

Framing Headers and Corners

A summary of framing details for strength and energy efficiency

by Rob Thallon

The walls of a building serve several important purposes: They define the spaces within a building to provide privacy and zoning, and they enclose the building itself, keeping the weather out and the heat or cold in. Walls provide the vertical structure that supports the upper floors and roof of the building, as well as the lateral structure that stiffens the building. Walls also enclose the mechanical systems (electrical wiring, plumbing and heating). To incorporate all of this within a 4-in. or 6-in. deep wood-framed panel is quite an achievement, and numerous decisions need to be made in the course of designing a wall system for a wood-frame building. There are two preliminary decisions to make that establish the framework for the remaining decisions. Once these are made, details such as headers and corner posts can be determined.

Wall thickness—Should the walls be framed with 2x4s or 2x6s? The 2x6 wall has become increasingly popular in recent years, primarily because it provides more space for insulation. This advantage comes at some cost, however. A 2x6 wall with studs spaced 24 in. o. c. (the maximum spacing allowed by codes) uses about 20% more material for studs and plates than a 2x4 wall with studs spaced 16 in. o. c. On the outside of the wall, the sheathing has to be ½ in. thick (⅛ in. thicker than sheathing on a standard 2x4 wall), and inside, the drywall also has to be ⅛ in. thicker to span the greater distance between 2x6 studs. Thicker insulation costs more, too. So, overall, 2x6 framing makes a superior wall but one that costs more. Framing the exterior

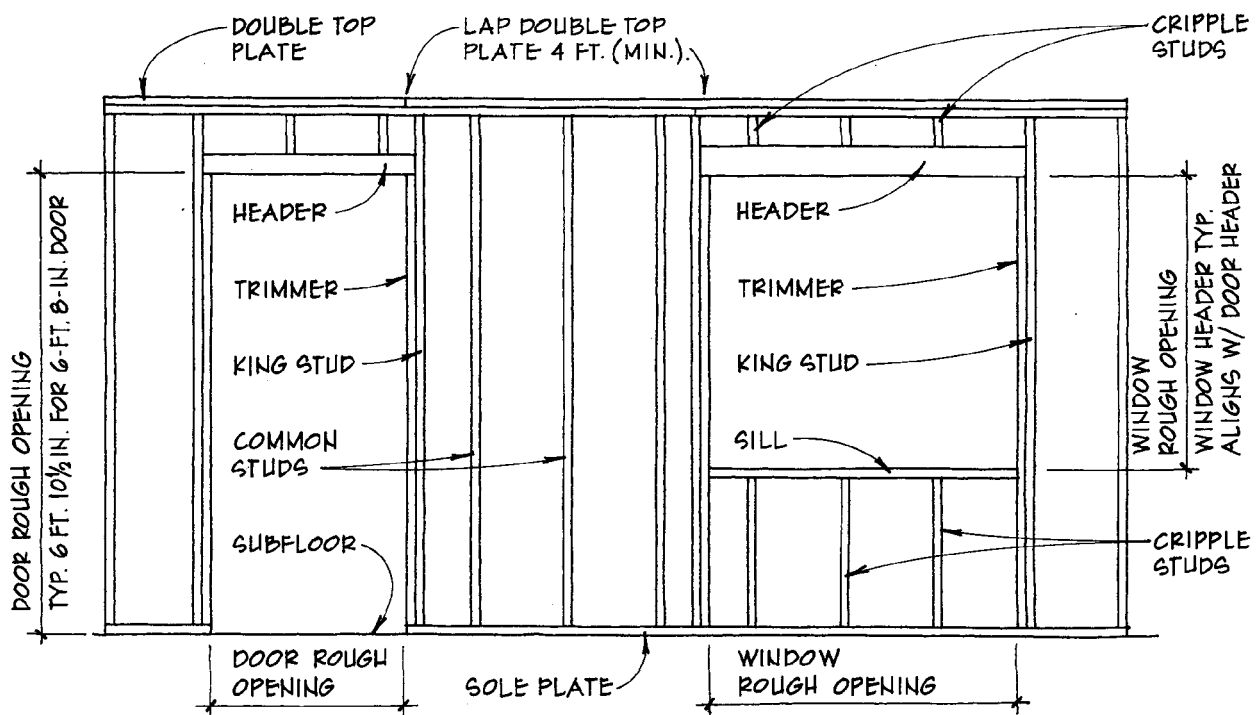
walls with 2x6s and interior walls with 2x4s is a typical combination when the energy-efficient 2x6 wall is selected. Stud spacing of 2x4 and 2x6 walls may vary with loading, lumber grades and finish materials.

Framing style—Should the walls be built using platform framing or balloon framing? Balloon framing, with studs continuous from mudsill to top plate and continuous between floors, was developed in the 1840s and is the antecedent of the platform-framed wall. In recent years, balloon framing has been almost completely superseded by the more labor-efficient and fire-resistant platform-frame construction.

Headers and corners—Header size depends on wood species and grade, loading, header design and rough-opening span. Following is a rule of thumb for sizing a common header type, the 4x header:

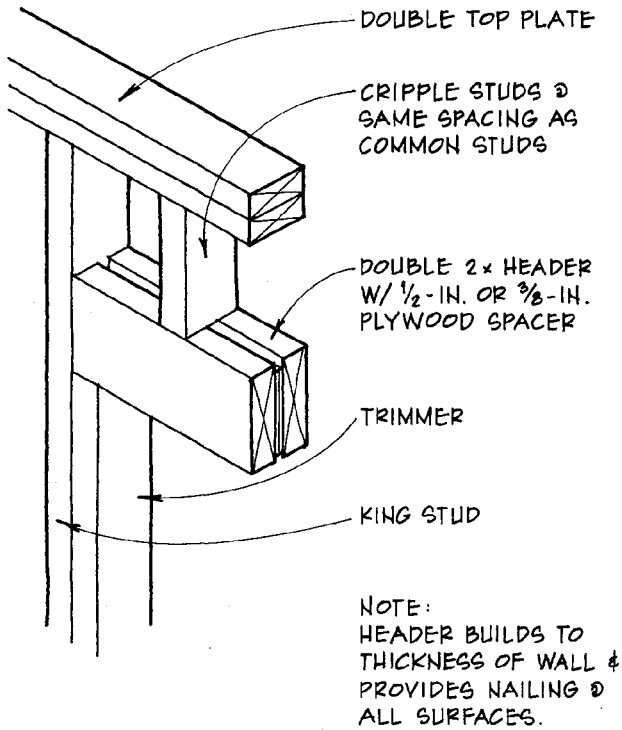
For a single-story building with a 30-lb. live load on the roof and 2x4 bearing walls, the span in feet of the rough opening should equal the depth (nominal) in inches of a 4x header. For example, openings up to 4 ft. wide require a 4x4 header. The drawings on the following pages show various commonly used solutions to the problems of tying adjacent walls together and providing weight transfer around openings. □

Rob Thallon is an architect and builder in Eugene, Oregon. His book, Graphic Guide to Frame Construction, from which this article is excerpted, has just been published by The Taunton Press.

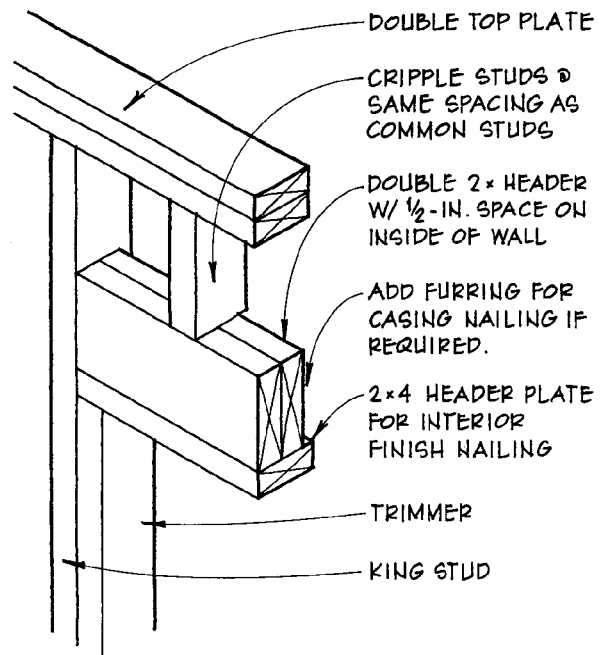


OPENINGS IN A STUD WALL

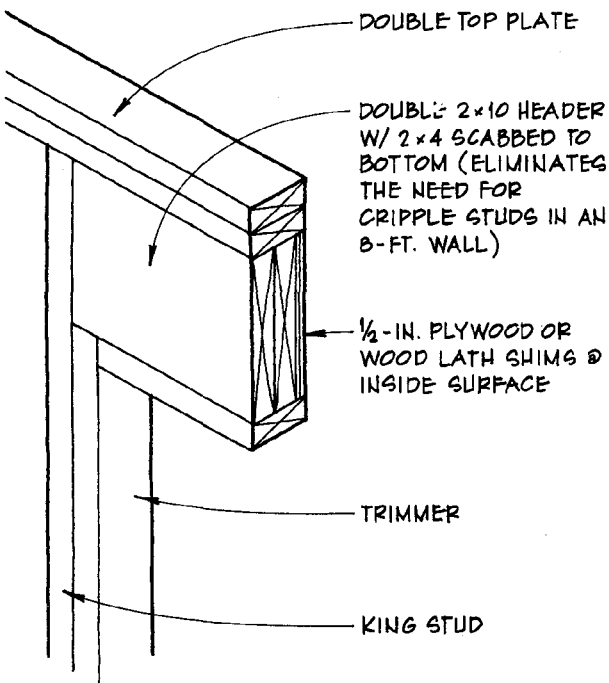
Framing Headers and Corners



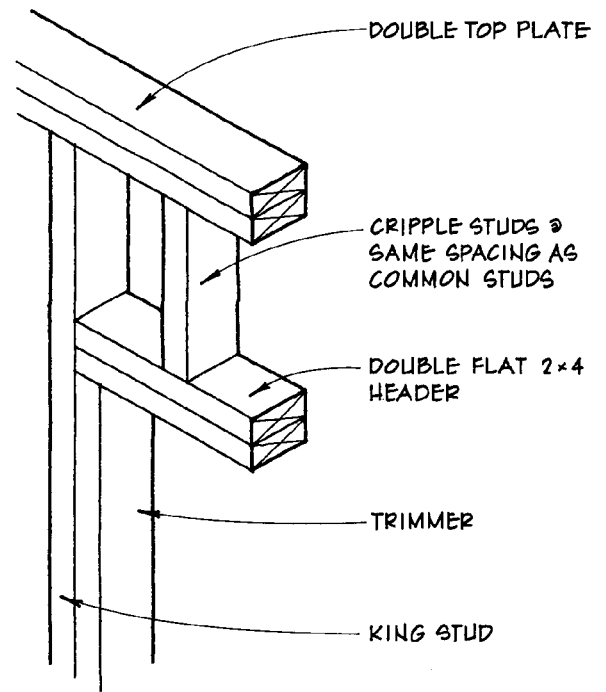
TYPICAL DOUBLE 2x HEADER
2x4 BEARING WALL



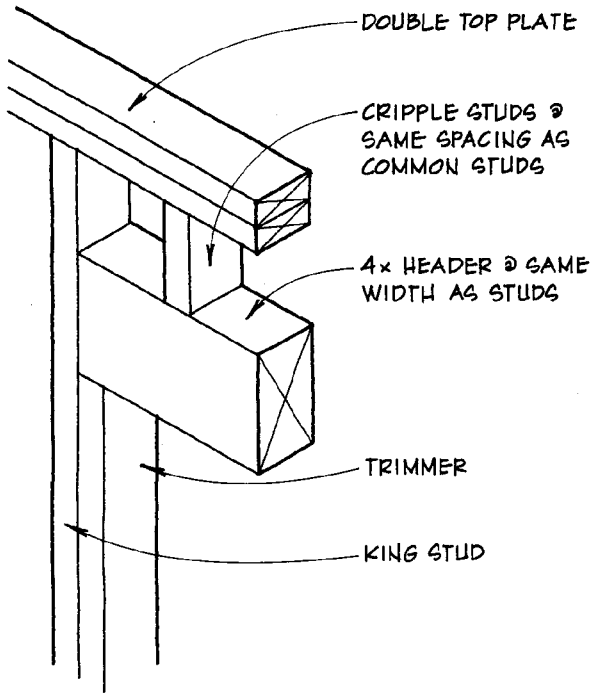
ALTERNATIVE DOUBLE 2x HEADER
2x4 BEARING WALL



DOUBLE 2x10 HEADER
2x4 BEARING WALL

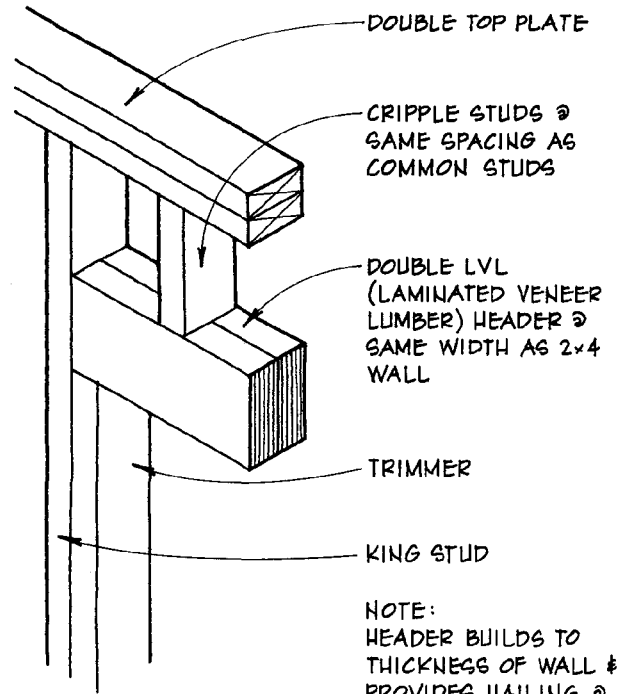


FLAT 2x4 HEADER
2x4 PARTITION WALL



4x HEADER

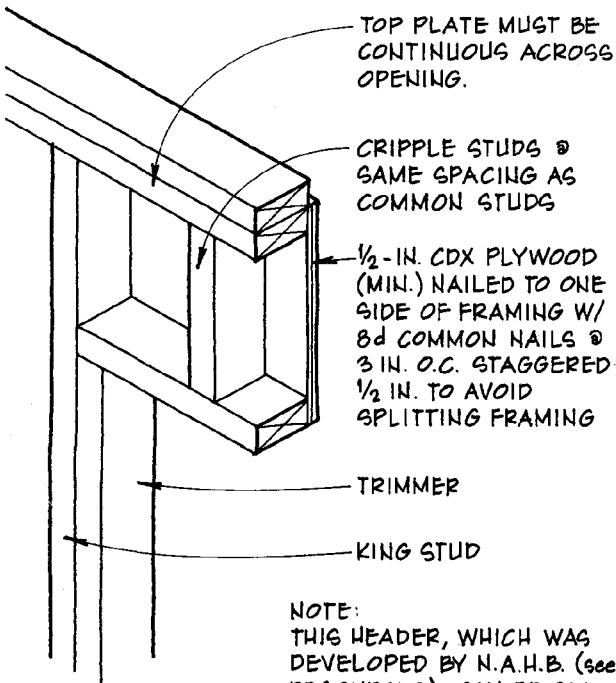
2x4 BEARING WALL



LVL HEADER

2x4 BEARING WALL

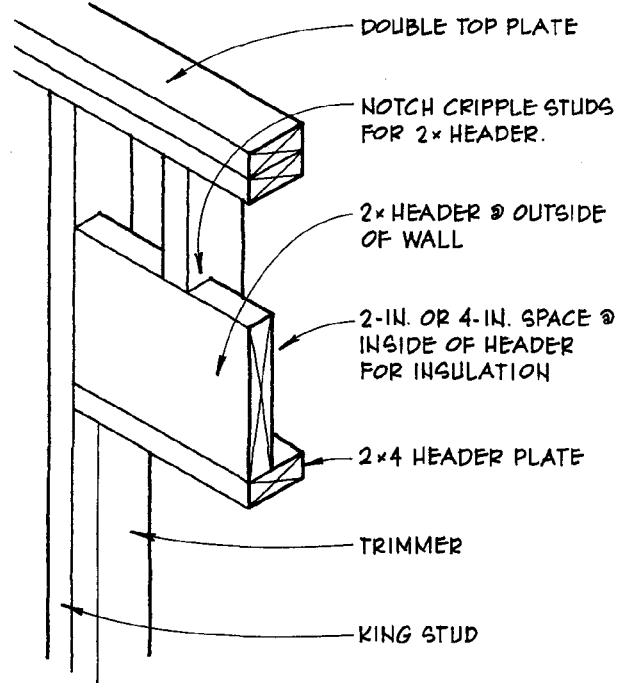
NOTE:
HEADER BUILDS TO THICKNESS OF WALL & PROVIDES NAILING @ ALL SURFACES.



OPEN-BOX PLYWOOD HEADER

2x4 BEARING WALL

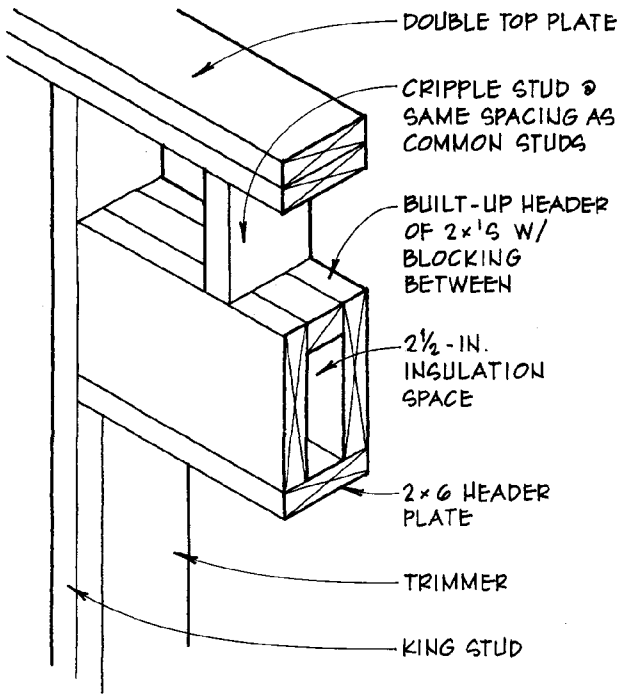
NOTE:
THIS HEADER, WHICH WAS DEVELOPED BY N.A.H.B. (see RESOURCES), CAN BE SIZED TO SPAN UP TO 8 FT.



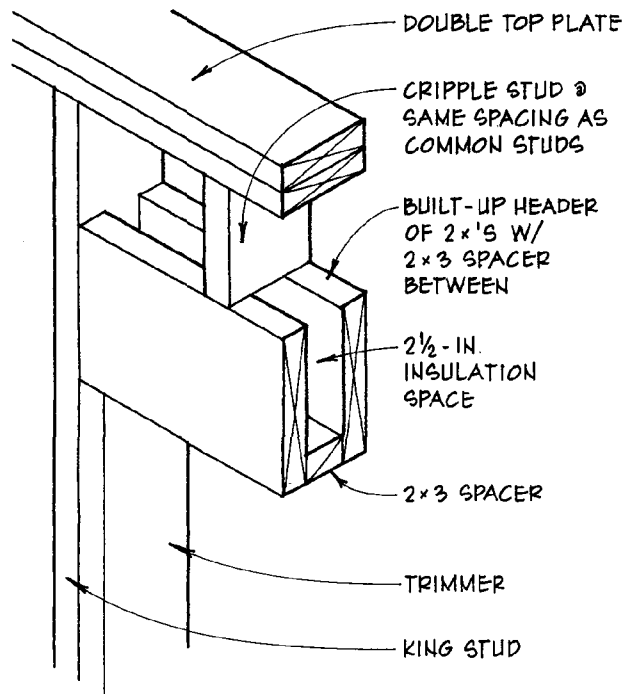
INSULATED HEADER

2x4 OR 2x6 EXTERIOR WALL

Framing Headers and Corners

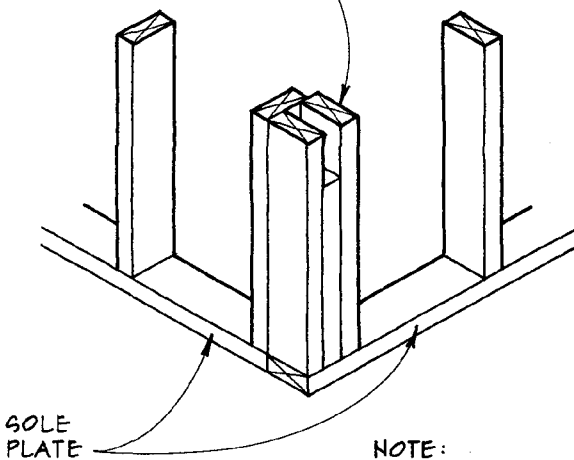


INSULATED DOUBLE 2x HEADER
2x6 BEARING WALL



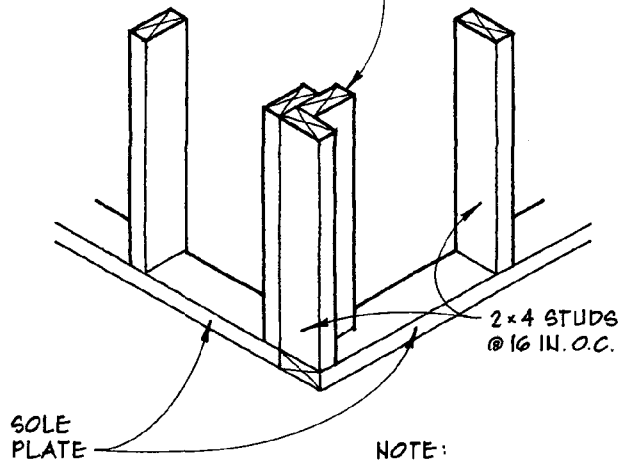
INSULATED DOUBLE 2x HEADER
2x6 BEARING WALL / ALTERNATIVE DETAIL

CORNER STUDS BUILT UP W/
2x4 BLOCKING BETWEEN
PROVIDES NAILING @
INSIDE CORNER.



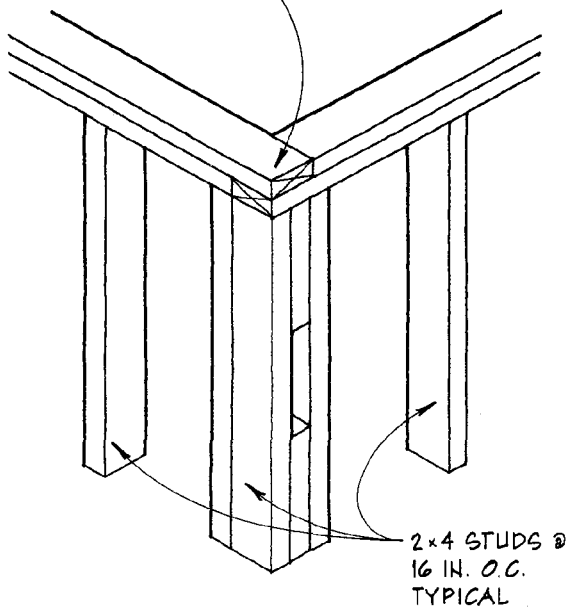
2x4 CORNER
W/ BLOCKING

EXTRA STUD ADDED PERPENDICULAR
TO CORNER STUD PROVIDES NAILING @
INSIDE CORNER & ALLOWS SPACE FOR
INSULATION @ CORNER.



2x4 CORNER
W/ INSULATION @ CORNER

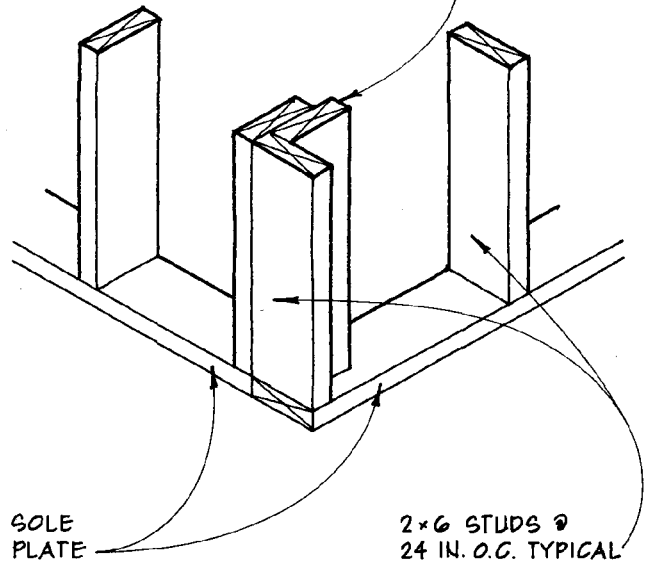
DOUBLE TOP PLATE OVERLAPS @ CORNERS TO LOCK TWO WALLS TOGETHER.



2x4 CORNER

@ DOUBLE TOP PLATE

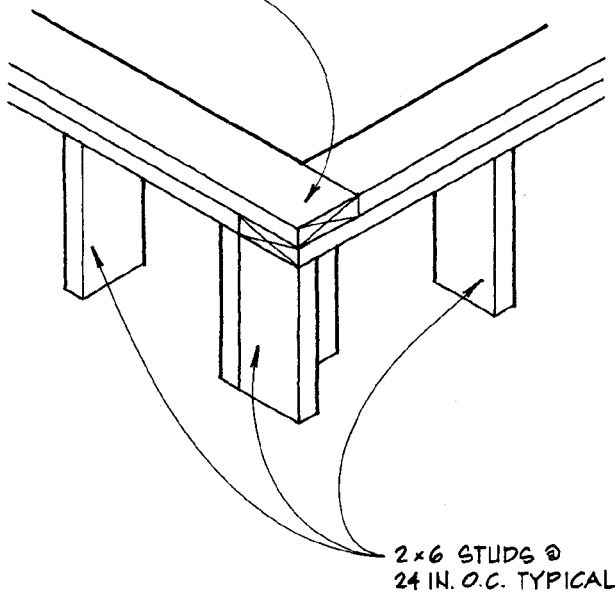
EXTRA STUD ADDED PERPENDICULAR TO CORNER STUD PROVIDES NAILING @ INSIDE CORNER & ALLOWS SPACE FOR 4-IN. THICK INSULATION @ CORNER.



2x6 CORNER

W/ INSULATION @ CORNER

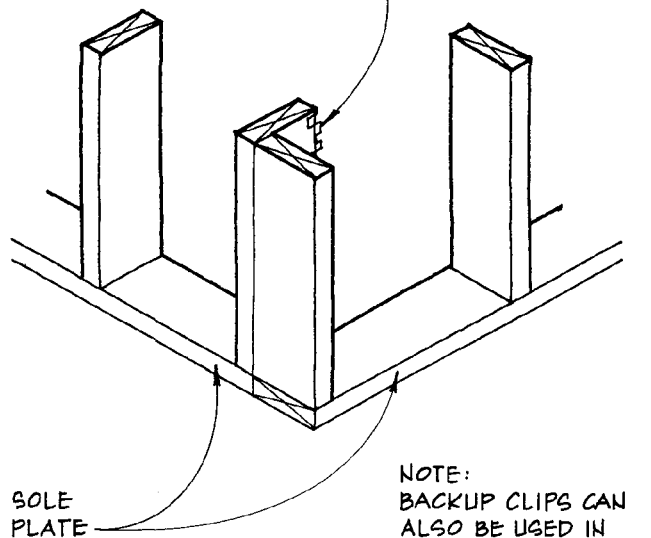
DOUBLE TOP PLATE OVERLAPS @ CORNERS, LOCKING TWO WALLS TOGETHER.



2x6 CORNER

@ DOUBLE TOP PLATE

METAL BACKUP CLIPS @ INSIDE CORNERS OF GYPSUM WALLBOARD ELIMINATE NEED FOR EXTRA STUD, ALLOWING FOR FULL THICKNESS OF INSULATION.



SUPERINSULATED 2x6 CORNER

OUTSIDE CORNER ONLY