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437-007-0600 Inspection and General Requirements for Rigging.

(1) A competent person must thoroughly inspect all:

(a) Blocks, butt rigging, shackles and other rigging for damaged, cracked or worn parts, loose nuts and bolts, and the need for lubrication before they are used.

(b) Wire rope (running lines), skylines, chokers, straps and guylines before they are used.

(2) Repairs or replacements must be made before the blocks, butt rigging, shackles, other rigging, guylines, or straps are used.

(3) Rigging and loads must not foul or saw against lines, straps, blocks, or other equipment when in use.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.
OR-OSHA Admin. Order 3-2004, f. 6/7/04, ef. 6/7/04.

437-007-0605 Out-of-Service Requirements for Wire Rope.

(1) Wire rope must be repaired (spliced), re-socketed, or taken out of service when there is:

(a) Evidence of chafing, sawing, crushing, kinking, crystallization, bird-caging, corrosion, heat damage, or other damage that has weakened the rope structure, or

(b) One or more broken wire(s) at the base of a poured nubbin or end fitting, or

(c) Corroded, damaged, or improperly applied end connections, or

(d) 12 1/2 percent of the wires are broken within a distance of one lay.

EXCEPTION: *Out-of-service requirements do not apply to chokers, grapple opening lines, tag lines, cat and skidder winch lines, and droplines that are not used to move the carriage. However, in accordance with 437-007-0600, a competent person must inspect these cables daily and remove from service any that are unsafe.*

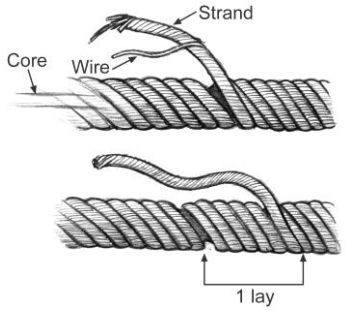


Figure 7-1 – Wire Rope Out-of-Service

EXAMPLE 1: A 6 x 19 Independent Wire Rope Core (IWRC) wire rope must be removed from service when 14 broken wires are found within the distance of one wire rope lay. [6 strands with 19 wires = 114 x 0.125 (12 1/2%) = 14.25]

EXAMPLE 2: A 6 x 25 IWRC wire rope must be removed from service when 19 broken wires are found within the distance of one wire rope lay. [6 strands with 25 wires = 150 x 0.125 (12 1/2%) = 18.75]

(2) Oversized trailer lift straps must be removed from service when the strap no longer has a breaking strength equal to five times the load to be lifted.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.
OR-OSHA Admin. Order 3-2004, f. 6/7/04, ef. 6/7/04.

437-007-0610 Line Cutting and Splicing.

(1) Hard hammers must not be used when splicing or cutting wire rope with a wire axe.

(2) Eye protection must be used when cutting lines.

(3) Marlin spikes (needles) must be used when splicing.

(4) Short splices, eye-to-eye splices, cat's paws, and knots are prohibited except when used to move nonload-bearing lines.

(5) Knots may be used on single drum tractor winch lines, grapple pickup lines and carriage droplines when the knot is tied on the end of the dropline/pickup line. The knot must be pulled as tight as possible and the ends trimmed in accordance with Table 7-2.

(6) Eye splices in wire rope 1/2-inch or less in diameter must be tucked at least two times when used as haywire (strawline).

(7) Eye splices in all regular lay lines and straps must be tucked at least three times.

(8) Eye splices in lang lay lines must be tucked at least four times.

(9) When flemish (rolled) eye splices are used on load bearing lines, the strand ends must be secured by:

(a) Hand tucking each strand three times, or

(b) Applying a compression fitting (pressed eye fittings).

(10) Long splices must be used for permanently joining regular lay running line.

Exception: When using mechanical slack pulling carriages, jump splices may be used to connect the main and slack pulling lines, and tucked splices may be used to attach drop lines to main lines only if the:
1. Crew members are notified of the splices being used.
2. Yarder boom sheaves are of the Tommy Moore type.
3. Splices are on the yarder side of the carriage.
4. Lines are arranged so splices do not go through the carriage.
5. Spliced strands are trimmed at 6 inches.
6. Splices are inspected at least once daily for signs of excessive wear or failure.
7. Defective splices are immediately repaired (spliced) or removed from service.
8. Jump splices connecting main and slack pulling lines are between 30 inches and 48 inches long and tucked at least three times.
9. Splices attaching drop lines to main lines are tucked at least three times.

(11) Follow Table 7-1 for the length of line strand to unravel to make a long splice in wire rope. The full length of the splice must be twice the length of the unraveled rope.

Table 7-1
Length of Wire Rope to Unravel When Long Splicing

Rope Diameter	Unravel	Rope Diameter	Unravel
3/4-inch	15 feet	1 3/8-inch	28 feet
7/8-inch	18 feet	1 1/2-inch	30 feet
1-inch	20 feet	1 5/8-inch	33 feet
1 1/8-inch	23 feet	1 3/4-inch	35 feet
1 1/4-inch	25 feet	2 inches	40 feet

(12) Wire strand ends must be trimmed to the length shown in Table 7-2.

Table 7-2
Trimmed Length For Wire Rope Strand Ends

Wire Rope Diameter	Length Of Strand Ends
up to 5/8-inch	2 inches
3/4 to 1-inch	6 inches
1 1/8-inch and larger	8 inches

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0615 Pressed Eyes and End Fittings.

(1) Pressed eyes must not be used for skyline eyes that will be crossed with loaded carriages.

(2) Quick nubbins must not be used as guyline and skyline end fittings.

(3) For rigging made up after December 1, 2003, standard sized ferrules must be used when nubbins are poured on wire rope that exceeds the rated breaking strength of 1 1/8-inch diameter extra improved plow steel.

(4) Poured nubbin ferrules must be stamped with the date they were poured.

(5) The recommendations of the manufacturer must be followed in attaching sockets and similar end fastenings.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.
OR-OSHA Admin. Order 3-2004, f. 6/7/04, ef. 6/7/04.

437-007-0620 Cable Clamps.

(1) The use of cable clips or clamps for joining lines is prohibited, except where used for transferring slack lines from one place to another.

Figure 7-2
Wire Rope U-Bolt Clip

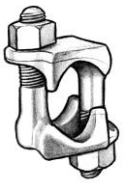


Figure 7-3
Wire Rope Fist Grip Clip

(2) When U-bolt wire rope clips are used, the following requirements apply:

(a) When used for eye splices, the U-bolt wire rope clip must be attached so that the “U” section is in contact with the dead or short end of the rope;

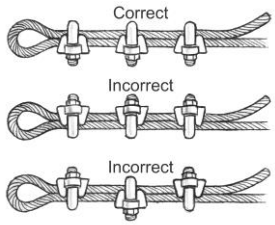


Figure 7-4 – U-Bolt Clip Installation

(b) U-bolt wire rope clips must be spaced at least six rope diameters apart to obtain the maximum holding power. Nuts must be tightened evenly and tightened again after application of the first sustained load. After the rope has been used and is under tension, the clips must be tightened again to take up any looseness caused by the tension reducing the rope diameter;

(c) When high strength wire rope is used, one more U-bolt wire rope clip must be added for each grade above improved plow steel; and

(d) U-bolt wire rope clips must not be used to form eyes on running lines, skylines, or straps.

(3) When U-bolt wire rope clips are used to form eyes, Table 7-3 must be used to determine the number and spacing of clips.

TABLE 7-3
NUMBER AND SPACING OF U-BOLT WIRE ROPE CLIPS

Improved Plow Steel Rope Diameter In Inches	Drop Forge Number of Clips	Other Material Number of Clips	Minimum Spacing In Inches
3/8 to 5/8	3	4	3 3/4
3/4	4	5	4 1/2
7/8	4	5	5 1/4
1	5	6	6
1 1/8	6	6	6 3/4
1 1/4	6	7	7 1/2
1 3/8	7	7	8 1/4
1 1/2	7	8	9

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0625 Mollies.

(1) Mollies must not be used to connect eyes of load-bearing lines.

(2) Mollies or cold shuts must not be used in butt rigging as a load-bearing connection.

(3) The use of mollies for attaching guylines is prohibited.

(4) Mollies must be rolled in with the lay of the line.

(5) Mollies, latchpins, or cotterkeys must be large enough to retain the shackle pin.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0630 Connectors.

(1) Guyline extensions must be connected by:

(a) A shackle using a safety pin connecting spliced and/or pressed eyes, or

(b) Poured nubbins and a double-end hook.

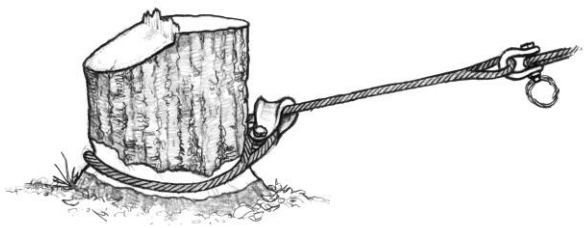


Figure 7-5 – Guyline Connectors – Spliced Eyes

Figure 7-6 – Guyline Connectors – Poured Nubbins

(2) Guyline extension connectors must have at least 1 1/2 times the strength of the guyline.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0635 Shackles.

(1) Shackle pin diameter must be:

(a) 1/8-inch larger than the indicated shackle size for shackles up to 1 3/4 inches.

(b) 1/4-inch larger than the indicated shackle size for shackles 1 3/4-inch up through 3 inches.

(2) Replacement shackle pins must meet the manufacturer's original specifications for strength and design for the size of shackle being used.

(3) Shackle pins and nuts must be replaced when the threads are worn or stripped.

(4) Worn shackle pins must be replaced when the original diameter is reduced by 15 percent.

(5) The opening size between the jaws of shackles used to hang blocks, jacks, rigging, and join or attach lines, cannot be more than 1-inch greater than the size of the line, swivel, shackle, or similar device to which it is attached.

(6) Safety pins must secure shackles used to hang blocks, jacks, or rigging on trees, anchor guylines and join guyline or deadman strap eyes.

Figure 7-7 – Shackle – Safety Pin

(7) When skylines are attached with a shackle using a knockout pin, the pin must be one size larger than the skyline and secured with a molly, latchpin, or cotterkey. (See Figures 7-8 and 7-9.)

(8) Sleeve shackles or choker bells must be used where choked lines are permitted.

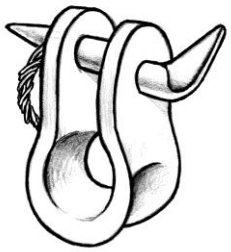


Figure 7-8
Shackle – Sleeve with Knockout Pin

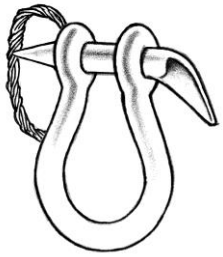


Figure 7-9
Shackle – Bell with Knockout Pin

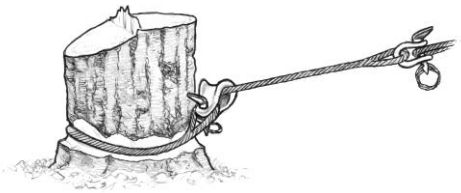


Figure 7-10 – Skyline
Attachments with Knockout Pins

Figure 7-11 – Shackle –
Sleeve with Safety Pin

(9) When a line is passed around an anchor without the use of a strap, the shackle pin must be inserted through the line eye and the “U” part of the shackle placed around the bight of the line.

(10) Sleeve shackles must not be used to join two or more eyes together.

(11) A flush pin, straight-sided shackle must be used to connect the eyes of lines if:

(a) The shackle will be crossed by a sheave, or

(b) A sheave will be crossed by the shackle.

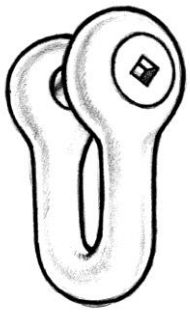


Figure 7-12 – Shackle – Flush Pin, Straight Side

(12) When shackles are crossed by carriages, the pin must be facing the landing.

(13) Shackles used to join three or more lines must be hung with the:

(a) Pin through the single eye.

(b) "U" part through two or more line eyes.

(14) When attaching a guyline, mainline, or skyline eye to two or more strap eyes, the:

(a) Shackle pin must be placed through the guyline, mainline, or skyline eye.

(b) "U" part of the shackle must be placed through the strap eyes.

(15) After a strap is passed around an anchor and the two eyes are contained in the "U" part of the shackle, the angle created by the strap eyes must not be greater than 90 degrees.

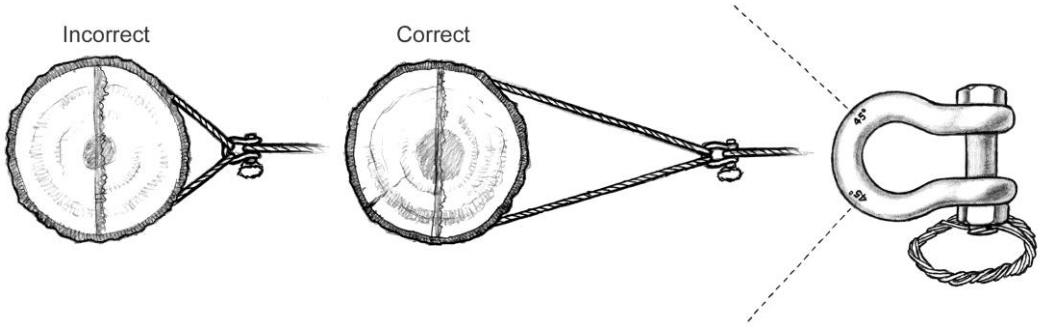


Figure 7-13 – Shackle – Straps within 90 Degrees

NOTE: If the angle created by the strap eyes is greater than 90 degrees, the strap is too short. The shackle containing the strap eyes should be hung at least half the diameter of the anchor away from the anchor.

(16) Shackles used to connect tipping plate anchor lines to the eye of a guyline, mainline, or skyline must be:

(a) 1/8-inch larger than the largest line.

(b) Rated for a load equal to or greater than the expected working load.

(c) Large enough to accommodate all line eyes.

(17) Shackles attached to tipping plate anchors must have the shackle pins inserted through the anchor pad-eyes.

(18) A shackle must have a rated breaking strength greater than the rated breaking strength of the line that they are used with.

(19) The manufacturer's rated breaking strength of shackles must be used in determining oversize requirements when the make, size and steel classification of the shackle can be identified.

(20) Shackles listed in Tables 7-4, 7-5 and 7-6 must be made of alloy steel which develops 120,000 PSI ultimate tensile strength or better.

NOTE: Shackles sizes are listed for extra improved plow steel wire rope.

(21) The minimum size of shackles required to hang or attach single sheave blocks or jacks are shown in Table 7-4.

Table 7-4
Bell Shaped and Sleeve Shackles Used to Hang or Attach Single Sheave Blocks or Jacks

Wire Rope Size In Inches	Shackle Size In Inches	Wire Rope Size In Inches	Shackle Size In Inches
1/2	3/4	1	1 3/8
9/16	7/8	1 1/8	1 1/2
5/8	7/8	1 1/4	1 3/4
3/4	1 1/8	1 3/8	1 7/8
7/8	1 1/8	1 1/2	2 1/4

(22) The minimum size of shackles required for joining or attaching lines are shown in Table 7-5.

Table 7-5
Bell Shaped and Sleeve Shackles Used to Join or Attach Lines

Wire Rope Size In Inches	Shackle Size In Inches	Wire Rope Size In Inches	Shackle Size In Inches
1/2	5/8	1	1 1/4
9/16	3/4	1 1/8	1 3/8
5/8	7/8	1 1/4	1 1/2
3/4	1	1 3/8	1 5/8
7/8	1 1/8	1 1/2	2

(23) The minimum size of flush pin straight-sided shackles for joining or attaching skyline extensions are shown in Table 7-6.

Table 7-6
Flush Pin Straight-Sided Shackles Used for Attaching Skyline Extensions

Wire Rope Size In Inches	Shackle Size In Inches	Wire Rope Size In Inches	Shackle Size In Inches
1/2	5/8	1	1 1/8
9/16	3/4	1 1/8	1 1/4
5/8	3/4	1 1/4	1 3/8
3/4	7/8	1 3/8	1 1/2
7/8	1	1 1/2	1 5/8

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0640 Metal Spar Guyline Safety Straps.

(1) A guyline safety strap or equivalent device must be installed at the top of metal spars to prevent guylines from falling vertically more than 5 feet in case of structural or mechanical failure of the guyline attachment.

(2) Metal spar guyline safety straps or equivalent devices must be equal to the individual strength of any guyline being used.

(3) The ends of metal spar guyline safety straps must be connected to each other, or installed per manufacturer's instructions.

NOTE: Two eyes secured with a shackle or two poured nubbins secured in a connector are acceptable for the connections.

(4) The use of cable clips or clamps for joining the ends of metal spar guyline safety straps is prohibited.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.
OR-OSHA Admin. Order 2-2005, f. 5/27/05, ef. 6/1/05.

437-007-0645 Chokers and Straps.

(1) In highlead logging, chokers must be at least one size smaller than the mainline.

(2) Straps must be equivalently sized for the line they support, e.g., Extra Improved Plow Steel (EIPS) line requires EIPS straps or equivalent strength material.

(3) Straps or chokers used at or near the ground to hang or support blocks, jacks, tree shoes, or rigging must be sized in accordance with Table 7-7.

Table 7-7
Strap Sizes For Rigging At Or Near The Ground

Skyline or Running Line Size In Inches	Block Hung In Both Eyes	Block Hung In Single Eye	Skyline or Running Line Size In Inches	Block Hung In Both Eyes	Block Hung In Single Eye
5/16	1/4	1/2	7/8	7/8	1 1/4
3/8	1/4	9/16	1	1	1 3/8
7/16	5/16	5/8	1 1/8	1	not permitted
1/2	3/8	3/4	1 1/4	1	not permitted
9/16	7/16	7/8	1 3/8	1	not permitted
5/8	5/8	1	1 1/2	1 1/8	not permitted
3/4	3/4	1 1/8	1 5/8	1 1/4	not permitted

(4) Straps or chokers used to hang or support blocks, jacks, tree shoes, or rigging in tail and intermediate trees must be sized in accordance with Table 7-8.

Table 7-8
Strap Sizes For Rigging Hung In Tail and Intermediate Support Trees

Skyline Or Running Line Size In Inches	Block Hung In Both Eyes	Block Hung In Single Eye**
5/16	1/4	5/16
3/8	1/4	3/8
7/16	5/16	3/8
1/2	5/16	1/2
9/16	3/8	1/2
5/8	3/8	9/16
3/4	1/2	3/4
7/8	9/16	3/4
1	5/8	7/8
1 1/8	3/4	1
1 1/4	3/4	1 1/8
1 3/8	7/8	not permitted
1 1/2	1	not permitted
1 5/8	1	not permitted
2	1 1/8	not permitted

NOTE: Flat angle on skyline through block or jack.

(5) When a two part strap or two chokers are used to hang a block, jack, tree shoe, or rigging both eyes or ends must be under approximately equal tension.

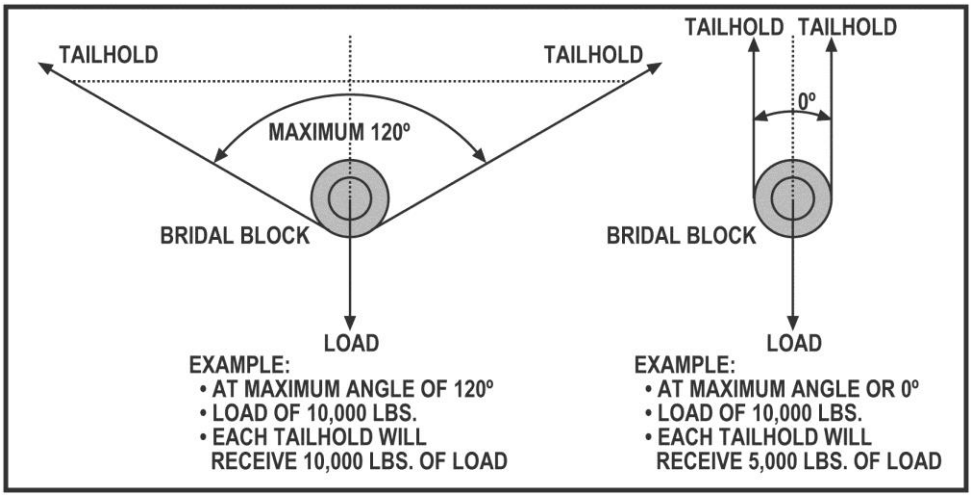


Figure 7-15 – Straps – Line Tension Bridal

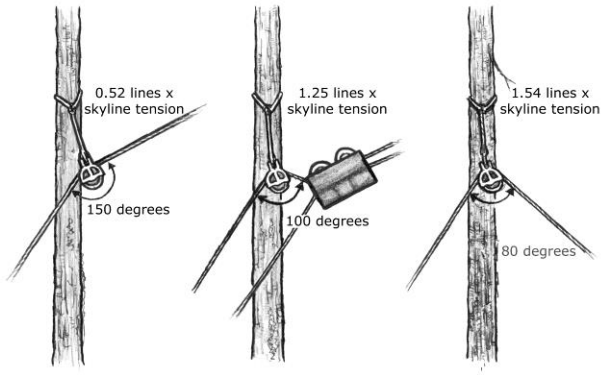
(6) When two equal length chokers are used to hang a block, jack, tree shoe, or rigging in lieu of one choker to gain extra breaking strength, they must be:

(a) Arranged as a swede-type connection.

(b) Considered as a block hung in two eyes for Table 7-8.

(7) For straps hung in trees where the interior angle or angles create excessive loading on the strap as shown in Figure 7-14 additional precautions must be taken, such as using a larger strap, lightening loads, moving the carriage ahead on the line, and so forth to reduce the load on the strap.

Figure 7-14 – Straps – Line Tension



(8) Straps made of synthetic materials must be arranged so the straps cannot ride up or down from their intended position.

(9) Straps made of synthetic materials must be used and replaced in accordance with the manufacturer's recommendations.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0650 Guylines – General Requirements.

(1) Splicing of guylines is prohibited except to make an eye.

(2) Guylines used to stabilize logging machines must be at least of the size, strength and number recommended by the machine manufacturer.

(3) Load-bearing guyline angles must not be greater than 50 degrees measured horizontally or that recommended by the machine manufacturer. If suitable anchors are not available or the terrain is so steep that the guyline angle exceeds 50 degrees or the machine manufacturer's recommendation, additional precautions must be taken, such as rearranging guylines to oppose the load, adding an additional guyline to oppose the load, or narrowing yarding roads.

(4) Tail and intermediate support tree guylines must be:

(a) Arranged and adjusted so they share the load when lines are tensioned.

(b) Kept securely tightened during the yarding process.

(c) Made of the same strength material as the line hung in the tree or larger size guylines must be used to provide the same relative strength.

> ***Example:*** *In 437-007-0650(4)(c), a 1-inch swaged skyline requires guylines equivalent in strength to 5/8-inch swaged guylines.*

(5) When using tail or intermediate support trees and the line hung in the tree is:

(a) 5/8-inch or less, guylines must be at least 3/8-inch.

(b) Greater than 5/8-inch and less than 1-inch, guylines must be at least 1/2-inch.

(c) 1-inch and larger, guylines must be at least 5/8-inch.

(6) A skyline must not be considered a guyline.

(7) Machines and equipment used for yarding that are specifically designed to be self-stabilizing during operation may be used without guyline(s).

NOTE: Hydraulic excavator-based log loading machines may yard logs without using guylines.

(8) Guylines made of synthetic materials, including the end connectors, must have the equivalent strength capacities of wire rope.

(9) The manufacturer's recommendations for out-of-service requirements of synthetic materials must be followed.

(10) When guylines are required for towers they must be positioned according to Appendix 7-I, Figure 7-39 through Figure 7-50.

(11) Tail or intermediate support tree guylines must not be pretensioned beyond the point of tree stability before the load is applied. (See Figure 7-18.)

(12) Trees and unintentional siwashes must not interfere with the proper alignment, placement, or tightening of guylines.

(13) Guylines must be hung in a manner to prevent a bight or fouling when they are tightened.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.
OR-OSHA Admin. Order 3-2004, f. 6/7/04, ef. 6/7/04.
OR-OSHA Admin. Order 2-2005, f. 5/27/05, ef. 6/1/05.

437-007-0655 Guylines - Tail Tree Guying.

(1) Except as provided for in rule (2) and (5) of this section, a minimum of two guylines must be used on tail trees and located within guying zones to oppose the forces as shown in Figure 7-16 (azimuths 130-150 and 210-230 degrees).

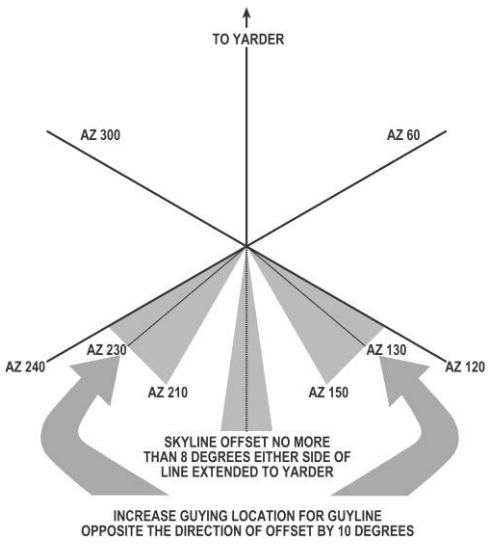


Figure 7-16 – Guylines – Tail Trees

(2) When the angle of the lines between the tail tree and a tail hold produces an offset of more than 8 degrees between the lines as they enter and leave the tail tree, then at least three guylines are required.

(3) If a suitable anchor is not available within a specified guying zone, two guylines may be used in lieu of one guyline for that zone, provided a guyline is placed on both sides of, and as near as possible, to the affected guying zone.

(4) When additional guylines are needed in a tree, they must be placed to oppose the yarding forces.

(5) Guylines are not required when at the point of rigging attachment the tail tree does not move more than its diameter in the direction of load as shown in Figure 7-18 and the:

(a) Tail tree is not within reach of workers.

(b) Resulting line movement would not pose a hazard to workers if the tail tree failed.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.
OR-OSHA Admin. Order 3-2004, f. 6/7/04, ef. 6/7/04.

437-007-0660 Intermediate Support Trees.

(1) Intermediate support trees must be rigged so:

(a) Horizontal carriage clearance at the base of the intermediate support tree(s) is sufficient for the turn of logs to pass the support tree(s).

(b) The jackline is a single piece of line that provides strength equal to a line 1/8-inch larger than the tong or skidding line. (Figures 7-17, 7-19 and 7-20.) Extensions may be attached to the anchor end of the jack-line.

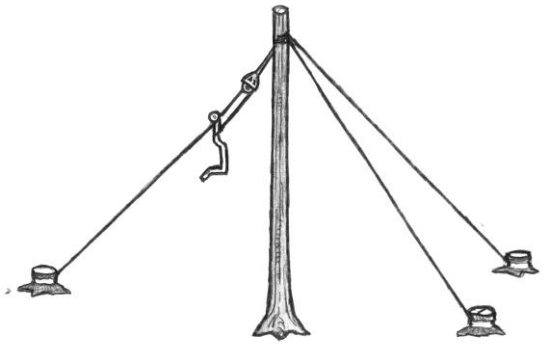


Figure 7-17 – Intermediate Support Tree – Vertical

(2) Vertical support trees must be firmly rooted.

(3) The base of all leaning tree supports must be prevented from moving by:

(a) Retaining 20 percent of the stump diameter in holding wood; or

(b) Other suitable rigging arrangements.

(4) Single tree intermediate supports must be guyed as follows:

(a) For skylines 1-inch and smaller use the rigging configuration in Figure 7-17:

(A) No guylines are required when at the point of rigging attachment the tree does not move more than its diameter in the direction of load as shown in Figure 7-18.

(B) If the tree moves more than one diameter at the point of rigging attachment, then a guyline of the size called for in 437-007-0650(4) must be rigged to oppose the yarding forces.

Figure 7-18 –Tail and Intermediate Support Tree Stability

(b) For all skylines larger than 1-inch and for skylines rigged as in Figure 7-17.

(A) Two guylines are needed of the sizes called for in 437-007-0650(4)(c).

(B) The guylines must be rigged according to 437-007-0655(4) if the tree is not stable according to Figure 7-18.

(c) For all leaning tree intermediate supports using the rigging configuration of Figure 7-19, a minimum of three guylines must be used.

(A) Two guylines of the sizes called for in 437-007-0650(4)(c) must be rigged according to Appendix 7-I, Figure 7-42.

(B) A snap guyline of at least 3/8-inch diameter must be placed opposite the two load-bearing guylines.

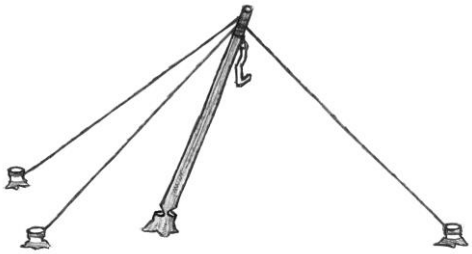


Figure 7-19 – Intermediate Support Tree – Leaning

(5) Double tree supports must be rigged (see Figure 7-20) so the:

(a) Angle of the block to the center of the support line:

(A) Is 10 degrees in any direction when skylines 1 1/8-inch and smaller are used, or

(B) Has deflection in the direction of the jack which does not exceed 10 degrees when skylines larger than 1 1/8-inch are used.

(b) Loaded support trees do not displace more than 2 feet at the point of rigging attachment.

(c) Minimum and maximum heights of the jack relative to the height of the block is as shown below for double tree intermediate support systems.

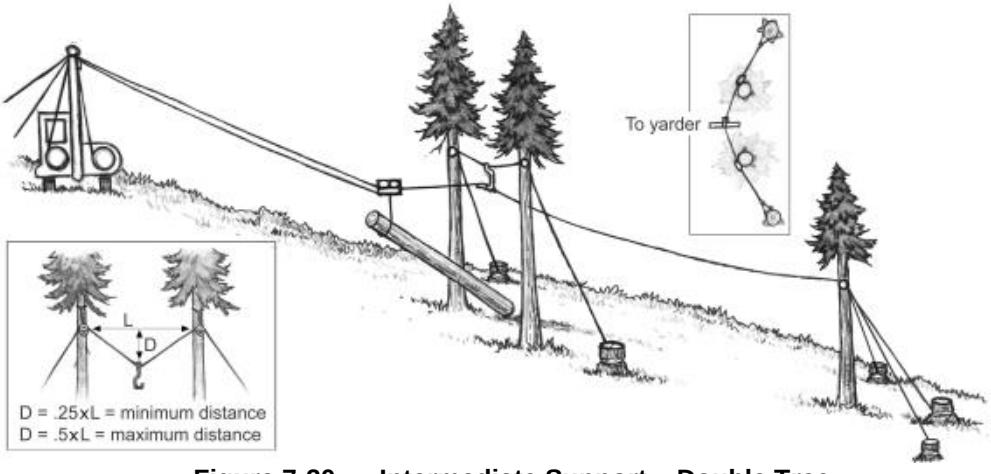


Figure 7-20 – Intermediate Support – Double Tree

(6) Double tree supports must be guyed as follows:

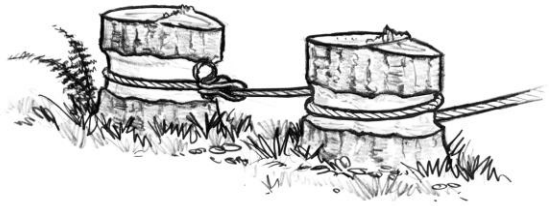
(a) For skyline sizes equivalent to 1 1/8-inch improved plow steel (IPS) and less, no guys are required;

(b) For skyline sizes equivalent to those larger than 1 1/8-inch IPS as shown in Appendix 7-I, Figure 7-39.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.
OR-OSHA Admin. Order 3-2004, f. 6/7/04, ef. 6/7/04.
OR-OSHA Admin. Order 2-2005, f. 5/27/05, ef. 6/1/05.

437-007-0665 Anchoring.

(1) A competent person must carefully choose skyline, guyline and running line anchors for position and strength.



7. Figure 7-21 – Stump Tie Back Anchor

(2) A competent person must inspect anchors while the operation is in progress. When necessary, anchors must be tied back or changed.

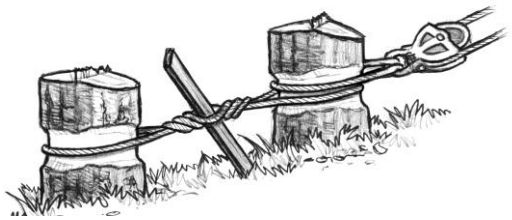


Figure 7-22 – Stump Twister Anchor

(3) Unstable yarder guyline anchors must be immediately corrected.

(4) Stump anchors must be notched to a depth not greater than is necessary to safely secure the line to the stump.

(5) Deadman anchors must have:

(a) Straps or lines equal in strength to the guyline, skyline, or mainline to attach the line to a deadman.

(b) Deadman anchor strap or line connectors visible for inspection.

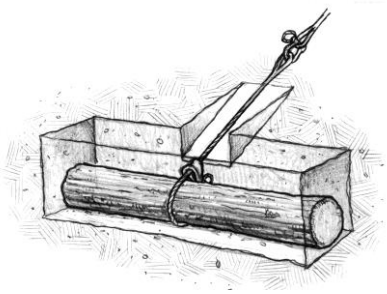


Figure 7-23 – Deadman Anchor

(6) When a standing tree is used as an anchor:

(a) The line or strap must be attached to the base of the tree.

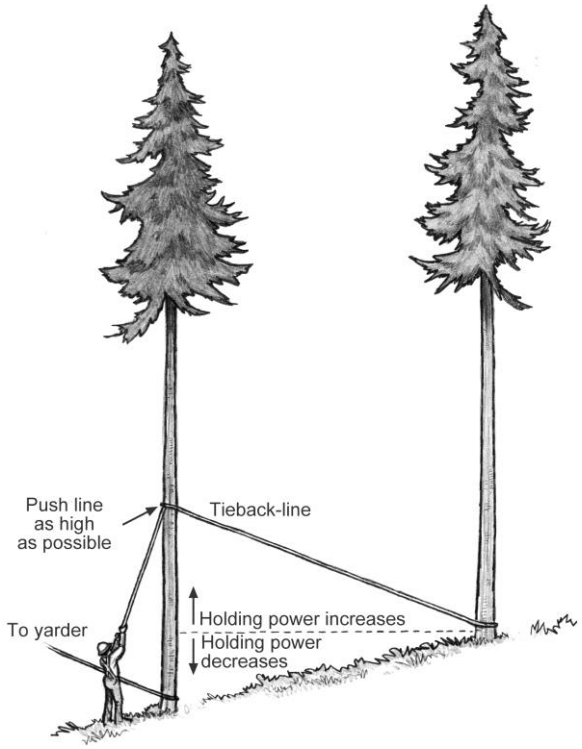


Figure 7-24 – Tree Tie Back Anchor

(b) The tree must be tied back if it is within reach of any worker, the landing area, or haul road.

NOTE: *In some cases, the base of a standing tree(s) that is used as an anchor may also need to be tied-back.*

(c) Affected personnel must be notified of the standing tree anchor and the potential failure zone.

NOTE: *See the potential failure zone requirements listed in 437-007-0927(1) through (7).*

(7) The use of machines for anchoring guylines, skylines, or corner blocks must be done only under the supervision of a competent person.

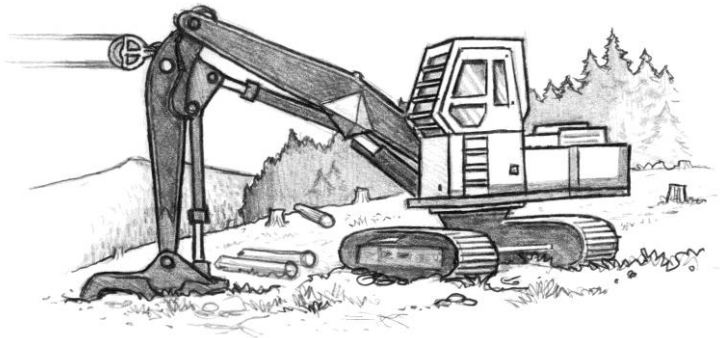


Figure 7-25 – Log Loader Anchor

(a) When determining if the machine is a suitable anchor, the competent person must consider:

(A) The size and weight of the machine.

(B) The size of the line to be attached.

(C) The type of logging system to be used.

(D) The condition of the soil and slope of the ground.

(E) The availability of holding aids, such as road embankments or stumps.

(F) The skyline, guyline, or running line angle from the horizontal and vertical.

(G) Any other factors which would affect the stability of the machine anchor.

(b) Line attachment points on the machine must be determined by a qualified person.

(c) Machines that are used as mobile tail anchors and are stabilized with a guyline(s) must be guyed in accordance with OAR 437-007-0650(1), (2) and (3).

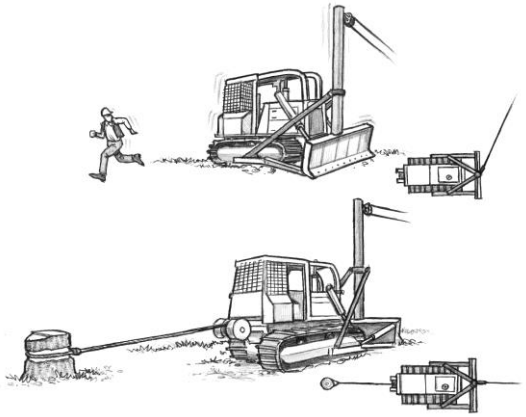


Figure 7-26 – Tailhold Cat Anchor

(8) Rock bolt anchors must be installed, grouted, tested and maintained in accordance with the manufacturer's recommendations.

(9) Artificial earth anchors must be installed and used in accordance with their design specifications and manufacturer's recommendations.

(10) When using tipping plate anchors:

(a) Guylines, skylines, or mainlines must not be directly attached to the anchors.

(b) The combined strength of straps or lines attached to multiple anchors must be equal in strength to the guyline, skyline, or mainline.

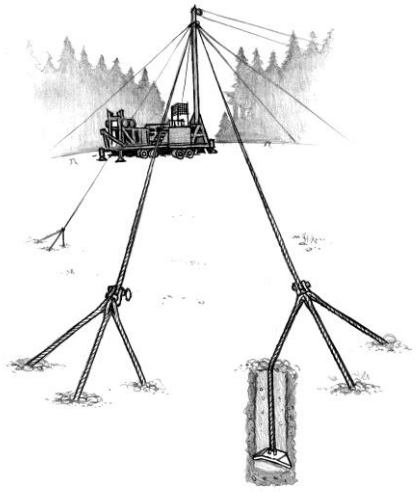


Figure 7-27 – Tipping Plate Anchor

(c) Shackles used to connect straps to the anchors must be secured with a safety pin.

NOTE: *This connection will not be visible for inspection.*

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.
OR-OSHA Admin. Order 2-2005, f. 5/27/05, ef. 6/1/05.

437-007-0670 Spiking and Releasing Spiked Guylines or Skylines.

(1) Spiked guylines or skylines must be anchored with at least two and one-half wraps around the stump. The first wrap must be secured with at least eight spikes or six staples. The second wrap must be secured with at least three spikes. The last, or top wrap, must be secured with eight spikes or six staples. (See Figure 7-28.)

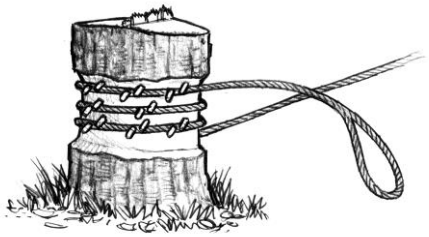


Figure 7-28 – Spiked Guylines and Skylines

(2) All the bark must be removed from the stump where the line is wrapped and spiked.

(3) Employees must not stand close to the stump or tree or in the bight of the lines as the guyline or skyline wraps are being tightened.

(4) When removing spiked guylines or spiked skylines from stumps or trees, a reverse safety wrap (Figure 7-29) must be put on and secured before loosening the last wrap, or the skyline or guyline must be held while the spikes are removed from the last wrap, and snubbed until the tension is relieved.

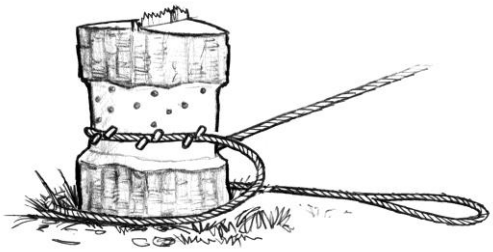


Figure 7-29 – Spiked Guyline Reverse Safety Wrap

(5) A competent person must be in charge of loosening spiked guylines or skylines, using all precautions and giving warning before lines are released. Safety holdbacks must be used when necessary.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0675 Selecting, Preparing and Rigging Trees.

(1) Tail and intermediate support trees must be carefully chosen by a competent person based on position and strength necessary to support the imposed loads.

(2) Raised trees must be identified and marked as such.

(3) Trees must not be topped during windy weather.

(4) At no time must topping, rigging up, or stripping work be done when visibility is impaired.

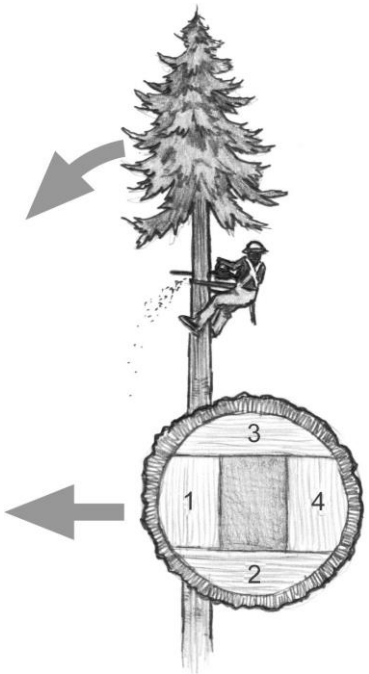


Figure 7-30 – Topping Trees

(5) Loose equipment, rigging, or material must either be removed from the tree or securely fastened.

(6) Skylines with breaking strengths greater than 1-inch IPS (or equivalent) must not be hung in trees where the tree diameter at the point of attachment is less than 12 inches unless precautions are taken to prevent the tree from pinching off.

(7) A skyline must not make an angle greater than 50 degrees measured from the horizontal as it leaves the tail tree unless additional precautions are taken to prevent the tree from failing.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0680 Blocks and Hanging Blocks.

(1) Load-bearing blocks must:

(a) Not be used for lines other than those for which they are constructed.

(b) Be fitted with line guards and be designed and used in a manner that prevents fouling.

(c) Be kept in proper alignment when in use.

(d) Have bearing and yoke pins of a material that will safely withstand the strains imposed and be securely fastened.

(e) Have sheaves of a size designed for the size of the wire rope used.

EXCEPTION: *437-007-0680(b) and (e) do not apply to small rig-up (Tommy Moore) blocks.*

(2) Block bearings must be kept well-lubricated.

(3) Sufficient corner or tail blocks to distribute the stress on anchors and attachments must be used on all logging systems.

(4) Tail, side, or corner blocks used in yarding must be hung in both eyes of straps or in the single eye of a strap or choker that meets the requirements OAR 437-007-0645, Tables 7-7 and 7-8.

(5) The yoke pin of haulback blocks must be inserted with the head facing the direction from which the rigging approaches, when the rigging can reach the block.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.

437-007-0690 Metal Towers.

(1) A competent person must direct the raising and lowering of each metal tower.

(2) All employees not engaged in the actual raising or lowering of metal towers must stay in the clear during these operations.

(3) Metal towers must be level to provide proper line spooling and avoid excessive stress on component parts.

(4) Each metal tower must have an identification plate permanently attached to its base or on the yarder in a position that can be easily read by a person standing on the ground or on the base platform.

(5) All plates must contain the following information:

(a) Name and address of manufacturer and model number; and

(b) The maximum and minimum inclination at which the metal tower is designed to operate.

(6) In addition, all identification plates on metal towers manufactured after July 1, 1980, must contain the following information:

(a) The maximum breaking strength and size of mainline for which the metal tower is designed;

(b) The maximum breaking strength and size of haulback line for which the metal tower is designed;

(c) The number, minimum breaking strength and size of guylines or any other lines required; and

(d) If the metal tower is designed for a skyline, slackline, or modified slackline system, the maximum breaking strength and size of skyline, mainline and haulback line that can be used.

(7) All metal towers must be operated within the manufacturer's capacity:

(a) As specified on the identification plate; or

(b) As modified by the manufacturer; or

(c) As designed and specified by a registered professional engineer.

(8) If wire rope dimensionally larger in size or of a greater breaking strength than that specified by the yarder manufacturer is used for skyline, mainline, skidding line and/or haulback line, one of the following methods for limiting the load on the spar must be used:

(a) A tamper-proof tension limiting device that automatically slacks the line loads (pull) on the metal tower to below its maximum identification plate rating.

(b) A line fuse system installed in the skyline or mainline; or

(c) Established operating procedures that limit line loads (pull) on the metal tower to below the maximum identification plate rating for the metal tower.

(9) When a line fuse system is used to limit line loads (pull) on the metal tower:

(a) The line fuse must have a designed breaking strength equal to or less than the maximum line rating of the metal tower as listed on its identification plate.

(b) The line fuse must be certified and stamped as to the breaking strength.

(c) The skyline or mainline must be hung in a single eye of the fuse link.

(d) Notice must be given to crew personnel that line fuses are in use.

(10) When operating procedures are used to limit line loads (pull) on the metal tower:

(a) They must be observable or verifiable.

(b) Any locking or dogging device on the brake or elsewhere must be removed or deactivated.

(c) Personnel must be knowledgeable about the operating procedures that are in use to limit line loads.

(11) Metal towers and their appurtenances must be inspected by a competent person each time the tower is lowered and at any time its safe condition is in doubt.

(12) When damage from overstress or any other source is noted or suspected, the part in question must be inspected by a suitable method and found to be safe or the part repaired by a qualified person or replaced before the tower is again used.

(13) Structural modifications or additions which affect the capacity or safe operation of metal towers must be made only under the direction of the manufacturer or a registered professional engineer. If such modifications or additions are made, the identification plate required in OAR 437-007-0690(4), (5) and (6) must reflect such changes.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 5-2003, f. 6/02/03, ef. 12/01/03.
OR-OSHA Admin. Order 3-2004, f. 6/7/04, ef. 6/7/04.