

2009 Edition of the International Building Code

by

Paul J. Bennett, P.E., CBIE



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The 2009 edition of the International Building Code (IBC) is quickly being adopted by building agencies across Colorado and the Nation. As with every new version of the building code, changes have occurred that affect new construction. The 2009 IBC institutes major changes regarding repairs to damaged structures.

Generally, municipalities and structural engineers have relied upon Chapter 34 of the IBC for guidance regarding designing repairs to damaged structures. Until 2009, the building codes mandated that only the damaged elements of a structure needed to be brought up to current code during the repair process. For example, if a vehicle struck a building and damaged an exterior wall and during the engineering inspection of the damage, it was discovered that the roof trusses, wall framing and foundation did not comply with current building codes. The prior editions of the IBC, and its predecessor, the Uniform Building Code (UBC), only required that the damaged elements be brought into conformance with current code. The undamaged portions of the substandard walls, roof and foundation were allowed to remain.

A majority of basic property insurance policies do not cover the costs associated with upgrading damaged, or undamaged, building elements. Therefore, many insurance companies offered law and ordinance coverage which was intended to provide coverage for the additional 'code upgrade' costs. It was common for the law and ordinance coverage to be 10%-25% of the policy limits. In the past these coverage limits were ample.

Chapter 34 of the 2009 IBC now has language consistent with prior versions of the International Existing Building Code (a more stringent code that was rarely used in repair situations). Chapter 34 introduces a threshold that, when crossed, triggers an engineering evaluation of the entire structure. The engineering evaluation must report whether or not the entire structure complies with current

codes and loads (wind, snow, seismic). Any portions of the structure, even undamaged portions, that do not conform with the 2009 IRC will have to be strengthened to comply with current code.

In the front range of Colorado, the design wind speed in many jurisdictions has recently changed from 105 mph to as much as 140 mph, a substantial increase, and one which existing structures will rarely be capable of resisting. Fortunately, the 2009 IBC allows the structure to be evaluated with reduced seismic loads and original wind design loads if the damage was not caused by wind or seismic forces. For hurricane and seismic prone areas, it is likely damage will occur from wind or seismic forces and, if enough damage occurs, it will trigger the engineering evaluation. Historic structures – a term that is not defined but is generally considered to mean a structure on, or eligible for, the historic register – are exempt from the engineering evaluation requirements regardless of the extent of damage.

The new damage threshold, identified as “substantial structural damage,” has a fairly complex definition. Several realistic scenarios that would trigger an engineering evaluation are as follows:

- A large majority of a masonry or wood framed exterior wall is damaged by a vehicle impact or fire;
- Structural wood sheathing rotted by a stucco failure;
- More than 10 feet of a load bearing wall in a 50 foot square structure is damaged;
- A simple wood framed structure with a 4 foot long corner shear wall that is damaged.

Once an evaluation is triggered, there are several realistic scenarios that could trigger structural rehabilitation to undamaged elements:

- An un-reinforced (no cell grouting or rebar) masonry structure.;
- A structure supported on an un-reinforced concrete foundation;
- A structure not supported on footings (as is common with many late 1800's and early 1900's structures);
- A structure that was not originally built to comply with applicable codes and loads (a common occurrence).

If the damage threshold is crossed, the structure must be evaluated and if found to be lacking, the non-damaged components (including foundation) have to be rehabilitated. Fire, decay and vehicle impacts are the most likely events that may trigger substantial structural damage in the Colorado area. In other parts of the Country, seismic and wind events could easily trigger the engineering evaluation. A roof structure damaged by a snow event would not trigger an evaluation.

While it still remains to be seen if building officials will strictly enforce the 2009 IRC, insurance agents, adjusters and underwriters should be aware of these

significant code changes. Code changes for Chapter 34 in the 2012 version of the IBC have been proposed, and these changes are attempting to raise the damage threshold as well as exempt one and two family dwellings damaged by seismic events.

Paul Bennett, PE, CBIE is a licensed engineer and certified building inspection engineer who works as a forensic engineer for Knott Laboratory, LLC in Centennial, CO. Mr. Bennett serves on the Code Change and Disaster Mitigation committees for the Colorado Chapter of the International Code Council.