



Structural Guidelines for Residential Construction

Most residential construction will come under the scoping provisions of the International Residential Code (IRC). You will need to reference the 2003 IRC on your drawings. If your house conforms to the prescriptive requirements of the IRC, you may design the entire house per the IRC. If your project requires an engineered structural design, the structural portion must comply with the International Building Code (IBC). Your drawings will need to reference this as well. We anticipate that many houses will be designed to the nonstructural portions of the IRC while being designed to the structural portions of the IBC.

IRC R301 lists options for structural design per the prescriptive requirements in the IRC or the *Wood Frame Construction Manual (WFCM)* published by AF&PA. For buildings complying with the IRC, refer to the Climatic and Geographic Design Criteria handout from your local jurisdiction for IRC Table R301.2(1).

Prescriptive Design:

You may also use the prescriptive requirements of IBC 2308. In this case, you must list the following on the drawings per IBC 1603:

- Floor and roof live loads
- Roof and ground snow load of 25 psf
- Basic wind speed of 85 mph (3-second gust)
- Seismic design category of D and site class

Engineered Design:

If you are not using a prescriptive method or WFCM, you must engineer the structural systems in accordance with the IBC. The IBC provides design options for engineering. Refer to IBC Chapter 16, Structural Design, and ASCE 7-02. For engineered structures, IBC 1603.1 requires the following to be listed on the drawings:

- Design loads
- Floor and roof live loads
- Roof and ground snow load of 25 psf, along with other snow load design data listed in IBC 1603.1.3
- Basic wind speed of 85 mph (3-second gust), along with other wind design data listed in IBC 1603.1.4
- Seismic design category D, along with other earthquake design data listed in IBC 1603.1.5
- Flood load, if applicable in the jurisdiction
- Any other special loading criteria
- Systems and components requiring special inspections for seismic resistance

The IBC incorporates the latest seismic design principles and is based on ASCE 7-02. There are no seismic zones; instead, buildings are assigned a seismic design category. In general, under the IBC, seismic design is based on more site-specific criteria. ASCE 7-02 provides suitable seismic design procedures that may be used.

Design of structures for wind loads is required to comply with ASCE 7-02 or WFCM. These are more complicated than previous UBC standards, taking into account more site-specific criteria and local topography. It is predicted that seismic loading will typically govern house designs.

Information about specific construction materials can be found in IBC Chapters 19-23. These chapters adopt many standards by reference, increasing the need for designers to refer to the standards instead of relying entirely on the IBC for design information.

If you have any questions, please contact your local jurisdiction.