

# AMENDMENTS to the 2018 INTERNATIONAL BUILDING CODE

## CHAPTER 3 OCCUPANCY - CLASSIFICATION AND USE

No amendments

## CHAPTER 4 –SPECIAL DETAILED REQUIREMENTS BASE ON USE AND OCCUPANCY

### SECTION 403 - HIGH-RISE BUILDINGS

**[F] 403.3.2 Water supply to required fire pumps.** In buildings that are more than 420 feet (128 m) in *building height*, required fire pumps shall be supplied by connections to not fewer than two water mains located in different streets as approved by Puerto Rico Aqueducts and Sewer Authority (PRASA) or (AAA) or delegated entity. Connections to mains must be made in compliance with the REGLAMENTO DE NORMAS DE DISEÑO of PRASA. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate as approved by PRASA or the delegated utility entity.

**Exception:** Two connections to the same main shall be permitted provided that the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through not fewer than one of the connections.

### SECTION 406 - MOTOR-VEHICLE-RELATED OCCUPANCIES

**406.2.9 Equipment and appliances.** Equipment and appliances shall be installed in accordance with Sections 406.2.9.1 through 406.2.9.3 and the *International Mechanical Code*, *International Fuel Gas Code*, NFPA 70, and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

### SECTION 423 - STORM SHELTERS

**423.3 Critical Emergency Operations.** In areas where the shelter design wind speed for hurricanes is 190 mph or greater on island states or territories where vehicle access to the continental US by roadway is not available, 911 call stations,

emergency operations center and fire, rescue, ambulance and police stations shall comply with Table 1604.5 as a Risk Category IV structure and shall be provided with a storm shelter constructed in accordance with ICC 500.

**423.4 Group E Occupancies.** In accordance with Figure 304.2(2) of ICC 500, all Group E occupancies with occupant load of 50 or more shall have a storm shelter constructed in accordance with ICC 500.

## **CHAPTER 5 GENERAL BUILDING HEIGHTS AND AREAS**

No amendments

## **CHAPTER 6 TYPES OF CONSTRUCTION**

No amendments.

## **CHAPTER 7 FIRE AND SMOKE PROTECTION FEATURES**

No amendments.

## **CHAPTER 8 INTERIOR FINISHES**

No amendments.

## **CHAPTER 9 – FIRE PROTECTION SYSTEMS AND LIFE SAFETY SYSTEMS**

### **SECTION 903 - AUTOMATIC SPRINKLER SYSTEMS**

**[F] 903.2.8 Group R.** An *automatic sprinkler system* installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R *fire area*.

#### **Exceptions:**

1. Residential occupancy Group R-2, construction type I, when the floor level having an occupant load of 30 or less that is located 45 feet (16.76 m) or less above the lowest level of fire department vehicle access.
2. Residential occupancy Group R-3.

**[F] 903.2.8.1 Group R-3.** An *automatic sprinkler system* if installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies.

**[F] 903.2.8.2 Group R-4, Condition 1.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-4, Condition 1 occupancies.

**[F] 903.2.8.3 Group R-4, Condition 2.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4, Condition 2 occupancies.

**[F] 903.2.8.4 Care facilities.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in care facilities with five or fewer individuals in a single-family dwelling

**[F] 903.3.5 Water supplies.** Water supplies for *automatic sprinkler systems* shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against backflow in accordance with the requirements of this section and the *International Plumbing Code*. For connections to public waterworks systems, connections to water mains must be made in compliance with the Reglamento de Normas de Diseño of the Puerto Rico Aqueducts and Sewer Authority or the delegated utility entity.

**[F] 903.3.5.1 Domestic services.** Where the domestic service provides the water supply for the *automatic sprinkler system*, the supply shall be in accordance with this section.

**[F] 903.3.5.2 Residential combination services.** A single combination water supply shall be allowed provided that the domestic demand is added to the sprinkler demand, where required, shall be as required by NFPA.

## CHAPTER 10 – MEANS OF EGRESS

### SECTION 1004 - OCCUPANT LOAD

**1004.7 Outdoor areas.** Yards, patios, occupied roofs, *courts* and similar outdoor areas accessible to and usable by the building occupants shall be provided with *means of egress* as required by this chapter. The *occupant load* of such outdoor areas shall be assigned by the registered design professional and the fire code official in accordance with the anticipated use. Where outdoor areas are to be used by persons in addition to the occupants of the building, and the path of egress travel from the outdoor areas passes through the building, *means of egress* requirements for the building shall be based on the sum of the *occupant loads* of the building plus the outdoor areas.

#### Exceptions:

1. Outdoor areas used exclusively for service of the building need only have one *means of egress*.
2. Both outdoor areas associated with Group R-3 and individual dwelling units of Group R-2.

## SECTION 1006 - NUMBER OF EXITS AND EXIT ACCESS DOORWAYS

**TABLE 1006.2.1**  
**SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY**

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE(feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A <sup>c</sup> , E, M	49	75	75	75 <sup>a</sup>
B	49	100	75	100 <sup>a</sup>
F	49	75	75	100 <sup>a</sup>
H-1, H-2, H-3	3	NP	NP	25 <sup>b</sup>
H-4, H-5	10	NP	NP	75 <sup>b</sup>
I-1, I-2 <sup>d</sup> , I-4	10	NP	NP	75 <sup>a</sup>
I-3	10	NP	NP	100 <sup>a</sup>
R-1	10	NP	NP	75 <sup>a</sup>
R-2	30	75	NP	125 <sup>a</sup>
R-3 <sup>e</sup>	20	75	NP	125 <sup>a, g</sup>
R-4 <sup>e</sup>	20	NP	NP	125 <sup>a, g</sup>
S <sup>f</sup>	29	100	75	100 <sup>a</sup>
U	49	100	75	75 <sup>a</sup>

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

a. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.

b. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.

c. For a room or space used for assembly purposes having fixed seating, see Section 1029.8.

d. For the travel distance limitations in Group I-2, see Section 407.4.

e. The common path of egress travel distance shall only apply in a Group R-3 occupancy located in a mixed occupancy building.

f. The length of common path of egress travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

g. For the travel distance limitations in Groups R-3 and R-4 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3, see Section 1006.2.2.6

**TABLE 1006.3.3(1)**  
**STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES**

STORY	OCCUPANCY	MAXIMUM NUMBER OF DWELLING UNITS PER STORY	MAXIMUM COMMON PATH OF TRAVEL DISTANCE
Basement, first, second, third, or fourth story above grade plane	R-2 <sup>a, b</sup>	4 dwelling units	125 feet
Fifth story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 3048 mm.

NP = Not Permitted.

NA = Not Applicable.

a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.

b. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(2).

## SECTION 1020 - CORRIDORS

**TABLE 1020.1**  
**CORRIDOR FIRE-RESISTANCE RATING**

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system <sup>c</sup>
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R-1, R-4	Greater than 10	Not Permitted	0.5 <sup>c</sup> /1 <sup>d</sup>
R2	Less than 30	1	0.5 <sup>c</sup> /1 <sup>d</sup>
R2	Greater than 30	Not Permitted	0.5 <sup>c</sup> /1 <sup>d</sup>
R3	Less than 16	1	0.5 <sup>c</sup> /1 <sup>d</sup>
I-2 <sup>a</sup>	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1 <sup>b</sup>
I-4	All	1	0

a. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3.

b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.8.

c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

d. Group R-3 and R-4 buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3. See Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.3.

## CHAPTER 11 ACCESSIBILITY

No amendments.

## CHAPTER 12 – INTERIOR ENVIRONMENT

### SECTION 1207 - INTERIOR SPACE DIMENSIONS

**1207.2 Minimum ceiling heights.** Occupiable spaces, *habitable spaces* and *corridors* shall have a ceiling height of no less than 8 feet (2625 mm) above the finished floor. Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall be permitted to have a ceiling of no less than 7 feet (2134 mm) above the finished floor.

Exceptions:

1. In one – and two – family dwellings, beams or girders spaced not more than 6 inches (152 mm) below the required ceiling height.
2. If any room in a building has a slope ceiling, the prescribed ceiling height for the room is required at the lower level of the ceiling. Any portion of the room measuring less than 5 feet (1524 mm) from the finished floor to the ceiling shall not be included in any computation of the minimum area thereof.
3. The height of *mezzanines* and spaces below *mezzanines* shall be in accordance with Section 505.2.
4. Corridors contained within a *dwelling unit* or *sleeping unit* in a Group R occupancy shall have a ceiling height of not less than 7 feet (2134 mm) above the finished floor.

**1207.2.1 Furred ceiling.** Any room with a furred ceiling shall be required to have the minimum ceiling height in two-thirds of the area thereof, but in no case shall the height of the furred ceiling be less than 7 feet (2134 mm).

## CHAPTER 13 ENERGY EFFICIENCY

No amendments.

## CHAPTER 14 EXTERIOR WALLS

No amendments.

# CHAPTER 15 – ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

## SECTION 1507 - REQUIREMENTS FOR ROOF COVERINGS

TABLE 1507.3.7  
CLAY AND CONCRETE TILE ATTACHMENT<sup>a, b, c</sup>

GENERAL - CLAY OR CONCRETE ROOF TILE				
Maximum Allowable Stress Design Wind Speed, $V_{asd}^f$ (mph)	Mean roof height (feet)	Roof slope < 3:12	Roof slope 3:12 and over	
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.3.		
INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS <sup>d,*</sup> (Installations on spaced/solid sheathing with battens or spaced sheathing)				
Maximum Allowable Stress Design Wind Speed, $V_{asd}^f$ (mph)	Mean roof height (feet)	Roof slope < 5:12	Roof slope 5:12 < 12:12	Roof slope 12:12 and over
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.3.		
INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS (Installations on solid sheathing without battens)				
Maximum Allowable Stress Design Wind Speed, $V_{asd}^f$ (mph)	Mean roof height (feet)	All roof slopes		
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.3.		

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 4.882 kg/m<sup>2</sup>.

- Minimum fastener size. Corrosion-resistant nails not less than No. 11 gage with <sup>5</sup>/<sub>16</sub> -inch head. Fasteners shall be long enough to penetrate into the sheathing <sup>3</sup>/<sub>4</sub> inch or through the thickness of the sheathing, whichever is less. Attaching wire for clay and concrete tile shall not be smaller than 0.083 inch.
- Snow areas. Not fewer than two fasteners per tile are required or battens and one fastener. c. Roof slopes greater than 24:12. The nose of all tiles shall be securely fastened.
- Horizontal battens. Battens shall be not less than 1 inch by 2 inch nominal. Provisions shall be made for drainage by a riser of not less than <sup>1</sup>/<sub>4</sub> inch at each nail or by 4-foot-long battens with not less than a <sup>1</sup>/<sub>4</sub> -inch separation between battens. Horizontal battens are required for slopes over 7:12.
- Perimeter fastening areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and gable rakes. f.  $V_{asd}$  shall be determined in accordance with Section 1609.3.1.

**1507.12.2 Material standards.** Thermoset single-ply roof coverings shall comply with ASTM D4637 or ASTM D5019. Minimum thickness shall be 60 mils reinforced membrane over a 1/4" minimum thickness dense coverboard.

**1507.13.2 Material standards.** Thermoplastic single-ply roof coverings shall comply with ASTM D4434, ASTM D6754 or ASTM D6878. Minimum thickness shall be 60 mils reinforced membrane over a 1/4" minimum thickness dense coverboard.

**1507.15.1 Slope.** Liquid-applied roofing shall have a design slope of not less than one-fourth unit vertical in 12 units horizontal (2-percent slope). Liquid acrylic coatings shall have a one-half unit vertical in 12 units horizontal (4-percent slope).

## CHAPTER 16 – STRUCTURAL DESIGN

### SECTION 1603 - CONSTRUCTION DOCUMENTS

**1603.1.4 Wind design data.** The following information related to wind loads shall be shown, regardless of whether wind loads govern the design of the lateral force-resisting system of the structure:

1. Basic design wind speed,  $V$ , miles per hour and allowable stress design wind speed,  $V_{asd}$ , as determined in accordance with Section 1609.3.1.
2. *Risk category.*
3. Wind exposure. Applicable wind direction if more than one wind exposure is utilized.
4. Applicable internal pressure coefficient.
5. Design wind pressures to be used for exterior component and cladding materials not specifically designed by the registered design professional responsible for the design of the structure, psf (kN/m<sup>2</sup>), shall be coordinated and approved by the designer of record of the project, and comply with all engineering design regulations.

### SECTION 1604 - GENERAL DESIGN REQUIREMENTS

**1604.3 Serviceability.** Structural systems and members thereof shall be designed to have adequate stiffness to limit deflections as indicated in Table 1604.3. Drift limits applicable to earthquake loading shall be in accordance with ASCE 7 Chapter 12, 13, 15 or 16, as applicable. See Section 12.12.1 of ASCE 7 for drift limits applicable to earthquake loading.



**TABLE 1604.3**  
**DEFLECTION LIMITS a,b,c,h,i**

CONSTRUCTION	$L$ or $L_r$	$S$ or $W^f$	$D + L^{d,g}$
Roof members: <sup>e</sup>			
Supporting plaster or stucco ceiling	$l/36$	$l/36$	$l/24$
Supporting nonplaster ceiling	0	0	0
Not supporting ceiling	$l/24$	$l/24$	$l/18$
	0	0	0
	$l/18$	$l/18$	$l/12$
	0	0	0
Floor members	$l/360$	—	$l/240$
Exterior walls:			
With plaster or stucco finishes	—	$l/36$	—
With other brittle finishes	—	0	—
With flexible finishes	—	$l/24$	—
		0	
		$l/12$	
		0	
Interior partitions: <sup>b</sup>			
With plaster or stucco finishes	$l/36$	—	—
With other brittle finishes	0	—	—
With flexible finishes	$l/24$	—	—
	0		
	$l/12$		
	0		
Farm buildings	—	—	$l/180$
Greenhouses	—	—	$l/120$

For SI: 1 foot = 304.8 mm.

- For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed  $l/60$ . For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed  $l/150$ . For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed  $l/90$ . For roofs, this exception only applies when the metal sheets have no roof covering.
- Flexible, folding and portable partitions and interior partitions not exceeding 6 feet in height are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.15.
- See Section 2403 for glass supports.
- The deflection limit for the  $D+(L+L_r)$  load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For lumber, structural glued laminated timber, prefabricated wood I-joists and structural composite lumber members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from  $0.5D$ . For lumber and glued laminated timber members installed or used at all other moisture conditions or cross laminated timber and wood structural panels that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from  $D$ . The value of  $0.5D$  shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.
- The preceding deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Chapter 8 of ASCE 7.
- The wind load shall be permitted to be taken as 0.42 times the "component and cladding" loads or directly calculated using the 10-year mean return interval wind speed for the purpose of determining deflection limits in Table 1604.3. Where framing members support glass, the deflection limit therein shall not exceed that specified in Section 1604.3.7.
- For steel structural members, the deflection due to creep component of long-term dead load shall be permitted to be taken as zero.
- For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed  $l/60$ . For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed  $l/175$  for each glass lite or  $l/60$  for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed  $l/120$ .
- $l$  = Length of the member between supports. For cantilever members,  $l$  shall be taken as twice the length of the cantilever.

## SECTION 1604 - GENERAL DESIGN REQUIREMENTS

**1604.4 Analysis.** *Load effects* on structural members and their connections shall be determined by methods of structural analysis that take into account equilibrium, general stability, geometric compatibility and both short-and long-term material properties.

Members that tend to accumulate residual deformations under repeated service loads shall have included in their analysis the the added eccentricities expected to occur during their service life.

Any system or method of construction to be used shall be based on a rational analysis in accordance with well-established principles of mechanics. Such analysis shall result in a system that provides a complete load path capable of transferring loads from their point of origin to the load-resisting elements.

The total lateral force shall be distributed to the various vertical elements of the lateral force-resisting system in proportion to their rigidities, considering the rigidity of the horizontal bracing system or diaphragm. Rigid elements assumed not to be a part of the lateral force-resisting system are permitted to be incorporated into buildings provided that their effect on the action of the system is considered and provided for in the design. A diaphragm is rigid for the purpose of distribution of story shear and torsional moment when the lateral deformation of the diaphragm is less than or equal to two times the average story drift. Where required by ASCE 7, provisions shall be made for the increased forces induced on resisting elements of the structural system resulting from torsion due to eccentricity between the center of application of the lateral forces and the center of rigidity of the lateral force-resisting system.

Every structure shall be designed to resist the overturning effects caused by the lateral forces specified in this chapter. See Section 1609 for wind loads, Section 1610 for lateral soil loads and Section 1613 for earthquake loads. The use of reinforced concrete walls with slabs acting as frames, in their weak (out-of-plane) direction, to withstand lateral forces as part of lateral force resisting system, is not permitted.

**TABLE 1607.1**  
**MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L<sub>0</sub>**  
**AND MINIMUM CONCENTRATED LIVE LOADS<sub>g</sub>**

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
1. Apartments (see residential)	—	—
2. Access floor systems	50	2,000
Office use	100	2,000
3. Armories and drill rooms	150 <sup>n</sup>	—
4. Assembly areas		
Fixed seats (fastened to floor) Follow spot, projections and control	60 <sup>m</sup>	
rooms Lobbies	50	—
Movable seats	100 <sup>m</sup>	
Stage floors	100 <sup>m</sup>	
Platforms	150 <sup>n</sup>	
(assembly) Other	100 <sup>m</sup>	
5. Balconies and decks <sup>h</sup>	1.5 times the live load for the area served, not	—
6. Catwalks	40	300
7. Cornices	60	—
8. Corridors		
First floor	100	—
Other floors	Same as occupancy served except as indicated	
9. Dining rooms and restaurants	100 <sup>m</sup>	—
10. Dwellings (see residential)	—	—
11. Elevator machine room and controlroom grating (on area of 2 inches by 2	—	300
12. Finish light floor plate construction	—	200
13. Fire escapes	100	
On single-family dwellings only	40	—
14. Garages (passenger vehicles only) Trucks and buses	40 <sup>o</sup>	Note a See Section 1607.7
15. Handrails, guards and grab	See Section 1607.8	
16. Helipads	See Section 1607.6	
17. Hospitals		
Corridors above first floor	80	1,000
Operating rooms, laboratories	60	1,000
Patient rooms	40	1,000
18. Hotels (see residential)	—	—
19. Libraries		
Corridors above first floor	80	1,000
Reading rooms	60	1,000
Stack rooms	150 <sup>b, n</sup>	1,000
20.		
Manufacturing	250 <sup>n</sup>	3,000
Heavy	125 <sup>n</sup>	2,000
21. Marquees, except one- and two-family	75	—

22. Office buildings		
Corridors above first floor	80	2,000
File and computer rooms shall be designed for heavier loads based on anticipated occupancy	100	2,000
Lobbies and first-	50	2,000

(continued)

**TABLE 1607.1—continued**  
**MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L<sub>0</sub>,**  
**AND MINIMUM CONCENTRATED LIVE LOADS<sub>g</sub>**

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
23. Penal institutions		
Cell blocks	40	—
Corridors	100	
24. Recreational uses:		
Bowling alleys, poolrooms and similar uses	75 <sup>m</sup>	—
Dance halls and ballrooms	100 <sup>m</sup>	
Gymnasiums	100 <sup>m</sup>	
Ice skating rink	250 <sup>n</sup>	
Reviewing stands, grandstands and bleachers	100 <sup>c, m</sup>	
Roller skating rink	100 <sup>m</sup>	
25. Residential		
One- and two-family dwellings	60 <sup>c, m</sup>	—
Uninhabitable attics without storage <sup>i</sup>	10	
Uninhabitable attics with storage <sup>i</sup>	20	
Habitable attics and sleeping areas <sup>k</sup>	30	
Canopies, including marquees	20	
All other areas	40	
Hotels and multifamily dwellings	40	
Private rooms and corridors serving them	100	

26. Roofs		
Flat roofs with rise less 1 unit vertical in 24 units horizontal (slope less than 4.2%)	30	
All roof surfaces subject to maintenance workers	5 <sup>m</sup>	300
Awnings and canopies:		
Fabric construction supported by a skeleton structure	20	2,000 300
All other construction, except one- and two-family dwellings	20	Note 1
Ordinary flat, pitched, and curved roofs (that are not occupiable) Primary roof members exposed to a work floor	100 100 <sup>m</sup> Note 1	
Single panel point of lower chord of roof trusses or any point along primary structural members supporting roofs over manufacturing, storage warehouses, and repair garages		
All other primary roof members		
Occupiable roofs: Roof		
27. Schools		
Classrooms	40	1,000
Corridors above first floor	80	1,000
First-floor corridors	100	1,000
28. Scuttles, skylight ribs and accessible ceilings	—	200
29. Sidewalks, vehicular driveways and yards, subject to trucking	250 <sup>d, n</sup>	8,000 <sup>e</sup>
30. Stairs and exits	40	300 <sup>f</sup>
One- and two-family dwellings	100	300 <sup>f</sup>

**TABLE 1607.1—continued**  
**MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L<sub>0</sub>,**  
**AND MINIMUM CONCENTRATED LIVE LOADS<sub>g</sub>**

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
31. Storage warehouses (shall be designed for heavier loads if required for anticipated storage) Heavy Light	250 <sup>n</sup> 125 <sup>n</sup>	—
32. Stores Retail First floor Upper floors Wholesale, all floors	100 75 125 <sup>n</sup>	1,000 1,000 1,000
33. Vehicle barriers	See Section 1607.9	
34. Walkways and elevated platforms (other than exitways)	60	—
35. Yards and terraces, pedestrians	100 <sup>m</sup>	—

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm<sup>2</sup>,  
1 square foot = 0.0929 m<sup>2</sup>, 1 pound per square foot = 0.0479 kN/m<sup>2</sup>,  
1 pound = 0.004448 kN, 1 pound per cubic foot = 16 kg/m<sup>3</sup>.

a. Floors in garages or portions of buildings used for the storage of motor vehicles shall be designed for the uniformly distributed live loads of this table or the following concentrated loads: (1) for garages restricted to passenger vehicles accommodating not more than nine passengers, 3,000 pounds acting on an area of 4½ inches by 4½ inches; (2) for mechanical parking structures without slab or deck that are used for storing passenger vehicles only, 2,250 pounds per wheel.

b. The loading applies to stack room floors that support non-mobile, double-faced library book stacks, subject to the following limitations:

1. The nominal book stack unit height shall not exceed 90 inches.
2. The nominal shelf depth shall not exceed 12 inches for each face.
3. Parallel rows of double-faced book stacks shall be separated by aisles not less than 36 inches wide.

c. Design in accordance with ICC 300.

d. Other uniform loads in accordance with an approved method containing provisions for truck loadings shall be considered where appropriate.

e. The concentrated wheel load shall be applied on an area of 4.5 inches by 4.5 inches.

f. The minimum concentrated load on stair treads shall be applied on an area of 2 inches by 2 inches. This load need not be assumed to act concurrently with the uniform load.

g. Where snow loads occur that are in excess of the design conditions, the structure shall be designed to support the loads due to the increased loads caused by drift buildup or a greater snow design determined by the building official (see Section 1608).

h. See Section 1604.8.3 for decks attached to exterior walls.

i. Uninhabitable attics without storage are those where the maximum clear height between the joists and rafters is less than 42 inches, or where there

are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses. This live load need not be

assumed to act concurrently with any other live load requirements.

j. Uninhabitable attics with storage are those where the maximum clear

height between the joists and rafters is 42 inches or greater, or where there

are two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in

width, or greater, within the plane of the trusses.

The live load need only be applied to those portions of the joists or truss

bottom chords where both of the following conditions are met:

i. The attic area is accessible from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is not less than 30 inches.

ii. The slopes of the joists or truss bottom chords are not greater than two units vertical in 12 units horizontal.

The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than

10 pounds per square foot.

k. Attic spaces served by stairways other than the pull-down type shall be

designed to support the minimum live load specified for habitable attics

and sleeping rooms.

l. Areas of occupiable roofs, other than roof gardens and assembly areas,

shall be designed for appropriate loads as approved by the building official. Unoccupied landscaped areas of roofs shall be designed in accordance with Section 1607.13.3.

m. Live load reduction is not permitted.

n. Live load reduction is only permitted in accordance with Section 1607.11.1.2

or Item 1 of Section 1607.11.2.

o. Live load reduction is only permitted in accordance with Section 1607.11.1.3

or Item 2 of Section 1607.11.2.

## SECTION 1609 - WIND LOADS

**1609.1 Applications.** Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads pre-scribed herein. Decreases in wind loads shall not be made for the effect of shielding by other structures.

**1609.1.1 Determination of Wind Loads.** Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 31 of ASCE 7. The type of opening protection required, the basic design wind speed,  $V$ , and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

### Exceptions:

1. Subject to the limitations of Section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings.
2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AWC WFCM.
3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AISI S230.
4. Designs using NAAMM FP 1001.
5. Designs using TIA-222 for antenna-supporting structures and antennas, provided that the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment.
6. Wind tunnel tests in accordance with ASCE 49 and Sections 31.4 and 31.5 of ASCE 7.

The wind speeds in Figures 1609.3(1) through 1609.3(8) are basic design wind speeds,  $V$ , and shall be converted in accordance with Section 1609.3.1 to allowable stress design wind speeds,  $V_{asd}$ , when the provisions of the standards referenced in Exceptions 4 and 5 are used.



**TABLE 1609.2**  
**WINDBORNE DEBRIS PROTECTION FASTENING SCHEDULE FOR WOOD STRUCTURAL PANELS<sup>a, b, c, d</sup>**

FASTENER TYPE	FASTENER SPACING (inches)		
	Panel Span □ 4 feet	4 feet < Panel Span □ 6 feet	6 feet < Panel Span □ 8 feet
No. 8 wood-screw-based anchor with 2-inch embedment length	16	10	8
No. 10 wood-screw-based anchor with 2-inch embedment length	16	12	9
<sup>1</sup> / <sub>4</sub> -inch diameter lag-screw-based anchor with 2-inch embedment length	16	16	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound = 4.448 N, 1 mile per hour = 0.447 m/s.

- a. This table is based on a 140 mph basic design wind speeds and a 45-foot mean roof height.  
b. Fasteners shall be installed at opposing ends of the wood structural panel. Fasteners shall be located not less than 1 inch from the edge of the panel.  
c. Anchors shall penetrate through the exterior wall covering with an embedment length of 2 inches minimum into the building frame. Fasteners shall be located not less than 2<sup>1</sup>/<sub>2</sub> inches from the edge of concrete block or concrete.  
d. Where panels are attached to masonry or masonry/stucco, they shall be attached using vibration-resistant anchors having a minimum ultimate withdrawal capacity of 1,500 pounds.

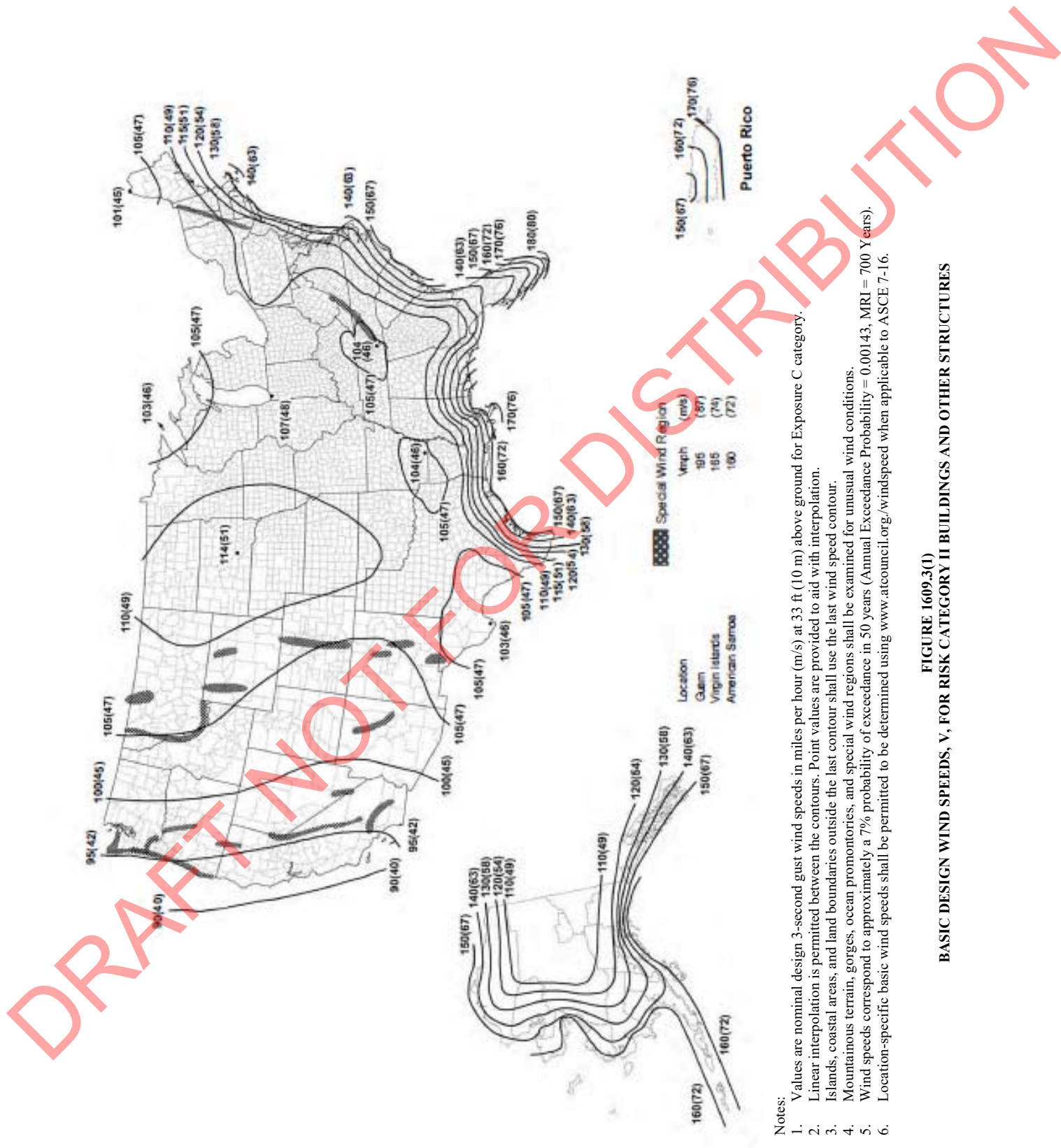
**TABLE 1609.3.1 - WIND SPEED CONVERSIONS<sup>a, b, c</sup>**

**TABLE 1609.3.1**  
**WIND SPEED CONVERSIONS<sup>a, b, c</sup>**

V	100	110	120	130	140	150	160	170	180	190	200
V <sub>asd</sub>	78	85	93	101	108	116	124	132	139	147	155

For SI: 1 mile per hour = 0.44 m/s.

- a. Linear interpolation is permitted.  
b. V<sub>asd</sub> = allowable stress design wind speed applicable to methods specified in Exceptions 1 through 5 of Section 1609.1.1.  
c. V = basic design wind speeds determined from Figures 1609.3(1) through 1609.3(8).



**FIGURE 1609.3(1)**  
**BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES**

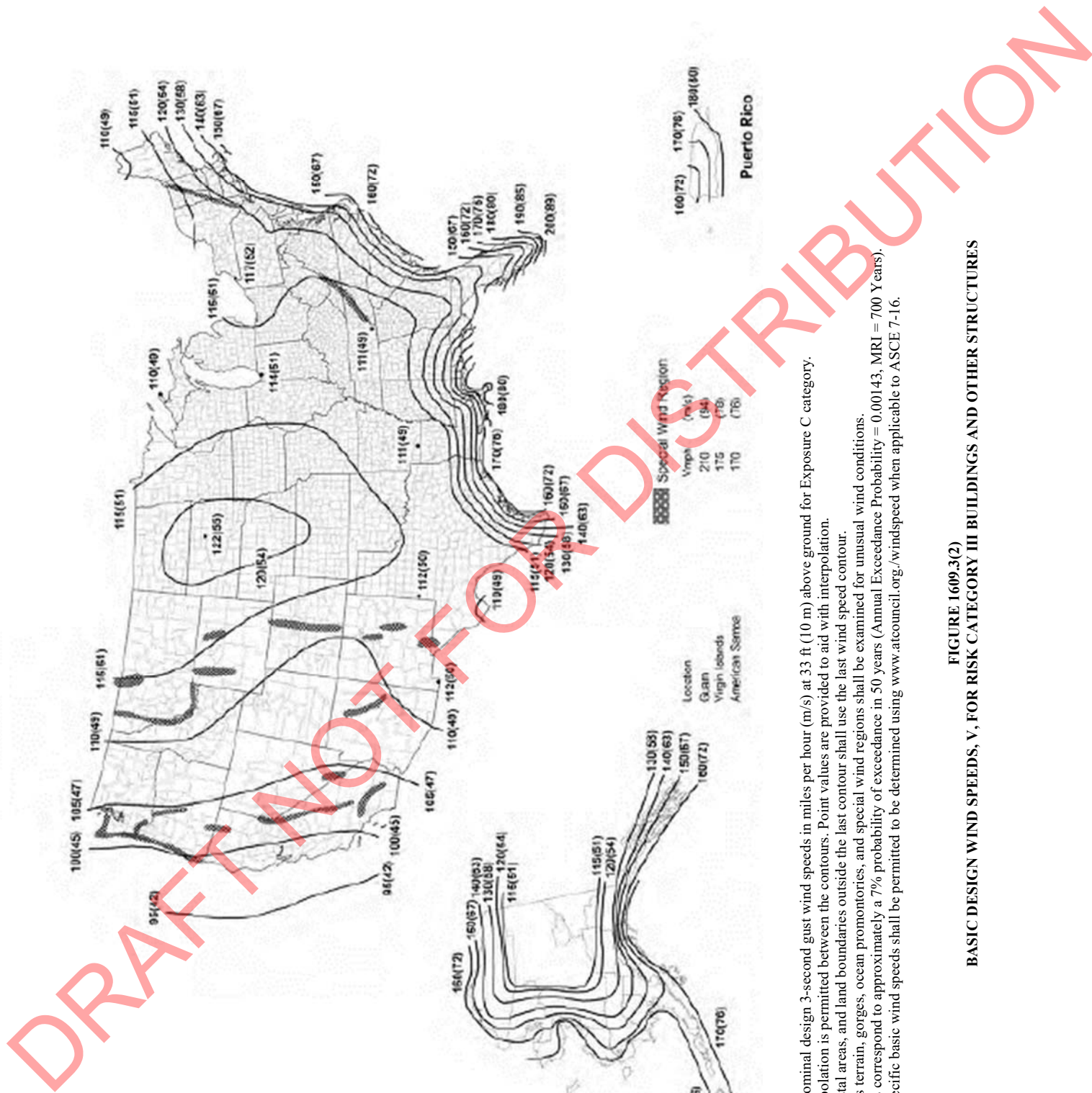


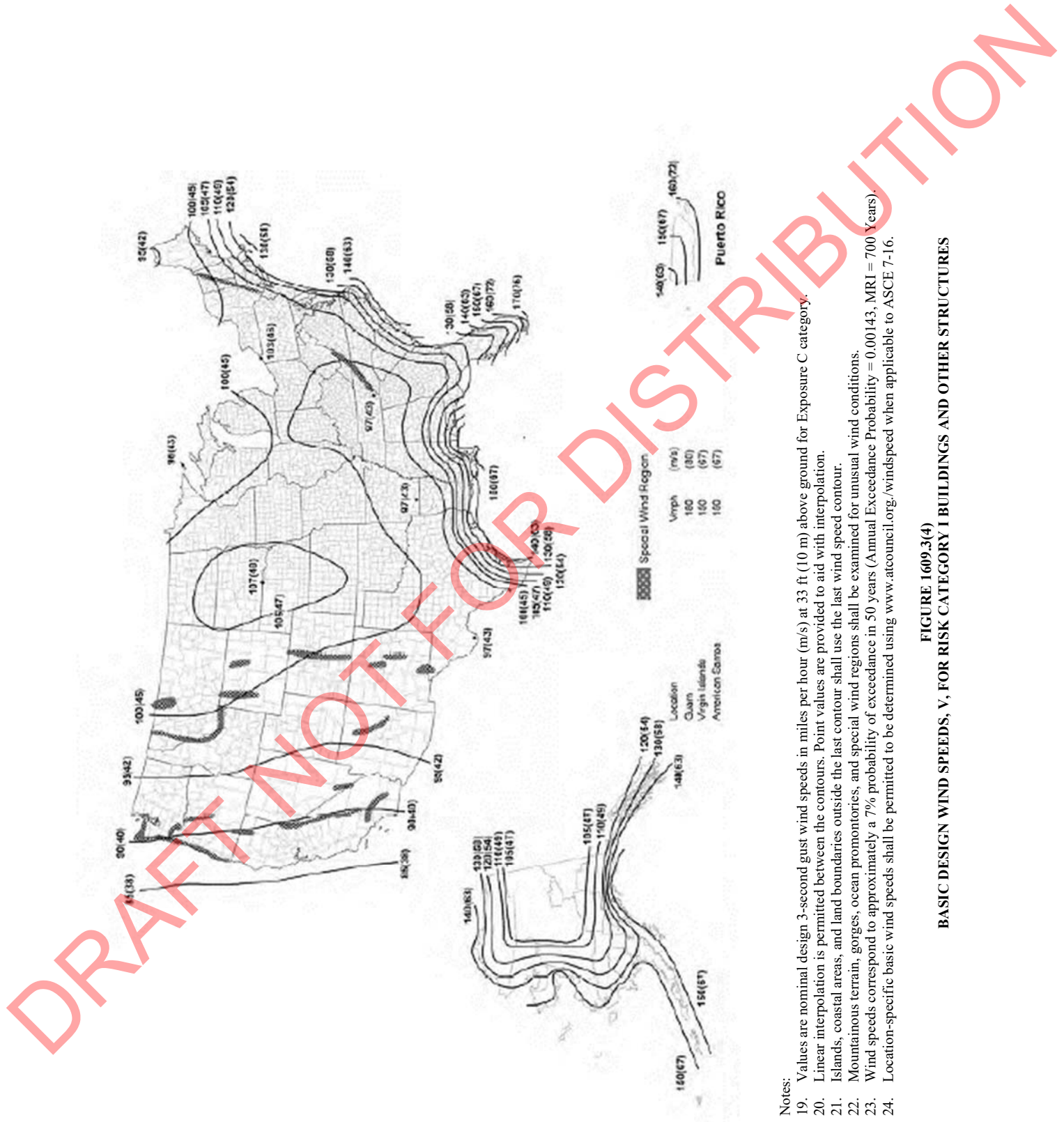
FIGURE 1609.3(2)  
BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY III BUILDINGS AND OTHER STRUCTURES

Notes:

7. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10 m) above ground for Exposure C category.
8. Linear interpolation is permitted between the contours. Point values are provided to aid with interpolation.
9. Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.
10. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
11. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).
12. Location-specific basic wind speeds shall be determined using [www.atcouncil.org/wind](http://www.atcouncil.org/wind) when applicable to ASCE 7-16.







Notes:

19. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10 m) above ground for Exposure C category.
20. Linear interpolation is permitted between the contours. Point values are provided to aid with interpolation.
21. Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.
22. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
23. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).
24. Location-specific basic wind speeds shall be permitted to be determined using [www.atcouncil.org/windspeed](http://www.atcouncil.org/windspeed) when applicable to ASCE 7-16.

**FIGURE 1609.3(4)**  
**BASIC DESIGN WIND SPEEDS, V, FOR RISK CATEGORY I BUILDINGS AND OTHER STRUCTURES**

## SECTION 1613 - EARTHQUAKE LOADS

**1613.2 Seismic ground motion values.** Seismic ground motion values shall be determined in accordance with this section.

**1613.2.1 Mapped acceleration parameters.** The parameters  $SS$  and  $S1$  shall be determined from the 0.2 and 1-second spectral response accelerations shown on Figures 1613.2.1(1) through 1613.2.1(8) and Table 1613.2.1. Where  $S1$  is less than or equal to 0.04 and  $SS$  is less than or equal to 0.15, the structure is permitted to be assigned *Seismic Design Category A*.

Table 1613.2 .1  
Spectral Response Accelerations for Municipalities of Puerto Rico, % of g.

MUNICIPALITIES	0.2 Sec	1.0 Sec	MUNICIPALITIES	0.2 Sec	1.0 Sec	MUNICIPALITIES	0.2 Sec	1.0 Sec
ADJUNTAS	110	43	FAJARDO	98	39	NAGUABO	97	37
AGUADA	133	50	FLORIDA	110	42	NARANJITO	97	38
AGUADILLA	133	50	GUÁNICA	125	50	OROCOVIS	101	39
AGUAS BUENAS	95	37	GUAYAMA	92	34	PATILLAS	93	34
AIBONITO	96	36	GUAYANILLA	125	46	PEÑUELAS	115	43
AÑASCO	125	48	GUAYNABO	98	39	PONCE	107	42
ARECIBO	116	45	GURABO	95	37	QUEBRADILLAS	122	48
ARROYO	92	34	HATILLO	119	46	RINCÓN	135	53
BARCELONETA	113	43	HORMIGUEROS	124	49	RIO GRANDE	97	39
BARRANQUITAS	97	38	HUMACAO	96	36	SABANA GRANDE	125	47
BAYAMÓN	98	39	ISABELA	125	49	SALINAS	93	35
CABO ROJO	135	53	JAYUYA	105	41	SAN GERMÁN	125	48
CAGUAS	94	36	JUANA DÍAZ	100	38	SAN JUAN	98	39
CAMUY	119	47	JUNCOS	95	37	SAN LORENZO	94	36
CANÓVANAS	96	38	LAJAS	130	51	SAN SEBASTIÁN	119	47
CAROLINA	97	39	LARES	116	44	SANTA ISABEL	96	36
CATAÑO	99	39	LAS MARÍAS	118	46	TOA ALTA	99	39
CAYEY	93	35	LAS PIEDRAS	96	37	TOA BAJA	101	40
CEIBA	98	38	LOIZA	98	39	TRUJILLO ALTO	96	38
CIALES	106	40	LUQUILLO	98	39	UTUADO	112	43
CIDRA	94	36	MANATÍ	110	43	VEGA ALTA	106	41
COAMO	97	37	MARICAO	117	46	VEGA BAJA	107	42
COMERIO	96	37	MAUNABO	96	34	VIEQUES	102	37
COROZAL	99	39	MAYAGÜEZ	124	48	VILLALBA	101	39
CULEBRA	112	40	MOCA	125	49	YABUCOA	96	35
DORADO	104	40	MOROVIS	103	39	YAUCO	125	46





## CHAPTER 17 – SPECIAL INSPECTIONS AND TEST

### SECTION 1703 - APPROVALS

**1703.6 Evaluation and follow-up inspection services.** Where structural components or other items regulated by this code are not visible for inspection after completion of a pre-fabricated assembly, the owner or the owner's authorized agent shall submit a report of each prefabricated assembly. The report shall indicate the complete details of the assembly, including a description of the assembly and its components, the basis upon which the assembly is being evaluated, test results and similar information and other data as necessary for the Registered Design Professional in Responsible Charge and/or designated inspector to determine conformance to this code. Such a report shall be approved by the building official.

### SECTION 1704 - CONTRACTOR RESPONSIBILITY

**1704.4 Contractor responsibility.** Each contractor responsible for the construction of a main wind- or seismic force-resisting system, designated seismic system or a wind- or seismic force-resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the designated inspector and to the building official and the owner or the owner's authorized agent prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain acknowledgement of awareness of the special requirements contained in the statement of special inspections.

### SECTION 1705 - REQUIRED SPECIAL INSPECTIONS AND TEST

**1705.4 Masonry construction.** *Special Inspection* and *tests* of masonry construction shall be performed in accordance with the quality assurance program requirements of TMS 402 and TMS 602.

**Exception:** *Special inspections* and *tests* shall not be required for:

1. Masonry fireplaces, masonry heaters or masonry chimneys installed or constructed in accordance with Section 2111, 2112 or 2113, respectively.

**1705.4.1 Empirically designed masonry, glass unit masonry or masonry veneer in Risk Category III or IV.** *Special inspections* and *tests* for empirically designed masonry, glass unit masonry or masonry veneer designed in accordance with Section 2109, 2110 or Chapter 14, respectively, where they are part of a structure classified as Risk Category III or IV shall be performed in accordance with TMS 402 Level B Quality Assurance.

**1705.4.2 Vertical masonry foundation elements.** *Special inspections* and *tests* of vertical masonry foundation elements shall be performed in accordance with Section 1705.4.

**1705.12.5 Architectural components.** *Periodic special inspection* 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 inspection is not required for the following:

1. Interior nonbearing walls and interior veneer 30 feet (9144 mm) or less in height above grade or walking surface.
2. Interior veneer weighing 5 psf (24.5 N/m<sup>2</sup>) or less.
3. Interior nonbearing walls weighing 15 psf (73.5 N/m<sup>2</sup>) or less.

## CHAPTER 18 – SOILS AND FOUNDATIONS

### SECTION 1810 - DEEP FOUNDATIONS

#### 1810.3 Design and detailing

##### 1810.3.8 Precast concrete piles

###### 1810.3.8.2 Precast non-prestressed piles

**1810.3.8.2.1 Minimum reinforcement.** Longitudinal Reinforcement shall consist of at least four bars with a minimum longitudinal reinforcement ratio of 0.008.

**1810.3.8.2.2 Seismic reinforcement in Seismic Design Categories C through F.** For structures assigned to Seismic Design Category C, D, E or F, precast non-prestressed piles shall be reinforced as specified in this section. The minimum longitudinal reinforcement ratio shall be 0.01 throughout the length. Transverse reinforcement shall consist of closed ties or spirals with a minimum 3/8 inch (9.5 mm) diameter. The spiral ratio made with wire 6.0 mm or bigger in diameter is accepted for spiral reinforcement in prefabricated concrete piles of 12 inches or less in diameter. Spacing of transverse reinforcement shall not exceed the smaller of eight times the diameter of the smallest longitudinal bar or 6 inches (152 mm) within a distance of three times the least pile dimension from the bottom of the pile cap. Spacing of transverse reinforcement shall not exceed 6 inches (152 mm) throughout the remainder of the pile.

## CHAPTER 19 CONCRETE

No amendments.

## CHAPTER 20 ALUMINUM

No amendments.

## CHAPTER 21 MASONRY

No amendments.

## CHAPTER 22 STEEL

No amendments.

## CHAPTER 23 – WOOD

### SECTION 2303 - MINIMUM STANDARDS AND QUALITY

**2303.4 Trusses.** Wood trusses shall comply with Sections 2303.4.1 through 2303.4.7.

**2303.4.1 Design.** Wood trusses shall be designed in accordance with the provisions of this code and accepted engineering practice. Members are permitted to be joined by nails, glue, bolts, timber connectors, metal connector plates or other *approved* framing devices.

**2303.4.1.1 Truss design drawings.** The written, graphic and pictorial depiction of each individual truss shall be provided by the registered design professional in charge to the *building official* for approval prior to installation. Truss design drawings shall be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the following information:

## CHAPTER 24 GLASS AND GLAZING

No amendments.

## CHAPTER 25 GYPSUM BOARD, GYPSUM PANEL PRODUCTS AND PLASTER

No amendments.

## CHAPTER 26 PLASTIC

No amendments.

## CHAPTER 27 – ELECTRICAL AND TELECOMMUNICATIONS

### SECTION 2701 - GENERAL

**2701.1 Scope.** The provisions of this chapter, NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code) shall govern the design, construction, erection and installation of the electrical components, appliances, equipment and systems used in buildings and structures covered by this code. The *International Fire Code* and NFPA 70 shall govern the use and maintenance of electrical components, appliances, equipment and systems. The *International Existing Building Code*, NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code) shall govern the alteration, repair, relocation, replacement and addition of electrical components, appliances, or equipment and

systems. In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## **SECTION 2703 - TELECOMMUNICATIONS**

**2703.1 Scope.** The provisions of this chapter and the Telecommunications Industry Association (TIA) Common Standards and Premise Standards shall govern the design and construction of the telecommunication infrastructure, and the installation of components, appliances, equipment and systems used in buildings and structures covered by this code.

The Puerto Rico Telecommunication Regulatory Board may, by way of Technical Bulletins and or Regulations amend or clarify the Telecommunications Industry Association (TIA) adopted standards.

## **CHAPTER 28 MECHANICAL SYSTEMS**

No amendments.

## **CHAPTER 29 PLUMBING SYSTEMS**

No amendments.

## **CHAPTER 30 ELEVATORS AND CONVEYING SYSTEMS**

No amendments.

## **CHAPTER 31- SPECIAL CONSTRUCTION**

### **SECTION 3108 - TELECOMMUNICATIONS AND BROADCAST TOWERS**

**[BS] 3108.1 General.** Towers shall be designed and constructed in accordance with the provisions of TIA-222.

**Exception:** Single free-standing poles used to support antennas not greater than 75 feet (22 860 mm), measured from the top of the pole to grade, shall not be required to be noncombustible.

**[BS] 3108.2 Location and access.** Towers shall be located such that guy wires and other accessories shall not cross or encroach on any street or other public space, or over above-ground electric utility lines, or encroach on any privately-owned property without the written consent of the owner of the encroached-upon property, space or above-ground electric utility lines. Towers shall be equipped with climbing and working facilities in compliance with TIA-222. Access to the tower sites shall be limited as required by applicable OSHA, FCC and EPA regulations.

### **SECTION 3111 - SOLAR ENERGY SYSTEMS**

**3111.3 Photovoltaic solar energy systems.** Photovoltaic solar energy systems shall be designed and installed in accordance with this section, the *International Fire Code*, NFPA 70, the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code), either the Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta (Regulation 8915) or the Reglamento para Interconectar Generadores con el Sistema de Transmisión Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta (Regulation 8916), as applicable, and the manufacturer's installation instructions.

**3111.3.1 Equipment.** Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703. Inverters shall comply with IEEE 1547 and be *listed* and *labeled* in accordance with UL 1741. Systems connected to the utility grid shall use inverters *listed* for utility interaction. Photovoltaic panels, modules and inverters shall be approved and certified by the Authority having Jurisdiction.

## **CHAPTER 32 ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY**

No amendments.

## **CHAPTER 33 SAFEGUARDS DURING CONSTRUCTION**

No amendments.

## **CHAPTER 34 RESERVED**

## CHAPTER 35 – REFERENCED STANDARDS

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PREPA

Puerto Rico Power Authority  
PO Box 364267  
San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
[A]108.3, 406.2.9, 2701.1, 3111.3

8915-2017: Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta  
3111.3

8916-2017: Reglamento para Interconectar Generadores con el Sistema de Transmisión Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta  
3111.3

## APPENDIX A - EMPLOYEE QUALIFICATIONS

No amendments.

## APPENDIX B - BOARD OF APPEALS

No amendments.

## APPENDIX C - GROUP U - AGRICULTURAL BUILDINGS

No amendments.

## APPENDIX D - FIRE DISTRICTS

No amendments.

## APPENDIX E – SUPPLEMENTARY ACCESSIBILITY REQUIREMENTS

No amendments.

## APPENDIX F - RODENTPROOFING

No amendments.

## APPENDIX G - FLOOD-RESISTANT CONSTRUCTION

### SECTION G105 - VARIANCES

**G105.3 Historic structures.** A variance is authorized to be issued for the repair or rehabilitation of a historic structure upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure, and the variance is the minimum necessary to preserve the historic character and design of the structure.

**Exception:** Within *flood hazard areas*, *historic structures* or properties that do not meet one or more of the following designations:

1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places.
2. Determined by the Secretary of the U.S. Department of Interior, Puerto Rico Planning Board in the Register of Historic Places and Zones, Board of Directors of the Institute of Puerto Rican Culture, and the Puerto Rico Legislative Assembly, as contributing to the historical significance of a registered historic district or zone or a district preliminarily determined to qualify as an historic district or zone.
3. Designated as *historic* or having historic significance under - applicable state or law, ordinance or resolution.

## APPENDIX H - SIGNS



No amendments.

## **APPENDIX I - PATIO COVERS**

No amendments.

## **APPENDIX J - GRADING**

No amendments.

## **APPENDIX K - ADMINISTRATIVE PROVISIONS**

No amendments.

## **APPENDIX L - EARTHQUAKE RECORDING INSTRUMENTATION**

No amendments.

## **APPENDIX M TSUNAMI-GENERATED FLOOD HAZARD**

No amendments.

## **APPENDIX N - REPLICABLE BUILDINGS**

### **SECTION N103 - REPLICABLE DESIGN REQUIREMENTS**

**N103.1 Prototypical construction documents.** A replicable design shall establish prototypical construction documents for application at multiple locations. The construction documents shall include details appropriate to each wind region, seismic design category, Special Flood Hazard Area (SFHA), and climate zone for locations in which the replicable design is intended for application. Application of replicable design shall not vary with regard to the following, except for allowable variations in accordance with Section N106.

1. Use and occupancy classification.
2. Building heights and area limitations.
3. Type of construction classification.
4. Fire-resistance ratings.
5. Interior finishes.
6. Fire protection system.
7. Means of egress.
8. Accessibility.
9. Structural design criteria.
10. Energy efficiency.
11. Type of mechanical and electrical systems.
12. Type of plumbing system and number of fixtures.
13. Special Flood Hazard Area (SFHA).

**N104.1.2 Structural plans, specifications and engineering details.** Where approval of the structural requirements of the replicable design is sought, the submittal documents shall include details for each wind region, seismic design category, Special Flood Hazard Area (SFHA), and climate zone for which approval is sought; and shall include the following:

1. Signed and sealed structural design calculations that support the member sizes on the drawings.
2. Design load criteria, including: frost depth, live loads, snow loads, flood loads, wind loads, earthquake design date, and other special loads.
3. Details of foundations and superstructure.
4. Provisions for special inspections.

## **APPENDIX O - ALTERNATE STRUCTURAL PROVISIONS FOR ONE AND TWO STORY BUILDINGS ONE AND TWO STORIES BUILDING CONSTRUCTION**

### **SECTION O101 - Applicability and Scope**

**O101.1 General.** The structural design and construction of new qualified one and two story reinforced concrete buildings can be performed in accordance with these alternate provisions, as an alternate to those included in the 2018 International Building Code (IBC 2018) and the International Residential Code 2018. For additions or modifications of existing structures, follow the International Existing Building Code 2018. A qualified building shall meet the requirements set forth in this section as follows:

1. The building consists of a reinforced concrete structure with or without concrete block infill walls. The floor area of each story shall not exceed five thousand (5,000) square feet and any story level shall not exceed 12 feet in height.
2. The building shall have a nearly symmetrical plan configuration in both principal directions. The distance between the center of mass and the center of rigidity of the building shall not exceed five (5) percent of the plan dimension measured normal to the direction of the load.
3. All reinforced concrete structural elements supporting vertical and lateral loads shall be cast-in-place.
4. A lateral force resisting system (LFRS), consisting of moment frames or shear walls or a combination of both, shall be provided in both principal directions of the building. The out-of-plane stiffness of the walls shall not be considered as part of the LFRS.
5. All vertical structural elements shall be continuous down to the foundation, with no horizontal offset and no reduction in sectional area. Rigid structural systems on the second level, like reinforced concrete or concrete block shear walls that are supported by frame systems on the first level, shall be identified as a soft story at the first level and shall not be allowed.
6. The maximum difference in base elevation between adjacent footings shall not exceed twelve (12) inches. Additionally, the final grading elevation around the building shall not exceed three (3) feet above the ground slab elevation.

7. The second-floor slab area shall not exceed that of the ground floor, except that for balconies or overhangs the second-floor slabs are permitted up to six (6) feet from the faces of the four façades of the building, but not larger than  $\frac{1}{3}$  of the adjacent interior span.

8. The resulting design seismic base shear, calculated as per these alternate provisions, shall not be reduced due to ductility considerations.

9. These provisions shall apply only to buildings with Occupancy Category I and II as defined in Table O102.2 or Table 1604.5 (IBC 2018) (Minimum Design Loads for Buildings and Other Structures). The qualified buildings shall not have an Importance Factor greater than 1.0.

## SECTION O102 - DESIGN LOADS

**O102.1. Permanent Loads.** Dead, fixed and permanent loads used for the design shall be as per the IBC 2018 provisions.

**O102.2. Live Loads:** Design live loads shall be as per the IBC 2018 provisions or PRBC-2018 amendments.

**O102.3. Lateral Forces.** The general provisions for the calculation of the design lateral loads shall be as per this section.

### **O102.3.1. Hurricane Wind Loads:**

**O102.3.1.1. General.** All buildings and their components, and accessories and their attachments subject to wind loads, shall be designed to withstand the pressures and meet the requirements of this section. Building components, such as windows, panels, doors, roof equipment, antennas and the architectural features exposed to the wind shall be designed for the wind loads specified. The wind shall be assumed as approaching the structure from any horizontal direction. Reductions on the design wind pressures shall not be permitted. Reductions in load associated with protection or shielding provided by adjacent structures shall not be permitted. However, the calculated capacity of the components may be increased by a factor of 1.3 to account for the short duration of the wind loads.

**O102.3.1.2. Basic wind speed.** Wind pressures listed in this section are based on a wind speed of one hundred and eighty-seven miles per hour (187 mph), based on the three (3) seconds gust criteria, as defined by the ASCE 7 16 design standard. Design wind pressures as per this section are unfactored service loads.

**O102.3.1.3. Design wind pressure.** The net wind pressure, at strength load condition, acting on the main wind force resisting system shall not be less than 54 psf, acting normal to both the windward (positive pressure) and leeward (negative pressure) façades of the building, concurrently with a roof vertical

pressure of 54 psf acting on the roof upward or 42 psf acting on the roof downward. The two load cases specified above shall be considered separately and the structural element shall be designed for the larger load combination. The total shear force induced by wind shall be calculated based on these criteria.

**O102.3.1.4. Components and Cladding** – The wind pressures acting on any structural or non-structural component or cladding element shall not be less than those listed on Table I. Designer shall refer to ASCE 7-16 standard, to obtain the design wind pressures for those components not listed in this section. Wall edge zones shall be defined as the portion of the wall located within a distance of ten (10) feet measured horizontally from the corners of the building.

**Table O102.1:** Design Wind Pressures for Components and Cladding

TYPE OF COMPONENT AND CLADDING	DESIGN PRESSURE NORMAL TO SURFACE (IN PSF)
<p>Wall components and their connections to LFRS, including, but not limited to, structural members, concrete block walls, exterior wall panels, doors, windows, permanent terrace covers and non-retractable shade curtains and all exterior architectural components, All Roof structure components.</p>	<p>90 (inward or outward) at edge zone and 65(inward or outward) elsewhere</p>
<p>All equipment and components supported by the roof including, but not limited to, solar water heaters, solar panels, water cisterns, A/C units, equipment, and associated conduit and ductwork and all attachments. Also, skylights, ventilation and extraction fans and all their attachments.</p>	<p>90 (acting in any direction) 54 (acting upward and downward)</p>
<p>All parapets or extension of wall elements above roof elevation.</p>	<p>90 (acting inward, outward or upward)</p>
<p>Roof membranes installed for impermeabilization and climate control purposes.</p>	<p>90 (acting inward or outward) 110 (acting upward) at edge zones and flashings and 65 (acting upward) elsewhere</p>

### **O102.3.2 Earthquake Loads:**

**O102.3.2.1 General.** All qualified buildings and all their components shall be designed to meet the seismic requirements of this section.

**O102.3.2.2 Seismic loads.** The design horizontal seismic force shall be applied at the level of each story and located at a distance of plus or minus five (5) percent of the maximum plan dimension normal to the direction of the load from the center of rigidity of each story. This distance shall be considered the accidental eccentricity. The seismic load need not be applied concurrently along both principal directions of the building. For all non-structural components, the design seismic force shall be applied at their center of mass. The seismic forces calculated as per these alternate provisions are factored loads based on the elastic structural behavior and shall not be reduced to account for any ductility considerations.

**O102.3.2.3 Minimum design seismic force.** The design seismic load shall not be less than that calculated by the following formula:

$$V_u = 0.50W$$

where;

W = Total weight of the structure including all structural and non-structural components, equipment and any other permanent attachment to the structure that modifies the inertial properties of the structure.

$V_u$  = Total horizontal base shear force at factored level.

For one story structures, the total base shear,  $V_u$ , shall be applied to the roof level. For two story structures,  $V_u$  shall be applied in equal proportions to the first and roof levels.

**O102.3.2.4 Horizontal Distribution of Seismic Force.** The total shear force applied at each level shall be distributed among all components of the LFRS in proportion to their relative stiffness. The floor and roof slabs shall be used as horizontal rigid diaphragms. Slabs thickness shall not be less than four (4) inches and shall be cast-in-place without horizontal construction joints.

**O102.3.2.5 Minimum horizontal design seismic forces on nonstructural components:** All non-structural components and their attachments to the principal structure shall be designed to withstand as a minimum, the lateral loads calculated in accordance with the following formula:

$$F_p = 0.60W_p$$

where,

$W_p$  = Total weight of the non-structural components or equipment.

$F_p$  = Total design horizontal seismic force at factored level.

**O102.4. Load Combinations:** The required strength of the structure and all its components shall be determined from the Load and Resistance Factor Design load combinations and load factors provided in Section 1605 of the IBC 2018.

## SECTION O103 - FOUNDATIONS

**O103.1 General.** The foundation design of qualified buildings shall meet the requirements of this section. Structures designed as per these alternate provisions may be supported by isolated or combined footings or by a mat foundation. Minimum concrete compressive strength is 3,000 psi at 28 days and 60,000 ksi for steel reinforcement conforming to ASTM A615-09. Welding of reinforcement bars shall not be permitted.

**O103.2 Minimum foundation thickness.** The foundation thickness shall not be less than the following:

1. For spread footings under load bearing walls twelve (12) inches.
2. For spread footings under columns twelve (12) inches.
3. For mat foundations, twelve (12) inches under concrete walls, twelve (12) inches under columns and six (6) inches elsewhere. Changes in thickness shall be done gradually in a 1:1 slope down towards the thickened portion.

**O103.3 Minimum foundation width.** The foundation width shall not be less than the following:

1. For combined footings and mat foundations under interior load bearing walls, twelve (12) inches measured from each face of the wall. For the case of combined footings and mat foundations under exterior load bearing walls, fifteen (15) inches measured from each face of the wall.
2. For spread footings and combined footings under interior and exterior columns, eighteen (18) inches measured from each face of the column. For the case of mat foundations under interior columns, eighteen (18) inches measured from each face of the column. For the case of mat foundations under exterior columns, fifteen (15) inches measured from each face of the column.

**O103.4 Minimum steel reinforcement** – Foundation reinforcement shall not be less than 0.002 of the gross sectional area.

**O103.5 Minimum concrete cover.** The concrete clear cover of steel reinforcement cast against earth or permanently exposed to earth, shall not be less than three (3) inches or two (2) inches if the complete foundation is cast against an unperforated bituminous or plastic vapor barrier membrane conforming to ASTM E-1993 and ASTM 1745 of at least six thousandths of an inch (6 mils) thick. Membrane installation shall be as per ASTM 1643.

**O103.6 Type L Footings.** Type "L" footings shall not be used except at those instances required to avoid conflicts with property lines. In such cases, their design shall consider soil bearing pressure variations caused by the eccentricity of the applied load. The full footprint of the foundation shall remain in bearing contact with the soil when subjected to service level loads combinations as per IBC 2018.

## **SECTION O104 REINFORCED CONCRETE FRAMES**

**O104.1 General.** The design of reinforced concrete frames designated to be part of the LFRS shall meet the provisions of this section.

**O104.2 Materials.** The specified materials shall satisfy or exceed the following minimum requirements:

1. Concrete. The specified 28 days concrete compressive strength for all components of the frame components shall not be less than three thousand pounds per square inches (3,000 psi).
2. Steel. All steel reinforcement shall consist of deformed bars with a minimum yield stress,  $F_y$ , of sixty thousand pounds per square inches (60,000 psi) conforming to ASTM A615-09. Welding of steel reinforcement bars shall not be permitted.

**O104.3 Minimum element dimensions.** The depth of frame elements in the plane of the lateral load under consideration, shall not be less than twelve (12) inches in columns and eighteen (18) inches in beams, including the slab thickness when cast monolithically. In no case any frame element shall have a dimension of less than eight (8) inches. In addition, the minimum column cross sectional area shall not be less than one hundred forty-four (144) square inches.

**O104.4 Minimum reinforcement.** The beams of the frame shall be provided with at least two (2) #5 longitudinal reinforcing bars at bottom and top. In no case shall the minimum reinforcement provided in beams be less than the provisions of Section 10.5 of ACI 318-14. Transverse reinforcement shall consist of at least #3 closed stirrups spaced no farther apart than six (6) inches on center. The center of the splice for the positive (bottom) reinforcement shall be located at a distance of one-fourth ( $1/4$ ) the clear span from the face of the support and shall have a splice length of thirty-six (36) times the bar diameter or eighteen (18) inches, whichever is greater. The negative (top) reinforcement shall be continuous throughout the supports, and the center of the splice shall be located at mid-span with an overlapping length of thirty (30) times the bar diameter or twelve (12) inches, whichever is greater. The longitudinal top and bottom reinforcement of beams shall terminate on exterior columns anchored with 90 degree standard hooks. The longitudinal reinforcement in columns shall not be less than eight (8) #5



bars. The longitudinal reinforcement of columns shall terminate anchored with 90 degree standard hooks. The footing dowels shall be spliced with the column longitudinal reinforcement at column mid-height with an overlapping of thirty-six (36) times the diameter of the longitudinal bars. Column transverse reinforcement shall consist of at least #3 closed ties spaced no farther than six (6) inches on center. Beam stirrups and column ties shall consist of closed hoops in accordance with ACI standards. In all columns, ties shall be extended through the column-beam joints.

**O104.5 Minimum Area of Concrete Columns.** The sum of the gross area of all concrete columns, in square inches and on the base floor must be at least 0.00325 times the total horizontal base shear  $V_u$ , in pounds.

**O104.6 Required analysis of moment frames.** The structural analysis of moment frames shall be performed by means of a rational analytical method accepted by the engineering community. The stiffness contribution and effects of moment frames with Concrete Masonry Units (CMU) infill shall be considered as per these provisions.

## SECTION 0105 - REINFORCED CONCRETE WALLS

**O105.1 General** – The design of reinforced concrete walls designated to be part of the LFRS shall meet the provisions of this section.

**O105.2 Materials.** The specified materials shall satisfy or exceed the following minimum requirements:

1. Concrete – The specified 28 days concrete compressive strength for all walls shall not be less than three thousand pounds per square inches (3,000 psi).
2. Steel – All steel reinforcement shall consist of deformed bars with a minimum yield stress,  $F_y$ , of sixty thousand pounds per square inches (60,000 psi) conforming to ASTM A615-09. Welding of steel reinforcement bars shall not be permitted.

**O105.3 Minimum element dimensions.** The length of the wall in the direction of the lateral load under consideration, shall not be less than forty-eight (48) inches. The perpendicular dimension of the wall shall not be less than eight (8) inches.

**O105.4 Minimum reinforcement.** The walls shall be provided with at least two (2) #5 longitudinal reinforcing bars at each end of the wall cross section, confined with #3 ties or hairpins spaced at six (6) inches along the wall height. In no case shall the minimum horizontal and vertical reinforcement provided in walls be less than 0.0025 times the gross area of the wall. The vertical and horizontal reinforcements shall not be spaced further apart than eighteen (18) inches. The longitudinal reinforcement of walls shall be anchored with 90 degree standard hooks. The footing dowels shall be spliced with the wall longitudinal reinforcement with an overlapping length of thirty-six (36) times the diameter of the longitudinal bars.

**O105.5 Minimum Area of Concrete Walls.** The sum of the gross area of all concrete walls at the base floor must be at least 0.005 times the total gross area of the ground level.

## SECTION O106 - CONCRETE MASONRY WALLS

**O106.1 General.** The design of concrete masonry (CMU) walls shall meet the provisions of this section. The out-of-plane stiffness and strength of all CMU walls shall not be considered in the LFRS.

The design lateral forces shall be resisted by the designated structural walls comprising the LFRS. The seismic loads shall be distributed among all wall components in proportion to their relative in-plane stiffness. Only walls properly connected to a horizontal rigid diaphragm shall be considered to be part of the LFRS.

CMU walls designated to be part of the LFRS, shall not have their horizontal sectional area reduced by more than fifty (50) percent at any location. Larger reductions may be permitted, when caused by the presence of embedded components such as vertical conduits, drainage pipes or any other required accessories to be installed within the wall, if the discontinuity in the horizontal sectional area is considered in the structural analysis and design. The affected wall shall not be considered to act as a whole unit. Instead they shall be modeled and designed as independent wall segments delimited by each vertical disruption. The structural designer shall coordinate with other disciplines in order to determine and consider all the instances in which such condition would occur.

**O106.2 Materials.** The materials to be used in the construction of the load bearing and transverse CMU walls shall satisfy the minimum quality requirements specified below:

1. Concrete Masonry Units (CMU) – All CMU must meet all minimum requirements specified in Chapter 21, Section 2103 of IBC 2018
2. Mortar – must meet all minimum requirements specified in Chapter 21, Section 2103 of IBC 2018.
3. Cement Grout - must meet all the minimum requirements specified in Chapter 21, Section 2103 of IBC 2018.
4. Concrete – The concrete used in the structural confining elements shall have a minimum compressive strength of three thousand psi (3,000 psi) at twenty-eight (28) days.
5. Steel Reinforcement – The reinforcement shall have a minimum yield strength of sixty thousand psi (60,000 psi) and shall comply with ASTM A615-09.

**O106.3 Dimensions.** All load bearing and transverse CMU walls shall meet the following requirements related to their dimensions. The free distance, horizontal or vertical between supports or confining elements, shall not exceed twenty-five (25) times the thickness of the wall. For this limitation, the vertical distance from top of foundation to bottom of confining beam, or the distance from top of slab to bottom of confining beam shall be considered. The horizontal distance to be considered shall be the distance between confining columns or transverse walls.

No structural CMU walls shall be constructed using a thickness less than six inches (6"). No finishes or plaster shall be considered to determine wall thicknesses.

**O106.4 Wall Confinements.** The CMU wall and its confining frame, acting as a structural unit, shall be designed to withstand the vertical and lateral loads. The minimum dimensions for the beams and columns shall be as established in sections O106.5 and O106.6 of this regulation.

To guarantee that individual and group behavior will be adequate, the confined CMU walls shall be located symmetrically and must provide the highest possible torsional stiffness of the building. This could be achieved by locating confined walls as close as possible to the perimeter of the structure.

The openings located on load bearing and transverse CMU walls that form part of the LFRS shall meet the following:

1. The total area of the openings shall not exceed thirty-five percent (35%) of the total CMU wall area enclosed by the horizontal and vertical confinement elements.
2. The aggregate of the horizontal length of the openings, within the CMU wall, shall not exceed half (1/2) the distance between confinement column elements.
3. The horizontal distance between an opening edge and the CMU wall edge shall not be less than one fourth (1/4) the opening height.
4. The clear horizontal distance between openings shall not be less than one half (1/2) the smaller height of the openings, nor less than twenty inches (20").
5. The clear vertical distance between openings shall not be less than one half (1/2) the width of the widest opening, nor less than twenty inches (20").

When any CMU wall does not comply with one or more of the requirements above in this subsection, the wall shall not be considered part of the LFRS. Nevertheless, this wall shall be designed to withstand all applicable local horizontal and vertical forces.

When all openings are surrounded by interior confinement columns and beams as defined below on these provisions, the edge distance requirements above in this subsection are no longer required. The confinement columns that surround the openings shall extend from the foundations or inferior diaphragm to the next superior diaphragm, and shall be properly anchored on both sides.

**O106.5 Interior Confinement Beams.** The minimum width for the interior confinement beams shall be eight (8) inches. Interior confinement beams shall not have a total depth smaller than twelve (12) inches and shall comply with the requirements of Section O104.3.

The confinement beams shall have a minimum reinforcement as required on this section. Minimum reinforcement shall consist of four (4) longitudinal #4 bars (2 bars top and two bars

bottom) with #3 stirrups spaced at eight inches (8") on the beams located at intermediate floor levels and roof. The interior confinement beams for load bearing and transverse CMU walls must fit inside the intermediate floor system to guarantee the diaphragm effect. The superior level of the interior confinement beam will correspond to the superior level of the intermediate floor level.

The beams shall be cast on top of the CMU wall to anchor the vertical reinforcement of the walls. As an alternate, the CMU wall shall be constructed so that the wall reinforcement is effectively anchored to the beam and columns through splices and the wall is provided with a mechanism to transfer the shear forces acting in all directions.

**O106.6 Interior Confinement Columns.** The interior confinement columns are interior vertical reinforced elements that confine the walls. These Confinement columns will be used wherever the required CMU walls are part of the LFRS or at the intersection between two load bearing or transverse walls, or at intermediate locations of the load bearing and transverse walls with a separation not to exceed the limits established in these provisions.

The minimum width of the confinement columns shall be the eight (8) inches, and the cross-sectional area shall not be less than ninety-six square inches (96 in<sup>2</sup>). The confinement columns shall extend from the inferior beam up to the superior beam properly anchored to these elements. The reinforcement of the columns shall be anchored with standard 90 degree hooks to the foundation.

The confinement columns minimum reinforcement shall be six (6) #4 longitudinal bars with #3 ties spaced at six (6) inches.

The columns shall be cast against the CMU walls, and the forms shall be placed only to the sides with no walls. As an alternate, the CMU wall shall be constructed so that the wall reinforcement is effectively anchored to the beam and columns through splices and the wall is provided with a mechanism to transfer the shear forces acting in all directions.

**O106.7 CMU walls subjected to Lateral Loads Design.** The wall elements shall be designed according to the following criteria:

1. Lateral Loads – The lateral loads specified in this regulation shall be used.
2. Analysis – Each CMU wall will be modeled as a frame of articulated joints comprised of confinement beams and columns and diagonal elements formed by masonry equivalent elements. Those diagonal elements shall have an equivalent width no greater than twenty-five percent (25%) of the clear diagonal length within joints and a depth equal to the thickness of the wall. The elasticity modulus of the equivalent element shall be equal to the masonry modulus of elasticity to be taken as  $E_m = 900f_m$ .
3. Design – For the loads specified in section O102 and the mathematical model described above, the internal forces in tension or compression of the different columns will be determined, and each will be designed for the predominant forces.

The diagonal equivalent elements forces shall not exceed the diagonal strength of the wall, estimated as,

$$R_c = (2/3) a t f'_m \sec \theta$$

Where,

$R_c$  = Ultimate strength of the equivalent diagonal element.

$t$  = Equivalent element depth, in other words, the thickness of the wall, in inches.

# AMENDMENTS to the 2018 INTERNATIONAL RESIDENTIAL CODE

## CHAPTER 3 – BUILDING PLANNING

### SECTION R301 - DESIGN CRITERIA

**R301.2.1.2 Protection of openings.** Exterior glazing in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E1996 and ASTM E1886 as modified in Section 301.2.1.2.1. Garage door glazed opening protection for windborne debris shall meet the requirements of an *approved* impact-resisting standard or ANSI/DASMA 115

**Exception:** Tested and certified Storm Shutter systems or Wood structural panels with a thickness of not less than 7/16 inch (11 mm) and a span of not more than 8 feet (2438 mm) shall be permitted for opening protection. Panels shall be precut and attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the anchorage method and shall be secured with the attachment hardware provided. Attachments shall be designed to resist the component and cladding loads determined in accordance with either Table R301.2(2) or ASCE 7, with the permanent corrosion-resistant attachment hardware provided and anchors permanently installed on the building. Attachment in accordance with Table R301.2.1.2 is permitted for buildings with a *mean roof height* of 45 feet (13 728 mm) or less where the ultimate design wind speed,  $V_{ult}$ , is 180 mph (290 kph) or less.

**R301.2.5 Atmospheric corrosion.** All the environment of Puerto Rico is extremely corrosive to exposed materials. Corrosion-resistant materials or protection shall be provided for all structural members, connections, fasteners, metal straps, and anchoring mechanism.

### SECTION R313 - AUTOMATIC FIRE SPRINKLERS SYSTEM

**R313.1 Townhouse automatic fire sprinkler systems.** An automatic residential fire sprinkler system shall not be installed in *townhouses*.

Exception:

1. Spaces with walls, ceilings, and floor with less than 1 hour fire rating.
2. Places where mixed occupancy would cause the fire load to increase.

**R313.1.1 Design and installation.** Automatic residential fire sprinkler systems for *townhouses* shall be designed and installed in accordance with Section P2904 or NFPA 13D.

**R313.2 One- and two-family dwellings automatic fire sprinkler systems.** An automatic residential fire sprinkler system shall not be installed in one- and two-family *dwellings*.

Exception:

1. Spaces with walls, ceilings, and floor with less than 1 hour fire rating.
2. Places where mixed occupancy would cause the fire load to increase.

**R313.2.1 Design and installation.** Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D.

## SECTION R324 - SOLAR ENERGY SYSTEMS

**R324.3 Photovoltaic systems.** Photovoltaic systems shall be designed and installed in accordance with Sections R324.3.1 through R324.7.1, NFPA 70, the *Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta* (Regulation 8915) and the manufacturer's installation instructions.

**R324.3.1 Equipment listings.** Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703. Inverters shall be *listed* and *labeled* in accordance with UL 1741. Systems connected to the utility grid shall use inverters *listed* for utility interaction. Photovoltaic panels, modules and inverters shall be approved and certified by the *authority having jurisdiction in Puerto Rico*.

## SECTION R327 - STATIONARY STORAGE BATTERY SYSTEMS

**R327.4 Electrical installation.** *Stationary storage battery systems* shall be installed in accordance with NFPA 70. Inverters shall be *listed* and *labeled* in accordance with UL 1741 or provided as part of the UL 9540 listing. Systems connected to the utility grid shall use inverters *listed* for utility interaction with the *Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta* (Regulation 8915). Stationary storage batteries, charge controllers and inverters shall be approved and certified by the *authority having jurisdiction in Puerto Rico*.

## CHAPTER 4 FOUNDATIONS

No amendments.

## CHAPTER 5 FLOORS

No amendments.

## CHAPTER 6 WALL CONSTRUCTION

No amendments.



## **CHAPTER 7 WALL COVERING**

No amendments.

## **CHAPTER 8 ROOF-CEILING CONSTRUCTION**

No amendments.

## **CHAPTER 9 ROOF ASSEMBLIES**

No amendments.

## **CHAPTER 10 CHIMNEYS AND FIREPLACES**

No amendments.

## **CHAPTER 11 ENERGY EFFICIENCY**

No amendments.

## **CHAPTER 12 MECHANICAL ADMINISTRATION**

No amendments.

## **CHAPTER 13 GENERAL MECHANICAL SYSTEM REQUIREMENTS**

No amendments.

## **CHAPTER 14 HEATING AND COOLING EQUIPMENT AND APPLIANCES**

No amendments.

## **CHAPTER 15 EXHAUST SYSTEMS**

No amendments.

## **CHAPTER 16 DUCT SYSTEMS**

No amendments.

## **CHAPTER 17 COMBUSTION AIR**

No amendments.

## **CHAPTER 18 CHIMNEYS AND VENTS**

No amendments.

## **CHAPTER 19 SPECIAL APPLIANCES, EQUIPMENT AND SYSTEMS**

No amendments.

## **CHAPTER 20 BOILERS AND WATER HEATERS**

No amendments.

## **CHAPTER 21 HYDRONIC PIPING**

No amendments.

## **CHAPTER 22 SPECIAL PIPING AND STORAGE SYSTEMS**

No amendments.

## **CHAPTER 23 SOLAR THERMAL ENERGY SYSTEMS**

No amendments.

## **CHAPTER 24 FUEL GAS**

No amendments.

## **CHAPTER 25 PLUMBING ADMINISTRATION**

No amendments.

## **CHAPTER 26 GENERAL PLUMBING REQUIREMENTS**

No amendments.

## **CHAPTER 27 PLUMBING FIXTURES**

No amendments.

## **CHAPTER 28 WATER HEATERS**

No amendments.

## **CHAPTER 29 WATER SUPPLY AND DISTRIBUTION**

No amendments.

## **CHAPTER 30 SANITARY DRAINAGE**

No amendments.

## **CHAPTER 31 VENTS**

No amendments.

## CHAPTER 32 TRAPS

No amendments.

## CHAPTER 33 STORM DRAINAGE

No amendments.

## CHAPTER 34 – GENERAL REQUIREMENTS

### SECTION E3401 - GENERAL

**E3401.1 Applicability.** The provisions of Chapters 34 through 43 shall establish the general scope of the electrical system and equipment requirements of this code. Chapters 34 through 43 cover those wiring methods and materials most commonly encountered in the construction of one- and two- family dwellings and structures regulated by this code. Other wiring methods, materials and subject matter covered in NFPA 70 are also allowed by this code. The wiring methods and materials shall also comply with the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**E3401.2 Scope.** Chapters 34 through 43 shall cover the installation of electrical systems, equipment and components indoors and outdoors that are within the scope of this code, including services, power distribution systems, fixtures, appliances, devices and appurtenances. Services within the scope of this code shall be limited to 120/240-volt, 0- to 400- ampere, single-phase systems. These chapters specifically cover the equipment, fixtures, appliances, wiring methods and materials that are most commonly used in the construction or alteration of one- and two-family dwellings and accessory structures regulated by this code. The omission from these chapters of any material or method of construction provided for in the referenced standard NFPA 70 shall not be construed as prohibiting the use of such material or method of construction. Electrical systems, equipment or components not specifically covered in these chapters shall comply with the applicable provisions of NFPA 70. Electrical systems, equipment and components shall also comply with the Puerto Rico Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## SECTION E3404 GENERAL EQUIPMENT REQUIREMENTS

**TABLE E3404.4 (Table) 110.28  
ENCLOSURE SELECTION**

Note 1: The term rain tight is typically used in conjunction with Enclosure Types 3, 3S, 3SX, 3X, 4, 4X, 6 and 6P. The term rain proof is typically used in conjunction

PROVIDES A DEGREE OF PROTECTION AGAINST THE FOLLOWING ENVIROMENTAL CONDITIONS	FOR OUTDOOR USE									
	Enclosure-type number									
	3	3R	3S	3X	3RX	3SX	4	4X	6	6P
Incidental contact with the enclosed equipment	X	X	X	X	X	X	X	X	X	X
Windblown dust	X	----	X	X	----	X	X	X	X	X
Hosedown	----	----	----	----	----	----	X	X	X	X
Corrosive agents	----	----	----	X	X	X	----	X	----	X
Temporary submersion	----	----	----	----	----	----	----	----	X	X
Prolonged submersion	----	----	----	----	----	----	----	----	----	X
PROVIDES A DEGREE OF PROTECTION AGAINST THE FOLLOWING ENVIROMENTAL CONDITIONS	FOR INDOOR USE									
	Enclosure-type number									
	1	2	4	4X	5	6	6P	12	12K	13
Incidental contact with the enclosed equipment	X	X	X	X	X	X	X	X	X	X
Falling dirt	X	X	X	X	X	X	X	X	X	X
Falling liquids and light splashing	----	X	X	X	X	X	X	X	X	X
Circulating dust, lint, fibers and flyings	----	----	X	X	----	X	X	X	X	X
Settling airborne dust, lint, fibers and flyings	----	----	X	X	X	X	X	X	X	X
Hosedown and splashing water	----	----	X	X	----	X	X	----	----	----
Oil and coolant seepage	----	----	----	----	----	----	----	X	X	X
Oil and coolant spraying and splashing	----	----	----	----	----	----	----	----	----	X
Corrosive agents	----	----	----	X	----	----	X	----	----	----
Temporary submersion	----	----	----	----	----	X	X	----	----	----
Prolonged submersion	----	----	----	----	----	----	X	----	----	----

with Enclosure Types 3R and 3RX. The term watertight is typically used in conjunction with Enclosure Types 4, 4X, 6 and 6P. The term driptight is typically used in conjunction with Enclosure Types 2, 5, 12, 12K and 13. The term dusttight is typically used in conjunction with Enclosure Types 3, 3S, 3SX, 3X, 5, 12, 12K and 13.  
Note 2: Ingress protection (IP) ratings are found in ANSI/NEMA 60529, Degrees of Protection Provided by Enclosures. IP ratings are not a substitute for enclosure-type ratings.

## SECTION E3406 - ELECTRICAL CONDUCTORS AND CONNECTIONS

**E3406.1 General.** This section provides general requirements for conductors, connections and splices. These requirements do not apply to conductors that form an integral part of equipment, such as motors, appliances and similar equipment, or to conductors specifically provided for elsewhere in Chapters 34 through 43. (310.1) Electrical conductors and connections shall also comply with the Puerto Rico Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## **CHAPTER 35 – ELECTRICAL DEFINITIONS**

### **SECTION E350 - GENERAL**

**SERVICE-ENTRANCE CONDUCTORS, UNDERGROUND SYSTEM.** The service conductors between the terminals of the service equipment and the point of connection to the electric utility supply system.

**SERVICE LATERAL.** The underground service conductors between the electric utility supply street main, including any risers at a pole or other structure or from transformers, and the first point of connection to the service-entrance conductors in a terminal box or meter or other enclosure, inside or outside the building wall. Where there are no terminal box, meter or other enclosure with adequate space, the point of connection shall be the point of entrance of the service conductors into the building.

## **CHAPTER 36 – SERVICES**

### **SECTION E3601 - GENERAL SERVICES**

**E3601.1 Scope.** This chapter covers service conductors and equipment for the control and protection of services and their installation requirements. (230.1) The provisions covered by this chapter shall also comply with the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## **CHAPTER 37 BRANCH CIRCUIT AND FEEDER REQUIREMENTS**

No amendments.

## **CHAPTER 38 – WIRING METHODS**

### **SECTION E3801 - GENERAL REQUIREMENTS**

**E3801.1 Scope.** This chapter covers the wiring methods for services, feeders and branch circuits for electrical power and distribution. (300.1) The wiring methods and materials shall also comply with the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## **SECTION E3804 - TELECOMMUNICATIONS**

**E3804.1 Scope.** The provisions of this chapter and the Telecommunications Industry Association (TIA) Common Standards and Premise Standards shall govern the design and construction of the telecommunication infrastructure, and the installation of components, appliances, equipment and systems used in buildings and structures covered by this code.

**E3804.2 Design.** TIA-570 shall govern the design, construction and installation of the telecommunications components, appliances, equipment and systems used in buildings and structures covered by this code. The Puerto Rico Telecommunication Regulatory Board may, by way of Technical Bulletins and or Regulations amend or clarify the Telecommunications Industry Association (TIA) adopted standards.

## **CHAPTER 39 POWER AND LIGHTING DISTRIBUTION.**

No amendments.

## **CHAPTER 40 DEVICES AND LUMINAIRES**

No amendments.

## **CHAPTER 41 APPLIANCE INSTALLATION**

No amendments.

## **CHAPTER 42 SWIMMING POOLS**

No amendments.

## **CHAPTER 43 CLASS 2 REMOTE-CONTROL, SIGNALING AND POWERLIMITED CIRCUITS**

No amendments.

## CHAPTER 44 – REFERENCED STANDARDS

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### PREPA

Puerto Rico Power Authority  
PO Box 364267  
San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
E3401.1, E3401.2, E3406.1, E3601.1, E3801.1

8915-2017: Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta  
R324.3

### **APPENDIX A SIZING AND CAPACITIES OF GAS PIPING**

No amendments.

### **APPENDIX B SIZING OF VENTING SYSTEMS SERVING APPLIANCES EQUIPPED WITH DRAFT HOODS, CATEGORY I APPLIANCES, AND APPLIANCES LISTED FOR USE WITH TYPE B VENTS**

No amendments.

### **APPENDIX C EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS**

No amendments.

### **APPENDIX D RECOMMENDED PROCEDURE FOR SAFETY INSPECTION OF AN EXISTING APPLIANCE INSTALLATION**

No amendments.

### **APPENDIX E MANUFACTURED HOUSING USED AS DWELLINGS**

No amendments.

### **APPENDIX F RADON CONTROL METHODS**

No amendments.

## **APPENDIX G PIPING STANDARDS FOR VARIOUS APPLICATIONS**

No amendments.

## **APPENDIX H PATIO COVERS**

No amendments.

## **APPENDIX I PRIVATE SEWAGE DISPOSAL**

No amendments.

## **APPENDIX J EXISTING BUILDINGS AND STRUCTURES**

No amendments.

## **APPENDIX K SOUND TRANSMISSION**

No amendments.

## **APPENDIX L PERMIT FEES**

No amendments.

## **APPENDIX M HOME DAY CARE—R-3 OCCUPANCY**

No amendments.

## **APPENDIX N VENTING METHODS**

No amendments.

## **APPENDIX O AUTOMATIC VEHICULAR GATES**

No amendments.

## **APPENDIX P SIZING OF WATER PIPING SYSTEM**

No amendments.

## **APPENDIX Q TINY HOUSES**

No amendments.

## **APPENDIX R LIGHT STRAW-CLAY CONSTRUCTION**

No amendments.

## **APPENDIX S STRAWBALE CONSTRUCTION**



No amendments.

**APPENDIX T SOLAR-READY PROVISIONS - DETACHED ONE-  
AND TWO-FAMILY DWELLINGS AND TOWNHOUSES)**

No amendments.

DRAFT NOT FOR DISTRIBUTION

# AMENDMENTS to the 2018 INTERNATIONAL MECHANICAL CODE

## CHAPTER 3 – GENERAL REGULATIONS

### SECTION 301 - GENERAL

**301.10 Electrical.** Electrical wiring, controls and connections to *equipment* and appliances regulated by this code shall be in accordance with NFPA 70 and the *Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## CHAPTER 4 – VENTILATION

No amendments.

## CHAPTER 5 – EXHAUST SYSTEMS

No amendments.

## CHAPTER 6 – DUCT SYSTEMS

No amendments.

## CHAPTER 7 – COMBUSTION AIR

No amendments.

## CHAPTER 8 – CHIMNEYS AND VENTS

No amendments.

## CHAPTER 9 – SPECIFIC APPLIANCES, FIREPLACES AND SOLID FUEL-BURNING EQUIPMENTS

No amendments.

## CHAPTER 10 – BOILERS, WATER HEATERS AND PREASSURE VESSELS

No amendments.

## CHAPTER 11 – REFRIGERATION

No amendments.

## **CHAPTER 12 – HYDRONIC PIPING**

No amendments.

## **CHAPTER 13 – FUEL OIL PIPING AND STORAGE**

No amendments.

## **CHAPTER 14 – SOLAR THERMAL SYSTEMS**

No amendments.

## **CHAPTER 15 – REFERENCED STANDARDS**

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PREPA

Puerto Rico Power Authority  
PO Box 364267  
San Juan, PR 00936-4267

5676-1997: Reglamento Complementario al Código Eléctrico Nacional (Complementary Code)  
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## **APPENDIX A – COMBUSTION AIR OPENINGS AND CHIMNEY CONNECTOR PASS-THROUGHS**

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

## **APPENDIX B – RECOMMENDED PERMIT FEE SCHEDULE**

Not Applicable to Puerto Rico.

**AMENDMENTS  
to the  
2018 INTERNATIONAL PLUMBING CODE**

**CHAPTER 3 GENERAL REGULATIONS**

No amendments.

**CHAPTER 4 FIXTURES, FAUCETS AND FIXTURE FITTINGS**

No amendments.

**CHAPTER 5 WATER HEATERS**

No amendments.

**CHAPTER 6 WATER SUPPLY AND DISTRIBUTION**

No amendments.

**CHAPTER 7 SANITARY DRAINAGE**

No amendments.

**CHAPTER 8 INDIRECT/SPECIAL WASTE**

No amendments.

**CHAPTER 9 VENTS**

No amendments.

**CHAPTER 10 TRAPS, INTERCEPTORS AND SEPARATORS**

No amendments.

**CHAPTER 11 STORM DRAINAGE**

No amendments.

**CHAPTER 12 SPECIAL PIPING AND STORAGE SYSTEMS**

No amendments.

**CHAPTER 13 NONPOTABLE WATER SYSTEMS**

No amendments.

## **CHAPTER 14 SUBSURFACE LANDSCAPE IRRIGATION SYSTEMS**

No amendments.

## **CHAPTER 15 REFERENCED STANDARDS**

No amendments.

## **APPENDIX A PLUMBING PERMIT FEE SCHEDULE**

No amendments.

## **APPENDIX B RATES OF RAINFALL FOR VARIOUS CITIES**

No amendments.

## **APPENDIX C STRUCTURAL SAFETY**

No amendments.

## **APPENDIX D DEGREE DAY AND DESIGN TEMPERATURES**

No amendments.

## **APPENDIX E SIZING OF WATER PIPING SYSTEM**

No amendments.

# AMENDMENTS to the 2018 INTERNATIONAL FIRE CODE

## CHAPTER 3 – GENERAL REQUIREMENTS

### SECTION 304 - COMBUSTIBLE WASTE MATERIALS

**304.1.2 Vegetation.** Weeds, grass, vines or other growth that is capable of being ignited and endangering property, shall be cut down and removed by the *owner* or occupant of the premises.

### SECTION 310 - SMOKING

**310.3 “No Smoking” signs.** The *fire code official* is authorized to order the posting of “No Fume, No Smoking” signs in a conspicuous location in each structure or location in which smoking is prohibited. The content, lettering, size, color and location of required “No Fume, No Smoking” signs shall be approved.

310.4 Removal of signs prohibited. A posted “No Fume, No Smoking” sign shall not be obscured, removed, defaced, mutilated or destroyed.

### SECTION 311 - VACANT PREMISES

311.5.5 Informational use. The use of these symbols shall be informational only and shall not in any way limit the discretion of the on-scene incident commander. When text message is used in Placards, it shall be in both, English and Spanish, language.

## CHAPTER 4 EMERGENCY PLANNING AND PREPAREDNESS

No amendments.

## CHAPTER 5 FIRE SERVICE FEATURES

No amendments.

## CHAPTER 6 BUILDING SERVICES AND SYSTEMS

No amendments.

## CHAPTER 7 FIRE AND SMOKE PROTECTION FEATURES

No amendments.

## CHAPTER 8 INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS

No amendments.

## CHAPTER 9 – FIRE PROTECTION SYSTEMS AND LIFE SAFETY SYSTEMS

### SECTION 903 - AUTOMATIC SPRINKLER SYSTEMS

**903.2.8 Group R.** An *automatic sprinkler system* installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R *fire area*.

**Exceptions:**

1. Residential occupancy Group R-2, construction type I, when the floor level having an *occupant load* of 30 or less that is located 45 feet (16.76 m) or less above the lowest level of fire department vehicle access.
2. Residential occupancy Group R-3.

**903.2.8.1 Group R-3.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies.

**903.2.8.2 Group R-4, Condition 1.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in Group R-4, Condition 1 occupancies.

**903.2.8.3 Group R-4, Condition 2.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.2 shall be permitted in Group R-4, Condition 2 occupancies.

**903.2.8.4 Care facilities.** An *automatic sprinkler system* installed in accordance with Section 903.3.1.3 shall be permitted in care facilities with five or fewer individuals in a single-family dwelling.

**903.3.5 Water supplies.** Water supplies for *automatic sprinkler systems* shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against backflow in accordance with the requirements of this section and the *Puerto Rico Plumbing Code*. For connections to public waterworks systems, connections to water main must be made in compliance with the *Reglamento de Normas de Diseño* of the Puerto Rico Aqueducts and Sewer Authority or the delegated utility entity.

**903.3.5.1 Domestic services.** Where the domestic service provides the water supply for the *automatic sprinkler system*, the supply shall be in accordance with this section.



**903.3.5.2 Residential combination services.** A single combination water supply shall be allowed provided that the domestic demand is added to the sprinkler demand, where required, shall be as required by NFPA.

## CHAPTER 10 – MEANS OF EGRESS

### SECTION 1004 - OCCUPANT LOAD

[BE]1004.7 Outdoor areas. *Yards*, patios, occupied roofs, *courts* and similar outdoor areas accessible to and usable by the building occupants shall be provided with *means of egress* as required by this chapter. The *occupant load* of such outdoor areas shall be assigned by the *registered design professional* and the *fire code official* in accordance with the anticipated use. Where outdoor areas are to be used by persons in addition to the occupants of the building, and the path of egress travel from the outdoor areas passes through the building, *means of egress* requirements for the building shall be based on the sum of the *occupant loads* of the building plus the outdoor areas.

#### Exceptions:

1. Outdoor areas used exclusively for service of the building need only have one *means of egress*.
2. Both outdoor areas associated with Group R-3 and individual dwelling units of Group R-2.

**SECTION 1006**  
**NUMBER OF EXITS AND**  
**EXIT ACCESS DOORWAYS**

**[BE] TABLE 1006.2.1**  
**SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY**

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE(feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A <sup>c</sup> , E, M	49	75	75	75 <sup>a</sup>
B	49	100	75	100 <sup>a</sup>
F	49	75	75	100 <sup>a</sup>
H-1, H-2, H-3	3	NP	NP	25 <sup>b</sup>
H-4, H-5	10	NP	NP	75 <sup>b</sup>
I-1, I-2 <sup>d</sup> , I-4	10	NP	NP	75 <sup>a</sup>
I-3	10	NP	NP	100 <sup>a</sup>
R-1	10	NP	NP	75 <sup>a</sup>
R-2	30	75	NP	125 <sup>a</sup>
R-3 <sup>e</sup>	20	<u>75</u>	NP	125 <sup>a, g</sup>
R-4 <sup>e</sup>	20	NP	NP	125 <sup>a, g</sup>
S <sup>f</sup>	29	100	75	100 <sup>a</sup>
U	49	100	75	75 <sup>a</sup>

304.8 mm.

NP = Not Permitted.

b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.

c. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.

d. For a room or space used for assembly purposes having fixed seating, see Section 1029.8.

e. For the travel distance limitations in Group I-2, see Section 407.4.

f. The common path of egress travel distance shall only apply in a Group R-3 occupancy located in a mixed occupancy building.

For  
SI: 1  
foot  
=

- g. The length of common path of egress travel distance in a Group S-2 open parking garage shall be not more than 100 feet.
- h. For the travel distance limitations in Groups R-3 and R-4 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3, see Section 1006.2.2.6

**[BE]TABLE 1006.3.3(1)**  
**STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES**

<b>STORY</b>	<b>OCCUPANCY</b>	<b>MAXIMUM NUMBER OF DWELLING UNITS PER STORY</b>	<b>MAXIMUM COMMON PATH OF TRAVEL DISTANCE</b>
Basement, first, second, third, or fourth story above grade plane	R-2 <sup>a, b</sup>	4 dwelling units	125 feet
Fifth story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 3048 mm.

NP = Not Permitted.

NA = Not Applicable.

- b. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.
- c. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(2).

## SECTION 1020 - CORRIDORS

**[BE]TABLE 1020.1  
CORRIDOR FIRE-RESISTANCE RATING**

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system <sup>c</sup>
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R-1, R-4	Greater than 10	Not Permitted	0.5 <sup>c</sup> /1 <sup>d</sup>
R2	Less than 30	1	0.5 <sup>c</sup> /1 <sup>d</sup>
R2	Greater than 30	Not Permitted	0.5 <sup>c</sup> /1 <sup>d</sup>
R3	Less than 16	1	0.5 <sup>c</sup> /1 <sup>d</sup>
I-2 <sup>a</sup>	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1 <sup>b</sup>
I-4	Al	1	0

- b. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3.
- c. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.8.
- d. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.
- e. Group R-3 and R-4 buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3. See Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.3.

## **CHAPTER 11 CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS**

No amendments.

## **CHAPTER 12 ENERGY SYSTEMS**

No amendments.

## **CHAPTERS 13 through 19 RESERVED**

No amendments.

## **CHAPTER 20 AVIATION FACILITIES**

No amendments

## **CHAPTER 21 DRY CLEANING**

No amendments

## **CHAPTER 22 COMBUSTIBLE DUSTPRODUCING OPERATIONS**

No amendments

## **CHAPTER 23 MOTOR FUEL-DISPENSING FACILITIES AND REPAIR GARAGES**

No amendments

## **CHAPTER 24 FLAMMABLE FINISHES**

No amendments

## **CHAPTER 25 FRUIT AND CROP RIPENING**

No amendments

## **CHAPTER 26 FUMIGATION AND INSECTICIDAL FOGGING**

No amendments

## **CHAPTER 27 SEMICONDUCTOR FABRICATION FACILITIES**

No amendments

## **CHAPTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL, SOLID BIOMASS AND WOODWORKING FACILITIES**

No amendments

## **CHAPTER 29 MANUFACTURE OF ORGANIC COATINGS**

No amendments

## **CHAPTER 30 INDUSTRIAL OVENS**

No amendments

## **CHAPTER 31 TENTS, TEMPORARY SPECIAL EVENT STRUCTURES AND OTHER MEMBRANE STRUCTURES**

No amendments

## **CHAPTER 32 HIGH-PILED COMBUSTIBLE STORAGE**

No amendments

## **CHAPTER 33 FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION**

No amendments

## **CHAPTER 34 TIRE REBUILDING AND TIRE STORAGE**

No amendments

## **CHAPTER 35 WELDING AND OTHER HOT WORK**

No amendments

## **CHAPTER 36 MARINAS**

No amendments

## **CHAPTER 37 COMBUSTIBLE FIBERS**

No amendments

## **CHAPTER 38 HIGHER EDUCATION LABORATORIES**

No amendments

## **CHAPTER 39 PROCESSING AND EXTRACTION FACILITIES**

No amendments

## **CHAPTERS 40 through 49 RESERVED**

## **CHAPTER 50 HAZARDOUS MATERIALS - GENERAL PROVISIONS**

No amendments

## **CHAPTER 51 AEROSOLS**

No amendments

## **CHAPTER 52 RESERVED**

## **CHAPTER 53 COMPRESSED GASES**

No amendments

## **CHAPTER 54 CORROSIVE MATERIALS**

No amendments

## **CHAPTER 55 CRYOGENIC FLUIDS**

No amendments

## **CHAPTER 56 EXPLOSIVES AND FIREWORKS**

No amendments

## **CHAPTER 57 FLAMMABLE AND COMBUSTIBLE LIQUIDS**

No amendments

## **CHAPTER 58 FLAMMABLE GASES AND FLAMMABLE CRYOGENIC FLUIDS**

No amendments

## **CHAPTER 59 FLAMMABLE SOLIDS**

No amendments

## **CHAPTER 60 HIGHLY TOXIC AND TOXIC MATERIALS**

No amendments

## **CHAPTER 61 LIQUEFIED PETROLEUM GASES**

No amendments

## **CHAPTER 62 ORGANIC PEROXIDES**

No amendments

## **CHAPTER 63 OXIDIZERS, OXIDIZING GASES AND OXIDIZING CRYOGENIC FLUIDS**

No amendments

## **CHAPTER 64 PYROPHORIC MATERIALS**

No amendments

## **CHAPTER 65 PYROXYLIN (CELLULOSE NITRATE) PLASTICS**

No amendments

## **CHAPTER 66 UNSTABLE (REACTIVE) MATERIALS**

No amendments

## **CHAPTER 67 WATER-REACTIVE SOLIDS AND LIQUIDS**

No amendments



## **CHAPTERS 68 through 79 RESERVED**

## **CHAPTER 80 REFERENCED STANDARDS**

No amendments

## **APPENDIX A BOARD OF APPEALS**

No amendments

## **APPENDIX B FIRE-FLOW REQUIREMENTS FOR BUILDINGS**

No amendments

## **APPENDIX C FIRE HYDRANT LOCATIONS AND DISTRIBUTION.**

No amendments

## **APPENDIX D FIRE APPARATUS ACCESS ROADS**

No amendments

## **APPENDIX E HAZARD CATEGORIES**

No amendments

## **APPENDIX F HAZARD RANKING**

No amendments

## **APPENDIX G CRYOGENIC FLUIDS—WEIGHT AND VOLUME EQUIVALENTS**

No amendments

## **APPENDIX H HAZARDOUS MATERIALS MANAGEMENT PLAN (HMMP) AND HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS) INSTRUCTIONS**

No amendments

## **APPENDIX I FIRE PROTECTION SYSTEMS - NONCOMPLIANT CONDITIONS**

No amendments

## **APPENDIX J BUILDING INFORMATION SIGN**

No amendments

## **APPENDIX K CONSTRUCTION REQUIREMENTS FOR EXISTING AMBULATORY CARE FACILITIES**

No amendments

## **APPENDIX L REQUIREMENTS FOR FIRE FIGHTER AIR REPLENISHMENT SYSTEMS**

No amendments

## **APPENDIX M HIGH-RISE BUILDINGS—RETROACTIVE AUTOMATIC SPRINKLER REQUIREMENT**

No amendments

## **APPENDIX N INDOOR TRADE SHOWS AND EXHIBITIONS**

No amendments

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AMENDMENTS  
to the  
2018 INTERNATIONAL FUEL AND GAS CODE

**CHAPTER 3 - GENERAL REGULATIONS**

No amendments

**CHAPTER 4 - GAS PIPING INSTALLATIONS.**

No amendments

**CHAPTER 5 - CHIMNEYS AND VENTS**

No amendments

**CHAPTER 6 - SPECIFIC APPLIANCES**

No amendments

**CHAPTER 7 - GASEOUS HYDROGEN SYSTEMS**

No amendments

**CHAPTER 8- REFERENCED STANDARDS**

No amendments

**APPENDIX A - SIZING AND CAPACITIES OF GAS PIPING (IFGS)**

No amendments

**APPENDIX B - SIZING OF VENTING SYSTEMS SERVING  
APPLIANCES EQUIPPED WITH DRAFT HOODS, CATEGORY I  
APPLIANCES AND APPLIANCES LISTED FOR USE WITH TYPE  
B VENTS (IFGS)**

No amendments

**APPENDIX C - EXIT TERMINALS OF MECHANICAL DRAFT AND  
DIRECT-VENT VENTING SYSTEMS (IFGS)**

No amendments

**APPENDIX D - RECOMMENDED PROCEDURE FOR SAFETY  
INSPECTION OF AN EXISTING APPLIANCE INSTALLATION  
(IFGS)**

No amendments

# AMENDMENTS to the 2018 INTERNATIONAL ENERGY CONSERVATION CODE

## CHAPTER 3 - GENERAL REQUIREMENTS

No amendments

## CHAPTER 4 [CE] - COMMERCIAL ENERGY EFFICIENCY

### SECTION C402 - BUILDING ENVELOPE REQUIREMENTS

#### C402.1 General (Prescriptive).

**C402.1.2 Equipment buildings.** Buildings that comply with the following shall be exempt from the building thermal envelope provisions of this code:

1. Are separate buildings with floor area not more than 500 square feet (50 m<sup>2</sup>).
2. Are intended to house electronic equipment with installed equipment power totaling not less than 7 watts per square foot (75 W/m<sup>2</sup>) and not intended for human occupancy.
3. Have an average wall and roof U-factor less than 0.200 in Climate Zone 1 5. Comply with the roof solar reflectance and thermal emittance provisions for Climate Zone 1.

**C402.1.3 Insulation component R- value-based method.** Building thermal envelope opaque assemblies shall comply with the requirements of Sections C402.2 and C402.4 based on the climate zone specified in Chapter 3. For opaque portions of the building thermal envelope intended to comply on an insulation component R-value basis, the R-values for insulation shall be not less than that specified in Table C402.1.3. Commercial buildings or portions of commercial buildings enclosing Group R occupancies shall use the R-values from the "Group R" column of Table C402.1.3. Commercial buildings or portions of commercial buildings enclosing occupancies other than Group R shall use the R-values from the "All other" column of Table C402.1.3.

TABLE C402.1.3  
OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS, R-VALUE METHOD <sup>a, i</sup>

CLIMATE ZONE	1	
	All other	
Roofs		
Insulation entirely above roof deck	R-20ci	
Metal Buildings <sup>b</sup>		R-20
Attic and other	R-38	
Walls, above grade		
Mass <sup>g</sup>		NR
Metal Building	R-13	
Metal framed	R-13	
Wood framed and other	R-13	
Walls, below grade		
Below-grade wall <sup>d</sup>	NR	
Floors		
Mass <sup>e</sup>	NR	
Joist/framing	NR	
Slab-on-grade floors		
Unheated slabs	NR	
Heated slabs <sup>h</sup>		
Opaque doors		
Nonswinging		U-1.54

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 4.88 kg/m<sup>2</sup>, 1 pound per cubic foot = 16 kg/m<sup>3</sup>.

ci = Continuous insulation, NR = No Requirement, LS = Liner System.

a. Assembly descriptions can be found in ANSI/ASHRAE/IESNA Appendix A.

b. Where using R-value compliance method, a thermal spacer block shall be provided, otherwise use the U-factor compliance method in Table C402.1.4.

c. R-5.7ci is allowed to be substituted with concrete block walls complying with ASTM C90, ungrouted or partially grouted at 32 inches or less on center vertically and 48 inches or less on center horizontally, with ungrouted cores filled with materials having a maximum thermal conductivity of 0.44 Btu-in/h-ft<sup>2</sup> °F.

d. Where heated slabs are below grade, below-grade walls shall comply with the exterior insulation requirements for heated slabs.

e. "Mass floors" shall be in accordance with Section C402.2.3.

f. Steel floor joist systems shall be insulated to R-38.

g. "Mass walls" shall be in accordance with Section C402.2.2.

h. The first value is for perimeter insulation and the second value is for slab insulation. Perimeter insulation is not required to extend below the bottom of the slab.

i. Not applicable to garage doors. See Table C402.1.4

Table C402.1.4  
OPAQUE THERMAL ENVELOPE ASSEMBLY MAXIMUM REQUIREMENTS, U-FACTOR METHOD <sup>a,b</sup>

CLIMATE ZONE	1	
	All other	
<b>Roofs</b>		
Insulation entirely above roof deck	U-0.048	
Metal Buildings		U-0.048
Attic and other		
<b>Walls, Above Grade</b>		
Mass <sup>g</sup>		NR
Metal Building		U-0.078
Metal framed		U-0.078
Wood framed and other		U-0.078
<b>Walls, below grade</b>		
Below-grade wall <sup>c</sup>		NR
<b>Floors</b>		
Mass <sup>e</sup>		NR
Joist/framing		NR
<b>Slab-on-grade floors</b>		
Unheated slabs		NR
Heated slabs <sup>h</sup>		
<b>Opaque doors</b>		
Swinging door		U-1.45
Garage door <14%		U-1.45

For SI: 1 pound per square foot = 4.88 kg/m<sup>2</sup>, 1 pound per cubic foot = 16 kg/m<sup>3</sup>.

ci = Continuous insulation, NR = No Requirement, LS = Liner System.

a. Where assembly U-factors, C-factors, and F-factors are established in ANSI/ASHRAE/IESNA 90.1 Appendix A, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table, and provided that the construction, excluding the cladding system on walls, complies with the appropriate construction details from ANSI/ASHRAE/IESNA 90.1 Appendix A.

b. Where U-factors have been established by testing in accordance with ASTM C1363, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table. The R-value of continuous insulation shall be permitted to be added to or subtracted from the original tested design.

c. Where heated slabs are below grade, below-grade walls shall comply with the U-factor requirements for above-grade mass walls.

d. "Mass floors" shall be in accordance with Section C402.2.3.

e. These C-, F- and U-factors are based on assemblies that are not required to contain insulation.

f. The first value is for perimeter insulation and the second value is for full slab insulation.

g. "Mass walls" shall be in accordance with Section C402.2.2.

**C402.1.4 Assembly U- factor, C -factor or F -factor based-method.** Building thermal envelope opaque assemblies shall meet the requirements of Sections C402.2 and C402.4 based on the climate zone specified in Chapter 3. Building thermal envelope opaque assemblies intended to comply on an assembly U-, C- or F-factor basis shall have a U-, C- or F-factor not greater than that specified in Table C402.1.4. Commercial buildings or portions of commercial buildings enclosing Group R occupancies shall use the U-, C- or F-factor from the “Group R” column of Table C402.1.4. Commercial buildings or portions of commercial buildings enclosing occupancies other than Group R shall use the U-, C- or F-factor from the “All other” column of Table C402.1.4

**C402.4 Fenestration (Prescriptive).** Fenestration shall comply with Sections C402.4.1 through C402.4.5 and Table C402.4. Daylight responsive controls shall comply with this section and Section C405.2.3.1.

**C402.4.1 Maximum area.** The vertical fenestration area, not including opaque doors and opaque spandrel panels, shall be not greater than 80 percent of the gross above-grade wall area. The skylight area shall be not greater than 10 percent of the gross roof area.

**C402.4.1.1 Increased vertical fenestration area with daylight responsive controls.** In Climate Zones 1 , not more than 90 percent of the gross above-grade wall area shall be vertical fenestration, provided that all of the following requirements are met

TABLE C402.4  
BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR AND SHGC REQUIREMENTS

CLIMATE ZONE	1
<b>V</b>	
<b>U-factor</b>	
Fixed fenestration	1.2
Operable	1.2
Entrance doors	1.2
<b>SHGC</b>	
Orientation <sup>a</sup>	SEW N
PF < 0.2	0.25 0.33
0.2 ≤ PF < 0.5	0.30 0.37
PF ≥ 0.5	0.40 0.40
<b>S</b>	
U-factor	0.75
SHGC	0.3

#### C402.4.2 Minimum skylight fenestration area.

**Exception:** Skylights above daylight zones of enclosed spaces are not required in:

- 1.. Spaces where the designed general lighting power densities are less than 0.5 W/ft<sup>2</sup> (5.4 W/m<sup>2</sup>).
- 2.. Areas where it is documented that existing structures or natural objects block direct beam sunlight on not less than half of the roof over the enclosed area for more than 1,500 daytime hours per year between 8 a.m. and 4 p.m.
3. Spaces where the daylight zone under rooftop monitor is greater than 50 percent of the enclosed space floor area.
4. Spaces where the total area minus the area of sidelight daylight zone is less than 2,500 square feet (232 m<sup>2</sup>), and where the lighting is controlled in accordance with Section C405.2.3.

#### C402.4.3 Maximum U- factor and SHGC.

**C402.4.3.1 Increased skylight SHGC.** In Climate Zones 1 skylights shall be permitted a maximum SHGC of 0.60 where located above daylight zones provided with daylight responsive controls.

**C402.4.3.2 Increased skylight U- factor.** Where skylights are installed above daylight zones provided with daylight responsive controls, a maximum U-factor of 0.9 shall be permitted in Climate Zones 1

**C402.5.6 Loading dock weather-seals** at air conditioner spaces. Cargo door openings and loading door openings shall be equipped with weather-seals that restrict infiltration and provide direct contact along the top and sides of vehicles that are parked in the doorway.

**C402.5.7 Vestibules.** Building entrances shall be protected with self-closing devices.

### SECTION C403 - BUILDING MECHANICAL SYSTEMS

TABLE C403.4.4  
VARIABLE SPEED DRIVE (VSD) REQUIREMENTS FOR DEMAND-  
CONTROLLED PUMPS

CHILLED WATER AND HEAT REJECTION LOOP PUMPS IN THESE CLIMATE ZONES		VSD REQUIRED FOR MOTORS WITH RATED OUTPUT OF:
1A, 1B, 2B		≥ 2 hp



## **C403.7 Ventilation and exhaust systems.**

**C403.7.1 Demand control ventilation (Mandatory).** Demand control ventilation (DCV) shall be provided for spaces larger than 500 square feet (46.5 m<sup>2</sup>) and with an average occupant load of 25 people or greater per 1,000 square feet (93 m<sup>2</sup>) of floor area, as established in Table 403.3.1.1 of the International Mechanical Code, and served by systems with one or more of the followings:

### **C403.7.2 Enclosed parking garage ventilation controls (Mandatory).**

#### **Exceptions:**

1. Garages with a total exhaust capacity less than 22,500 cfm (10 620 L/s) with ventilation systems that do not utilize heating or mechanical cooling.
2. Garages that have a garage area to ventilation system motor nameplate power ratio that exceeds 1125 cfm/hp (710 L/s/kW) and do not utilize heating or mechanical cooling.

**C403.7.3 Ventilation air heating control (Mandatory).** Units that provide ventilation air to multiple zones and operate in conjunction with zone heating and cooling systems shall not use heating or heat recovery to warm supply air to a temperature greater than 60°F (16°C) when representative building loads or outdoor air temperatures indicate that the majority of zones require cooling.

**C403.7.4 Energy recovery ventilation systems (Mandatory).** Where the supply airflow rate of a fan system exceeds the values specified in Tables C403.7.4(1) and C403.7.4(2), the system shall include an energy recovery system. The energy recovery system shall be configured to provide a change in the enthalpy of the outdoor air supply of not less than 50 percent of the difference between the outdoor air and return air enthalpies, at design conditions.

**Exception:** An energy recovery ventilation system shall not be required in any of the following conditions:

1. Where energy recovery systems are prohibited by the International Mechanical Code.
2. Laboratory fume hood systems that include not fewer than one of the following features:
  - 2.1. Variable-air-volume hood exhaust and room supply systems configured to reduce exhaust and makeup air volume to 50 percent or less of design values.
  - 2.2. Direct makeup (auxiliary) air supply equal to or greater than 75 percent of the exhaust rate, heated not warmer than 2°F (1.1°C) above room setpoint, cooled to not cooler

than 3°F (1.7°C) below room setpoint, with no humidification added, and no simultaneous heating and cooling used for dehumidification control.

3. Systems serving spaces that are heated to less than 60°F (15.5°C) and that are not cooled.
4. Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site-solar energy.

## Heating energy recovery in Climate Zones 1

**TABLE C403.7.4(1)**  
**ENERGY RECOVERY REQUIREMENT**  
(Ventilation systems operating less than 8,000 hours per year)

CLIMATE ZONE	PERCENT (%) OUTDOOR AIR AT FULL DESIGN AIRFLOW RATE							
	≥ 10% and < 20%	≥ 20% and < 30%	≥ 30% and < 40%	≥ 40% and < 50%	≥ 50% and < 60%	≥ 60% and < 70%	≥ 70% and < 80%	> 80%
DESIGN SUPPLY FAN AIRFLOW RATE (cfm)								
1A,	≥ 26,000	≥ 16,000	≥ 5,500	≥ 4,500	≥ 3,500	≥ 2,000	≥ 1,000	> 120

**TABLE C403.7.4(2)**  
**ENERGY RECOVERY REQUIREMENT**  
(Ventilation systems operating not less than 8,000 hours per year)

CLIMATE ZONE	PERCENT (%) OUTDOOR AIR AT FULL DESIGN AIRFLOW RATE							
	≥ 10% and < 20%	≥ 20% and < 30%	≥ 30% and < 40%	≥ 40% and < 50%	≥ 50% and < 60%	≥ 60% and < 70%	≥ 70% and < 80%	> 80%
DESIGN SUPPLY FAN AIRFLOW RATE (cfm)								
1A,	≥ 2,500	≥ 2,000	≥ 1,000	≥ 500	≥ 140	≥ 120	≥ 100	> 80

**C403.7.5 Kitchen exhaust systems (Mandatory).** Replacement air introduced directly into the exhaust hood cavity shall not be greater than 80 percent of the hood exhaust airflow rate. Conditioned supply air delivered to any space shall not exceed the greater of the following:

1. The ventilation rate required to meet the space heating or cooling load.

**C403.7.6 Automatic control of HVAC systems serving guestrooms (Mandatory).**

**C403.7.6.1 Temperature setpoint controls.** Controls shall be provided on each HVAC system that are capable of and configured to automatically raise the cooling setpoint and lower the heating setpoint by not less than 4°F (2°C) from the occupant setpoint within 30 minutes after the occupants have left the guestroom. The controls shall be capable of and configured to automatically raise the cooling setpoint to not lower than 80°F (27°C) and lower the heating setpoint to not higher than 60°F (16°C) when the guestroom is unrented or has not been continuously occupied for more than 16 hours or a networked guestroom control system indicates that the

guestroom is unrented, and the guestroom is unoccupied for more than 30 minutes. A networked guestroom control system that is capable of returning the thermostat set-points to default occupied set-points 60 minutes prior to the time a guestroom is scheduled to be occupied is not precluded by this section. Cooling that is capable of limiting relative humidity with a setpoint not lower than 65-percent relative humidity during unoccupied periods is not precluded by this section.

#### **C403.11 Construction of HVAC system elements.**

**C403.11.1 Duct and plenum insulation and sealing (Mandatory).** Supply and return air ducts and plenums shall be insulated with not less than R-6 insulation where located in unconditioned spaces and where located outside the building with not less than R-8 insulation in Climate Zone 1. Where located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by not less than R-8 insulation in Climate Zone 1.

#### **C403.12 Mechanical systems located outside of the building thermal envelope (Mandatory).**

## **CHAPTER 5 [CE] – EXISTING BUILDINGS**

### **SECTION C501- GENERAL**

**C501.4 Compliance.** *Alterations, repairs, additions* and changes of occupancy to, or relocation of, existing *buildings* and structures shall comply with the provisions for *alterations, repairs, additions* and changes of occupancy or relocation, respectively, in this code and the *International Building Code, International Existing Building Code, International Fire Code, International Fuel Gas Code, International Mechanical Code, International Plumbing Code, International Private Sewage Disposal Code*, NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail. They shall also comply with either the Reglamento para Interconectar Generadores con el Sistema de Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta (Regulation 8915) or the Reglamento para Interconectar Generadores con el Sistema de Transmisión Eléctrica de la Autoridad de Energía Eléctrica y Participar en los Programas de Medición Neta (Regulation 8916), as applicable.

## CHAPTER 6 [CE] – REFERENCE STANDARDS

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**PREPA**

Authority

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5676-1997: Reglamento Complementario al Código Eléctrico Nacional  
(Complementary Code) \_\_\_\_\_

C501.4

8915-2017: Reglamento para Interconectar Generadores con el Sistema de  
Distribución Eléctrica de la Autoridad de Energía Eléctrica y Participar en los  
Programas de Medición Neta

C501.4

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Transmisión Eléctrica de la Autoridad de Energía Eléctrica y Participar en los  
Programas de Medición Neta

C501.4.

### APPENDIX CA SOLAR-READY ZONE – COMMERCIAL

No amendments

## CHAPTER 3 - GENERAL REQUIREMENTS

No amendments

## CHAPTER 4 [RE] – RESIDENTIAL ENERGY EFFICIENCY

### SECTION R401 - GENERAL

**R401.1 Scope.** This chapter applies to *residential buildings*.

**R401.1.1** For the RESIDENTIAL PROVISIONS of this code, Residential Buildings includes detached one- and two-family dwellings and townhouses as well as Group R-2, R-3 and R-4 buildings including over three stories in height

### R401.2 Compliance.

**R401.2.1 Tropical Zone.** Residential Buildings in the tropical zone at elevations less than 2,400 feet (731.5 m) above sea level shall be deemed to be in compliance with this chapter provided that the following conditions are met:

1. Not more than one-half of the occupied space is air conditioned.
2. The occupied space is not heated.
3. Solar, wind or other renewable energy source supplies not less than 80 percent of the energy for service water heating.
4. Glazing in conditioned spaces has a solar heat gain coefficient of less than or equal to 0.40 or has an overhang with a projection factor equal to or greater than 0.30, (refer to Table 5.5.4.4.1 from ASHREA 90.1, 2016.),
5. Permanently installed lighting, where is in accordance with Section R404.
6. The exterior roof surface complies with one of the options in Table C402.3 or the roof or ceiling has insulation with an R-value of R-15 or greater. Where attics are present, attics above the insulation are vented and attics below the insulation are unvented.
7. Roof surface have a slope of not less than one fourth unit vertical in 12 unit horizontal (21 percent slope). The finished roof does not have water accumulation areas.
8. Operable fenestration provides a ventilation area of not less than 14 percent of the floor area in each room. Alternatively, equivalent ventilation is provided by a ventilation fan,
9. Bedrooms with exterior walls facing two different directions have operable fenestration walls facing two directions.
10. Interior doors to bedrooms are capable of being secured in the open position.
11. A ceiling fan or ceiling fan rough-in is provided for bedrooms and the largest space that is not used as a bedroom.

**R401.3 Certificate (Mandatory).** A permanent certificate shall be completed by the builder or other approved party and posted on a wall in a utility room or an approved location inside the building. Where located on an electrical panel, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall indicate the predominant R-values of insulation installed in or on ceilings, roofs, walls, ; U-factors of fenestration and the solar heat gain coefficient (SHGC) of fenestration, and the results from any required duct system and building envelope air leakage testing performed on the building. Where there is more than one value for each component, the certificate shall indicate the value covering the largest area. The certificate shall indicate the types and efficiencies of heating, cooling and service water heating equipment. Where a gas-fired unvented room heater, electric furnace or baseboard electric heater is installed in the residence, the certificate shall indicate "gas-fired unvented room heater," "electric furnace" or "baseboard electric heater," as appropriate. An efficiency shall not be indicated for gas-fired unvented room heaters, electric furnaces and electric baseboard heaters.

## **SECTION R402 - BUILDING THERMAL ENVELOPE**

**R402.3 Fenestration (Prescriptive).** In addition to the requirements of Section R402, fenestration shall comply with Sections R402.3.1 through R402.3.5.

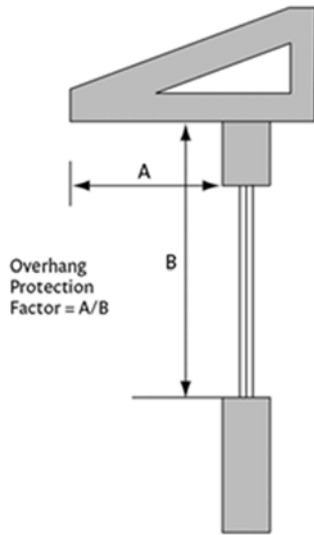
**R402.3.1 U-factor.** An area-weighted average of fenestration products shall be permitted to satisfy the U-factor requirements.

**R402.3.2 Glazed fenestration SHGC.** An area-weighted average of fenestration products more than 50-percent glazed shall be permitted to satisfy the SHGC requirements.

Dynamic glazing shall be permitted to satisfy the SHGC requirements of Table R402.1.2 provided that the ratio of the higher to lower labeled SHGC is greater than or equal to 2.4, and the dynamic glazing is automatically controlled to modulate the amount of solar gain into the space in multiple steps. Dynamic glazing shall be considered separately from other fenestration, and area-weighted averaging with other fenestration that is not dynamic glazing shall be prohibited.

**Exception:** Dynamic glazing shall not be required to comply with this section where both the lower and higher labeled SHGC comply with the requirements of Table R402.1.2.

For demonstrating compliance in vertical fenestrations shaded by opaque permanent projections that will last as long as the building itself, the equivalent SHGC of the fenestration product shall be reduced by using the multipliers in Table 402.3.2. The following formula should be used to calculate the required estimated overhang projection factor, the projection factor will be the range applicable to the respective calculated SHGC Multiplier:



$$\text{SGHC}_{\text{Multiplier}} = \frac{\text{SGHC}_{\text{required in Table 402.3.2}}}{\text{SGHC}_{\text{Equipment}}}$$

Table 402.3.2 (NEW)  
SHGC Multipliers for Permanent Projections

Projection Factor	SHGC Multiplier (All other orientations)	SHGC Multiplier (North-Oriented)
>0-0.10	1.00	1.00
>0.10-0.20	0.91	0.95
>0.20-0.30	0.82	0.91
>0.30-0.40	0.74	0.87
>0.40-0.50	0.67	0.84
>0.50-0.60	0.61	0.81
>0.60-0.70	0.56	0.78
>0.70-0.80	0.51	0.76
>0.80-0.90	0.47	0.75
>0.90-1.00	0.44	0.73

**R402.3.3 Glazed fenestration exemption.** Not greater than 15square feet (1.4 m<sup>2</sup>) of glazed fenestration per dwelling unit shall be exempt from the U- factor and SHGC requirements in Section R402.1.2. This exemption shall not apply to the U- factor alternative in Section R402.1.4 and the Total UA alternative in Section R402.1.5.

**R402.3.5 Sunroom fenestration.** *Sunrooms* enclosing *conditioned space* shall comply with the fenestration requirements of this code.

\*(1)New fenestration separating the *sunroom* with *thermal isolation* from *conditioned space* shall comply with the *building thermal envelope* requirements of this code.

**R402.5 Maximum fenestration U-factor and SHGC (Mandatory).** The area-weighted average maximum fenestration SHGC permitted using tradeoffs from Section R405 in Climate Zone 1 shall be 0.50.

## R403 - SYSTEMS

**R403.3 Ducts.** Ducts and air handlers shall be installed in accordance with Sections R403.3.1 through R403.3.7.

**R403.3.6 Ducts buried within ceiling insulation.** Where supply and return air ducts are partially or completely buried in ceiling insulation, such ducts shall comply with all of the following:



1. The supply and return ducts shall have an insulation R-value not less than R-8.
2. At all points along each duct, the sum of the ceiling insulation R-value against and above the top of the duct, and against and below the bottom of the duct, shall be not less than R-19, excluding the R-value of the duct insulation.
3. In Climate Zones 1A, , the supply ducts shall be completely buried within ceiling insulation, insulated to an R-value of not less than R-13 and in compliance with the vapor retarder requirements of Section 604.11 of the International Mechanical Code or Section M1601.4.6 of the International Residential Code, as applicable.

**R403.10 Pools and permanent spa energy consumption (Mandatory).** The energy consumption of pools and permanent spas shall be in accordance with Sections R403.10.1 through R403.10.3.

**R403.10.1 Heaters.** All pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters are allowed only with renewable or alternate energy source.

## **SECTION R404 - ELECTRICAL POWER AND LIGHTING SYSTEMS**

**R404.1 Lighting equipment (Mandatory).** Not less than 90 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps.

**R404.1.1 Lighting equipment (Mandatory).** Fuel gas lighting systems shall not have continuously burning pilot lights.

**R404.2 Solar-Ready Provisions for Distributed Generation Systems Installation (Mandatory).** Solar-ready provisions included as Appendix RA of this code shall be applicable to new construction of one- and two-family dwelling and townhouses. Although solar systems are not required to be installed, it is required the space(s) for installing such systems, providing pathways for connections and requiring adequate structural capacity of roof systems to support them.

## **SECTION R406 - ENERGY RATING INDEX COMPLIANCE ALTERNATIVE**

**R406.4 ERI-based compliance.** Compliance based on an ERI analysis requires that the rated design be shown to have an ERI less than or equal to the appropriate value indicated in Table R406.4 when compared to the ERI reference design.

**TABLE R406.4  
MAXIMUM ENERGY RATING INDEX**

<b>CLIMATE ZONE</b>	<b>ENERGY RATING INDEX<sup>a</sup></b>
1	57



## CHAPTER 5 [RE] – EXISTING BUILDINGS

### SECTION R501 - GENERAL

**R501.4 Compliance.** *Alterations, repairs, additions* and changes of occupancy to, or relocation of, existing *buildings* and structures shall comply with the provisions for *alterations, repairs, additions* and changes of occupancy or relocation, respectively, in this code and the *International Building Code, International Existing Building Code, International Fire Code, International Fuel Gas Code, International Mechanical Code, International Plumbing Code, International Private Sewage Disposal Code*, NFPA 70 and the Puerto Rico Electric Power Authority's Reglamento Complementario al Código Eléctrico Nacional (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## CHAPTER 6 [RE] – REFERENCE STANDARDS

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<b>PREPA</b> Authority 364267 PR 00936-4267	Puerto Rico Power PO Box San Juan,
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5676-1997: Reglamento Complementario al Código Eléctrico Nacional  
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R501.4

## APPENDIX RA - Solar Ready Provisions - Detached One and Two-Family Dwelling and Townhouses

### SECTION RA103 - SOLAR-READY ZONE

**RA103.1 General.** New detached one- and two-family dwellings, and townhouses with not less than 600 square feet (55.74 m<sup>2</sup>) of roof area oriented between 110 degrees and 270 degrees of true north shall comply with Sections RA103.2 through RA103.8.

**Exceptions:**

1. New residential buildings with a permanently Installed on-site renewable energy System.
2. A building with a solar-ready zone that is shaded for more than 70 percent of daylight hours annually.
3. Low income housing units.

**RA103.2 Construction document requirements for solar-ready zone.** Construction documents shall indicate the solar-ready zone.

**RA103.3 Solar-ready zone area.** The total solar-ready zone area shall be not less than 300 square feet (27.87 m<sup>2</sup>) exclusive of mandatory access or set back areas as required by the International Fire Code. New townhouses three stories or less in height above grade plane and with a total floor area less than or equal to 2,000 square feet (185.8 m<sup>2</sup>) per dwelling shall have a solar-ready zone area of not less than 150 square feet (13.94 m<sup>2</sup>). The solar-ready zone shall be composed of areas not less than 5 feet (1524 mm) in width and not less than 80 square feet (7.44 m<sup>2</sup>) exclusive of access or set back areas as required by the International Fire Code.

**RA103.4 Obstructions.** Solar-ready zones shall be free from obstructions, including but not limited to vents, chimneys, and roof-mounted equipment.

**RA103.5 Roof load documentation.** The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents.

**RA103.6 Interconnection pathway.** Construction documents shall indicate pathways for routing of conduit or plumbing from the solar-ready zone to the electrical service panel or service hot water system.

**RA103.6.1** Installation of a 5"x 5"x2 1/2" junction box connected to the Main meter box by a 1" PVC empty conduit. The junction box shall have a waterproof cover for a future disconnect switch. Location must be accessible to Puerto Rico Electric Power Authority (PREPA) personnel.

**RA103.6.2** Installation of a 1" PVC empty conduit from the 1/2" junction box to roof level at location where Solar systems will be located. Empty PVC pipe will be installed with pull wire for future installation of cables, properly capped and sealed 6" above roof deck.

**RA103.6.3** (optional) Installation of a 1/2" PVC empty conduit from roof to ground level, properly capped and sealed for future installation of ground.

**RA103.7 Electrical service reserved space.** The main electrical service panel shall have a reserved space to allow installation of a dual pole circuit breaker for future solar electric installation and shall be labeled "For Future Solar Electric." The reserved space

shall be positioned at the opposite (load) end from the input feeder location or main circuit location.

**RA103.8 Construction documentation certificate.** A permanent certificate, indicating the solar-ready zone and other requirements of this section, shall be posted near the electrical distribution panel, water heater or other conspicuous location by the builder or registered design professional.

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# AMENDMENTS to the 2018 INTERNATIONAL EXISTING BUILDING CODE

## CHAPTER 3 PROVISIONS FOR ALL COMPLIANCE METHODS.

No amendments

## CHAPTER 4 - REPAIRS

### SECTION 406 - ELECTRICAL

**406.1 Material.** Existing electrical wiring and equipment undergoing *repair* shall be allowed to be repaired or replaced with equal or similar material, except for replacement of luminaries that shall comply with section 406.1.6.

**406.1.1 Receptacles.** Replacement of electrical receptacles shall comply with the applicable requirements of Section 406.4(D) of NFPA 70.

**406.1.2 Plug fuses.** Plug fuses of the Edison-base type shall be used for replacements only where there is no evidence of over fusing or tampering per applicable requirements of Section 240.51(B) of NFPA 70.

**406.1.3 Nongrounding-type receptacles.** For replacement of nongrounding-type receptacles with grounding type receptacles and for branch circuits that do not have an equipment grounding conductor in the branch circuitry, the grounding conductor of a grounding-type receptacle outlet shall be permitted to be grounded to any accessible point on the grounding electrode system or to any accessible point on the grounding electrode conductor in accordance with Section 250.130(C) of NFPA 70.

**406.1.4 Group I-2 receptacles.** Receptacles in patient bed locations of Group I-2 that are not "hospital grade" shall be replaced with "hospital grade" receptacles, as required by NFPA 99 and Article 517 of NFPA 70.

**406.1.5 Grounding of appliances.** Frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers and outlet or junction boxes that are part of the existing branch circuit for these appliances shall be permitted to be grounded to the grounded circuit conductor in accordance with Section 250.140 of NFPA 70.

**406.1.6 Luminaries.** Any luminary or sign on building with illumination shall be replaced with LED or similar lamps.

## CHAPTER 5 PRESCRIPTIVE COMPLIANCE METHOD

No amendments

## CHAPTER 6 - CLASSIFICATION OF WORK

### SECTION 601 - GENERAL

**601.1 Scope.** The provisions of this chapter shall be used in conjunction with Chapters 7 through 12 and shall apply to the *alteration, repair, addition and change of occupancy of existing structures*, including historic buildings, structures and properties, and moved structures, as referenced in Section 301.3.2. The work performed on an *existing building* shall be classified in accordance with this chapter.

## CHAPTER 7 ALTERATIONS—LEVEL 1 .

No amendments

## CHAPTER 8 - ALTERATIONS—LEVEL 2

### SECTION 807 - ELECTRICAL

**807.1 New installations.** Newly installed electrical equipment and wiring relating to work done in any *work area* shall comply with all applicable requirements of NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code), except as provided for in Section 807.3. In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**807.1.1 Conductors.** Electrical equipment and wiring in newly installed partitions and ceilings shall comply with all applicable requirements of NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail. Copper conductors shall be used in circuit conductors between the meter and the service panelboard and in branch circuits at residential occupancies.

## CHAPTER 9 ALTERATIONS—LEVEL 3.

No amendments

## CHAPTER 10 - CHANGE OF OCCUPANCY

### SECTION 1007 - ELECTRICAL

**1007.1 Special occupancies.** Where the occupancy of an *existing building* or part of an *existing building* is changed to one of the following special occupancies as described in NFPA 70, the electrical wiring and equipment of the building or portion thereof that contains the proposed occupancy shall comply with the applicable requirements of NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code), whether or not a *change of occupancy* group is involved:

1. Hazardous locations
2. Commercial garages, *repair* and storage
3. Aircraft hangars
4. Gasoline dispensing and service stations
5. Bulk storage plants
6. Spray application, dipping and coating processes
7. Health care facilities
8. Places of assembly
9. Theaters, audience areas of motion picture and television studios, and similar locations
10. Motion picture and television studios and similar locations
11. Motion picture projectors
12. Agricultural buildings

**1007.2 Unsafe conditions.** Where the occupancy of an *existing building* or part of an *existing building* is changed, all unsafe conditions shall be corrected without requiring that all parts of the electrical system comply with NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code). In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**1007.3 Service upgrade.** Where the occupancy of an *existing building* or part of an *existing building* is changed, electrical service shall be upgraded to meet the requirements of NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code) for the new occupancy. In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

## **CHAPTER 11 ADDITIONS**

No amendments

## **CHAPTER 12 HISTORIC BUILDINGS**

No amendments

## **CHAPTER 13 PERFORMANCE COMPLIANCE METHODS**

No amendments

## CHAPTER 14 RELOCATED OR MOVED BUILDINGS

No amendments

## CHAPTER 15 CONSTRUCTION SAFEGUARDS

No amendments

## CHAPTER 16 - REFERENCED STANDARDS

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[A]107.3, 807.1, 807.1.1, 1007.1, 1007.2, 1007.3

## APPENDIX A GUIDELINES FOR THE SEISMIC RETROFIT OF EXISTING BUILDINGS

No amendments

### APPENDIX B

#### SUPPLEMENTARY ACCESSIBILITY REQUIREMENTS FOR EXISTING BUILDINGS AND FACILITIES

##### SECTION B101 - QUALIFIED HISTORICAL BUILDINGS AND FACILITIES

**B101.1 General.** Qualified *historic buildings or properties* and facilities shall comply with Sections B101.2 through B101.5.

**B101.2 Qualified historic buildings or properties and facilities.** These procedures shall apply to buildings and facilities designated as historic structures that undergo *alterations or a change of occupancy*.

**B101.3 Qualified historic buildings or properties and facilities subject to Section 106 of the National Historic Preservation Act.** ...

**B101.4 Qualified historic buildings and facilities not subject to Section 106 of the National Historic Preservation Act.** Where an *alteration* or *change of occupancy* is undertaken to a qualified *historic building* or facility that is not subject to Section 106 of the National Historic Preservation Act, and the entity undertaking the *alterations* believes that compliance with the requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historic significance of the building or facility, the entity shall consult with the state government preservation program, Instituto de Cultura Puertorriqueña. Where the state government preservation program, Instituto de Cultura Puertorriqueña determines that compliance with the accessibility requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historical significance of the building or facility, the alternative requirements of Section 305.9 for that element are permitted.

## **APPENDIX C GUIDELINES FOR THE WIND RETROFIT OF EXISTING BUILDINGS**

No amendments

## **RESOURCE A GUIDELINES ON FIRE RATINGS OF ARCHAIC MATERIALS AND ASSEMBLIES**

No amendments



# AMENDMENTS to the 2018 INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE

## CHAPTER 3 – GENERAL REGULATIONS

### SECTION 301 - GENERAL

**301.1 Scope.** The provisions of this charter shall govern the general regulations of private sewage disposal systems, including specific limitations and flood hazard areas. This Code shall apply to the disposal of domestic wastes (sewage) only.

## CHAPTER 4 - SITE EVALUATION AND REQUIREMENTS

### SECTION 401 - GENERAL

**401.1 Scope.** The provisions of this chapter shall govern the evaluation of and requirements for private sewage disposal system sites. Site evaluation and requirements shall comply with the design standards and specifications of the Puerto Rico Environmental Quality Board's Underground Injection Control Regulation.

## CHAPTER 5 MATERIALS

No Amendments

## CHAPTER 6 SOIL ABSORPTION SYSTEMS

No Amendments

## CHAPTER 7 PRESSURE DISTRIBUTION SYSTEMS

No Amendments

## CHAPTER 8 TANKS

No Amendments

## CHAPTER 9 MOUND SYSTEMS

No Amendments

## CHAPTER 10 CESSPOOLS

No Amendments

## CHAPTER 11 RESIDENTIAL WASTEWATER SYSTEMS

No Amendments

## **CHAPTER 12 - INSPECTIONS**

### **SECTION 1202 - GENERAL**

**1202.1 Initial inspection procedures.** *Private sewage disposal systems* shall be inspected once during excavation, once before backfilling, and after construction. The code official shall be notified when the private sewage disposal system is ready for inspection.

## **CHAPTER 13 NONLIQUID SATURATED TREATMENT SYSTEMS**

No Amendments

## **CHAPTER 14 REFERENCED STANDARDS**

No Amendments

## **APPENDIX A SYSTEM LAYOUT ILLUSTRATIONS**

No Amendments

## **APPENDIX B TABLES FOR PRESSURE DISTRIBUTION SYSTEMS**

No Amendments

# AMENDMENTS to the 2018 INTERNATIONAL SWIMMING POOL AND SPA CODE

## CHAPTER 3 – GENERAL COMPLIANCE

### SECTION 302 - ELECTRICAL, PLUMBING, MECHANICAL AND FUEL GAS REQUIREMENTS

**302.1 Electrical.** Electrical requirements for aquatic facilities shall be in accordance with NFPA 70 and the Puerto Rico Electric Power Authority's *Reglamento Complementario al Código Eléctrico Nacional* (Complementary Code) or the International Residential Code, as applicable in accordance with Section 102.7.1. In case of a conflict between the Complementary Code and the NFPA 70, the Complementary Code will prevail.

**Exception:** Internal wiring for portable residential spas and portable residential exercise spas.

## CHAPTER 4 PUBLIC SWIMMING POOLS

No Amendments.

## CHAPTER 5 PUBLIC SPAS AND PUBLIC EXERCISE SPAS

No Amendments.

## CHAPTER 6 AQUATIC RECREATION FACILITIES

No Amendments.

## CHAPTER 7 ONGROUND STORABLE RESIDENTIAL SWIMMING POOLS

No Amendments.

## CHAPTER 8 PERMANENT INGROUND RESIDENTIAL SWIMMING POOLS

No Amendments.

## CHAPTER 9 PERMANENT RESIDENTIAL SPAS AND PERMANENT RESIDENTIAL EXERCISE SPAS.

No Amendments.

## **CHAPTER 10 PORTABLE RESIDENTIAL SPAS AND PORTABLE RESIDENTIAL EXERCISE SPAS**

No Amendments.

## **CHAPTER 11 – REFERENCED STANDARDS**

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302.1