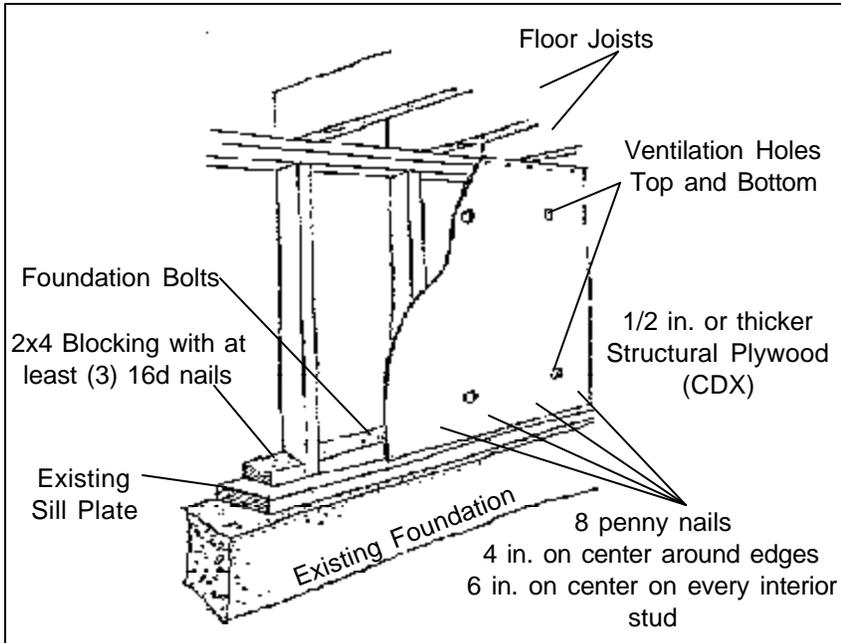


Sheathing Cripple Walls

Adapted from EQE International and used with permission.
Prepared by the Peninsulas Emergency Preparedness Committee
of Washington 11/00 (www.pep-c.org)



Floor joists framed perpendicular to the foundation should be restrained by either an existing rim joist or full-depth blocking between alternate joists. The minimum bottom edge connection (to the top plates) should consist of 8d toe nails spaced at 6 inches for the rim joist, or three 8 d nails per block. When this minimum bottom edge connection cannot be verified, a supplemental connection should be provided (Simpson A35 or A35F).

Where floor joists are parallel to the exterior walls, the end joists should be in contact with the sill plate. Minimum bottom connections should be 8d toe nails spaced 6 inches apart.

1. Mark the centerline of the vertical studs on the foundation and above

the cripple wall to locate the studs behind the plywood for later nailing.

2. Locate all exterior ventilation grates with respect to some easy reference point so that they will not be covered with plywood. Blocks should be installed with the long dimension flat against the plywood to allow ventilation.

3. Cut the plywood with a circular saw using a plywood blade. No sheet should be less than 24 inches wide (all sheets should be nailed to at least three studs).

4. Place each pre-cut section of plywood up to check the fit. It may need to be trimmed; a jigsaw can be used to trim the plywood without taking it out of the crawl space.

5. Tack the plywood up temporarily with a few nails. Using a chalk line, snap a line on the plywood between the marks made in step 4. Nail the plywood to the studs and plates with 8d nails (larger nails may split the studs). The nails should be spaced 3 inches apart around the entire perimeter of each plywood panel (at all panel edges) and 6 inches apart in the middle of each sheet.

Before You Begin

Prior to sheathing cripple walls, make sure that no wood rot or termite infestation will be covered. If any doubt exists, consult a professional pest control agency.

1. Check the sill plate to ensure that it has been adequately bolted to the foundation.

2. Check to ensure that the sill and top plates and the studs are the same dimensions (flush at the face). If not, block between the studs and nail the blocks into the plates with six 16d nails per block to create a flush nailing surface for the plywood.

3. Measure the distance between the bottom of the sill plate and the top of the top plate. Measure the distance between the corner stud and the middle of a stud at 4 feet or 8 feet away to be sure that a standard sheet will fit. If not, two sides of the 4 ft. x 8 ft. sheet will need to be cut. Check with a framing square to ensure that the studs are square and use it to lay out cuts on the plywood.

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Nails should be located at least 3/8 inch from the edge of the plywood and near the centerline of the studs. Nails should be driven flush but should not fracture the surface of the plywood sheathing and should penetrate the stud a minimum of 1 1/2 inches. All plywood joints and edges must have a stud backing and perimeter nailing.

6. Measure and, using the jigsaw, cut out space with the same dimensions as the ventilation grates previously located.

7. Using a hole saw, drill two 1 1/2 inch ventilation holes for each cavity between the studs. The holes should be approximately 2 inches up from the sill plate, 2 inches down from the top plate, and centered between the studs.

8. Measure the next section to be cut and fit after the previous section has been completely attached.

NOTE: In most single story houses, it would not be necessary to sheath the entire cripple wall area. However, since this is a homeowner project, it would be less expensive to do the extra sheathing than to hire an engineer to advise you on which areas should be sheathed.

As a general rule, sheathed areas should be at least 8 feet in length and no farther than 12 feet apart. Premanufactured hardware known as holddowns should be used at the ends of walls where the length is less than twice the height of the cripple wall. Good locations for sheathing are at corners and immediately below walls (not windows).

The minimum total length of plywood sheathing should be 40% to 50% of the total exterior and interior bearing walls for one story buildings, and 80% for two-story buildings.

Consulting an Expert

Consult a structural engineer for advice if you have any of the following conditions:

1. Brick foundation (especially houses built prior to 1906).
2. Brick houses, brick or stone veneers on wood frame houses, and brick higher than the waist.
3. High chimneys which may need replacing, removal or bracing.
4. Large window areas on exterior walls, particularly on two or more story homes.
5. Split-level house with room over the garage. The walls at the back of the garage and around the garage should be made of plywood.
6. Unusual, dramatic architecture, particularly on steep slopes.

Supply List

1/2 inch STRUCTURAL I or C-DX plywood
8d common nails
Simpson HD2A holddown or equivalent
Simpson A35 framing clips with N8 nails or equivalent

Tool List

Circular Saw
Jigsaw
1 1/2 inch hole saw
Framing square
Hammer
Plywood blade
Tape measure
Chalk line
Pencil