

**Oregon**  
**Alternate Method Ruling No. 92-27**

**DESIGN OF POST-FRAME BUILDINGS NOT REQUIRED TO BE  
DESIGNED UNDER THE ARCHITECTS LAW**

Requested By: BUILDING CODES AGENCY FIELD STAFF  
AUGUST 18, 1992

**REQUEST FOR RULING**

To what standard are post-frame buildings which fall below the requirements of the Architects Law required to be designed?

**CODE SECTIONS**

Section 302 OSSC "Application for Permits" says in Subsection (b)

(b) Plans and Specifications. Plans, engineering calculations, diagrams and other data shall be submitted in one or more sets with each application for a permit. The building official shall require plans, computations and certifications to be prepared and designed by an engineer or architect licensed by the state to practice as such.

**EXCEPTIONS:** 1. The building official may waive the submission of plans, calculations or other data if he finds that the nature of the work applied for is such that reviewing of plans is not necessary to obtain compliance with this code.

2. Plans and specifications prepared and designed by an engineer or architect licensed by the State to practice as such are not required for the following work, provided the building official determines that the work is not of a highly technical nature or there is no unreasonable potential risk to life and/or safety of the structure:

- A. The erection, enlargement or alteration of any building, or any appurtenance thereto, where the resulting building has a ground area of 4,000 square feet or less and is not more than 20 feet in height from the top surface of the lowest floor to the highest interior overhead finish. (ORS 671.030).
- B. A single-family dwelling or farm building.
- C. Alterations or repairs that do not involve the structural parts of the building.  
(emphasis added)

Section 2303 OSSC "design method" says in part:

**Design Methods**

**Sec 2303. (a) General.** All buildings and portions thereof shall be designed and constructed to sustain, within the stress limitations specified in this code, all dead loads and all other loads specified in this chapter or elsewhere in this code. Impact loads shall be considered in the design of any structure where impact loads

**EXCEPTION:** Unless otherwise required by the building official, buildings or portions thereof which are constructed in accordance with the conventional framing requirements specified in Chapter 25 of this code shall be deemed to meet the requirements of this section.

**(b) Rationality.** Any system or method of construction to be used shall be based on a rational analysis in accordance with well-established principles of mechanics. Such analysis shall result in a system which provides a complete load path capable of transferring all loads and forces from their point of origin to the load-resisting elements. The analysis shall include, but not be limited to, the following: ...

(emphasis added)

**HISTORY**

Most buildings less than 4,000 square feet in area (which are not required by the Architects Law to be designed by an engineer or architect) have been designed using the prescriptive "conventional construction provisions" as specified in Section 2517 OSSC. There are, however, a growing number of buildings which do not use conventional framing and that the building official may be required design by registered professionals.

Section R-103, Scope, of the One and Two Family Dwelling Specialty Code (hereinafter called the Dwelling Code) says in part: "The provisions of this code apply to the construction •... of detached one- or two family dwellings not more than three stories in height, and their accessory structures." Subsection 1.a., says this code applies to "R-3,

M-1 and M-2 occupancies as defined in the Structural Specialty Code; ... ". By definitions M-I Occupancies are "private garages, carports, sheds and agricultural buildings;" M-2 Occupancies are "fences over 6 feet high tanks and towers." Therefore, the Dwelling Code also regulates accessory buildings to a dwelling which may be built using nonconventional construction which is not specifically prescribed in the Dwelling Code.

An example of such structures are post-frame (pole buildings) which sustain both vertical and lateral loads by poles buried in the ground and their metal sheathing. Post-frame buildings have largely developed in the unregulated agricultural building market and, due to their relatively low cost, are now being marketed in the regulated nonagricultural building sector. The perception by both the builder and some building officials is that these are simple buildings. These buildings are actually more complex because they are often structurally indeterminate; i.e., they mix embedded poles, knee braces and shear walls, so they cannot be analyzed by normal engineering methods. The area and height of such buildings has also grown. Building officials are starting to awaken to this new reality. Since such agricultural building designer/builders have not been required to obtain permits and were not subject to plan review, for these builders the transition is painful. Exiting, firewalls, occupancy classification and greater vertical and lateral design loads are all new concepts to these designer/builders. Avoiding these concepts in agricultural buildings also accounts for their reduced cost. As a result, addressing these issues during plans review takes a disproportionate share of the building department's time. Frequently building departments require nonconventional constructed buildings to be designed by registered professional designers.

## **BOARD FINDINGS**

1. It is important for designers and builders to know when a building or structure requires engineer's or architect's design before they apply for a permit at the building department.
2. To protect the public interest it is important to provide, and encourage the use of, the authority of the building official with jurisdiction to require rational designs for any plan about which there is a question. This is a reasonable responsibility of the building official.
3. It is the designer's responsibility to submit a design which complies with the appropriate code. It is not the building department's responsibility or authority to redesign a non-complying building for the applicant. Due to potential legal liability and policies against competing with private enterprise, it is not appropriate for building department personnel to participate in the redesign beyond providing code advice.
4. Except for those specifically excluded, buildings and structures over 4,000 square feet or over 20 feet in height, from the lowest floor to highest ceiling, are required by the Architect's Law to be designed by an engineer or architect. There are exceptions as noted in Section 302(b).
5. Buildings or structures not required to be designed according to the Architect's Law and which use conventional wood frame construction as provided in Section 2517, are normally not required to be engineered. Some unusually complex structures, or their components, designed using conventional construction may be required to be engineered.
6. Buildings or structures not required to be designed by the Architect's Law, and which do not use conventional wood frame construction as provided in Section 2517; i.e., geodesic domes, pole buildings, log buildings etc. are required to be engineered or tested. Building designs which mix conventional and nonconventional construction may be required to have their nonconventional components engineered; i.e., trusses, box beams, critical shear walls, etc.
7. It is reasonable to set a threshold for when engineered design is required.
8. The American Society of Agricultural Engineers have published standards ASAE EP484.1-1991 and ASAE EP486-1990.

## **DISCUSSION AND CONCLUSION**

Builders who have been surprised by a demand for engineering upon application for a permit are at an economic and customer relations disadvantage. Non-uniform enforcement of required engineering design from jurisdiction to jurisdiction is also a complaint.

The following is the conclusion of the board:

1. Except for those specifically excluded, buildings and structures over 4,000 square feet or over 20 feet in height, from the lowest floor to highest ceiling, are required by the Architect's Law to be designed by an engineer or architect There are exceptions as noted in Section 302 (b).
2. Buildings or structures not required to be designed according to the Architect's Law and which use conventional wood frame construction, as provided in Section 2517, are normally not required to be

engineered. Some unusually complex structures designed using conventional construction may be required by the building official to be engineered.

3. Buildings or structures not required to be designed by the Architect's Law, and which do not use conventional wood frame construction as provided in Section 2517; i.e., geodesic domes, pole buildings (see more specific requirements for pole buildings in 4. E. below), log buildings, etc., are required to be engineered or tested. Building designs which mix conventional and nonconventional construction may be required to have their non conventional components engineered; i.e., trusses, box beams, critical shear walls, etc.
4. Unless otherwise required by the building official, post-frame buildings or portions thereof which are loaded in accordance with this code and designed and constructed in accordance with the American Society of Agricultural Engineers Standards ASAE EP484.1-1991 and ASAE EP486-1990 shall be deemed to meet the requirements of Section 2303 for Type V Construction for Group B, and M Occupancies.

(signed July 21 1993) John Talbott,  
Chairman Structural Code Advisory Board

The recommendations and findings of the Structural Code Advisory Board are accepted and adopted.

(signed July 30 1993) Gary J. Wicks,  
Administrator Building Codes Agency