

2024 IBC Significant Changes -Continued

black underlined text represents changes made by ICC to the base code text.

1810.2.2 Stability. *Deep foundation* elements shall be braced to provide lateral stability in all directions. Three or more elements connected by a rigid cap shall be considered to be braced, provided that the elements are located in radial directions from the centroid of the group not less than 60 degrees (1 rad) apart. A two-element group in a rigid cap shall be considered to be braced along the axis connecting the two elements. Methods used to brace *deep foundation* elements shall be subject to the approval of the *building official*. *Deep foundation* elements supporting walls shall be placed alternately in lines spaced not less than 1 foot (305 mm) apart and located symmetrically under the center of gravity of the wall load carried, unless effective measures are taken to provide for eccentricity and lateral forces, or the foundation elements are adequately braced to provide for lateral stability.

Exceptions:

1. Isolated cast-in-place *deep foundation* elements without lateral bracing shall be permitted where the least horizontal dimension is not less than 2 feet (610 mm), adequate lateral support in accordance with Section 1810.2.1 is provided for the entire height and analysis demonstrates that the element can support the required loads, including mislocations required by Section 1810.3.1.3, with neither harmful distortion nor instability in the structure.
2. A single row of *deep foundation* elements without lateral bracing is permitted for one- and two-family *dwelling*s and lightweight construction not exceeding two *stories above grade plane* or 35 feet (10 668 mm) in *building height*, provided that the centers of the elements are located within the width of the supported wall.

1810.3.3.2 Allowable lateral load. Where required by the design, the lateral load capacity of a single *deep foundation* element or a group thereof shall be determined by an *approved* method of analysis or by lateral load tests to not less than twice the proposed design working *load*. The resulting allowable lateral load shall not be more than one-half of the *load* that produces a gross lateral movement of 1 inch (25 mm) at the lower of the top of the foundation element and the ground surface, unless it can be shown that the predicted lateral movement shall cause neither harmful distortion of, nor instability in, the *structure*, nor cause any element to be loaded beyond its capacity. Group effects shall be evaluated where required by Section 1810.2.5.

1810.3.8 Precast concrete piles. Precast concrete piles shall be designed and detailed in accordance with ACI 318.

Exceptions:

1. For precast prestressed piles in Seismic Design Category C, the minimum volumetric ratio of spirals or circular hoops required by Section 18.13.5.10.4 of ACI 318 shall not apply in cases where the design includes full consideration of load combinations specified in ASCE 7, Section 2.3.6 or Section 2.4.5 and the applicable overstrength factor, Ω_0 . In such cases, minimum transverse reinforcement index shall be as specified in Section 13.4.5.6 of ACI 318.

2. For precast prestressed piles in Seismic Design Categories D through F and in Site Class A, B, BC, C, CD, D or DE sites, the minimum volumetric ratio of spirals or circular hoops required by Section 18.13.5.10.5(c) of ACI 318 shall not apply in cases where the design includes full consideration of load combinations specified in ASCE 7, Section 2.3.6 or Section 2.4.5 and the applicable overstrength factor, Ω_0 . In such cases, minimum transverse reinforcement shall be as specified in Section 13.4.5.6 of ACI 318.

1810.3.9.4.2.1 Site Classes A through DE. For Site Class A, B, BC, C, CD, D or DE sites, transverse confinement reinforcement shall be provided in the element in accordance with Sections 18.7.5.2, 18.7.5.3 and 18.7.5.4 of ACI 318 within three times the least element dimension of the bottom of the pile cap. A transverse spiral reinforcement ratio of not less than one-half of that required in Table 18.10.6.4(g) of ACI 318 shall be permitted.

1810.3.12 Grade beams. Grade beams shall comply with the provisions of ACI 318.

Exception: Grade beams not subject to differential settlement exceeding one-fourth of the thresholds specified in ASCE 7 Table 12.13-3 and designed to resist the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7 need not comply with ACI 318 Section 18.13.3.1.

1810.4.5 Vibratory driving. Vibratory drivers shall only be used to install *deep foundation* elements where the element load capacity is verified by load tests in accordance with Section 1810.3.3.1.2.

Exceptions:

1. The pile installation is completed by driving with an impact hammer in accordance with Section 1810.3.3.1.1.
2. The pile is to be used only for lateral resistance.

The installation of production elements shall be controlled according to power consumption, rate of penetration or other *approved* means that ensures element capacities equal or exceeding those of the test elements.

1901.2.1 Structural concrete with GFRP reinforcement. Cast-in-place structural concrete internally reinforced with glass fiber reinforced polymer (GFRP) reinforcement conforming to ASTM D7957 and designed in accordance with ACI CODE 440.11 shall be permitted where fire-resistance ratings are not required and only for *structures* assigned to *Seismic Design Category A*.

Chapter 20 Aluminum--No Significant Changes

Chapter 21 Masonry—No Significant Changes

Chapter 22 Steel

2203.1 General. The design, manufacture and erection of austenitic and duplex structural stainless steel shall be in accordance with AISC 370.

2204.1 General. The design of cold-formed carbon and low-alloy steel structural members not covered in Sections 2206 through 2209 shall be in accordance with AISI S100. The design of cold-formed steel diaphragms shall be in accordance with additional provisions of AISI S310 as applicable. Where required, the seismic design of cold-formed steel *structures* shall be in accordance with the additional provisions of Section 2204.2.

2205.1 General. The design of cold-formed stainless steel structural members shall be in accordance with ASCE 8.

2206.3 Cutting and notching. The cutting and notching of holes in cold-formed steel framing members shall be in accordance with AISI S240 for structural members and AISI S220 for nonstructural members.

2210.1 General. The design, fabrication and erection of a *metal building system* shall be in accordance with the provisions of this section.

2210.1.1 Design. The design of *metal building systems* shall be in accordance with Sections 2210.1.1.1 through 2210.1.1.4, as applicable.

2210.1.1.1 Structural steel. The design, fabrication and erection of structural steel shall be in accordance with Section 2202.

2210.1.1.2 Cold-formed steel. The design of cold-formed carbon and low-alloy steel structural members shall be in accordance with Section 2204.

2210.1.1.3 Steel joists. The design of steel joists shall be in accordance with Section 2207.

2210.1.1.4 Steel cable. The design, fabrication and erection of steel cables, including related connections, shall be in accordance with Section 2214.

2210.2 Seismic design. Where required, the seismic design, fabrication and erection of the structural steel seismic force-resisting system shall be in accordance with Section 2202.2.1 or 2202.2.2, as applicable.

2211.1 General. The design, testing and utilization of industrial boltless steel shelving shall be in accordance with MHI ANSI/MH 28.2. Where required by ASCE 7, the seismic design of industrial boltless steel shelving shall be in accordance with Chapter 15 of ASCE 7.

2212.1 General. The design, testing and utilization of industrial steel work platforms shall be in accordance with MHI ANSI/MH 28.3. Where required by ASCE 7, the seismic design of industrial steel work platforms shall be in accordance with Chapter 15 of ASCE 7.

2305.1.2 Permanent load duration. Permanent loads are associated with permanent load duration in accordance with the ANSI/AWC NDS. For wood shear walls and wood diaphragms designed to resist lateral loads of permanent load duration only and that are not in combination with wind or seismic lateral loads, the design unit shear capacities shall be taken as the AWC SDPWS nominal unit shear capacities, multiplied by 0.2 for use with allowable stress design in Section 2306 and 0.3 for use with load and resistance factor design in Section 2307.

2404.1 Vertical glass. Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads due to basic wind speed, V , in Section 1609 for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 13.5.9. The load resistance of glass under uniform load shall be determined in accordance with ASTM E1300. The design of vertical glazing shall be based on Equation 24-1.

$$\text{Equation 24-1 } 0.6 F_{gw} \leq F_{ga}$$

where:

F_{gw} = Wind *load* on the glass due to basic wind speed, V , computed in accordance with Section 1609.

F_{ga} = Short duration *load* on the glass as determined in accordance with ASTM E1300.

2406.4.3 Glazing in windows. Glazing in an individual fixed or operable panel that meets all of the following conditions shall be considered to be a hazardous location:

1. The exposed area of an individual pane is greater than 9 square feet (0.84 m²).
2. The bottom edge of the glazing is less than 18 inches (457 mm) above the floor or adjacent walking surface.
3. The top edge of the glazing is greater than 36 inches (914 mm) above the floor or adjacent walking surface.
4. One or more walking surface(s) are within 36 inches (914 mm), measured horizontally and in a straight line, of the plane of the glazing.

Exceptions:

1. Decorative glazing.
2. Where a horizontal rail is installed on the accessible side(s) of the glazing 34 to 38 inches (864 to 965 mm) above the walking surface. The rail shall be capable of withstanding a horizontal load of 50 pounds per linear foot (730 N/m) without contacting the glass and be not less than 1½ inches (38 mm) in cross-sectional height.
3. Outboard panes in insulating glass units or multiple glazing where the bottom exposed edge of the glass is 8 feet (2438 mm) or more above any grade or walking surface adjacent to the glass exterior.

Chapter 25 Masonry—No Significant Changes

Chapter 26 Plastic—No Significant Changes

Chapter 27 Electrical

SECTION 2703—LIGHTNING PROTECTION SYSTEMS

2703.1 General. Where provided, lightning protection systems shall comply with Sections 2703.2 through 2703.3.

2703.2 Installation. Lightning protection systems shall be installed in accordance with NFPA 780 or UL 96A. UL 96A shall not be utilized for *buildings* used for the production, handling or storage of ammunition, *explosives, flammable liquids, flammable gases* or other *explosive ingredients including dust*.

2703.2.1 Surge protection. Where lightning protection systems are installed, surge protective devices shall also be installed in accordance with NFPA 70 and either NFPA 780 or UL 96A, as applicable.

2703.3 Interconnection of systems. All lightning protection systems on a *building or structure* shall be interconnected in accordance with NFPA 780 or UL 96A, as applicable.

Chapter 28 Mechanical Systems—No significant changes

Chapter 29—Plumbing Systems

Table 2902.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES

Chapter 30 Elevators and Conveying Systems—No significant changes

Chapter 31 Special Construction

SECTION 3103 Temporary Structures

Chapter 32 Encroachments into the Public Right of Way--No significant changes

Chapter 33 Safeguards During Construction--No significant changes

Chapter 34 Reserved--No significant changes