

**(Effective until October 1, 2020)**

**WAC 296-155-706 Structural steel assembly.** (1) You must maintain structural stability at all times during the erection process.

Note: 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 C.F.R. 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, Sec. 3.2.1, 15th edition, 1992*, which FHWA incorporates by reference in 23 C.F.R. 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>.)

- Make sure that multistory structures have the following:
  - Permanent floors installed as the erection of structural members progress;
  - No more than 8 stories between the erection floor and the upper-most permanent floor; and
  - No more than 4 floors or 48 feet (14.6 m), whichever is less, of unfinished bolting or welding above the foundation or uppermost permanent secured floor.

Exception: The above applies except where the structural integrity is maintained as a result of design.

(2) **Walking/working surfaces.**

(a) Shear connectors and other similar devices.

(i) Shear connectors, reinforcing bars, deformed anchors or threaded studs must not be attached to the top flanges of beams, joists or beam attachments so 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. This becomes a tripping hazard. Examples of shear connectors are headed steel studs, steel bars or steel lugs.

(ii) Installation of shear connectors on composite floors. When shear connectors are used in construction of composite floors, roofs and bridge decks, employees must lay out and install the shear connectors after the metal decking has been installed, using the metal decking as a working platform.

(b) Slip resistance of metal decking.

(c) You must provide safe access to the working level. Employees must not slide down ropes, columns, or ladders.

(3) **Plumbing-up.**

(a) When deemed necessary by a competent person, you must install plumbing-up equipment in conjunction with the steel erection process to ensure the stability of the structure.

(b) When used, plumbing-up equipment must 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.

(c) You must only remove plumbing-up equipment with the approval of a competent person.

(4) **Metal decking.**

(a) Hoisting, landing and placing of metal decking bundles.

(i) You must not use bundle packaging and strapping for hoisting unless specifically designed for that purpose.

(ii) If loose items such as dunnage, flashing, or other materials are placed on the top of metal decking bundles to be hoisted, you must secure such items to the bundles.

(iii) You must land bundles of metal decking on joists in accordance with WAC 296-155-709 (5) (d).

(iv) You must land metal decking bundles on framing members so that enough support is provided to allow the bundles to be unbanded without dislodging the bundles from the supports.

(v) At the end of the shift or when environmental or job site conditions require, you must secure metal decking against displacement.

(b) Roof and floor holes and openings. You must install metal decking at roof and floor holes and openings as follows:

(i) Framed metal deck openings must have structural members turned down to allow continuous deck installation except where not allowed by structural design constraints or constructibility.

(ii) Roof and floor holes and openings must be decked over. Where large size, configuration or other structural design does not allow openings to be decked over (such as elevator shafts, stair wells, etc.) you must protect employees in accordance with chapter 296-155 WAC, Part C-1, Fall protection requirements for construction.

(iii) You must not cut metal decking holes and openings until immediately prior to them being permanently filled with the equipment or structure needed or intended to fulfill its specific use and which meets the strength requirements of (c) of this subsection, or they must be immediately covered.

(c) **Covering roof and floor openings.** Smoke dome or skylight fixtures that have been installed are not considered covers for the purpose of this section unless they meet the strength requirements of chapter 296-155 WAC, Part C-1, Fall protection requirements for construction.

(d) **Decking gaps around columns.** You must install wire mesh, exterior plywood, or equivalent, around columns where planks or metal decking do not fit tightly. The materials used must be of sufficient strength to provide fall protection for personnel and prevent objects from falling through.

(e) **Installation of metal decking.**

(i) You must lay metal decking tightly and immediately secure it upon placement to prevent accidental movement or displacement.

(ii) During initial placement, you must place metal decking panels to ensure full support by structural members.

(f) **Derrick floors.**

(i) You must fully deck and plank a derrick floor and complete the steel member connections to support the intended floor loading.

(ii) Temporary loads placed on a derrick floor must be distributed over the underlying support members so as to prevent local overloading of the deck material.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 16-09-085, § 296-155-706, filed 4/19/16, effective 5/20/16. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1926, Subpart M, Fall Protection. WSR 13-04-073, § 296-155-706, filed 2/4/13, effective 4/1/13. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and chapter 49.17 RCW. WSR 10-22-105, § 296-155-706, filed 11/2/10, effective 1/1/11. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-155-706, filed 1/24/07, effective 4/1/07. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. WSR 02-13-115, § 296-155-706, filed 6/19/02, effective 9/1/02.]

***(Effective October 1, 2020)***

**WAC 296-155-706 Structural steel assembly.** (1) You must maintain structural stability at all times during the erection process.

Note: 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 C.F.R. 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, Sec. 3.2.1, 15th edition, 1992*, which FHWA incorporates by reference in 23 C.F.R. 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>)

- Make sure that multistory structures have the following:
  - Permanent floors installed as the erection of structural members progress;
  - No more than 8 stories between the erection floor and the upper-most permanent floor; and
  - No more than 4 floors or 48 feet (14.6 m), whichever is less, of unfinished bolting or welding above the foundation or uppermost permanent secured floor.

Exception: The above applies except where the structural integrity is maintained as a result of design.

(2) **Walking/working surfaces.**

(a) Shear connectors and other similar devices.

(i) Shear connectors, reinforcing bars, deformed anchors or threaded studs must not be attached to the top flanges of beams, joists or beam attachments so 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. This becomes a tripping hazard. Examples of shear connectors are headed steel studs, steel bars or steel lugs.

(ii) Installation of shear connectors on composite floors. When shear connectors are used in construction of composite floors, roofs and bridge decks, employees must lay out and install the shear connectors after the metal decking has been installed, using the metal decking as a working platform.

(b) Slip resistance of metal decking.

(c) You must provide safe access to the working level. Employees must not slide down ropes, columns, or ladders.

(3) **Plumbing-up.**

(a) When deemed necessary by a competent person, you must install plumbing-up equipment in conjunction with the steel erection process to ensure the stability of the structure.

(b) When used, plumbing-up equipment must 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.

(c) You must only remove plumbing-up equipment with the approval of a competent person.

(4) **Metal decking.**

(a) Hoisting, landing and placing of metal decking bundles.

(i) You must not use bundle packaging and strapping for hoisting unless specifically designed for that purpose.

(ii) If loose items such as dunnage, flashing, or other materials are placed on the top of metal decking bundles to be hoisted, you must secure such items to the bundles.

(iii) You must land bundles of metal decking on joists in accordance with WAC 296-155-709 (5) (d).

(iv) You must land metal decking bundles on framing members so that enough support is provided to allow the bundles to be unbanded without dislodging the bundles from the supports.

(v) At the end of the shift or when environmental or job site conditions require, you must secure metal decking against displacement.

(b) Roof and floor holes and openings. You must install metal decking at roof and floor holes and openings as follows:

(i) Framed metal deck openings must have structural members turned down to allow continuous deck installation except where not allowed by structural design constraints or constructibility.

(ii) Roof and floor holes and openings must be decked over. Where large size, configuration or other structural design does not allow openings to be decked over (such as elevator shafts, stair wells, etc.) you must protect employees in accordance with chapter 296-880 WAC, Unified safety standards for fall protection.

(iii) You must not cut metal decking holes and openings until immediately prior to them being permanently filled with the equipment or structure needed or intended to fulfill its specific use and which meets the strength requirements of (c) of this subsection, or they must be immediately covered.

(c) **Covering roof and floor openings.** Smoke dome or skylight fixtures that have been installed are not considered covers for the purpose of this section unless they meet the strength requirements of chapter 296-880 WAC, Unified safety standards for fall protection.

(d) **Decking gaps around columns.** You must install wire mesh, exterior plywood, or equivalent, around columns where planks or metal decking do not fit tightly. The materials used must be of sufficient strength to provide fall protection for personnel and prevent objects from falling through.

(e) **Installation of metal decking.**

(i) You must lay metal decking tightly and immediately secure it upon placement to prevent accidental movement or displacement.

(ii) During initial placement, you must place metal decking panels to ensure full support by structural members.

(f) **Derrick floors.**

(i) You must fully deck and plank a derrick floor and complete the steel member connections to support the intended floor loading.

(ii) Temporary loads placed on a derrick floor must be distributed over the underlying support members so as to prevent local overloading of the deck material.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, and chapter 49.17 RCW. WSR 20-12-091, § 296-155-706, filed 6/2/20, effective 10/1/20. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 16-09-085, § 296-155-706, filed 4/19/16, effective 5/20/16. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and 29 C.F.R. 1926, Subpart M, Fall Protection. WSR 13-04-073, § 296-155-706, filed 2/4/13, effective 4/1/13. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060 and chapter 49.17 RCW. WSR 10-22-105, § 296-155-706, filed 11/2/10, effective 1/1/11. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 07-03-163, § 296-155-706, filed 1/24/07, effective 4/1/07. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. WSR 02-13-115, § 296-155-706, filed 6/19/02, effective 9/1/02.]