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Office of the State Fire Marshal - Engineering Division
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Boathouses Accessory to Single-Family Dwellings

Code: 2018 Residential Code

Date: March 20, 2019

Sections: R101.2.2 and Appendix M

Question 1:

For boathouses that are not exempted by Section R327, are engineered designs required for boathouses built at private residences?

Answer 1:

No. Boathouses for private residences are accessory structures to the single-family residence. Consequently, if constructed in accordance with Appendix M, the design need not be sealed. Treating the boathouses as freestanding decks is an entirely appropriate application of Appendix M. Essentially, the boathouse is a covered, freestanding deck. Roof structures should be constructed in accordance with Chapter 8 Roof-Ceiling Construction.

Question 2:

How should the piles be designed and inspected?

Answer 2:

Appendix M has provisions for embedded posts intended to address lateral stability of the deck. However, the Appendix M embedment depths assume the posts are embedded in concrete encasements. Most residential boathouses utilize driven wood piles or embedded wood posts with no encasement. For driven piles and posts the embedment depth may be calculated using the mathematical formula in Section 1807.3.2.1 of the Building Code. The installer of the piles must provide signed, notarized certification that the piles are installed to the required depths, or the installer can retain an independent testing laboratory to observe the installation and certify the installation. If no testing lab is on site during the installation, and there is any question concerning the depths of the piles, then the local building inspector has the right to request verification through field testing by an independent testing laboratory. Many testing laboratories have access to Ground Penetrating Radar equipment or other devices capable of sounding the depths of the piles. Testing, since it is expensive, should only be requested in the event the installation is questionable.

Question 3:

For decks and boathouses, can an engineered design be used as an alternate method which is different from the provisions of Appendix M?

Answer 3:

Appendix M was written in general terms to apply to a wide range of structures. Consequently, the provisions of Appendix M are necessarily conservative. It is, therefore, possible for an engineered design to be different from Appendix M and still comply with the intent of the code. Any engineered design should be accompanied by sealed calculations based on ASCE 7 (American Society of Civil Engineers), the AF&PA (American Forest and Paper Association) National Design Specification, accepted principles of structural mechanics, and accepted principles of soil mechanics.

Note, for structures in Coastal areas, see Chapter 46 for additional requirements. For structures in high-wind zones, see Chapter 45 for additional requirements.

Keywords: covered decks, boat docks