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ADHERED VENEER

CODE REQUIREMENTS FOR INSTALLATION

Two types of veneer are predominantly used in today's built environment. Most prominent is anchored veneer, which is constructed with brick set in mortar anchored to concrete masonry, wood stud or metal stud backup systems. Masonry as we traditionally know it. The other is adhered veneer. It's different from an anchored veneer! There are different installation requirements for these types of adhered veneers.

In Chapter 6 of Veneers of Building Code Requirements for Masonry Structures (commonly referred to as ACI-530 or TMS 402), adhered veneers are well described. What I will point out in this article are some of the most important elements to consider if you're using adhered veneer in order to avoid potential installation and/or detailing problems. Correct installation of adhered veneer is a multi-step process requiring careful attention to material selection and placement.

INSTALLATION REQUIREMENTS

The isometric detail (Figure 1) has been drawn in successive layers to illustrate proper installation of adhered veneer systems as required by Code. OSB, or sheathing between metal or wooden studs, is the first vertical material that is installed. Next, two layers of building paper are installed in a shiplapped fashion to protect the sheathing. On top of the building paper, a drainage mat is installed to stop any water that penetrates the adhered veneer. This drainage mat diverts water that does get through the mesh and drains it all the way down to the flashing. Flashing collects the water and safely diverts it to the exterior through weep holes. On top of the drainage mat, 2½# galvanized expanded metal lath, (diamond mesh), is mechanically fastened. This attachment is very important. It is the only thing that is holding the veneer system to the wood or steel studs.

Nails with plastic washers that are used to hold the mesh in place should be of proper length to maintain penetration of ⅝″ into the stud's wood framing. For steel stud backup, screws must penetrate a minimum of ¼″ into the studs. Because a regular nail or screw head can easily pull through diamond mesh, a larger headed nail or screw should be used to properly engage the mesh and to spread the load. A 100% parging backing should be applied onto the mesh at least ½″ to ¾″ thick. Adhered veneer material must weigh less than 15 lbs/sf by Code. Code does not directly address the durability of adhered veneer. It may

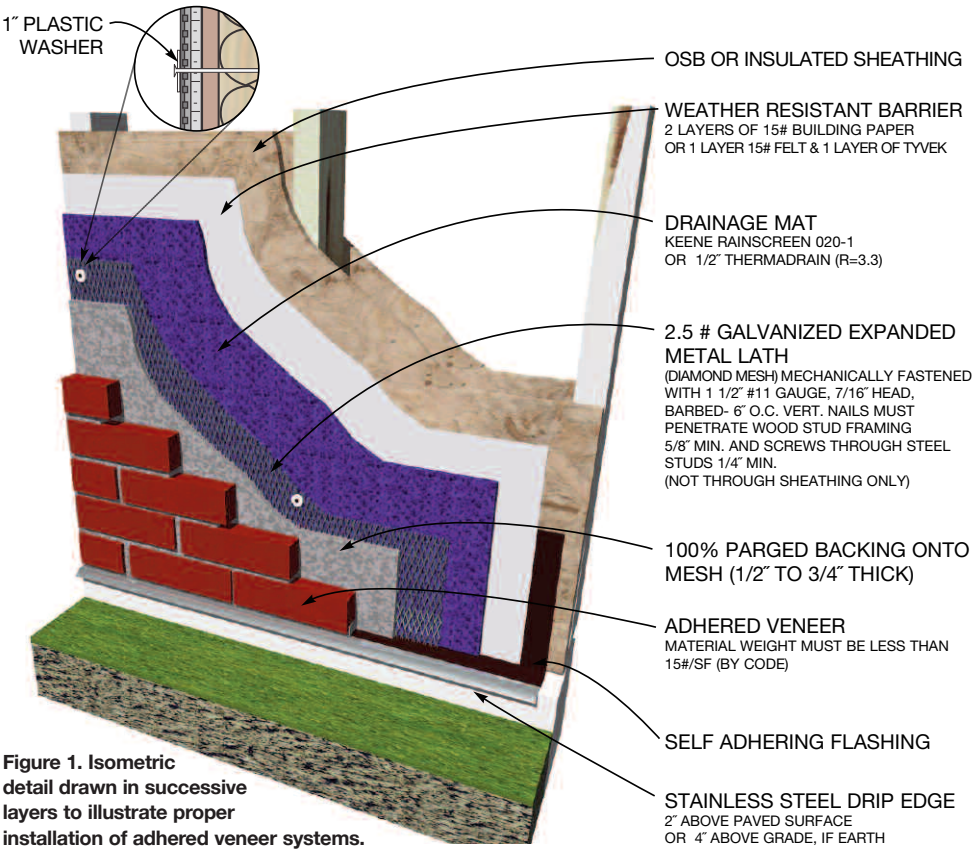

Figure 1. Isometric detail drawn in successive layers to illustrate proper installation of adhered veneer systems.

Picture 1. Adhered veneer failure. Materials used must be durable for severe weather application. The durability of an adhered veneer used in Sedona, AZ is different from that for a product used in the Midwest with wind driven rain, water penetration and freeze/thaw cycles.

be assumed to be severe weathering. Picture 1 clearly shows a problem project. Unfortunately, an owner selected an interior material to be used for an exterior job. Assume nothing!

Adhered veneer is applied to the parged surface by applying additional mortar all over the back side of the adhered material and pushing it into the parged surface.

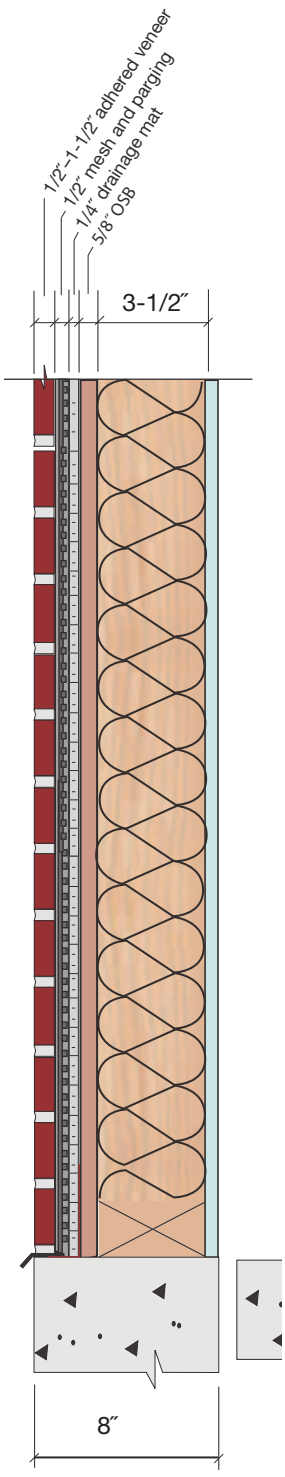

Figure 2. Adhered veneer cross section

DESIGNER'S DETAILS

Picture 2 showcases a local project where movement joints were properly detailed for differential movement. According to Code, these must also be detailed on the project's elevation drawings for the mason to install at the designated location.

The general design requires the backing system of the exterior veneer to be designed to resist water penetration. To responsibly use this system, the designer must call out for drainage material to be installed. The detailing of flashing with weep holes in the exterior veneer is critically important to divert water to the exterior. Weep holes are required to be at least 3⁄16″ in diameter and spaced not less than 33″ on center. Design and detailing must accommodate differential movement.

CONSEQUENCES OF IMPROPER INSTALLATION

Unfortunately, one of the elements that has been missing in many adhered veneer systems is the drainage material. It was never called for on the drawings, therefore it was not installed. How else would water be removed that does penetrate through this thin veneer? How else can the system prevent water from getting to the inside and causing perhaps mold or mildew damage? Another prevalent and crucial element often missed is flashing. Without flashing there is nothing to stop and divert water. Another problem is not having the proper spacing of nails or screws 6″ oc vertically into the studs.

We have seen projects where the adhered veneer is only coated with mortar on its backside and then the adhered material is stuck to the substrate, (sometimes referred to just as "lick & stick") without the mesh being parged prior to the adhered material being set in. It is recommended that continuous parging be applied before the material is installed.

Picture 2. Adhered veneer with movement joints properly installed. By code, these movement joints must be shown on the drawings.

Adhered veneer should only be installed at least 2″ above paved surfaces or at least 4″ above grade if earth is around this particular building or it's being used on the perimeter side of the building.

Weather can be extremely harsh on adhered veneers. Installers must carefully follow regulations set forth in the Code in order to ensure that owners will have a quality wall. There are no shortcuts when it comes to adhered veneer. The nature of the product requires that every step be taken or failure is almost certain.

Sadly, many architects do not have the code, even in their office libraries. However, they refer to this document on nearly every set of plans. Most structural engineers refer to this document but many use an older 2002, or even a 1999 edition. Many smart mason contractors own the code. They bear the responsibility of complying with code requirements specified by architects and engineers. *Lawyers always buy a copy. Do you want the lawyer to be smarter than you?*