

## § 1926.751

## 29 CFR Ch. XVII (7–1–12 Edition)

structures; sound barriers; water process and water containment structures; air and cable supported structures; space frames; geodesic domes; canopies; racks and rack support structures and frames; platforms; walkways; balconies; atriums; penthouses; car dumpers; stackers/reclaimers; cranes and craneways; bins; hoppers; ovens; furnaces; stacks; amusement park structures and rides; and artistic and monumental structures.

(b)(1) Steel erection activities include hoisting, laying out, placing, connecting, welding, burning, guying, bracing, bolting, plumbing and rigging structural steel, steel joists and metal buildings; installing metal decking, curtain walls, window walls, siding systems, miscellaneous metals, ornamental iron and similar materials; and moving point-to-point while performing these activities.

(2) The following activities are covered by this subpart when they occur during and are a part of steel erection activities: rigging, hoisting, laying out, placing, connecting, guying, bracing, dismantling, burning, welding, bolting, grinding, sealing, caulking, and all related activities for construction, alteration and/or repair of materials and assemblies such as structural steel; ferrous metals and alloys; non-ferrous metals and alloys; glass; plastics and synthetic composite materials; structural metal framing and related bracing and assemblies; anchoring devices; structural cabling; cable stays; permanent and temporary bents and towers; falsework for temporary supports of permanent steel members; stone and other non-precast concrete architectural materials mounted on steel frames; safety systems for steel erection; steel and metal joists; metal decking and raceway systems and accessories; metal roofing and accessories; metal siding; bridge flooring; cold formed steel framing; elevator beams; grillage; shelf racks; multi-purpose supports; crane rails and accessories; miscellaneous, architectural and ornamental metals and metal work; ladders; railings; handrails; fences and gates; gratings; trench covers; floor plates; castings; sheet metal fabrications; metal panels and panel wall systems; louvers; column covers; enclosures and pockets; stairs; perforated metals; ornamental iron work, expansion control including bridge ex-

pansion joint assemblies; slide bearings; hydraulic structures; fascias; soffit panels; penthouse enclosures; skylights; joint fillers; gaskets; sealants and seals; doors; windows; hardware; detention/security equipment and doors, windows and hardware; conveying systems; building specialties; building equipment; machinery and plant equipment, furnishings and special construction.

(c) The duties of controlling contractors under this subpart include, but are not limited to, the duties specified in §§1926.752 (a) and (c), 1926.755(b)(2), 1926.759(b), and 1926.760(e).

### § 1926.751 Definitions.

*Anchored bridging* means that the steel joist bridging is connected to a bridging terminus point.

*Bolted diagonal bridging* means diagonal bridging that is bolted to a steel joist or joists.

*Bridging clip* means a device that is attached to the steel joist to allow the bolting of the bridging to the steel joist.

*Bridging terminus point* means a wall, a beam, tandem joists (with all bridging installed and a horizontal truss in the plane of the top chord) or other element at an end or intermediate point(s) of a line of bridging that provides an anchor point for the steel joist bridging.

*Choker* means a wire rope or synthetic fiber rigging assembly that is used to attach a load to a hoisting device.

*Cold forming* means the process of using press brakes, rolls, or other methods to shape steel into desired cross sections at room temperature.

*Column* means a load-carrying vertical member that is part of the primary skeletal framing system. Columns do not include posts.

*Competent person* (also defined in §1926.32) means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

*Connector* means an employee who, working with hoisting equipment, is

placing and connecting structural members and/or components.

*Constructibility* means the ability to erect structural steel members in accordance with subpart R without having to alter the over-all structural design.

*Construction load (for joist erection)* means any load other than the weight of the employee(s), the joists and the bridging bundle.

*Controlled Decking Zone (CDZ)* means an area in which certain work (for example, initial installation and placement of metal decking) may take place without the use of guardrail systems, personal fall arrest systems, fall restraint systems, or safety net systems and where access to the zone is controlled.

*Controlled load lowering* means lowering a load by means of a mechanical hoist drum device that allows a hoisted load to be lowered with maximum control using the gear train or hydraulic components of the hoist mechanism. Controlled load lowering requires the use of the hoist drive motor, rather than the load hoist brake, to lower the load.

*Controlling contractor* means a prime contractor, general contractor, construction manager or any other legal entity which has the overall responsibility for the construction of the project—its planning, quality and completion.

*Critical lift* means a lift that (1) exceeds 75 percent of the rated capacity of the crane or derrick, or (2) requires the use of more than one crane or derrick.

*Decking hole* means a gap or void more than 2 inches (5.1 cm) in its least dimension and less than 12 inches (30.5 cm) in its greatest dimension in a floor, roof or other walking/working surface. Pre-engineered holes in cellular decking (for wires, cables, etc.) are not included in this definition.

*Derrick floor* means an elevated floor of a building or structure that has been designated to receive hoisted pieces of steel prior to final placement.

*Double connection* means an attachment method where the connection point is intended for two pieces of steel which share common bolts on either side of a central piece.

*Double connection seat* means a structural attachment that, during the installation of a double connection, supports the first member while the second member is connected.

*Erection bridging* means the bolted diagonal bridging that is required to be installed prior to releasing the hoisting cables from the steel joists.

*Fall restraint system* means a fall protection system that prevents the user from falling any distance. The system is comprised of either a body belt or body harness, along with an anchorage, connectors and other necessary equipment. The other components typically include a lanyard, and may also include a lifeline and other devices.

*Final interior perimeter* means the perimeter of a large permanent open space within a building such as an atrium or courtyard. This does not include openings for stairways, elevator shafts, etc.

*Girt (in systems-engineered metal buildings)* means a “Z” or “C” shaped member formed from sheet steel spanning between primary framing and supporting wall material.

*Headache ball* means a weighted hook that is used to attach loads to the hoist load line of the crane.

*Hoisting equipment* means commercially manufactured lifting equipment designed to lift and position a load of known weight to a location at some known elevation and horizontal distance from the equipment’s center of rotation. “Hoisting equipment” includes but is not limited to cranes, derricks, tower cranes, barge-mounted derricks or cranes, gin poles and gantry hoist systems. A “come-a-long” (a mechanical device, usually consisting of a chain or cable attached at each end, that is used to facilitate movement of materials through leverage) is not considered “hoisting equipment.”

*Leading edge* means the unprotected side and edge of a floor, roof, or formwork for a floor or other walking/working surface (such as deck) which changes location as additional floor, roof, decking or formwork sections are placed, formed or constructed.

*Metal decking* means a commercially manufactured, structural grade, cold rolled metal panel formed into a series of parallel ribs; for this subpart, this

## § 1926.751

includes metal floor and roof decks, standing seam metal roofs, other metal roof systems and other products such as bar gratings, checker plate, expanded metal panels, and similar products. After installation and proper fastening, these decking materials serve a combination of functions including, but not limited to: a structural element designed in combination with the structure to resist, distribute and transfer loads, stiffen the structure and provide a diaphragm action; a walking/working surface; a form for concrete slabs; a support for roofing systems; and a finished floor or roof.

*Multiple lift rigging* means a rigging assembly manufactured by wire rope rigging suppliers that facilitates the attachment of up to five independent loads to the hoist rigging of a crane.

*Opening* means a gap or void 12 inches (30.5 cm) or more in its least dimension in a floor, roof or other walking/working surface. For the purposes of this subpart, skylights and smoke domes that do not meet the strength requirements of §1926.754(e)(3) shall be regarded as openings.

*Permanent floor* means a structurally completed floor at any level or elevation (including slab on grade).

*Personal fall arrest system* means a system used to arrest an employee in a fall from a working level. A personal fall arrest system consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these. The use of a body belt for fall arrest is prohibited.

*Positioning device system* means a body belt or body harness rigged to allow an employee to be supported on an elevated, vertical surface, such as a wall or column and work with both hands free while leaning.

*Post* means a structural member with a longitudinal axis that is essentially vertical, that: (1) weighs 300 pounds or less and is axially loaded (a load presses down on the top end), or (2) is not axially loaded, but is laterally restrained by the above member. Posts typically support stair landings, wall framing, mezzanines and other sub-structures.

*Project structural engineer of record* means the registered, licensed profes-

## 29 CFR Ch. XVII (7–1–12 Edition)

sional responsible for the design of structural steel framing and whose seal appears on the structural contract documents.

*Purlin (in systems-engineered metal buildings)* means a “Z” or “C” shaped member formed from sheet steel spanning between primary framing and supporting roof material.

*Qualified person* (also defined in §1926.32) means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

*Safety deck attachment* means an initial attachment that is used to secure an initially placed sheet of decking to keep proper alignment and bearing with structural support members.

*Shear connector* means headed steel studs, steel bars, steel lugs, and similar devices which are attached to a structural member for the purpose of achieving composite action with concrete.

*Steel erection* means the construction, alteration or repair of steel buildings, bridges and other structures, including the installation of metal decking and all planking used during the process of erection.

*Steel joist* means an open web, secondary load-carrying member of 144 feet (43.9 m) or less, designed by the manufacturer, used for the support of floors and roofs. This does not include structural steel trusses or cold-formed joists.

*Steel joist girder* means an open web, primary load-carrying member, designed by the manufacturer, used for the support of floors and roofs. This does not include structural steel trusses.

*Steel truss* means an open web member designed of structural steel components by the project structural engineer of record. For the purposes of this subpart, a steel truss is considered equivalent to a solid web structural member.

*Structural steel* means a steel member, or a member made of a substitute material (such as, but not limited to, fiberglass, aluminum or composite members). These members include, but are not limited to, steel joists, joist girders, purlins, columns, beams, trusses, splices, seats, metal decking, girts, and all bridging, and cold formed metal framing which is integrated with the structural steel framing of a building.

*Systems-engineered metal building* means a metal, field-assembled building system consisting of framing, roof and wall coverings. Typically, many of these components are cold-formed shapes. These individual parts are fabricated in one or more manufacturing facilities and shipped to the job site for assembly into the final structure. The engineering design of the system is normally the responsibility of the systems-engineered metal building manufacturer.

*Tank* means a container for holding gases, liquids or solids.

*Unprotected sides and edges* means any side or edge (except at entrances to points of access) of a walking/working surface, for example a, floor, roof, ramp or runway, where there is no wall or guardrail system at least 39 inches (1.0 m) high.

**§ 1926.752 Site layout, site-specific erection plan and construction sequence.**

(a) *Approval to begin steel erection.* Before authorizing the commencement of steel erection, the controlling contractor shall ensure that the steel erector is provided with the following written notifications:

(1) The concrete in the footings, piers and walls and the mortar in the masonry piers and walls has attained, on the basis of an appropriate ASTM standard test method of field-cured samples, either 75 percent of the intended minimum compressive design strength or sufficient strength to support the loads imposed during steel erection.

(2) Any repairs, replacements and modifications to the anchor bolts were conducted in accordance with § 1926.755(b).

(b) *Commencement of steel erection.* A steel erection contractor shall not

erect steel unless it has received written notification that the concrete in the footings, piers and walls or the mortar in the masonry piers and walls has attained, on the basis of an appropriate ASTM standard test method of field-cured samples, either 75 percent of the intended minimum compressive design strength or sufficient strength to support the loads imposed during steel erection.

(c) *Site layout.* The controlling contractor shall ensure that the following is provided and maintained:

(1) Adequate access roads into and through the site for the safe delivery and movement of derricks, cranes, trucks, other necessary equipment, and the material to be erected and means and methods for pedestrian and vehicular control. Exception: this requirement does not apply to roads outside of the construction site.

(2) A firm, properly graded, drained area, readily accessible to the work with adequate space for the safe storage of materials and the safe operation of the erector's equipment.

(d) *Pre-planning of overhead hoisting operations.* All hoisting operations in steel erection shall be pre-planned to ensure that the requirements of § 1926.753(d) are met.

(e) *Site-specific erection plan.* Where employers elect, due to conditions specific to the site, to develop alternate means and methods that provide employee protection in accordance with § 1926.753(c)(5), § 1926.757(a)(4) or § 1926.757(e)(4), a site-specific erection plan shall be developed by a qualified person and be available at the work site. Guidelines for establishing a site-specific erection plan are contained in appendix A to this subpart.

**§ 1926.753 Hoisting and rigging.**

(a) All the provisions of subpart CC apply to hoisting and rigging with the exception of § 1926.1431(a).

(b) In addition, paragraphs (c) through (e) of this section apply regarding the hazards associated with hoisting and rigging.

(c) *General.* (1) Pre-shift visual inspection of cranes.

(i) Cranes being used in steel erection activities shall be visually inspected