

Notes From the Commish Pools, Decks and Other Summer Fun

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Spring sprang March twentieth this year and with that date so should the flowers, political yard signs and permit requests to my office for decks and swimming pools. Deck and above ground swimming pool construction work is split between home owner's and contractor construction, most in ground swimming pools are installed by contractors hired by the property owner. Whether the project is done by or under the supervision of the home owner or an appropriate contractor the Massachusetts State Building Code 780 CMR (the Code) specifies performance or prescriptive requirements for all.

The Massachusetts State Building code is available on line at:

[Building Code 6th Edition](#)

This is not the official version of the code, but is very close. For the readers convenience quotations and relevant sections of the code are annotated in parentheses (§ xx.x) with in the article.

This article will deal with the construction or reconstruction of residential decks, next month we will address swimming pools. The first step in the process is to determine if a permit is required for the proposed work. Like most activities regulated by the Code the answer to the question is a permit required is "it depends" and more questions are asked.

First question, for the Code's purpose what is a deck? To find that answer, we must look at the definitions of deck. The Code defines a deck as; "*An exterior floor system supported on at least two opposing sides by an adjoining structure and/or posts, piers, or other independent supports.*" ([§ 3602.2](#)) If the components assembled were for example attached to an existing house on one side and support by some wood post and or

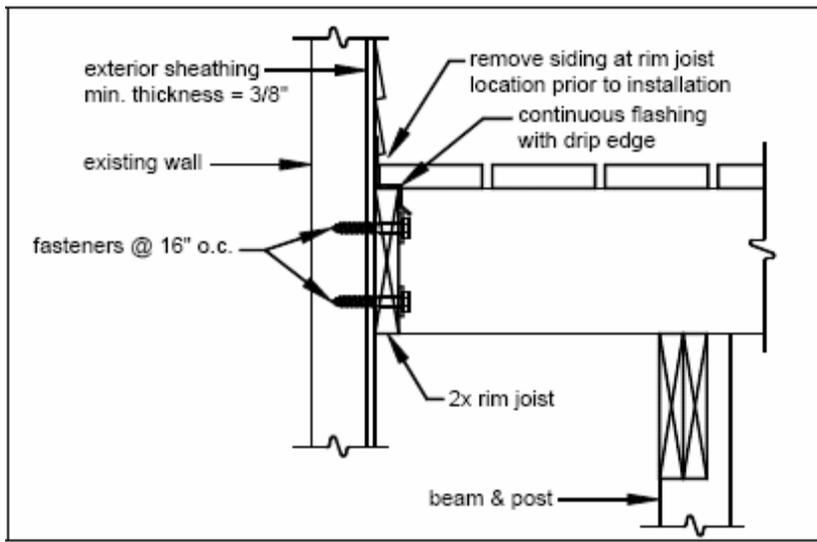
a beam on the other side and raised two inches off the ground, the Code would consider this a deck, and a building permit would be required. A permit would be required for both new decks and the replacement of an existing deck ([§ 110.1](#)) regardless of the size.

If the materials assembled were resting directly on the ground, the Code would consider it to be a patio or side walk, which would not require permit.

The Code's requirements for safety ([§ 101.4](#)) affects both decks and swimming pools by dealing with the issues of structural loads, preventing fall off and falling into them. I will try to summarize the Code requirements for both pools and decks; with the reminder each project is unique, so specifics that cover all the possible options or details can not be outlined in this article.

Decks should be fastened to house with bolts, nailing the ledger board to the house wall will not provide enough strength. One half diameters by five inches (1/2x5) in length lag bolts are the minimum, carriage bolts through the band joist is the preferred method, the number and spacing of these bolts depend on the span of the joist. Table 3606.4.10a, found in the Code ([§ 3606.6](#)) can be used for guidance to determining bolt size and spacing, based on the joist span. When we use this table, consideration must be give to the fact it is based on floor loads of forty (40) pound per square foot (PSF), where decks are required to support a load of sixty (60) PSF of surface area; this is twenty (20) PSF more that the first floor of the house they serve. Homes constructed with floor truss or "I" joist systems require addition blocking or special attachments, are dependent on the actual circumstances found in the field for each insulation.

Below is a drawing that shows generic information for deck construction, remember most times there will be only a few people on the deck, with a barbeque and a few chairs, however when there is a party and the kids are running around the stress on the structure are increased greatly.



Floor joist of two by ten (2x10) stock, sixteen (16) inches on center, usually are sufficient for a deck with a twelve (12) to fourteen (14) foot span. The outer edge of the deck would then need to have a beam built up of two (2), two by ten (2x10), supported with positive attachment to post spaced seven (7) feet on center. The wood post should then be anchored to concrete supports ten (10) inches diameter buried four (4) feet below finish grade. Of course a decking material will have to be installed (balancing chairs on just the joists is difficult), this decking material now come in a variety of products, including various types of natural wood products, plastics and composite compositions. Decking material must be installed in accordance with the Code and manufactures specifications, which in the case of manufactured products may limit the span and orientating of the decking in relationship to the joists along with the proper fastening methods.

Stairs, handrail and guardrails are the next regulated components associated with decks. Most people consider handrails and guardrails as a single component, but they are not. There are times when only a handrail is required. A handrail is the portion that you grasp usually with a circular or oval cross section ([§ 3603.14.2](#)); the guardrail is the portion with balusters below the handrail use to keep person from falling through that space.

Stairs and stairways have tight dimensional requirements; the minimum width of a stairway is thirty six (36) inches ([§ 3603.13.1](#)). A tread can be no less than nine (9) inches deep measured between the foremost projection of adjacent treads, risers are limited to a maximum height of eight and one quarter (8 ¼) inches, this includes the first and last stair, in addition the variation between rise and tread dimensions are less than three sixteenths (3/16) of an inch (§ 3603.13.2). If a stairway has 3 or more rises, a handrail thirty (30) to thirty eight (38) inches above the nosing line must be provided on one side (§ 3603.14.1).

Guardrails are required when the difference between adjacent walking, standing or grade surfaces is thirty (30) or more inches ([§ 3603.14.2.1](#)). So if the deck is twenty eight inches off the ground, a guard rail is not required, however you should consider if a person was unaware of the drop, what would happen if a person fell or stepped off such a drop. If the deck or portion of the stairway is thirty (30) or more inches off the ground, guardrails are required. For the stairway the guardrail and handrail may be combined and need to be thirty four (34) inches off the nosing, for the deck area the guardrail must be thirty six (36) inches tall, both sections have suitable infill that a sphere five (5) inches around will not pass through ([§ 3603.14.2.2](#)). What would satisfy the requirements of infill, most commonly vertical balusters or picks are used, sometimes decorative woodwork is installed, for those who wish to have a modern look, cable or tempered glass may be suitable.

The railing and guardrail system need to be attached sufficiently to the deck to keep people that may lean against it from breaking through, this is not a Hollywood movie where the cousin grabs the other cousin and tumbles through the guardrail to the ground in the action shot. The Code requires the handrail and the top of a guardrail withstand a concentrated load of two hundred (200) pounds in any direction ([§ 1615.5](#)).

Next month pools.