

means either the manufacturer's original design or a design approved by a registered professional engineer

(c) Load end attachment methods using splices are prohibited.

**§ 57.19026 Drum end attachment.**

(a) For drum end attachment, wire rope shall be attached—

(1) Securely by clips after making one full turn around the drum spoke;

(2) Securely by clips after making one full turn around the shaft, if the drum is fixed to the shaft; or

(3) By properly assembled anchor bolts, clamps, or wedges, provided that the attachment is a design feature of the hoist drum. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

(b) A minimum of three full turns of wire rope shall be on the drum when the rope is extended to its maximum working length.

**§ 57.19027 End attachment retermination.**

Damaged or deteriorated wire rope shall be removed by cutoff and the rope reterminated where there is—

(a) More than one broken wire at an attachment;

(b) Improper installation of an attachment;

(c) Slippage at an attachment; or

(d) Evidence of deterioration from corrosion at an attachment.

**§ 57.19028 End attachment replacement.**

Wire rope attachments shall be replaced when cracked, deformed, or excessively worn.

**§ 57.19030 Safety device attachments.**

Safety device attachments to hoist ropes shall be selected, installed, and maintained according to manufacturers' specifications to minimize internal corrosion and weakening of the hoist rope.

HEADFRAMES AND SHEAVES

**§ 57.19035 Headframe design.**

All headframes shall be constructed with suitable design considerations to

allow for all dead loads, live loads, and wind loads.

**§ 57.19036 Headframe height.**

Headframes shall be high enough to provide clearance for overtravel and safe stopping of the conveyance.

**§ 57.19037 Fleet angles.**

Fleet angles on hoists installed after November 15, 1979, shall not be greater than one and one-half degrees for smooth drums or two degrees for grooved drums.

**§ 57.19038 Platforms around elevated head sheaves.**

Platforms with toeboards and handrails shall be provided around elevated head sheaves.

CONVEYANCES

**§ 57.19045 Metal bonnets.**

Man cages and skips used for hoisting or lowering employees or other persons in any vertical shaft or any incline shaft with an angle of inclination of forty-five degrees from the horizontal, shall be covered with a metal bonnet.

**§ 57.19049 Hoisting persons in buckets.**

Buckets shall not be used to hoist persons except during shaft sinking operations, inspection, maintenance, and repairs.

**§ 57.19050 Bucket requirements.**

Buckets used to hoist persons during vertical shaft sinking operations shall—

(a) Be securely attached to a crosshead when traveling in either direction between the lower and upper crosshead parking locations;

(b) Have overhead protection when the shaft depth exceeds 50 feet;

(c) Have sufficient depth or a suitably designed platform to transport persons safely in a standing position; and

(d) Have devices to prevent accidental dumping where the bucket is supported by a bail attached to its lower half.

**§ 57.19054 Rope guides.**

Where rope guides are used in shafts other than in shaft sinking operations,