



# BBS MEMO

Ohio Board of Building Standards  
9009

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6606 Tussing Road, P.O. Box 4009, Reynoldsburg, Ohio 43068-

The new Residential Code of Ohio (RCO) based on the 2009 International Residential Code went into effect on January 1, 2013. The following provides clarification on the intended application of new RCO Section 502.14 Fire Resistance of Floors:

Section 502.14 requires protection of engineered light frame construction. During fire testing, unprotected floors assemblies of light-weight construction have shown to have a short time to failure. The section requires a protection layer for engineered light frame construction to provide occupants additional time for evacuation and for fire service to begin search and rescue operations. The new section requires that:

*Floor assemblies, not required elsewhere in this code to be fire resistance rated, shall be provided with a 1/2 inch gypsum board membrane or a 5/8 inch wood structural panel membrane or an equivalent material on the underside of the floor framing member which complies with section 302.14.*

**Exceptions:**

1. Floor assemblies located directly over a space protected by an automatic sprinkler system designed and installed in accordance with Sections 313.1.1 or 313.2.1.
  2. Floor assemblies located directly over an underfloor space as referenced in section 408 which is not intended for storage or fuel-fired appliances.
  3. Portions of floor assemblies can be unprotected when complying with the following:
    - 3.1 The aggregate area of the unprotected portions shall not exceed 80 square feet per story.
    - 3.2 Fire blocking in accordance with Section 302.11.1 shall be installed along the perimeter of the unprotected portion to separate the unprotected portion from the remainder of the floor assembly.
  4. Wood floor assemblies using dimension lumber or structural composite lumber equal to or greater than 2-inch by 10-inch nominal dimension, or other approved floor assemblies demonstrating equivalent fire performance.
- This section is not included in the code to provide or be considered to be a fire rated assembly.
  - The layer of protection can be 1/2 gypsum or 5/8" structural panel membranes.
    - This layer is not required to be sealed with gypsum joint compound, taped, or sealed.
    - The layer components shall be butted to ductwork, other membrane sheets, piping, the plate at walls, or other structural or non-structural elements.
  - Blocking shall be installed at the perimeter of any openings in the protective layer. The total aggregate area of the openings shall be 80 sq. ft. or less.
    - This is not meant to require totaling the area of seams and joints as a part of the 80 sq. ft. but provide an allowable area where the membrane may be omitted.
  - Crawl spaces not used for storage or which do not contain fuel-fired appliances do not need this protective layer.
    - If it is indicated in that crawl spaces are not to be used for storage or will not contain a fuel-fired appliance, the certificate of occupancy should reflect these as stipulations in the special conditions section of the certificate of occupancy.
  - No protective layer is required on the underside of the floor framing if the floor is framed with sawn or structural composite lumber with nominal dimensions of 2"x10" or greater. Tests have shown that these types of framing provide adequate time for evacuation and for fire fighter search and rescue.
    - The minimum size requirement is meant to assure that framing members have a contiguous cross section that has minimum nominal dimensions of 2" wide by 10" high. This is not a total cross section area of the members that make up a truss joist, I-joist, or other configuration of engineered floor framing.
    - Structural Composite Lumber is an alternative to sawn lumber and is a family of solid and uniformly engineered wood products designed for structural use. It is created by layering dried and graded wood veneers, strands, or flakes with exterior type adhesives into blocks of material. The blocks are cured in a heated press and sawn to consistent sizes that are easily worked in the field using conventional construction tools. These products include laminated veneer lumber, parallel strand lumber, laminated strand lumber, and oriented strand lumber. These products are commonly used in the same structural applications as conventional sawn lumber and timber including rafters, headers, beams, joists, rim boards, studs and columns.

RCO Chapter 5, Section 502.14, Exception 4, also uses the phrase, "or other approved floor assemblies demonstrating equivalent fire performance." The intent of this provision is to direct code users to the other approval methods the code provides for showing compliance.

- One common compliance method is found in RCO Section 114.2.1 *Research Reports and Listings*. If the product has obtained an appropriate evaluation report produced by a Board-approved evaluation service, the product, when installed according to the report and indicated as equivalent to sawn lumber under exception 4 in RCO Section 502.14, is deemed to comply.
- Another compliance method is found in RCO Section 106.5 *Alternative Engineered Design*. If an Ohio registered design professional completes an application for plan approval and indicates that a system shown in their proposed design is being submitted as an alternative engineered system, the registered design professional should submit appropriate system manufacturer's installation instructions as well as sufficient technical data to substantiate their alternate engineered design and prove that it meets the intent of the code. Once evaluated for compliance with this section, the alternate design can be approved. The plan approval certification, certificate of occupancy, and permanent approval records should identify the design professional and that the project approval included an alternate engineered design submitted by the design professional.

As always, if there are any questions regarding the application of these code provisions, please call the Board's office at: 614-644-2613 or E-mail at: [dic.bbs@com.state.oh.us](mailto:dic.bbs@com.state.oh.us).