HEATING AN ACCESSORY BUILDING

HABITABLE ACCESSORY BUILDINGS*

Energy Code requirements for heating habitable accessory buildings such as Accessory Dwelling Units, Common Buildings, studios, personal offices, and other detached residential spaces

Larimer County allows unheated, detached accessory buildings to be built on monolithically poured slabs that do not extend down below frost line (30 inches in Larimer County). If the structure remains unheated, the frost force moves horizontally below the foundation causing no frost heave problems. However, once the structure is heated, the frost force moves upward on the heated structure causing frost heave damage. To protect against frost uplift, a shallow frost foundation system may be used, which calls for slab perimeter insulation protection. The Energy Code requires the slab perimeter insulation to be a minimum of R-10 from top of slab to top of footing.

When obtaining a permit to build a new habitable accessory building, or to change from a non-habitable to a habitable accessory building, information must be submitted on whether the structure is on a shallow monolithically poured slab with slab perimeter insulation being added, or the foundation extends below frost line. Other energy conservation requirements in the 2021 IRC or IECC include R-60 ceiling insulation, R-30 wall insulation, and windows with a U-value of 0.32 or less. Be aware that section M1401.3 of the 2021 International Residential Code & Section 312.1 of the 2021 International Mechanical Code require heating and cooling equipment and ducts to be sized based on heating loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies.

*Buildings with bedrooms but no kitchens, such as a garage with a bedroom above, will be considered habitable accessory buildings and will be referred to as Common Buildings.

NON-HABITABLE UTILITY BUILDINGS

Energy code requirements for heating non-habitable utility buildings such as shops, garages, and barns

Below are amendments to the 2021 IRC approved in Larimer County for non-habitable accessory buildings. When applying for a permit, indicate which method you are using to meet the energy code requirements.

Accessory buildings. Fully enclosed accessory buildings and attached garages not containing habitable space may be conditioned subject to the following thermal and envelope criteria:
1. Such spaces meet the criteria for thermal isolation and any HVAC equipment installed therein is sized for a peak design load assuming a maximum Winter Indoor Design Dry–bulb Temperature of (60ºF) and a minimum Summer Indoor Design Dry–bulb Temperature of (80ºF).
2. The walls are insulated with insulation having a minimum R-value of R-10.
3. The roof/ceiling is insulated with insulation having a minimum R-value of R-30.
4. Windows have a maximum U-factor of .40 and in total do not exceed 10% of the floor area.
5. Doors have a minimum R-value of 3 and are sealed to prevent infiltration to the extent practical as determined by the building official.

Exceptions:
1. The following detached accessory buildings do not need to meet requirements 1-5 above. Accessory/Agricultural buildings heated or cooled in their interior for short periods of time and switched with a timer of two hours or less.
2. Accessory/Agricultural buildings which are neither heated nor cooled by regulated fuel or electrical energy. (Examples of non-regulated fuels include wood, wood pellets, corn cobs and waste oil.)
3. Accessory/Agricultural buildings with restricted thermostats limiting heat to a maximum of 50º F.

Foundations for new heated accessory buildings must extend a minimum of 30" below grade or be frost-protected with a minimum of R-15 perimeter insulation.

Seasonal buildings. These buildings do not need to be heated by a primary heat source (gas or electric) and may be heated with a fireplace or woodstove; however, you do need to protect plumbing lines from freezing by draining them every winter.