Fastening of Exterior Wall Sheathing

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With the introduction over the years of new sheathing products, builders now have a variety of products to pick from when choosing a wall sheathing product. Some of these wall sheathing products are used only as wall covering materials, while others can provide structural stability to walls, by providing code compliant wall bracing. In northern Michigan the most popular wall sheathing product still seems to be wood structural panels, more commonly known as plywood and OSB. Other wall sheathing products available include foam sheet goods, cellulosic fiberboard, exterior gypsum products, and particle board.

While the 2003 Michigan Residential Building Code (MRC) contains more than one section addressing the installation of wall sheathing products, the fastening requirements for most wall sheathing products can be found in Table 602.3(1). This table lists the minimum fastener requirements for structural members. The following is a brief overview of the type and number of fasteners needed in typical wall sheathing installations:

- Typical installation of plywood, OSB or particle board sheathing up to ½" in thickness requires a minimum 6d common nail spaced a maximum of 6" along the edges and 12" in the field of the material.
- Plywood, OSB and particle board sheathing over ½" in thickness and up to 1" in thickness requires a minimum 8d common nail, spaced a maximum of 6" along the edges and 12" in field of the material.
- Regular cellulosic fiberboard sheathing up to ½" thick requires a minimum of 1.5" galvanized roofing nails, 6d common nails or 16 ga. Staple 1.5" long, spaced a maximum of 3" along the edge and 6" in field of the material.
- Structural cellulosic fiberboard sheathing up to ½" thick requires a minimum of 1.75" galvanized roofing nails, 8d common nails, or 16 ga. Staples 1.75" long, spaced a maximum of 3" along the edge and 6" in field of the material.
- Gypsum sheathing up to ½" thick requires a minimum 1.5" galvanized roofing nails, 6d common nails, 1.5" galvanized staples, 1.25" type W or type S screws, spaced a maximum of 4" along the edges and 8" in the field of the material.
- Gypsum sheathing with a thickness of 5/8" requires a minimum of 1.75" galvanized roofing nails, 8d common nails, 1 5/8" staples, or 1 5/8" type W or type S screws spaced a maximum of 4" along the edges and 8" in the field of the material.

As previously stated, there are several materials that can be used as wall sheathing, however not all of them can be approved as structural sheathing. Materials such as regular fiberboard and sheet foam require additional materials to be used in conjunction with the sheathing, to provide code compliant wall bracing. The most common type of wall bracing used in conjunction with non-structural sheathings is let in bracing. Let in bracing can be done with either a minimum 1" x 4" or approved metal wall bracing. These continuous diagonal braces are cut into the wall studs and wall plates, running continuous from the bottom to the top wall plates. Let in bracing can be placed at an angle not more than 60 degrees and no less than 45 degrees horizontal.

Some structural sheathings have been tested and approved to provide code compliant wall bracing when installed as tested. Those sheathing products must be installed as per the manufacturer’s specifications for the installation to be approved. Materials approved as structural sheathings can be used to create braced wall panels, as long as they are attached as per the minimum code requirements of the fastening schedule, and meet the minimum braced wall panel size requirements of the Building Code.

It is advisable, regardless of the product used, to confirm prior to installation, what the fastening requirements are for a particular sheathing material. By doing so, the installer is aware of the fastening requirements, and can install the sheathing using a code compliant method. It is much easier to install a material correctly, than to have to return to a jobsite to re-fasten a product once the installation has been completed. Should you have questions regarding the installation of wall sheathings, or any other Building Code issues, contact your local Building Inspection Department. The Building Dept. can and should be your best source of code information.