EN8 *Walls, Steel Framed* (Climate Zones: all)

Cold-formed steel framing members are thermal bridges to the cavity insulation (see Figure 5-7). Adding exterior foam sheathing as c.i. is the preferred method to upgrade the wall thermal performance because it will increase the overall wall thermal performance and tends to minimize the impact of the thermal bridging.

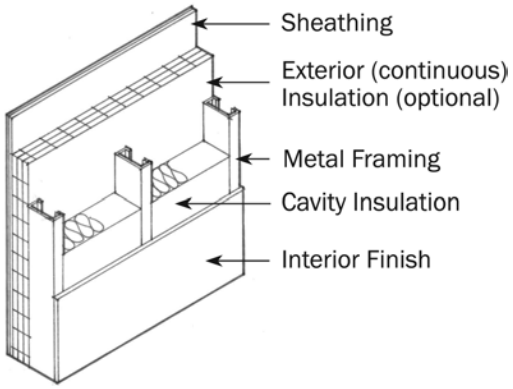


Figure 5-7. (EN8) Walls, steel framed—a common construction type in nonresidential buildings.

Alternative combinations of cavity insulation and sheathing in thicker steel-framed walls can be used provided that the proposed total wall assembly has a U-factor that is less than or equal to the U-factor for the appropriate climate zone construction listed in Appendix A. Batt insulation when installed in cold-formed steel-framed wall assemblies is to be ordered as "full width batts" and installation is normally by friction fit.

EN9 *Walls, Wood Frame and Other* (Climate Zones: all)

Cavity insulation is used within the wood-framed wall, while rigid c.i. is placed on the exterior side of the framing (see Figure 5-8). Care must be taken to have a vapor barrier on the warm side of the wall and to utilize a vapor-barrier-faced batt insulation product to avoid insulation sagging away from the vapor barrier.

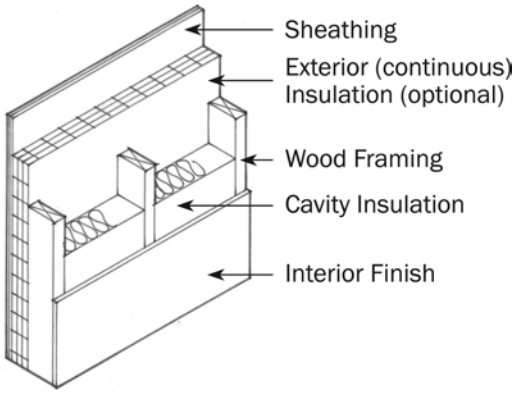
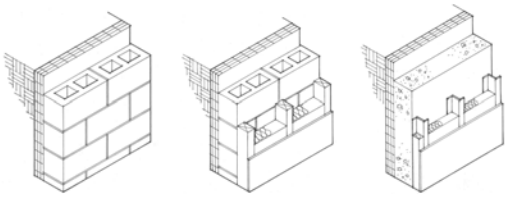


Figure 5-8. (EN9) Walls, wood frame and other.

Alternative combinations of cavity insulations and sheathings in thicker walls can be used provided the total wall assembly has a U-factor that is less than or equal to the appropriate climate zone construction listed in Appendix A.

EN10 *Below-Grade Walls* (Climate Zones: all)



(a) (b) (c)

Figure 5-9. (EN10) Below-grade walls—the outer surface of the wall is in contact with the earth, and the inside surface is adjacent to conditioned or semi-heated space.

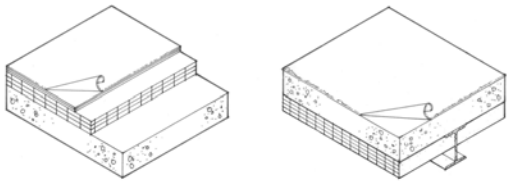
Insulation, when recommended, may be placed on either the inside or the outside of the below-grade wall (see Figure 5-9). If placed on the exterior of the wall, (a) rigid c.i. is recommended. If placed on the interior, a (b) furring or (c) framing system is recommended provided the total wall assembly has a C-factor that is less than or equal to the appropriate climate zone construction listed in Appendix A.

EN11 *Floors, Mass* (Climate Zones: all)

Insulation should be continuous and either integral to or above the slab (see Figure 5-10). It should be purchased by the conductive R-value. This can be achieved by (a) placing high-density extruded polystyrene as c.i. above the slab with either plywood or a thin layer of concrete on top. Placing insulation below the deck is not recommended due to losses through any concrete support columns or through the slab perimeter.

Exception: Buildings or zones within buildings that have durable floors for heavy machinery or equipment could have (b) insulation placed below the deck.

When heated slabs are placed below grade, below-grade walls should meet the insulation recommendations for perimeter insulation according to the heated slab-on-grade construction.



(a) (b)

Figure 5-10. (EN11) Floors, mass—any floor with a heat capacity exceeding 7 Btu/ft^2·°F.

EN12 *Floors, Steel Joist or Wood Frame* (Climate Zones: all)

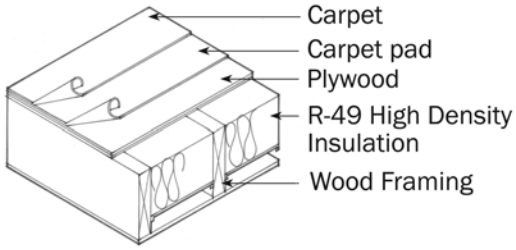


Figure 5-11. (EN12) Floors, wood frame.

Insulation should be installed parallel to the framing members and in intimate contact with the flooring system supported by the framing member in order to avoid the potential thermal short-circuiting associated with open or exposed air spaces (see Figure 5-11).

Nonrigid insulation should be supported from below no less frequently than 24 in. on center.