EXPEDITED RULE MAKING

CR-105 (December 2017)
(Implements RCW 34.05.353)

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STATE OF WASHINGTON
FILED

DATE: July 29, 2020
TIME: 8:48 AM

WSR 20-16-068

Agency: State Building Code Council

Title of rule and other identifying information: (describe subject) WAC 51-51 Amendments to the 2018 International Residential Code

Purpose of the proposal and its anticipated effects, including any changes in existing rules: Reconciling State Amendments with section renumbering in the 2018 International Residential Code.

Reasons supporting proposal: With the exception of the issues noted below, this represents section and reference numbering housekeeping.

	WAC	Section	Changes	Discussion
1	51-51-0202	R202	Definitions: SLEEPING LOFT: added the missing word “on” after “main floor” for clarity.	Editorial correction.
2			Definitions.: MEZZANINE: Eliminated amendment	Deleted because amendment matched model code language.
3			Definitions.: BALANCED VENTILATION: Eliminated amendment	This definition is not defined, therefore, not adopted is inappropriate.
4			Definitions.: DISTRIBUTED VENTILATION SYSTEM: Eliminated amendment	This definition is not defined, therefore, not adopted is inappropriate.
5	51-51-0314	R314.3.1	R314.3.1 Installation near cooking appliances: Eliminated amendment	Deleted because amendment matched model code language.
6	51-51-0315	R315.1	General: Eliminated amendment.	Deleted because amendment matched model code language.
7		R315.1.1	Listings: Eliminated amendment.	Deleted because amendment matched model code language.
8		R315.4	Combination alarms: Eliminated amendment.	Deleted because amendment matched model code language.
9	51-51-03240	R324.5.1	Photovoltaic shingles: Eliminated amendment.	Deleted because amendment matched model code language.
10		R324.7.1	Fire separation distances: Corrected incorrect section number	Corrects which section is not being adopted.
11	51-51-0404	R404.1.3.3.6	Form materials and form ties: Clarification language added.	Addresses clarification language
12	51-51-0602	R602.1.1	Sawn lumber: Eliminated amendment	Deleted because amendment matched model code language.

13	51-51-0703	R703.1	General: Eliminated amendment	Deleted because amendment matched model code language.
14	51-51-1004	R1004.1.1	Emission Standards for Factory-built Fireplaces: Corrected standard title	Corrects standard title.
15	51-51-4400	Standards	ANCE.: NMX-J-521/2-40-ANCE—2019/CAN/CSA-22.2 No. 60335-2-40—19/UL 60335-2-40-2019 Household and Similar Electrical Appliances - Safety-Part 2-40: Corrected standard title	Addresses incorrect standard title
16		Standards	ASTM E2558-2013: Standard Test Method for Determining Particulate Matter Emissions from Fires in Wood-burning Fireplaces R1004.1.1: Furnishes standard referenced in the body of the code.	Addresses referenced standard
17		Standards	ASHRAE.: 34—2019: Designation and Safety Classification of Refrigerants: Provided missing citation	Addressed missing citation
18	51-51-60104	AQ103	Ceiling height: Removes an incorrect deletion.	Addresses text erroneously deleting a section
19		AQ104	Lofts: Removes an incorrect deletion.	Addresses text erroneously deleting a section
20	51-51-60105	Appendix U	Appendix U—Dwelling unit fire sprinkler systems: Relocated text from P2904 regarding fire sprinkler locations.	Addressed where best to place amendments to P2904

Statutory authority for adoption: 19.27.031, 19.27.074

Statute being implemented: 19.27.031, 19.27.074

Is rule necessary because of a:

Federal Law?	☐ Yes	☒ No
Federal Court Decision?	☐ Yes	☒ No
State Court Decision?	☐ Yes	☒ No

If yes, CITATION:

Name of proponent: (person or organization) State Building Code Council

☐ Private
☐ Public
☒ Governmental

Name of agency personnel responsible for:

	Name	Office Location	Phone
Drafting:	Richard Brown	1500 Jefferson St. SE, Olympia, WA 98504	360-407-9277
Implementation:	Richard Brown	1500 Jefferson St. SE, Olympia, WA 98504	360-407-9277
Enforcement: Having Authority	Local Jurisdictions		

Agency comments or recommendations, if any, as to statutory language, implementation, enforcement, and fiscal matters:

Expedited Adoption - Which of the following criteria was used by the agency to file this notice:

☐ Relates only to internal governmental operations that are not subject to violation by a person;

☐ Adopts or incorporates by reference without material change federal statutes or regulations, Washington state statutes, rules of other Washington state agencies, shoreline master programs other than those programs governing shorelines of statewide significance, or, as referenced by Washington state law, national consensus codes that generally establish industry standards, if the material adopted or incorporated regulates the same subject matter and conduct as the adopting or incorporating rule;

☒ Corrects typographical errors, make address or name changes, or clarify language of a rule without changing its effect;

☐ Content is explicitly and specifically dictated by statute;

☐ Have been the subject of negotiated rule making, pilot rule making, or some other process that involved substantial participation by interested parties before the development of the proposed rule; or

☐ Is being amended after a review under RCW 34.05.328.

Expedited Repeal - Which of the following criteria was used by the agency to file notice:

☐ The statute on which the rule is based has been repealed and has not been replaced by another statute providing statutory authority for the rule;

☐ The statute on which the rule is based has been declared unconstitutional by a court with jurisdiction, there is a final judgment, and no statute has been enacted to replace the unconstitutional statute;

☐ The rule is no longer necessary because of changed circumstances; or

☐ Other rules of the agency or of another agency govern the same activity as the rule, making the rule redundant.

Explanation of the reason the agency believes the expedited rule-making process is appropriate pursuant to RCW 34.05.353(4): This addresses clerical oversight

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO

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AND RECEIVED BY (date) October 5, 2020

Date: July 29, 2020

Name: Diane Glenn

Title: State Building Code Council Chair

Signature:

AMENDATORY SECTION (Amending WSR 16-03-025, filed 1/11/16, effective 7/1/16)

WAC 51-51-0102 Section R102—Applicability.

R102.5 Appendices. Provisions in the appendices shall not apply unless specifically referenced in the adopting ordinance. An appendix adopted by a local jurisdiction shall not be effective unless approved by the state building code council pursuant to RCW 19.27.060 (1)(a).

EXCEPTIONS: 1. The state building code council has determined that a local ordinance providing specifications for light straw-clay or strawbale construction, or requiring a solar-ready zone or requiring fire sprinklers in accordance with Appendix R, S, U or V of this chapter may be adopted by any local government upon notification of the council.
2. Appendix F, Radon Control Methods, and Appendix Q, Dwelling Unit Fire Sprinkler Systems, are included in adoption of the International Residential Code.

R102.7.1 Additions, alterations or repairs. Additions, alterations or repairs to any structure shall conform to the requirements for a new structure without requiring the existing structure to comply with the requirements of this code, unless otherwise stated. Additions, alterations or repairs and relocations shall not cause an existing structure to become unsafe or adversely affect the performance of the building.

EXCEPTIONS: 1. Additions with less than 500 square feet of conditioned floor area are exempt from the requirements for Whole House Ventilation Systems, Section ((~~M1508~~)) M1505.4.
2. Additions or alterations to existing buildings which do not require the construction of foundations, crawlspaces, slabs or basements shall not be required to meet the requirements for radon protection in Section ((~~R327.1~~)) R332.1 and Appendix F.

R102.7.2 Moved buildings. Buildings or structures moved into or within a jurisdiction shall comply with the provisions of this code, the *International Building Code* (chapter 51-50 WAC), the International Mechanical Code (chapter 51-52 WAC), the International Fire Code (chapter 51-54A WAC), the Uniform Plumbing Code and Standards (chapter 51-56 WAC), and the Washington State Energy Code (chapter 51-11R WAC) for new buildings or structures.

EXCEPTION: Group R-3 buildings or structures are not required to comply if:
1. The original occupancy classification is not changed; and
2. The original building is not substantially remodeled or rehabilitated. For the purposes of this section a building shall be considered to be substantially remodeled when the costs of remodeling exceed 60 percent of the value of the building exclusive of the costs relating to preparation, construction, demolition or renovation of foundations.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-0202 Section R202—Definitions.

ADULT FAMILY HOME means a dwelling in which a person or persons provide personal care, special care, room and board to more than one but not more than six adults who are not related by blood or marriage to the person or persons providing the services.

((~~**BALANCED VENTILATION. This definition is not adopted.**~~))

BALANCED WHOLE HOUSE VENTILATION. Balanced whole house ventilation is defined as any combination of concurrently operating residential unit mechanical exhaust and mechanical supply whereby the total mechanical exhaust airflow rate is within 10 percent or 5 cfm, whichever is greater, of the total mechanical supply airflow rate. Intermittent dryer exhaust, intermittent range hood exhaust, and intermittent toilet room exhaust airflow rates above the residential dwelling or sleeping unit minimum ventilation rate are exempt from the balanced airflow calculation.

BATTERY SYSTEM, STATIONARY STORAGE. This definition is not adopted.

BUILDING, EXISTING. A building or structure erected prior to the adoption of this code, or one that has passed a final inspection.

BUILDING. Any one- or two-family dwelling or *townhouse*, or portion thereof used or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, or any accessory structure.

CHILD CARE, FAMILY HOME. A child care facility, licensed by Washington state, located in the dwelling of the person or persons under whose direct care and supervision the child is placed, for the care of twelve or fewer children, including children who reside at the home.

CHILD DAY CARE, shall, for the purposes of these regulations, mean the care of children during any period of a 24 hour day.

CONDITIONED SPACE. An area, room or space that is enclosed within the building thermal envelope and that is directly or indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces, where they are separated from conditioned spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating or cooling.

((~~**DISTRIBUTED VENTILATION SYSTEM.** This definition is not adopted.~~))

DISTRIBUTED WHOLE HOUSE VENTILATION. A whole house ventilation system shall be considered distributed when it supplies outdoor air directly (not transfer air) to each dwelling or sleeping unit habitable space (living room, den, office, interior adjoining spaces or bedroom), and exhausts air from all kitchens and bathrooms directly outside.

DWELLING UNIT. A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation. Dwelling units may also include the following uses:

1. Adult family homes, foster family care homes and family day care homes licensed by the Washington state department of social and health services.

2. Offices, mercantile, food preparation for off-site consumption, personal care salons or similar uses which are conducted primarily by the occupants of the dwelling unit and are secondary to the use of the unit for dwelling purposes, and which do not exceed 500 square feet (46.4 m^2).

EGRESS ROOF ACCESS WINDOW. A skylight or roof window designed and installed to satisfy the *Emergency Escape and Rescue Opening* requirements of Section R310.2.

ENERGY STORAGE SYSTEMS (ESS). One or more devices, assembled together, capable of storing energy in order to supply electrical energy at a future time.

FIRE SEPARATION DISTANCE. The distance measured from the foundation wall or face of the wall framing, whichever is closer, to one of the following:

1. To the closest interior lot line; or
2. To the centerline of a street, an alley or public way; or
3. To an imaginary line between two buildings on the lot.

The distance shall be measured at a right angle from the wall.

FLOOR AREA. The area within the inside perimeter of exterior walls of the building. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor above.

LANDING PLATFORM. A landing provided as the top step of a stairway accessing a *Sleeping Loft*.

LOCAL EXHAUST. An exhaust system that uses one or more fans to exhaust air from a specific room or rooms within a residential dwelling or sleeping unit.

LOT. A measured portion or parcel of land considered as a unit having fixed boundaries.

LOT LINE. The line which bounds a plot of ground described as a *lot* in the title to the property.

((**~~MEZZANINE. An intermediate level or levels between the floor and ceiling of any story.~~**))

MIXED VENTILATION ZONE. This definition is not adopted.

SALT WATER COASTAL AREA. Those areas designated as salt water coastal areas by the local jurisdiction.

SLEEPING LOFT. A sleeping space on a floor level located more than 30 inches (726 mm) above the main floor and open to the main floor on one or more sides with a ceiling height of less than 6 feet 8 inches (2032 mm).

SMALL BUSINESS. Any business entity (including a sole proprietorship, corporation, partnership or other legal entity) which is owned and operated independently from all other businesses, which has the purpose of making a profit, and which has fifty or fewer employees.

TOWNHOUSE. A building that contains three or more attached *townhouse units*.

TOWNHOUSE UNIT. A single-family *dwelling unit* in a *townhouse* that extends from foundation to roof and that has a yard or public way on not less than two sides that extends at least 50 percent of the length of each of these two sides.

WHOLE HOUSE VENTILATION SYSTEM. A mechanical ventilation system, including fans, controls, and ducts, which replaces, by direct means, air from the habitable rooms with outdoor air.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-03100 Section ((~~3100~~)) 310—Emergency escape and rescue openings.

((~~R3100.1~~)) R310.1 Emergency escape and rescue opening required. Basements, habitable attics and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, an emergency escape and rescue

opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court providing an unobstructed path with a width of not less than 36 inches (914 mm) that opens to a public way.

EXCEPTIONS: 1. Storm shelters and basements used only to house mechanical equipment not exceeding a total floor area of 200 square feet (18.58 m).
2. Where the *dwelling unit* or *townhouse unit* is equipped with an automatic sprinkler system installed in accordance with Section P2904, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:
2.1. One means of egress complying with Section R311 and one emergency escape and rescue opening.
2.2. Two means of egress complying with Section R311.

((~~R3100.1.1~~)) R310.1.1 Operational constraints and opening control devices. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools, or special knowledge. Window opening control devices on windows serving as a required emergency escape and rescue opening shall be not more than 70 inches (177.8 cm) above the finished floor and shall comply with ASTM F2090.

((~~R3100.2.4~~)) R310.2.4 Emergency escape and rescue openings under decks and porches. Emergency escape and rescue openings installed under decks and porches shall be fully openable and provided with an unobstructed pathway of not less than 36 inches (914 mm) in height, 36 inches (914 mm) in width, and no greater than 60 inches (1524 mm) in length that opens to a yard or court. The pathway shall be measured from the exterior face of the glazed opening, or if the glazed opening is in a window well, at the window well wall furthest from the exterior face of the glazed opening.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-0314 Section R314—Smoke alarms and heat detection.

R314.1 General. Smoke alarms, heat detectors, and heat alarms shall comply with NFPA 72 and this section.

R314.1.1 Listings. Smoke alarms shall be listed in accordance with UL 217. Heat detectors and heat alarms shall be listed for the intended application. Combination smoke and carbon monoxide alarms shall be listed in accordance with UL 217 and UL 2034.

R314.2 Where required. Smoke alarms, heat detectors, and heat alarms shall be provided in accordance with this section.

R314.2.1 New construction. Smoke alarms shall be provided in *dwelling units*. A heat detector or heat alarm shall be provided in new attached garages.

R314.2.2 Alterations, repairs and additions. Where *alterations*, *repairs* or *additions* requiring a permit occur, or where one or more sleeping rooms are added or created in existing dwellings, or where an accessory dwelling unit is created within an existing *dwelling unit*, each *dwelling unit* shall be equipped with smoke alarms as required for new dwellings.

EXCEPTIONS: 1. Work involving the exterior surfaces of *dwellings*, such as the replacement of roofing or siding, the *addition* or replacement of windows or doors, or the addition of a porch or deck are exempt from the requirements of this section.
2. Installation, *alteration* or repairs of plumbing, electrical or mechanical systems are exempt from the requirements of this section.

R314.2.3 New attached garages. A heat detector or heat alarm rated for the ambient outdoor temperatures and humidity shall be installed in new garages that are attached to or located under new and existing dwellings. Heat detectors and heat alarms shall be installed in a central location and in accordance with the manufacturer's instructions.

EXCEPTION: Heat detectors and heat alarms shall not be required in dwellings without commercial power.

R314.3 Location. Smoke alarms shall be installed in the following locations:

1. In each sleeping room or sleeping loft.
2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements and habitable attics but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
4. Smoke alarms shall be installed not less than 3 feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by Section R314.3.
5. In napping areas in a family home child care.

((**R314.3.1 Installation near cooking appliances.** ~~Smoke alarms shall not be installed in the following locations unless this would prevent placement of a smoke alarm in a location required by Section R314.3.~~

~~1. Ionization smoke alarms shall not be installed less than 20 feet (6096 mm) horizontally from a permanently installed cooking *appliance*.~~

~~2. Ionization smoke alarms with an alarm-silencing switch shall not be installed less than 10 feet (3048 mm) horizontally from a permanently installed cooking *appliance*.~~

~~3. Photoelectric smoke alarms shall not be installed less than 6 feet (1828 mm) horizontally from a permanently installed cooking *appliance*.~~))

R314.4 Interconnection. Where more than one smoke alarm is required to be installed within an individual *dwelling unit* in accordance with Section R314.2, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual *dwelling unit*. Where an accessory *dwelling unit* is created within an existing *dwelling unit* all required smoke alarms, in the accessory *dwelling unit* and the primary *dwelling unit*, shall be interconnected in such a manner that the actuation of one alarm will activate all alarms in both the primary *dwelling unit* and the accessory *dwelling unit*. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.

EXCEPTION: Smoke alarms and alarms installed to satisfy Section R314.4.1 shall not be required to be interconnected to existing smoke alarms where such existing smoke alarms are not interconnected or where such new smoke alarm or alarm is not capable of being interconnected to the existing smoke alarms.

R314.4.1 Heat detection interconnection. Heat detectors and heat alarms shall be connected to an alarm or a smoke alarm that is installed in the *dwelling*. Alarms and smoke alarms that are installed for

this purpose shall be located in a hallway, room, or other location that will provide occupant notification.

R314.6 Power source. Smoke alarms, heat alarms, and heat detectors shall receive their primary power from the building wiring where such wiring is served from a commercial source and, where primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection.

EXCEPTIONS: 1. Smoke alarms shall be permitted to be battery operated where installed in buildings without commercial power.
2. Smoke alarms installed in accordance with Section R314.2.2 shall be permitted to be battery powered.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-0315 Section R315—Carbon monoxide alarms.

((~~**R315.1 General.** Carbon monoxide alarms shall comply with Section R315.~~

~~**R315.1.1 Listings.** Carbon monoxide alarms shall be listed in accordance with UL 2034. Combination carbon monoxide and smoke alarms shall be listed in accordance with UL 2034 and UL 217.~~))

R315.2 Where required. Carbon monoxide alarms shall be provided in accordance with Sections R315.2.1 and R315.2.2.

R315.2.1 New construction. For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in dwelling units and on each level of the dwelling in accordance with the manufacturer's recommendation.

R315.2.2 Alterations, repairs, and additions. Existing dwellings shall be equipped with carbon monoxide alarms in accordance with Section R315.2.1. An inspection will occur where alterations, repairs, or additions requiring a permit occur, or where one or more sleeping rooms are added or created.

EXCEPTIONS: 1. Work involving only the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck, is exempt from the inspection requirements of this section.
2. Installation, alteration or repairs of nonfuel burning plumbing or mechanical systems or electrical systems are exempt from the inspection requirements of this section.
3. Owner-occupied single-family residences legally occupied before July 26, 2009. RCW 19.27.530 (2)(b).

R315.3 Location. Carbon monoxide alarms in dwelling units shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms and on each level of the dwelling and in accordance with the manufacturer's recommendations. Where a fuel burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom.

((~~**R315.4 Combination alarms.** Combination carbon monoxide and smoke alarms shall be permitted to be used in lieu of carbon monoxide alarms.~~))

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-03240 Section R324—Solar energy systems.

R324.3 Photovoltaic systems. Installation, modification, or alteration of solar photovoltaic power systems shall comply with this section and the *International Fire Code*. Section R104.11 alternate materials and methods of this code shall be considered when approving the installation of solar photovoltaic power systems. Photovoltaic systems shall be designed and installed in accordance with Sections R324.3.1 through R324.6 and chapter 19.28 RCW. Inverters shall be listed and labeled in accordance with UL 1741. Systems connected to the utility grid shall use inverters listed for utility interaction.

EXCEPTION: Detached, nonhabitable Group U structures shall not be subject to the requirements of this section for structural and fire safety.

R324.4 Rooftop-mounted photovoltaic systems. Rooftop-mounted photovoltaic panel systems installed on or above the roof covering shall be designed and installed in accordance with Section R907.

EXCEPTION((S)): The roof structure shall be deemed adequate to support the load of the rooftop solar photovoltaic system if all of the following requirements are met:
1. The solar photovoltaic panel system shall be designed for the wind speed of the local area, and shall be installed per the manufacturer's specifications.
2. The ground snow load does not exceed 70 pounds per square foot.
3. The total dead load of modules, supports, mountings, raceways, and all other appurtenances weigh no more than 4 pounds per square foot.
4. Photovoltaic modules are not mounted higher than 18 inches above the surface of the roofing to which they are affixed.
5. Supports for solar modules are to be installed to spread the dead load across as many roof-framing members as needed, so that no point load exceeds 50 pounds.

((~~**R324.5.1 Photovoltaic shingles.** Photovoltaic shingles shall comply with Section R905.16.~~

~~**R324.6**~~)) **R324.7.1** This section is not adopted.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-0325 Section R325—((~~Reserved~~)) Mezzanines.

R325.1 General. Mezzanines shall comply with Sections R325 through R325.5. *Habitable attics* shall comply with Section R326.

AMENDATORY SECTION (Amending WSR 16-03-025, filed 1/11/16, effective 7/1/16)

WAC 51-51-0404 ((~~Reserved.~~)) Section R404—Foundation and retaining walls.

R404.1.3.3.6 Form materials and form ties. Forms shall be made of wood, steel, aluminum, plastic, a composite of cement and foam insulation, a composite of cement and wood chips, or other approved material suitable for supporting and containing concrete. Forms shall be positioned and secured before placing concrete and shall provide suffi-

cient strength to contain concrete during the concrete placement operation.

Form ties shall be steel, solid plastic, foam plastic, a composite of cement and wood chips, a composite of cement and foam plastic, or other suitable material capable of resisting the forces created by fluid pressure of fresh concrete.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-0507 Section R507—Decks.

R507.1 Decks. Wood-framed decks shall be in accordance with this section. Decks shall be designed for the live load required in Section R301.5 or the ground snow load indicated in Table R301.2(1), whichever is greater. For decks using materials and conditions not prescribed in this section, refer to Section R301.

TABLE R507.3.1

MINIMUM FOOTING SIZE FOR DECKS

LIVE OR GROUND SNOW LOAD[b] (psf)	TRIBUTARY AREA[c] (sq.ft.)	SOIL BEARING CAPACITY[acd]								
		1500 psf			2000 psf			≥ 3000 psf		
		Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness[f] (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness[f] (inches)	Side of a square footing (inches)	Diameter of a round footing (inches)	Thickness[f] (inches)
60 Live or 70 Ground Snow Load	5	7	8	6	7	8	6	7	8	6
	20	12	14	6	11	13	6	9	10	6
	40	18	20	6	15	17	6	12	14	6
	60	21	24	8	19	21	6	15	17	6
	80	25	28	9	21	24	8	18	20	6
	100	28	31	11	24	27	9	20	22	7
	120	30	34	12	26	30	10	21	24	8
	140	33	37	13	28	32	11	23	26	9
	160	35	40	15	30	34	12	25	28	9

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2, 1 pound per square foot = 0.0479 kPa.

a. Interpolation permitted, extrapolation not permitted.
b. Reserved.
c. Footing dimensions shall allow complete bearing of the post.
d. If the support is a brick or CMU pier, the footing shall have a minimum 2-inch projection on all sides.
e. Area, in square feet, of deck surface supported by post and footings.
f. Minimum thickness shall only apply to plain concrete footings,

R507.4 Deck posts. For single-level decks, wood post size shall be in accordance with Table R507.4.

TABLE R507.4
DECK POST HEIGHT

LOADS[b] (psf)	POST SPECIES[c]	POST SIZE[d]	MAXIMUM DECK POST HEIGHT[a] (feet-inches)							
			Tributary Area[g,h] (sq. ft.)							
			20	40	60	80	100	120	140	160
60 Live Load, ≤60 Ground Snow Load	Douglas Fir[e], Hem-fir[e], SPF[e]	4 x 4	14-0	10-10	8-7	7-0	5-8	4-1	NP	NP
		4 x 6	14-0	13-10	11-1	9-5	8-2	7-3	6-4	5-4
		6 x 6	14-0	14-0	14-0	14-0	14-0	13-3	10-9	6-11
		8 x 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Redwood[f], Western Cedars[f], Ponderosa Pine[f], Red Pine[f]	4 x 4	14-0	10-3	7-0	NP	NP	NP	NP	NP
		4 x 6	14-0	13-6	10-6	8-4	5-10	NP	NP	NP
		6 x 6	14-0	14-0	14-0	14-0	11-11	NP	NP	NP
		8 x 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
70 Ground Snow Load	Douglas Fir[e], Hem-fir[e], SPF[e]	4 x 4	14-0	10-1	7-11	6-6	5-3	3-7	NP	NP
		4 x 6	14-0	12-10	10-3	8-9	7-7	6-8	5-10	4-11
		6 x 6	14-0	14-0	14-0	14-0	14-0	12-2	9-9	5-9
		8 x 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0
	Redwood[f], Western Cedars[f], Ponderosa Pine[f], Red Pine[f]	4 x 4	14-0	9-5	6-5	NP	NP	NP	NP	NP
		4 x 6	14-0	12-6	9-8	7-7	5-3	NP	NP	NP
		6 x 6	14-0	14-0	14-0	14-0	10-8	NP	NP	NP
		8 x 8	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2, 1 pound per square foot = 0.0479 kPa, NP = Not permitted.

a. Measured from the underside of the beam to top of footing or pier.
b. 10 psf dead load. Snow load not assumed to be concurrent with live load.
c. No. 2 grade, wet service factor included.
d. Notched deck posts shall be sized to accommodate beam size per in accordance with Section R507.5.2.
e. Includes incising factor.
f. Incising factor not included.
g. Area, in square feet, of deck surface supported by post and footing.
h. Interpolation permitted. Extrapolation not permitted.

R507.5 Deck beams. Maximum allowable spans for wood deck beams, as shown in Figure R507.5, shall be in accordance with Tables R507.5(1) through R507(4). Beam plies shall be fastened with two rows of 10d (3-inch × 0.128-inch) nails minimum at 16 inches (406 mm) on center along each edge. Beams shall be permitted to cantilever at each end up to one-fourth of the allowable beam span. Deck beams of other materials shall be permitted where designed in accordance with accepted engineering practices.

TABLE R507.5
MAXIMUM DECK BEAM SPAN - 60 PSF LIVE LOAD or 70 PSF GROUND SNOW LOAD[c]

BEAM SPECIES[d]	BEAM SIZE[e]	MAXIMUM BEAM SPAN[a,b,f] (feet-inches)						
		Deck Joist Span[a,i] (feet)						
		6	8	10	12	14	16	18
Douglas fir-larch[g], Hem-fir[g], Spruce-pine-fir[g]	1-2×6	3-5	2-10	2-5	2-2	2-0	1-10	1-9
	1-2×8	4-7	3-8	3-2	2-10	2-7	2-5	2-4
	1-2×10	5-8	4-9	4-1	3-8	3-4	3-1	2-11
	1-2×12	6-7	5-8	5-0	4-6	4-1	3-10	3-7
	2-2×6	5-2	4-6	4-0	3-5	3-1	2-10	2-7
	2-2×8	6-11	6-0	5-3	4-7	4-1	3-8	3-5
	2-2×10	8-5	7-4	6-6	5-10	5-2	4-9	4-5
	2-2×12	9-10	8-6	7-7	6-11	6-4	5-9	5-4
	3-2×6	6-6	5-7	5-0	4-7	4-2	3-9	3-5
	3-2×8	8-8	7-6	6-8	6-1	5-6	5-0	4-7
	3-2×10	10-7	9-2	8-2	7-6	6-11	6-4	5-10
	3-2×12	12-4	10-8	9-7	8-9	8-1	7-7	7-1
Redwood[h], Western Cedars[h], Ponderosa Pine[h], Red Pine[h]	1-2×6	3-6	2-11	2-6	2-3	2-0	1-11	1-9
	1-2×8	4-6	3-10	3-3	2-11	2-8	2-6	2-4
	1-2×10	5-6	4-9	4-2	3-9	3-5	3-2	3-0
	1-2×12	6-4	5-6	4-11	4-6	4-2	3-11	3-8
	2-2×6	5-3	4-7	4-1	3-6	3-2	2-11	2-8
	2-2×8	6-8	5-9	5-2	4-8	4-2	3-10	3-6
	2-2×10	8-2	7-1	6-4	5-9	5-4	4-10	4-6
	2-2×12	9-5	8-2	7-4	6-8	6-2	5-9	5-5
	3-2×6	6-4	5-8	5-1	4-8	4-3	3-10	3-6
	3-2×8	8-4	7-3	6-5	5-11	5-5	5-1	4-8
	3-2×10	10-2	8-10	7-11	7-2	6-8	6-3	5-11
	3-2×12	11-10	10-3	9-2	8-4	7-9	7-3	6-10

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Interpolation allowed. Extrapolation is not allowed.
b. Beams supporting a single span of joists with or without cantilever.
c. Dead load = 10 psf, $L/\Delta = 360$ at mainspan, $L/\Delta = 180$ at cantilever. Snow load not assumed to be concurrent with live load.
d. No. 2 grade, wet service factor included.
e. Beam depth shall be equal to or greater than the depth of intersecting joist for a flush beam connection.
f. Beam cantilevers are limited to the adjacent beam's span divided by 4.
g. Includes incising factor.
h. Incising factor not included.
i. Deck joist span as shown in Figure R507.5.

TABLE R507.5(1)
MAXIMUM DECK BEAM SPAN – 40 PSF LIVE LOAD (NOT ADOPTED)

TABLE R507.5(2)
MAXIMUM DECK BEAM SPAN – 50 PSF LIVE LOAD (NOT ADOPTED)

TABLE R507.5(3)
MAXIMUM DECK BEAM SPAN – 60 PSF LIVE LOAD[c]

BEAM SPECIES[d]	BEAM SIZE[e]	DECK JOIST SPAN[a,i] (feet)						
		6	8	10	12	14	16	18
		MAXIMUM BEAM SPAN[a,b,f] (feet-inches)						
Douglas fir-larch[g], Spruce-pine-fir[g]	1-2×6	3-8	3-1	2-8	2-4	2-2	2-0	1-10
	1-2×8	5-0	4-1	3-6	3-1	2-10	2-7	2-5
	1-2×10	6-1	5-2	4-6	4-0	3-7	3-4	3-2
	1-2×12	7-1	6-1	5-5	4-10	4-5	4-1	3-10
	2-2×6	5-6	4-9	4-3	3-10	3-5	3-1	2-10
	2-2×8	7-5	6-5	5-9	5-0	4-6	4-1	3-9
	2-2×10	9-0	7-10	7-0	6-4	5-9	5-2	4-10
	2-2×12	10-6	9-1	8-1	7-5	6-10	6-4	5-10
	3-2×6	6-11	6-0	5-4	4-11	4-6	4-2	3-10
	3-2×8	9-3	8-0	7-2	6-6	6-1	5-6	5-0
	3-2×10	11-4	9-10	8-9	8-0	7-5	6-11	6-5
	3-2×12	13-2	11-5	10-2	9-4	8-7	8-1	7-7
Redwood[h], Western Cedars[h], Ponderosa Pine[h], Red Pine[h]	1-2×6	6-9	3-2	2-9	2-5	2-2	2-0	1-11
	1-2×8	4-10	4-2	3-7	3-2	2-11	2-8	2-6
	1-2×10	5-10	5-1	4-6	4-1	3-8	3-5	3-3
	1-2×12	6-10	5-11	5-3	4-10	4-5	4-2	3-11
	2-2×6	5-7	4-10	4-4	3-11	3-6	3-2	2-11
	2-2×8	7-1	6-2	5-6	5-0	4-7	4-2	3-10
	2-2×10	8-8	7-6	6-9	6-2	5-8	5-4	4-11
	2-2×12	10-1	8-9	7-10	7-2	6-7	6-2	5-10
	3-2×6	6-8	6-1	5-5	5-0	4-7	4-3	3-11
	3-2×8	8-9	7-9	6-11	6-4	5-10	5-5	5-2
	3-2×10	10-11	9-5	8-5	7-8	7-2	6-8	6-3
	3-2×12	12-8	10-11	9-9	8-11	8-3	7-9	7-3

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Interpolation permitted. Extrapolation not permitted.
b. Beams supporting a single span of joists with or without cantilever.
c. Dead load = 10 psf, $L/\Delta = 360$ at main span, $L/\Delta = 180$ at cantilever. Snow load not assumed to be concurrent with live load.
d. No. 2 grade, wet service factor included.
e. Beam depth shall be equal to or greater than the depth intersecting joist for a flush beam connection.
f. Beam cantilevers are limited to the adjacent beam's span divided by 4.
g. Includes incising factor.
h. Incising factor not included.
i. Deck joist span as shown in Figure R507.5.

TABLE R507.5(4)
MAXIMUM DECK BEAM SPAN – 70 PSF LIVE LOAD[c]

BEAM SPECIES[d]	BEAM SIZE[e]	DECK JOIST SPAN[a,i] (feet)						
		6	8	10	12	14	16	18
		MAXIMUM BEAM SPAN[a,b,f] (feet-inches)						
Douglas fir-larch[g], Spruce-pine-fir[g]	1-2×6	3-5	2-10	2-5	2-2	2-0	1-10	1-9
	1-2×8	4-7	3-8	3-2	2-10	2-7	2-5	2-4
	1-2×10	5-8	4-9	4-1	3-8	3-4	3-1	2-11
	1-2×12	6-7	5-8	5-0	4-6	4-1	3-10	3-7
	2-2×6	5-2	4-6	4-0	3-5	3-1	2-10	2-7
	2-2×8	6-11	6-0	5-3	4-7	4-1	3-8	3-5
	2-2×10	8-5	7-4	6-6	5-10	5-2	4-9	4-5
	2-2×12	9-10	8-6	7-7	6-11	6-4	5-9	5-4
	3-2×6	6-6	5-7	5-0	4-7	4-2	3-9	3-5
	3-2×8	8-8	7-6	6-8	6-1	5-6	5-0	4-7
	3-2×10	10-7	9-2	8-2	7-6	6-11	6-4	5-10
	3-2×12	12-4	10-8	9-7	8-9	8-1	7-7	7-1
Redwood[h], Western Cedars[h], Ponderosa Pine[h], Red Pine[h]	1-2×6	3-6	2-11	2-6	2-3	2-0	1-11	1-9
	1-2×8	4-6	3-10	3-3	2-11	2-8	2-6	2-4
	1-2×10	5-6	4-9	4-2	3-9	3-5	3-2	3-0
	1-2×12	6-4	5-6	4-11	4-6	4-2	3-11	3-8
	2-2×6	5-3	4-7	4-1	3-6	3-2	2-11	2-8
	2-2×8	6-8	5-9	5-2	4-8	4-2	3-10	3-6
	2-2×10	8-2	7-1	6-4	5-9	5-4	4-10	4-6
	2-2×12	9-5	8-2	7-4	6-8	6-2	5-9	5-5
	3-2×6	6-4	5-8	5-1	4-8	4-3	3-10	3-6
	3-2×8	8-4	7-3	6-5	5-11	5-5	5-1	4-8
	3-2×10	10-2	8-2	7-11	7-2	6-8	6-3	5-11
	3-2×12	11-10	10-3	9-2	8-4	7-9	7-3	7

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.

a. Interpolation permitted. Extrapolation not permitted.
b. Beams supporting a single span of joists with or without cantilever.
c. Dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever. Snow load not assumed to be concurrent with live load.
d. No. 2 grade, wet service factor included.
e. Beam depth shall be equal to or greater than the depth intersecting joist for a flush beam connection.
f. Beam cantilevers are limited to the adjacent beam's span divided by 4.
g. Includes incising factor.
h. Incising factor not included.
i. Deck joist span as shown in Figure R507.5.

R507.6 Deck joists. Maximum allowable spans for wood deck joists, as shown in Figure R507.6, shall be in accordance with Table R507.6. The maximum joist spacing shall be limited by the decking materials in accordance with Table R507.7.

TABLE R507.6
MAXIMUM DECK JOIST SPANS

((~~LOAD~~[a] ~~(psf)~~	~~JOIST SPECIES~~[b]	~~JOIST SIZE~~	~~ALLOWABLE JOIST SPAN~~[c] ~~(feet-inches)~~			~~MAXIMUM CANTILEVER~~[d] ~~(feet-inches) ADJACENT JOIST SPAN~~[g]							
			~~JOIST SPACING (inches)~~			~~JOIST BACK SPAN~~[g] ~~(feet)~~							
			~~12~~	~~16~~	~~24~~	~~4~~	~~6~~	~~8~~	~~10~~	~~12~~	~~14~~	~~16~~	~~18~~
~~60 Ground Snow Load~~	~~Douglas Fir[c], Hem-fir[c], SPF[c]~~	~~2×6~~	~~8-4~~	~~7-6~~	~~6-2~~	~~1-0~~	~~1-6~~	~~1-4~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~
		~~2×8~~	~~10-11~~	~~9-11~~	~~8-3~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-2~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~
		~~2×10~~	~~13-11~~	~~12-4~~	~~10-0~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-6~~	~~2-10~~	~~NP~~	~~NP~~	~~NP~~
		~~2×12~~	~~16-6~~	~~14-3~~	~~11-8~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-6~~	~~3-0~~	~~3-5~~	~~3-5~~	~~NP~~
	~~Redwood[f], Western Cedars[f], Ponderosa Pine[f], Red Pine[f]~~	~~2×6~~	~~7-9~~	~~7-0~~	~~6-2~~	~~1-0~~	~~1-4~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~
		~~2×8~~	~~10-2~~	~~9-3~~	~~7-11~~	~~1-0~~	~~1-6~~	~~2-0~~	~~1-11~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~
		~~2×10~~	~~13-0~~	~~11-9~~	~~9-7~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-6~~	~~2-7~~	~~NP~~	~~NP~~	~~NP~~
		~~2×12~~	~~15-9~~	~~13-8~~	~~11-2~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-6~~	~~3-0~~	~~3-2~~	~~NP~~	~~NP~~
~~70 Ground Snow Load~~	~~Douglas Fir[c], Hem-fir[c], SPF[c]~~	~~2×6~~	~~7-11~~	~~7-1~~	~~5-9~~	~~1-0~~	~~1-6~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~
		~~2×8~~	~~10-5~~	~~9-5~~	~~7-9~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-1~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~
		~~2×10~~	~~13-3~~	~~11-6~~	~~9-5~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-6~~	~~2-8~~	~~NP~~	~~NP~~	~~NP~~
		~~2×12~~	~~15-5~~	~~13-4~~	~~10-11~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-6~~	~~3-0~~	~~3-3~~	~~NP~~	~~NP~~
	~~Redwood[f], Western Cedars[f], Ponderosa Pine[f], Red Pine[f]~~	~~2×6~~	~~7-4~~	~~6-8~~	~~5-10~~	~~1-0~~	~~1-4~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~
		~~2×8~~	~~9-8~~	~~8-10~~	~~7-4~~	~~1-0~~	~~1-6~~	~~1-11~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~	~~NP~~
		~~2×10~~	~~12-4~~	~~11-0~~	~~9-0~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-6~~	~~2-6~~	~~NP~~	~~NP~~	~~NP~~
		~~2×12~~	~~14-9~~	~~12-9~~	~~10-5~~	~~1-0~~	~~1-6~~	~~2-0~~	~~2-6~~	~~3-0~~	~~3-0~~	~~NP~~	~~NP~~

~~For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg, NP = Not permitted.~~
~~a. Dead load = 10 psf dead load. Snow load not assumed to be concurrent with live load.~~
~~b. No. 2 grade, wet service factor included.~~
~~c. L/Δ = 360 at main span.~~
~~d. L/Δ = 180 at cantilever with 220-pound point load applied to end.~~
~~e. Includes incising factor.~~
~~f. Incising factor not included.~~
~~g. Interpolation permitted. Extrapolation not permitted.~~))

LOAD[a] (psf)	JOIST SPECIES[b]	JOIST SIZE	ALLOWABLE JOIST SPAN[b,c] (feet-inches)			MAXIMUM CANTILEVER[f,g] (feet-inches)							
			Joist Spacing (inches)			Adjacent Joist Back Span[g] (feet)							
			12	16	24	4	6	8	10	12	14	16	18
60 Live Load or 70 Ground Snow Load	Douglas fir-larch[e], Hem-fir[e], Spruce-pine-fir[e]	2×6	7-11	7-1	5-9	1-0	1-6	NP	NP	NP	NP	NP	NP
		2×8	10-5	9-5	7-8	1-0	1-6	2-0	2-1	NP	NP	NP	NP
		2×10	13-3	11-6	9-5	1-0	1-6	2-0	2-6	2-8	NP	NP	NP
		2×12	15-5	13-4	10-11	1-0	1-6	2-0	2-6	3-0	3-3	NP	NP
	Redwood[f], Western Cedars[f], Ponderosa Pine[f], Red Pine[f]	2×6	7-4	6-8	5-10	1-0	1-4	NP	NP	NP	NP	NP	NP
		2×8	9-8	8-10	7-4	1-0	1-6	1-11	NP	NP	NP	NP	NP
		2×10	12-4	11-0	9-0	1-0	1-6	2-0	2-6	2-6	NP	NP	NP
		2×12	14-9	12-9	10-5	1-0	1-6	2-0	2-6	3-0	3-0	NP	NP

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg, NP = Not permitted.
a. Dead load = 10 psf dead load. Snow load not assumed to be concurrent with live load.
b. No. 2 grade, wet service factor included.
c. L/Δ = 360 at main span.
d. L/Δ = 180 at cantilever with 220-pound point load applied to end.
e. Includes incising factor.
f. Incising factor not included.
g. Interpolation permitted. Extrapolation not permitted.

R507.9.1.2 Band joist details. Band joists supporting a ledger shall be a minimum 2-inch-nominal (51 mm), solid-sawn, spruce-pine-fir or better lumber or minimum 1-inch (25 mm) nominal engineered wood rim boards in accordance with Section R502.1.7. Band joists shall bear fully on the primary structure capable of supporting all required loads.

TABLE R507.9.1.3(1)
DECK LEDGER CONNECTION TO BAND JOIST

LOAD[c] (psf)	JOIST SPAN[a] (feet)	On-CENTER SPACING OF FASTENERS[b] (inches)		
		1/2-inch diameter lag screw with 1/2-inch maximum sheathing[d,e]	1/2-inch diameter bolt with 1/2-inch maximum sheathing[e]	1/2-inch diameter bolt with 1-inch maximum sheathing[f]
60 Live Load or 70 Ground Snow Load	6	22	36	35
	8	16	31	26
	10	13	25	21
	12	11	20	17
	14	9	17	15
	16	8	15	13
	18	7	13	11

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.
a. Interpolation permitted. Extrapolation is not permitted.
b. Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
c. Dead load = 10 psf. Snow load shall not be assumed to act concurrently with live load.
d. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
e. Sheathing shall be wood structural panel or solid sawn lumber.
f. Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber or foam sheathing. Up to 1/2-inch thickness of stacked washers shall be permitted to substitute for up to 1/2 inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

R507.9.2 Deck lateral load connections. Lateral loads shall be transferred to the ground or to a structure capable of transmitting them to the ground. Where the lateral load connection is provided in accordance with Figure R507.9.2(1), hold-down tension devices shall be installed in not less than two locations per deck, within 24 inches of each end of the deck. Each device shall have an allowable stress design capacity of not less than 1500 pounds (6672 N). Where the lateral load connections are provided in accordance with Figure R507.9.2(2), the hold-down tension devices shall be installed in not less than four locations per deck, and each device shall have an allowable stress design capacity of not less than 750 pounds (3336 N).

EXCEPTION: Decks not more than 30 inches above grade at any point may be unattached.

TABLE R507.9.1
PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS

MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS				
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger[a]	2 inches[d]	3/4 inch	2 inches[b]	1 5/8 inches[b]
Band joist[c]	3/4 inch	2 inches[e]	2 inches[b]	1 5/8 inches[b]

For SI: 1 inch = 25.4 mm.
a Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.2.1(1).
b Maximum 5 inches.
c For engineered rim joists, the manufacturer's recommendations shall govern.
d The minimum distance from bottom row of lag screws to the top edge of the ledger shall be in accordance with Figure R507.2.1(1).
e The 2 inches may be reduced to 3/4 inch when the band joist is directly supported by a mudsill, a header or by double top wall plates.

TABLE R507.9.3(1)
DECK LEGER CONNECTION TO BAND JOIST

LOAD[c] (psf)	JOIST SPAN[a] (feet)	1/2-inch diameter leg screw with 1/2-inch maximum sheathing[d, e]	1/2-inch diameter bolt with 1/2-inch maximum sheathing[e]	1/2-inch diameter bolt with 1-inch maximum sheathing[f]
		ON-CENTER SPACING OF FASTENERS[b] (inches)		
60 Ground Snow Load	6	25	36	36
	8	18	35	30
	10	15	28	24
	12	12	23	20
	14	10	20	17
	16	9	17	15
	18	8	15	13
70 Ground Snow Load	6	22	36	35
	8	16	31	26
	10	13	25	21
	12	11	20	17
	14	9	17	15
	16	8	15	13
	18	7	13	11

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

a. Interpolation permitted. Extrapolation not permitted.
b. Legers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
c. Dead Load = 10 psf. Snow load shall not be assumed to act concurrently with live load.
d. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
e. Sheathing shall be wood structural panel or solid sawn lumber.
f. Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber or foam sheathing. Up to 1/2 inch thickness of stacked washers shall be permitted to substitute for up to 1/2 inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-0602 Section R602—Wood wall framing.

((~~**R602.1.1 Sawn lumber.** Sawn lumber shall be identified by a grade mark of an accredited lumber grading or inspection agency and have design values certified by an accreditation body that complies with DOC PS 20. In lieu of a grade mark, a certification of inspection issued by a lumber grading or inspection agency meeting the requirements of this section shall be accepted.~~))

R602.1.1.1 Used sawn lumber. Used sawn lumber identified with a grade mark, in good condition and devoid of areas of decay shall be assumed to meet the requirements of Section 602.1.1 or shall comply with the following:

1. Dimensional lumber not identified with a grade mark that has a nominal thickness of 2 inches with a nominal width of 6 inches, or less, shall be assumed to be spruce-pine-fir stud grade and shall have structural properties assigned in accordance with current adopted standards. All other dimensional lumber shall be assumed to be hem-fir No. 2 grade and shall have structural properties assigned in accordance with current adopted standards.

R602.9 Cripple walls. Foundation cripple walls shall be framed of studs not smaller than the studding above. When exceeding 4 feet (1219 mm) in height, such walls shall be framed of studs having the size required for an additional story.

Cripple walls supporting bearing walls or exterior walls or interior braced wall panels as required in Sections R403.1.2 and R602.10.9.1 with a stud height less than 14 inches (356 mm) shall be continuously sheathed on one side with wood structural panels fastened to both the top and bottom plates in accordance with Table R602.3(1), or the cripple walls shall be constructed of solid blocking. All cripple walls shall be supported on continuous footings or foundations.

EXCEPTION: Footings supporting cripple walls used to support interior braced wall panels as required in Sections R403.1.2 and R602.10.9.1 shall be continuous for the required length of the cripple wall and constructed beyond the cripple wall for a minimum distance of 4 inches and a maximum distance of the footing thickness. The footings extension is not required at intersections with other footings.

R602.10.10 Cripple wall bracing. Cripple walls shall be constructed in accordance with Section R602.9 and braced in accordance with this section. Cripple walls supporting bearing walls or exterior walls or interior braced wall panels as required in Section R403.1.2 shall be braced with the length and method of bracing used for the wall above in accordance with Tables R602.10.3(1) and R602.10.3(3), and the applicable adjustment factors in Table R602.10.3(2) or R602.10.3(4), respectively, except the length of the cripple wall bracing shall be multiplied by a factor of 1.15.

Where gypsum wall board is not used on the inside of the cripple wall bracing, the length adjustments for the elimination of the gypsum wallboard, or equivalent, shall be applied as directed in Tables R602.10.3(2) and R602.10.3(4) to the length of cripple wall bracing required. This adjustment shall be taken in addition to the 1.15 increase.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-0703 Section R703—Exterior covering.

((**R703.1 General.** ~~Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.4.~~

~~EXCEPTION: Log walls designed and constructed in accordance with the provisions of ICC 400.~~))

R703.1.1 Water resistance. The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining water that enters the assembly to the exterior. Protection

against condensation in the exterior wall assembly shall be provided in accordance with Section R702.7 of this code.

EXCEPTIONS:
1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed according to Section R703.4 or R703.8.
2. Compliance with the requirements for a means of drainage, and the requirements of Sections R703.2 and R703.4, shall not be required for an exterior wall envelope that has been demonstrated to resist wind-driven rain through testing of the exterior wall envelope, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
2.2. Exterior wall envelope test assemblies shall be at least 4 feet (1219 mm) by 8 feet (2438 mm) in size.
2.3. Exterior wall assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (299Pa).
2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.
The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the exterior wall envelope; joints at the perimeter of opening penetration; or intersections of terminations with dissimilar materials.
3. The requirement for a means of drainage shall not be construed to mean an air space cavity under the exterior cladding for an exterior wall clad with panel or lapped siding made of plywood, engineered wood, hardboard, or fiber cement. A water-resistive barrier as required by Section R703.2 will be required on exterior walls.

R703.2 Water-resistive barrier. Not fewer than one layer of water-resistive barrier shall be applied over studs or sheathing with flashing as indicated in Section R703.4, in such a manner as to provide a continuous water resistive barrier behind the exterior wall veneer. Water-resistive barrier materials shall comply with one of the following:

1. No. 15 felt complying with ASTM D226, Type 1.
2. ASTM E2556, Type 1 or 2.
3. ASTM E331 in accordance with Section R703.1.1; or
4. Other approved materials in accordance with the manufacturer's installation instructions.

R703.4 Flashing. Approved corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structure framing components. Self-adhered membranes used as flashing shall comply with AAMA 711. Fluid-applied membranes used as flashing in exterior walls shall comply with AAMA 714. The flashing shall extend to the surface of the exterior wall finish. Approved corrosion-resistant flashing shall be installed at all of the following locations:

1. Exterior window and door openings. Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to the water resistive barrier complying with Section 703.2 for subsequent drainage. Mechanically attached flexible flashings shall comply with AAMA 712.
2. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings.
3. Under and at the ends of masonry, wood or metal copings and sills.
4. Continuously above all projecting wood trim.
5. Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.
6. At wall and roof intersections.
7. At built-in gutters.

R703.10.2 Lap siding. Fiber-cement lap siding having a maximum width of 12 inches (305 mm) shall comply with the requirements of ASTM C 1186, Type A, minimum Grade II or ISO 8336, Category A, minimum Class 2. Lap siding shall be lapped a minimum of 1 1/4 inches (32 mm) and lap siding shall be installed in accordance with the manufacturer's installation instructions or shall be designed to comply with Section R703.1. Lap siding courses shall be installed with the fastener heads

exposed or concealed, in accordance with Table R703.3(1) or approved manufacturer's instructions.

AMENDATORY SECTION (Amending WSR 13-04-068, filed 2/1/13, effective 7/1/13)

WAC 51-51-1004 Section R1004—Factory-built fireplaces.

R1004.1.1 Emission standards for factory-built fireplaces. No new or used factory-built fireplace shall be installed in Washington state unless it is certified and labeled in accordance with procedures and criteria specified in ASTM E2558 Standard Test Method for determining particulate matter emission from fires in ((~~low mass~~)) wood burning fireplaces.

To certify an entire fireplace model line, the internal assembly shall be tested to determine its particulate matter emission performance. Retesting and recertifying is required if the design and construction specifications of the fireplace model line internal assembly change. Testing for certification shall be performed by a Washington state department of ecology (DOE) approved and U.S. Environmental Protection Agency (EPA) accredited laboratory.

R1004.1.2 Emission standards for certified masonry and concrete fireplaces. Masonry and concrete fireplace model lines certified to Washington State Building Code Standard 31-2 prior to July 1, 2013, may retain certification provided the design and construction specifications of the fireplace model line internal assembly do not change.

NEW SECTION

WAC 51-51-1503 Section M1503—Domestic cooking exhaust equipment.

M1503.2.1 Open-top broiler exhaust. Domestic open-top broiler units shall be provided with a metal exhaust hood, having a minimum thickness of 0.0157 inch (0.3950 mm) (No. 28 gage). Such hoods shall be installed with a clearance of not less than 1/4 inch (6.4 mm) between the hood and the underside of combustible material or cabinets. A clearance of not less than 24 inches (610 mm) shall be maintained between the cooking surface and the combustible material or cabinets. The hood width shall not be less than the width of the broiler unit and shall extend over the entire unit.

EXCEPTIONS: 1. Broiler units that incorporate an integral exhaust system, and that are listed and labeled for use without an exhaust hood, shall not be required to have an exhaust hood.
2. Broiler units permanently installed outside the building envelope and having the cooking surface at least 5 feet below a 1-hour fire resistance rated ceiling shall not be required to have an exhaust hood.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-4400 Referenced standards.

ANCE

NMX-J-521/2-40-ANCE—2019/CAN/CSA-22.2 No. 60335-2-40—19/UL 60335-2-40-2019 Household and Similar Electrical Appliances - Safety-Part 2-40((-~~Safety~~)): Particular Requirements for Electric Heat Pumps, Air-Conditioners and Dehumidifiers.
M1403.1, M1412.1, M1413.1

ANSI

LC 1/CSA 6.26—18: Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST)
G2414.5.4, G2411.3, G2415.5
403.5.5

ASHRAE

34—2019: Designation and Safety Classification of Refrigerants
M1411.1

ASTM

E2556/E2556M-10: Standard Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment.
M1411.1

E2558-2013: Standard Test Method for Determining Particulate Matter Emissions from Fires in Wood-burning Fireplaces
R1004.1.1

CSA

CAN/CSA/C22.2 No. 60335-2-40—2012 60335-2-40—2019

NMX-J-521/2-40-ANCE—2019/CAN/CSA-C22.2 No. 60335-2-40—19/UL 60335-2-40-2019 Household and Similar Electric Appliances, Part 2-40-Safety: Particular Requirements for Electric Heat Pumps, Air-Conditioners and Dehumidifiers.
M2006.1

UL

UL/CSA/ANCE 60335-2-40—2019 Household and Similar Electrical Appliances Safety-Part 2-40: Particular Requirements for Electrical Heat Pumps, Air Conditioners and Dehumidifiers.
M1403.1, M1412.1, M1413.1

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-60104 Appendix Q—Tiny houses.

AQ102 Definitions.
EGRESS ROOF ACCESS WINDOW. See Chapter 2.

LANDING PLATFORM. See Chapter 2.
LOFT. This definition is not adopted.
SLEEPING LOFT. See Chapter 2.
TINY HOUSE. A *dwelling unit* that is 400 square feet (37 m^2) or less in floor area excluding *sleeping lofts*.

AQ103.1 Minimum ceiling height. Habitable space in tiny houses shall have a ceiling height of not less than 6 feet 8 inches (2032 mm). Bathrooms, toilet rooms and kitchens shall have a ceiling height of not less than 6 feet 4 inches (1930 mm). Obstructions including, but not limited to, beams, girders, ducts and lighting, shall not extend below these minimum ceiling heights.

EXCEPTION: Ceiling heights in *sleeping lofts* shall be in accordance with Section R326.

((~~**AQ103 Ceiling height.** This section is not adopted.~~))

AQ104 Energy conservation.

AQ104.1 Air leakage testing. The air leakage rate for tiny houses shall not exceed 0.30 cfm at 50 Pascals of pressure per feet of the dwelling unit enclosure area. Testing shall be conducted in accordance with RESNET/ICC 380, ASTM E 779 or ASTM E 1827 and reported at a pressure of 0.2 inch w.g. (50 Pascals). Where required by the code official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed after the continuous air barrier, including all penetrations, is completed and sealed.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weather stripping or other infiltration control measures.
2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.
3. Interior doors, if installed at the time of the test, shall be open.
4. Exterior louvers for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.
5. Heating and cooling systems, if installed at the time of the test, shall be turned off.
6. Supply and return registers, if installed at the time of the test, shall be fully open.

((~~**AQ104 Lofts.** This section is not adopted.~~))

AQ104.1.1 Whole house mechanical ventilation. Where an air leakage rate not exceeding 0.30 cfm per ft of the dwelling unit enclosure area in accordance with Section AQ106.1 is provided, the tiny house shall be provided with whole house mechanical ventilation in accordance with Section M1505.4.

AQ105 Emergency escape and rescue openings. This section is not adopted.

AMENDATORY SECTION (Amending WSR 20-03-023, filed 1/6/20, effective 7/1/20)

WAC 51-51-60105 Appendix U—Dwelling unit fire sprinkler systems. The design and installation of residential fire sprinkler systems shall be in accordance with the 2018 International Residential Code Section P2904 Dwelling Unit Fire Sprinkler Systems.

P2904.1.1 Required sprinkler locations. Sprinklers shall be installed to protect all areas of a dwelling unit.

EXCEPTIONS:
1. Uninhabitable attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not require sprinklers. In uninhabitable attics, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the remainder of the space.
2. Clothes closets, linen closets and pantries not exceeding 24 square feet (2.2 m^2) in area, with the smallest dimension not greater than 3 feet (915 mm) and having wall and ceiling surfaces of gypsum board.
3. Bathrooms not more than 55 square feet (5.1 m^2) in area.
4. Garages; carports; exterior porches; unheated entry areas, such as mud rooms, that are adjacent to an exterior door; and similar areas.

AMENDATORY SECTION (Amending WSR 16-03-025, filed 1/11/16, effective 7/1/16)

WAC 51-51-60106 Appendix ((U)) T—Solar-ready provisions-detached one-and two-family dwellings, multiple single-family dwellings (townhouses). The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

((~~U101~~)) AT101 Scope.

((~~U101.1~~)) AT101.1 General. These provisions shall be applicable for new construction where solar-ready provisions are required.

((~~U102~~)) AT102 General definitions. Solar-ready zone. A section or sections of the roof or building overhang designated and reserved for the future installation of a solar photovoltaic or solar water-heating system.

((~~U103~~)) AT103 Solar ready zone.

((~~U103.1~~)) AT103.1 General. New detached one- and two-family dwellings, and multiple single-family dwellings (townhouses) with not less than 600 square feet (55.74 m^2) of roof area oriented between 90 degrees and 270 degrees of true north shall comply with Sections U103.2 through U103.10.

EXCEPTIONS:
1. New residential buildings with a permanently installed on-site renewable energy system.
2. A building where all areas of the roof that would otherwise meet the requirements of Section ((~~U103~~)) AT103 are in full or partial shade for more than 70 percent of daylight hours annually.

((~~U103.2~~)) AT103.2 Construction document requirements for solar ready zone. Construction documents shall indicate the solar ready zone.

((~~U103.3~~)) AT103.3 Solar-ready zone area. The total solar-ready zone area shall be not less than 300 square feet (27.87 m^2) exclusive of mandatory access or set back areas as required by this code. New multiple single-family dwellings (townhouses) three stories or less in height above grade plane and with a total floor area less than or equal to 2,000 square feet (185.8 m^2) per dwelling shall have a solar-ready zone area of not less than 150 square feet (13.94 m^2). The solar-ready zone shall be composed of areas not less than 5 feet (1.52

m) in width and not less than 80 square feet (7.44 m^2) exclusive of access or set back areas as required in this code or the applicable provisions of the *International Fire Code*. No portion of the solar zone shall be located on a roof slope greater than 2:12 that faces within 45 degrees of true north.

((~~U103.4~~)) AT103.4 Obstructions. Solar-ready zones shall be free from obstructions including, but not limited to, vents, chimneys, and roof-mounted equipment.

((~~U103.5~~)) AT103.5 Shading. The solar-ready zone shall be set back from any existing or new permanently affixed object on the building or site that is located south, east, or west of the solar zone a distance at least two times the object's height above the nearest point on the roof surface. Such objects include, but are not limited to, taller portions of the building itself, parapets, chimneys, antennas, signage, rooftop equipment, trees and roof plantings.

((~~U103.6~~)) AT103.6 Capped roof penetration sleeve. A capped roof penetration sleeve shall be provided adjacent to a solar-ready zone when the solar-ready zone has a roof slope of 2:12 or less. The capped roof penetration sleeve shall be sized to accommodate the future photovoltaic system conduit, but shall have an inside diameter not less than 1 1/4 inches.

((~~U103.7~~)) AT103.7 Roof load documentation. The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents.

((~~U103.8~~)) AT103.8 Interconnection pathway. Construction documents shall indicate pathways for routing of conduit or plumbing from the solar-ready zone to the electrical service panel or service hot water system.

((~~U103.9~~)) AT103.9 Electrical service reserved space. The main electrical service or feeder panel for each dwelling unit shall have a reserved space to allow installation of a dual pole circuit breaker for future solar electric installation and shall be labeled "For Future Solar Electric." The reserved space shall be positioned at the opposite (load) end from the input feeder location or main circuit location.

((~~U103.10~~)) AT103.10 Construction documentation certificate. A permanent certificate, indicating the solar-ready zone and other requirements of this section, shall be posted near the electrical distribution panel, water heater or other conspicuous location by the builder or registered design professional.