

Attaching plywood and OSB sheathing

by Mark S. Graham

In March, APA—The Engineered Wood Association (APA) updated its fastening schedules for wood structural panel sheathing—plywood and oriented strand board (OSB)—for steep-slope roof applications. APA Data File Form No. T325D, “Roof Sheathing Fastening Schedules for Wind Uplift,” offers prescriptive sheathing fastening recommendations to provide resistance to wind-uplift pressures as required by most current building codes.

Although it generally is understood roofing contractors are not responsible for the attachment of structural panel sheathing to underlying wood framing, proper nailing is an important consideration in the overall performance of steep-slope roof assemblies, particularly in high-wind regions. Therefore, I encourage you to be familiar with these new fastener schedules.

Basis

The recommendations provided in the APA data file were developed through engineering analysis and full-scale testing of wet and dry specimens of plywood and OSB structural panels that were evaluated for full-panel withdrawal under uniform loads.

The fastening schedules assume use of 5/8-inch-thick or thinner plywood or OSB structural panels on sloping structural framing members spaced 24 inches on center or less over enclosed structures in an ASCE 7-02, “Minimum Design Loads for Buildings and Other Structures,” Exposure B region with a mean roof height of 35 feet or less.

Fasteners listed are minimum 8d

common nails with smooth or ring shanks that comply with ASTM F1667, “Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.”

Fastener schedules reflect the differences in wind-uplift pressures over various zones on steep-slope roof systems. Zone 1 represents the field; Zone 2 represents the perimeter; and Zone 3 represents the corners. Zones 2 and 3 will need to withstand higher wind-uplift pressures and, as a result, require more restrictive fastening spacing than at Zone 1.

Proper nailing is an important consideration in the performance of steep-slope roof assemblies

Slightly different fastening schedules are provided for three wind-speed regions—90 mph, 120 mph and 150 mph—based on the basic wind-speed map contained in ASCE 7-02.

Fastening schedules

The fastening schedule for the 90-mph wind-speed region prescribes nailing at 6 inches on center at supported panel edges and 12 inches on center over intermediate panel supports except in the corners of the roof area (Zone 3) where 6-inch on-center spacing is needed over intermediate panel supports.

For the 120-mph wind-speed region, the fastening schedule prescribes nailing at 6 inches on center at supported panel edges and 12 inches on center over

intermediate panel supports in Zone 1, 6 inches on center in Zone 2 and 4 inches on center in Zone 3.

For the 150-mph wind-speed region, the fastening schedule prescribes nailing at 6 inches on center at supported panel edges and over intermediate panel supports in Zone 1, 4 inches on center in Zone 2 and 3 inches on center in Zone 3. Portions of roof areas that overhang beyond buildings’ exterior walls (eaves) should use Zones 2 and 3 fastening.

Also, for gable-shaped roofs where sheathing bears over gable end wall framing, special fastening is required. In the 90-mph region, fastening in a 6-inch on-center spacing over the gable end wall is prescribed. In the 120-mph region, fastening in a 3-inch on-center spacing is prescribed. In the 150-mph region, fastening in a 3-inch on-center spacing using 10d ring shank nails is prescribed.

Closing thoughts

APA Data File Form No. T325D provides updated fastener schedules for plywood and OSB structural panel sheathing used for roof decks of steep-slope roof assemblies.

APA Data File Form No. T325D can be downloaded from APA’s Web site, www.apawood.org. Questions relating to plywood and OSB structural panel sheathing can be directed to APA’s product support help desk by calling (253) 620-7400 or e-mailing help@apawood.org. 

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