

Residential Roof Sheathing and Shear Walls or Braced Wall Panels

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This tip sheet reflects code requirements of the 2021 International Residential Code (IRC) with Washington State Amendments.

Please verify the following before calling for roof sheathing, shear wall, or braced wall panel inspection.

Permits and Plans

- Job address shall be posted in a visible location. (R319.1)
- Permit and approved plans are on site and accessible to the inspector. (R105.7, R106.1.1, R106.3.1)
- Permit information is correct (e.g., address, permit number, description of work, etc.). (R106.1.1)
- Previous required building inspections are approved. (R104.4, R109.4)
- All inspections, as required by the jurisdiction, shall have inspection approvals prior to cover and shall be requested by permit holder or agent. (R109.3, R109.4)

Exterior Wall Sheathing and Braced Wall Panel

- Exterior wall sheathing inspection is required prior to papering or siding. (R109.4)
- Verify the sheathing is the grade and thickness specified on the approved plans and/or engineering. (R604.1, R604.2, R604.3)
- Verify the sheathing is nailed per the shear wall/braced wall panel schedule on the approved plan. As a rule, all nails for vertical or horizontal diaphragms are required to be common nail sizes instead of sinkers. (IRC Tables R602.3(1), R602.3(2), and R602.3(3)).
- Sheathing edges and end joints must be blocked or occur over horizontal or vertical framing members. (R602.10.4.4)
- Plate dimensions are per shear wall schedule/approved plans. (R404.3, R403.1.6, R602.11)
- Plates are fastened per shear wall schedule/approved plans. (R404.3, R403.1.6, R602.11)
- Check for nailing/attachment requirements for required double 2x's or 3x's as shown on approved plan and shear wall schedule. (R602.3.1)
- Confirm stud size, height, and spacing. (IRC Table R602.3(5)).
- Fasteners at end joints are not spaced greater than 6 inches on center and are firmly driven into the framing. (R602.3)

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- Fastener heads or crowns don't penetrate the outer veneer of plywood. Loose sheathing shall be attached to framing members using nails. (NDS 4.2.6.3)
- Fasteners for preservative-treated wood shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Staples shall be of stainless steel. Coating types and weights for connectors in contact with preservative-treated wood shall be in accordance with the connector manufacturer's recommendations. In the absence of manufacturer's recommendations, a minimum of ASTM A 653 type G185 zinc-coated galvanized steel, or equivalent, shall be used. (R317.3.1) Exceptions:
 - One-half-inch diameter or greater steel bolts.
 - Fasteners other than nails, staples and timber rivets shall be permitted to be of mechanically deposited zinc coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.
 - Plain carbon steel fasteners in SBX/DOT and Zinc Borate preservative treated wood in an interior, dry environment shall be permitted.
- Pressure-treated materials or impervious moisture barrier installed wherever concrete is being poured against wood construction. (R317.1.2)
- Check plans for lateral restraint or alternate braced panels and confirm that the construction meets the approved engineering or the prescriptive design. (R602.10.6.2)
- Verify roof eave rafter tails/sheathing does not project into fire separation distance at the property line. (IRC Tables R302.1(1), R302.1(2))
- For braced wall panel method Portal Frame with Hold-downs (PFH) (also known as APA Portal Frame), verify that the framing, hold-downs, and nail pattern match that of IRC Figure 602.10.6.2. For more information, see this webinar by APA: <https://www.apawood.org/portal-frames-made-right> (IRC R602.10.6)

Exterior Roof Sheathing

- Roof sheathing inspection is required prior to papering or roofing. (R109.4)
- Mid-span clips are installed as required by approved plan or the APA manufacturing and installation requirements. (IRC Table R503.2.1(1))
- Fasteners at the end joints are not spaced greater than 6 inches on center and are firmly driven into the framing members and end joints are staggered. (R602.3, R803.2.3)
- Check plans for any specified blocking and/or nailing (i.e., shear wall connections to roof diaphragm). (R301.1.2, , R803.2)

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- Where diaphragms are designated as blocked, all joints in sheathing shall occur over and be fastened to common framing members or common blocking. The size and spacing of fasteners at wood-frame diaphragm boundaries and panel edges shall be as prescribed by the approved plans. Panels shall not be less than 4 feet by 8 feet except at boundaries and changes in framing where minimum panel dimension shall be 24 inches unless all edges of the undersized panels are supported by and fastened to framing members or blocking. Nails shall be located at least 3/8 inch from the edges of panels. (NDS 4.2.7.1.1)
- Verify that blocking, framing members, etc. are nailed to the sheathing at interior shear wall locations that result in a system that provides a complete load path that meets the requirements for the transfer of loads from their point of origin through the load-resisting elements to the foundation. (IRC 301.1; NDS 4.3.6)
- Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the approved drawings and on the individual truss design drawings. In the absence of specific bracing requirements, trusses shall be braced in accordance with accepted industry practice such as the SBCA Building Component Safety Information (BCSI) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses. Most manufacturers require sheathing to be nailed to the blocking between trusses. (IRC R802.10.3)
- Thickness and grade of sheathing shall conform to approved plans or prescriptive requirements. (R803.2.)
- Allowable spans and thickness for lumber sheathing shall conform to IRC Table R803.1. (R803.1)
- Spaced lumber sheathing for wood shingle and shake roofing shall conform to the requirements of sections R905.7 and R905.8. (R803.1)
- Spaced lumber sheathing is not allowed in Seismic Design Category D₂. (R803.1)

Hold-Downs and Hardware

- Confirm that all floor-to-floor, wall-to-floor, and lateral straps and transfer connections are installed per the approved plans. (R301.1.2, R602.10, R602.11)
- Hold-downs are not over-spalled beyond manufacturer's maximum allowance. Spalling greater than that allowed will cause a reduction in load capacities. See manufacturer's installation instructions (MII) and/or engineering that is provided.
- Hold-downs and straps are attached properly per approved plans and/or manufacturer's installation instructions (MII).
- Full height studs are required at strapping and hold-downs. (MII)

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- Multiple studs are installed at strapping and hold-downs as required per approved plan or manufacturer's installation instructions (MII).
- Check anchor bolts at garage walls and other areas not inspected during the underfloor inspection. (R403.1.6)
- Anchor bolt size and spacing is per the shear wall schedule in the approved plans. (R301.1.2, R403.1.6).
- Wall anchorage for all buildings in Seismic Design Categories D₀, D₁, and D₂ and townhouses in Seismic Design Category C. (R403.1.6.1, R602.11.1)
 - Plate washers, a minimum of 0.229 inch by 3 inches by 3 inches in size, shall be provided between the foundation sill plate and the nut except where approved anchor straps are used. The hole in the plate washer is permitted to be diagonally slotted with a width of up to 3/16 inch larger than the bolt diameter and a slot length not to exceed 1-3/4 inches, provided a standard cut washer is placed between the plate washer and the nut.
- For braced wall panel method Portal Frame with Hold-downs (PFH) (also known as APA Portal Frame), strap-type hold-downs are required per IRC Figure 602.10.6.2. For more information, see this webinar by APA: <https://www.apawood.org/portal-frames-made-right> (IRC R602.10.6)

Framing

- Check framing member requirements for double 2x's or 3x's as shown on approved plan and shear wall schedule. (R602.3.1)
- Confirm stud size, height, and spacing. (IRC Table R602.3(5)).
- Continuity is maintained when exterior wall (1-hour-rated) is within 5-foot fire separation. Distance should also be verified at time of foundation and framing inspections. (R302.1(1),R302.1(2))
- Cripple wall bracing, exterior and interior, per requirements of R602.9. (WA Amendment)