CHAPTER 4 - FOUNDATIONS - 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

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.

51.00: continued

R403.1.6 Revise the subsection as follows:

R403.1.6 Foundation Anchorage. Wood sill plates and wood walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section Cold-formed steel framing shall be anchored directly to the foundation or fastened to wood sill plates anchored to the foundation. Anchorage of cold-formed steel framing and sill plates supporting cold-formed steel framing shall be in accordance with this section and section R505.3.1 or R603.3.1. Wood sole plates at all exterior walls on monolithic slabs, wood sole plates of braced wall panels at building interiors on monolithic slabs and all wood sill plates shall be anchored to the foundation with minimum ½-inch diameter (12.7 mm) A 307 or other applicable steel anchor bolts spaced a maximum of six feet (1,829 mm) on center or approved anchors or anchor straps spaced as required to provide equivalent anchorage to ½-inch diameter (12.7 mm) anchor bolts, installed in accordance with the manufacturer's instructions. Bolts shall extend a minimum of seven inches (178 mm) into concrete or grouted cells of concrete masonry units. The bolts shall be located in the middle third of the width of the plate. A nut and washer shall be tightened on each anchor bolt. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches (305 mm) or less than seven bolt diameters from each end of the plate section. Interior bearing wall sole plates on monolithic slab foundation that are not part of a braced wall panel shall be positively anchored with approved fasteners. Sill plates and sole plates shall be protected against decay and termites where required by sections R317 and R318.

R404.1.7 Revise the subsection as follows:

R404.1.7 Backfill Placement. Backfill shall not be placed against the wall until the wall has sufficient strength and has been anchored to the floor above, or has been sufficiently braced to prevent damage by the backfill. Backfill material shall be free draining and free of organic materials, construction debris, cobbles and boulders, shall be placed in lifts not exceeding 12 inches and shall be mechanically compacted. Foundation walls shall be properly braced prior to the setting of a manufactured building.

R406.2.1 Add subsection as follows:

R406.2.1 Through-wall Formwork Ties. Through-wall formwork ties shall be removed from both faces of the foundation walls which enclose basements, cellars, below-grade garages or any space having the potential to be converted to useable or occupied space. Remaining holes shall be patched with hydraulic cement.

R408.7 Delete the exception.

Chapter 5: FLOORS

R502.3 Revise the section as follows:

R502.3 Allowable Joist Spans. Spans for floor joists shall be in accordance with Tables R502.3.1(1) and R502.3.1(2). For other grades and species and for other loading conditions, refer to the AWC STJR or the American Wood Council ("AWC") Maximum Span Calculator for Wood Joists & Rafters found at:
http://www.awc.org/calculators/span/calc/timbercalcstyle.asp

R502.11.1 Revise the subsection as follows:

R502.11.1 Design. Wood trusses shall be designed in accordance with approved engineering practice. The design and manufacture of metal-plate-connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered design professional.

R506.1.1 Add the subsection as follows:

R506.1.1 Control Joints. Slabs shall be constructed with control joints having a depth of at least one quarter of the slab thickness but not less than one inch (25 mm). Joints shall be spaced at intervals not greater than 30 feet (9,144 mm) in each direction. Control joints shall be placed at locations where the slab width or length changes.