

(A) All control mechanisms for maladjustments;

(B) Control and drive mechanism for excessive wear of components and contamination by lubricants, water or other foreign matter;

(C) Safety devices, including but not limited to boom angle indicators, boom stops, boom kick out devices, anti-two block devices, and load moment indicators where required;

(D) Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those which flex in normal operation;

(E) Hooks and latches for deformation, chemical damage, cracks, or wear;

(F) Wire rope reeving for compliance with hoisting equipment manufacturer's specifications;

(G) Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, or moisture accumulation;

(H) Hydraulic system for proper fluid level;

(I) Tires for proper inflation and condition;

(J) Ground conditions around the hoisting equipment for proper support, including ground settling under and around outriggers, ground water accumulation, or similar conditions;

(K) The hoisting equipment for level position; and

(L) The hoisting equipment for level position after each move and setup.

(i) If any deficiency is identified, an immediate determination shall be made by the competent person as to whether the deficiency constitutes a hazard.

(iii) If the deficiency is determined to constitute a hazard, the hoisting equipment shall be removed from service until the deficiency has been corrected.

(iv) The operator shall be responsible for those operations under the operator's direct control. Whenever there is any doubt as to safety, the operator shall have the authority to stop and refuse to handle loads until safety has been assured.

(2) A qualified rigger (a rigger who is also a qualified person) shall inspect the rigging prior to each shift in accordance with §1926.251.

(3) The headache ball, hook or load shall not be used to transport per-

sonnel except as provided in paragraph (c)(4) of this section.

(4) Cranes or derricks may be used to hoist employees on a personnel platform when work under this subpart is being conducted, provided that all provisions of §1926.1431 (except for §1926.1431(a)) are met.

(5) Safety latches on hooks shall not be deactivated or made inoperable except:

(i) When a qualified rigger has determined that the hoisting and placing of purlins and single joists can be performed more safely by doing so; or

(ii) When equivalent protection is provided in a site-specific erection plan.

(d) *Working under loads.* (1) Routes for suspended loads shall be pre-planned to ensure that no employee is required to work directly below a suspended load except for:

(i) Employees engaged in the initial connection of the steel; or

(ii) Employees necessary for the hooking or unhooking of the load.

(2) When working under suspended loads, the following criteria shall be met:

(i) Materials being hoisted shall be rigged to prevent unintentional displacement;

(ii) Hooks with self-closing safety latches or their equivalent shall be used to prevent components from slipping out of the hook; and

(iii) All loads shall be rigged by a qualified rigger

(e) *Multiple lift rigging procedure.* (1) A multiple lift shall only be performed if the following criteria are met:

(i) A multiple lift rigging assembly is used;

(ii) A maximum of five members are hoisted per lift;

(iii) Only beams and similar structural members are lifted; and

(iv) All employees engaged in the multiple lift have been trained in these procedures in accordance with §1926.761(c)(1).

(v) No crane is permitted to be used for a multiple lift where such use is contrary to the manufacturer's specifications and limitations.

(2) Components of the multiple lift rigging assembly shall be specifically

designed and assembled with a maximum capacity for total assembly and for each individual attachment point. This capacity, certified by the manufacturer or a qualified rigger, shall be based on the manufacturer's specifications with a 5 to 1 safety factor for all components.

(3) The total load shall not exceed:

(i) The rated capacity of the hoisting equipment specified in the hoisting equipment load charts;

(ii) The rigging capacity specified in the rigging rating chart.

(4) The multiple lift rigging assembly shall be rigged with members:

(i) Attached at their center of gravity and maintained reasonably level;

(ii) Rigged from top down; and

(iii) Rigged at least 7 feet (2.1 m) apart.

(5) The members on the multiple lift rigging assembly shall be set from the bottom up.

(6) Controlled load lowering shall be used whenever the load is over the connectors.

[66 FR 5265, Jan. 18, 2001, as amended at 75 FR 48134, Aug. 9, 2010]

§ 1926.754 Structural steel assembly.

(a) Structural stability shall be maintained at all times during the erection process.

NOTE TO PARAGRAPH (a): Federal Highway Administration (FHWA) regulations incorporate by reference a number of standards, policies, and standard specifications published by the American Association of State Highway and Transportation Officials (AASHTO) and other organizations. (See 23 CFR 625.4). Many of these incorporated provisions may be relevant to maintaining structural stability during the erection process. For instance, as of May 17, 2010, in many cases FHWA requires a Registered Engineer to prepare and seal working drawings for falsework used in highway bridge construction. (See AASHTO Specifications for Highway Bridges, Div. II, § 3.2.1, 15th edition, 1992, which FHWA incorporates by reference in 23 CFR 625.4). FHWA also encourages compliance with AASHTO Specifications that the FHWA regulations do not currently incorporate by reference. (See <http://www.fhwa.dot.gov/bridge/lrfd/index.htm>.)

(b) The following additional requirements shall apply for multi-story structures:

(1) The permanent floors shall be installed as the erection of structural members progresses, and there shall be not more than eight stories between the erection floor and the upper-most permanent floor, except where the structural integrity is maintained as a result of the design.

(2) At no time shall there be more than four floors or 48 feet (14.6 m), whichever is less, of unfinished bolting or welding above the foundation or uppermost permanently secured floor, except where the structural integrity is maintained as a result of the design.

(3) A fully planked or decked floor or nets shall be maintained within two stories or 30 feet (9.1 m), whichever is less, directly under any erection work being performed.

(c) *Walking/working surfaces—shear connectors and other similar devices—(1) Tripping hazards.* Shear connectors (such as headed steel studs, steel bars or steel lugs), reinforcing bars, deformed anchors or threaded studs shall not be attached to the top flanges of beams, joists or beam attachments so that they project vertically from or horizontally across the top flange of the member until after the metal decking, or other walking/working surface, has been installed.

(2) *Installation of shear connectors on composite floors, roofs and bridge decks.* When shear connectors are used in construction of composite floors, roofs and bridge decks, employees shall lay out and install the shear connectors after the metal decking has been installed, using the metal decking as a working platform. Shear connectors shall not be installed from within a controlled decking zone (CDZ), as specified in § 1926.760(c)(7).

(d) *Plumbing-up.* (1) When deemed necessary by a competent person, plumbing-up equipment shall be installed in conjunction with the steel erection process to ensure the stability of the structure.

(2) When used, plumbing-up equipment shall be in place and properly installed before the structure is loaded with construction material such as loads of joists, bundles of decking or bundles of bridging.