



Planning, Development & Transportation Services
Community Development & Neighborhood Services

To: Residential Stakeholders
From: Richard C. Anderson, CBO
Chief Building Official
Date: August 11, 2020
File: Residential Code Interpretation

INTERPRETATION NUMBER: 2020-0002

TITLE: Interior Stair Design Submittal and Inspection requirements

CODE EDITION: International Residential Code (IRC)

SECTIONS: R106.1 Submittal documents
R109.1.4 Frame and masonry inspection
R109.1.5 Other inspections
R202 Definitions
R301.5 Live load
Table 301.5

PURPOSE: To provide clarification on submittal and inspection requirements for Live load calculations for design, construction and installation of all interior stairs, stairways and stair systems (stairs)

DEFINITIONS:

R202 Definitions:

APPROVED. Acceptable to the *building official*.

DEAD LOADS. The weight of the materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, built-in partitions, finishes, cladding, and other similarly incorporated architectural and structural items, and fixed service *equipment*.

LIVE LOADS. Those loads produced by the use and occupancy of the building or other structure and do not include construction or environmental loads such as wind load, snow load, rain load, earthquake load, flood load or dead load.

CODE REQUIREMENTS:

R106.1 Submittal documents. Submittal documents consisting of *construction documents*, and other data shall be submitted in two or more sets with each application for a *permit*. The *construction documents* shall be



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prepared by a registered *design professional* where required by the statutes of the *jurisdiction* in which the project is to be constructed. Where special conditions exist, the *building official* is authorized to require additional *construction documents* to be prepared by a registered *design professional*.

Exception: The *building official* is authorized to waive the submission of *construction documents* and other data not required to be prepared by a registered *design professional* if it is found that the nature of the work applied for is such that reviewing of *construction documents* is not necessary to obtain compliance with this code.

R109.1.4 Frame and masonry inspection. Inspection of framing and masonry construction shall be made after the roof, masonry, framing, firestopping, draftstopping and bracing are in place and after the plumbing, mechanical and electrical rough inspections are *approved*.

R109.1.5 Other inspections. In addition to inspections in Sections R109.1.1 through R109.1.4, the *building official* shall have the authority to make or require any other inspections to ascertain compliance with this code and other laws enforced by the *building official*.

R301.5 Live load. The minimum uniformly distributed live load shall be as provided in Table R301.5.

**TABLE R301.5
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS
(in pounds per square foot)**

USE	LIVE LOAD
Uninhabitable attics without storage ^b	10
Uninhabitable attics with limited storage ^{b, g}	20
Habitable attics and attics served with fixed stairs	30
Balconies (exterior) and decks ^e	40
Fire escapes	40
Guards and handrails ^d	200 ^h
Guard in-fill components ^f	50 ^h
Passenger vehicle garages ^a	50 ^a
Rooms other than sleeping rooms	40
Sleeping rooms	30
Stairs	40 ^c

c. Individual stair treads shall be designed for the uniformly distributed live load or a 300-pound concentrated load acting over an area of 4 square inches, whichever produces the greater stresses.

CODE INTERPRETATION:

Per the IRC, *construction documents* shall be prepared by a registered *design professional*, however the *building official* is authorized to waive requirement.



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The IRC Table 301.5 requires the live load per of 40 pounds per square foot or each indivial tread to have a 300-pound concentrated acting over an area of 4 square inches, whichever produces the greater stress.

Plan review requirements:

Interior stairs must meet the live load requirements. It is my determination that the submittal documents are not required to be prepared by a registered design professional to ensure compliance with this requirement. Plans that are not stamped with an architect or engineer seal will have the following "REDLINE" to communicate the live load requirement.

All interior stairs, stairways, and stair systems shall be designed and built to meet the live load requirements in table 305.1 of the IRC. It shall be the responsibly of the contractor and design professional to ensure the design, construction and installation meets the live load requirements. All interior stair, stairways, and stair systems are subject to approval by the Building Official at time of Frame inspection.

Frame inspection requirements:

Interior stairs are a vital part of egress in all homes. The inspection process for this, cannot be taken lightly. Since the IRC has no prescriptive path for design of interior stairs to ensure compliance with the live load requirements in table 301.5, we must rely on the design professional and contractor of record.

If at time of frame inspection the inspector finds an interior stair is not built to the approved plans or is unable to locate a stair design on the reviewed approved plans, the inspector shall pass the inspection with a condition note stating the following:

At time of Frame Inspection, we were unable to determine if the interior stairs, stairway, or stair system was built in accordance with the live load requirements in table 301.5. It shall be the responsibly of the contractor and design professional to ensure the design, construction and installation meets the live load requirements in table 305.1 of the IRC.

A handwritten signature in blue ink that reads "Richard C. Anderson".

Richard C. Anderson, CBO
Chief Building Official