CITY OF WHITE SALMON
RESIDENITAL CODE SUMMARY

Structural and Mechanical Requirements

This checklist becomes part of the approved plans and permit. Construction must comply with the 2015 IRC code requirements. Approved plans must be kept on the job side. Building must be built to conform to the approved plans. Plan changes require Building Department approval and may require designer approval. Refer to the building permit card for required inspections. Final inspection approval and certificate of occupancy are required before occupancy.

These regulations shall be incorporated into this project in addition to any requirements appearing on the construction plans. Circled regulations are of significant importance. **The approval of plans and specifications does not permit the violation of any section of the building code or other city ordinance or state law.**

Refences are to the 2015 International Residential Code unless noted otherwise. Language stated below may not be exactly as appears in the Code. However, the interpretation is consistent. If the exact Code text is required, see referenced Code sections.

BUILDING CODE REQUIREMENTS

1. **R106.1.2** Manufacturer's installation instructions, as required by this code, shall be available on the job site at the time of inspection.
2. **R106.3.1** Approved plans, calculations, and other paper work shall be kept on the job-site at all times.
3. **R109.1** Construction or work for which a permit is required shall be subject to inspection by the building official and such construction or work shall remain accessible and exposed for inspection purposes until approved. Approval as a result of an inspection shall not be constructed to be an approval of a violation of the provisions of this code or other laws or ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code, other laws or ordinances of the jurisdiction shall not be valid.
4. **R109.1.4.1** After the framing and prior to the installation of interior finishes, the Building Official shall be noted in writing by the general contractor that all moisture sensitive wood framing member used to the construction have a moisture content of not more than 19%. **Attached form must be filled out and presented to the inspector before approval for cover can be granted.**
5. **R109.1.6** A final inspection shall be requested once all work and corrections have been made – **Prior to occupancy.**
6. **R109.3** It shall be the duty of the permit holder or their authorized agent to notify the Building Department when work is ready for inspection.
7. **R109.4** Work shall not be done beyond the point indicated in each successive inspection with-out first obtaining approval from the Building Department.
8. **R110.1** No building or structure shall be used or occupied without first obtaining a Certificate of Occupancy.
9. **R301.2.2.2.5** Irregular Portions of structures shall be designed in accordance with accepted engineering practice. A building is considered "irregular" when any of the following conditions exist (does not include code exceptions):
    1. Exterior shear wall lines or braced wall panels are not in one plane vertically from the foundation to the uppermost story in which they are required.
    2. When a section of a floor or roof is not laterally supported by shear walls or braced wall lines on all edges.
    3. When a braced wall panel occurs over an opening in the wall below and ends at a horizontal distance greater than one (1) foot from the edge of an opening.

4. Where openings in a floor or roof diaphragms have a dimension greater than 50% of the distance between lines of bracing or an area greater than 25% of the area between orthogonal pairs of braced wall lines are present.
5. When portions of a floor level are vertically offset.
6. When shear walls and braced wail lines do not occur in two perpendicular directions.
7. When an exterior braced wall line is consented with dissimilar braced wall panels.

10. **R303.3** All rooms containing bathing or spa facilities shall be provided with a mechanical ventilation system and shall be designed to have the capacity to exhaust a minimum 50 cfm intermittent or 20 cfm continuous.
11. **R305** Habitable rooms, hallways, bathrooms, laundry rooms, and basements shall have a ceiling height of not less than 7'. Beams and girders spaced not less than 4' on center may project not more than 6" below the required ceiling height. Not more than 75% of the bathroom or toilet room is permitted to have a sloped ceiling less than 7' provided an area not less than 21" x 24" in front of the toilet and lavatory and an area not less than 24" x 30" in front of the tub or shower has a ceiling height not less than 6' x 4".
12. **R307.1** Bathroom fixtures shall have the following clearances: Water Closet – 21" in front and 30" wide with a minimum 15" from center of water closet to sidewall or tub; Lavatory – 4" clear at side and 21" at front; Showers shall be a minimum of 30" x 30" with 24" minimum clearance in front of opening; Tubs – minimum 21" clear at open side.
13. **R302.5** Openings from a garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8", solid or honeycomb core steel doors not less than 1 3/8" or a 20 minute fire rated door.
14. **R302.5.2** Ducts in the garage and ducts penetrating the walls and ceilings shall be made for a minimum 26 gauge sheet metal.
15. **R302.6** The garage shall be separated from the residence and its attic area by not less than ½" gypsum board applied to the garage side. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than 5/8" Type X gypsum board or equivalent. Where the separation is a floor-ceiling assembly, the structure supporting the separation shall also be protected by not less than ½" inch gypsum board or equivalent.
16. **R308.4** Hazardous locations. The following shall be considered specific hazardous locations for the purpose of glazing:
    1. Swinging doors.
    2. Sliding doors.
    3. Storm doors.
    4. Unframed swinging doors.
    5. Doors and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers. Any part of the building wall enclosing these compartments where the bottom edge of the glazing is less than 60" from the standing or walking surface.
    6. Fixed or operating panels next to a door where the nearest vertical edge is within a 24" arc of the door in a closed position and whose bottom edge is less than 60" from the floor.
    7. Glazing meeting all of the following conditions – exposed area greater than 9 square feet, bottom edge less than 18" from the floor, top edge greater than 36" from the floor and one or more walking surfaces within 36" horizontally.
    8. Glazing in railing systems.
    9. Glazing in walls and fences enclosing indoor and outdoor pools, hot tubs and spas where the bottom edge is less than 60" above the walking surface and 60" horizontally form the water's edge.
    10. Glazing adjacent to stairways, landings and ramps within 36" horizontally of a walking surface where the bottom edge is less than 60" from the floor.
    11. Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36" above the landing and within a 60" horizontal arc less than 180 degrees from the bottom tread nosing.
17. **R310** Sleeping rooms and basements with habitable space shall have at least one operable emergency escape and rescuer opening. All emergency escape and rescue openings shall have a net clear opening size of 5.7 square feet. Exception: Grade floor windows shall have a minimum net clear opening of 5 square feet. Egress windows shall have a maximum sill height of 44" above the floor; have a minimum net clear width of 20" and have a minimum net clear height of 24"

18. **R311.3.1** The required landing on the interior side of exterior doors shall not be more than 1 ½" below the threshold. The exterior landing at an exterior doorway shall not be more than 8" below the threshold provided the door does not swing over the landing. **Exception:** Where a stairway of three or fewer risers is located on the exterior side of the door (other than the required exit door), a landing is not require provide the door does not swing over the stairs. A landing is required to be the width of the door or stairway and 36" in the travel direction.
19. **R311.7** Stairways shall be a minimum of 36" in width above the handrail and have a clear width of 31 ½" at and below the handrail. Handrails shall not project more than 4 ½" into the required width; headroom shall not be less than 6' – 8"; maximum riser height is 7 ¾" and the minimum run is 9"; the greatest riser height or thread depth shall not exceed the smallest by more than 3/8"; the greatest nosing projection shall not exceed the smallest by more than 3/8" including floors and landings. The rise of a step or steps shall not be less than 4" or greater than 8". Enclosed useable space under stairs shall be sheathed with minimum ½" sheetrock. Winders: Winder treads shall have a minimum thread depth of 9" measured at a point 12" from the side where the thread is narrower. Winder treads shall have a minimum thread depth of 6" at any point.
20. **R311.7.5** There shall be a floor or landing at the top and bottom of each stairway. Where the stairway has a straight run the minimum depth in the direction of travel shall not be less than 36". A flight of stairs shall not have a vertical rise larger than 12' between floor levels or landings. **Exceptions:** A floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage, provided the door does not swing over the stairs.
21. **R311.7.7** Handrails shall be provided on at least one side of each continuous run of treads or flights with four or more risers. The continuous handrail for winders shall be located on the side where the tread is narrower. Handrails shall be mounted between 30" and 38" above the nosing of the treads. Handrails shall be continuous the full length of stairways from a point directly above the top riser to a point directly above the lower riser. Handrails adjacent to the wall shall have a space of not less than 1 ½" between the wall and the handrail.
22. **R311.7.7.3** Handrail Grip Size:
    1. Type I – Handrails with circular cross section shall have an outside diameter of at least 1 ¼" and not greater than 2". If the handrail is not circular it shall have a perimeter dimension of at least 4" and not greater than 6 ½" with a maximum cross section dimension of 2 ¼".
    2. Type II – Handrails with a perimeter greater than 6 ½" shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within ¾" measured vertically from the tallest portion of the profile and achieve depth of at least 5/16" within 7/8" below the widest portion of the profile. The required depth shall continue for at least 3/8" to a level that is not less than 1 ¾" below the tallest portion of the profile. The minimum width of the handrail above the recess shall not be less than 1 ¼" to a maximum of 2 ¾". Edges shall have a minimum radius of .01".
23. **R312** Porches, balconies, stairs, ramps or raised floors more than 30" above the floor or grade below shall have "guards" not less than 36" high. Open sides of stairs shall have a guard of not less than 34" high. Required guards shall have intermediate rails or ornamental closures that do not allow the passage of a sphere 4" or more in diameter. Exceptions: The triangular openings formed by the riser, tread and bottom rail are permitted to be as such a size the a sphere 6" in diameter cannot pass through. Openings for required guards on open sides of stairs shall not allow a passage of a 5" sphere or more in diameter to pass through.
24. **R314/315** Smoke alarms shall be installed in the following location: In each sleeping room. Outside each sleeping area in the immediate vicinity of the bedrooms. On each additional story of the dwelling, including basements and cellars but not including crawl spaces and uninhabitable attics. Multiple alarms shall be interconnected within individual units. Required smoke alarms shall not be installed in a garage, kitchen, or area below 40°F. Ionization type alarms shall not be horizontally closer than 3' to a kitchen door, bathroom door containing a tub or shower, or the supply register of an HVAC system. Alteration, repairs and additions: When interior alterations, repairs or additions requiring a structural permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual unit shall be provided with smoke alarms located as required for new dwellings; the smoke alarms shall be interconnected and hard wired. **Expectations:** Smoke alarms in existing areas shall not be require to be interconnected and hard wired where the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure. For all new construction, approved single station carbon monoxide alarms or a household carbon monoxide

detection system shall be installed. Alarms shall be located in each bedroom or within 15' outside each bedroom door. In existing dwellings where a new carbon monoxide source is introduced or work requiring a structural permit occurs, carbon monoxide alarms shall be provided.

25. **R317** Protection against decay shall be as follows: (1) Wood joists or the bottom of a wood structural floor when closer than 18" or wood girders when closer than 12" to the exposed ground in crawl spaces or unexcavated area located within the periphery of the building foundation. (2) All wood framing members and sill plates that rest on concrete or masonry foundation walls. (3) Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separate from such slab by an impervious moisture barrier. Such as 6-mil polyethylene sheeting or equivalent. (4) The ends of wood girders entering exterior masonry or concrete walls of a building having clearances of less than ½" on tops, sides and ends. (5) Wood siding, sheathing and wall framing on the exterior of a building having clearances of less than 6" from the ground. (6) Wood structural members supporting moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, unless separated from such floors or roofs by an impervious moisture barrier. (7) Wood furring strips or other wood framing members attached directly to the interior of exterior masonry walls or concrete walls below grade except where an approved vapor retarder is applied between the wall and the furring strips or framing members.
26. **R317.1.4** Posts and columns embedded in concrete in direct contact with the ground or embedded in concrete exposed to weather shall be pressure treated, labeled for ground contact, or covered by an impervious moisture barriers. (6-mil polyethylene sheeting or equivalent)
27. **R317.1.5** Exposed glued-laminated timbers that form structural supports of a building or other structure and not properly protected by roof, eve or similar covering shall be pressure treated with preservative.
28. **R317.3** Fasteners for pressure preservative and fire-retardant-treated wood shall be of hot-dipped galvanized steel, stainless steel, silicon bronze or copper. Exception: one-half inch diameter or greater steel bolts.
29. **R319** Approved numbers or addresses shall be provided for all new buildings in such a position as to be plainly visible and legible from the street for road fronting the property.
30. **R401.2** Foundation construction shall be capable of accommodating all loads imposed and of transmitting the resulting load to the supporting soil.
31. **R401.3** Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection so as not to create a hazard. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of 6" within the first 10 feet.
32. **R401.4** Areas likely to have expansive, compressible, shifting or other unknown soil conditions may require a soils test by an approved agency.
33. **R403** Footings and stem walls with a soil bearing value of 1500 psf. shall be as follows: 1 Story = 12" wide x6" thick (6" thick foundations wall); 2 stories = 15" wide x T thick (8" thick foundation wall); 3 stories = 18" x8" thick (10" thick foundation wall). Plain concrete isolated footing located inside the crawlspace supporting a single floor system whose total loads do not exceed 50 pounds per square foot (40 lbs. live load and 10 lbs. dead load) shall be a minimum size of 18" in diameter by 8" in depth. When the axial load exceeds 9000 pounds, the footing shall be designed. All continuous and isolated pad footings located outside the foundation wall shall extend below the frost line.
34. **R403.1.3** The braced wall panels at exterior walls of buildings located in Seismic Design Category D1 shall be supported by continuous footings. All required interior braced wall panels in buildings with plan dimensions greater than 50' shall also be supported by continuous footing.
35. **R403.1.4** Footing and stem wall reinforcing in Seismic Design Category D1 shall have reinforcement. Where a construction joint is created between a footing and stem wall, a minimum of one No. 4 bar shall be provided at not be more than 4' on center. Foundations with stem walls shall be provided with a minimum of one No. 4 bar shall be provide at not more than 4' on center. Foundations with stem walls shall be provided with a minimum of one No. 4 bar within 12" of the top of the wall and one No. 4 bar minimum 3" clear from bottom of the footing.
36. **R403.1.5** All exterior footing shall be placed below the frost line. The minimum footing depth for White Salmon is 18" below grade.
37. **R403.1.5.2** Interior footings supporting bearing walls or braced wall panels and cast monolithically with a slab on grade shall extend to a depth of not less than 12" below the top of the slab.

38. **R403.1.8** Install ½" diameter anchor bolts embedded a minimum of 7" concrete or masonry at 6' on center maximum including interior braced wall lines. Two bolts are required for each plate and must be located within 12" from ends. Plate washers a minimum of 3" x 3" x 0.229 are required at all braced wall line sill plates (R602.11.1).
39. **R404.1.3** A design in accordance with accepted engineering practice shall be provided for concrete and masonry foundation walls when any of the following conditions exist: (1) Walls are subject to hydrostatic pressure from groundwater. (2) Wall supporting more than 48" of unbalanced backfill that do not have permanent lateral support at the top and bottom.
40. **R404.1.4** Concrete walls retaining over 4' of backfill must be restrained at the top of bottom or engineered.
41. **R405** An approved drainage system shall be provided around concrete or masonry foundations retaining earth and enclosing habitable or useable space.
42. **R406** Foundations enclosing habitable or useable space shall be damp-proofed in an approved manner. Areas with a high water table or severe soil-water conditions shall be water proofed.
43. **R408** Provide under floor ventilation at 1 sq. ft. per 150 sq. ft. of under floor space. Openings shall be within 3' of each corner and shall provide cross ventilation.
44. **R408.4** The under-floor grade shall be cleaned of all vegetation and organic material. All wood forms and construction material shall be removed before a building is occupied or used for any purpose.
45. **R408.3** Access opening shall be provided to all under floor spaces. Access openings through floors shall be a minimum of 18" x 24". Openings through perimeter walls shall be a minimum of 16" x 24".
46. **R501.3** Floor assemblies shall be provided with a ½" gypsum wallboard, 5/8" wood structural or equivalent membrane or the underside of the floor framing member. Exceptions; Floor located directly over a space protected by automatic sprinklers, directly over crawl not used for storage or fuel fired appliances, aggregate area not exceeding 80sq. ft. and has fire blocking accordance to R302.11.1, or floor assemblies using dimensions or structural composite lumber 2" x 10" nominal dimension or greater. (excluding I-joist)
47. **R502.3** Spans for floor joists shall be in accordance with Tables R502.3.1 (1) and R502.3.1 (2). For other landing conditions, refer to the AF&PA Span Tables for Joist and Rafters.
48. **R502.4** Joists parallel and under bearing partitions shall be of adequate size to support the load.
49. **R502.6** The ends of each joist, beam or girder shall have not less than 1 ½" of bearing on wood and a minimum of 3" bearing on concrete or masonry. Joist meeting over a bearing support shall lap 3" minimum and be nailed with three 10d nails.
50. **R502.8** Structural floor joists, rafters and beams shall not be cut, bored or notched in excess of the limitations specified in this section. **Notches:** Shall not exceed 1/6 of the depth or be longer than 1/3 of the depth of the member, and shall not be located in the middle 1/3 of the span. Notches located at the end of the member shall not exceed ¼ of the depth of the member. The tension side of members 4" or greater in thickness, shall not be notched except at ends. **Holes:** shall not exceed 1/3 the depth or be closer than 2" to the top, bottom or any other hole in the member. **Engineered wood products:** cuts, notches and holes are prohibited except where permitted by the manufacture's recommendations or specifically considered in the design of a registered design professional.
51. **R507** Decks where supported by attachment to an exterior wall, shall be positively anchored to the primary structure and designed for both vertical and later loads. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal (see attached detail).
52. **R602.3.3** Where joists, trusses or rafters are spaced more than 16" on center and the bearing stud below and spaced at 24" on center, such members shall bear within 5" of the studs beneath. Expectations: (1) The top plates are two 2 x 6 or two 3 x 4 members. (2) A third top plate is installed. (3) Solid blocking equal in size to the studs is installed to reinforce the double top plate.
53. **R602.6** Notching of exterior or bearing walls shall not exceed 25% of its width; non-bearing studs may be notched a maximum of 40%; drilled or bored holes in any stud may be a maximum or 40% of its width. The hole shall not be closer than 5/8" to edge of the stud. A stud may be bored to a diameter not exceeding 60% of its width, provided that such studs are doubled and that not more than two successive studs are bored.
54. **R602.10** Braced wall panels shall be constructed in accordance with the intermediate bracing methods specified in Section R602.10.2 or the continuous sheathing methods specified in Section R602.10.4 and R602.10.5.

55. **R602.10.1** The amounts and location of bracing shall be in accordance with Tables R602.10.3.1, Table R602.10.1.2 (1) and Table R602.10.4.2. Braced wall panels that are counted as part of a braced wall line shall be in line, except that horizontal offset out of plane of up to 4' shall be permitted provided the total out-to-out offset dimension in any braced wall line is not more than 8'. Braced wall lines equal to or greater than 12' in length are required to have a minimum of two braced wall panels.
56. **R602.10.3.2** Alternate brace panels shall be allowed to replace each 4' of braced wall panels as required by Section R602.10.3 in accordance with Table R602.10.3.2.
57. **R602.10.4.1** Continuous wood structural panel sheathing is used on areas of exterior walls, including areas above and below openings, bracing wall panel length shall be in accordance with Table R602.10.5. All vertical and horizontal panel edges regardless of the locations shall be blocked and edges nailed.
58. **R602.10.4.1.1** Continuous portal frame braced wall panels shall be constructed in accordance with Figure 602.10.4.1.1.
59. **R602.10.4.4** Structures located in Seismic Design Category D1 shall be provided with exterior and interior braced wall lines. Exterior braced wall panels shall be located at each end of the braced wall line or a minimum 24" wide panel applied to each side of the building corner (see Figure R602.10.4.4((2) and R602.4.4 (3)). The braced panel shall be permitted to being no more than 8' from the corner. Continuously sheathed braced walls shall be an 800 lbs. hold down placed at the end of the brace panel closest to the corner. Intermediate braced walls shall be an 1800 lbs. hold down placed at each end of the brace panel closest to the corner.
60. **R602.10.6.2** Exterior braced wall panels shall be connected to roof framing. See Figure R602.10.6.2 (3).
61. **R612.2** Where an operable window is more than 72" above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24" above the finishing floor. Operable sections of windows shall not permit the passage of a 4" diameter sphere where such openings are located within 24" of the finished floor.
62. **R701.2** Products sensitive to adverse weather shall not be installed until adequate weather protection for the installation is provided. Exterior sheathing shall be dry before applying exterior cover.
63. **R703** 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 in R703.2 and a means of draining water that enters the assembly to the exterior.
64. **R703.7.4.1** Veneer ties, if strand wire, shall not be less in thickness than No. 9 U.S. gage wire and shall have a hook embedded in the mortar joint, or is sheet metal, shall not be less than No. 22 U.S. gage by 7/8" corrugated. Each tie shall be spaced not more than 24" on center horizontally and vertically and shall support not more than 2 sq. ft. Inspections are required.
65. **R802.3** Rafters shall be framed to a ridge board or each other with a gusset plate as a tie. The ridge shall be at least 1" nominal thickness and not less in depth than the cut end of the rafter where the roof pitch is less than 3/12, structural members that support rafters and ceiling joists such as ridges, hips and valleys shall be designed as beams.
66. **R802.3.1** Where ceiling joists or rafter ties are not provided at the top plate, the ridge shall be supported by a girder designed in accordance with accepted engineering practice.
67. **R802.4** Spans for ceiling joists shall be in accordance with Tables R802.4 (1) and R802.4 (s).
68. **R802.5** Spans for rafters shall be in accordance with Table R802.5.1 (1) through R802.5.1 (8). For other loading conditions, refer to the WWPA Western Lumbar Span Tables.
69. **R802.10.1** Wood trusses shall be designed, manufactured, and installed to comply with approved standards. Complete truss specifications shall be provided prior to installation.
70. **R802.11** Trusses shall be connected to wall plates by the use of approved connections. R802.11 – A continuous load path shall be provided to transmit the uplift forces from the rafter or truss to the foundation.
71. **R806.2** Enclosed attics, to include rafter spaces at vaulted ceilings, shall have cross ventilation of minimum of 1 sq. ft. / 150 sq. ft. of attic area. 1 sq. ft. / 300 sq. ft. is permitted with the installation of a vapor barrier or ridge and eave vents with an approximate ratio of 50 / 50, and not greater than 80%.
72. **R806.4** Unvented attic spaces must be completed contained within the building thermal envelope. A minimum R-20 air-impermeable insulation shall be installed in direct contact with the underside of the roof sheathing or shall be installed directly above the structural roof sheathing with the air-permeable insulation

installed directly under the roof sheathing. Air-impermeable insulation shall be a vapor retarder or shall be a vapor retarder coating or covering in direct contact with the underside of the insulation.

73. **R807** Provide a minimum 22" x 30" attic access opening in a readily accessible location such as hallways. A minimum of 30" headroom is required at access.
74. **R1001** Wood stoves shall be listed and approved and installed per manufacturer's instructions. Installation instructions shall be on the job site at time of inspection.
75. **WEC601.1** All conditioned spaces within residential buildings shall comply with the requirement of Table 402.1.1.
76. **WEC602.4** Slab on grade floors shall be provided with rigid R-10 insulation at the perimeter. The insulation shall extend downward from the top of the slab a minimum of 24" or can extend downward from the top of the slab and horizontally for a distance of 24".
77. **WEC502.1.4.9** Slab on grade floors that incorporate hydronic heating, in addition to the required R-10 permitted insulation, the entire underside of the slab shall be insulated to R-10.
78. **R408.2** Provide 6-mil black polyethylene ground cover lapped 12" at joints and extending 12" up foundation wall. Conditioned slabs shall have the same or equal.
79. **M1305.1** Appliances shall be accessible for inspection, service, and replacement without altering permanent construction. A 30" x 30" working space shall be provided at the control / service side. Attic installations shall be within 20' of attic access. A 24" wide catwalk shall be provided to the appliance as needed, and a clear access opening of 20" x 30" shall be provided.
80. **M1307.2** Appliances designed to be fixed in position shall be fastened or anchored in an approved manner. In Seismic Design Category D1 water heaters shall be anchored or strapped to resist horizontal displacement due to earthquake motion. Strapping shall be at points within the upper third and lower third of the appliance. At the lower point the strap shall maintain a minimum distance above the controls.
81. **M1307.3** Appliances located in garages shall have all sources of ignition located not less than 18" above the floor.
82. **M1307.3.1** Furnace and water heaters installed in a garage / carport shall be protected from automobile impact by the use of a minimum 2" diameter concrete filled steel pipe embedded 12" through the slab or equal. (see attached detail)
83. **M1411.6** Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps or shall be otherwise secured to prevent unauthorized access.
84. **M1508** Whole house ventilation. Minimum outdoor ventilation rates are required.
85. **M1701.1** Liquid and solid fuel burning appliances shall be provided with an adequate supply of air for fuel combustion.
86. **M2005.2** Fuel fired water heaters shall not be installed in a room used as a storage closet. Water heaters located in a bedroom or bathroom shall be installed in a sealed enclosure so that combustion air will not be taken from the living space. Direct vent water heaters are not required to be installed within an enclosure.
87. **G2407.4** Combustion air ducts and openings shall not connect appliance enclosures with space in which the operation of a fan may adversely affect the flow of combustion air. Fuel fired appliances shall not obtain combustion air from sleeping rooms, bathrooms or toilet areas.

TABLE R502.2.2.1
FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER AND A 2-INCH NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST[c,f,g]
(Deck Live Load = 40 psf, Deck Dead Load = 10 psf)

Joist Span	6'-0" and Less	6'-1" to 8'-0"	8'-1" to 10'-0"	10'-1" to 12'-0"	12'-1" to 14'-0"	14'-1" to 16'-0"	16'-1" to 18'-0"
Connection Details	**On-Center Spacing of Fasteners[d,e]**						
1/2" diameter lag screw with 15/32" maximum sheathing[a]	30	23	18	15	13	11	10
1/2" diameter bolt with 15/32" maximum sheathing	36	36	34	29	24	21	19
1/2" diameter bolt with 15/32" maximum sheathing and ½" stacked washers[b,h]	36	36	29	24	21	18	16