

More Tips on Weatherization

Air sealing and insulating a building will give us the best Savings to Investment Ratio (SIR). How much does it cost & how long will this investment take to pay itself back in energy savings?

Consideration Factors

When we air seal and insulate it is important to have continuity. Also, air and insulation boundaries should be adjacent. These boundaries vary from different types of building construction framing. We determine these boundaries by identifying what should be inside (heated/conditioned) and what is outside (unheated/unconditioned). Not each house is the same. Typically the insulator needs to determine this before starting the work.

Air seal the building

Air seal before insulating

Preparation for insulating Crawl spaces

With any house it is very important that the outside surface water can drain away from the foundation. Foundations, which are usually made from masonry products, are water reservoirs. They have the capability to absorb and wick water into other parts of the building. When insulating, especially crawls spaces, it is very important to determine if water management is controlled. Newer homes will have sump drainage systems that will have a pump to discharge the water. A Vapor barrier (6mil plastic) should always be used for ground cover.

Crawls spaces

Determine how and where to insulate. Is the thermal boundary (insulation line) going to be on the foundation wall or on the frame of the floor?

If there are plumbing pipes in this area, it is best to insulate around the perimeter of the foundation wall. The vapor barrier should continue up the foundation wall at least a foot. Insulation should be applied to cover the entire foundation wall. This application is known as conditioned crawl space. Probably 90% of what is out there in our geographical location

If there is no plumbing and only duct work in the crawl space, then we could insulate the floor and the ductwork. A vapor barrier will still be needed to stop ground moisture from entering into the building. This application is known as unconditioned crawl space.

Crawl space ventilation: During construction operable vents are built into the foundation wall or frame floor of the building. Currently we are told by building code officials that we need cross ventilation in our crawl spaces. Over the past few years building science has proven to us that this theory is wrong, especially for our geographical climate location. Crawl spaces are actually mini-basements and should be treated as one. We don't ventilate our basements! My first recommendation is to close the vents and keep them closed. My other recommendation is to do it the wrong way, the way we were taught 40 years ago. Close them in the winter & open them in the summer.

Choosing Insulation

The application of insulation is looked at in two different ways:

Cavity insulation- this is used to fill voids of specific cavity sizes that are part of the building framework.

Continuous insulation- this covers the building framework and the cavity insulation.

Insulation is rated as R-value per inch.

R-values determine the insulation's ability to resist radiant heat flow.

The higher the R-value, the more resistance to heat flow.

Types and characteristics of insulation.

Fiberglass Insulation a.k.a. Batt insulation: Composed of spun glass fibers and air molecules. Needs to be installed without compressing. Compressing the insulation during installation can degrade the R-value by up to 75 %. This material does not act as an air barrier. There are limits to the types of application. It does come in a shredded version, which can be applied by a blower machine through a hose. Respiratory, eye, and skin irritant.

Cellulose Insulation a.k.a. loose fill or dense packed: Composition of shredded newspaper, with borate and borax added. Borate, which is found in eyewash, is used as a fire retardant. Borax, which is found in hand soaps, is used to deter insect infestation. This product is more user friendly. Comes in bales that are put into a blower machine that distributes through a hose. Works well in attics as continuous insulation over other insulations. Can be used to dense pack existing wall cavities that contain no insulation from construction. Does have air barrier properties especially dense packed into wall cavities. Dust during application can be respiratory irritant.

Other loose blow insulations:

Rockwool

Vermiculite- this may contain asbestos fibers.

Rigid Insulations

Extruded polystyrene

Comes in board sheets, varies in thickness, width and lengths.

Typically used as continuous insulation

R-value is 5 per inch of material

Expanded polystyrene a.k.a. as bead board

More commonly known as Styrofoam

Comes in board sheets, varies in thickness, width and lengths. needs dry area for application

Foam Insulations

Urethane

Iceyene

New insulations are being tested and used. There are new foam products that are made from soybean extracts.
Another development that is being tested is from recycled jean pants.