B30.6-202X
(Proposed revision of ASME B30.6 - 2015)

Derricks
December 2019
Draft Revisions

TENTATIVE
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ASME Standards and Certification
This American National Standard, Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings, has been developed under the procedures accredited by the American National Standards Institute (ANSI). This Standard had its beginning in December 1916 when an eight-page Code of Safety Standards for Cranes, prepared by an ASME Committee on the Protection of Industrial Workers, was presented at the annual meeting of the ASME.

Meetings and discussions regarding safety on cranes, derricks, and hoists were held from 1920 to 1925 involving the ASME Safety Code Correlating Committee, the Association of Iron and Steel Electrical Engineers, the American Museum of Safety, the American Engineering Standards Committee (AESC) [later changed to American Standards Association (ASA), then to the United States of America Standards Institute (USASI), and finally to ANSI], Department of Labor — State of New Jersey, Department of Labor and Industry — State of Pennsylvania, and the Locomotive Crane Manufacturers Association. On June 11, 1925, AESC approved the ASME Safety Code Correlating Committee’s recommendation and authorized the project with the U.S. Department of the Navy, Bureau of Yards and Docks, and ASME as sponsors.

In March 1926, invitations were issued to 50 organizations to appoint representatives to a Sectional Committee. The call for organization of this Sectional Committee was sent out October 2, 1926, and the committee organized November 4, 1926, with 57 members representing 29 national organizations. Commencing June 1, 1927, and using the eight-page code published by ASME in 1916 as a basis, the Sectional Committee developed the Safety Code for Cranes, Derricks, and Hoists. The early drafts of this safety code included requirements for jacks, but, due to inputs and comments on those drafts, the Sectional Committee decided in 1938 to make the requirements for jacks a separate code. In January 1943, ASA B30.2-1943 was published addressing a multitude of equipment types and in August 1943, ASA B30.1-1943 was published just addressing jacks. Both documents were reaffirmed in 1952 and widely accepted as safety standards.

Due to changes in design, advancement in techniques, and general interest of labor and industry in safety, the Sectional Committee, under the joint sponsorship of ASME and the Bureau of Yards and Docks (now the Naval Facilities Engineering Command), was reorganized on January 31, 1962, with 39 members representing 27 national organizations. The new committee changed the format of ASA B30.2-1943 so that the multitude of equipment types it addressed could be published in separate volumes that could completely cover the construction, installation, inspection, testing, maintenance, and operation of each type of equipment that was included in the scope of ASA B30.2. This format change resulted in the initial publication of B30.3, B30.5, B30.6, B30.11, and B30.16 being designated as revisions of B30.2, with the remainder of the B30 volumes being published as totally new volumes. ASA changed its name to USASI in 1966 and to ANSI in 1969, which resulted in B30 volumes from 1943 to 1968 being designated as either ASA B30, USAS B30, or ANSI B30, depending on their date of publication.

In 1982, the Committee was reorganized as an Accredited Organization Committee, operating under procedures developed by ASME and accredited by ANSI. This Standard presents a coordinated set of rules that may serve as a guide to government and other regulatory bodies and municipal authorities responsible for the guarding and inspection of the equipment falling within its scope. The suggestions leading to accident prevention are given both as mandatory and advisory provisions; compliance with both types may be required by employers of their employees.

In case of practical difficulties, new developments, or unnecessary hardship, the administrative or regulatory authority may grant variances from the literal requirements or permit the use of other devices or methods but only when it is clearly evident that an equivalent degree of protection is thereby secured. To secure uniform application and interpretation of this Standard, administrative or regulatory authorities are urged to consult the B30 Committee, in accordance with the format described in Section IX of the Introduction, before rendering decisions on disputed points.
Safety codes and standards are intended to enhance public safety. Revisions result from committee consideration of factors such as technological advances, new data, and changing environmental and industry needs. Revisions do not imply that previous editions were inadequate.

B30.6 was first published in 1969; new editions were published in 1977, 1984, 1990, 1995, 2003, and 2010. The 2015 Edition incorporates many global B30 changes, including the addition of sections on personnel competence, translation, and responsibilities, along with several other revisions. This 2020 edition contains additions and/or revisions to Rigger Responsibilities, Crane Operator Qualifications, Operation in the Vicinity of Electric Power Lines and definitions.

This Volume of the Standard, which was approved by the B30 Committee and by ASME, was approved by ANSI and designated as an American National Standard on TBD.
## Summary of Revisions

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Rational - Revise definitions for lexicon consistency per global request 2015-1

Black text is existing language from current edition for the section being revised and other related sections as needed for understanding of the proposed changes. Green text is explanation of the proposed changes for committee use only. Yellow highlight denotes revisions for the 1st recirculation ballot.

Scope, Definitions, Translations, Personnel Competence, and References

SECTION 6-0.2: DEFINITIONS

6-0.2.1 Types of Equipment

derrick: A derrick is an apparatus consisting of a mast or equivalent member held at the end by guys or braces, with or without a boom, for use with a winching mechanism and operating ropes.

derrick, A-frame derrick: a derrick in which the boom is hinged from a cross member or pedestal between the bottom ends of two upright members spread apart at the lower ends and joined at the top, the boom point is secured to the junction of the side members, and the side members are braced or guyed from this junction point (see Fig. 6-0.2.1-1).

derrick, basket derrick: a derrick without a boom, similar to a gin pole, with its base supported by ropes attached to corner posts or other parts of the structure. The base is at a lower elevation than its supports. The location of the base of a basket derrick can be changed by varying the length of the rope supports. The top of the pole is secured with multiple reeved guys to position the top of the pole to the desired location by varying the length of the upper guy lines. The load is lifted and lowered by ropes through a sheave or block secured to the top of the pole (see Fig. 6-0.2.1-2).

derrick, breast derrick: a derrick without a boom. The mast consists of two side members spread farther apart at the base than at the top, and tied together at the top and bottom by rigid members. The mast is prevented from tipping forward by guys connected to its top. The load is lifted and lowered by ropes through a sheave or block secured to the top of the crosspiece (see Fig. 6-0.2.1-3).

derrick, Chicago boom derrick: a boom that is attached to a structure, an outside upright member of the host structure serving as the mast, and the boom being mounted in a pivoting seat secured to the upright. The derrick is complete with load, boom, and boom point swing line falls (see Fig. 6-0.2.1-4).

derrick, gin pole derrick: a boom derrick without a mast boom that has guys arranged from its the mast top to permit leaning the mast in one or more directions. The load is lifted and lowered by ropes reeved through sheaves or blocks at the top of the mast and the lower block (see Fig. 6-0.2.1-5).

derrick, guy derrick: a fixed derrick consisting of a mast capable of being rotated 360 deg, but not continuous rotation, supported in a vertical position by guys, and a boom, the bottom end of which is hinged or pivoted to move in a vertical plane with a reeved rope between the head of the mast and the boom harness for lifting and lowering the boom, and a reeved rope from the boom point for lifting and lowering the load (see Fig. 6-0.2.1-6).

shearleg derrick: a boom with or without a mast derrick with a boom suspended from a mast or A-frame, not capable of swinging, hinged at the bottom and raised and lowered by a boom hoist mechanism or a hydraulic cylinder (see Fig. 6-0.2.1-7).

derrick, stiffleg derrick: a derrick similar to a guy derrick, except that the mast is supported or held in place by two or more stiff members, called stifflegs, which are capable of resisting either tensile or
compressive forces. Sills are generally provided to connect the lower ends of the stifflegs to the foot of the mast (see Fig. 6-0.2.1-8).

{ note: figures below have been collected together, as published these are scattered between sections }

Fig. 6-0.2.1-1  A-Frame Derrick

Fig. 6-0.2.1-2  Basket Derrick
Fig. 6-0.2.1-3  Breast Derrick
Fig. 6-0.2.1-4  Chicago Boom Derrick

Fig. 6-0.2.1-5  Gin Pole Derrick
Fig. 6-0.2.1-6  Guy Derrick

![Guy Derrick Diagram]

Fig. 6-0.2.1-7  Shearleg Derrick

![Shearleg Derrick Diagram]
6-0.2.2 General

*abnormal operating conditions:* environmental conditions that are unfavorable, harmful, or detrimental to or for the operation of a derrick, such as excessively high or low ambient temperatures, exposure to adverse weather, corrosive fumes, dust-laden or moisture-laden atmospheres, and hazardous locations.

*administrative or regulatory authority:* governmental agency, or the employer in the absence of governmental jurisdiction.

*boom:* a timber or metal section or strut, pivoted or hinged at the heel (lower end) at a location fixed in height on a frame, mast, or vertical member, with its point (upper end) supported by chains, ropes, or rods to the upper end of the frame, mast, or vertical member. A rope for lifting and lowering the load is reeved through the sheaves or a block at the boom point and the load block. The length of the boom shall be taken as the straight line distance between the axis of the foot pin and the axis of the boom point sheave pin, or where used, the axis of the upper load block attachment pin.

*boom angle:* the angle above or below horizontal of the longitudinal axis of the boom base section.

*boom angle indicator:* an accessory device that measures the angle of the boom base section center line to the horizontal.

*boom harness:* the block and sheave arrangement on the boom point to which the topping lift cable is reeved for changing the boom angle raising and lowering the boom.

*boom point:* the outward end of the top section of the boom.

*crossover points:* in multiple-layer spooling of rope on a drum, those points of rope contact where the rope crosses the preceding rope layer.

*derrick bullwheel:* a horizontal ring or wheel fastened to the mast base of a derrick for the purpose of swinging the derrick by means of ropes leading from this wheel to a powered drum.
**derrick service:**

(a) normal: that service which involves operating at less than 85% rated capacity and not more than 10 lift cycles per hour except for isolated instances.

(b) heavy: that service which involves operating at 85% to 100% of rated capacity, or in excess of 10 lift cycles per hour as a regular specified procedure operation within the rated load limit that exceeds normal service.

(c) severe: that service which involves normal or heavy service with abnormal operating conditions.

**eye:** a loop formed at the end of a rope by securing the dead end to the live end at the base of the loop.

**fiddle block:** a block consisting of sheaves held in place by the same cheek plates; at least two sheaves are not on the same shaft.

**flange point:** a point of contact between rope and drum flange where the rope changes layers.

**gudgeon pin:** a pin connecting the mast cap to the mast, allowing rotation of the mast.

**guy:** a rope used to steady or secure the mast, boom, or other member in the desired position.

**hairpin anchor:** a hairpin-shaped, guy-supporting anchor that is placed in footings or walls before concrete is poured and is held in place by the cured concrete.

**latch,** **hook latch:** a device used to bridge the throat opening of a hook or close the throat opening of a hook for the purpose of preventing attachments from being dislodged.

**lower load block, lower:** the assembly of shackle, swivel, sheaves, pins, and frame suspended by the hoisting rope. {this definition is relocated}

**mast:** the upright member of the derrick.

**mast cap (spider):** the fitting at the top of the mast to which the guys are connected.

**minimum breaking force:** the minimum load at which a new and unused wire rope will break when loaded to destruction in direct tension.

**operational aid:** an accessory that provides information to facilitate operation of the equipment or that takes control of particular functions without action of the operator when a limiting condition is sensed. Examples of such devices include, but are not limited to, the following: anti-two block device, rated capacity indicator, rated capacity load limiter, boom angle or radius indicator, drum rotation indicator, load indicator, and wind speed indicator.

**original language(s): language(s) used by the manufacturer to develop and verify product instructions and manual(s).** {Rational - Update translations requirements per global request 2016-2}

**rated load, rated:** the maximum allowable working load in pounds (kilograms) established by the manufacturer in accordance with Section 6-1.1. {this definition is relocated}

**qualified person:** a person who, by possession of a recognized degree in an applicable field, certificate of professional standing, or by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

**reeving:** a rope system in which the rope travels around drums and sheaves.

**repetitive pickup point:** when operating on a repetitive short cycle operation, that part of the rope which is leaving the drum when the load is first applied to the rope being used on a single layer and being spooled repetitively over a short portion of the drum.
**rock anchor**: an anchoring device inserted in a hole drilled into rock or concrete. The device is secured in the hole to withstand a predetermined load.

**rope**: refers to wire rope unless otherwise specified.

**rotation-resistant rope**: a wire rope consisting of an inner layer of strand laid in one direction covered by a layer of strand laid in the opposite direction. This has the effect of counteracting torque by reducing the tendency of the finished rope to rotate. *may be replaced later with new definition if approved for use in B30.30 - stranded wire rope consisting of at least two layers of strands where the outer layer of strands is laid opposite to the underlying layer. The design results in a reduction in load-induced torque*

**side loading**: a load applied at an angle to the vertical plane of the boom.

**sill**: a member connecting the **foot sill** block and to the lower end of the stiffleg, or a member connecting the lower ends of a double-member mast. *rational - existing definition could describe other parts*

**foot bearing or block (still block)** **sill block**: the lower support on which the mast rotates. *this definition is relocated*

**standby derrick**: a derrick not in regular service that is used occasionally or intermittently as required.

**stiffleg**: a rigid member supporting the mast at the head.

**swing**: rotation of the mast or boom for movements of loads in a horizontal direction about the axis of rotation.

**two-blocking**: the condition in which the lower load block or hook assembly comes in contact with the upper load block or boom point sheave assembly.

**upper load block**, **upper**: the assembly of sheaves, pins, and frame suspended from the boom. *this definition is relocated*

**working load**, **working**: the external load in pounds (kilograms) applied to the derrick equipment, including the weight of load-attaching equipment such as hoisting ropes, lower load block, shackles, and slings. *this definition is relocated*
Rational - Update sections related to translations of safety-related information per global request 2016-2

Required addition of definition for "original language" is included as part of a separate ballot for lexicon consistency.

Black text is existing language from current edition for the section being revised and other related sections as needed for understanding of the proposed changes. Green text is explanation of the proposed changes for committee use only.

Yellow highlight denotes revisions for the 1st recirculation ballot.

SECTION 6-0.3: TRANSLATIONS OF SAFETY-RELATED INFORMATION AND CONTROL DESIGNATIONS

This Section specifies translations of safety-related information and control designations.

(a) Translation of non-English documentation into English

(1) The wording of written non-English safety information and manuals regarding use, inspection, and maintenance shall be translated onto English by professional translation industry standards, which include, but are not limited to, the following:

(-a) translation of the complete paragraph message, instead of word by word
(-b) grammatical accuracy
(-c) respectfulness of the source document content without omitting or expanding the text
(-d) accurate translation of the terminology
(-e) reflecting the level of sophistication of the original document

(2) The finished translation shall be verified for compliance with (a)(1)(-a) through (a)(1)(-e) above by a qualified person having an understanding of the technical content of the subject matter.

(3) Pictograms used to identify controls shall be described in the manuals. The pictograms should comply with ISO 7000 or another recognized source, if previously defined. The text description shall meet the criteria of (a)(1) and (a)(2) above.

(b) Any non-English documentation provided in addition to English shall be translated and reviewed in accordance with the requirements listed above.

SECTION 6-0.43: TECHNICAL AND SAFETY-RELATED INFORMATION

The manufacturer shall provide instructions [manual(s)] for the operation, inspection, maintenance, assembly and disassembly of the equipment.

(a) The instructions shall be provided in a language specified by the purchaser at the time of the initial sale by the manufacturer.

(b) Pictograms used to identify controls shall be described in the instructions. The pictograms should comply with ISO 7000, ISO 7296, or other recognized source, if previously defined.

(c) Translations of the original language instructions [if the manufacturer no longer exists, translation of the instructions with the machine is acceptable] shall meet professional translation industry standards, which include, but are not limited to, the following:

(1) translating the complete paragraph message, instead of word by word
(2) ensuring grammatical accuracy
(3) preserving the source document content without omitting or expanding the text
(4) translating the terminology accurately
(5) reflecting the level of sophistication of the original document
The finished translation shall be verified for compliance with paragraphs (c)(1) through (c)(5) by a qualified person having an understanding of the technical content of the subject matter.

SECTION 6-0.4: PERSONNEL COMPETENCE

Persons performing the functions identified in this Volume shall, through education, training, experience, skill, and physical fitness, as necessary, be competent and capable to perform the functions as determined by the employer or employer’s representative.

SECTION 6-0.5: REFERENCES

The following is a list of standards and specifications referenced in this Volume, showing the year of approval:

Publisher: American Welding Society (AWS), 8669 NW 36 Street, No. 130, Miami, FL 33166 (www.aws.org)
ASME B30.7-2011, Winches
ASME B30.8-2010, Floating Cranes and Floating Derricks ASME B30.10-2009, Hooks
Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)
ISO 7000:2014, Graphical symbols for use on equipment - Registered Symbols
Publisher: International Organization for Standardization (ISO), Central Secretariat, Chemin de Blandonnet 8, Case Postale 401, 1214 Vernier, Geneva, Switzerland (www.iso.org)

6-3.2.1 Responsibilities of the Derrick Owner and Derrick User

6-3.2.1.1 The derrick owner’s responsibilities shall include the following:

6-3.2.1.2 The derrick user’s responsibilities shall include the following:

Section 6-3.2.1.3: Translation of Technical and Safety-Related Information and Manual(s).

The entities responsible for the operation use, inspection, and maintenance of the covered equipment shall have the technical and safety-related information available in a language that their employees can read and understand. If the information is not available in a language understood by their employees, the entities shall obtain a translation of the original manufacturer’s written safety information and manuals from the manufacturer or from a translation service provider. The translation(s) shall meet the requirements of Section 6-0.4 (c) and (d).
6-3.2.2 Responsibilities of the Site Supervisor and Lift Director {no further related changes}
Rational - Wording changes to enhance consistency and clarity throughout chapter. Add omitted D/d requirements identified by B30.30 development.

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Chapter 6-1 Construction and Installation
SECTION 6-1.2: CONSTRUCTION

6-1.2.2 Guy Derricks
(a) The recommended minimum number of guys is six. Preferably, guy length and spacing should be equal. Variations from these requirements are acceptable provided original rated load or rerated load is calculated by a qualified person or derrick manufacturer to compensate for these variations.
(b) For published ratings, the manufacturer shall furnish complete guy information recommending
   (1) the number of guys
   (2) the spacing around the mast
   (3) the maximum vertical slope
   (4) the size, grade, and construction of rope to be used in each
   (5) initial sag or tension
   (6) tension in guy line rope at anchor
(c) The mast base shall permit free rotation of the mast with allowance for slight tilting of the mast caused by guy slack.
(d) The mast cap shall
   (1) permit free rotation of the mast
   (2) withstand tilting and cramping action imposed by the guy loads
   (3) be secured to the mast to prevent disengagement during erection
   (4) be provided with means for attachment of guy ropes

6-1.2.3 Stiffleg Derricks
(a) The mast shall be supported in the vertical position by at least two stifflegs, one end of each being connected to the top of the mast and the other end securely anchored. The stifflegs shall be capable of withstanding the loads imposed at any point of operation within the rated load chart range.
(b) The mast base shall
   (1) permit free rotation of the mast, when required
(2) permit deflection of the mast without binding
(3) provide means to prevent the mast from lifting out of its socket when the mast is in tension

(c) The stiffleg connecting member at the top of the mast shall
   (1) permit free rotation of the mast, when required
   (2) withstand the loads imposed by the action of the stifflegs
   (3) be so secured as to oppose separating forces at all times

6-1.2.4 Gin Pole Derricks
(a) Guy lines should shall be sized and spaced so as to make the gin pole stable in both boomed and vertical positions.
(b) The base of the gin pole shall
   (1) permit movement of the pole when required
   (2) provide means to anchor the pole against horizontal forces when required

6-1.2.5 Chicago Boom Derricks

SECTION 6-1.3: ROPES AND REEVING ACCESSORIES
{ no related changes 6-1.3.1 through 6-1.3.5 }

6-1.3.5 Reeving Accessories
(a) Poured, swaged, compressed, or wedge socket fittings shall be applied as recommended by the rope, derrick, or fitting manufacturer. Any new poured socket or swaged socket assembly used as a boom pendant shall be proof tested to the derrick or fitting manufacturer’s recommendation but in no case greater than 50% of the minimum breaking force of the component wire ropes, structural strands, or fittings.
(b) Rope end shall be anchored to the drum.
(c) Eyes shall be made in a recommended manner, and rope thimbles should be used in the eye.
(d) Rope clips attached with U-bolts shall have the U-bolt on the dead or short end of the rope. Spacing and number of all types of clips shall be in accordance with the clip manufacturer’s recommendations. Nuts on clip bolts shall be tightened evenly to the manufacturer’s recommended torque. After the initial load is applied to newly installed rope and the rope is under tension, the nuts on the clip bolts should be tightened again to the required torque in order to compensate for any decrease in rope diameter caused by the load.
(e) Where a half-wedge socket is used, it shall be of a positive-locking type.
(f) Wire rope clips used in conjunction with wedge sockets shall be attached to the unloaded dead end of the rope only. Refer to ASME B30.26, Chapter 3, Section 26-3.1.4, and Fig. 26-3.1.1-2 for a more complete instruction in the use of wedge sockets.
(g) If a load is supported by more than one part of rope, the tension in the parts shall be equalized.
6-1.3.6 Sheaves

(a) Sheave grooves shall be smooth and free from surface conditions that could cause rope damage or accelerated rope wear. The cross-sectional radius at the bottom of the groove should be such as to form a close-fitting saddle for the size rope used, and the sides of the groove should be tapered outward to facilitate entrance of the rope into the groove. Flange corners should be rounded, and the rims should run true about the axis of rotation.

(b) Sheaves carrying ropes that can be momentarily unloaded shall be provided with close-fitting guards or other devices to guide the rope back into the groove when the load is applied again.

(c) The sheaves in the lower load block should be equipped with close-fitting guards that will reduce the possibility of ropes becoming fouled when the block is lying on the ground with the ropes loose.

(d) Means should be provided, if necessary, to prevent chafing of the ropes.

(e) All running sheaves shall be equipped with means for lubrication or with permanently lubricated, sealed, or shielded bearings.

(f) Hoisting sheaves shall have pitch diameters not less than 18 times the nominal diameter of the rope used.

(g) Boom point sheaves should be provided with guides to limit the offlead angle of the rope when entering the grooves from either side.

(h) Boom hoist sheaves shall have pitch diameters not less than 15 times the nominal diameter of the rope used.

(i) Equalizer sheaves in guy lines shall have pitch diameters not less than 6 times the nominal diameter of the rope used. A qualified person shall evaluate any necessary strength reduction factors.

(j) Equalizer sheaves in boom pendants shall have pitch diameters not less than 7 times the nominal diameter of the rope used. A qualified person shall evaluate any necessary strength reduction factors.

SECTION 6-1.4: ANCHORING AND GUYING

6-1.4.1 Guy Derricks

(a) The mast base shall be anchored. Anchorages shall be designed, and fabricated, and installed to withstand the maximum horizontal and vertical forces encountered while handling rated loads stipulated for the application with the particular guy slope and spacing. Maximum horizontal and vertical forces encountered when handling rated loads with the particular guy slope and spacing stipulated for the application are among the design factors for which provision shall be made.

(b) The guys shall be secured to the ground or other firm anchorage. Anchorages shall be designed, and fabricated, and installed to withstand the maximum horizontal and vertical forces encountered while handling rated loads stipulated for the application with the particular guy slope and spacing. Maximum horizontal and vertical forces encountered while handling rated loads with the particular guy slope and spacing stipulated for the application are among the factors for which provision shall be made.
6-1.4.2 Stiffleg Derricks

(a) The mast base shall be anchored. Anchorages shall be designed, and fabricated, and installed to withstand the maximum horizontal and vertical forces encountered while handling rated loads stipulated for the application with the particular stiffleg spacing and slope. Maximum horizontal and vertical forces encountered while handling rated loads stipulated for the application with the particular stiffleg spacing and slope are among the design factors for which provision shall be made.

(b) The stifflegs shall be anchored. Anchorages shall be designed, and fabricated, and installed to withstand the maximum horizontal and vertical forces encountered while handling rated loads stipulated for the application with the particular stiffleg spacing and slope. Maximum horizontal and vertical forces encountered while handling rated loads with the particular stiffleg arrangement stipulated for the application are among the factors for which provision shall be made.

6-1.4.3 Load-Anchoring Data

For permanent fixed installations, the owner shall provide load-anchoring data referred to in paras. 6-1.4.1 and 6-1.4.2 for the conditions stipulated for the application. For nonpermanent installations, such data shall be determined by a qualified person.
Chapter 6-3 Operation

SECTION 6-3.1: QUALIFICATIONS, RESPONSIBILITIES, AND OPERATING PRACTICES

6-3.1.1 Operators

(a) Derricks shall be operated only by the following personnel:

(1) designated persons.

(2) trainees under the supervision of a designated person. The number of trainees permitted to be supervised by a single designated person, the physical location of the designated person while supervising, and the type of communication required between the designated person and the trainee shall be determined by a qualified person.

(3) maintenance and test personnel, when it is necessary in the performance of their duties.

(4) inspectors (derrick).

(b) No one, other than personnel specified in (a) above, shall enter the cab or operate the derrick with the exception of persons such as oilers, supervisors, and those specific persons authorized by supervisors and then only in the performance of their duties and with the knowledge of the operator.

6-3.1.2 Qualifications for Operators

(a) Operators shall be required by the employer to pass a written or oral examination and a practical operating examination, unless able to furnish satisfactory evidence of qualifications and experience. Qualifications shall be limited to the specific type of equipment for which the operator is examined.

(b) Operators and operator trainees shall meet the following physical qualifications, unless it can be shown that failure to meet the qualification will not affect the operation of the derrick. In such cases, specialized clinical and/or medical judgments and tests may be required.

(1) vision of at least 20/30 Snellen in one eye and 20/50 in the other, with or without corrective lenses.

(2) ability to distinguish color, regardless of the position of colors, if color differentiation is required for operation.

(3) adequate hearing to meet operational demands, with or without hearing aid, for the specific operation.

(4) sufficient strength, endurance, agility, coordination, and speed of reaction to meet the operational demands of equipment operation.

(5) normal depth perception, field of vision, reaction time, manual dexterity, coordination, and no tendencies to dizziness or similar undesirable characteristics.
(5)(6) a negative result on a substance abuse test. The level of testing will be determined by the current standard of practice for the industry in which the derrick is employed, and the test results shall be confirmed by a recognized laboratory service. Testing shall be in accordance with applicable government regulations and policies of the employer.

(7) no evidence of having physical defects or emotional instability that could render a hazard to the operator or others, or that in the opinion of the examiner could interfere with the operator’s performance. If evidence of this nature is found, it may be cause for disqualification.

(c) Evidence of physical limitations or emotional instability that could be a hazard to the operator or others, or that in the opinion of the examiner could interfere with the operator’s safe performance, may be cause for disqualification. In such cases, specialized clinical or medical judgements and tests may be required.

(d) Evidence that an operator is subject to seizures or loss of physical control shall be reason for disqualification. Specialized medical tests may be required to determine these conditions.

(e) Operators and operator trainees should have normal depth perception, field of vision, reaction time, manual dexterity, coordination, and no tendencies to dizziness or similar undesirable characteristics.

(f) Operator requirements shall include, but not be limited to, the following:

(1) evidence of successfully passing a physical examination as defined in (b) above

(2) satisfactory completion of a written examination covering operational characteristics, controls, emergency control skills such as response to fire, control malfunction, as well as characteristics and performance questions appropriate to the derrick type for which qualification is being sought

(3) demonstrated ability to read, write, comprehend, and use arithmetic and a load/capacity chart in the English language

(4) satisfactory completion of a combination written and verbal test on load/capacity chart usage that covers a selection of the configurations the derrick may be equipped to handle, for the derrick type for which qualification is being sought

(5) satisfactory completion of testing by appropriate written, oral, or practical methods demonstrating proficiency in operating the specific derrick type, including pre-start and post-start inspections, shutdown, and securing procedures

(6) demonstrated understanding of the applicable sections of the B30 Standard and federal, state, and local requirements

(g)(d) Operators who have successfully qualified to operate a specific derrick type shall be required to be requalified if supervision deems it necessary. Requalification shall include, but not be limited to, requirements listed in (f)(c)(1) through (f)(c)(6) above.

6-3.2: RESPONSIBILITIES { no further changes on this subject }
Rational - Add responsibilities for riggers per global request 2014-3
Add responsibilities for signalpersons per global request 2016-1
Add detailed instruction for use of voice signals.
Add lifting activities to lists for user's designation of personnel.

Black text is existing language from current edition for the section being revised and other related sections as needed for understanding of the proposed changes. Green text is explanation of the proposed changes for committee use only.

Chapter 6-3 Operation
SECTION 6-3.1: QUALIFICATIONS, RESPONSIBILITIES, AND OPERATING PRACTICES
6-3.2: RESPONSIBILITIES

6-3.2.1 Responsibilities of the Derrick Owner and Derrick User
6-3.2.1.2 The derrick user's responsibilities shall include the following:
(h) designating personnel for the purpose of lifting activities, maintenance, repair, transport, assembly, and disassembly, as applicable
(i) ensuring that all personnel involved in lifting activities, maintenance, repair, transport, assembly, disassembly, and inspection, as applicable, are aware of their responsibilities, assigned duties, and the associated hazards

{ Note: Insertion of a new paragraph 6-3.2.1.3 is proposed in a separate ballot on translations per global 2016-2 }

6-3.2.2 Responsibilities of the Site Supervisor and Lift Director
6-3.2.2.1 The Site Supervisor’s responsibilities shall include the following:
(c) ensuring that a qualified person is designated as the Lift Director.
(k) ensuring that work performed by the rigging crew is supervised by a designated person.

6-3.2.2.2 The Lift Director’s responsibilities shall include the following:
(e) ensuring that personnel involved in derrick operations understand their responsibilities, assigned duties, and the associated hazards.
(g) designating a signal person(s) and conveying that information to the derrick operator.
(m) ensuring that a derrick’s load rigging is performed by designated personnel.
(n) ensuring that the load is properly rigged and balanced.

6-3.2.3 Responsibilities of Derrick Operators
(p) ensuring that the load and rigging weight(s) have been provided.
(s) knowing the standard and special signals as specified in Fig. 6-3.4.2-1 and responding to such signals from the designated signal person. (When a signal person is not required as part of the lift
operation, the operator is then responsible for the movement of the derrick. However, the operator shall obey a stop signal at all times, no matter who gives it.)

(t) understanding basic load-rigging procedures.

6-3.2.4 Responsibilities of Riggers

Riggers assigned to a load handling activity shall at a minimum be responsible for:

1. Ensuring the weight of the load and its approximate center of gravity have been obtained, provided or calculated.

2. Selecting the proper rigging equipment, inspecting it, and complying with the applicable operating practices according to the criteria of the applicable ASME volume (i.e., B30.9, B30.10, B30.20, B30.23, B30.26).

3. Ensuring the rated load of the rigging equipment as selected and configured is sufficient for the load to be handled, based on the number of legs, hitch configuration and effects of angles.

4. Properly attaching the rigging equipment to the hook, shackle, or other load handling device.

5. Ensuring that rigging equipment is adequately protected from abrasion, cutting or other damage, during load handling activities.

6. Rigging the load in a manner to ensure balance and stability during the load handling activity.

7. Knowing and understanding the applicable signals for the equipment in use.

8. Installing and using a tag line(s) when additional load control is required.

6-3.2.5 Responsibilities of Signalpersons

A signalperson assigned to a load handling activity shall at a minimum be responsible for:

(a) Identifying himself / herself as the signalperson to the load handling equipment operator(s) before commencing a load handling activity.

(b) Confirming with the operator the method of communication and the associated signals that are to be used during the load handling activity.

(c) Ensuring that standard, discernible signals provided to the operator are in accordance with para. 6-3.4.

(d) Verifying that load handling activities are stopped if there is a need to give instructions to the operator, other than those provided by the established signal system.

(e) Ensuring that telephones, radios or other equipment intended for use as the primary signal system are tested prior to the load handling activity.

(f) Ensuring that a form of communication is maintained with the operator during all load handling activities.

(g) Ensuring that all directions given to the operator shall be given from an understood and agreed perspective (e.g., swing clockwise).

(h) Ensuring that each series of voice signals contains three elements stated in the following order:

(1) function and direction
(2) distance and/or speed
(3) function stop

i) Ensuring that special signals (when needed) that are not covered by para. 6-3.4.2 do not conflict with standard signals.

(j) Avoiding giving signal commands that would result in loads being lifted over personnel whenever possible.

SECTION 6-3.4: SIGNALS

6-3.4.1 Standard Signals

Standard signals to the operator shall be in accordance with the standard prescribed in paras. 6-3.4.2, and 6-3.4.3, or 6-3.4.4 unless voice communication equipment (telephone, radio, or equivalent) is utilized. Signals shall be discernible or audible at all times. No response shall be made unless signals are clearly understood.

6-3.4.2 Standard Hand Signals

Hand signals shall be in accordance with Fig. 6-3.4.2-1 and shall be posted conspicuously.

6-3.4.3 Standard Voice Signals

Prior to beginning lifting operations using voice signals, the signals shall be discussed and agreed upon by the person directing lifting operations, the derrick operator, and the appointed signalperson.

(a) Telephones, radios, or equivalent, if used, shall be tested before lifting operations begin. If the system is battery powered, extra batteries should be available at the job site.

(b) Prior to commencing a lift, the operator and signalperson shall contact and identify each other.

(c) All directions given to the crane operator by the signalperson shall be given from an understood and agreed perspective (e.g., swing clockwise).

(d) Each series of voice signals shall contain three elements stated in the following order:

(1) function and direction
(2) distance and/or speed
(3) function stop

NOTE: These are some examples of signals.

(a) swing clockwise 50 ft, 25 ft, 15 ft, 10 ft, 5 ft, 2 ft, swing stop

(b) load down 100 ft, 50 ft, 40 ft, 30 ft, . . ., 2 ft, load stop

(c) load up slow, slow, slow, load stop

(e) For lifting operations using voice signals, the person directing lifting operations shall consider the complexity of the lift, the capabilities of the particular crane, the experience and skill of the operator and signalperson, and the ability to communicate the necessary signals before permitting multiple simultaneous crane function signals.

6-3.4.3.4 Bell or Light Signals
Bells of different tones shall be used for boom, load, runner (whip), and swinger. Where electrically activated, both bell and light signal systems shall have safety lights of a different color lit to indicate that the signal system is effective. The signals shall be as follows:

(a) When operating, one bell or light means stop.
(b) When stopped, one bell or light means lift; two bells or lights means lower.
(c) When temporarily stopped, three or four bells or lights alternately on the boom and load mean dog it off or stopping for some time.
(d) When dogged off, before starting, ring three or four bells or light three or four lights alternately on the boom and load, meaning get ready to start work again.

6-3.4.5 Special Signals

Some special operations may require additions to, or modifications of, the basic signals standardized herein. In all such cases, these special signals should be agreed upon; thoroughly understood by the Lift Director, signal person, and the operator; and should not be in conflict with the standard signals.

6-3.4.6 Emergency Signals

Emergency signals can be given by anyone. The signal used shall be agreed upon for each job site location and it shall meet the requirements of para. 6-3.4.5 (e.g., multiple short audible signals or a continuous audible signal).

6-3.4.5-7 Instructions

If it is desired to give instructions to the operator other than those provided for in the standard signal system, the derrick motions shall be stopped.

Fig. 6-3.4.2-1 Standard Hand Signals for Controlling Derricks

{ no change to hand signals in figure 6-3.4.2-1 }
Chapter 6-3 Operation

SECTION 6-3.5: MISCELLANEOUS

6-3.5.3 Operating Near Electric Power Lines

(a) Derricks shall be operated so that no part of the derrick or load enters into the danger zone shown in Fig. 6-3.5.3-1.

EXCEPTIONS:

(1) The danger zone may be entered if the electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work.

(2) The danger zone may be entered if insulating barriers (not a part of or an attachment to the derrick) have been erected to prevent physical contact with the lines.

(1) For lines rated 50 kV or below, minimum clearance between the lines and any part of the derrick or load shall be 10 ft (3.0 m).

(2) For lines rated over 50 kV, minimum clearance between the lines and any part of the derrick or load shall be 10 ft (3.0 m) plus 0.4 in. (10.2 mm) for each 1 kV over 50 kV, or use twice the length of the line insulator, but never less than 10 ft (3.0 m) (see Table 6-3.5.3-1).

(3) Caution shall be exercised when working near overhead lines because they can move horizontally or vertically due to wind, moving the danger zone to new positions.

(4) In transit with no load and boom lowered, the clearance shall be a minimum of 4 ft (1.2 m) (see Table 6-3.5.3-1).

(5) A qualified signal person shall be assigned to observe the clearance and give warning before approaching the above limits.

(b) If cage-type boom guards, insulating links, or proximity warning devices are used on derricks, such devices shall not be considered a substitute for the requirements of (a) above, even if such devices are required by law or regulation. Limitations of such devices shall be understood by the operating personnel and tested in the manner prescribed by the manufacturer of the device.

(c) Before the commencement of operations near electrical lines, the person responsible for the job shall notify the owners of the lines or their authorized representatives, providing them with all pertinent information and requesting their cooperation.

(d) Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities verify that it is not an energized line.
(e) Exceptions to this procedure, if approved by the owner of the electrical lines, may be granted by the administrative or regulatory authority if the alternate procedure provides protection and is set forth in writing.

(f) Durable signs shall be installed at the operator's station and on the outside of the derrick, warning that electrocution or serious bodily injury may occur unless a minimum clearance of 10 ft (3.0 m) is maintained between the derrick or the load being handled and energized power lines. Greater clearances are required because of higher voltage as stated in (a)(2) above. These signs shall be revised but not removed when local jurisdiction requires greater clearances.

6-3.5.4 Induced Electrical Charges

When a potentially hazardous condition exists due to an electrical charge that can be or is being induced into the equipment or materials being handled, a qualified person shall be contacted and his/her recommendation for corrective actions shall be followed.

Common sources of induced electrical charges include energized power lines, as well as radio frequency (RF), radar, microwave, and other electromagnetic energy transmitters.

6-3.5.4.5 Cab or Operating Enclosure {renumbered}

(a) Necessary clothing and personal belongings shall be stored in such a manner as not to interfere with access or operation.

(b) Tools, oil cans, waste, extra fuses, and other necessary articles shall be stored in the toolbox and shall not be permitted to lie loose in or about the cab operating enclosure.
Fig. 6-3.5.3-1  Danger Zone for Derricks and Lifted Loads Operating Near Electrical Transmission Lines

NOTE:

(1) For minimum radial distance of danger zone, see para. 6-3.5.3.
Table 6-3.5.3-1  Required Clearance for Normal Voltage in Operation Near High-Voltage Power Lines

<table>
<thead>
<tr>
<th>Normal Voltage, kV (Phase to Phase)</th>
<th>Minimum Required Clearance</th>
<th>ft</th>
<th>m</th>
</tr>
</thead>
<tbody>
<tr>
<td>When Operating Near High Voltage Power Lines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 50</td>
<td></td>
<td>10</td>
<td>3.05</td>
</tr>
<tr>
<td>Over 50 to 200</td>
<td></td>
<td>15</td>
<td>4.57</td>
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<tr>
<td>Over 200 to 350</td>
<td></td>
<td>20</td>
<td>6.10</td>
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<tr>
<td>Over 350 to 500</td>
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<td>25</td>
<td>7.62</td>
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<tr>
<td>Over 500 to 750</td>
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<td>10.67</td>
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<tr>
<td>Over 750 to 1,000</td>
<td></td>
<td>45</td>
<td>13.72</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>While in Transit With No Lead and Boom or Mast Lowered</th>
<th>Minimum Required Clearance</th>
<th>ft</th>
<th>m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 0.75</td>
<td></td>
<td>4</td>
<td>1.22</td>
</tr>
<tr>
<td>Over 0.75 to 50</td>
<td></td>
<td>6</td>
<td>1.83</td>
</tr>
<tr>
<td>Over 50 to 345</td>
<td></td>
<td>10</td>
<td>3.05</td>
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<tr>
<td>Over 345 to 750</td>
<td></td>
<td>16</td>
<td>4.88</td>
</tr>
<tr>
<td>Over 750 to 1,000</td>
<td></td>
<td>20</td>
<td>6.10</td>
</tr>
</tbody>
</table>
6-0.2.2 SECTION 6-0.5: REFERENCES

ASME P30.1, Planning for Load Handling Activities
Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)

SECTION 6-3.1: QUALIFICATIONS, RESPONSIBILITIES, AND OPERATING PRACTICES

6-3.1.1 Operators  

6-3.1.2 Qualifications for Operators  

6-3.1.3 Lift Planning

Derrick operations are recognized to present risks to personnel or property. Lift planning and oversight shall be tailored to each hoisting operation and shall be sufficient to manage varying conditions and their associated hazards. The information presented in ASME P30.1, Planning for Load Handling Activities, provides a method of documenting the planning and oversight necessary to reduce that risk.

6-3.2: RESPONSIBILITIES

6-3.2.2.2 The Lift Director’s responsibilities shall include the following:

(a) being present at the jobsite during lifting operations.

(b) ensuring a lift plan appropriate to the lifting operation is prepared and followed.

(c) stopping derrick operations if alerted to an unsafe condition affecting these operations.

(d) ensuring that the preparation of the area needed to support derrick operations has been completed before commencing derrick operations.

(e) ensuring necessary traffic controls are in place to restrict unauthorized access to the derrick work area.

(f) ensuring that personnel involved in derrick operations understand their responsibilities, assigned duties, and the associated hazards.

remaining paragraphs (f) through (m) to be renumbered (g) through (n).
Rational - Update sections related to operation near electric power lines to better align with B30.3.

6- DERRICKS
6-0 Scope, Definitions, Translations, Personnel Competence, and References

6-0.2: DEFINITIONS

Configuration: The post-erected arrangement of the derrick including boom, mast, jib, and guys.

Dedicated spotter: qualified signal person who has direct and unrestricted contact with the operator and whose sole responsibility is to verify that the specified clearance(s) are maintained.

Insulated power lines: Electric power lines that are insulated for the voltage at which they operate. All electric power lines are presumed to be uninsulated until the insulation is confirmed to be adequate by a qualified person.

Maximum reach: The maximum horizontal or vertical distance the configuration, including the load, hook, and rigging can reach during lifting or boom raising/lowering operations.

Specified clearance(s): The distance from an electrical conductor as determined by para. 6-3.5.3.1 (a).

The complete text within 6-3.5.3 will be replaced with the following. For clarity, the body text is neither colored nor underlined. Only changes to the section title and figures are marked with revisions. Everything from 6-3.5.3.1 through 6-3.5.3.6(l) is new balloted text.

6-3 Operation

6-3.5: MISCELLANEOUS
6-3.5.1 Fire Extinguishers { text omitted }
6-3.5.2 Refueling { text omitted }

6-3.5.3 Derrick Operation in the Vicinity of Operating Near Electric Power Lines
6-3.5.3.1 General. This Volume recognizes that derrick operation, including load handling, erecting, dismantling, inspecting and maintaining derricks where they can become energized by electric power lines can be extremely hazardous. When working in the vicinity of electric power lines, the requirements below shall be followed to address the hazard. Figure 6-3.5.3-2 illustrates the specified clearance around an energized electric power line.

(a) To prevent the derrick, load line, rigging, or load from becoming a conductive path when operating in the vicinity of energized electric power lines, the specified clearance shall be maintained at all times. There are two ways to establish the voltage in the electric power lines, from which to determine the specified clearance:

(1) Preferred method – have a qualified representative of the utility owner/operator of the electric power lines determine the voltage and elevation of the electric power lines. Use Table 6-3.5.3-1 to determine the specified clearance.

(2) Alternate method – estimate the voltage of the electric power lines by comparing the electric power line support structures to those depicted in Figure 6-3.5.3-3. If multiple electric power line support structures are in the vicinity of the work site, use the highest typical voltage
shown in Figure 6-3.5.3-3. Maintain a specified clearance of 20 feet (6.1 m) for electric power lines with typical voltages below or equal to 350 kV and a specified clearance of 50 feet (15.2 m) for electric power lines with typical voltages above 350 kV.

(b) Operation of derricks where they can become energized by electric power lines shall not be performed unless the requirements of this section are followed.

(c) Additional precautions and measures may need to be taken beyond those identified in this volume for derrick operation in the vicinity of electric power lines when snow, ice, rain, fog, wind, darkness or other conditions or environments affect visibility or induce unwanted movement or position of the derrick, loads or electric power lines. These precautions or measures may include but are not limited to: additional spotters, warning systems or zone restriction systems, increased distance from specified clearance, and procedures.

(d) Operators, signalpersons, riggers and other involved personnel shall receive training on, as well as an evaluation of their understanding of, the electrical hazards associated with derrick operation in the vicinity of electric power lines, the requirements of this section, and the procedures and emergency responses that are to be implemented should the derrick, rigging, load line, or load become energized.

(e) Any overhead wire shall be considered to be an energized electric power line unless and until the utility owner/operator of the electric power lines indicates that it is deenergized and, except for insulated power lines, the electric power lines are visibly grounded at the jobsite. Operators and other personnel directly involved with the lifting operations shall not rely on the coverings of wires for protection. All electric power lines are presumed to be uninsulated until the insulation is confirmed to be adequate by a qualified person.

(f) If insulating links, zone restriction systems or other warning devices are used on derricks, such devices shall not be a substitute for the requirements of this section, even if such devices are required by law or regulation. Electrical hazards are complex, invisible, and lethal. To lessen the potential of false security, instructions related to the devices and hazards shall be reviewed with the operator, crew, and load-handling personnel. Instructions shall include information about the electrical hazard(s) involved, operating conditions for the devices, limitations of such devices, and testing requirements prescribed by the device manufacturer. The specified clearances to electric power lines, established in Table 6-3.5.3-1, shall be maintained, regardless of any device(s) used on the derrick.

(g) When a derrick is installed in proximity to power lines, durable signs shall be installed at the operator’s station and at locations visible to the rigging crew, warning that electrocution or serious bodily injury may occur unless a minimum clearance of 10 ft (3.0 m) is maintained between the derrick or the load being handled and energized power lines. Greater clearances are required because of higher voltage as stated in (a) above. These signs shall be revised but not removed when local jurisdiction requires greater clearances.

(h) Before beginning operations, the Site Supervisor shall ensure that:

1. The derrick has been configured and located as planned and verified to be correct.
2. The area around the derrick through the full range of rotation has been defined up to the maximum reach.
3. The dimensions of the load(s) and rigging that will be used have been identified.
4. A preliminary determination is made if any part of the derrick, load line, rigging, or load, if operated at the derrick’s maximum reach has the capability to get closer than the specified clearance.
5. The Lift Director has the information contained in 6-3.5.3.1 (h)(1) through (h)(4).

(i) The Lift Director shall re-evaluate the information contained in 6-3.5.3.1(h)(1) through (h)(4) whenever changes that affect the configuration or the lift plan are required during operation.
is required to work in the vicinity of uninsulated electric power lines since the hazard of injury, or death due to electrocution, has been removed.

The following steps shall be taken to ensure the electric power lines are deenergized:

(a) The utility owner/operator of the electric power lines shall deenergize the electric power lines.
(b) The electric power lines shall be visibly grounded to avoid electrical feedback and appropriately marked at the job site location.
(c) A qualified representative of the utility owner/operator of the electric power lines shall come to the site to verify that the steps of paras. 6-3.5.3.2(a) and (b) have been completed and that the electric power lines are deenergized and grounded.

6-3.5.3.3  **Operation in the Vicinity of Deenergized Insulated Power Lines.** This is the preferred condition for derrick operation when the derrick is required to work in the vicinity of insulated power lines since the hazard of injury or death due to electrocution has been removed. The following steps shall be taken to ensure the electric power lines are deenergized:

(a) The utility owner/operator of the electric power lines shall deenergize the electric power lines.
(b) The necessity for grounding the electric power lines shall be determined by the utility owner/operator of the electric power lines.
(c) A qualified representative of the utility owner/operator of the electric power lines shall come to the site to verify that the steps of paras. 6-3.5.3.3(a) and (b) have been completed and that the electric power lines are deenergized.

6-3.5.3.4  **Operation in the Vicinity of Energized Electric Power Lines and the Configuration is Capable of Reaching within the Specified Clearance.** No part of the derrick, load line, rigging, or load shall be allowed in the vicinity of an electric power line unless:

(a) The lines are deenergized in accordance with para. 6-3.5.3.2 or 6-3.5.3.3 or
(b) Where the electric power lines remain energized during derrick operations in the vicinity of electric power lines, the following is required:

(1) The horizontal and vertical distance of movement of electric power lines due to the wind, sag, or other conditions, including consideration of lateral drift of the load from wind, pendulation and inertia shall be added to the initial specified clearance.
(2) Evaluation whether the derrick, load line, rigging, or load is capable of reaching within the resultant specified clearance

If the derrick, load line, rigging, or load is capable of reaching within the resultant specified clearance but the work is planned so that the derrick, load line, rigging, and load shall not enter into the specified clearance and the derrick is not operating below energized electric power lines, the following steps shall be taken to minimize the hazard of electrocution or serious injury as a result of contact between the energized electric power lines and the derrick, load line, or load:

(-a) The derrick, load line, rigging, or load shall not enter into the resultant specified clearance.
(-b) The Lift Director shall conduct an onsite planning meeting with the operator and the other workers who will be in the area of the derrick or load to review the location of the electric power line(s) and the steps that shall be implemented to prevent encroachment.
(-c) Tag lines, when required, shall be of a nonconductive type. Nonconductive material can become conductive when exposed to moisture or contamination.
(-d) Erect and maintain an elevated warning line, barricade, or line of signs, in view of the operator, equipped with flags or similar high visibility markings to mark the working radius at or farther than the specified clearance distance from the electric power lines.
(-e) Implement at least one of the following measures. If at any time the operator is unable to see the elevated warning line, barricade, or line of signs, a dedicated spotter shall be
used in addition to complying with 6-3.5.3.4 (b)(2)(-e)(-2) or 6-3.5.3.4 (b)(2)(-e)(-3).
(-1) A dedicated spotter that shall:
   (+a) Be provided with any visual aids required to assist in identifying and maintaining the specified clearance distance.
   (+b) Be positioned to accurately gauge the clearance distance.
   (+c) Use communication methods that enable the dedicated spotter to communicate directly with the operator.
   (+d) Give timely information to the operator so that the specified clearance can be maintained.
(-2) A device that automatically warns the operator when to stop movement. This device shall be set to give the operator sufficient warning to prevent encroachment.
(-3) A device that automatically limits range of movement, set to prevent encroachment.

6-3.5.3.5 **Operation below Energized Electric Power Lines.** No part of the derrick, load line, or load (including rigging) shall be allowed directly below an electric power line unless:
   (a) The electric power lines are deenergized in accordance with para. 6-3.5.3.2 or 6-3.5.3.3, or;
   (b) Where the electric power lines remain energized during derrick operations below electric power lines, the following is required:
      (1) The horizontal and vertical distance of movement of electric power lines due to the wind, sag, or other conditions shall be added to the initial specified clearance as established in Section 6-3.5.3.1. A qualified representative of the utility owner/operator of the electric power lines shall be consulted for specific movement distances.
      (2) Identify if the derrick is capable of reaching within the resultant specified clearance.
            If the load or uppermost part of the derrick is capable of entering within the resultant specified clearance, and the derrick is operating below energized electric power lines, the requirements of 6-3.5.3.6 shall be followed even if the work is not within the specified clearance.

6-3.5.3.6 **Operation within the Specified Clearance with the Electric Power Lines Energized.** The following steps shall be taken to minimize the hazard of electrocution or serious injury as a result of contact between the energized electric power lines and the derrick, load line, or load.

Before such operations take place, the Lift Director together with a qualified representative of the utility owner/operator of the electric power lines or an engineer qualified in electric power transmission shall, after visiting the site, determine if this is the only practical most feasible way to complete the operation and set minimum approach distances and procedures for such operations. The procedures developed to comply with this section shall be documented and readily available onsite. These operations shall be under their direct supervision. The following shall be required:
   (a) The Lift Director shall conduct an onsite planning meeting with the operator and the other workers who will be in the area of the derrick or load to review the location of the electric power line(s) and the steps that shall be implemented to prevent encroachment.
   (b) Electrical system protective devices that automatically reenergize the circuit after an electrical power line contact occurrence shall be blocked or disengaged to inhibit this function.
   (c) A dedicated spotter that shall:
      (1) Be provided with any visual aids required to assist in identifying and maintaining the specified clearance distance.
      (2) Be positioned to accurately gauge the minimum approach distances.
      (3) Use communication methods that enable the dedicated spotter to communicate directly with the operator.
      (4) Give timely information to the operator so that the minimum approach distances can be maintained.
(d) An elevated warning line, or barricade (not attached to the derrick), in view of the operator (either directly or through video equipment), equipped with flags or similar high-visibility markings, to prevent encroachment on the minimum approach distance.

(e) If the rigging will be within the specified clearance it shall be nonconductive.

(f) If the derrick is equipped with a device that automatically limits range of movement, it shall be used and set to prevent any part of the derrick, load line, rigging, or load from encroaching the minimum approach distances established.

(g) Tag lines, when required, shall be of a nonconductive type. Nonconductive material can become conductive when exposed to moisture or contamination.

(h) Barricades shall be used to form a perimeter to restrict access to the derrick work area.

(i) Nonessential personnel shall be removed and prohibited from the derrick work area.

(j) No one shall be permitted to touch the derrick, load line, rigging, or load unless the Lift Director indicates it is safe to do so.

(k) The derrick shall be grounded in accordance with the manufacturer’s or a qualified person’s written instructions.

(l) Insulated barriers shall be installed by the utility owner/operator of the electric power lines, except where such devices are unavailable for the line voltages involved. Installation of such barriers are not a substitute for compliance with this section.
Fig. 6-3.5.3-1 Flow Chart to Assist in Determination of Applicable Section of Derrick Operation Near Electric Power Lines

- Verify derrick placement is in accordance with approved plans.
- Verify the derrick is configured in accordance with approved plans.
- Identify the dimensions of the load(s), rigging and rigging accessories.
- Define the area around the derrick through the full range of rotation up to the derrick’s maximum reach.

Power lines in vicinity?
- No
- Not applicable
- Yes

Power lines Deenergized?
- No
- 6-3.5.3.2 or 6-3.5.3.3
- Yes

Power Line Voltage Known?
- No
- Contact Utility Company – Voltage Provided?
  - No
  - Use Table 6-3.5.3.1 to establish specified clearance
  - Yes
  - Use 6-6-3.5.3.1(2) to establish specified clearance
- Yes

Operation is within specified clearance?
- No
- Operation is below power line?
  - No
  - Operation where derrick can reach specified clearance?
    - No
    - 6-6-3.5.3.4
    - Yes
    - 6-6-3.5.3.5
    - Yes
    - 6-6-3.5.3.6

Any changes that affect the configuration or any part of the lift plan shall require re-evaluation.
Fig. 6-3.5.3-1  Specified Clearance Around an Electric Power Line  Danger Zone for Derricks and Lifted Loads Operating Near Electrical Transmission Lines

NOTE:
(1) For minimum radial distance of danger zone the specified clearance around an energized electric power line, see para. 6-3.5.3.1(a) and Table 6-3.5.3-1.
### Table 6-3.5.3-1

**Specified Required Clearance for Normal Voltage in Operation Near High-Voltage in the Vicinity of Energized Power Lines**

<table>
<thead>
<tr>
<th>Normal Voltage, kV (Phase to Phase)</th>
<th>Minimum Required Specified Clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>When Operating Near High Voltage Power Lines</td>
<td>ft</td>
</tr>
<tr>
<td>Up to 50</td>
<td>10</td>
</tr>
<tr>
<td>Over 50 to 200</td>
<td>15</td>
</tr>
<tr>
<td>Over 200 to 350</td>
<td>20</td>
</tr>
<tr>
<td>Over 350 to 500</td>
<td>25</td>
</tr>
<tr>
<td>Over 500 to 750</td>
<td>35</td>
</tr>
<tr>
<td>Over 750 to 1,000</td>
<td>45</td>
</tr>
<tr>
<td><strong>Over 1,000</strong></td>
<td><strong>Determine specified clearance after consultation with utility owner/operator</strong></td>
</tr>
</tbody>
</table>

**While in Transit With No Lead and Boom or Mast Lowered**

<table>
<thead>
<tr>
<th>Voltage Range</th>
<th>Minimum Required Specified Clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 0.75</td>
<td>4</td>
</tr>
<tr>
<td>Over 0.75 to 50</td>
<td>6</td>
</tr>
<tr>
<td>Over 50 to 345</td>
<td>10</td>
</tr>
<tr>
<td>Over 345 to 750</td>
<td>16</td>
</tr>
<tr>
<td>Over 750 to 1,000</td>
<td>20</td>
</tr>
</tbody>
</table>

**Figure 6-3.5.3-3 Electric Power Line Support Structures**

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**Draft - B30.6 Derricks**
The following is the existing wording of 6-3.5.4 to be deleted. It is included for reference.  
Note: paragraph numbering is corrected to match the published version.

6-3  Operation
6-3.5:  MISCELLANEOUS
6-3.5.3  Operating Near Electric Power Lines

(a) Derricks shall be operated so that no part of the derrick or load enters into the danger zone shown in Fig. 6-3.5.3-1.

EXCEPTIONS:
The danger zone may be entered if the electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work.
The danger zone may be entered if insulating barriers (not a part of or an attachment to the derrick) have been erected to prevent physical contact with the lines.

(1) For lines rated 50 kV or below, minimum clearance between the lines and any part of the derrick or load shall be 10 ft (3.0 m).

(2) For lines rated over 50 kV, minimum clearance between the lines and any part of the derrick or load shall be 10 ft (3.0 m) plus 0.4 in. (10.2 mm) for each 1 kV over 50 kV, or use twice the length of the line insulator, but never less than 10 ft (3.0 m) (see Table 6-3.5.3-1).

(3) Caution shall be exercised when working near overhead lines because they can move horizontally or vertically due to wind, moving the danger zone to new positions.

{ previously deleted (4) } In transit with no load and boom lowered, the clearance shall be a minimum of 4 ft (1.2 m) (see Table 6-3.5.3-1).

(4) A qualified signal person shall be assigned to observe the clearance and give warning before approaching the above limits.

(b) If cage-type boom guards, insulating links, or proximity warning devices are used on derricks, such devices shall not be considered a substitute for the requirements of (a) above, even if such devices are required by law or regulation. Limitations of such devices shall be understood by the operating personnel and tested in the manner prescribed by the manufacturer of the device.

(c) Before the commencement of operations near electrical lines, the person responsible for the job shall notify the owners of the lines or their authorized representatives, providing them with all pertinent information and requesting their cooperation.

(d) Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical-utility authorities verify that it is not an energized line.

(e) Exceptions to this procedure, if approved by the owner of the electrical lines, may be granted by the administrative or regulatory authority if the alternate procedure provides protection and is set forth in writing.

(f) Durable signs shall be installed at the operator’s station and on the outside of the derrick, warning that electrocution or serious bodily injury may occur unless a minimum clearance of 10 ft (3.0 m) is maintained between the derrick or the load being handled and energized power lines. Greater clearances are required because of higher voltage as stated in (a)(2) above. These signs shall be revised but not removed when local jurisdiction requires greater clearances.
Rational - Change in addition to Ballot 18-3732 Record 18-2945 related to operation near electric power lines adding new paragraph 6-3.5.3.1(h)(5) to address powerline sag and movement due to wind.

Black text is existing language from current edition for the section being revised and other related sections (except as noted) as needed for understanding of the proposed changes. Green text is explanation of the proposed changes for committee use only. Brown text is previously balloted changes.

6- DERRICKS
6-3 Operation
6-3.5 MISCELLANEOUS
6-3.5.3 Derrick Operation in the Vicinity of Electric Power Lines

6-3.5.3.1 General. This Volume recognizes that derrick operation, including load handling, erecting, dismantling, inspecting and maintaining derricks where they can become energized by electric power lines can be extremely hazardous. When working in the vicinity of electric power lines, the requirements below shall be followed to address the hazard. Figure 6-3.5.3-2 illustrates the specified clearance around an energized electric power line.

   { text omitted }

   (h) Before beginning operations, the Site Supervisor shall ensure that:

   (1) The derrick has been configured and located as planned and verified to be correct.

   (2) The area around the derrick through the full range of rotation has been defined up to the maximum reach.

   (3) The dimensions of the load(s) and rigging that will be used have been identified.

   (4) A preliminary determination is made if any part of the derrick, load line, rigging, or load, if operated at the derrick’s maximum reach has the capability to get closer than the specified clearance.

   (5) The evaluation of the maximum reach relative to the power line minimum clearance distance shall include consideration of sag, wind and other changing conditions.

   (5) (6) The Lift Director has the information contained in 6-3.5.3.1 (h)(1) through (h)(4)(5)(4).

   (i) The Lift Director shall re-evaluate the information contained in 6-3.5.3.1(h)(1) through (h)(5)(4) whenever changes that affect the configuration or the lift plan are required during operation.

6-3.5.3.2 Operation in the Vicinity of Deenergized and Grounded Electric Power Lines, except for insulated power lines. { text omitted }