**15-026**

**1. State Building Code to be Amended:**

International Building Code  State Energy Code

ICC ANSI A117.1 Accessibility Code  International Mechanical Code

International Existing Building Code  International Fuel Gas Code

X International Residential Code  NFPA 54 National Fuel Gas Code

International Fire Code  NFPA 58 Liquefied Petroleum Gas Code

Uniform Plumbing Code  Wildland Urban Interface Code

**Section(s):**

Table R301.5

**Title:**

Minimum Uniformly Distributed Live Loads

**2. Proponent Name (Specific local government, organization or individual):**

**Proponent: Washington Association of Building Officials Technical Code Development Committee**

**Title:**

**Date: 2/10/2015**

**3. Designated Contact Person:**

**Name: Jonathan Siu**

**Title: Principal Engineer/Building Official**

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**4. Proposed Code Amendment**. Reproduce the section to be amended by underlining all added language, striking through all deleted language. Insert new sections in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code additional pages may be attached. (Examples on the SBCC [website](https://fortress.wa.gov/ga/apps/sbcc/Page.aspx?nid=191))

**Code(s)** IRC **Section(s)** Table R301.5

Amend section to read as follows:

**TABLE R301.5**

**MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS**

**(in pounds per square foot)**

|  |  |
| --- | --- |
| **USE** | **LIVE LOAD** |
| Uninhabitable attics without storageb | 10 |
| Uninhabitable attics with limited storageb, g | 20 |
| Habitable attics and attics served with fixed stairs | 30 |
| Balconies (exterior) and deckse | ~~40~~ 1.5 times the live load for the area served |
| Fire escapes | 40 |
| Guards and handrailsd | 200h |
| Guard in-fill componentsf | 50h |
| Passenger vehicle garagesa | 50a |
| Rooms other than sleeping rooms | 40 |
| Sleeping rooms | 30 |
| Stairs | 40c |

[No change to footnotes]

1. **Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.** Specifically note any impacts or benefits to business, and specify construction types, industries and services that would be affected. Finally, please note any potential impact on enforcement such as special reporting requirements or additional inspections required.

The purpose of this amendment is to align the live load table in the IRC with the live loads in ASCE 7, “Minimum Design Loads for Buildings and Other Structures.” ASCE 7 is the basis for the live loads in the I-codes, and the two documents should align.

Prior to the 2009 IRC, balconies and decks were on different lines in the live load table, with different load requirements (40 psf for decks and 60 psf for balconies). In the 2009 IRC, the two lines were combined, on the basis that they should have the same loading, and 40 psf was somewhat arbitrarily approved by the ICC membership.

The same change was submitted to ASCE 7 for their consideration, as they are the experts in determining what the live load should be. Many comments from ASCE 7 committee members and other public commenters questioned whether designing to normal floor live loads was adequate, given the history of deck and balcony failures leading to deaths and injuries. ASCE determined through their deliberative process that the live load on these structures should be 1.5 times the live load for the area the deck or balcony serves. This should result in safer decks and balconies. Note that the result is that decks and balconies will mostly be designed for 60 psf, which corresponds with the code requirement for balconies prior to the 2009 edition.

The benefit of this proposal is to bring the IRC and ASCE 7 into alignment with each other, so designers can appropriately design these structures without concern as to which document governs.

As an alternate proposal to simplify the code, the live load for decks and balconies could be established as 60 psf instead of 1.5 times the live load for the area served.

1. **Specify what criteria this proposal meets.** You may select more than one.

X The amendment is needed to address a critical life/safety need.

The amendment is needed to address a specific state policy or statute.

The amendment is needed for consistency with state or federal regulations.

The amendment is needed to address a unique character of the state.

The amendment corrects errors and omissions.

1. **Is there an economic impact:** X Yes      No

Explain:

The cost will be extremely variable, as it depends on the specific design of the structure—is the balcony cantilevered, or supported by posts? Which way do the joists and beams span? How long are the spans? However, as an extremely conservative example, for a residential deck or balcony, the cost could rise by as much as $10 per square foot as follows:

If the decks and balconies are currently designed for 40 psf live load and 10 psf dead load (total = 50 psf), the new requirement for up to 60 psf live load will increase the total load by 40% (70 psf/50 psf = 1.4). If the assumption is made that this results in a 40% increase in the amount of structural materials, it could be argued that there is a 40% increase in the cost.

For the City of Seattle, based on ICC building valuation data, an uncovered deck associated with a single family residence is valued at approximately $25/square foot, including labor and materials. A 40% increase would mean a deck would cost $10 more per square foot (=0.4 x $25).

However:

* For the example above, it is unlikely that 40% more structural materials (numbers of joists, decking, or posts) will be needed to comply with the new loading, as there are many other factors that contribute to sizing of structural members, including user comfort. (Minimum code design allows floors that deflect more than most users are comfortable with.)
* ICC’s building valuation data theoretically includes labor costs. Increasing the amount of materials in the example above does not necessarily result in a 40% increase in labor.
* This is a temporary difference in cost, as it is anticipated that the same change will be made to the 2018 IRC. That is, when the 2018 IRC is adopted, the amendment will no longer be necessary, and the cost difference for deck/balcony construction between the IRC and the Washington State Residential Code will be zero.

If there is an economic impact, use the Table below to estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. If preferred, you may submit an alternate cost benefit analysis.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Building Type | Construction[[1]](#footnote-1) | | Enforcement[[2]](#footnote-2) | | Operations & Maintenance[[3]](#footnote-3) | |
| Costs | Benefits[[4]](#footnote-4) | Costs | Benefits4 | Costs | Benefits4 |
| Residential |  |  |  |  |  |  |
| Single family | ≤ $10/sq ft |  |  |  |  |  |
| Multi-family |  |  |  |  |  |  |
| Commercial/Retail |  |  |  |  |  |  |
| Industrial |  |  |  |  |  |  |
| Institutional |  |  |  |  |  |  |

Please send your completed proposal to: [sbcc@ga.wa.gov](mailto:sbcc@ga.wa.gov)

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.

1. $ / square foot of floor area or other cost. Attach data. **Construction** costs are costs prior to occupancy, and include both design and direct construction costs

   that impact the total cost of the construction to the owner/consumer. [↑](#footnote-ref-1)
2. Cost per project plan. Attach data. **Enforcement** costs include governmental review of plans, field inspection, and other action required for enforcement. [↑](#footnote-ref-2)
3. Cost to building owner/tenants over the life of the project. [↑](#footnote-ref-3)
4. Measurable benefit. [↑](#footnote-ref-4)