

Building a Pole Barn as a Dwelling & the Building Code

Question: Can a new construction Post Frame Building (Pole Barn) be used as a 1 or 2 family dwelling?

Answer: Yes, but the structure must comply with the Wisconsin Uniform Dwelling Code SPS 320-325.

If you are converting an existing pole barn to a dwelling please see the document [Conversion to a Dwelling](#) also.

Structural analysis is a term you will hear frequently when discussing this topic.

SPS 320.09 (73) "Structural analysis" is a branch of the physical sciences which uses the principles of mechanics in analyzing the impact of loads and forces and their effect on the physical properties of materials in the form of internal stress and strain.

- ✓ Construction standards shall comply with SPS 321.

Basic code requirements of SPS 321.

- Exits shall comply with SPS 321.03.
 - Interior circulation shall comply with SPS 321.035.
 - Stairways and elevated areas shall comply with SPS 321.04-321.045.
 - Natural light and ventilation shall comply with SPS 321.05.
 - Safety glazing shall comply with SPS 321.05.
 - Fire separation and fireblocking shall comply with SPS 321.08-321.085.
 - Smoke detectors shall comply with SPS 321.09.
 - Carbon monoxide alarms shall comply with SPS 321.097.
 - Protection against decay and termites shall comply with SPS 321.10.
 - Foam plastic insulation (styrofoam) shall comply with SPS 321.11.
 - Finished grade shall comply with SPS 321.12.
 - Erosion control shall comply with SPS 321.125
- ✓ Energy conservation shall comply with SPS 322.
 - ✓ HVAC installation shall comply with SPS 323.
 - ✓ Electrical installation shall comply with SPS 324 & the NEC.
 - ✓ Plumbing installation shall comply with SPS 325, 382-387.

Below are some code requirements that *could be an issue.*

- Footings shall comply with SPS 321.15. Please note typical post frame footings are considered column or pier footings. SPS 321.15 (2)(b) requires column or pier footings to be a minimum of 2'x2'x1' (width, length, thickness) unless designed through structural analysis. Depending on the post spacing and the width of the dwelling (load being transferred through trusses to posts to footings) they may need to be larger than the minimum required.
- Dwellings built on floating slabs shall be designed through structural analysis SPS 321.15 (2)(e).
- Frost protection shall comply with SPS 321.16 (1). Frost protected shallow foundations (FPSF) shall comply with SPS 321.16 (2) and UDC Appendix A Frost Protected Shallow Foundations pages 225-228. The FPSF design is based off of ASCE-32.

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- Insulation requirements shall comply with SPS 322.
 - ❖ Please note that the requirements for an FPSF and the insulation requirements work hand in hand but insulation r-values and installation dimensions will differ, this does not give you a choice to use the lesser of the requirement. If one requirement requires a higher r-value of insulation than the other, the higher r-value shall prevail. If one requires a larger dimension of insulation the larger dimension shall prevail. If in-floor heat is installed additional insulation is required regardless of the FPSF, insulation, or energy analysis requirements.
- Concrete floors shall comply with SPS 321.20 (minimum thickness, base course) & SPS 322.38(3)(vapor retarder requirements).
- Walls shall be designed in accordance with SPS 321.23 (wind load).
- Exterior Covering shall comply with SPS 321.24 (permanent weather resistant covering).
- Wood framed walls shall comply with SPS 321.25 (stud configuration, plates, headers, wall bracing).
 - ❖ Stud heights shall comply with Table 321.25-A, stud heights over 10' shall be supported by structural analysis.
 - ❖ Wall bracing shall comply with SPS 321.25 (8).
- Roof framing shall comply with SPS 321.27 (structural design, restraint, rafters, ceiling joists, trusses, flashing).
 - ❖ Roof purlins shall be treated as rafters and shall meet the span requirements of SPS 321.27 (1) (b)

Please note the above listed items are NOT a full list of requirements for a one & two family dwelling. There may be several others depending on your specific situation.

You may view and print out the Wisconsin Uniform Dwelling Code and Commentary at the following website <http://dsps.wi.gov/Programs/Industry-Services/Industry-Services-Programs/One-and-Two-Family-UDC/UDC-Admin-Code/>

You may purchase a copy of the Wisconsin Uniform Dwelling Code and Commentary at the following website <https://docsales.wi.gov/> follow the how to order instructions.