CHAPTER 3 - BUILDING PLANNING - AMENDMENTS

The ninth edition building code became first effective on October 20, 2017 and, with a shortened concurrency period, the new code came into full force and effect on January 1, 2018.

The new, ninth edition code is based on modified versions of the following *2015 International Codes as published by the International Code Council* (ICC).

- The International Building Code (IBC);
- International Residential Code (IRC);
- International Existing Building Code (IEBC);
- International Mechanical Code (IMC);
- International Energy Conservation Code (IECC);
- International Swimming Pool and Spa Code (ISPSC);
- Portions of the International Fire Code (IFC).

Massachusetts amends these code fairly significantly to accommodate for unique issues in the commonwealth. This package of amendments revises the IRC only. Please see base code amendments for changes to other listed codes that comprise the ninth edition.

Please remember that the Massachusetts amendments posted on-line are ***unofficial versions*** and are meant for convenience only. Official versions of the Massachusetts amendments may be purchased from the State House Bookstore @ **Shop the Bookstore** and any of the I-Codes may be purchased from the International Code Council (ICC) @ **iccsafe.org**.

Additionally, the ICC publishes transition documents that identify changes from the 2009 to the 2015 I-Codes for those who may have interest.

- **International Building Code (IBC) Transition**
- **International Residential Code (IRC) Transition.**

Note: *The residential code is part of the overall building code, which is referred to as 780 CMR. It is considered to be Chapter 51 in the overall code, which is why you will see reference to 780 CMR Chapter 51 in the amendments. The residential code is applicable to detached one- and two-family dwellings, multiple-family dwellings (townhouses) not more than three stories in height above the grade plane an\or their accessory structures not more than three stories in height above grade. See the base code for other building types.*

51.00: continued

NATIVE LUMBER. Native lumber is wood processed in the Commonwealth of Massachusetts by a mill registered in accordance with 780 CMR 110.R4: *Registration of Native Lumber Producers*. Such wood is ungraded but is stamped or certified in accordance with the requirements of 780 CMR 110.R4. For the purpose of this definition, native lumber shall be restricted to the use in one- and two-story dwellings, barns, sheds, agricultural and accessory buildings and other structures when permitted by 780 CMR 110.R4.

OFFICIAL INTERPRETATION. A written interpretation made by the BBRS, under authority of M.G.L. c. 143, § 94(e), or by the Building Code Appeals Board under authority of M.G.L. c. 143, § 100, of any provision of 780 CMR, or its referenced standards, except the specialized codes.

REGISTERED DESIGN PROFESSIONAL. An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the Commonwealth.

SPECIALIZED CODES. Codes, rules or regulations pertaining to building construction, reconstruction, alteration, repair or demolition promulgated by and under the authority of various boards authorized by the general court. *See* M.G.L. c. 143, § 96.

STATE BUILDING INSPECTOR. An "inspector" as described in M.G.L. c. 143, § 3A.

WINDBORNE DEBRIS REGION. Areas within hurricane-prone regions located in accordance with one of the following:

1. Within one mile (1.61 km) of the coastal mean high water line where the nominal design wind speed, V_{asd}, is 130 mph (58 m/s) or greater.
2. In areas where the nominal design wind speed, V_{asd}, is 140 mph (63.6 m/s) or greater.

Note: Values of V_{ult} are found in Table R301.2(4). To convert V_{ult} to V_{asd}, refer to Table R301.2.1.3.

Chapter 3: BUILDING PLANNING

R301.1.1 Add item 4 below item 3 as follows:

4. American Forest and Paper Association ("AF&PA") *Prescriptive Residential Wood Deck Construction Guide* (DCA6).

R301.1.4 Add subsection as follows:

R301.1.4 Townhouse Buildings Greater than 35,000 ft³. Such buildings shall require registered design professional services in accordance with section 107.6 Construction Control.

R301.2 Revise section, and add Table R301.2(1) as follows:

R301.2 Climatic and Geographic Design Criteria. Buildings shall be constructed in accordance with the provisions of 780 CMR 51.00 as limited by the provisions of this section. *See* Table R301.2(1).

51.00: continued

Table R301.2(1) Climatic and Geographic Design Criteria

Ground Snow Load		Table R301.2(4)
Wind Design	Speed	Table R301.2(4)
	Topographic effects	No
	Special Wind Regions	No
	Windborne debris zone	Any area within a windborne debris region, as defined in Chapter 2 of 780 CMR 51.00
Seismic Design Category		No
Subject to Damage From	Weathering	Severe
	Frost line depth	48 inches. For shallow foundations, *see* R403.3(2).
	Termite	*See* Figure R301.2(6).
Winter Design Temperature		Dry bulb
Ice Barrier Underlayment Required		For roofing, *see* R905.2.7.
Flood Hazards		*See* section 322.
Air Freezing Index		For shallow foundations, *see* R403.3(2).
Mean Annual Temperature		*See* https://www.ncdc.noaa.gov/sotc/global/201607

R301.2.1.1 Revise subsection as follows:

R301.2.1.1 Wind Limitations and Wind Design Required. The wind provisions of 780 CMR 51.00 shall not apply to the design of buildings where the ultimate wind speed, V_{ult}, is 140 mph or greater. *See* Table R301.2(4) for wind speeds by city or town.

Exceptions:

1. For concrete construction, the wind provisions of 780 CMR 51.00 shall apply in accordance with the limitations of sections R404 and R608.
2. For structural insulated panels, the wind provisions of 780 CMR 51.00 shall apply in accordance with the limitations of section R610.
3. For cold-formed steel light-frame construction, the wind provisions of 780 CMR 51.00 shall apply in accordance with the limitations of sections R505, R603 and R804.

In regions where wind design is required, the design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. AF&PA *Wood Frame Construction Manual* ("WFCM") or its *Guide to Wood Construction in High Wind Areas for One- and Two-Family Dwellings*, 110 mph Exposure B. A Commonwealth of Massachusetts version of the checklist can be used in place of the checklist at the end of the guide and is found at http://www.mass.gov/ocabr/government/oca-agencies/dpl-lp/opsi/.
2. ICC *Standard for Residential Construction in High-Wind Regions* (ICC 600).
3. ASCE *Minimum Design Loads for Buildings and Other Structures* (ASCE 7).
4. AISI *Standard for Cold-Formed Steel Framing—Prescriptive Method For One- and Two-Family Dwellings* (AISI S230).
5. *International Building Code.*

The elements of design not addressed by the methods in section R301.2.1.1 1. through 5. shall be in accordance with the provisions of 780 CMR.

Where ASCE 7 or the *International Building Code* is used for the design of the building, the wind speed map and exposure category requirements as specified in ASCE 7 and the *International Building Code* shall be used.

51.00: continued

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2. In areas where the nominal design wind speed, V_{asd}, is 140 mph (63.6 m/s) or greater.

Note: Values of V_{ult} are found in Table R301.2(4). To convert V_{ult} to V_{asd}, refer to Table R301.2.1.3.

Chapter 3: BUILDING PLANNING

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R301.2 Revise section, and add Table R301.2(1) as follows:

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51.00: continued

Table R301.2(4) Add table as follows:

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS

	SNOW LOADS		
City/Town	Ground Snow Load, P_g (psf)	Minimum Flat Roof Snow Load, P_f[1] (psf)	Basic Wind Speed, V_{ult} (mph)
Abington	35	30	132
Acton	50	35	124
Acushnet	30	30	138
Adams[2]	60	40	115
Agawam	35	35	120
Alford[2]	40	40	115
Amesbury	50	30	123
Amherst	40	35	118
Andover	50	30	124
Aquinnah (Gay Head)	25	25	140
Arlington	40	30	127
Ashburnham	60	35	118
Ashby	60	35	119
Ashfield	50	40	115
Ashland	40	35	127
Athol	60	35	117
Attleboro	35	30	132
Auburn	50	35	125
Avon	35	35	131
Ayer	50	35	122
Barnstable	30	25	140
Barre	50	35	120
Becket[2]	60	40	115
Bedford	50	30	125
Belchertown	40	35	119
Bellingham	40	35	129
Belmont	40	30	127
Berkley	30	30	135
Berlin	50	35	124
Bernardston	60	35	115
Beverly	50	30	127
Billerica	50	30	124
Blackstone	40	35	129
Blandford	50	40	116
Bolton	50	35	123
Boston	40	30	128
Bourne	30	25	139
Boxborough	50	35	123
Boxford	50	30	125
Boylston	50	35	123

51.00: continued

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS - continued

	SNOW LOADS		
City/Town	**Ground Snow Load, P_g (psf)**	**Minimum Flat Roof Snow Load, P_f[1] (psf)**	**Basic Wind Speed, V_{ult} (mph)**
Braintree	35	30	131
Brewster	25	25	140
Bridgewater	30	30	134
Brimfield	40	35	123
Brockton	35	30	132
Brookfield	50	35	122
Brookline	40	30	128
Buckland[2]	60	40	115
Burlington	50	30	125
Cambridge	40	30	128
Canton	40	35	130
Carlisle	50	30	124
Carver	30	30	136
Charlemont[2]	60	40	115
Charlton	50	35	124
Chatham	25	25	140
Chelmsford	50	30	123
Chelsea	40	30	128
Cheshire[2]	60	40	115
Chester	60	40	115
Chesterfield	50	40	115
Chicopee	35	35	119
Chilmark	25	25	140
Clarksburg[2]	60	40	115
Clinton	50	35	123
Cohasset	35	30	131
Colrain[2]	60	40	115
Concord	50	35	125
Conway	50	40	115
Cummington[2]	60	40	115
Dalton[2]	60	40	115
Danvers	50	30	126
Dartmouth	30	30	139
Dedham	40	35	129
Deerfield	50	35	115
Dennis	30	25	140
Dighton	30	30	135
Douglas	40	35	127
Dover	40	35	128
Dracut	50	30	122
Dudley	50	35	126
Dunstable	50	35	121
Duxbury	30	30	135

51.00: continued

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS - continued

	SNOW LOADS		
City/Town	Ground Snow Load, P_g (psf)	Minimum Flat Roof Snow Load, P_f[1] (psf)	Basic Wind Speed, V_{ult} (mph)
E. Bridgewater	35	30	133
E. Brookfield	50	35	122
E. Longmeadow	35	35	121
Eastham	25	25	140
Easthampton	40	35	117
Easton	35	30	132
Edgartown	25	25	140
Egremont[2]	40	40	115
Erving	50	35	116
Essex	50	30	127
Everett	40	30	128
Fairhaven	30	30	139
Fall River	30	30	137
Falmouth	30	25	140
Fitchburg	60	35	120
Florida[2]	60	40	115
Foxborough	35	35	131
Framingham	40	35	127
Franklin	40	35	129
Freetown	30	30	137
Gardner	60	35	119
Georgetown	50	30	124
Gill	50	35	115
Gloucester	50	30	128
Goshen	50	40	115
Gosnold	30	25	140
Grafton	50	35	126
Granby	35	35	119
Granville	50	40	117
Great Barrington[2]	50	40	115
Greenfield	50	35	115
Groton	60	35	121
Groveland	50	30	123
Hadley	40	35	117
Halifax	30	30	134
Hamilton	50	30	126
Hampden	35	35	122
Hancock[2]	50	40	115
Hanover	35	30	133
Hanson	35	30	133
Hardwick	50	35	120
Harvard	50	35	123

51.00: continued

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS - continued

	SNOW LOADS		
City/Town	Ground Snow Load, P_g (psf)	Minimum Flat Roof Snow Load, P_f[1] (psf)	Basic Wind Speed, V_{ult} (mph)
Harwich	25	25	140
Hatfield	40	35	117
Haverhill	50	30	123
Hawley[2]	60	40	115
Heath[2]	60	40	115
Hingham	35	30	131
Hinsdale[2]	60	40	115
Holbrook	35	30	131
Holden	50	35	122
Holland	40	35	124
Holliston	40	35	128
Holyoke	35	35	118
Hopedale	40	35	128
Hopkinton	40	35	127
Hubbardston	50	35	120
Hudson	50	35	124
Hull	35	30	130
Huntington	50	40	116
Ipswich	50	30	126
Kingston	30	30	135
Lakeville	30	30	136
Lancaster	50	35	122
Lanesborough[2]	50	40	115
Lawrence	50	30	123
Lee[2]	50	40	115
Leicester	50	35	123
Lenox[2]	50	40	115
Leominster	60	35	121
Leverett	40	35	117
Lexington	40	30	126
Leyden[2]	60	40	115
Lincoln	40	35	126
Littleton	50	35	123
Longmeadow	35	35	120
Lowell	50	30	123
Ludlow	35	35	120
Lunenburg	60	35	120
Lynn	40	30	128
Lynnfield	50	30	126
Malden	40	30	127
Manchester	50	30	128
Mansfield	35	30	131

51.00: continued

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS - continued

	SNOW LOADS		
City/Town	Ground Snow Load, P_g (psf)	Minimum Flat Roof Snow Load, P_f[1] (psf)	Basic Wind Speed, V_{ult} (mph)
Marblehead	40	30	128
Marion	30	30	139
Marlborough	50	35	125
Marshfield	35	30	134
Mashpee	30	25	140
Mattapoisett	30	30	139
Maynard	50	35	124
Medfield	40	35	129
Medford	40	30	127
Medway	40	35	129
Melrose	40	30	127
Mendon	40	35	128
Merrimac	50	30	123
Methuen	50	30	122
Middleborough	30	30	135
Middlefield	60	40	115
Middleton	50	30	125
Milford	40	35	128
Millbury	50	35	125
Millis	40	35	129
Millville	40	35	129
Milton	40	30	130
Monroe[2]	60	40	115
Monson	40	35	122
Montague	50	35	116
Monterey	50	40	116
Montgomery	40	40	117
Mount Washington[2]	40	40	115
Nahant	40	30	128
Nantucket	25	25	140
Natick	40	35	127
Needham	40	35	128
New Ashford[2]	50	40	115
New Bedford	30	30	139
New Braintree	50	35	121
New Marlborough	50	40	115
New Salem	50	35	117
Newbury	50	30	125
Newburyport	50	30	124
Newton	40	30	127
Norfolk	40	35	129
North Adams[2]	60	40	115

51.00: continued

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS - continued

	SNOW LOADS		
City/Town	Ground Snow Load, P_g (psf)	Minimum Flat Roof Snow Load, P_f[1] (psf)	Basic Wind Speed, V_{ult} (mph)
North Andover	50	30	123
North Attleborough	35	30	131
North Brookfield	50	35	122
North Reading	50	30	125
Northampton	40	35	117
Northborough	50	35	124
Northbridge	40	35	127
Northfield	60	35	115
Norton	35	30	133
Norwell	35	30	133
Norwood	40	35	129
Oak Bluffs	25	25	140
Oakham	50	35	121
Orange	60	35	117
Orleans	25	25	140
Otis	50	40	115
Oxford	50	35	125
Palmer	40	35	121
Paxton	50	35	122
Peabody	50	30	127
Pelham	40	35	118
Pembroke	30	30	134
Pepperell	60	35	120
Peru[2]	60	40	115
Petersham	50	35	118
Phillipston	60	35	118
Pittsfield[2]	50	40	115
Plainfield[2]	60	40	115
Plainville	40	35	131
Plymouth	30	30	136
Plympton	30	30	135
Princeton	50	35	121
Provincetown	25	25	138
Quincy	40	30	130
Randolph	35	30	131
Raynham	35	30	134
Reading	50	30	126
Rehoboth	35	30	134
Revere	40	30	128
Richmond[2]	50	40	115
Rochester	30	30	138
Rockland	35	30	132

51.00: continued

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS - continued

	SNOW LOADS		
City/Town	**Ground Snow Load, P_g (psf)**	**Minimum Flat Roof Snow Load, P_f[1] (psf)**	**Basic Wind Speed, V_{ult} (mph)**
Rockport	50	30	128
Rowe[2]	60	40	115
Rowley	50	30	125
Royalston	60	35	116
Russell	40	40	116
Rutland	50	35	121
Salem	50	30	127
Salisbury	50	30	124
Sandisfield	50	40	115
Sandwich	30	25	139
Saugus	40	30	127
Savoy[2]	60	40	115
Scituate	35	30	133
Seekonk	35	30	134
Sharon	35	35	130
Sheffield[2]	40	40	115
Shelburne	50	40	115
Sherborn	40	35	127
Shirley	60	35	121
Shrewsbury	50	35	124
Shutesbury	40	35	117
Somerset	30	30	136
Somerville	40	30	127
South Hadley	35	35	118
Southampton	40	35	117
Southborough	40	35	125
Southbridge	40	35	125
Southwick	40	35	118
Spencer	50	35	123
Springfield	35	35	120
Sterling	50	35	122
Stockbridge[2]	50	40	115
Stoneham	40	30	126
Stoughton	35	35	131
Stow	50	35	124
Sturbridge	40	35	124
Sudbury	40	35	125
Sunderland	40	35	116
Sutton	50	35	126
Swampscott	40	30	128
Swansea	30	30	136
Taunton	35	30	134

51.00: continued

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS - continued

	SNOW LOADS		
City/Town	**Ground Snow Load, P_g (psf)**	**Minimum Flat Roof Snow Load, P_f[1] (psf)**	**Basic Wind Speed, V_{ult} (mph)**
Templeton	60	35	118
Tewksbury	50	30	124
Tisbury	25	25	140
Tolland	50	40	115
Topsfield	50	30	125
Townsend	60	35	119
Truro	25	25	139
Tyngsborough	50	30	121
Tyringham[2]	50	40	115
Upton	40	35	127
Uxbridge	40	35	128
Wakefield	50	30	126
Wales	40	35	123
Walpole	40	35	130
Waltham	40	30	127
Ware	40	35	120
Wareham	30	30	138
Warren	40	35	121
Warwick	60	35	115
Washington[2]	60	40	115
Watertown	40	30	127
Wayland	40	35	126
Webster	50	35	126
Wellesley	40	35	127
Wellfleet	25	25	140
Wendell	50	35	117
Wenham	50	30	126
W. Boylston	50	35	123
W. Bridgewater	35	30	133
W. Brookfield	40	35	122
W. Newbury	50	30	123
W. Springfield	35	35	119
W. Stockbridge[2]	40	40	115
W. Tisbury	25	25	140
Westborough	50	35	125
Westfield	40	35	118
Westford	50	35	123
Westhampton	50	40	116
Westminster	60	35	120
Weston	40	35	126
Westport	30	30	139
Westwood	40	35	129

51.00: continued

TABLE R301.2(4) SNOW LOADS AND WIND SPEEDS - continued

	SNOW LOADS		
City/Town	Ground Snow Load, P_g (psf)	Minimum Flat Roof Snow Load, P_f^1 (psf)	Basic Wind Speed, V_{ult} (mph)
Weymouth	35	30	131
Whately	50	35	116
Whitman	35	30	133
Wilbraham	35	35	121
Williamsburg	50	40	116
Williamstown[2]	50	40	115
Wilmington	50	30	125
Winchendon	60	35	117
Winchester	40	30	126
Windsor[2]	60	40	115
Winthrop	40	30	129
Woburn	50	30	126
Worcester	50	35	124
Worthington	60	40	115
Wrentham	40	35	130
Yarmouth	30	25	140

Note 1: The design flat roof snow load shall be the larger of the calculated flat roof snow load using P_g or the value of P_f^1 listed in this table.

Note 2: Special Wind Region. Local conditions may cause higher wind speeds than the tabulated values. *See* ASCE/SEI 7.

R301.2.2 Reserved

R301.2.4 Revise subsection as follows:

> **R301.2.4 Floodplain Construction.** Buildings and structures constructed in whole or in part in flood hazard areas (including AO or V Zones) or coastal dunes as established in section R322.1.1, and substantial improvement and restoration of substantial damage of buildings and structures in flood hazard areas or coastal dunes, shall be designed and constructed in accordance with section R322. Buildings and structures that are located in more than one flood hazard area or coastal dune shall comply with the most restrictive provisions of all those flood hazard areas and coastal dunes. Buildings and structures located in whole or in part in identified floodways shall be designed and constructed in accordance with ASCE 24.

R301.2.4.1 Reserved

SECTION R302 FIRE-RESISTANT CONSTRUCTION

R302.1 Revise the section as follows, while retaining all exceptions:

> **R302.1 Exterior Walls.** Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or dwellings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13D shall comply with Table R302.1(2).

51.00: continued

Table R302.1(2) Revise footnote a. as follows:

a. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13D, the fire separation distance for nonrated exterior walls and rated projections shall be permitted to be reduced to zero feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is six feet or more in width on the opposite side of the property line.

R302.2 Revise items 1 and 2 as follows:

1. Where a fire sprinkler system in accordance with NFPA 13, 13R, or 13D is provided, the common wall shall be not less than a one-hour fire-resistance-rated wall assembly tested in accordance with ASTM E 119 or UL 263.
2. Where a fire sprinkler system in accordance with NFPA 13, 13R, or 13D is not provided, the common wall shall be not less than a two-hour fire-resistance-rated fire wall assembly tested in accordance with ASTM E119 or UL 263.

Table R302.6 Revise table as follows:

TABLE R302.6 DWELLING-GARAGE SEPARATION

Separation	MATERIAL	
	Sprinklered	Not-sprinklered
From the residence and attics	Not less than ½-inch gypsum board, or equivalent, applied to the garage side	Not less than ⅝-inch Type X gypsum board, or equivalent, applied to the garage side
From habitable rooms above the garage	Not less than ⅝-inch Type X gypsum board, or equivalent	Not less than ⅝-inch Type X gypsum board, or equivalent
Structure(s) supporting floor/ceiling assemblies used for separation required by this section	Not less than ½-inch gypsum board, or equivalent	Not less than ⅝-inch Type X gypsum board, or equivalent
Garages located less than three feet from a dwelling unit on the same lot	Not less than ½-inch gypsum board, or equivalent, applied to the interior side of exterior walls that are within this area	Not less than ⅝-inch Type X gypsum board, or equivalent, applied to the interior side of exterior walls that are within this area

Note: For SI, one inch = 25.4 mm; one foot = 304.8 mm.

R302.13 Revise exception 1 as follows:

1. Floor assemblies located directly over a space protected by an automatic sprinkler system in accordance with NFPA 13, 13R, or 13D, or other approved equivalent sprinkler system.

R302.14 Revise as follows:

Combustible Insulation Clearance: Combustible insulation shall be separated not less than three inches (76 mm) from recessed luminaires, fan motors, knob and tube wiring, and other heat-producing devices.

R303.3 Replace entire section as follows:

R303.3 Bathrooms. Mechanical ventilation in accordance with section M1507 is required for all bathrooms with a shower or bathtub and rooms with a toilet.

R305.1 Revise section as follows:

R305.1 Minimum Height. Habitable space and hallways shall have a ceiling height of not less than seven feet (2,134 mm). Bathrooms, toilet rooms, laundry rooms and habitable space in basements shall have a ceiling height of not less than six feet, eight inches (2,032 mm).

Note: Exceptions are retained.

R308.1 Add the following language at the end of the section:

See also M.G.L. c. 143, §§ 3T, 3U, and 3V.

51.00: continued

R309.3 Revise section as follows:

R309.3 Flood Hazard Areas and Coastal Dunes. For buildings located in flood hazard areas or coastal dunes, as established by section R322.1.1., garage floors shall be:

1. Elevated to or above the design flood elevation as determined in accordance with section R322.2; or
2. Located below the design flood elevation provided that the floors are at or above grade on not less than one side, are used solely for parking, building access or storage, meet the requirements of section R322.2 and are otherwise constructed in accordance with 780 CMR 51.00.

R309.5 Revise section as follows:

R309.5 Fire Sprinklers. Private garages shall be protected by fire sprinklers where the garage wall has been designed based on Table R302.1(2), footnote a. Sprinklers in garages shall be connected to an automatic sprinkler system that complies with NFPA 13, 13R, or 13D. Garage sprinklers shall be residential sprinklers or quick-response sprinklers, designed to provide a density of 0.05 gpm/ft^2. Garage doors shall not be considered obstructions with respect to sprinkler placement.

R310.2.1 Revise subsection as follows:

R310.2.1 Minimum Opening Area. Emergency and escape rescue openings shall have a net clear opening of not less than 5.7 ft^2 (0.530 m^2). The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. The net clear height opening shall be not less than 24 inches (610 mm) and the net clear width shall be not less than 20 inches (508 mm).

Exceptions:

1. Grade floor or below grade openings shall have a net clear opening of not less than five ft^2 (0.465 m^2).
2. Single-hung and/or double-hung windows shall have a minimum net clear opening of 3.3 ft^2 (0.31m^2). In such cases, the minimum net clear opening dimensions shall be 20 inches (508 mm) by 24 inches (610 mm) in either direction.

R311.1 through R311.2.1 Revise sections and subsection as follows:

R311.1 Means of Egress. Dwelling units shall be provided with a primary and secondary means of egress in accordance with this section. Each means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the egress doors. The primary means of egress shall not require travel through a garage but the secondary means of egress may. The required egress doors shall open directly into a public way or to a yard or court that opens to a public way.

Notes:

1. In multi-level dwellings including, but not limited to townhouses, split-level and raised ranch style layouts, the two separate egress doors may be located on different levels.
2. Where site topography prevents direct access at two remote locations to grade from the normal level of entry, the two separate egress doors may be located on different levels.

R311.2 Egress Door. A primary and secondary egress door shall be provided for each dwelling unit and shall be as remote as possible from each other. The primary egress door shall be side-hinged, and shall provide a clear width of not less than 32 inches (813 mm) where measured between the face of the door and the stop, with the door open 90° (1.57 rad). The secondary egress door shall be side-hinged or sliding, and shall provide a clear width of not less than 28 inches (711 mm) where measured between the face of the door and the stop, with the door open 90° (1.57 rad). The clear height of side-hinged door openings shall be not less than 78 inches (1,981 mm) in height measured from the top of the threshold to the bottom of the stop. Sliding door clear width may be slightly less than 28 inches (711 mm) to conform to industry fabrication standards. Other doors shall not be required to comply with these minimum dimensions. Egress doors shall be capable of being readily opened from inside the dwelling without the use of a key or special knowledge or effort.

51.00: continued

R311.2.1 Interior Doors. All doors providing access to habitable rooms shall have a minimum nominal width of 30 inches (762 mm) and a minimum nominal height of six feet, six inches (1,981 mm).

Exceptions:

1. Doors providing access to bathrooms are permitted to be 28 inches (711 mm) in nominal width.
2. Doors providing access to bathrooms in existing buildings are permitted to be 24 inches (610 mm) in nominal width.

R311.7.5.1 through R311.7.5.2.1 Revise subsections as follows:

R311.7.5.1 Risers. The riser height shall be not more than 8¼ inches (210 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than ⅜ inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30° (0.51 rad) from the vertical. Open risers are permitted provided that the openings located more than 30 inches (762 mm), as measured vertically, to the floor or grade below do not permit the passage of a four-inch-diameter (102 mm) sphere.

Exceptions:

1. The opening between adjacent treads is not limited on spiral stairways.
2. The riser height of spiral stairways shall be in accordance with section R311.7.10.1.

R311.7.5.2 Treads. The tread depth shall be not less than nine inches (229 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than ⅜ inch (9.5 mm).

R311.7.5.2.1 Winder Treads. Winder treads shall have a minimum tread depth equal to the tread depth of the straight run portion of the stairs measured as above at a point 12 inches from the side where the treads are narrower. Winder treads shall have a minimum tread depth of three inches at any point. Within any flight of stairs, the greatest winder tread depth at the 12 inch walk line shall not exceed the smallest by more than ⅜ inch (9.5 mm).

R313.1.1 Revise the section as follows:

R313.1.1 Design and Installation. Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with NFPA 13, NFPA 13R, or NFPA 13D, as applicable:

1. A townhouse building with an aggregate area of 12,000 ft^2, or more, shall be provided with an NFPA 13 system.
2. A townhouse building with an aggregate area of less than 12,000 ft^2 shall be permitted to use a NFPA 13R system.

Exception: A three-unit townhouse building with an aggregate area less than 12,000 ft^2 shall be permitted to use a NFPA 13D system.

For the purposes of this section, the aggregate area shall be the combined area of all stories of the building, and firewalls shall not be considered to create separate buildings. Aggregate area shall include garage areas, basement areas, and finished attic areas. Unfinished attic areas shall not be included in the aggregate area.

R313.2 through R313.2.1 Revise section and subsection as follows:

R313.2 One- and Two-family Dwellings Automatic Fire Systems. One- and two-family dwellings used as a lodging house shall be equipped with an automatic sprinkler system installed in accordance with NFPA 13D. Only one- and two-family dwellings having an aggregate area greater than 14,400 ft^2 shall have fire sprinklers installed in accordance with NFPA 13D. Aggregate area, for the purpose of this section, shall include basements but not garages and unfinished attics.

51.00: continued

Exception: An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings having an aggregate area greater than 14,400 ft^2 that are not already provided with an automatic residential sprinkler system.

R313.2.1 Design and Installation. Automatic residential fire sprinkler systems shall be designed and installed in accordance with NFPA 13D.

R314.1.1 Revise subsection as follows:

R314.1.1 Listings. Smoke alarms shall be the photoelectric type listed in accordance with UL 217 or UL 268. Combination smoke and carbon monoxide alarms shall be listed in accordance with UL 217 and UL 2034.

R314.2.2 Revise the subsection as follows:

R314.2.2 Alterations, Repairs and Additions. *See* Appendix J.

R314.3 Revise the section as follows:

R314.3 Location. Smoke alarms shall be installed in the following locations:

1. In each sleeping room.
2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements and habitable attics and not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
4. Smoke alarms shall be installed not less than three feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by section R314.3.
5. For each 1,000 ft^2 of area or part thereof.
6. Near all stairs.

R314.3.1 Reserved

R314.4 Add the following wording to the end of the exception:

and unless one or more bedrooms are being added or created.

R314.5 Revise the section as follows:

R314.5 Combination Alarms. Combination smoke and carbon monoxide ("CO") alarms shall be permitted to be used in *lieu* of smoke alarms and shall be interconnected such that fire alarm signals have precedence over CO alarms in accordance with the requirements of NFPA 720.

R314.6 Delete Exception 2.

R314.7.4 Revise the subsection as follows:

R314.7.4 Combination Detectors. Combination smoke and carbon monoxide detectors shall be permitted to be installed in fire alarm systems in *lieu* of smoke detectors, provided that they are listed in accordance with UL 268 and UL 2075. The fire alarm control panel battery shall serve as the source of secondary power for wireless systems.

R314.8 through R314.9 Add sections and subsections as follows:

R314.8 Heat Detector. A single heat detector listed for the ambient environment shall be installed in:

1. Any garage attached to or under the dwelling (detached garages do not require a heat detector).
2. A new garage attached to an existing dwelling. If the existing house contains a fire detection system that is compatible with the garage heat detector, then the detector shall be interconnected to that system. Where the existing fire detection system is not compatible with the garage heat detector, the garage heat detector shall be connected to an alarm (audible occupant notification), or compatible heat detector with an alarm, located in the dwelling and within 20 feet (6,096 mm) of the nearest door to the garage from the dwelling. An alarm is not required in the garage, either integral with or separate from the heat detector.

51.00: continued

R314.8.1 Heat Detector Placement. For flat-finished ceilings, the heat detector shall be placed on or near the center of the garage ceiling. For sloped ceilings having a rise to run of greater than one foot in eight feet (305 mm in 2,438 mm), the heat detector shall be placed in the approximate center of the vaulted ceiling but no closer than four inches (102 mm) to any wall. Heat detection shall be listed in accordance with UL 521 or UL 539.

R314.9 Common Areas. In all buildings which are not protected with sprinklers, each unit shall have additional interconnected smoke detectors on the stairway side of all doors leading to common interior stairways. If there is a common basement, a separate interconnected system of smoke detectors, including smoke detectors on the stairway side of all doors leading to interior stairways, shall be provided to serve the basement level only.

R315.1 Revise the section as follows:

R315.1 General. Carbon monoxide alarms shall comply with section R315, 248 CMR, NFPA 720, and the manufacturer's instructions. Any required carbon monoxide detection shall be interconnected.

R315.1.1 Revise the subsection as follows:

R315.1.1 Listings. Carbon monoxide alarms shall be listed in accordance with UL 2034 and UL 2075. Combination carbon monoxide and smoke alarms shall be listed in accordance with UL 2034 and UL 217.

R315.2.2 Revise the subsection as follows:

R315.2.2 Alterations, Repairs and Additions. *See* Appendix J.

R315.3 Revise the section as follows:

R315.3 Location. Carbon monoxide alarms in dwelling units shall be outside of each separate sleeping area within ten feet of the bedrooms. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom. At least one alarm shall be installed on each story of a dwelling unit, including basements and cellars but not in crawl spaces and uninhabitable attics.

R315.4 Revise the section as follows:

R315.4 Combination Alarms. Combination carbon monoxide and smoke alarms (in compliance with section 314) shall be permitted to be used in *lieu* of carbon monoxide alarms, located as in R315.3, provided they are compatible and the smoke alarms take precedence.

R315.5 Revise the section as follows:

R315.5 Power Source. Carbon monoxide alarms and combination alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and, where primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for over current protection. Alarms may also be part of a low voltage or wireless system with standby power from monitored batteries in accordance with NFPA 72.

Exception: Carbon monoxide alarms shall be permitted to be battery operated where installed in buildings without commercial power.

R319.1 Replace the section as follows:

R319.1 Address Identification. *See* M.G.L. c. 148, § 59 and applicable provisions of 527 CMR: *Board of Fire Prevention Regulations*.

R320.1 Replace the section as follows:

R320.1 Scope. For townhouses, *see* 521 CMR: *Architectural Access Board.*

R320.1.1 Delete subsection.

51.00: continued

R321.1 through R321.3 Revise the sections as follows:

R321.1 Elevators. Where provided, passenger elevators, limited-use and limited-application elevators or private residence elevators shall comply with 524 CMR: *Board of Elevator Regulations.*

R321.2 Platform Lifts. Where provided, platform lifts shall comply with 524 CMR: *Board of Elevator Regulations.*

R321.3 Accessibility. Elevators or platform lifts that are part of an accessible route required by 780 CMR 11.00: *Accessibility* shall comply with 524 CMR: *Board of Elevator Regulations.*

R322.1 Replace the section as follows:

R322.1 General. Buildings and structures constructed in whole or in part in flood hazard areas and coastal dunes, and substantial improvement and restoration of substantial damage of buildings and structures in those areas shall be designed and constructed in accordance with the provisions contained in this section. Buildings and structures located in more than one flood hazard area and coastal dunes shall comply with the most restrictive provisions. Buildings and structures located in whole or in part in identified floodways shall be designed and constructed in accordance with ASCE 24. *See* section R105.3.1.1 for substantial improvements and damage and *see* section R309 for garage requirements. Flood hazard areas include the following:

1. AO zones, where shallow flooding exists without waves;
2. A zones; and
3. V zones, where high velocity wave action exists and wave heights are greater than or equal to three feet.

R322.1.1 Replace the subsection as follows:

R322.1.1 Base Flood Elevation, Flood Maps, Delineations and Definitions. For base flood elevation and mapping resources, *see* the following:

1. Flood hazard areas and base flood elevations are identified on a community's current effective Flood Insurance Rate Map ("FIRM") or Flood Hazard Boundary Map ("FHBM"), whichever is applicable, and further defined in the current effective Flood Insurance Study ("FIS") where applicable.
2. Floodways are delineated on a community's current effective FIRM or Flood Boundary & Floodway Map, whichever is applicable, and further defined in the current effective FIS.
3. If a community has received a preliminary FIRM and FIS from FEMA, and has been issued a Letter of Final Determination ("LFD") from FEMA, the community shall use the preliminary FIRM and FIS to determine applicable flood zones, base flood elevations and floodways as of the date of the LFD.
4. Coastal wetlands resource areas are defined on the "Map of Coastal Wetland Resources for Building Officials".

R322.1.4 Revise the subsection as follows:

R322.1.4 Establishing the Design Flood Elevation. The design flood elevation in Massachusetts shall be as follows:

1. For AO Zones, the design flood elevation shall be the elevation of the highest adjacent grade plus the flood depth specified on the FIRM plus one foot or the elevation of the highest adjacent grade plus three feet if no flood depth is specified. *See* section R322.2 for requirements.
2. For A Zones, the design flood elevation shall be the base flood elevation plus one foot. *See* section R322.2 for requirements.
3. For V Zones, the design flood elevation shall be the base flood elevation plus two feet. *See* section R322.3 for requirements.
4. For coastal dunes, *see* section R322.4 for requirements.

R322.1.4.2 Reserved

51.00: continued

R322.1.5 Revise the subsection as follows:

R322.1.5 Lowest Floor and Basement. The lowest floor shall be the lowest floor of the lowest enclosed area, including basement, and excluding any unfinished flood-resistant enclosure that is useable solely for vehicle parking, building access or limited storage, provided that such enclosure is not built so as to render the building or structure in violation of this section. A basement is the portion of a building, including crawl spaces, having its floor below exterior grade on all sides. This definition of "basement" is limited in application to the provisions of section R322.

R322.1.6 Revise the subsection as follows:

R322.1.6 Protection of Mechanical, Plumbing and Electrical Systems. Electrical systems, equipment and components; heating, ventilating, air conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall be located at or above the elevation required in section R322.2, R322.3 or R322.4. If replaced as part of a substantial improvement, electrical systems, equipment and components; heating, ventilating, air conditioning and plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall meet the requirements of this section. Systems, fixtures, and equipment and components shall not be mounted on or penetrate through walls intended to break away under flood loads.

Exception: Locating electrical systems, equipment and components; heating, ventilating, air conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment only within flood hazard areas including A and AO Zones is permitted below the elevation required in section R322.2, provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in accordance with ASCE 24. Electrical wiring systems are permitted to be located below the required elevation provided that they conform to the provisions of the electrical part of 780 CMR 51.00 for wet locations.

R322.1.7 Reserved

R322.1.9 Revise the subsection as follows:

R322.1.9 Manufactured Homes. The bottom of the frame of new and replacement manufactured homes on foundations that conform to the requirements of section R322.2 or R322.3 and R322.4, as applicable, shall be elevated to or above the elevations specified in section R322.2 (flood hazard areas including AO and A Zones) or R322.3 in coastal high hazard areas (V Zones) and R322.4 in coastal dunes. The anchor and tie-down requirements of the applicable state or federal requirements shall apply. The foundation and anchorage of manufactured homes to be located in identified floodways shall be designed and constructed in accordance with ASCE 24.

R322.1.10 Revise the subsection as follows:

R322.1.10 As-built Elevation Documentation. A registered design professional shall prepare and seal documentation for submittal of the elevations specified in section R322.2, R322.3 or R322.4.

R322.1.11 Add the following subsection as follows:

R322.1.11 Construction Documents. The construction documents shall include documentation that is prepared and sealed by a registered design professional that the design and methods of construction to be used meet the applicable criteria of this section.

R322.2 Revise the section as follows:

R322.2 Flood Hazard Areas (Including A and AO Zones). Buildings and structures constructed in whole or in part in A and AO Zones shall be designed and constructed in accordance with sections R322.2.1 through R322.2.3.

51.00: continued

R322.2.1 Revise subsection as follows:

R322.2.1 Elevation Requirements.

1. Buildings and structures in A Zones, shall have the lowest floor elevated to or above the design flood elevation.
2. In AO Zones, buildings and structures shall have the lowest floor (including basement) elevated to a height of not less than the design flood elevation.
3. Basement floors that are below grade on all sides shall be elevated to or above design flood elevation.

R322.2.2 Revise the subsection as follows:

R322.2.2 Enclosed Area below Design Flood Elevation. Enclosed areas, including crawl spaces, that are below the design flood elevation and are not basements shall:

1. Be used solely for parking of vehicles, building access or storage.
2. Be provided with flood openings that meet the following criteria and are installed in accordance with section R322.2.2.1:
   2.1. The total net area of openings shall be not less than one in^2 (645 mm^2) for each ft^2 (0.093 m^2) of enclosed area where the enclosed area is measured on the exterior of the enclosure walls, or the openings shall be designed as engineered openings and the construction documents shall include a statement by a registered design professional that the design of the openings will provide for equalization of hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwaters as specified in section 2.6.2.2 of ASCE 24.
   2.2. Openings shall be not less than three inches (76 mm) in any direction in the plane of the wall.

R322.2.2.1 Revise the subsection as follows:

R322.2.2.1 Installation of Openings. The walls of enclosed areas shall have openings installed such that:

1. There shall be not less than two openings on different sides of each enclosed area; if a building has more than one enclosed area below the design flood elevation, each area shall have openings on exterior walls.
2. The bottom of each opening shall be not more than one foot (305 mm) above the higher of the final interior grade or floor and the finished existing exterior grade immediately under each opening.
3. Openings shall be permitted to be installed in doors and windows; doors and windows without installed openings do not meet the requirements of this section.

R322.3 through R322.3.7 Revise the section and subsections as follows:

R322.3 Coastal High-hazard Areas (Including V Zones). Buildings and structures constructed in whole or in part in V Zones shall be designed and constructed in accordance with sections R322.3.1 through R322.3.6.

R322.3.1 Location and Site Preparation. New buildings and buildings that are determined to be substantially improved pursuant to section R105.3.1.1 shall be located landward of the reach of mean high tide.

R322.3.2 Elevation Requirements.

1. Buildings and structures shall be elevated so that the bottom of the lowest portion of horizontal structural members supporting the lowest floor, with the exception of pilings, pile caps, columns, grade beams and bracing, is elevated to the design flood elevation.
2. Basement floors that are below grade on all sides are prohibited.
3. The use of fill for structural support is prohibited.
4. Minor grading, and the placement of minor quantities of fill, shall be permitted for landscaping and for drainage purposes under and around buildings and for support of parking slabs, pool decks, patios and walkways. Fill is prohibited unless such fill is constructed and/or placed to avoid diversion of water and waves toward any building or structure.
5. Walls and partitions enclosing areas below the design flood elevation shall meet the requirements of sections R322.3.4 and R322.3.5.

51.00: continued

6. For lateral additions in V Zones that are not a substantial improvement, only the addition shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor with the exception of pilings, pile caps, columns, grade beams and bracing, is located at an elevation that is at least the design flood elevation.

R322.3.3 Foundations. Buildings and structures erected in coastal high-hazard areas and shall be supported on pilings or columns and shall be adequately anchored to such pilings or columns. The space below the elevated building shall be either free of obstruction or, if enclosed with walls, the walls shall meet the requirements of section R322.3.4. Pilings shall have adequate soil penetrations to resist the combined wave and wind loads (lateral and uplift). Water-loading values used shall be those associated with the design flood. Wind-loading values shall be those required by 780 CMR 51.00. Pile embedment shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the piling. Pile systems design and installation shall be certified in accordance with section R322.3.6. Spread footing, mat, raft or other foundations that support columns shall not be permitted where soil investigations that are required in accordance with section R401.4 indicate that soil material under the spread footing, mat, raft or other foundation is subject to scour or erosion from wave-velocity flow conditions. If permitted, spread footing, mat, raft or other foundations that support columns shall be designed in accordance with ASCE 24. Slabs, pools, pool decks and walkways shall be located and constructed to be structurally independent of buildings and structures and their foundations to prevent transfer of flood loads to the buildings and structures during conditions of flooding, scour or erosion from wave-velocity flow conditions, unless the buildings and structures and their foundations are designed to resist the additional flood load.

R322.3.4 Walls below Design Flood Elevation. Walls and partitions are permitted below the elevated floor, provided that such walls and partitions are not part of the structural support of the building or structure and:

1. Electrical, mechanical and plumbing system components are not to be mounted on or penetrate through walls that are designed to break away under flood loads; and
2. Are constructed with insect screening or open lattice; or
3. Are designed to break away or collapse without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system. Such walls, framing and connections shall have a resistance of not less than ten lbs. per ft^2 (479 Pa) and not more than 20 lbs. per ft^2 (958 Pa) as determined using allowable stress design; or
4. Where wind loading values of 780 CMR 51.00 exceed 20 lbs. per ft^2 (958 Pa), the construction documents shall include documentation prepared and sealed by a registered design professional that:
   4.1 The walls and partitions below the design flood elevation have been designed to collapse from a water load less than that which would occur during the base flood.
   4.2 The elevated portion of the building and supporting foundation system have been designed to withstand the effects of wind and flood loads acting simultaneously on structural and nonstructural building components. Water-loading values used shall be those associated with the design flood. Wind-loading values shall be those required by 780 CMR 51.00; or
5. Walls intended to break away under flood loads as specified in Item 3 or 4 have flood openings that meet the criteria in section R322.2.2, Item 2.

R322.3.6 Construction Documents. Reserved

R322.4 through R322.4.6 Add the section and subsections as follows:

R322.4 Coastal Dunes. Buildings or structures constructed in whole or in part in coastal dunes shall be designed and constructed in accordance with sections R322.4.1 through R322.4.6.

51.00: continued

R322.4.1 Construction Documents. For buildings and structures, including new or replacement manufactured homes, lateral additions, foundations that are replaced in total or repaired so as to constitute substantial repair of a foundation, or substantial repair or improvement of a building or structure that has incurred substantial damage as a result of flooding and/or storms, proposed on a parcel of land that is located wholly or partially within a coastal wetland resource area shown on the map entitled "Map of Coastal Wetland Resources For Building Officials," the building official shall require submission of one of the construction documents specified in section R322.4.1 (a) through (d) along with a notarized statement by the applicant that the order, determination or notice is in effect and is not the subject of any administrative appeals before the Department of Environmental Protection or the Division of Administrative Law Appeals. No building permit shall be issued unless and until a construction document that conforms to the requirements of this section is submitted.

(a) An order of conditions establishing the boundaries of all coastal wetland resource areas in a plan referenced in and accompanying the order. The order shall determine whether the coastal wetland resource areas are significant to any of the interests identified in the Wetlands Protection Act, M.G.L. c. 131, § 40 including the interests of flood control and storm damage prevention. If the order indicates that the proposed construction work is located within a coastal dune that is significant to the interests of flood control and/or storm damage prevention, the order of conditions shall allow the proposed construction.

(b) An order of resource area delineation stating that the proposed construction work is outside the boundaries of all coastal wetland resource areas as shown on a plan referenced in and accompanying the order.

(c) A determination of applicability stating that the proposed construction work is outside the boundaries of all coastal wetland resource areas as shown on a plan referenced in and accompanying the determination or will not fill, dredge or alter a coastal wetland resource area.

(d) A notice of non-significance evidencing that the proposed construction work is within a coastal wetland resource area as shown on a plan referenced in and accompanying the notice and stating that the coastal wetland resource area is not significant to any of the interests identified in M.G.L. c. 131, § 40 (the Wetlands Protection Act).

R322.4.2 Structural Elevation. The elevation of the bottom of the lowest horizontal structural member, as required by the lowest floor elevation inspection in subsection R109.1.3, shall be submitted.

R322.4.3 Additional Documentation. Documentation for buildings located in more than one zone shall meet the requirements of all zones.

R322.4.4 Elevation Requirements. For new buildings and structures, new foundations, replacement or substantial repair of a foundation, or repair of a substantially damaged structure where damage is the result of a storm or flooding the entire structure shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor is located at the elevation required by the order of conditions of the local conservation commission in accordance with the Wetlands Protection Act, M.G.L. c. 131, § 40 (the Wetland Protection Act) and Wetlands Protection Regulations, 310 CMR 10.21 through 10.35. For lateral additions that are not a substantial improvement, only the addition shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor is located at the elevation required by the order of conditions of the local conservation commission in accordance with M.G.L. c. 131, § 40 and Wetlands Protection Regulations, 310 CMR 10.21 through 10.35.

R322.4.5 Foundations. Foundations for work meeting the elevation requirements of section R322 shall consist of open pilings without footings to allow the movement of the dune.

51.00: continued

Exception: Where surface or subsurface conditions consist of non-erodible soil that prevents the use of pile foundations, spread footings or mat foundations may be permitted. Such foundations shall be anchored to prevent sliding, uplift or overturning of the footing and the non-erodible soil it is attached to and be designed to withstand any combination of loads. No other use of alternate materials, design and methods of construction and equipment as described in R104.11 is permitted.

R322.4.6 Enclosed Areas below Design Flood Elevation. Enclosures are not permitted below the lowest horizontal structural member of the lowest floor.

R324.3 Delete the words *"International Fire Code"* at the end of the sentence.

R324.3 Replace the section as follows:

R324.3 Photovoltaic Systems. Photovoltaic systems shall be designed and installed in accordance with all governing loading conditions, fire protection, energy conservation and weatherization requirements dictated by 780 CMR 51.00 and the electrical requirements of 527 CMR: *Board of Fire Prevention Regulations* and those of the manufacturer.

R324.4 through R324.7 Delete all sections and associated subsections.

R326.1 Revise the section as follows:

R326.1 General. The design and construction of pools and spas shall comply with the *International Swimming Pool and Spa Code* and the following notes:

Notes:

1. Public and semi-public outdoor in-ground swimming pool enclosures shall conform to the requirements of M.G.L. c. 140, § 206.
2. Also *see* 521 CMR 19.00: *Recreational Facilities.*
3. Also *see* 105 CMR 430.00: *Minimum Standards for Recreational Camps for Children (State Sanitary Code, Chapter IV)* and 435.00: *Minimum Standards for Swimming Pools (State Sanitary Code: Chapter V)* as such regulate swimming pool requirements.
4. Installation of electrical wiring and electrical devices shall be in accordance with 527 CMR: *Board of Fire Prevention Regulations.*
5. Installation of gas-fired pool heaters shall be in accordance with 248 CMR: *Board of State Examiners of Plumbers and Gas Fitters.*

Chapter 4: FOUNDATIONS

R401.3 Revise the section as follows:

R401.3 Drainage. Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection that does not create a hazard. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of six inches (152 mm) within the first ten feet (3,048 mm). Temporary and finished grading shall not direct nor create flooding or damage to adjacent property during or after completion of construction.

R401.4.1 Revise the subsection as follows:

R401.4.1 Geotechnical Evaluation. In *lieu* of a complete geotechnical evaluation, the load-bearing values in Table R401.4.1 or 780 CMR Table 1806.2a shall be assumed.

R403.1 Revise the section as follows:

R403.1 General. All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, crushed stone footings, wood foundations, or other approved structural systems which shall be of sufficient design to accommodate all loads according to section R301 and to transmit the resulting loads to the soil within the limitations as determined from the character of the soil. Footings shall be supported on undisturbed natural soils, compacted fill not more than 12 inches (305 mm) in depth, provided that the fill is adequately compacted using appropriate mechanical means, or engineered fill. Concrete footing shall be designed and constructed in accordance with the provisions of section R403 or in accordance with ACI 332.