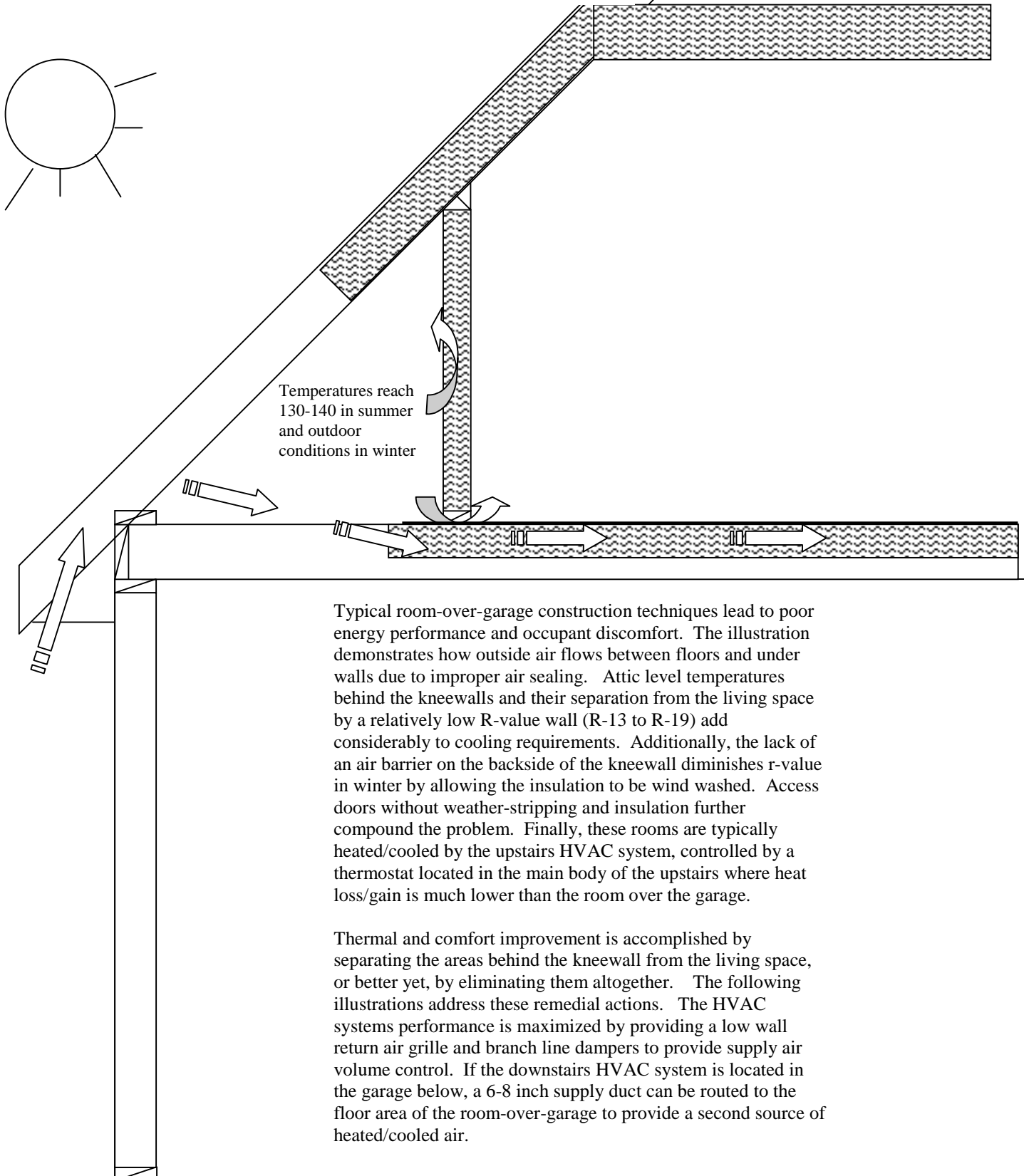


Improving Comfort in Rooms Over Garages

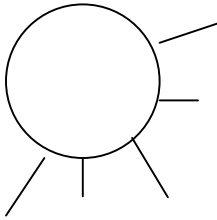
Attic temperatures reach 130-140. Increased ventilation provides little help due to solar radiation. Insulation and an effective air barrier provides best protection



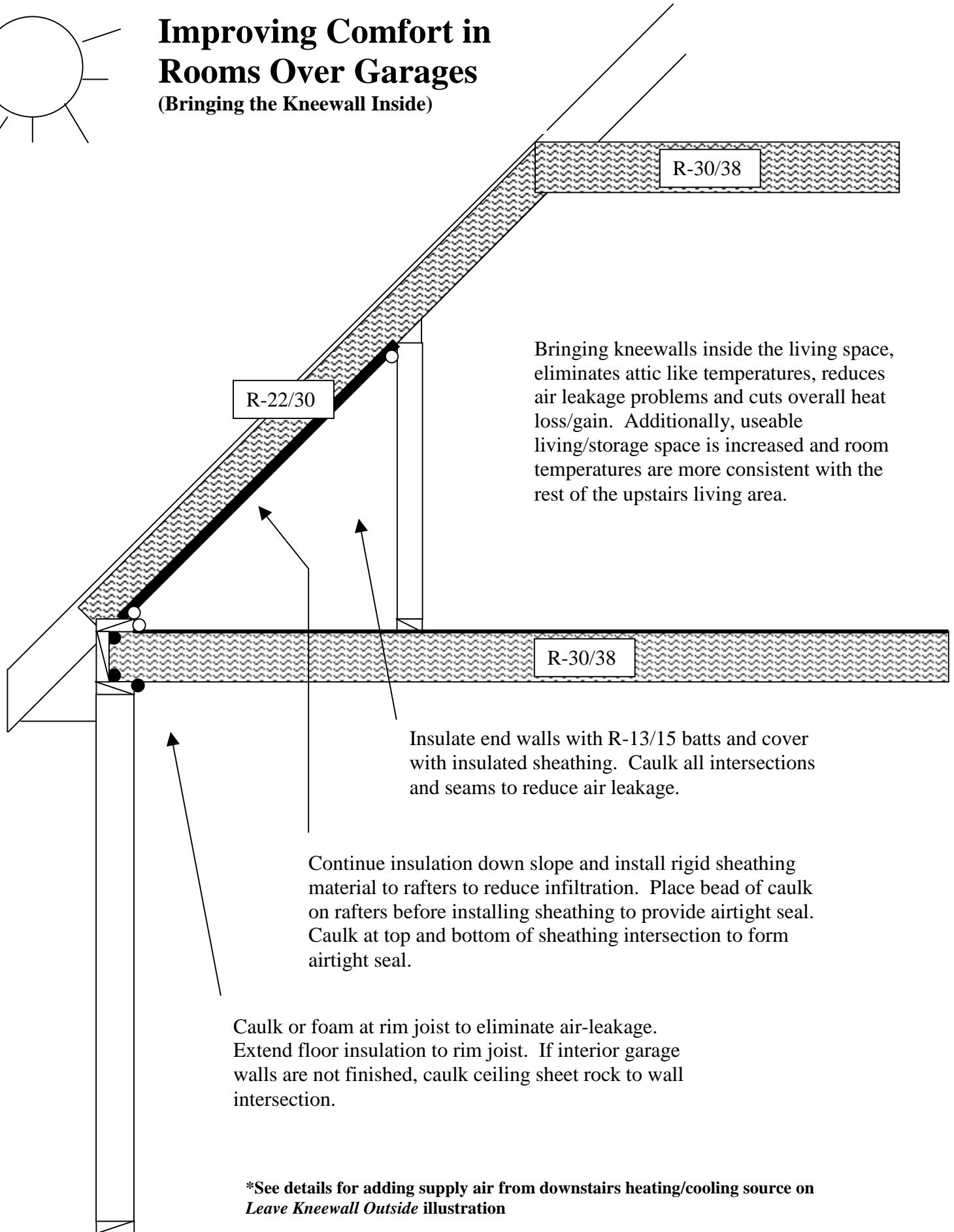
Temperatures reach 130-140 in summer and outdoor conditions in winter

Typical room-over-garage construction techniques lead to poor energy performance and occupant discomfort. The illustration demonstrates how outside air flows between floors and under walls due to improper air sealing. Attic level temperatures behind the kneewalls and their separation from the living space by a relatively low R-value wall (R-13 to R-19) add considerably to cooling requirements. Additionally, the lack of an air barrier on the backside of the kneewall diminishes r-value in winter by allowing the insulation to be wind washed. Access doors without weather-stripping and insulation further compound the problem. Finally, these rooms are typically heated/cooled by the upstairs HVAC system, controlled by a thermostat located in the main body of the upstairs where heat loss/gain is much lower than the room over the garage.

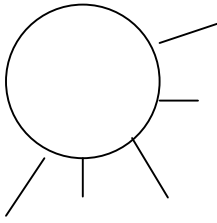
Thermal and comfort improvement is accomplished by separating the areas behind the kneewall from the living space, or better yet, by eliminating them altogether. The following illustrations address these remedial actions. The HVAC systems performance is maximized by providing a low wall return air grille and branch line dampers to provide supply air volume control. If the downstairs HVAC system is located in the garage below, a 6-8 inch supply duct can be routed to the floor area of the room-over-garage to provide a second source of heated/cooled air.



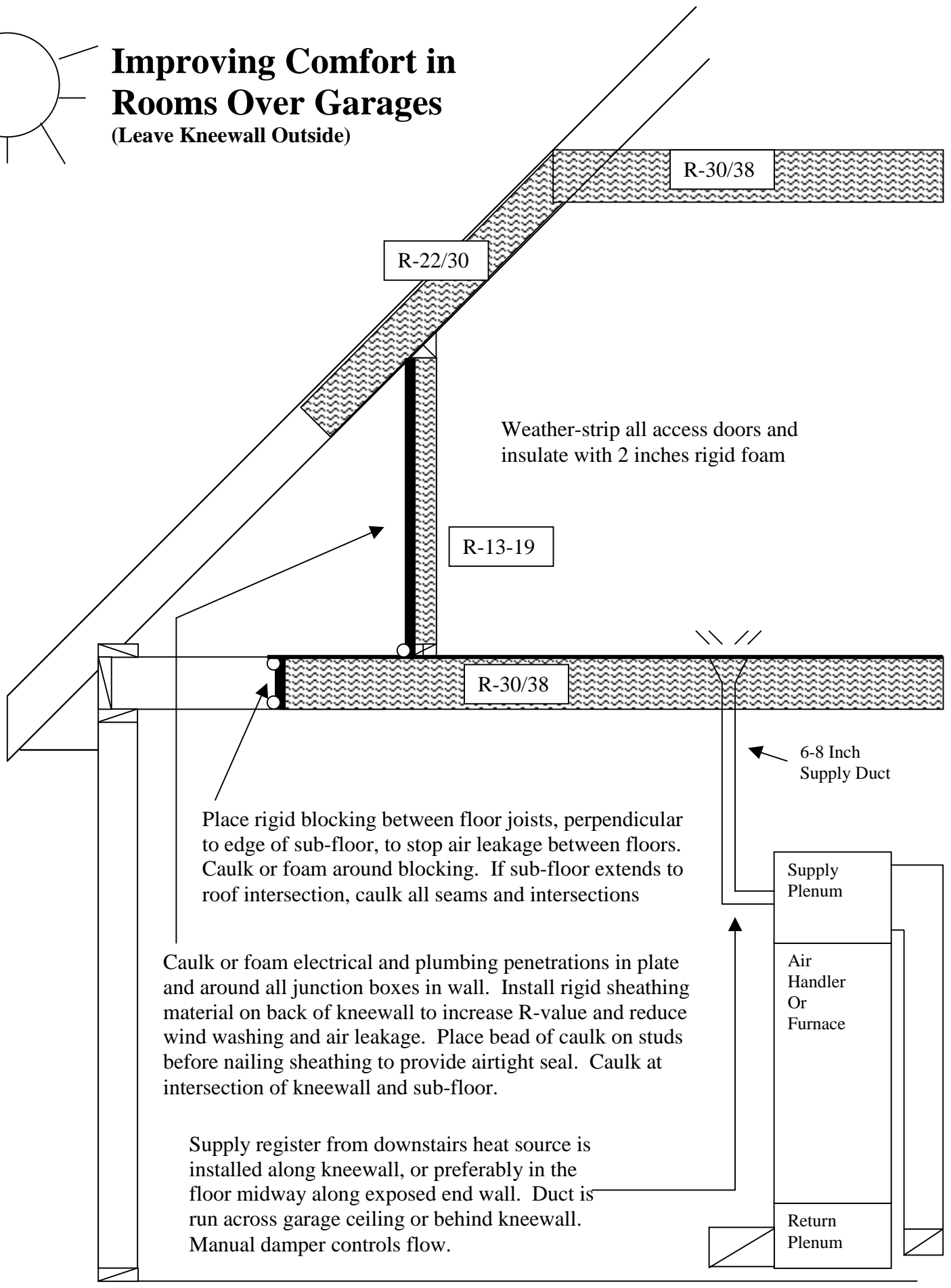
Improving Comfort in Rooms Over Garages (Bringing the Kneewall Inside)



***See details for adding supply air from downstairs heating/cooling source on *Leave Kneewall Outside* illustration**



Improving Comfort in Rooms Over Garages (Leave Kneewall Outside)



Weather-strip all access doors and insulate with 2 inches rigid foam

Place rigid blocking between floor joists, perpendicular to edge of sub-floor, to stop air leakage between floors. Caulk or foam around blocking. If sub-floor extends to roof intersection, caulk all seams and intersections

Caulk or foam electrical and plumbing penetrations in plate and around all junction boxes in wall. Install rigid sheathing material on back of kneewall to increase R-value and reduce wind washing and air leakage. Place bead of caulk on studs before nailing sheathing to provide airtight seal. Caulk at intersection of kneewall and sub-floor.

Supply register from downstairs heat source is installed along kneewall, or preferably in the floor midway along exposed end wall. Duct is run across garage ceiling or behind kneewall. Manual damper controls flow.

