

To: House Committee on Business and Labor  
From: Tom Bowerman (tbowerman001@gmail.com)  
RE: Testimony on HB2737 (2017) - Legislative Direction for Code Revisions on Small Houses  
Hearing Date: February 15, 2017, Hearing Room E

Chairman Holvey and Members of the Committee:

Attached please find three supporting documents:

Exhibit 1. Copy of [House Bill 2737 \(2017\)](https://olis.leg.state.or.us/liz/2017R1/Downloads/MeasureDocument/HB2737) <https://olis.leg.state.or.us/liz/2017R1/Downloads/MeasureDocument/HB2737>

Exhibit 2. Proposed Amendment to HB 2737

Exhibit 3. International Building Code Appendix V

Short background and explanation:

Popularity of very small homes is being driven by trends in cost of housing, resource conservation, and homelessness. The incompatibility of small houses with the existing residential building code is resulting in illegal bootleg construction projects and varying and inconsistent attempts by local jurisdictions to address the issues through alternative methods and materials pathways. Working through the conventions of the Oregon Building Codes Agency can take years of process. Meanwhile, an epic crisis in homelessness is motivating individuals and jurisdictions alike to seek immediate alternatives. HB 2737 aims at definitive directive for the Building Codes Agency to adopt emergency interim standards for very small houses.

HB2737 was drafted during 2016 in response to on-the-ground experiences in getting building code approvals for tiny houses in Oregon. This bill is recognition that building code standards for conventional 1000+ square foot houses are incompatible for micro dwellings of 100-400 square feet. For example, it is virtually impossible to accommodate code required stairway access to a sleeping loft in a micro house. While recreational vehicles and boats commonly employ ladders and steep stairways, such solutions are not allowed in Oregon unless a local building official makes a unique exception on a case by case basis. Such an approach is problematic from both a builder and code official standpoint.

The International Building Code Council has also taken up the topic of tiny house standards. After being process through three sequential committee reviews, late in 2016 the Council voted to approve a new standard for micro dwellings. With the requisite 2/3 majority vote by membership, a new Appendix V is to be included in the 2018 IBC Code update. But based on past experience we expect Oregon to not get the 2018 update installed until 2021 or later, with no assurance that Appendix V would be included.

We urge the Oregon Legislature address this urgent crisis in housing by directing the building codes agency to immediately adopt IBC Appendix V or at minimum to provide latitude to local Oregon jurisdictions to apply Appendix V until such time that the Oregon Building Codes Agency gets around to it. Exhibit 2 herein proposes an amendment to HB 2737 to replace the original language with the updated IBC Appendix V reference. This amendment has been submitted to Legislative Council, awaiting processing. The more definitive process and development of Appendix V by the IBC committees as well as the authoritative reputation of the IBC should allay concerns of safety and due process by qualified expertise.

Exhibit 3 is the text of Appendix V from the IBC which also contains the rationale for the new Appendix.

**EXHIBIT 2.** Proposed Amendment to Oregon HB 2737 (2017)

**SUMMARY**

Requires Director of Department of Consumer and Business to adopt Addendum V of the International Building Code. Identifies certain provisions for inclusion in building code standards.

**A BILL FOR AN ACT**

Relating to affordable housing, homelessness, construction standards for very small homes.

Be It Enacted by the People of the State of Oregon:

SECTION 1. Section 2 of this 2017 Act is added to and made a part of ORS chapter 455.

SECTION 2. The Director of the Department of Consumer and Business Services shall amend specialty codes to establish special construction standards for single-family dwellings by immediate inclusion of Addendum V of the International Building Code into Oregon's Residential Specialty Building Code. If Amendment V is not officially adopted by International Code Council at the date of this act becoming law:

- (a) The Director shall either adopt the provisions of Amendment V as an interim measure or publish Amendment V as an alternative method pathway available to jurisdictions or,
- (b) The Director may make changes to Amendment V in furtherance of the legislative intent of this act.
- (3) Addendum V buildings permitted under this act shall be provided with an alternative energy efficiency pathway from that prescribed in Chapter 13 of the Oregon Residential Specialty Code provided that heat loss calculation for the net heat loss of the building envelope is not greater than that of a 700 square foot building heat loss baseline using current prescriptive efficiency standards.
- (4) Allow exemption from requirements for electrical service, but require that a dwelling provided with utility grid electrical service has a distribution panel rated at 40 amps or more.
- (5) Allow exemption from the requirement for connection to an external water supply, but require that if a dwelling is connected to an external water supply, the main sanitary drain connecting the dwelling to a wastewater treatment system must be three inches or more in diameter.
- (6) Allow an alternative method for building inspection by local code enforcement jurisdictions of Amendment V qualified houses when such houses are pre-constructed off-site from the intended permanent location provided that a label indentifying the building by serial number and manufacturer is permanently affixed to the building through the building process and this identification is made part of the permitting records for each specific building and its address of permanent installation.

**Exhibit 3:**  
**International Residential Building Code Updates for 2018**  
**APPENDIX V TINY HOUSES**

*(The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.)*

**SECTION AV101**

**GENERAL**

**AV101.1 Scope.** This appendix shall be applicable to *tiny houses* used as single *dwelling units*. *Tiny houses* shall comply with the *International Residential Code* except as otherwise stated in this appendix.

**SECTION AV102**

**DEFINITIONS**

**AV102.1 General.** The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of the *International Residential Code* for general definitions.

**EGRESS ROOF ACCESS WINDOW.** A skylight or roof window designed and installed to satisfy the *emergency escape and rescue opening* requirements in Section R310.2.

**LANDING PLATFORM.** A landing measuring two treads deep and two risers tall, provided as the top step of a stairway accessing a *loft*.

**LOFT.** Any floor level located above the main floor and open to it on at least one side, with a *ceiling height* less than 6 feet 8 inches (2032 mm), complying with the area, access, and guard requirements of Section AV104, and used as a living or sleeping space.

**TINY HOUSE.** A *dwelling* which is 400 or less square feet (37 m<sup>2</sup>) in floor area excluding *lofts*.

**SECTION AV103**

**CEILING HEIGHT**

**AV103.1 Minimum ceiling height.** *Habitable space* and hallways in *tiny houses* shall have a *ceiling height* not less than 6 feet 8 inches (2032 mm). Bathrooms, toilet rooms, and kitchens shall have a *ceiling height* not less than 6 feet 4 inches (1930 mm). No obstructions shall extend below these minimum ceiling heights including beams, girders, ducts, lighting, or other obstructions.

**Exception:** *Ceiling heights* in *lofts* are permitted to be less than 6 foot 8 inches (2032 mm).

**SECTION AV104**

**LOFTS**

**AV104.1 Minimum loft areas.** *Lofts* used as a sleeping or living space shall meet the minimum area and dimension requirements of Sections AV104.1.1 through AV104.1.3.

**AV104.1.1 Minimum area.** *Lofts* shall have a floor area of not less than 35 square feet (3.25 m<sup>2</sup>)

**AV104.1.2 Minimum dimensions.** *Lofts* shall be not less than 5 feet (1524 mm) in any horizontal dimension.

**AV104.1.3 Height effect on loft area.** Portions of a *loft* with a sloping ceiling measuring less than 3 feet (914 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the loft.

**Exception:** Under gable roofs with a minimum slope of 6:12, portions of a *loft* with a sloping ceiling measuring less than 16 inches (406 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the loft.

**AV104.2 Loft access.** The access to and primary egress from *lofts* shall be of any type described

in Sections AV104.2.1 through AV104.2.4

**AV104.2.1 Stairways.** Stairways accessing *lofts* shall comply with this code or with Sections AV104.2.1.1 through AV104.2.1.5

**AV104.2.1.1 Width.** Stairways accessing a *loft* shall not be less than 17 inches (432 mm) in clear width at all points at or above the permitted handrail height. The minimum width below the handrail shall not be less than 20 inches (508 mm).

**AV104.2.1.2 Headroom.** The headroom in stairways accessing a *loft* shall not be less than 6 feet 2 inches (1880 mm) measured vertically from the sloped line connecting the tread nosings in the middle of the tread width.

**Exception:** The headroom for *landing platforms* shall not be less than 4 feet 6 inches (1372 mm).

**AV.104.2.1.3 Treads and Risers.** Risers for stairs accessing a *loft* shall be a minimum of 7 inches (178 mm) and a maximum of 12 inches (305 mm). Tread depth and riser height shall be calculated with the following formulas:

Tread depth = 20 inches (508 mm) minus  $\frac{4}{3}$  riser height

OR

Riser height = 15 inches (381 mm) minus  $\frac{3}{4}$  tread depth

**Exception:** *Landing platforms* shall measure two treads deep and two risers tall.

**AV104.2.1.4 Handrails.** Handrails shall comply with Section R311.7.8.

**AV104.2.1.5 Stairway guards.** *Guards* at open sides of stairways shall comply with Section R312.1.

**AV104.2.2 Ladders.** Ladders accessing *lofts* shall comply with Sections AV104.2.2.1 and AV104.2.2.2

**AV104.2.2.1 Size and capacity.** Ladders accessing *lofts* shall have 12 inches (305 mm) minimum rung width and 10 inches (254 mm) to 14 inch (356 mm) spacing between rungs. Ladders shall be capable of supporting a 200 pound (75 kg) load on any rung. Rung spacing shall be uniform within  $\frac{3}{8}$ -inch (9.5 mm).

**AV104.2.2.2 Incline.** Ladders shall be installed at 70 to 80 degrees from horizontal.

**AV104.2.3 Alternating tread devices.** *Alternating tread devices* accessing *lofts* shall comply with Sections R311.7.11.1 and R311.7.11.2. The clear width at and below the handrails shall be not less than 20 inches (508 mm).

**AV104.2.4 Ships ladders.** *Ships ladders* accessing *lofts* shall comply with Sections R311.7.12.1

and R311.7.12.2. The clear width at and below the handrails shall be not less than 20 inches (508 mm).

**AV104.3 Loft guards.** Loft *guards* shall be located along the open side(s) of *lofts* located more than 30 inches (762 mm) above the main floor. Loft *guards* shall be not less than 36 inches (914 mm) in height or one-half the clear height to the ceiling, whichever is less.

## **SECTION AV105**

### **EMERGENCY ESCAPE AND RESCUE OPENINGS**

**AV105.1 General.** *Tiny houses* shall meet the requirements of Section R310 for *emergency escape and rescue openings*.

**Exception:** *Egress roof access windows* in *lofts* used as sleeping rooms shall be deemed to meet the requirements of Section R310 where installed with the bottom of their opening no more than 44 inches (1118 mm) above the loft floor.

### **REASONS FOR DEFINITIONS:**

**EGRESS ROOF ACCESS WINDOW.** Most manufacturers use this term for their skylights and roof windows that are designed to satisfy the dimensional requirements of emergency escape and rescue openings in U.S. building codes.

**LANDING PLATFORM:** The design in this definition has demonstrated in practice to allow for the safe transition between stairways and lofts. The large tread depth provides

adequate standing space while the tall riser allows for a simple transition between standing and kneeling when entering or exiting the loft. (See photos)

**LOFT.** This definition is a modified version of the definition of loft area in Section 1-3 of ANSI A119.5 Recreational Park Trailer Standard and differentiates a loft from a mezzanine and habitable attic within this code.

**TINY HOUSE.** This definition is based on the widely accepted maximum square footage for tiny houses in the construction industry.

**REASONS PER SECTION:**

**AV103. CEILING HEIGHT:** The minimum ceiling height for non-loft habitable spaces in this proposed appendix is 6 feet 8 inches. Though lower than the 7 foot minimum for habitable spaces in the IRC, it is higher than the minimum of 6 feet 6 inches in Section 5-3.5.4 of ANSI A119.5 Recreational Park Trailer Standard, that has proven to provide safe and adequate head room during the extended occupancy of recreational park trailers.

**AV104 LOFT:** Tiny houses have considerably smaller footprints and building height than conventional houses. As such, lofts are essential to maximize the use of space in tiny houses and make them viable shelter for many individuals and families.

It is common knowledge to many building inspectors that spaces labeled “non-habitable storage” in dwellings of all sizes are sometimes used for sleeping or other habitable purposes once the final inspection is complete. Rather than being unable to enforce a falsely stated use, building departments could regulate the health and safety of those spaces for their intended use with the proposed appendix, ensuring health and safety with minimum loft dimensions, requirements for access and egress, and proper emergency escape and rescue openings.

**MINIMUM AREA and MINIMUM DIMENSIONS:** Lofts in tiny houses are small by necessity; however, minimum dimensions are required for lofts used as a living or sleeping space, so as to not impose a risk to occupant health and safety.

**HEIGHT EFFECT ON LOFT AREA:** For most roof designs in tiny houses, a minimum ceiling height of 3 feet has proven adequate in sleeping lofts for consideration of their required floor area. For gable roofs with moderate to high slopes, the slope has an aggressive impact on the loss of ceiling height but makes up for it with higher areas under the ridge. Thus lofts under gable roofs with a minimum 6:12 slope have a lesser minimum ceiling height when calculating their required floor area.

**STAIRWAY WIDTH:** These dimensional requirements are identical to those in Section 5-10.4.1.1 of ANSI A119.5. This provision is considered and proven safe for extended occupancy of recreational park trailers.

**STAIRWAY HEADROOM:** Because tiny houses are limited in square footage and height, IRC compliant head heights for stairs serving lofts are often not achievable. Therefore the stair headroom requirement has been reasonably reduced to 6 feet 2 inches. The inclusion of the “double tread/riser” landing platform design, with its own headroom requirement, allows for a safe transition from standing height to kneeling height, making for safe access to and egress from the loft.

**STAIRWAY TREAD/RISER:** This is identical to the requirements for treads/risers in Section 5-10.4.1.1 of ANSI A119.5. This provision is considered and proven safe for extended occupancy of recreational park trailers.

**STAIRWAY LANDING PLATFORM:** This defines the specific, technical parameters of a landing platform in terms of height, depth, and measurement locations.

**LADDERS:** This is identical to the requirements for ladders in Section 5-10.5 of ANSI A119.5. This provision is considered and proven safe for extended occupancy of recreational park trailers.

**ALTERNATING TREAD DEVICES:** Alternating tread devices as described in the IRC, are allowed to provide access to and egress from lofts.

**SHIPS LADDERS:** Ships ladders as described in the IRC, are allowed to provide access to and egress from lofts.

**LOFT GUARDS:** The height requirement for loft guards is identical to that for guardrails in Section 5-10.7 of ANSI A119.5.

**AV105 EMERGENCY ESCAPE AND RESCUE:** Due to the considerably smaller footprints of tiny houses, ceiling heights in sleeping lofts therein are often necessarily lower than minimum ceiling heights required by the IRC for sleeping rooms in larger houses. Egress roof access windows (which are specifically designed to meet the dimensional requirements of emergency escape and rescue openings) can be installed with their openings within 44 inches of the loft floor, thus meeting the requirements of Section R310 when wall mounted windows meeting these requirements are not possible.

**BIBLIOGRAPHY:**

ANSI A119.5 Recreational Park Trailer Standard - 2009 Edition