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Planning and Development Services
Building Division Policy

Title: Small Residential Storage Building Foundation Policy

Code Name: *International Residential Code* (IRC)

Code Sections: R401.1 Application, R403.1.4 Minimum depth, R403.1.4.1 Frost protection

Code Language:

R401.1 Application. The provisions of this chapter shall control the design and construction of the foundation and foundation spaces for buildings. In addition to the provisions of this chapter, the design and construction of foundations in flood hazard areas as established by Table R301.2(1) shall meet the provisions of Section R322. Wood foundations shall be designed and installed in accordance with AWC PWF.

R403.1.4 Minimum depth. Exterior footings shall be placed not less than 12 inches below the undisturbed ground surface. Where applicable, the depth of footings shall also conform to Section R403.1.4.1.

R403.1.4.1 Frost protection. Except where otherwise protected from frost, foundation walls, piers, and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:

1. Extended below the frost line specified in Table R301.2.(1).
2. Constructed in accordance with Section R403.3.
3. Constructed in accordance with ASCE 32.
4. Erected on solid rock.

Footings shall not bear on frozen soil unless the frozen condition is permanent.

Exceptions:

1. Protection of freestanding accessory structures with an area of 600 square feet or less, of light-frame construction, with an eave height of 10 feet or less shall not be required.
2. Protection of freestanding accessory structures with an area of 400 square feet or less, of other than light-frame construction, with an eave height of 10 feet or less shall not be required.
3. Decks not supported by a dwelling need not be provided with footings that extend below the frost line.

Scope of Policy: To clarify acceptable foundation construction methods for freestanding small residential storage buildings meeting outlined criteria.

Policy: Freestanding small residential storage buildings of light frame wood construction shall have a foundation meeting at least one of the following requirements:

1. Meet the prescriptive foundation requirements of the IRC.

    - Building area of 600 square feet or less
    - Eave height of 10 feet or less
    - Continuous footing meeting sizes and requirements IRC Section R403
    - Foundation walls meeting sizes and requirements of IRC Section R404
    - The depth of the footing shall be at least 12 inches below undisturbed soil

2. An alternative pier foundation method can be accepted where the following criteria is met:

    - Building area of 600 square feet or less
    - Light frame wood construction only
    - Width to length ratio of the building is 1:1.5 maximum
    - Maximum wall height of 10 feet
    - 12-inch minimum diameter piers
    - Piers have a depth of 12-inches minimum below undisturbed soil
    - Maximum load per pier of 1,300 lbs. – determines pier spacing and locations
    - Minimum of one ½ inch anchor bolt per pier with a minimum 7-inch embedment
    - The building design allows for bearing on a non-continuous foundation
    - This alternative pier foundation method does <u>not</u> apply to garages

3. Any other foundation method and design from a structural engineer licensed in the State of Idaho that is acceptable to the Building Division. Submittal documentation shall include the following at a minimum:

    - Structural plans and details stamped and signed by the engineer
    - Structural calculations, including design criteria, stamped and signed by the engineer

Intent: To provide clarity on an acceptable alternative method foundation design or an engineered design for freestanding small residential storage buildings in addition to the prescriptive requirements of the code.

Policy item #1 establishes that a small residential storage building is required to have a continuous footing/foundation as outlined in the prescriptive requirements of the IRC. The foundation does not need to extend to the 24-inch frost depth requirement when meeting criteria listed. The foundation needs to be properly sized per the code and only needs to extend 12 inches below undisturbed soil.

Policy item #2 establishes an acceptable alternative foundation method for a pier foundation design. This method has been reviewed as acceptable by an Idaho licensed engineer under contract with the City of Boise. The engineer analysis included evaluating one story buildings of 150-600 sq. ft. in size with a local wind pressure of 115 mph, Exposure B, Risk Category I, utilizing the "Alternate All Heights Method" of the building code for wind. No interior finishes were assumed so the dead load is at a minimum and the building's own dead load will resist overturning by wind.

However, to address localized uplift or damage from component and cladding as well as individual shear wall uplift, anchorage to piers is specified. The building as a whole, will resist the Main Wind Force Resisting System (MWFRS) uplift. A seismic analysis was not completed as wind always governs for these small light framed wood buildings. This alternative method can be used when the proposed small residential storage building meets all of the criteria listed.

Policy item#3 establishes that any other foundation method or design from a structural engineer licensed in the State of Idaho may be considered and approved by the Building Division where deemed acceptable. The engineered design shall include plans with details and any supporting structural calculations, including design criteria, indicating adequacy in meeting the building code. All submittal documents shall include the engineer stamp and signature.

This policy replaces a previous version of this policy dated 3/16/18 with some minor language update changes.

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Jason Blais
Building Official

1/9/2025
Effective Date

Date Retired