NEW YORK BUILDING TECHNOLOGY GROUP

Air Sealing Issues with Fiberglass Batt

The 2015 IRC requires that new homes meet an infiltration rate of 3ach50

In general, NYBTG recommends the use of spray foam as insulation because of its superior airsealing capability. However, because of its cost, it is not practical for every application. If you are using batt insulation alone, there are several areas that require extreme attention to detail when airsealing, and a few situations where fiberglass can never be used alone.

NOTE: It is very important that we inspect the airseal before the walls are closed up. This gives us the opportunity to find and address any specific issues while the walls are open. It is very difficult to make repairs if the house does not pass the blower door test which is run at final, long after the walls have been closed up.

1) ATTICS: It is becoming common to create a "sealed attic" using sprayfoam insulation in the rafters rather than in the ceiling. This has two benefits; it moves attic HVAC equipment into the thermal envelope which eliminates losses from the equipment. It also adds additional conditioned volume to the house which makes blower door compliance easier.

2) FIBERGLASS BATTS ALONE CANNOT BE USED FOR A SEALED ATTIC: The IECC requires that fiberglass batts in a roof rafter have a ventilation space but also requires that the insulation and airseal be aligned. Without drywall on the assembly (as with a vaulted ceiling) there is no airseal keeping air from the home from escaping out through the ridge and soffit vents. We have run into situations where builders have insulated both the ceiling and the rafters in an effort to keep HVAC equipment "inside conditioned space". Again, unless the roof assembly is insulated, properly vented, and air-sealed, it will not meet NYS code and will likely have serious moisture and mold issues.

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Airsealing wall cavities with Caulking

ZIPsystem—Sheathing has waterproof coating, seams are sealed with permanent adhesive tape

3) EXTERIOR WALLS: Walls are typically airsealed from the inside using caulking, "great-stuff" canned foam, or spray on adhesive airseal. Most insulation contractors will include this as an "airseal package" in the scope of work. It is important that any seam that might connect to the outside is sealed, especially the plates and around windows. It is also possible to airseal from the exterior using an adhesive air/water control layer such as "Blueskin"or using a "Zipsystem" type sheathing. If you are sealing from the exterior, it is very important that the connection where the sheathing meets the rim joist and top plates be sealed when the sheathing is installed.

4) FLOOR AND CEILING PENETRATIONS: As a general rule, penetrations between floors are sealed with an intumescent firestop caulking or rockwool in order to meet fire codes. In places where the floor connects to either an unconditioned basement or attic, it's critical that these holes be <u>completely air-tight</u>. The picture to the right shows a situation we run into regularly where ductwork is not properly sealed to the floor (or drywall for ceiling installations). A home will not pass NYS code without these connections being sealed air-tight. We cannot even run the tests until corrections have been made.

Please be sure to have all ductwork properly sealed before we come to test. A re-inspect fee will be charged for return trips caused by unfinished work. Please use our pre-inspection checklists and verify that all work is complete before you schedule an inspection.

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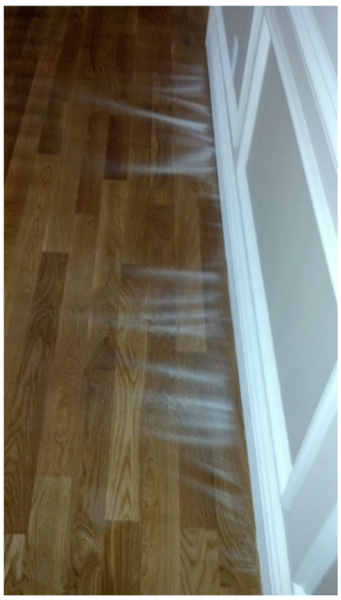
5) ATTIC CEILING TO WALL CONNECTIONS: This is the most critical connection and the one most often overlooked. Any ceiling that connects to an attic will require an additional seal where the drywall connects to the wall top-plates. Since drywall never presses perfectly to the framing (it's held out by nails, protector plates, mis-aligned studs, etc), there is a small gap between the framing and the drywall. This space allows for attic air to flow into the walls and out through outlets and under the base moldings.



The gap behind this drywall is about 3/16". This gap, multiplied by the length of second floor walls equaled an open hole to the attic of about 90 square inches. The image on the right shows drywall dust being blown out from behind the wall during our test.

The gasket foam is installed along all top wall plates that meet the attic. This keeps cold attic air from leaking in behind the drywall and out from under the base moldings. (see picture above right). The foam bead can be installed by a laborer in a few hours a day or two before the drywall begins. It cleans up with water and the gun cleans with a garden hose.

This is one of the available gasket foams available for drywall sealing. It's available at most supply houses or on Amazon. It's shown installed in the photo on the left.