

7b. Tighter ducts – Delivering all of the air and none of the dust

Work with the HVAC company to design the return duct

The HVAC contractor and builder should consult and review plans prior to construction so that the HVAC contractor can design and install the best and most efficient return duct, as well as an efficient overall system. The return should be short, large enough, well-insulated, well-filtered, and air-tight. Return ducts have caused more problems and callbacks than almost any other HVAC area. A properly sized (1.5 to 2 square feet of return grill area per ton of cooling) and sealed return will reduce overall duct leakage as it delivers more comfort for the dollar. In addition, this reduces several problems such as dust, transmission of ceiling insulation materials, noise, intake of unexpected air through building channels, and mold.



Best practice is to allow the HVAC company to build the return out of metal and not 2x4's and sheetrock as has been done here.

The HVAC company is responsible for handling the air from the filter in the return to the diffuser in the supply boot. The builder should be aware of the location and size of the return duct, which is typically installed prior to any sheetrock. A return should be sized so that the area of the filter grill is from 1 1/2 to 2 square feet per ton of cooling.

Tighter ducts



This return was finished with particle board and sealed with mastic. Careful sealing prevents any unwanted air, dust and insulation from entering the air stream.

Duct sealing materials



Duct mastic and mastic tapes are the best duct sealants available. If "duct tape" is used, insist on UL or equivalent tested and approved "duct sealant" tape.