

## *IDENTIFICATION OF COMMON DETAILS*

A library of 20 common wall assemblies constituting thermal bridges and thermally massive walls and roofs was developed. The list of wall assemblies considered includes wood- and steel-framed wall systems and insulated concrete structures: insulated concrete forms (ICF wall), sandwich walls with metal and plastic ties and two-core block masonry walls, with or without insulation inserts. The wood- and steel-stud wall systems include clear (or center of) wall, corners, intersections between above-grade wall, floor and foundation, wall/roof interfaces and framing-in of walls around windows. The list includes wood-frame structures even though the thermal bridging effect is small because they are so common in building construction.

The following building assemblies were analyzed in this project:

1. 2x4 wood stud with R-11 insulation – clear wall
2. 2x6 wood stud with R-19 insulation – clear wall
3. 2x4 wood stud with R-11 insulation – corner
4. 2x4 wood stud with R-11 insulation – window header
5. 2x4 wood stud – wall/floor
6. 2x4 wood stud – wall/roof
7. Insulated Concrete Form (ICF) Wall: Polysteel ties with finish
8. Concrete/foam/concrete sandwich with metal connectors (clear wall)
9. Concrete/foam/concrete sandwich with plastic connectors (clear wall)
10. 2x4 steel stud – clear wall
11. 2x4 steel stud wall – corner
12. 2x4 steel stud – window header
13. 2x4 steel stud with R-11 insulation – wall/floor
14. 2x4 steel stud with R-11 insulation – wall/roof
15. 2x4 steel stud wall + 1"EPS + Brick (clear wall)

16. 2x6 steel stud wall + R-19 insulation (clear wall)
17. 2x6 steel stud wall + R-19 insulation + 1-in. EPS + stucco (clear wall)
18. 2x6 steel stud wall + R-19 insulation + 1-in. EPS + brick (clear wall)
19. Two-core concrete blocks + empty cores + stucco
20. Two-core concrete blocks + insulated cores + stucco

A graphic representation of each wall assembly is presented in Appendix C. Following each figure is a description of the structural layers and the associated thermo-physical properties.