

Part III—Building Planning and Construction

CHAPTER 3 BUILDING PLANNING

User note:

About this chapter: Chapter 3 contains a wide array of building planning requirements that are critical to designing a safe and usable building. This includes, but is not limited to, requirements related to: general structural design, fire-resistant construction, light, ventilation, sanitation, plumbing fixture clearances, minimum room area and ceiling height, safety glazing, means of egress, automatic fire sprinkler systems, smoke and carbon monoxide alarm systems, accessibility, solar energy systems, swimming pools, spas and hot tubs.

SECTION R301 DESIGN CRITERIA

R301.1 Application. Buildings and structures, and parts thereof, shall be constructed to safely support all loads, including dead loads, live loads, roof loads, flood loads, snow loads, wind loads and seismic loads as prescribed by this code. The construction of buildings and structures in accordance with the provisions of this code shall result in a system that provides a complete load path that meets the requirements for the transfer of loads from their point of origin through the load-resisting elements to the foundation. Buildings and structures constructed as prescribed by this code are deemed to comply with the requirements of this section.

R301.1.1 Alternative provisions. As an alternative to the requirements in Section R301.1, the following standards are permitted subject to the limitations of this code and the limitations therein. Where engineered design is used in conjunction with these standards, the design shall comply with the *Jamaica Building Code* and shall be done only by a registered design building professional.

1. AWC *Wood Frame Construction Manual* (WFCM).
2. AISI *Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-Family Dwellings* (AISI S230). This construction system may be used only for internal non-loadbearing walls, floor support and roof framing where it is demonstrated that the structure will withstand winds of at least 240 kph (150 mph)
3. ICC *Standard on the Design and Construction of Log Structures* (ICC 400).

R301.1.2 Construction systems. The requirements of this code are based on platform and balloon-frame construction for light-frame wooden buildings. The requirements for concrete and masonry buildings are based on a balloon framing system. Other framing systems shall have equivalent detailing to ensure force transfer, continuity and compatible deformations.

R301.1.3 Engineered design. Where a building of otherwise conventional construction contains structural elements exceeding the limits of Section R301 or otherwise not conforming to this code, these elements shall be designed in accordance with accepted engineering practice. The extent of such design need only demonstrate compliance of nonconventional elements with other applicable provisions and shall be compatible with the performance of the conventional framed system. Engineered design in accordance with the *Jamaica Building Code*, done only by registered design building professionals, is permitted for buildings and structures, and parts thereof, included in the scope of this code.

R301.2 Climatic and geographic design criteria. Buildings shall be constructed in accordance with the provisions of this code as limited by the provisions of this section. Additional criteria shall be established by the *Local Authority* and set out in Table R301.2(1).

R301.2.1 Wind design criteria. Buildings and portions thereof shall be constructed in accordance with the wind provisions of this code using the ultimate design wind speed in Table R301.2(1) as determined from Figure R301.2(5)A. Where different construction methods and structural materials are used for various portions of a building, the applicable requirements of this section for each portion shall apply. Where not otherwise specified, the wind loads listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3) shall be used to determine design load performance requirements for wall coverings, curtain walls, roof coverings, exterior windows, skylights, garage doors and exterior doors. Asphalt shingles shall be designed for wind speeds in accordance with Section R905.2.4. A continuous load path shall be provided to transmit the applicable uplift forces in Section R802.11.1 from the roof assembly to the foundation.

**FIGURE R301.2(1)
SEISMIC DESIGN CATEGORIES
NOT APPLICABLE**

TABLE R301.2(1)
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

GROUND SNOW LOAD ^o	WIND DESIGN		SEISMIC DESIGN CATEGORY ⁱ	SUBJECT TO DAMAGE FROM			WINTER DESIGN TEMP ^o	ICE BARRIER UNDERLAYMENT REQUIRED ⁿ	FLOOD HAZARDS ^s	AIR FREEZING INDEX ^t	MEAN ANNUAL TEMP ⁱ		
	Speed ^a (kph)	Topographic effects ^k		Special wind region ^l	Windborne debris zone ^m	Weathering ^g						Frost line depth ^b	Termites ^r
Not applicable	Use map and site to decide	Assess site to decide exposure category then choose exposure factor from Table R301.2(3) Multiply factor by windspeed to get ultimate design wind speed	Municipality to decide & advise of specific requirement	Assess site for this likelihood	Use seismic map to decide if D ₁ or D ₂ or E applies	Negligible	Not applicable	Very heavy	25°C	Not applicable	See National Water Authority Flood Plain Maps	Not applicable	Obtain from the Meteorological Office
MANUAL J DESIGN CRITERIA ^a													
Elevation		Latitude	Winter heating	Summer cooling	Altitude correction factor	Indoor design temperature	Design temperature cooling	Heating temperature difference					
Cooling temperature difference		Wind velocity heating	Wind velocity cooling	Coincident wet bulb	Daily range	Winter humidity	Summer humidity						

For Inch Pound Units: 1 kPa = 20.8768 lb/ft², 1 m/s = 2.237 mph.

- a. The weathering column shall be filled in with the weathering index, “negligible,” “moderate” or “severe” for concrete as determined from Figure R301.2(4). The grade of masonry units shall be determined from ASTM C34, C55, C62, C73, C90, C129, C145, C216 or C652.
- b. Not applicable.
- c. The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local subterranean termite damage.
- d. The jurisdiction shall fill in this part of the table with the wind speed from the basic wind speed map [Figure R301.2(5)A]. Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.
- e. The outdoor design dry-bulb temperature shall be selected from the columns of 97/-percent values for winter from Appendix D of the *Jamaica Plumbing Code*. Deviations from the Appendix D temperatures shall be permitted to reflect local climates or local weather experience as determined by the building official. [Also see Figure R301.2.2.1.]
- f. The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.
- g. The jurisdiction shall fill in this part of the table with (a) the date of the code becoming effective and design in flood hazard areas now to be approved by the jurisdiction, (b) dates of the currently effective National Water Authority flood hazard map adopted by the authority having jurisdiction, as adopted or amended.
- h. In accordance with Sections R905.1.2, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1 and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall fill in this part of the table with “NO.”
- i. Not applicable.
- j. Not applicable.
- k. In accordance with Section R301.2.1.5, where there is local historical data documenting structural damage to buildings due to topographic wind speed-up effects, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall indicate “NO” in this part of the table.
- l. In accordance with Figure R301.2(5)A, where there is local historical data documenting unusual wind conditions, the jurisdiction shall fill in this part of the table with “YES” and identify any specific requirements. Otherwise, the jurisdiction shall indicate “NO” in this part of the table.
- m. In accordance with Section R301.2.1.2 the jurisdiction shall indicate the wind-borne debris wind zone(s). Otherwise, the jurisdiction shall indicate “NO” in this part of the table.
- n. The jurisdiction shall fill in these sections of the table to establish the design criteria using Table 1a or 1b from ACCA Manual J or established criteria determined by the jurisdiction.
- o. Not applicable.

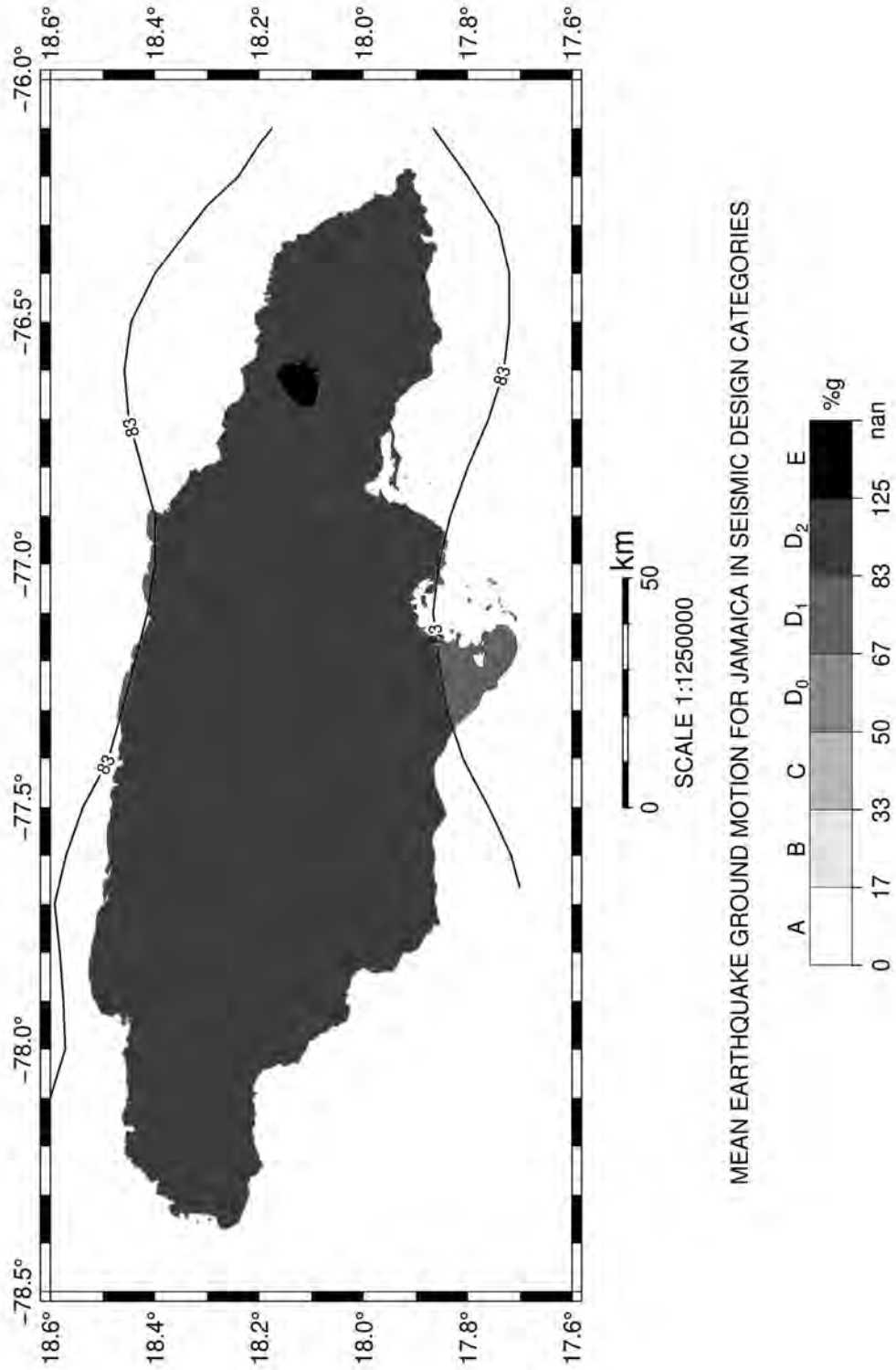


FIGURE R301.2(2)
SEISMIC DESIGN CATEGORIES

TABLE R301.2(2)
COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN
ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B (ASD) (kPa)^{a, b, c, d, e}

ZONE	EFFECTIVE WIND AREA (m ²)	ULTIMATE DESIGN WIND SPEED, V _{ULT} (m/s)																		
		49.17		51.405		53.64		58.11		62.58		67.05		71.52		75.99		80.46		
Roof 0 to 7 degrees	1	0.929	4.470	-5.811	4.470	-6.258	4.470	-6.705	4.470	-8.046	4.470	-9.387	4.425	-10.728	5.006	-12.069	5.632	-13.857	6.347	-15.645
	1	1.858	4.470	-5.364	4.470	-5.811	4.470	-6.705	4.470	-7.599	4.470	-8.940	4.112	-10.281	4.738	-11.622	5.39	-13.410	5.945	-15.243
	1	4.645	4.470	-5.364	4.470	-5.811	4.470	-6.705	4.470	-7.599	4.470	-8.493	3.800	-9.834	4.470	-11.622	4.828	-12.963	5.453	-14.706
	1	9.29	4.470	-4.917	4.470	-5.811	4.470	-6.258	4.470	-7.152	4.470	-8.493	3.487	-9.834	4.470	-11.175	4.470	-12.516	5.051	-14.304
	2	0.929	4.470	-9.387	4.470	-10.281	4.470	-11.622	4.470	-13.410	4.470	-15.645	4.425	-17.88	5.006	-20.562	5.632	-23.244	6.347	-26.239
	2	1.858	4.470	-8.493	4.470	-9.387	4.470	-10.281	4.470	-12.069	4.470	-13.857	4.112	-16.092	4.738	-18.327	5.319	-20.562	5.945	-23.423
	2	4.645	4.470	-7.152	4.470	-8.046	4.470	-8.493	4.470	-10.281	4.470	-11.622	3.800	-13.410	4.470	-15.198	4.828	-17.433	5.453	-19.713
	2	9.29	4.470	-6.258	4.470	-6.705	4.470	-7.152	4.470	-8.493	4.470	-9.834	3.487	-11.622	4.470	-13.410	4.470	-14.751	5.051	-16.941
	3	0.929	4.470	-14.751	4.470	-16.092	4.470	-17.433	4.470	-20.562	4.470	-23.691	4.425	-27.267	5.006	-30.843	5.632	-34.866	6.347	-39.470
	3	1.858	4.470	-12.069	4.470	-12.963	4.470	-14.304	4.470	-16.986	4.470	-19.668	4.112	-22.350	4.738	-25.479	5.319	-29.055	5.945	-32.676
	3	4.645	4.470	-8.493	4.470	-9.387	4.470	-10.281	4.470	-12.069	4.470	-14.304	3.800	-16.092	4.470	-18.327	4.828	-21.009	5.453	-23.736
	3	9.29	4.470	-6.258	4.470	-6.705	4.470	-7.152	4.470	-8.493	4.470	-9.834	3.487	-11.622	4.470	-13.410	4.470	-14.751	5.051	-16.941
Roof > 7 to 27 degrees	1	0.929	4.470	-4.917	4.470	-5.811	4.470	-6.258	4.694	-7.152	5.453	-8.493	6.258	-9.834	7.107	-11.175	8.001	-12.516	9.029	-14.304
	1	1.858	4.470	-4.917	4.470	-5.364	4.470	-5.811	4.470	-7.152	4.962	-8.046	5.722	-9.387	6.482	-10.728	7.331	-12.069	8.225	-13.902
	1	4.645	4.470	-4.917	4.470	-5.364	4.470	-5.811	4.470	-6.705	4.470	-8.046	4.962	-8.940	5.677	-10.281	6.392	-11.622	7.152	-13.365
	1	9.29	4.470	-4.470	4.470	-4.917	4.470	-5.364	4.470	-6.705	4.470	-7.599	4.425	-8.940	5.006	-9.834	5.632	-11.175	6.347	-12.963
	2	0.929	4.470	-8.940	4.470	-9.834	4.470	-10.728	4.694	-12.963	5.453	-14.751	6.258	-16.986	7.107	-19.668	8.001	-21.903	9.029	-24.943
	2	1.858	4.470	-8.493	4.470	-8.940	4.470	-9.834	4.470	-11.622	4.962	-13.857	5.722	-15.645	6.482	-17.880	7.331	-20.115	8.225	-22.886
	2	4.645	4.470	-7.152	4.470	-8.046	4.470	-8.940	4.470	-10.281	4.470	-12.069	4.962	-13.857	5.677	-15.645	6.392	-17.880	7.152	-20.294
	2	9.29	4.470	-6.705	4.470	-7.152	4.470	-8.046	4.470	-9.387	4.470	-10.728	4.425	-12.516	5.006	-14.304	5.632	-16.092	6.347	-18.282
	3	0.929	4.470	-13.410	4.470	-14.751	4.470	-16.092	4.694	-19.221	5.453	-21.903	6.258	-25.479	7.107	-29.055	8.001	-32.631	9.029	-36.833
	3	1.858	4.470	-12.516	4.470	-13.857	4.470	-15.198	4.470	-17.880	4.962	-20.562	5.722	-23.691	6.482	-26.820	7.331	-30.396	8.225	-34.419
	3	4.645	4.470	-11.622	4.470	-12.516	4.470	-13.857	4.470	-16.092	4.470	-18.774	4.962	-21.456	5.677	-24.585	6.392	-27.714	7.152	-31.245
	3	9.29	4.470	-10.728	4.470	-11.622	4.470	-12.516	4.470	-14.751	4.470	-17.433	4.425	-19.668	5.006	-22.797	5.632	-25.479	6.347	-28.876
Roof > 27 to 45 degrees	1	0.929	5.319	-5.811	5.856	-6.258	6.347	-6.705	7.465	-8.046	8.672	-9.387	9.923	-10.728	11.309	-12.069	12.740	-13.857	14.304	-15.645
	1	1.858	5.185	-5.364	5.677	-5.811	6.169	-6.258	7.241	-7.599	8.404	-8.940	9.655	-10.281	10.996	-11.622	12.382	-12.963	13.902	-14.840
	1	4.645	5.006	-4.917	5.453	-5.364	5.945	-5.811	6.243	-7.152	8.091	-8.046	9.298	-9.387	10.549	-10.728	11.935	-12.069	13.365	-13.768
	1	9.29	4.872	-4.470	5.319	-4.917	5.766	-5.364	6.750	-6.705	7.867	-7.599	9.029	-8.940	10.236	-9.834	11.577	-11.175	12.963	-12.963
	2	0.929	5.319	-6.705	5.856	-7.152	6.347	-8.046	7.465	-9.387	8.672	-10.728	9.923	-12.516	11.309	-14.304	12.740	-16.092	14.304	-18.282
	2	1.858	5.185	-6.258	5.677	-7.152	6.169	-7.599	7.241	-8.940	8.404	-10.281	9.655	-12.069	10.996	-13.410	12.382	-15.198	13.902	-17.478
	2	4.645	5.006	-5.811	5.453	-6.705	5.945	-7.152	6.973	-8.493	8.091	-9.834	9.298	-11.175	10.549	-12.963	11.935	-14.304	13.365	-16.450
	2	9.29	4.872	-5.811	5.319	-6.258	5.766	-6.705	6.750	-8.046	7.867	-9.387	9.029	-10.728	10.236	-12.069	11.577	-13.857	12.963	-15.645
	3	0.929	5.319	-6.705	5.856	-7.152	6.347	-8.046	7.465	-9.387	8.672	-10.728	9.923	-12.516	11.309	-14.304	12.740	-16.092	14.304	-18.282
	3	1.858	5.185	-6.258	5.677	-7.152	6.169	-7.599	7.241	-8.940	8.404	-10.281	9.655	-12.069	10.996	-13.410	12.382	-15.198	13.902	-17.478
	3	4.645	5.006	-5.811	5.453	-6.705	5.945	-7.152	6.973	-8.493	8.091	-9.834	9.298	-11.175	10.549	-12.963	11.935	-14.304	13.365	-16.450
	3	9.29	4.872	-5.811	5.319	-6.258	5.766	-6.705	6.750	-8.046	7.867	-9.387	9.029	-10.728	10.236	-12.069	11.577	-13.857	12.963	-15.645
Wall	4	0.929	5.856	-6.258	6.392	-6.705	6.929	-7.152	8.135	-8.493	9.476	-9.834	10.862	11.622	-12.382	-13.410	13.946	-14.751	15.645	-16.491
	4	1.858	5.588	-5.811	6.079	-6.258	6.616	-7.152	7.778	-8.493	9.029	-9.834	10.370	-11.175	11.801	-12.516	13.276	-14.304	14.930	-16.271
	4	4.645	5.230	-5.364	5.722	-6.258	6.213	-6.705	7.286	-7.599	8.493	-8.940	9.700	-10.281	11.041	-12.069	12.471	-13.410	13.991	-15.332
	4	9.29	4.962	-5.364	5.409	-5.811	5.900	-6.258	6.929	-7.599	8.046	-8.493	9.208	-9.834	10.505	-11.175	11.846	-12.963	13.321	14.617
	4	46.45	4.470	-4.470	4.738	-4.917	5.185	-5.364	6.079	-6.705	7.063	-7.599	8.091	-8.940	9.208	-9.834	10.370	-11.175	11.667	-12.963
	5	0.929	5.856	-7.599	6.392	-8.493	6.929	-8.940	8.135	-10.728	9.476	-12.516	10.862	-14.304	-12.382	-16.539	13.946	-18.327	15.645	-20.920
	5	1.858	5.588	-7.152	6.079	-7.599	6.616	-8.493	7.778	-9.834	9.029	-11.622	10.370	-13.410	11.801	-15.198	13.276	-17.433	14.930	-19.534
	5	4.645	5.230	-6.258	5.722	-7.152	6.213	-7.599	7.286	-8.940	8.493	-10.281	9.700	-12.069	11.041	-13.857	12.471	-15.645	13.991	-17.657
	5	9.29	4.962	-5.811	5.409	-6.258	5.900	-7.152	6.929	-8.493	8.046	-9.834	9.208	-11.175	10.505	-12.516	11.846	-14.304	13.221	-16.271
	5	46.45	4.470	-4.470	4.738	-4.917	5.185	-5.364	6.079	-6.705	7.063	-7.599	8.091	-8.940	9.208	-9.834	10.370	-11.175	11.667	-12.963

For Inch Pound Units: 1 mm = 0.00328 foot, 1 m² = 10.764 square foot, 1 m/s = 2.237 miles per hour, 1 kPa = 20.877 pounds per square foot.

- a. The effective wind area shall be equal to the span length multiplied by an effective width. This width shall be permitted to be not less than one-third the span length. For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener.
- b. For effective areas between those given, the load shall be interpolated or the load associated with the lower effective area shall be used.
- c. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table R301.2(3).
- d. See Figure R301.2(8) for location of zones.
- e. Plus and minus signs signify pressures acting toward and away from the building surfaces.

**TABLE R301.2(3)
HEIGHT AND EXPOSURE ADJUSTMENT COEFFICIENTS FOR TABLE R301.2(2)**

MEAN ROOF HEIGHT (mm)	EXPOSURE		
	B	C	D
4,575	1.00	1.21	1.47
6,100	1.00	1.29	1.55
7,625	1.00	1.35	1.61
9,150	1.00	1.40	1.66
10,675	1.05	1.45	1.70
12,200	1.09	1.49	1.74
13,725	1.12	1.53	1.78
15,250	1.16	1.56	1.81
17,000	1.19	1.59	1.84
18,300	1.22	1.62	1.87

**FIGURE R301.2(3)
ALTERNATE SEISMIC DESIGN CATEGORIES
NOT APPLICABLE**

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**FIGURE R301.2(4)
WEATHERING PROBABILITY MAP FOR CONCRETE^{a,b}**

**FIGURE R301.2(5)A
ULTIMATE DESIGN WIND SPEEDS
NOT APPLICABLE**