Group B Code Change Proposals for the

2027 Edition International Code Council Model Codes

(*Modifying the 2024 I-Codes*)

Complete code change proposals may be viewed in the ICC Monograph

There are over 1000 code change proposals for Group B. ACI staff will be monitoring or testifying on approximately 200 proposed changes. Of these 200, the below are proposed changes that may have an impact on ACI committee work, ranging from terminology to specific design and construction requirements.

Proposals by ACI

ADM 61-25	**Update Reference Standards in IBC, IEBC, IRC, and ISPSC**
S113-25	**Inspection of Concrete with GFRP**
S137-25	**GFRP in SDC B and C**
RB161-25	**Residential foundation walls reinforced with GFRP**

ADM 61-25 **Update Reference Standards in IBC, IEBC, IRC, and ISPSC**

IBC, IEBC, IRC **Approve as Submitted**

ACI	American Concrete Institute	
Standard Reference Number	**Title**	**Referenced in Code (s):**
117-~~10~~26	Specification for Tolerances for Concrete Construction and Materials	IBC
216.1-~~14~~26	~~for~~ Determining Fire Resistance of Concrete and Masonry Construction Assemblies—Code Requirements and Commentary	IBC
318-~~19~~25	Building Code Requirements for Structural Concrete	IBC, IRC, ISPSC
332-~~20~~26	Residential Concrete—Code Requirements ~~for Structural~~ and Commentary	IRC
440.11-22	Structural Concrete Buildings Reinforced Internally with Fiber Reinforced Polymer (FRP) Bars – Code Requirements and Commentary	IBC
550.5-18	~~for the~~ Design of Precast Concrete Diaphragms for Earthquake Motions—Code Requirements and Commentary	IBC
562-~~21~~25	Assessment, Repair, and Rehabilitation of Existing Concrete Structures—Code Requirements and Commentary	IEBC

Note 1: If any individual at the hearings opposing the inclusion of an ACI standard in ADMIN61-25, the standard is removed from the administrative update.

Note 2: To be updated, 117, 216.1, and 332 must be published by December 1, 2026.

S113-25 **Inspection of Concrete with GFRP**
IBC **Approve as Submitted**

Type		Continuous Special Inspection	Periodic Special In-spection	Referenced Standard	IBC Reference
1.	Inspect reinforcement and verify placement				
1.	~~Inspect~~ a. Steel reinforcement, including prestressing steel ~~and verify placement~~	--	X	ACI 318 Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	--
	b. GFRP reinforcement	--	X	ACI 440.11 Ch 26	--

S137-25 **GFRP in SDC B and C**
IBC **Approve as Submitted**

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~~:

1. In any structural elements of buildings ~~structures~~ assigned to Seismic Design Category A, or
2. In structural elements not part of the seismic force resisting system in buildings assigned to SDC B or C.

RB161-25 **Foundation walls reinforced with GFRP**
IRC **Approve as Submitted**

R404.1.3 Concrete foundation walls. Concrete foundation walls that support light-frame walls shall be designed and constructed in accordance with the provisions of this section, ACI 318, ACI 332, ACI CODE 440.11 or PCA 100. Concrete foundation walls that support above-grade concrete walls that are within the applicability limits of Section R608.2 shall be designed and constructed in accordance with the provisions of this section, ACI 318, ACI 332, ACI CODE 440.11 or PCA 100. Concrete foundation walls that support above-grade concrete walls that are not within the applicability limits of Section R608.2 shall be designed and constructed in accordance with the provisions of ACI 318, ACI 332, ACI CODE 440.11 or PCA 100. Where ACI 318, ACI 332, ACI CODE 440.11, PCA 100 or the provisions of this section are used to design concrete foundation walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the jurisdiction having authority.

R404.1.3.1 Concrete cross section. Concrete walls constructed in accordance with this code shall comply with the shapes and minimum concrete cross-sectional dimensions required by Table R608.3. Other types of forming systems resulting in concrete walls not in compliance with this section and Table R608.3 shall be designed in accordance with ACI 318 or ACI CODE 440.11.

R404.1.3.2 Reinforcement for foundation walls. Concrete foundation walls shall be laterally supported at the top and bottom. Horizontal reinforcement shall be provided in accordance with Table R404.1.3.2(1). Vertical reinforcement shall be provided in accordance with Table R404.1.3.2(2), R404.1.3.2(3), R404.1.3.2(4), R404.1.3.2(5), R404.1.3.2(6), R404.1.3.2(7) or R404.1.3.2(8) for walls reinforced with steel reinforcement or Table R404.1.3.2(10) for walls reinforced with GFRP

reinforcement. Vertical steel reinforcement for flat basement walls retaining 4 feet (1219 mm) or more of unbalanced backfill is permitted to be determined in accordance with Table R404.1.3.2(9). For basement walls supporting above-grade concrete walls, vertical steel reinforcement shall be the greater of that required by Tables R404.1.3.2(2) through R404.1.3.2(8) or by Section R608.6 for the above-grade wall. In buildings assigned to Seismic Design Category
D_0, D_1 or D_2, concrete foundation walls shall also comply with 0 1 2 Section R404.1.4.2.

R404.1.3.3.7.2 Glass fiber reinforced polymer (GFRP) reinforcement. GFRP reinforcement shall comply with ASTM D7957. Concrete foundation walls reinforced with GFRP reinforcement shall only be permitted in buildings assigned to Seismic Design Category A.

R404.1.3.3.7.2 Location of reinforcement in wall. The center of vertical reinforcement in basement walls determined from Tables R404.1.3.2(2) through R404.1.3.2(7) for walls reinforced with steel reinforcement and Table 404.1.3.2(10) for walls with GFRP reinforcement shall be located at the centerline of the wall. Vertical reinforcement in basement walls determined from Table R404.1.3.2(8) shall be located to provide a maximum cover of 1-1/4 inches (32 mm) measured from the inside face of the wall. Regardless of the table used to determine vertical wall reinforcement placement, the center of the ~~steel~~ reinforcing bars shall not vary from the specified location by more than the greater of 10 percent of the wall thickness and 3/8 inch (10 mm). Horizontal and vertical reinforcement shall be located in foundation walls to provide the minimum cover required by Section R404.1.3.3.7.4.

R404.1.3.3.7.4 Support and cover. Reinforcement shall be secured in the proper location in the forms with tie wire or other bar support system to prevent displacement during the concrete placement operation. Steel reinforcement in concrete cast against the earth shall have a minimum cover of 3 inches (75 mm). Minimum cover for steel reinforcement in concrete cast in removable forms that will be exposed to the earth or weather shall be 1-1/2 inches (38 mm) for No. 5 bars and smaller, and 2 inches (50 mm) for No. 6 bars and larger. For concrete cast in removable forms that will not be exposed to the earth or weather, and for concrete cast in stay-in-place forms, minimum cover for steel reinforcement shall be 3/4 inch (19 mm). For concrete reinforced with GFRP reinforcement the minimum cover for any exposure shall be 3/4 inch (19 mm). The minus tolerance for cover shall not exceed the smaller of one-third the required cover or 3/8 inch (10 mm).

R404.1.3.3.7.5 Lap splices. Vertical and horizontal wall reinforcement shall be the longest lengths practical. Where splices are necessary in reinforcement, the length of lap splice shall be in accordance with Table R608.5.4(1) for steel reinforcement or Table 404.1.3.3 for GFRP reinforcement and Figure R608.5.4(1). The maximum gap between noncontact parallel bars at a lap splice shall not exceed the smaller of one-fifth the required lap length and 6 inches (152 mm) [see Figure R608.5.4(1)].

TABLE 404.1.3.3 MINIMUM SPLICE LENGTH FOR HORIZONTAL GFRP REINFORCEMENT[a]

No. 4 bars	No. 5 bars	No. 6 bars
26 in.	32 in.	38 in.

a. Lap splices are not permitted for vertical GFRP reinforcement unless approved by a registered design professional.

R404.1.3.3.7.6 Alternate grade of steel reinforcement and spacing. Where tables in Section R404.1.3.2 specify vertical wall steel reinforcement based on minimum bar size and maximum spacing, which are based on Grade 60 (414 MPa) steel reinforcement, different size bars or bars made from a different grade of steel are permitted provided that an equivalent area of steel per linear foot of wall is provided. Use of Table R404.1.3.2(9) is permitted to determine the maximum bar spacing for different bar sizes

than specified in the tables or bars made from a different grade of steel. Bars shall not be spaced less than one-half the wall thickness, or more than 48 inches
(1219 mm) on center.

TABLE R404.1.3.2(1) MINIMUM HORIZONTAL REINFORCEMENT FOR CONCRETE BASEMENT FOUNDATION WALLS[a, b]

REINFORCEMENT TYPE	MAXIMUM UNSUPPORTED WALL HEIGHT (feet)	LOCATION OF HORIZONTAL REINFOREMENT ~~STEEL~~
Steel [a,b]	≤ 8	Minimum of 3 No. 4 bars placed such that there is ~~O~~one ~~No. 4 bar~~ within 12 inches of the top of the wall story and one ~~No. 4 bar~~ near mid-height of the wall story.
	> 8	Minimum of four No. 4 bars placed such that there is ~~O~~one ~~No. 4 bar~~ within 12 inches of the top of the wall story and one ~~No. 4 bar~~ near third points in the wall story.
GFRP	≤ 8	Minimum of four No. 4 bars placed such that there is one bar within 24 inches of the top and bottom of the wall story and one bar near the third points in the wall story.
	> 8 and ≤ 10	Minimum of five No. 4 bars placed such that there is one bar within 12 inches of the top and bottom of the wall story and one bar near the quarter points of the wall story.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.
a. Horizontal reinforcement requirements are for reinforcing bars with a minimum yield strength of 40,000 psi and concrete with a minimum concrete compressive strength of 2,500 psi.
b. See Section R404.1.3.2 for minimum reinforcement required for foundation walls supporting above-grade concrete walls.

TABLE R404.1.3.2(10) MINIMUM VERTICAL GFRP REINFORCEMENT FOR FLAT CONCRETE WALLS [a,b]

Maximum Unsupported Wall Height (ft)	Maximum Unbalanced Fill (ft)	Minimum Vertical Reinforcement - Bar Size No, and Spacing (in.) Maximum Design Lateral Soil Load psf/ft of depth								
		GW, GP,SW, SP30			GM, GC, SM, SM-SC, AND ML45			SC, ML-CL and Inorganic CL60		
		Nominal Wall Thickness, in.			Nominal Wall Thickness, in.			Nominal Wall Thickness, in.		
		6	8	10	6	8	10	6	8	10
8	4	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	5@32	NR	NR	6@31	NR	NR
	6	5@32	NR	NR	6@26	NR	NR	6@13	NR	NR
	7	6@29	NR	NR	6@12	NR	NR	DR	6@19	NR
	8	6@17	6@32	6@32	DR	6@20	6@32	DR	6@10	6@19
9	4	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	5@32	NR	NR	6@29	NR	NR
	6	5@27	NR	NR	6@23	NR	NR	6@10	6@26	NR
	7	6@25	NR	NR	6@8	6@24	NR	DR	6@26	6@28
	8	6@12	6@27	NR	DR	6@16	6@28	DR	6@7	6@17
	9	6@6	6@21	6@32	DR	6@8	6@18	DR	DR	6@11
10	4	NR	NR	NR	NR	NR	NR	NR	NR	NR
	5	NR	NR	NR	5@26	NR	NR	6@27	NR	NR
	6	6@32	NR	NR	6@20	NR	NR	6@8	6@24	NR

	7	6@22	NR	NR	6@6	6@22	NR	DR	6@13	6@21
	8	6@9	6@25	NR	DR	6@13	6@21	DR	DR	6@15
	9	DR	6@18	6@30	DR	6@6	6@16	DR	DR	6@8
	10	DR	6@11	6@20	DR	DR	6@10	DR	DR	DR

NR = Reinforcement not required.

DR = Design required.

a. Interpolation between values in these tables is not permitted. However, smaller bar sizes are permitted provided the bar cross sectional area divided by the bar spacing is greater than the bar cross sectional area divided by the bar spacing shown in the table. Bar cross sectional areas are provided in ASTM D7957-22.

b. Minimum vertical reinforcement spacing is 6 in.

ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331
CODE 440.11-22	Building Code Requirements for Structural Concrete Reinforced with Glass Fiber-Reinforced Polymer (GFRP) Bars—Code and Commentary
ASTM	ASTM International 100 Barr Harbor Drive, P.O. Box C700 West Conshohocken, PA 19428
D7957/D7957M-22	Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement

Proposals by Others that May Be of Interest to ACI Committees

Designation	Code	Topic	Page
ADM 61-25	Multiple Codes	Updates referenced standards	7
G 6-25	IBC	Replaces “portland” with “hydraulic” cement	8
G 19-I-25	IBC	Positive connections and positively anchored	9
G 19-II-25	IRC	Positive connections and positively anchored	9
G 194-25	IBC	Cites ICC 1150 on 3D printed concrete walls	9
G 206-25	IBC	Adds maximum level of greenhouse gas potential	10
S 108-25	IBC	New provisions on connections and fastenings	14
S 112-25	IBC	Revises inspection criteria and references for concrete	18
S 115-25	IBC	In-situ structural integrity testing for deep foundations	20
S 122-I-25	IBC	Post-tensions slab-on-ground	21
S 122-II-25	IRC	Post-tensions slab-on-ground	21
S 124-25	IBC	Special inspection for rigid inclusion systems	21
S 132-25	IBC	Anchor tensile strength in SDC D through F	24
S 133-25	IBC	Connection details in SDC D through F	25
S 136-25	IBC	Adds compliance and reference to ACI/PCI CODE 319	26
S 138-25	IBC	Alternate anchor criteria - deviates from ACI CODE 318	26
S 139-25	IBC	Replaces outdated ITG-10 with ACI SPEC 117-26	27
S 140-25	IBC	Intermediate precast walls	27
S 141-25	IBC	Insulated precast concrete panels	28
S 142-25	IBC	Lightweight concrete for insulated roofs	28
RB 1-25	IRC	Expands scope to 1, 2-, 3 and 4-family dwellings	30
RB 20-25	IRC	Requires combustibility testing for concrete containing combustibles	30
RB 89-25	IRC	Corrosion resistant fasteners	30
RB 152-25	irc	Discontinuous and reinforced footings	34
RB 154-25	IRC	Stepped footings in SDC D	37
RB 155-25	IRC	Replace PCA 100 with NRMCA 100	40
RB 158-25	IRC	Reorganization and requires 3000 psi in SDC D	42
RB 174-25	IRC	Vapor retarders	42
RB 175-25	IRC	Vapor retarders	42
PM 5-25	IPMC	Unsafe	42
PM 11-25	IPMC	Potentially unsafe	42

ADMIN61-25

Standard Reference Number	Title	Referenced in Code (s):
ASTM	**ASTM International**	
A416/A416M-~~18~~24	Standard Specification for Low-Relaxation, Seven-Wire Steel Strand, for Prestressed Concrete	IBC
A615/A615M-~~20~~24	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement	IBC, IRC
A706/A706M-~~16~~24	Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement	IBC, IRC
A996/A996M-~~20~~22a	Specifications for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement	IRC
C31/C31M-~~21a~~24b	Practice for Making and Curing Concrete Test Specimens in the Field	IBC
C33/C33M-~~18~~24	Specification for Concrete Aggregates	IBC, IRC
C76-22a	Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe	IPSDC, IPC, IRC
C94/C94M—~~21b~~24c	Standard Specification for Ready-Mixed Concrete	IBC, IEBC, IRC
C150/C150M—~~21~~24	Specification for Portland Cement	IBC, IRC
C317/C317M—~~00(19)~~ 24	Specification for Gypsum Concrete	IBC
C330/C330M-~~17~~23	Specification for Lightweight Aggregates for Structural Concrete	IBC
C478-~~15a~~/C478M-22	Specification for Circular Precast Reinforced Concrete Manhole Sections	IPSDC
C595/C595M—~~21~~24	Specification for Blended Hydraulic Cements	IBC, IRC
C685/C685M—~~17~~24	Specification for Concrete Made by Volumetric Batching and Continuous Mixing	IRC
C913—0823	Specification for Precast Concrete Water and Wastewater Structures	IPSDC
C956—~~04(19)~~24	Specification for Installation of Cast-In-Place Reinforced Gypsum Concrete	IBC
C1116/C116M—~~20~~23	Standard Specification for Fiber-Reinforced Concrete ~~and Shotcrete~~	IRC
C1157/C1157M—~~20a~~23	Standard Performance Specification for Hydraulic Cement	IBC, IRC
C1600/C1600M-~~19~~23	Standard Specification for Rapid Hardening Hydraulic Cement	IBC
C1644—06(17)	Specification for Resilient Connectors Between Reinforced Concrete On-Site Wastewater Tanks and Pipes	IPSDC
D7957/D7957M-~~17~~22	Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement	IBC

ASTM	ASTM International, continued	
E1745-17(23)	Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	IRC
E2634-18(22)	Standard Specification for Flat Wall Insulating Concrete Form (ICF) Systems	IBC, IRC
CSA	**Canadian Standards Association**	
A257.1-~~19~~24	Non-reinforced ~~Circular~~ circular ~~Concrete~~ concrete ~~Culvert~~ culvert, ~~Storm~~ storm ~~Drain~~ drain, ~~Sewer~~ sewer ~~Pipe~~ pipe and ~~Fittings~~ fittings	IPC
A257.2-~~19~~24	Reinforced Circular Concrete Culvert, Storm Drain, Sewer Pipe and Fittings	IPC, IPSDC, IRC
PCI	**Precast Prestressed Concrete Institute**	
PCI 124-~~18~~23	Specification for Fire Resistance of Precast / and Precast, Prestressed Concrete	IBC
PCI 128-~~19~~24	Specification for Glass-Fiber-Reinforced Concrete Panels	IBC
PTI	**Post-Tensioning Institute**	
PTI DC10.5-1924	Standard Requirements for Design and Analysis of Shallow ~~Post-Tensioned~~ Concrete Foundations on Expansive and Stable Soils	IBC, IRC

G6-25 **Replaces “portland” with “hydraulic” cement**
IBC **Watch**

[BS] CONCRETE.

Carbonate aggregate. Concrete made with aggregates consisting mainly of calcium or magnesium carbonate, such as limestone or dolomite, and containing 40 percent or less quartz, chert or flint.

Cellular. A lightweight insulating concrete made by mixing a preformed foam with ~~Portland~~ hydraulic cement slurry and having a dry unit weight of approximately 30 pcf (480 kg/m3).

Lightweight aggregate. Concrete made with aggregates of expanded clay, shale, slag or slate or sintered fly ash or any natural lightweight aggregate meeting ASTM C330 and possessing equivalent fire-resistance properties and weighing 85 to 115 pcf (1360 to 1840 kg/m3).

Perlite. A lightweight insulating concrete having a dry unit weight of approximately 30 pcf (480 kg/m3) made with perlite concrete aggregate. Perlite aggregate is produced from a volcanic rock which, when heated, expands to form a glass-like material of cellular structure.

Sand-lightweight. Concrete made with a combination of expanded clay, shale, slag, slate, sintered fly ash, or any natural lightweight aggregate meeting ASTM C330 and possessing equivalent fire-resistance properties and natural sand. Its unit weight is generally between 105 and 120 pcf (1680 and 1920 kg/m3).

Siliceous aggregate. Concrete made with normal-weight aggregates consisting mainly of silica or compounds other than calcium or magnesium carbonate, which contains more than 40-percent quartz, chert or flint.

Vermiculite. A light weight insulating concrete made with vermiculite concrete aggregate which is laminated micaceous material produced by expanding the ore at high temperatures. When added to a

~~Portland~~ hydraulic cement slurry the resulting concrete has a dry unit weight of approximately 30 pcf (480 kg/m3).

1805.2.2.1 Surface preparation of walls. Prior to application of dampproofing materials on concrete walls, holes and recesses resulting from the removal of form ties shall be sealed with a bituminous material or other approved methods or materials. Unit masonry walls shall be parged on the exterior surface below ground level with not less than 3/8 inch (9.5 mm) of Portland hydraulic (portland, blended, or performance hydraulic) cement mortar. The parging shall be coved at the footing.

G19,I-25 **Positive connections and positively anchored**
IBC **Watch**

POSITIVE CONNECTION. A connection that provides a continuous load path with sufficient strength and stiffness to transfer forces between structural elements without consideration of frictional resistance produced by the effects of gravity (see "Positively Anchored").
POSITIVELY ANCHORED. A connection that provides a continuous load path with sufficient strength and stiffness to transfer forces between structural elements without consideration of frictional resistance produced by the effects of gravity (see "Positive connection").

G19,II-25 **Positive connections and positively anchored**
IRC **Watch**

POSITIVE CONNECTION. A connection that provides a continuous load path with sufficient strength and stiffness to transfer forces between structural elements without consideration of frictional resistance produced by the effects of gravity (see "Positively Anchored").
POSITIVELY ANCHORED. A connection that provides a continuous load path with sufficient strength and stiffness to transfer forces between structural elements without consideration of frictional resistance produced by the effects of gravity (see "Positive connection").

G194-25 **Cites ICC 1150 on 3D printed concrete walls**
IBC **Watch**

SECTION 3115
AUTOMATED CONSTRUCTION TECHNOLOGY FOR 3D PRINTING WALLS

3115.1 General. 3D printing materials and 3D printing walls shall be designed and constructed in accordance with ICC 1150.
3D AUTOMATED CONSTRCUCTION TECHNOLOGY (3D-ACT). Construction-scale 3D printing technology, also known as additive manufacturing or layer-by-layer automated construction technology, used in the construction of buildings, or building components, consisting of a computer program, 3D printer software, and computer-controlled equipment, 3D printer, to create three-dimensional shapes with 3D printing material.
3D PRINTING MATERIALS. A proprietary or non-proprietary cementitious material, concrete or mortar, that consists of cement, fibers, supplementary cementitious materials, fine or coarse aggregate, and admixtures, if applicable. 3D printing material is extruded in layers during construction.
3D PRINTING WALLS. Walls constructed with the use of 3D automated construction technology using 3D printing material. Walls may be printed in various configurations, including but not limited to, printing 3D printing material in layers to create two outer face shells with a core fill grout between the shells to form a solid wall. If applicable, structural steel reinforcing shall be placed within the core fill grout, or

within the shell layers.

International Code Council, Inc.
ICC 200 Massachusetts Avenue, NW, Suite 250
Washington, DC 20001

1150-26 Standard for Automated Construction Technology for 3D Printing Walls

G206-25 **Adds maximum level of greenhouse gas potential**
IBC **Watch**

APPENDIX Q
EMBODIED GHG EMISSIONS REPORTING AND REDUCTION
SECTION Q101
GENERAL

Q101.1 Scope. The provisions of this appendix promote methods to measure and reduce the environmental impact of building materials and products.

SECTION Q102
DEFINITIONS

Q102.1 General. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.

COVERED PROJECT. A new building or structure, or an addition to an existing building or structure, [INSERT 50,000 OR 100,000] gross square feet or larger, or an alteration that impacts a work area of [INSERT 50,000 OR 100,000] gross square feet or larger.

EMBODIED GREENHOUSE GAS (GHG) EMISSIONS. The greenhouse gas (GHG) emissions generated by the extraction, production, transport, manufacturing, use, and end of life of a product, as measured using a life cycle assessment. These may include the lifecycle stages A, B, and C as defined by ISO 21931—1 or ISO 21930.

ENVIRONMENTAL PRODUCT DECLARATION (EPD). An environmental claim that provides quantified environmental data using predetermined parameters and, where relevant, additional environmental information. An EPD also includes additional product and company information. An EPD reports at least the product stage, covering the cradle-to-gate phase or life cycle modules A1-A3 as defined by ISO 21931—1 or 21930.

FACILITY-SPECIFIC ENVIRONMENTAL PRODUCT DECLARATION (FACILITY-SPECIFIC EPD). An environmental claim providing quantified environmental impacts based on data from one industrial facility at which a specific product that is represented by the EPD is manufactured.

GLOBAL WARMING POTENTIAL (GWP). The metric for tracking embodied GHG emissions, which is reported in kg CO2e/unit. GWP normalizes different gases associated with a product to an equivalent mass of carbon dioxide over a period of 100 years.

PRODUCT-SPECIFIC ENVIRONMENTAL PRODUCT DECLARATION (PRODUCT-SPECIFIC EPD). An EPD that represents the impacts of a single product.

SALVAGED AND REUSED PRODUCT. A product reclaimed of reusable materials from the disassembly, deconstruction, or demolition of buildings or structures, sourced from within a radius of 500 mi (800 km) of the project site, and requiring minimal to no processing for reinstallation and use on a different project.

WORK AREA. That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work

entailed by the intended work must be performed and portions of the building where work not initially intended by the owner is specifically required by this code.

SECTION Q103
REDUCTION OF EMBODIED GHG EMISSIONS

Q103.1 Embodied GHG emissions. Covered projects shall document embodied GHG emissions on construction documents, which shall be submitted to the building official.

Q103.2 Documentation of embodied GHG emissions. Documentation of embodied GHG emissions for covered projects shall meet one of the following pathways:

1. Product compliance or building compliance pathway; for a new building or structure, or an addition to an existing building or structure, [INSERT 50,000 OR 100,000] gross square feet or larger.
2. Building reuse compliance pathway; for an alteration that impacts a work area of [INSERT 50,000 OR 100,000] gross square feet or larger.
3. Product compliance, building compliance, or building reuse compliance pathway; for an addition to a building or structure that also includes an alteration, where the addition and work area of the alteration have a combined area of [INSERT 50,000 OR 100,000] gross square feet or larger.

Q103.3 Product compliance pathway. Covered projects shall submit Type III product-specific or facility-specific environmental product declarations (EPDs), for all covered products per section Q103.3.1. The product compliance pathway shall calculate the global warming potential (GWP) for the total mass, volume, or area of the covered products, which shall total no more than [INSERT 85, 90, 100, 125, OR 150] percent of the values in Table Q103.3.1 for the same total mass, volume, or area of the covered products. This calculation shall include project-specific product quantities and product-specific or facility-specific EPDs, and be summed across the entire project based on mass, volume, or area.

Q103.3.1 Covered products. Covered products shall include no less than [INSERT 90 OR 100] percent of the total combined mass, volume, or area of all products used in the building project that are included in Table Q103.3.1.

TABLE Q103.3.1 COVERED PRODUCT GWP REFERENCE VALUES[a]

Only information for concrete systems shown in this report

	Covered Product	Global Warming Potential (A1-A3)	Unit of Measurement
Ready-mixed concrete products[b]	Up to 2,500 psi	240	kg CO_2e/m^3
	2,501-3,000 psi	262	kg CO_2e/m^3
	3,001-4,000 psi	308	kg CO_2e/m^3
	4,001-5000 psi	365	kg CO_2e/m^3
	5,001-6000 psi	385	kg CO_2e/m^3
	6,001-8,000 psi	446	kg CO_2e/m^3
	Lightweight up to 3,000 psi	492	kg CO_2e/m^3
	Lightweight 3,001-4,000 psi	540	kg CO_2e/m^3
	Lightweight 4,001-5,000 psi	588	kg CO_2e/m^3
Concrete masonry unit products	Not shown here, see monograph		
Reinforcing steel products	Rebar – unfabricated	753	kg CO_2e/m^3
Structural steel products	Not shown here, see monograph		

Structural wood products	Not shown here, see monograph
Insulation products	Not shown here, see monograph
Flat glass	Not shown here, see monograph

a. GWP values are based on industry averages, sourced from industry-wide EPDs for all products for which there was one available.
b. AHJ to replace with regional ready mix concrete values based on NRMCA's regional benchmarks.
c. Replace with industry-wide average when available.
d. For all product types except XPS in this table, the noted GWP corresponds to A1-A3 life cycle modules (the "product stage"). An exception has been made for XPS board insulation due to the substantial contribution of blowing agent emissions to product life cycle GWP. Since insulation EPDs are required to report these impacts where applicable, the XPS value in this table includes modules A1-A3 (product stage), B1 (to account for blowing agent emissions during building life), and C4 (to account for blowing agent emissions during disposal).

Q103.3.2 Alternative Products. Covered products are permitted to be replaced with a product that is a salvaged and reused product. Products are permitted to be procured from onsite or from vendors. If a covered product is salvaged and reused, the applicable product category is permitted to assume a GWP of 0.

Q103.4 Building compliance pathway. Covered projects shall submit a building life cycle assessment (LCA) as part of the construction documents, which shall be submitted to the building official. The building LCA shall be developed in accordance with section Q103.4.1, and comply with one of the following:

1. For absolute reduction requirements, the global warming potential (GWP) of the proposed building shall be no more than [INSERT 70, 80, OR 90] percent of 1,102 lbCO_2e/square feet (500 kgCO_2e/m).
2. For relative reduction requirements, the GWP of the proposed building shall be no more than [INSERT 70, 80, OR 90] percent of the GWP of a functionally equivalent reference building. The reference building shall be of the same size, geographic location, and thermal performance as the proposed building, shall be subject to the same code requirements as the proposed building, and shall be functionally equivalent to the proposed building per ASTM E2921-22. The products and product quantities in the proposed building are permitted to vary compared to that shown in the reference building. The same LCA tool(s) or software shall be used to complete the building life cycle assessment for both the reference and proposed building designs.

Q103.4.1 Building life cycle assessment. Building LCAs shall comply with the following:

1. ISO 14040 and ISO 14044.
2. Software used to conduct a building LCA shall conform to ISO 21931—1 and/or EN 15978 and shall have a data set compliant with ISO 14044 and ISO 21930 and/or EN 15804. The software shall utilize a calculation methodology that is compliant with EN 15978, ISO 21931—1 and ISO 21929—1. Environmental impact data shall not be sourced from expired or retired data sources, unless no valid alternative data exists.
3. The life cycle scope shall cover cradle-to-grave, including all modules in life cycle stages A, B, and C, as defined by ISO 21931 —1 or 21930. The life cycle scope is permitted to exclude modules B6 and B7, covering operating energy and water.
4. The building LCA shall include all of the following building elements: foundations; exterior wall envelope; primary structural frame; secondary structural members; roof covering; roof deck; fenestration; load-bearing walls; and insulation. The assessment is permitted to include non-load-

bearing walls; fireproofing; insulation; interior constructions and interior finishes. An assessment submitted for an addition and/or alteration shall include elements within the boundary of the addition and/or the work area of the alteration.

5. The reference study period shall be 60 years.

6. Existing and salvaged and reused products shall be included or excluded at the discretion of the project team. For in-situ reused materials, it is permissible to assume the A1-A4 stages (raw material supply, raw material transport, manufacturing, and transportation to construction site) carry no impact in the proposed building's LCA to show the benefit of reusing materials, while retaining the A1-A4 estimated impacts for these materials in the LCA of the functionally equivalent reference design. For salvaged materials, it is permissible to assume the A1-A3 stages carry no impact in the proposed building's LCA to show the benefit of salvaging materials, while retaining the A1-A3 estimated impacts for these materials in the LCA of the functionally equivalent reference design.

7. Biogenic carbon and carbon sequestration shall be reported separately from fossil GWP.

Q103.5 Building reuse pathway. An alteration shall retain no less than a combined 45 percent, as calculated per section Q103.5.1, of the existing building's primary and secondary structural frame and exterior wall envelope as part of the work area. An addition to a building or structure that also includes an alteration, where the addition and work area of the alteration have a combined area of [INSERT 50,000 OR 100,000] gross square feet or larger, is permitted to use this compliance pathway.

Q103.5.1 Building reuse compliance calculation. The calculation shall include roof and floor areas, and façade area as measured in elevation, for the entire building. Façade areas are permitted to be considered retained even if the existing exterior wall covering is repaired, replaced, or modified to increase insulation or airtightness. Salvaged and reused products sourced from the project site are permitted to be counted towards the 45 percent building reuse threshold.

Exception: Buildings, or portions of buildings, that are deemed unsafe or dangerous, or that have hazardous materials, that are remediated as part of the project.

Q103.5.2 Construction documents for building reuse compliance. Construction documents for the building reuse compliance pathway shall clearly distinguish the square footage for existing and new elements, and include the following information:

1. Gross floor area of existing building(s) in square feet;
2. Gross floor area of the aggregate addition(s) in square feet (if applicable);
3. Gross floor area of the alteration in square feet;
4. Existing total floor area and retained total floor area of the primary and secondary structural frame of the existing building(s) in square feet; and
5. Existing total exterior wall and fenestration surface area and total retained exterior wall and fenestration surface area of the existing building(s) in square feet, as well as areas allowed to be excluded from the calculation.

SECTION Q104
DOCUMENTATION OF REDUCTION OF EMBODIED GHG EMISSIONS

Q104.1 Registered design professional. A registered design professional shall prepare the construction documents and provide signature verifying compliance with the requirements of this appendix.

Q104.2 Amended construction documents for embodied GHG emissions. Covered products shall be installed in accordance with the approved construction documents. Prior to the issuance of the certificate of occupancy, the registered design professional that submits documentation per Sections Q103.3, Q103.4, or Q103.5 shall ensure that as-built product selection matches the approved

construction documents. If as-built products differ from those submitted on the approved construction documents, the registered design professional shall update the embodied GHG emissions calculations based on the updated procured products and attest that they are accurate to the best of the registered design professional's knowledge.

SECTION Q105
REFERENCED STANDARDS

Q105.1 General. See Table Q105.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title, and the section or sections of this appendix that reference the standard.

TABLE Q105.1 REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
ASTM E2921–22	Standard Practice for Minimum Criteria for Comparing Whole Building Life Cycle Assessments for Use with Building Codes, Standards, and Rating Systems	Q103.4
EN 15804—22	Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products	Q103.4.1
EN 15978—11	Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method	Q103.4.1
ISO 14040—06	Environmental management – Life cycle assessment – Principles and framework	Q103.4.1
ISO 14044—06	Environmental management – Life cycle assessment – Requirements and guidelines	Q103.4.1
ISO 21929-1—11	Sustainability in building construction – Sustainability indicators – Part 1: Framework for the development of indicators and a core set of indicators for buildings	Q103.4.1
ISO 21930—17	Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services	Q102.1, Q103.4.1
ISO 21931-1—22	Sustainability in buildings and civil engineering works – Framework for methods of assessment of the environmental, social and economic performance of construction works as a basis for sustainability assessment – Part 1: Buildings	Q102.1, Q103.4.1

S108-25 **New provisions on connections and fastenings**
IBC **Watch**

1705.1.2 Special inspection of connections, fastening, and anchorages. Where this section is specified in Section 1705, special inspection of connections, fastening, and anchorages shall be performed in accordance with this section. The following applicable items shall be verified to comply with construction documents, valid evaluation reports and manufacturer's printed installation instructions.

1. Materials of members being connected.
2. Component materials, coatings, and surface preparation.
3. Component geometry, thicknesses, clearances, and material cover.

4. Fastener type, quantity, layout, size, length, edge distances, critical spacing, seating or bearing conditions, and embedment depths or thread engagement.
5. Fastener installation torques, pre-tension loads, or other special procedures.
6. Accommodation of specified allowable movements including length, direction, freedom of slip, and clearances.
7. Pretensioned bolts and other similar connectors achieve specified contact between connected members.

1705.2.4 Open-web steel joists and joist girders. Special inspections of open-web steel joists and joist girders in buildings, structures and portions thereof shall be in accordance with Table 1705.2.4.

TABLE 1705.2.4 REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard
1. Installation of open-web steel joists and joist girders.			
a. Edd connections welding or bolted	--	X	~~SJI specifications listed in Section 2207.1~~ 1705.1.2
b. Bridging – horizontal or diagonal	--	--	--
1. Standard bridging	--	X	SJI specifications listed in Section 2207.1
2. Bridging that differs from the SJI specifications listed in Section 2207.1	--	X	--

a. Where applicable, see Section 1705.13.

1705.5.3 Mass timber construction. Special inspections of mass timber elements in Types IV-A, IV-B and IV-C construction shall be in accordance with Table 1705.5.3.

TABLE 1705.5.3 REQUIRED SPECIAL INSPECTIONS OF MASS TIMBER CONSTRUCTION

Type		Continuous Special Inspection	Periodic Special Inspection
1. Inspection of anchorage and connections of mass timber construction to timber deep foundation systems. Inspect per section 1705.1.2.		--	X
2. Inspect erection of mass timber construction.		--	X
3. Inspection of connections where installation methods are required to meet design loads.			
Threaded Fasteners	Verify use of proper installation equipment.	--	X
	Verify use of pre-drilled holes where required.	--	X
	Inspect screws, including diameter, length, head type, spacing, installation angle and depth.	--	X
Adhesive anchors installed in horizontal or upwardly inclined orientation to resist sustained tension loads. Inspect per section 1705.1.2.		X	--
Adhesive anchors not defined in preceding cell. Inspect per section 1705.1.2.		--	X
Bolted connections. Inspect per section 1705.1.2.		--	X
Concealed connections. Inspect per section 1705.1.2.		--	X

1705.12 Special inspections for wind resistance. Special inspections for wind resistance specified in Sections 1705.12.1 through 1705.12.3, unless exempted by the exceptions to Section 1704.2, are required for buildings and structures constructed in the following areas:

1. In wind Exposure Category B, where basic wind speed, V, is 150 mph (67 m/sec) or greater.
2. In wind Exposure Category C or D, where basic wind speed, V, is 140 mph (62.6 m/sec) or greater

1705.12.1 Structural wood. Continuous special inspection is required during field gluing operations of elements of the main windforce-resisting system. Periodic special inspection per section 1705.1.2 is required for nailing, bolting, anchoring and other fastening of elements of the main windforce-resisting system, including wood shear walls, wood diaphragms, drag struts, braces and hold-downs.

Exception: Special inspections are not required for wood shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other elements of the main windforce-resisting system, where the lateral resistance is provided by structural sheathing and the specified fastener spacing at panel edges is more than 4 inches (102 mm) on center.

1705.12.2 Cold-formed steel light-frame construction. Periodic special inspection is required for welding operations of elements of the main windforce-resisting system. Periodic special inspection is required for screw attachment, bolting, anchoring and other fastening of elements of the main windforce-resisting system, including shear walls, braces, diaphragms, collectors (drag struts) and hold-downs. Inspection tasks shall be as follows:

1. Special inspections for screw and bolt attachments to the items above shall be per the quality assurance inspector tasks listed in AISI S240 Section D6.10.
2. Special inspections for welding operations to fasten the items above shall be per the quality assurance inspector tasks listed in AISI S240 Tables D6.7-2 and D6.7-3.

Exception: Special inspections are not required for cold-formed steel light-frame shear walls and diaphragms, including screwing, bolting, anchoring and other fastening to components of the windforce-resisting system, where either of the following applies:

1. The sheathing is gypsum board or fiberboard.
2. The sheathing is wood structural panel or steel sheets on only one side of the shear wall, shear panel or diaphragm assembly and the specified fastener spacing at the panel or sheet edges is more than 4 inches (102 mm) on center (o.c.).

1705.12.3 Wind-resisting components. Periodic special inspection per section 1705.1.2 is required for fastening of the following systems and components:

1. Roof covering, roof deck and roof framing connections.
2. Exterior wall covering and wall connections to roof and floor diaphragms and framing.

Exceptions: Special inspections for the following items shall be performed in accordance with the referenced section rather than section 1705.1.2.

1. Special inspections for side laps of cold-formed steel deck panels and for fastening of cold-formed steel decks to roof framing and to exterior wall framing shall be performed in accordance with section 1705.2.3.
2. Special inspections for structural steel connections shall be performed in accordance with section 1705.2.1.
3. Special inspections for concrete roof deck, concrete roof framing connections, and concrete wall connections to roof and floor diaphragms and framing shall be performed in accordance with section 1705.3.

4. Special inspections for connections of high-load wood roof diaphragms to roof framing shall be performed in accordance with section 1705.5.1.

5. Special inspections for threaded fastener mass timber connections shall be performed in accordance with Table 1705.5.3.

1705.13.2 Structural wood. For the seismic force-resisting systems of structures assigned to Seismic Design Category C, D, E or F:

1. Continuous special inspection shall be required during field gluing operations of elements of the seismic force-resisting system.

2. Periodic special inspection per section 1705.1.2 shall be required for nailing, bolting, anchoring and other fastening of elements of the seismic force-resisting system, including wood shear walls, wood diaphragms, drag struts, braces, shear panels and holddowns.

Exception: Special inspections are not required for wood shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other elements of the seismic force-resisting system, where the lateral resistance is provided by structural sheathing, and the specified fastener spacing at the panel edges is more than 4 inches (102 mm) on center.

1705.13.3 Cold-formed steel light-frame construction. For the seismic force-resisting systems of structures assigned to Seismic Design Category C, D, E or F, periodic special inspection shall be required for both:

1. Welding operations of elements of the seismic force-resisting system.

2. Screw attachment, bolting, anchoring and other fastening of elements of the seismic force-resisting system, including shear walls, braces, diaphragms, collectors (drag struts) and hold-downs.

Inspection tasks shall be as follows:

1. Special inspections for screw and bolt attachments to the items above shall be per the quality assurance inspector tasks listed in AISI S240 Section D6.10.

2. Special inspections for welding operations to fasten the items above shall be per the quality assurance inspector tasks listed in AISI S240 Tables D6.7-2 and D6.7-3.

Exception: Special inspections are not required for cold-formed steel light-frame shear walls and diaphragms, including screw installation, bolting, anchoring and other fastening to components of the seismic force-resisting system, where either of the following applies:

1. The sheathing is gypsum board or fiberboard.

2. The sheathing is wood structural panel or steel sheets on only one side of the shear wall, shear panel or diaphragm assembly and the specified fastener spacing at the panel or sheet edge is more than 4 inches (102 mm) on center.

1705.13.4 Designated seismic systems. For structures assigned to Seismic Design Category C, D, E or F, the special inspector shall examine designated seismic systems requiring seismic qualification in accordance with Section 13.2.3 of ASCE 7 and verify that the label, anchorage and mounting conform to the certificate of compliance.

1705.13.5 Architectural components. Periodic special inspection per section 1705.1.2 is required for the erection and fastening of exterior cladding, interior and exterior nonbearing walls and interior and exterior veneer in structures assigned to Seismic Design Category D, E or F.

Exception: Periodic special inspection is not required for the following:

1. Exterior cladding, interior and exterior nonbearing walls and interior and exterior veneer 30 feet (9144 mm) or less in height
above grade or walking surface.

2. Exterior cladding and interior and exterior veneer weighing 5 psf (0.24 kN/m^2) or less.

3. Interior nonbearing walls weighing 15 psf (0.72 kN/m^2) or less.

1705.13.5.1 Access floors. Periodic special inspection per section 1705.1.2 is required for the anchorage of access floors in structures assigned to Seismic Design Category D, E or F.

1705.13.6 Plumbing, mechanical and electrical components. Periodic special inspection of plumbing, mechanical and electrical components shall be required for the following:

1. Anchorage of electrical equipment for emergency and standby power systems in structures assigned to Seismic Design Category C, D, E or F shall be inspected per section 1705.1.2.
2. Anchorage of other electrical equipment in structures assigned to Seismic Design Category E or F shall be inspected per section 1705.1.2.
3. Installation and anchorage of piping systems designed to carry hazardous materials and their associated mechanical units in structures assigned to Seismic Design Category C, D, E or F shall be inspected per section 1705.1.2.
4. Installation and anchorage of ductwork designed to carry hazardous materials in structures assigned to Seismic Design Category C, D, E or F shall be inspected per section 1705.1.2.
5. Installation and anchorage of vibration isolation systems in structures assigned to Seismic Design Category C, D, E or F where the approved construction documents require a nominal clearance of 1/4 inch (6.4 mm) or less between the equipment support frame and restraint shall be inspected per section 1705.1.2.
6. Installation of mechanical and electrical equipment, including duct work, piping systems and their structural supports, where automatic sprinkler systems are installed in structures assigned to Seismic Design Category C, D, E or F to verify one of the following:
   6.1. Minimum clearances have been provided as required by Section 13.2.4 ASCE/SEI 7.
   6.2. A nominal clearance of not less than 3 inches (76 mm) has been be provided between automatic sprinkler system drops and sprigs and: structural members not used collectively or independently to support the sprinklers; equipment attached to the building structure; and other systems' piping.

Where flexible sprinkler hose fittings are used, special inspection of minimum clearances is not required.

S112-25 **Removes sections numbers from table on inspections**
IBC **Watch**

TABLE 1705.3 REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard[a]	IBC Reference
1. Inspect reinforcement, including prestressing tendons, and verify placement.	--	~~X~~--	ACI 318: Ch. 26 ~~20,25.2, 25.3, 26.6.1-26.6.3~~	1908.1
a. Reinforcement in special moment frames, boundary elements of special structural walls and coupling beams.	X	--	ACI 318 Ch 26	
b. All other reinforcement.	--	X	ACI 318 Ch 26	
2. Reinforcing bar welding				1705.3.1

a. Verify weldability of reinforcing bars other than ASTM A706.	--	X	AWS D1.4 ACI 318: Ch. 26.~~13.1.4~~	
b. Inspect welding of reinforcement for intermediate and special moment frames, boundary elements of special structural walls, ~~and~~ coupling beams and shear reinforcement.	X	--	AWS D1.4 ACI 318: Ch. 26.~~13.3~~	
c. Inspect welded reinforcement splices.	X	--	--	
d. Inspect welding of primary tension reinforcement in corbels.	X	--	--	
e. Inspect single-pass fillet welds, maximum 5/16", not defined in 2.b.	--	X	AWS D1.4 ACI 318: Ch. 26.~~13.3~~	
f. Inspect all other welds.	~~--~~X	~~X~~ --	AWS D1.4 ACI 318: Ch. 26.~~13.3~~	
3. Inspect anchors cast in concrete	--	X	ACI 318: Ch. 26.~~13.3.3~~	--
4. Inspect anchors post-installed in hardened concrete members.[b]				
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	X	--	ACI 318: Ch. 26.~~13.3.2~~	
b. Mechanical anchors and adhesive anchors not defined in 4.a.	--	X	ACI 318: Ch. 26.~~13.3~~	
5. Verify use of required design mix.	~~--~~X	~~X~~ --	ACI 318: Ch. ~~19~~, 26 ~~.4.3, 26.4.4~~	1904.1, 1904.2
6. Prior to and during concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete	X	--	ASTM C31 ASTM C172 ACI 318: Ch. 26.~~5, 26.12~~	--
7. Inspect concrete and shotcrete placement for proper application techniques.	X	--	ACI 318: Ch. 26.~~5~~	--
8. Verify maintenance of specified curing temperature and techniques.	--	X	ACI 318: Ch. 26.~~5.3 - 26.5.5~~	--
9. Inspect prestressed concrete for:				--
a. Application of prestressing forces.	X	--	ACI 318: Ch. 26.~~10~~	
b. Grouting of bonded prestressing tendons.	X	--		
10.Inspect erection of precast concrete members.	--	X	ACI 318: Ch. 26.~~9~~	--
11. For precast concrete diaphragm connections or reinforcement at joints classified as moderate or high deformability elements (MDE or HDE) in structures assigned to Seismic Design Category C, D, E or F, inspect such connections and reinforcement in the field for:			ACI 318: Ch. 26.~~13.1.3~~	--
a. Installation of the embedded parts.	X	--	ACI 505.5	--
b. Completion of the continuity of reinforcement across joints.	X	--		
c. Completion of connections in the field.	X	--		
12. Inspect installation tolerances of precast concrete diaphragm connections for compliance with ACI 550.5	--	X	ACI 318: Ch. 26.~~13.1.3~~	--

13. Verify in-situ concrete strength, prior to stressing of tendons in posttensioned concrete and prior to removal of shores and forms from beams and structural slabs.	--	X	ACI 318: Ch. 26~~.11.2~~	--
14. Inspect formwork for shape, location and dimensions of the concrete member being formed.			ACI 318: Ch. 26~~.11.2 .11.1.2(b)~~	--

For SI: 1 inch = 25.4 mm.

a. Where applicable, see Section 1705.13.

b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 26.13 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

S115-25 In-situ structural integrity testing for deep foundations
IBC Watch

~~**1705.10 Structural integrity of deep foundation elements**. Whenever there is a reasonable doubt as to the structural integrity of a deep foundation element, an engineering assessment shall be required. The engineering assessment shall include tests for defects performed in accordance with ASTM D4945, ASTM D5882, ASTM D6760 or ASTM D7949, or other approved method.~~

SECTION 1708

IN-SITU LOAD AND INTEGRITY TESTS

1708.1 General. Whenever there is a reasonable doubt as to the structural integrity, stability or load-bearing capacity of a completed building, structure or portion thereof for the expected loads, an engineering assessment shall be required. The engineering assessment shall involve ~~either~~ a structural analysis, ~~or an~~ in-situ load tests, or both. The structural analysis shall be based on actual material properties and other as-built conditions that affect stability or load-bearing capacity, and shall be conducted in accordance with the applicable design standard. The in-situ load tests shall be conducted in accordance with Section 1708.2 or 1708.3.

If the building, structure or portion thereof is found to have inadequate stability or load-bearing capacity for the expected loads, modifications to ensure structural adequacy or the removal of the inadequate construction shall be required.

1708.2 In-situ load tests. In-situ load tests shall be conducted in accordance with Section 1708.2.1 or 1708.2.2 and shall be supervised by a registered design professional. The test shall simulate the applicable loading conditions specified in Chapter 16 as necessary to address the concerns regarding structural stability of the building, structure or portion thereof.

1708.3 In-situ structural integrity testing of deep foundation elements. In-situ structural integrity tests of deep foundation elements shall be conducted in accordance with ASTM D4945, ASTM D5882, ASTM D6760, ASTM D7949, or other approved methods and shall be supervised by a registered design professional.

S122,I-25 **Post-tensions slab-on-ground**
IBC **Watch**

1808.1 General. Foundations shall be designed and constructed in accordance with Sections 1808.2 through 1808.9. Shallow foundations shall satisfy the requirements of Section 1809. Deep foundations shall satisfy the requirements of Section 1810.

Exception: Design of post-tensioned slabs-on-ground need not comply with the requirements of Sections 1808.8, 1809, and 1810. Materials and construction of post-tensioned slabs-on-ground shall comply with PTI DC10.5 and PTI M10.6.

1808.2.1 Post-tensioned slabs-on-ground. Post-tensioned slabs-on-ground shall be designed in accordance with PTI DC10.5.

PTI	Post-PTI Tensioning Institute 38800 Country Club Drive Farmington Hills, MI 48331
M10.6-15	Specification for Unbonded Single Strand Tendons for Slab-on-Ground Construction

S122,II-25 **Post-tensions slab-on-ground**
IRC **Watch**

R402.5 Post-tensioned slabs-on-ground. Post-tensioned slabs-on-ground materials and installation shall be in accordance with PTI DC10.5 and PTI M10.6.

R403.6 Post-tensioned slabs-on-ground. Post-tensioned slabs-on-ground constructed on soil not classified as expansive in accordance with Section R403.1.8.1 shall be designed in accordance with PTI DC10.5.

PTI	Post-PTI Tensioning Institute 38800 Country Club Drive Farmington Hills, MI 48331
M10.6-15	Specification for Unbonded Single Strand Tendons for Slab-on-Ground Construction

S124-25 **Special inspection for rigid inclusion systems**
IBC **Watch**

RIGID INCLUSIONS. Vertical elements within the ground consisting of timber, steel, concrete, grout, or other combination of cementitious materials mixed with aggregates, or other materials that are significantly stiffer than the ground in which they are installed and do not require lateral confinement of the surrounding soil for internal stability. Rigid inclusions are not connected directly to foundations.

RIGID INCLUSION SYSTEMS. Rigid inclusions, the strata and materials in which they are installed, and a load transfer layer.

1705.6.2 Rigid inclusion systems. Special Inspections and tests shall be performed during installation of rigid inclusion systems as specified in Tables 1705.6.1 and 1705.6.2. The approved geotechnical investigation and construction documents prepared by the registered design professional(s) shall be used to determine compliance.

TABLE 1705.6.2 REQUIRED SPECIAL INSPECTIONS AND TESTS OF RIGID INCLUSION SYSTEMS

Type	Continuous Special Inspection	Periodic Special Inspection
1. Inspect installation and load testing operations, and maintain complete and accurate records for each rigid inclusion	X	--
2. Verify rigid inclusion materials, placement locations, diameters, and plumbness. Verify embedment into bearing strata and adequate end-bearing strata capacity. Record concrete or grout volumes. Verify top of rigid inclusions elevations.	X	--
3. Perform test and special inspections on concrete or grout in accordance with applicable requirements of Section 1705.3	In accordance with Section 1705.3	
4. During rigid inclusion load transfer/layer installation, verify use of proper materials, procedures, material densities, and lift thicknesses.	X	--

1809.16 Rigid inclusions. Rigid inclusions shall be in accordance with this section.

1809.16.1 General. Where ground improvement systems use rigid inclusions, rigid inclusion systems shall be designed, detailed and installed in accordance with sections 1809.16.2 through 1809.16.1.3.

1809.16.2 Design and detailing. Rigid inclusion systems shall be designed and detailed in accordance with sections 1809.16.2.1 through 1809.16.2.4.

1809.16.2.1 Design requirements. In addition to the requirements of Section 1809.15.1, the registered design professional shall provide construction documents and calculations that include all of the following:

1. The load distribution and strain compatibility between the rigid inclusions and surrounding strata.
2. The structural compatibility between the rigid inclusions and the shallow foundations including impacts of concentrated reaction
loads imposed by the rigid inclusions on shallow foundations.
3. Minimum number and configuration of rigid inclusions to establish vertical, lateral, and rotational stability of foundations.

1809.16.2.2 Allowable stresses. The allowable stresses for materials used in rigid inclusions shall be in accordance with section 1810.3.2.6. Allowable stresses for materials not included in section 1810.3.2.6 shall be approved by the building official.

1809.16.2.3 Load Test. Where rigid inclusions are used to increase bearing capacity, or where predicted settlements without rigid inclusions would cause harmful distortion or instability in the structure, control test elements shall be tested in accordance with ASTM
D1143 or ASTM D4945. One or more load tests shall be conducted in each area of similar subsurface conditions. The resulting allowable load shall be not more than one-half of the ultimate load bearing capacity as assessed by one of the published methods listed in section 1810.3.3.1.3.

1809.16.2.4 Seismic Design Categories C through F. For structures assigned to seismic design category C, D, E or F, materials used in rigid inclusions shall comply with section 1809.16.2.4.1, and reinforcement shall be provided in accordance with section 1809.16.2.4.2.

1809.16.2.4.1 Materials. For structures assigned to seismic design category C, D, E or F, materials used in rigid inclusions shall comply with one of the following:

1. Steel elements meeting the requirements of 1810.3.2.3.
2. Timber elements meeting the requirements of 1810.3.2.4.
3. Concrete elements meeting the requirements of 1808.8.1.
4. Other approved materials, which have adequate strength and ductility to resist imposed ground curvatures.

1809.16.2.4.2 Seismic reinforcement for concrete rigid inclusions. Where a structure is assigned to Seismic Design Category C, reinforcement shall be provided in accordance with Section 1809.16.2.4.2.1. Where a structure is assigned to Seismic Design Category D, E or F, reinforcement shall be provided in accordance with Sections 1809.16.2.4.2.2 and 1809.16.2.4.2.3.

1809.16.2.4.2.1 Seismic reinforcement in Seismic Design Category C. For structures assigned to Seismic Design Category C, concrete rigid inclusions shall be reinforced as specified in this section. Reinforcement shall be provided where required by analysis. At least one longitudinal bar, with a minimum longitudinal reinforcement ratio of 0.002, shall be provided throughout the minimum reinforced length of the element as defined in this section starting at the top of the element. The minimum reinforced length of the rigid inclusion shall be taken as the greatest of the following:

1. One-third of the element length.
2. A distance of 10 feet (3048 mm).
3. Three times the least element dimension.
4. Three times the least element dimension below the interfaces of strata that are hard or stiff and strata that are liquefiable or are composed of soft- to medium-stiff clay.

Exception: The requirements of this section shall not apply to concrete rigid inclusions cast in structural steel pipes or tubes.

1809.16.2.4.2.2 Seismic reinforcement in Seismic Design Categories D through F. For structures assigned to Seismic Design Category D, E or F, concrete rigid inclusions shall be reinforced as specified in this section. Reinforcement shall be provided where required by analysis. For Site Class A, B, BC, C, CD, D or DE sites, not less than one longitudinal bar, with a minimum longitudinal reinforcement ratio of 0.003, shall be provided throughout the minimum reinforced length of the rigid inclusion. For Site Class E and F sites, not less than four longitudinal bars, with a minimum longitudinal reinforcement ratio of 0.005, shall be provided throughout the minimum reinforced length of the rigid inclusion. The minimum reinforced length of the rigid inclusion is defined in this section as starting at the top of the element. The minimum reinforced length of the rigid inclusion shall be taken as the greatest of the following:

1. One-half of the element length.
2. A distance of 10 feet (3048 mm).
3. Three times the least element dimension.
4. Seven times the least element dimension below the interfaces of strata that are hard or stiff and strata that are liquefiable or are composed of soft- to medium-stiff clay.

Exception: The requirements of this section shall not apply to concrete cast in structural steel pipes or tubes.

1809.16.2.4.2.3 Transverse Confinement for Site Classes E and F. For Site Class E or F sites, transverse confinement reinforcement shall be provided in the rigid inclusion in accordance with Section 1810.3.9.4.2.2.

1809.16.3 Installation. The rigid inclusion systems shall be installed in accordance with construction documents provided by the rigid inclusion systems designer.

1809.16.4 Special inspection. Special Inspections in accordance with 1705.6.1 and 1705.6.2 shall be provided for rigid inclusion systems.

S132-25 **Anchor tensile strength in SDC D through F**
IBC **Watch**

1810.3.11.2 Seismic Design Categories D through F. For structures assigned to Seismic Design Category D, E or F, deep foundation element resistance to uplift forces or rotational restraint shall be provided by anchorage into the pile cap, designed considering the combined effect of axial forces due to uplift and bending moments due to fixity to the pile cap~~. Anchorage shall develop not less than 25 percent of the strength of the element in tension~~. Anchorage of deep foundation elements into the pile cap shall comply with the following:

1. The anchorage shall be designed to resist a tensile force of not less than 25 percent of the strength of the element in tension. In addition, in the case of steel H-piles or unfilled steel pipe piles, the anchorage shall be designed to resist a tensile force of not less than 10 percent of the pile compression capacity.

~~1~~ 2. In the case of uplift, the anchorage shall be ~~capable of developing~~ designed to resist a tensile force of not less than the least of the following:

~~1.1~~ 2.1. The nominal tensile strength of the longitudinal reinforcement in a concrete element.

~~1.2~~ 2.2. The nominal tensile strength of a steel element.

~~1.3~~ 2.3. The frictional force developed between the element and the soil multiplied by 1.3.

2.4 The axial tension force resulting from load combinations with the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.

~~**Exception:** The anchorage is permitted to be designed to resist the axial tension force resulting from the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.~~

~~2~~ 3. In the case of rotational restraint, the anchorage shall be designed to resist the axial and shear forces, and moments resulting from not less than the least of the following:

3.1 The load combinations with the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7. or

3.2 The ~~anchorage shall be capable of developing the~~ full axial, bending and shear nominal strength of the element.

~~3. The connection between the pile cap and the steel H-piles or unfilled steel pipe piles in structures assigned to Seismic Design Category D, E or F shall be designed for a tensile force of the least of the following not less than 10 percent of the pile compression capacity.~~

~~**Exceptions:**~~

~~1. Connection tensile capacity need not exceed the strength required to resist seismic load effects including overstrength of ASCE 7 Section 12.4.3 or 12.14.3.2.~~

~~2. Connections need not be provided where the foundation or supported structure does not rely on the tensile capacity of the piles for stability under the design seismic force.~~

Exception: Anchorage of steel H-piles or unfilled steel pipe piles into the pile cap need not be provided where the foundation or supported structure does not rely on the tensile capacity of the piles for stability under the design seismic force.

Where the vertical lateral-force-resisting elements are columns, the pile cap flexural strengths shall exceed the column flexural strength. ~~The connection between batter piles and pile caps shall be designed to resist the nominal strength of the pile acting as a short column. Batter piles and their connection shall be designed to resist forces and moments that result from the application of seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.~~

1810.3.11.2.1 Batter Piles. The anchorage between batter piles and piles caps shall be designed to resist the greatest of the following:

1. The nominal strength of the pile acting as a short column.
2. The axial and shear forces, and moments resulting from the load combinations with seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.

S133-25 **Connection details in SDC D through F**
IBC **Watch**

1810.3.11.2 Seismic Design Categories D through F. For structures assigned to Seismic Design Category D, E or F, connection of deep foundations to pile caps shall be designed in accordance with 1810.3.11.2.1 and 1810.3.11.2.2. Where the vertical lateral-force-resisting elements are columns, the pile cap flexural strengths shall exceed the column flexural strength. ~~deep foundation element resistance to uplift forces or rotational restraint shall be provided by anchorage into the pile cap, designed considering the combined effect of axialforces due to uplift and bending moments due to fixity to the pile cap. Anchorage shall develop not less than 25 percent of the strength ofthe element in tension. Anchorage into the pile cap shall comply with the following:~~

~~1. In the case of uplift, the anchorage shall be capable of developing the least of the following:~~

~~1.1. The nominal tensile strength of the longitudinal reinforcement in a concrete element.~~

~~1.2. The nominal tensile strength of a steel element.~~

~~1.3. The frictional force developed between the element and the soil multiplied by 1.3.~~

~~**Exception:** The anchorage is permitted to be designed to resist the axial tension force resulting from the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.~~

~~2. In the case of rotational restraint, the anchorage shall be designed to resist the axial and shear forces, and moments resulting from the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7 or the anchorage shall be capable of developing the full axial, bending and shear nominal strength of the element.~~

~~3. The connection between the pile cap and the steel H-piles or unfilled steel pipe piles in structures assigned to Seismic Design Category D, E or F shall be designed for a tensile force of not less than 10 percent of the pile compression capacity.~~

~~**Exceptions:**~~

~~1. Connection tensile capacity need not exceed the strength required to resist seismic load effects including overstrength of ASCE 7 Section 12.4.3 or 12.14.3.2.~~

~~2. Connections need not be provided where the foundation or supported structure does not rely on the tensile capacity of the piles for stability under the design seismic force.~~

~~Where the vertical lateral-force-resisting elements are columns, the pile cap flexural strengths shall exceed the column flexural strength. The connection between batter piles and pile caps shall be designed to resist the nominal strength of the pile acting as a short column. Batter piles and their connection shall be designed to resist forces and moments that result from the application of seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.~~

1810.3.11.2.1 Connections. Deep foundation element resistance to uplift forces or rotational restraint shall be provided by connection to the pile cap, designed considering the combined effect of axial forces due to uplift and bending moments due to fixity to the pile cap. Connections shall develop not less than 25 percent of the strength of the element in tension. For elements required to resist uplift forces,

provide rotational restraint, or both, connection to the pile cap shall comply with the following:

1. In the case of uplift, the connection shall be capable of developing the least of the following:
   1.1. The nominal tensile strength of the longitudinal reinforcement in a concrete element.
   1.2. The nominal tensile strength of a steel element.
   1.3. The frictional force developed between the element and the soil multiplied by 1.3.
   Exception: The connection is permitted to be designed to resist the axial tensile force resulting from the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.
2. In the case of rotational restraint, the connection shall be designed to resist the axial and shear forces, and moments resulting from the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7 or the connection shall be capable of developing the full axial, bending and shear nominal strength of the element.
3. The connection between the pile cap and the steel H-piles or unfilled steel pipe piles in structures assigned to Seismic Design Category D, E or F shall be designed for a tensile force of not less than 10 percent of the pile compression capacity.

   Exceptions:

   1. Connection tensile capacity need not exceed the strength required to resist seismic load effects including overstrength of ASCE 7 Section 12.4.3 or 12.14.3.2.
   2. Connections need not be provided where the foundation or supported structure does not rely on the tensile capacity of the piles for stability under the design seismic force.

1810.3.11.2.2 Batter Piles. The connection between batter piles and pile caps shall be designed to resist the nominal strength of the pile acting as a short column. Batter piles and their connection shall be designed to resist axial forces and moments that result from the application of seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.

S136-25 **Adds compliance and reference to ACI/PCI CODE 319**
IBC **Watch**

1901.2 Plain and reinforced concrete. Structural concrete shall be designed and constructed in accordance with the requirements of this chapter and ACI 318 as supplemented in Section 1905 of this code.

1901.2.1 Precast pretensioned concrete. Precast pretensioned concrete members and connections shall be permitted to be designed in accordance with ACI/PCI CODE 319.

ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331-3439
ACI/PCI CODE 319-25	Structural Precast Concrete - Code Requirements

S138-25 **Alternate anchor criteria - deviates from ACI CODE 318**
IBC **Disapprove**

1901.3 Anchoring to concrete. Anchoring to concrete shall be in accordance with ACI 318 as supplemented in Section 1905, and applies to cast-in (headed bolts, headed studs and hooked J- or L-bolts), post-installed expansion (torque-controlled and displacement controlled), undercut, screw, and adhesive anchors.

Exception: Seismic qualification of post-installed concrete anchors shall be permitted to be in accordance with ACI 355.2 for post-installed expansion, undercut, and screw anchors and in accordance with ACI 355.4 for post-installed adhesive anchors.

ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331-3439
ACI 355.2-22	Post-Installed Mechanical Anchors in Concrete - Qualification Requirements
ACI 355.4-19(21)	Qualification of Post-Installed Adhesive Anchors in Concrete

S139-25 **Replaces outdated ITG-10 with ACI SPEC 117-26**
IBC **Watch**

~~**1901.7 Tolerances for structural concrete**. Where not indicated in construction documents , structural tolerances for concrete structural elements shall be in accordance with this section.~~

1901.7 ~~**1901.7.1 Cast-in-place concrete tolerances**~~ **Tolerances for structural concrete**. Where not indicated in construction documents, ~~Structural~~ structural tolerances for ~~cast-in-place~~ concrete structural elements shall be in accordance with ACI 117.

Exceptions:

1. Group R-3 detached one- or two-family dwellings are not required to comply with this section.
2. Shotcrete is not required to comply with this section.

:

~~**1901.7.2 Precast concrete tolerances**. Structural tolerances for precast concrete structural elements shall be in accordance with ACI ITG-7.~~

~~**Exception:** Group R-3 detached one- or two-family dwellings are not required to comply with this section.~~

ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331-3439
~~ITG-7-09~~	~~Specification for Tolerances for Precast Concrete~~

S140-25 **Intermediate precast walls**
IBC **Watch**

SECTION 1905
SEISMIC REQUIREMENTS

1905.1 General. In addition to the provisions of ACI 318, structural concrete shall comply with the requirements of Section 1905.

1905.3 Intermediate precast structural walls. Intermediate precast structural walls shall comply with Section 18.5 of ~~ACI 318~~ ACI/PCI CODE 319 and this section.

~~**1905.3.1 Connections designed to yield**. Connections that are designed to yield shall be capable of maintaining 80 percent of their design strength at the deformation induced by the design displacement or shall use Type 2 mechanical splices~~.

ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331-3439
ACI/PCI CODE 319-25	Structural Precast Concrete – Code Requirements

S141-25 **Insulated precast concrete panels**
IBC **Watch**

SECTION 1909

PRECAST CONCRETE INSULATED WALL PANELS

1909.1 General. Precast concrete insulated wall panels shall be in accordance with the requirements of ANSI/PCI 150.

PCI	Precast Prestressed Concrete Institute 8770 West Bryn Mawr, Suite 1150 Chicago, IL 60631-3517
ANSI/PCI 150	Specification for the Design of Precast Concrete Insulated Wall Panels

S142-25 **Lightweight concrete for insulated roofs**
IBC **Watch**

SECTION 1909

LIGHTWEIGHT INSULATING CONCRETE ROOF INSULATION

1909.1 Lightweight insulating concrete. Material produced with or without aggregate additions to hydraulic cement, water and air to form a hardened material possessing insulating qualities, which, when oven dried shall have a unit weight no greater than 50 pcf (801 kg/m3).

1909.1.1 Lightweight cellular insulating concrete. Insulating concrete formulated by mixing a hydrated cementitious matrix around discrete air cells created by the addition of preformed foam formed from surfactants. The cured cellular lightweight insulating concrete shall have minimum compressive strength of 160 psi (1103 kPa) when tested in accordance with ASTM C495 and C796.

1909.1.2 Lightweight aggregate insulating concrete. Insulating concrete formulated by mixing lightweight aggregates such as Vermiculite or Perlite. The cured lightweight aggregate insulating concrete shall have minimum compressive strength of 160 psi (1103 kPa) when tested in accordance with ASTM C495.

1909.1.3 Lightweight cellular/aggregate (hybrid) insulating concrete. Insulated concrete formulated by combining preformed foam with lightweight aggregates to impart properties of both lightweight aggregate and cellular lightweight insulating concrete. It shall have a minimum compressive strength of 200 psi (1379 kPa) when tested in accordance with ASTM C495.

1909.2 Materials. Lightweight insulating concrete may be poured over galvanized metal decks vented and nonvented, cementitious wood fiber acoustical decks, structural concrete slabs, lightweight structural concrete slabs, precast concrete, prepared structural wood decks, and existing roof systems. Where manufacturer installation instructions require, lightweight insulating concrete over structural concrete slabs, twin tees, precast units or other nonventing substrate shall be vented.

1909.2.1 Limitations of use. Lightweight insulating concrete, in conjunction with galvanized formed steel sheets, shall not be used as a roof deck in areas where highly corrosive chemicals are used or stored. Lightweight insulating concrete shall not be poured directly over a painted or nongalvanized steel deck.

1909.3 Minimum thickness. Minimum thickness of lightweight insulating concrete shall be 2 inches (51 mm) over the top plane of the substrate unless otherwise specified in the product approval. Lightweight insulating concrete shall be of sufficient thickness to receive the specified base ply fastener length.

1909.4 Galvanized coatings. Galvanized coatings of formed steel sheets shall be in accordance with ASTM A525. Base steel shall be in accordance with ASTM A446, Grade A, B, C, D or greater and ASTM A1008 C, D or E.

1909.5 Vermiculite or perlite. Vermiculite or perlite shall be in accordance with ASTM C332, Group I.

1909.6 Preformed foam. Preformed foam surfactants shall be in accordance with ASTM C869.

1909.7 Base ply fasteners. All base ply fasteners for use with a specific lightweight insulating concrete roof deck system shall be approved for use in the manufacturer's installation instructions and the design pressure requirements of Section 1609.

1909.8 Fastener withdrawal. The lightweight insulating concrete fastener withdrawal shall have a minimum resistance of 40 pounds (178 N) at time of roofing.

1909.9 Insulation board. Insulation board shall comply with the following:

1. When used with lightweight insulating concrete, insulation board shall conform to Type I expanded polystyrene insulation density or greater, as defined in ASTM C578 or as approved for use in the manufacturer's installation instructions.
2. Packaged insulation board delivered to the job site shall comply with the provisions of Section 2603.2.
3. Installation of insulating board in conjunction with lightweight insulating concrete shall comply with the uplift requirements in Section 1609.
4. Insulation panels shall be placed in a minimum 1/8-inch (3.2 mm) slurry of insulating concrete while the material is still in a plastic state. The insulating concrete shall be cast over the insulation boards according to the insulating concrete manufacturer's installation instructions. Insulation panels shall be provided with holes and/or slots for keying and venting.

1909.10 Reinforcing mesh. Reinforcing mesh shall be provided as required to meet fire-rating and/or special structural design requirements, and follow the manufacturer's installation instructions. Fiber reinforcement may be used.

ASTM	ASTM International 100 Barr Harbor Drive, P.O. Box C700 West Conshohocken, PA 19428
A446-76(1981)e1	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) By The Hot-Dip Process, Structural (Physical) Quality
A525-91be1	Standard Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
A1008/A1008M-24	Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable
C332-17	Standard Specification for Lightweight Aggregates for Insulating Concrete
C495-12 (2019)	Standard Test Method for Foaming Agents for Use in Producing Cellular Concrete Using Preformed Foam
C618-22	Standard Test Method for Foaming Agents for Use in Producing Cellular Concrete Using PreformedFoam
C796/C796M-19	Standard Test Method for Foaming Agents for Use in Producing Cellular Concrete Using PreformedFoam
C869/C869M-11(2016)	Standard Specification for Foaming Agents Used in Making Preformed Foam for Cellular Concrete

RB1-25 **Expands scope to 1, 2-, 3 and 4-family dwellings**
IRC **Watch**

R101.1 Title. These provisions shall be known as the Residential Code for One-, ~~and~~ Two-, Three-, and Four-family Dwellings of [NAME OF JURISDICTION], and shall be cited as such and will be referred to herein as "this code."

RB20-25 **Requires combustibility testing for concrete containing combustibles**
IRC **Watch**

SECTION R302
FIRE-RESISTANT CONSTRUCTION

R302.8 Testing for noncombustibility. Noncombustible building materials shall be those materials that comply with Section 703.3.1 of the International Building Code.

R302.8.1 Testing not required. The following building materials shall not be required to be tested to be acceptable as noncombustible building materials.

1. Steel.
2. Concrete, containing no combustible aggregates or fibers.
3. Masonry, containing no combustible aggregates or fibers.
4. Glass ,excluding plastic glazing.
5. 3xxx, 5xxx and 6xxx series aluminum alloys.

RB89-25 **Corrosion resistant fasteners**
IRC **Watch**

Currently appears to be primarily focused on wood construction, but not clear in language.

SECTION R306
CORROSION RESISTANCE - SALTWATER ENVIRONMENTS

R306.1 Fasteners and connectors exposed to saltwater environments. In hurricane-prone regions, fasteners and connectors in areas within 3,000 ft (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.1.1 and R306.1.2.

R306.1.1 Screws, bolts and nails. Screws, bolts and nails shall be corrosion resistant by composition, stainless steel or nonferrous metal, or by coating or galvanization as specified in this section and Table R306.1.

R306.1.1.1 Stainless steel. Where required by Table R306.1, fasteners shall be manufactured from ASTM A240 Type 304, Type 305 or Type 316 stainless steel.

R306.1.1.2 Galvanized. Where required by Table R306.1, fasteners shall be in accordance with the following:

1. For fasteners with diameters greater than 3/8 inch (9.5 mm), the minimum corrosion resistance shall comply with or be equivalent to ASTM A153, Class C.
2. For fasteners with diameters 3/8 inch (9.5 mm) and less, the minimum corrosion resistance shall comply with or be equivalent to one of the following methods:
   - 2.1. ASTM A153, Class D.
   - 2.2. ASTM A641, Class 3S.
   - 2.3. Corrosion resistance exhibiting not more than 5 percent red rust after 1,000 hours of exposure in accordance with ASTM B117.

2.4. Corrosion resistance exhibiting not more the 5 percent red rust after 280 hours of exposure for nails, 1000 hours of exposure for roof tile fasteners or 360 hours of exposure for other carbon steel fasteners in accordance with ASTM G85, Annex 5.

R306.1.1.3 Compatibility. Fasteners used with connectors or other metal plates shall have a corrosion-resistant coating or composition that is compatible with the corrosion-resistant coating or composition of the connectors to prevent corrosion from galvanic action between dissimilar materials.

R306.1.2 Connectors and metal plates. Connectors and metal plates shall be corrosion resistant by composition, stainless steel or nonferrous metal, or by coating or galvanization as specified in this section and Table R306.1.

R306.1.2.1 Stainless steel. Where required by Table R306.1, connectors and metal plates shall be manufactured from ASTM A240 Type 316 stainless steel.

R306.1.2.2 Enhanced galvanizing. Where required by Table R306.1, connectors and metal plates shall be hot-dipped galvanized prior to fabrication to meet ASTM A653, Coating Designation G185, hot-dipped galvanized after fabrication to meet ASTM A123, or provided with a protective coating as specified by TPI 1.

R306.1.2.3 Standard galvanizing. Where required by Table R306.1, connectors and metal plates shall be hot-dipped galvanized prior to fabrication to meet ASTM A653, Coating Designation G90, hot-dipped galvanized after fabrication to meet ASTM A123, or provided with a protective coating as specified by TPI 1.

TABLE R306.1 CORROSION RESISTANCE OF FASTENERS AND CONNECTORS

Exposure Description[a]	Building Location			
	Less than or equal to 300 ft from saltwater coastline		Greater than 300 ft and up to 3000 ft from a saltwater coastline	
	Screws, bolts, lag screws, including nuts and washers, nails and glulam rivets	Connectors and metal plates	Screws, bolts, lag screws, including nuts and washers, nails and glulam rivets	Connectors and metal plates
Exterior-Partially Sheltered and Exterior-Open Exposed	Stainless Steel in accordance with Section R306.1.1.1	Stainless Steel in accordance with Section R306.1.2.1	Galvanized in accordance with Section R306.1.1.2	Galvanized in accordance with Section R306.1.2.2
Interior - Vented Enclosed	Galvanized in accordance with Section R306.1.1.2	Enhanced Galvanized in accordance with Section R306.1.2.2	Galvanized in accordance with Section R306.1.1.2	Enhanced Galvanized in accordance with Section R306.1.2.2
Interior - Unvented Enclosed	Galvanized in accordance with Section R306.1.1.2	Standard Galvanized in accordance with Section R306.1.2.3	Galvanized in accordance with Section R306.1.1.2	Galvanized in accordance with Section R306.1.2.3

a. Exposure Descriptions:

Exterior-Partially Sheltered locations are areas where fasteners and connectors are exposed to salt air, but not exposed to fresh rainwater to remove accumulated salt.

Exterior-Open Exposed locations are areas where fasteners and connectors are exposed to salt air, but also exposed to rainwater to allow rinsing of the accumulated salt, and also more likely to dry after rain.

Interior-Vented Enclosed locations are those where fasteners and connectors inside a part of the building that also has vents to the outside environment that would allow salt air to enter.
Interior-Unvented Enclosed locations are those that are inside the building, but not in the conditioned space.

CHAPTER 5
FLOORS

R502.1.8 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m).

R502.3.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R505.2.5.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R507.2.3 Fasteners and connectors. Metal fasteners and connectors used for all decks shall be in accordance with Section R304.3 and Table R507.2.3. Holes for through bolts shall be drilled to a diameter of 1/32 inch to 1/16 inch larger than the bolt diameter. Connectors shall be installed in accordance with the manufacturer's approved instructions. In hurricane-prone regions, fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

TABLE R507.2.3 FASTENER AND CONNECTOR SPECIFICATIONS FOR DECKS[a, b]

Item	Material	Minimum Finish-Coating	Alternate Finish-Coating[c]
Nails and glulam rivets	In accordance with ASTM F1667	Hot-dipped galvanized per ASTM A153, Class D or ASTM A641 Class 3S for 3/8-inch diameter and less	Stainless steel, silicon, bronze or copper
Bolts, lag screws (including nuts and washers)	In accordance with ASTM A307 (bolts), ASTM A563 (nuts), ASTM F844 (washers)	Hot-dipped galvanized per ASTM A153, Class C (Class D for 3/8-inch or less) or mechanically galvanized per ASTM B695, Class 55 or 410 stainless steel	Stainless steel, silicon, bronze or copper
Metal connectors	Per manufacturer's specification	ASTM A653 type G185 zinc-coated galvanized steel or post hot-dipped galvanized per ASTM A123 providing a minimum average coating weight of 2.0 oz./ft (total both sides)	Stainless steel

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Equivalent materials, coatings and finishes shall be permitted.

b. In hurricane-prone regions, fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306. Outside hurricane-prone regions, fasteners and connectors within 300 feet of a saltwater coastline shall be stainless steel.
~~Fasteners and connectors exposed to salt water or located within 300 feet of a salt water shoreline shall be stainless steel.~~

c. Stainless-steel-driven fasteners shall be in accordance with ASTM F1667.

CHAPTER 6
WALL CONSTRUCTION

R602.1.12 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R603.2.5.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R604.3.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R608.9.1 Connections between concrete walls and light-frame floor, ceiling and roof systems. Connections between concrete walls and light-frame floor, ceiling and roof systems using the prescriptive details of Figures R608.9(1) through R608.9(12) shall comply with this section and Sections R608.9.2, ~~and~~ R608.9.3 and R608.9.4.

R608.9.4 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

Exception: One-half inch (12.7 mm) diameter or greater steel bolts.

R610.3.4 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

CHAPTER 7
WALL COVERING

R703.3.3.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R704.2 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

CHAPTER 8
ROOF-CEILING CONSTRUCTION

R802.1.8 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R803.2.3.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R804.2.5.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

CHAPTER 9
ROOF ASSEMBLIES

R905.2.5.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R905.3.7.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R905.4.5.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R905.5.5.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R905.6.6.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R905.10.4.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R905.12.3.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R905.15.5.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

R905.16.6.1 Fasteners and connectors exposed to saltwater environments. Fasteners and connectors in areas within 3,000 feet (914 m) of a saltwater coastline, or other areas subject to salt corrosion, shall comply with Section R306.

ASTM	ASTM International 100 Barr Harbor Drive, P.O. Box C700 West Conshohocken, PA 19428
B117-19	Standard Practice for Operating Salt Spray (Fog) Apparatus
G85-19	Standard Practice for Modified Salt Spray (Fog) Testing

RB152-25 **Discontinuous and reinforced footings**
IRC **Watch**

R403.1.5.1 Discontinuous footings. Where a continuous concrete or masonry wall is supported on discontinuous footings, the wall shall be designed and reinforced to span between footing segments, and the footings shall be designed and reinforced to support the wall in accordance with Section R301.1.3
.

RB154-25 **Stepped footings in SDC D**
IRC **Watch**

R403.1.5.1 Stepped Footings. The step height in stepped footings shall be 2 feet (610 mm) or less. The distance between footing steps, along the length of the footing, shall be at least two times the step height. The footing thickness shall comply with R403.1.1 and shall be maintained through the step as shown in Figure R403.1.5(1).

R403.1.5.2 Stepped footings in Seismic Design Categories D_0, D_1 and D_2. Stepped concrete footings in Seismic Design Categories D_0, D_1 and D_2 shall have minimum continuity reinforcement as shown in Figure R403.1.5(2).

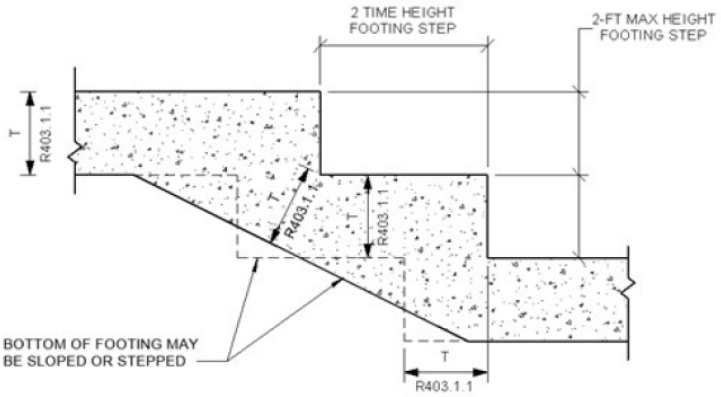

Figure R403.1.5(1)
Stepped Concrete Footings
All Wind and Seismic Design Categories

FIGURE R403.1.5(1) STEPPED CONCRETE FOOTINGS, ALL WIND AND SEISMIC DESIGN CATEGORIES

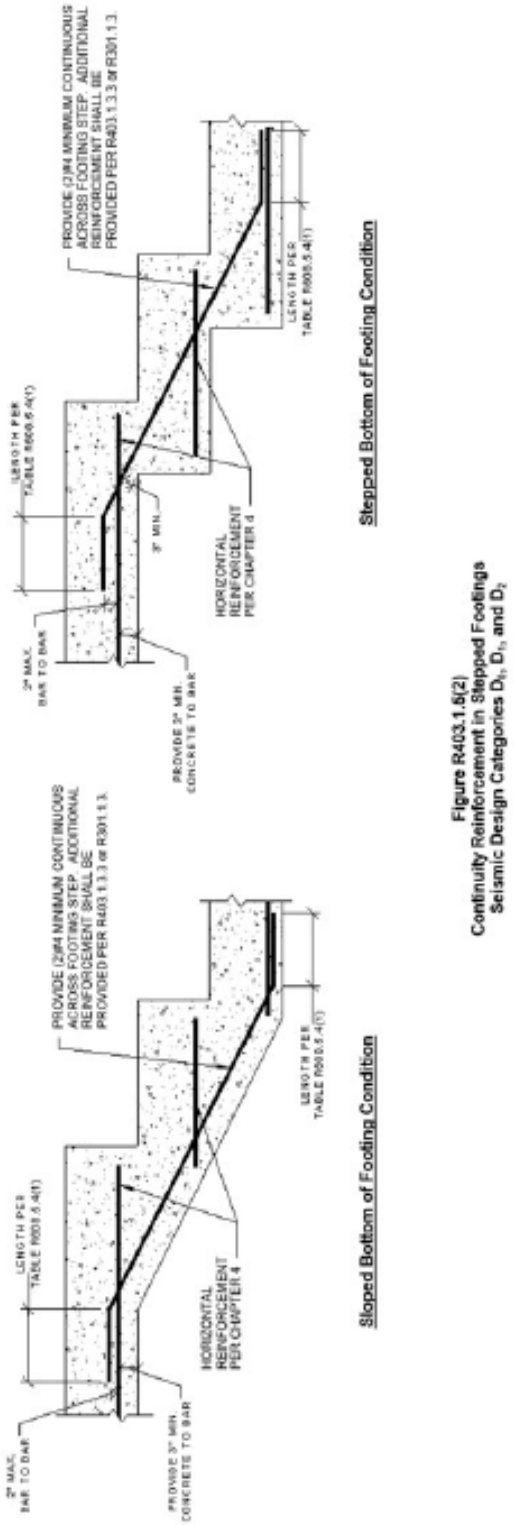

Figure R403.1.5(2)
Continuity Reinforcement in Stepped Footings
Seismic Design Categories D_0, D_1, and D_2

FIGURE R403.1.5(2) CONTINUITY REINFORCEMENT IN STEPPED FOOTINGS, SEISMIC DESIGN CATEGORIES D_0, D_1 AND D_2

RB155-25 **Replace PCA 100 with NRMCA 100**
IRC **Watch**

R301.2.2.5 Concrete construction. Buildings with exterior above-grade concrete walls shall comply with ~~PCA~~ NRMCA 100 or shall be designed in accordance with ACI 318.

Exception: Detached one- and two-family dwellings in Seismic Design Category C with exterior above-grade concrete walls are allowed to comply with the requirements of Section R608.

R404.1.3 Concrete foundation walls. Concrete foundation walls that support light-frame walls shall be designed and constructed in accordance with the provisions of this section, ACI 318, ACI 332 or ~~PCA~~ NRMCA 100. Concrete foundation walls that support abovegrade concrete walls that are within the applicability limits of Section R608.2 shall be designed and constructed in accordance with the provisions of this section, ACI 318, ACI 332 or ~~PCA~~ NRMCA 100. Concrete foundation walls that support above-grade concrete walls that are not within the applicability limits of Section R608.2 shall be designed and constructed in accordance with the provisions of ACI 318, ACI 332 or ~~PCA~~ NRMCA 100. Where ACI 318, ACI 332, ~~PCA~~ NRMCA 100 or the provisions of this section are used to design concrete foundation walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the jurisdiction having authority.

R404.1.3.2.1 Concrete foundation stem walls supporting above-grade concrete walls. Foundation stem walls that support above grade concrete walls shall be designed and constructed in accordance with this section.

1. Stem walls not laterally supported at top. Concrete stem walls that are not monolithic with slabs-on-ground or are not otherwise laterally supported by slabs-on-ground shall comply with this section. Where unbalanced backfill retained by the stem wall is less than or equal to 18 inches (457 mm), the stem wall and above-grade wall it supports shall be provided with vertical reinforcement in accordance with Section R608.6 and Table R608.6(1), R608.6(2) or R608.6(3) for above-grade walls. Where unbalanced backfill retained by the stem wall is greater than 18 inches (457 mm), the stem wall and above-grade wall it supports shall be provided with vertical reinforcement in accordance with Section R608.6 and Table R608.6(1).
2. Stem walls laterally supported at top. Concrete stem walls that are monolithic with slabs-on-ground or are otherwise laterally supported by slabs-on-ground shall be vertically reinforced in accordance with Section R608.6 and Table R608.6(1), R608.6(2) or R608.6(3) for above-grade walls. Where the unbalanced backfill retained by the stem wall is greater than 18 inches (457 mm), the connection between the stem wall and the slab-on-ground, and the portion of the slab-on-ground providing lateral support for the wall shall be designed in accordance with ~~PCA~~ NRMCA 100 or with accepted engineering practice. Where the unbalanced backfill retained by the stem wall is greater than 18 inches (457 mm), the minimum nominal thickness of the wall shall be 6 inches (152 mm).

R404.1.3.2.2 Concrete foundation stem walls supporting light-frame above-grade walls. Concrete foundation stem walls that support light-frame above-grade walls shall be designed and constructed in accordance with this section.

1. Stem walls not laterally supported at top. Concrete stem walls that are not monolithic with slabs-on-ground or are not otherwise laterally supported by slabs-on-ground and retain 48 inches (1219 mm) or less of unbalanced fill, measured from the top of the wall, shall be constructed in accordance with Section R404.1.3. Foundation stem walls that retain more than 48 inches (1219

mm) of unbalanced fill, measured from the top of the wall, shall be designed in accordance with Sections R404.1.1 and R404.4.

2. Stem walls laterally supported at top. Concrete stem walls that are monolithic with slabs-on-ground or are otherwise laterally supported by slabs-on-ground shall be constructed in accordance with Section R404.1.3. Where the unbalanced backfill retained by the stem wall is greater than 48 inches (1219 mm), the connection between the stem wall and the slab-on-ground, and the portion of the slab-on-ground providing lateral support for the wall, shall be designed in accordance with ~~PCA~~ NRMCA 100 or in accordance with accepted engineering practice.

R404.1.3.4 Requirements for Seismic Design Category C. Concrete foundation walls supporting above-grade concrete walls in townhouses assigned to Seismic Design Category C shall comply with ACI 318, ACI 332 or PCA NRMCA 100 (see Section R404.1.3).

R404.1.4.2 Concrete foundation walls. In buildings assigned to Seismic Design Category D0, D1 or D2, as established in Table R301.2, concrete foundation walls that support light-frame walls shall comply with this section, and concrete foundation walls that support above grade concrete walls shall comply with ACI 318, ACI 332 or ~~PCA~~ NRMCA 100 (see Section R404.1.3). In addition to the horizontal reinforcement required by Table R404.1.3.2(1), plain concrete walls supporting light-frame walls shall comply with the following:

1. Wall height shall not exceed 8 feet (2438 mm).
2. Unbalanced backfill height shall not exceed 4 feet (1219 mm).
3. Minimum thickness for plain concrete foundation walls shall be 7.5 inches (191 mm) except that 6 inches (152 mm) is permitted where the maximum wall height is 4 feet 6 inches (1372 mm).

Foundation walls less than 7.5 inches (191 mm) in thickness, supporting more than 4 feet (1219 mm) of unbalanced backfill or exceeding 8 feet (2438 mm) in height shall be provided with horizontal reinforcement in accordance with Table R404.1.3.2(1), and vertical reinforcement in accordance with Table R404.1.3.2(2), R404.1.3.2(3), R404.1.3.2(4), R404.1.3.2(5), R404.1.3.2(6), R404.1.3.2(7) or R404.1.3.2(8). Where Tables R404.1.3.2(2) through R404.1.3.2(8) permit plain concrete walls, not less than No. 4 (No. 13) vertical bars at a spacing not exceeding 48 inches (1219 mm) shall be provided.

R608.1 General. Exterior concrete walls shall be designed and constructed in accordance with the provisions of this section or in accordance with the provisions of ~~PCA~~ NRMCA 100, ACI 318 or ACI 332. Where ~~PCA~~ NRMCA 100, ACI 318, ACI 332 or the provisions of this section are used to design concrete walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the jurisdiction having authority.

R608.2 Applicability limits. The provisions of this section shall apply to the construction of exterior concrete walls for buildings not greater than 60 feet (18 288 mm) in plan dimensions, floors with clear spans not greater than 32 feet (9754 mm) and roofs with clear spans not greater than 40 feet (12 192 mm). Buildings shall not exceed 35 feet (10 668 mm) in mean roof height or two stories in height above grade. Floor/ceiling dead loads shall not exceed 10 pounds per square foot (479 Pa), roof/ceiling dead loads shall not exceed 15 pounds per square foot (718 Pa) and attic live loads shall not exceed 20 pounds per square foot (958 Pa). Roof overhangs shall not exceed 2 feet (610 mm) of horizontal projection beyond the exterior wall and the dead load of the overhangs shall not exceed 8 pounds per square foot (383 Pa).

Walls constructed in accordance with the provisions of this section shall be limited to buildings subjected to a maximum design wind speed of 160 mph (72 m/s) Exposure B, 136 mph (61 m/s) Exposure C and 125 mph (56 m/s) Exposure D. Walls constructed in accordance with the provisions of this section shall be limited to detached one- and two-family dwellings and townhouses assigned to Seismic Design Category A or B, and detached one- and two-family dwellings assigned to Seismic Design Category C.

Buildings that are not within the scope of this section shall be designed in accordance with PCA NRMCA 100 or ACI 318.

R608.5.1 Concrete and materials for concrete. Materials used in concrete, and the concrete itself, shall conform to requirements of this section, ~~PCA~~ NRMCA 100, ACI 318 or ACI 332.

R608.9.2 Connections between concrete walls and light-frame floor systems. Connections between concrete walls and lightframe floor systems shall be in accordance with one of the following:

1. For floor systems of wood-framed construction, the provisions of Section R608.9.1 and the prescriptive details of Figures R608.9(1) through R608.9(4), where permitted by the tables accompanying those figures. Portions of connections of wood framed floor systems not noted in the figures shall be in accordance with Section R502, or AWC WFCM, if applicable. Wood framing members shall be of a species having a specific gravity equal to or greater than 0.42.
2. For floor systems of cold-formed steel construction, the provisions of Section R608.9.1 and the prescriptive details of Figures R608.9(5) through R608.9(8), where permitted by the tables accompanying those figures. Portions of connections of cold-formed steel-framed floor systems not noted in the figures shall be in accordance with Section R505, or AISI S230, if applicable.
3. Proprietary connectors selected to resist loads and load combinations in accordance with Appendix A (ASD) or Appendix B (LRFD) of ~~PCA~~ NRMCA 100.
4. An engineered design using loads and load combinations in accordance with Appendix A (ASD) or Appendix B (LRFD) of ~~PCA~~ NRMCA 100.
5. An engineered design using loads and material design provisions in accordance with this code, or in accordance with ASCE 7, ACI 318, and AWC NDS for wood-framed construction or AISI S100 for cold-formed steel frame construction.

R608.9.3 Connections between concrete walls and light-frame ceiling and roof systems. Connections between concrete walls and light-frame ceiling and roof systems shall be in accordance with one of the following:

1. For ceiling and roof systems of wood-framed construction, the provisions of Section R608.9.1 and the prescriptive details of Figures R608.9(9) and R608.9(10), where permitted by the tables accompanying those figures. Portions of connections of wood-framed ceiling and roof systems not noted in the figures shall be in accordance with Section R802, or AWC WFCM, if applicable. Wood framing members shall be of a species having a specific gravity equal to or greater than 0.42.
2. For ceiling and roof systems of cold-formed steel construction, the provisions of Section R608.9.1 and the prescriptive details of Figures R608.9(11) and R608.9(12), where permitted by the tables accompanying those figures. Portions of connections of cold-formed steel-framed ceiling and roof systems not noted in the figures shall be in accordance with Section R804, or AISI S230, if applicable.
3. Proprietary connectors selected to resist loads and load combinations in accordance with Appendix A (ASD) or Appendix B (LRFD) of ~~PCA~~ NRMCA 100.

4. An engineered design using loads and load combinations in accordance with Appendix A (ASD) or Appendix B (LRFD) of ~~PCA~~ NRMCA 100.

5. An engineered design using loads and material design provisions in accordance with this code, or in accordance with ASCE 7, ACI 318, and AWC NDS for wood-framed construction or AISI S100 for cold-formed steel-framed construction.

NRMCA	National Ready Mixed Concrete Association 66 Canal Center Plaza, Suite 250 Alexandria, VA 2314
100-2023	Prescriptive Design of Exterior Concrete Walls for One and Two-Family Dwellings
~~**PCA**~~	~~Portland Cement Association~~ ~~5420 Old Orchard Road~~ ~~Skokie, IL 60077~~
~~100—17~~	~~Prescriptive Design of Exterior Concrete Walls for One- and Two-family Dwellings (Pub. No. PCA 100.3)~~

RB158-25 **Reorganization and requires 3000 psi in SDC D**
IRC **Watch**

R402.2.1 Concrete and materials ~~Materials for concrete~~. Concrete and materials ~~Materials~~ for concrete shall comply with the requirements of this Section ~~R608.5.1~~.

~~R608.5.1~~ R402.2.1.1 Concrete and materials for concrete. Materials used in concrete, and the concrete itself, shall conform to requirements of this section, PCA 100, ACI 318 or ACI 332.

~~R608.5.1.1~~ R402.2.1.2 Cements. The following standards as referenced in Chapter 44 shall be permitted to be used:

1. ASTM C150.
2. ASTM C595.
3. ASTM C1157.

~~R608.5.1.2~~ R402.2.1.3 Concrete mixing and delivery. Mixing and delivery of concrete shall comply with ASTM C94 or ASTM C685.

~~R608.5.1.3~~ R402.2.1.4 Maximum aggregate size. The nominal maximum size of coarse aggregate shall not exceed one-fifth the narrowest distance between sides of forms, or three-fourths the clear spacing between reinforcing bars or between a bar and the side of the form.

Exception: When approved, these limitations shall not apply where removable forms are used and workability and methods of consolidation permit concrete to be placed without honeycombs or voids.

~~R608.5.1.4~~R402.2.1.5 Proportioning and slump of concrete. Proportions of materials for concrete shall be established to provide workability and consistency to permit concrete to be worked readily into forms and around reinforcement under conditions of placement to be employed, without segregation or excessive bleeding. Slump of concrete placed in removable forms shall not exceed 6 inches (152 mm).

Exception: When approved, the slump is permitted to exceed 6 inches (152 mm) for concrete mixtures that are resistant to segregation, and are in accordance with the form manufacturer's recommendations.

Slump of concrete placed in stay-in-place forms shall exceed 6 inches (152 mm). Slump of concrete shall be determined in accordance with ASTM C143.

~~R608.5.1.5~~ R402.2.1.6 **Compressive strength**. The minimum specified compressive strength of concrete, f'_c, shall comply with Section R402.2 and shall be not less than 2,500 pounds per square inch (17.2 MPa) at 28 days. For concrete foundation walls in buildings assigned to Seismic Design Category D_0, D_1 or D_2 the minimum specified compressive strength of concrete shall not be less than 3,000 psi(21 MPa) .

~~R608.5.1.6~~ R402.2.1.7 **Consolidation of concrete**. Concrete shall be consolidated by suitable means during placement and shall be worked around embedded items and reinforcement and into corners of forms. Where stay-in-place forms are used, concrete shall be consolidated by internal vibration.

Exception: When approved, self-consolidating concrete mixtures with slumps equal to or greater than 8 inches (203 mm) that are specifically designed for placement without internal vibration need not be internally vibrated.

R404.1.3.3 Concrete, materials for concrete, and forms. Materials used in concrete foundation walls, ~~the concrete itself and forms~~ shall conform to requirements of Section R402.2.1. this section or ACI 318.

~~**R404.1.3.3.1 Compressive strength**. The minimum specified compressive strength of concrete, f ' , shall comply c with Section R402.2 and shall be not less than 2,500 psi (17.2 MPa) at 28 days in buildings assigned to Seismic Design Category A, B or C and 3,000 psi (20.5 MPa) in buildings assigned to Seismic Design Category D_0, D_1 or D_2.~~

~~**R404.1.3.3.2 Concrete mixing and delivery**. Mixing and delivery of concrete shall comply with ASTM C94 or ASTM C685.~~

~~**R404.1.3.3.3 Maximum aggregate size**. The nominal maximum size of coarse aggregate shall not exceed one-fifth the narrowest distance between sides of forms, or three-fourths the clear spacing between reinforcing bars or between a bar and the side of the form.~~

~~**Exception**: Where approved, these limitations shall not apply where removable forms are used and workability and methods of consolidation permit concrete to be placed without honeycombs or voids.~~

~~**R404.1.3.3.4 Proportioning and slump of concrete**. Proportions of materials for concrete shall be established to provide workability and consistency to permit concrete to be worked readily into forms and around reinforcement under conditions of placement to be employed, without segregation or excessive bleeding. Slump of concrete placed in removable forms shall not exceed 6 inches (152 mm).~~

~~**Exception:** Where approved, the slump is permitted to exceed 6 inches (152 mm) for concrete mixtures that are resistant to segregation, and are in accordance with the form manufacturer's recommendations.~~

~~Slump of concrete placed in stay-in-place forms shall exceed 6 inches (152 mm). Slump of concrete shall be determined in accordance with ASTM C143.~~

~~**R404.1.3.3.5 Consolidation of concrete**. Concrete shall be consolidated by suitable means during placement and shall be worked around embedded items and reinforcement and into corners of forms. Where stay-in-place forms are used, concrete shall be consolidated by internal vibration.~~

~~**Exception:** Where approved for concrete to be placed in stay-in-place forms, self-consolidating concrete mixtures with slumps equal to or greater than 8 inches (203 mm) that are specifically designed for placement without internal vibration need not be internally vibrated.~~

RB174-25 **Vapor retarders**
IRC **Watch**

R506.3.3 Vapor retarder. A minimum ~~6 mil (0.006 inch; 152 µm)~~ 10 mil (0.010 inch; 0.25mm) polyethylene or approved vapor retarder conforming to ASTM E 1745 requirements with joints lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where a base course does not exist.

Exception: The vapor retarder is not required for the following:

1. Garages, utility buildings and other unheated accessory structures.
2. For unheated storage rooms having an area of less than 70 square feet (6.5 m^2) and carports.
3. Driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date.
4. Where approved by the building official, based on local site conditions.

RB175-25 **Vapor retarders**
IRC **Watch**

R506.3.3 Vapor retarder. A minimum 6 mil (0.006 inch; 152 µm) polyethylene or approved vapor retarder shall comply with ASTM E1745 with joints lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where a base course does not exist.

Exception: The vapor retarder is not required for the following:

1. Garages, utility buildings and other unheated accessory structures.
2. For unheated storage rooms having an area of less than 70 square feet (6.5 m^2) and carports.
3. Driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date.
4. Where approved by the building official, based on local site conditions

PM5-25 **Unsafe**
IPMC **Watch**

UNSAFE. Buildings, structures or equipment that are unsanitary, or that are deficient due to inadequate means of egress facilities, inadequate light and ventilation, or that constitute a fire hazard, or in which the structure or individual structural members meet the definition of "Dangerous," or that are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance shall be deemed unsafe. A vacant structure that is not secured against entry shall be deemed unsafe.

PM11-25 **Potentially unsafe**
IPMC **Watch**

304.1.1 Potentially unsafe conditions. The following conditions shall be considered to be potentially unsafe, shall be assessed and, if determined to be unsafe, shall be addressed in compliance with the International Existing Building Code , the International Residential Code or the International Building Code :

1. Structural members have deterioration or distress that appears to reduce their load-carrying capacity.
2. The anchorage of the floor or roof to walls or columns, and of walls and columns to foundations has deterioration or distress that appears to reduce its load-carrying capacity.

3. Structures or components thereof have deterioration or distress that appears to reduce their load-carrying capacity.
4. Siding and masonry joints including joints between the building envelope and the perimeter of windows, doors and skylights are not maintained, weather resistant or watertight.
5 . Foundation systems that are not firmly supported by footings, are not plumb and free from open cracks and breaks, are not properly anchored or are not capable of supporting all nominal loads and resisting all load effects.
6. Exterior walls that are not anchored to supporting and supported elements or are not plumb and free of holes, cracks or breaks and loose or rotting materials, are not properly anchored or are not capable of supporting all nominal loads and resisting all load effects.
7. Roofing or roofing components that have defects that admit rain, roof surfaces with inadequate drainage, or any portion of the roof framing that is not in good repair with signs of deterioration, fatigue or without proper anchorage and incapable of supporting all nominal loads and resisting all load effects.
8. Flooring and flooring components with defects that affect serviceability or flooring components that show signs of deterioration or fatigue, are not properly anchored or are incapable of supporting all nominal loads and resisting all load effects.
9. Veneer, cornices, belt courses, corbels, trim, wall facings and similar decorative features not properly anchored or that are anchored with connections not capable of supporting all nominal loads and resisting all load effects.
10. Overhang extensions or projections including, but not limited to, trash chutes, canopies, marquees, signs, awnings, fire escapes, standpipes and exhaust ducts not properly anchored or that are anchored with connections not capable of supporting all nominal loads and resisting all load effects.
11. Exterior stairs, decks, porches, balconies and all similar appurtenances attached thereto, including guards and handrails, are not structurally sound, not properly anchored or that are anchored with connections not capable of supporting all nominal loads and resisting all load effects.
12. Chimneys, cooling towers, smokestacks and similar appurtenances not structurally sound or not properly anchored, or that are anchored with connections not capable of supporting all nominal loads and resisting all load effects.

Exception~~Exceptions~~:

~~1. Where substantiated otherwise by an approved method.~~

~~2.~~ Demolition of unsafe conditions shall be permitted where approved by the code official.

305.1.1 Potentially unsafe conditions. The following conditions shall be considered to be potentially unsafe, shall be assessed and, if determined to be unsafe, shall be addressed in compliance with the International Existing Building Code , the International Residential Code or the International Building Code :

1. Structural members have deterioration or distress that appears to reduce their load-carrying capacity.
2. The anchorage of the floor or roof to walls or columns, and of walls and columns to foundations has deterioration or distress that appears to reduce its load-carrying capacity.
3. Structures or components thereof have deterioration or distress that appears to reduce their load-carrying capacity.

4. Stairs, landings, balconies and all similar walking surfaces, including guards and handrails, are not structurally sound, not properly anchored or are anchored with connections not capable of supporting all nominal loads and resisting all load effects.
5. Foundation systems that are not firmly supported by footings are not plumb and free from open cracks and breaks, are not properly anchored or are not capable of supporting all nominal loads and resisting all load effects.

Exception~~Exceptions~~:

~~1. Where substantiated otherwise by an approved method.~~

~~2.~~ Demolition of unsafe conditions shall be permitted where approved by the code official