks; and B30.22C Articulating Boom Cranes).</p>	
Re-training and Training Records	None	<p>Re-training of Crane Operators. When an employer has reason to believe that a previously trained and qualified operator does not have the understanding and skill required by paragraphs 2 and 3 of this Subpart, the employer shall retrain and re-examine (re-qualify) the operator (in the specific areas or items deemed deficient) to ensure that the requisite proficiency is regained. Retraining and re-examination is required in at least the following situations:</p> <p>Where changes at the worksite present a hazard</p>	New

CFR SECTION	CURRENT REQUIREMENTS	ACCSH RECCOMENDATIONS	CHANGES AND POTENTIAL CONCERNS
		<p>about which the operator has not been previously trained; or</p> <p>Where changes have been made to the crane being operated, which the operator has not been previously trained; or Where inadequacies in an operators work involving cranes indicate that the employee has not retained the requisite proficiency.</p> <p>The employer shall have ready access to records that competent operators performing work covered by this subpart have been trained and qualified as required by paragraph 2. The records shall include the name of the person, type of crane, date of evaluation, and the identity of the evaluator. Qualification and training records shall be made available, in a reasonable time, to OSHA representatives.</p>	

TABLE 1

REQUIRED CLEARANCE FOR NORMAL VOLTAGE IN OPERATION NEAR HIGH VOLTAGE POWER LINES AND OPERATION IN TRANSIT WITH NO LOAD AND BOOM OR MAST LOWERED	
Normal Voltage kV (Phase to Phase)	Minimum Required Clearance, ft. (m) (Note 1 and 2)
Operation Near High Voltage Power Lines	
to 50	10 (3.05)
Over 50 to 200	15 (4.60)
Over 200 to 350	20 (6.10)
Over 350 to 500	25 (7.62)
Over 500 to 750	35 (10.57)
Over 750 to 1000	45 (13.72)
Operation in Transit With No Load and Boom or Mast Lowered	
to 0.75	4 (1.22)
Over 0.75 to 50	6 (1.83)
Over 50 to 345	10 (3.05)
Over 345 to 750	16 (4.87)
Over 750 to 1000	20 (6.10)
Note 1: Environmental conditions such as fog, smoke, or precipitation may require increased clearances.	
<i>Note 2: The horizontal and vertical distance of movement of long span power lines due to wind shall be added to the minimum clearance distance specified in table 1. A qualified representative of the owner of the power lines shall be consulted for specific distances.</i>	