

Guidelines for the proper installation of components that make up an Attic upgrade

An effective and continuous thermal and pressure boundary shall be established in each home through the installation of appropriate air sealing and insulation measures. Wherever possible, air sealing and insulation strategies shall be designed to align the thermal and pressure boundaries to create a single continuous Thermal Envelope. Within the SMUD Home Performance Program the minimum required insulation level is R-38 on the attic floor and R-19 in knee walls.

Air Sealing

Air sealing measures shall be prioritized to reduce the stack effect and inhibit moisture migration into attics or other interstitial spaces. Blower door quick tests shall be performed during air sealing to track progress and verify results. Air sealing installations must be installed to be permanent improvements to the structure. Products with an expected lifespan of less than 20 years shall not be used.

Where soffit vents are present and access is viable, appropriate blocking or baffles are required to provide protection from wind-washing where insulation exists, the baffles shall extend 6" past the level of the insulation.

SMUD recommends that batts insulation shall be installed at full loft with the insulation in full contact with the warm building surface. Paper backing on insulation is not needed in this climate zone because of the dry climate we are in (Sacramento area), and having paper on insulation can keep the insulation from making direct contact with the wall surface. Gaps between the insulation and the building elements must be avoided. Insulation batts shall not be compressed, folded, tucked, rolled, or otherwise compromised when installed for insulation purposes.

Recessed can light fixtures that are not Insulation Contact (IC) rated must be changed out to IC/AS* rated. Combustion appliances must have their vents, flues and chimneys sealed with a sheet metal draft stop and sealed with fire rated caulk at the attic floor. The chimney, the vent or the flue must be baffled with an effective insulation dam prior to insulating to maintain a minimum a clearance to combustibles. B-vent requires 1" inch and Single-walled flue pipes require a minimum 6" clearance to insulation or other combustible materials (refer to NFPA 54 for additional requirements for specific chimney materials.)

Using Insulation for Air Sealing

For leakage paths through enclosed cavities which cannot be accessed or reasonably sealed using conventional air sealing techniques, BPI requires installation of high density, pneumatically applied insulation - which complies with BPI-102 "Standard for Air Resistance of Thermal Insulation used in Retrofit Cavity Applications – Material Specification" - or air impermeable foam insulation, to reduce airflow through the building shell.

Cellulose insulation used in an enclosed cavity shall be installed at 3.5 pounds per cubic foot or greater density. Blown fiber glass, mineral fiber, rock and slag wool, or spray foam used in an enclosed cavity shall be installed at or above the manufacturer's recommended density to limit airflow that corresponds to an air permeance value of ≤ 3.5 cfm/sq ft. at 50 Pascal, as measured using BPI-102 "Standard for Air

* Air Sealing

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Resistance of Thermal Insulation used in Retrofit Cavity Applications – Material Specification” or ASTM C 522, E 283 or E 2178.

Insulation, installed in knee walls or other exposed vertical areas, must be covered on the cold side with an air-barrier such as plywood or house wrap to protect the insulation from wind-washing and free convection within the insulation. This measure is not necessary if two part spray foam or rigid foam board insulation is used.

Knee Walls

All vertical attic knee walls must be insulated to R-19 and have an air-barrier on all six sides. All seams of the air-barrier as well as the sides must be sealed to prevent air from entering the assembly.

If there is space between the ceiling vault and the roof deck where loose fill insulation is going to be installed, the connected knee walls must extend up tall enough to provide an insulation dam holding the insulation thickness to full loft on top of the vaulted ceiling in order to maintain the R-38 value attic floor insulation level.

Solar tubes

Solar tubes must be insulated to R-19 and have an air-barrier covering on the attic side, the insulation and air barrier must extend from the attic deck to the roof deck and any seams need to be sealed.