

# ALTERNATE BRACED WALL PANELS

## ONE STORY BUILDING

Braced wall panels and Alternate Brace Wall Panels continue to be building code requirements that can be used in the design and construction to good advantage in homes with 'window walls.' The International Building Code [IBC] and the International Residential Code [IRC] [2006 editions] provide for the Alternate Braced Wall Panel method in IBC 2308.9.3.1 and IRC 602.10.6.

The most obvious location where this condition may apply is on each side of the garage door opening. Another location where this issue may be applicable is on a wall with a fair amount of glazing where 4' wide braced panels would disrupt the desired glazing locations.

The following is the code section for alternate braced wall panels for one-story buildings with illustrations and hold-down options. The maximum height and width of each panel shall be in accordance with **Table R602.10.6**.

IBC 2308.9.3.1 [IRC 602.10.6] Alternate bracing. Any bracing required by Section 2308.9.3 [IRC 602.10.4] is permitted to be replaced by the following:

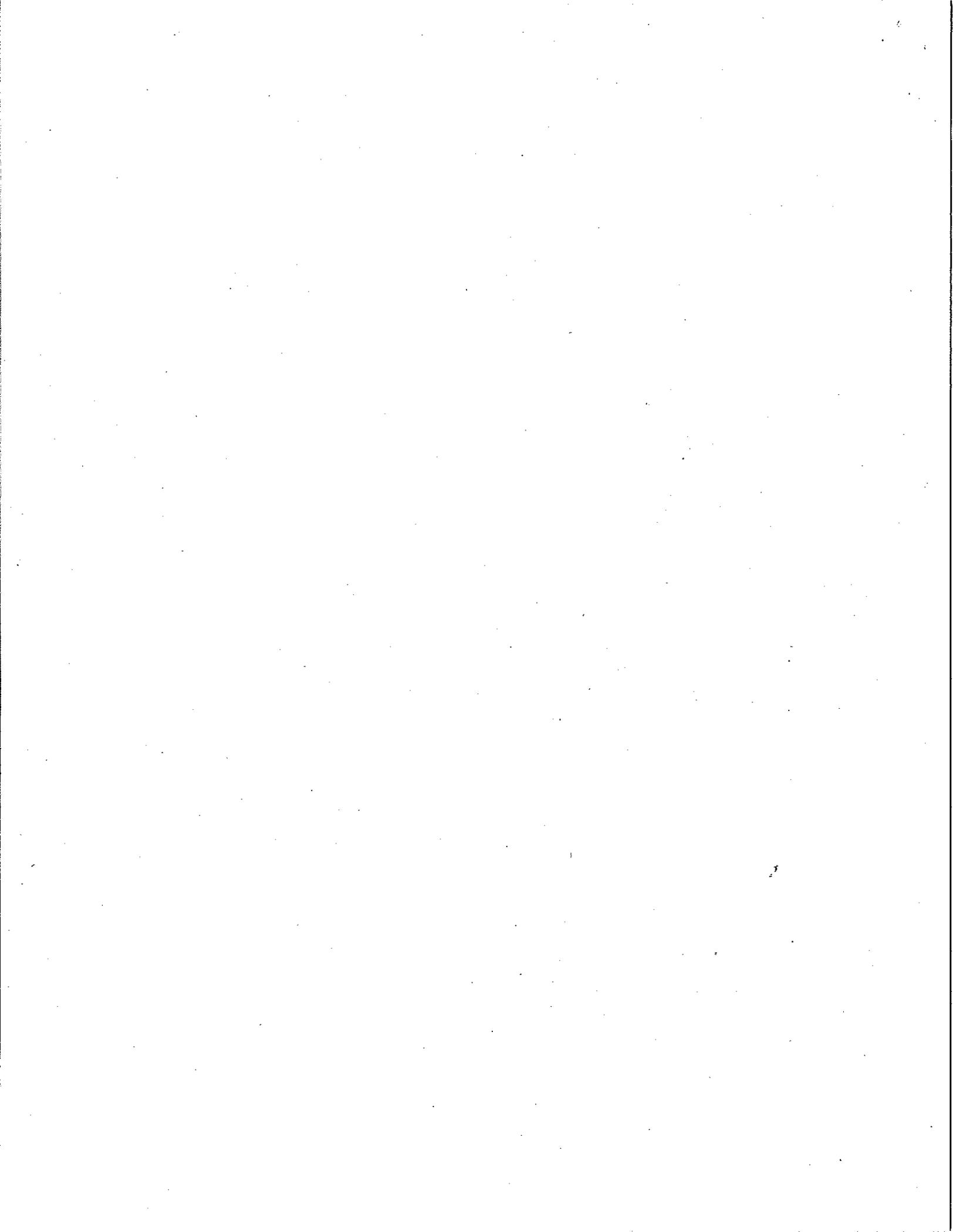
### Item 1.

In one-story buildings, each panel shall be sheathed on one face with 3/8-inch-minimum-thickness (10 mm) wood structural panel nailed with 8d common or galvanized box nails in accordance with Table 2304.9.1 [IRC 602.3(1)]. Fastener spacing of 6 inch at edges, 12 inch at intermediate supports and blocked at all wood structural panel sheathing edges. Two anchor bolts installed in accordance with Section 2308.6 [IRC Figure 403.1(1)] shall be provided in each panel. Anchor bolts shall be placed at panel quarter points. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing an approved uplift capacity in accordance with Table R602.10.6. The tie-down device shall be installed in accordance with the manufacturer's recommendations. The panels shall be supported directly on a foundation or on floor framing supported directly on a foundation that is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom.

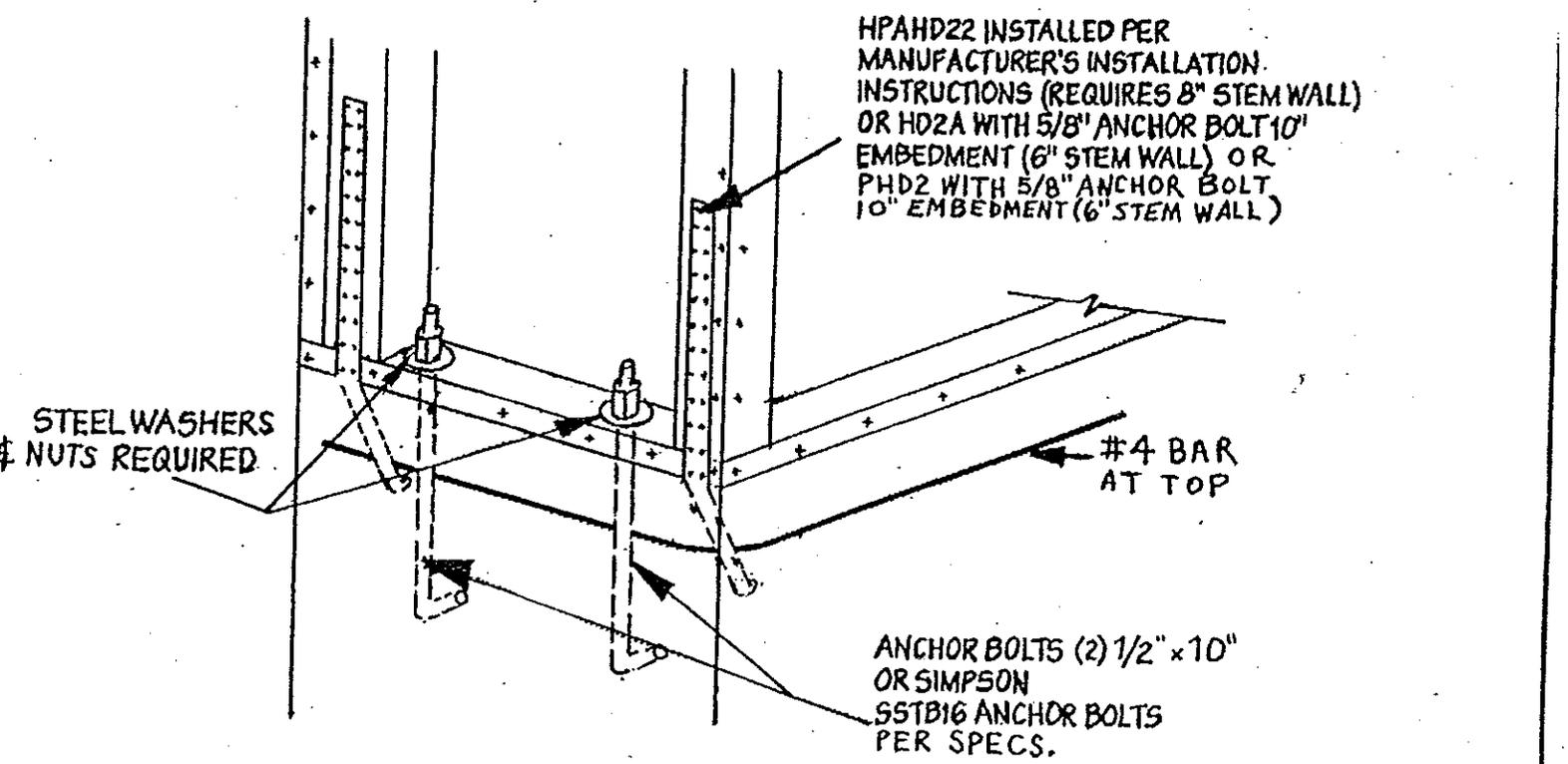
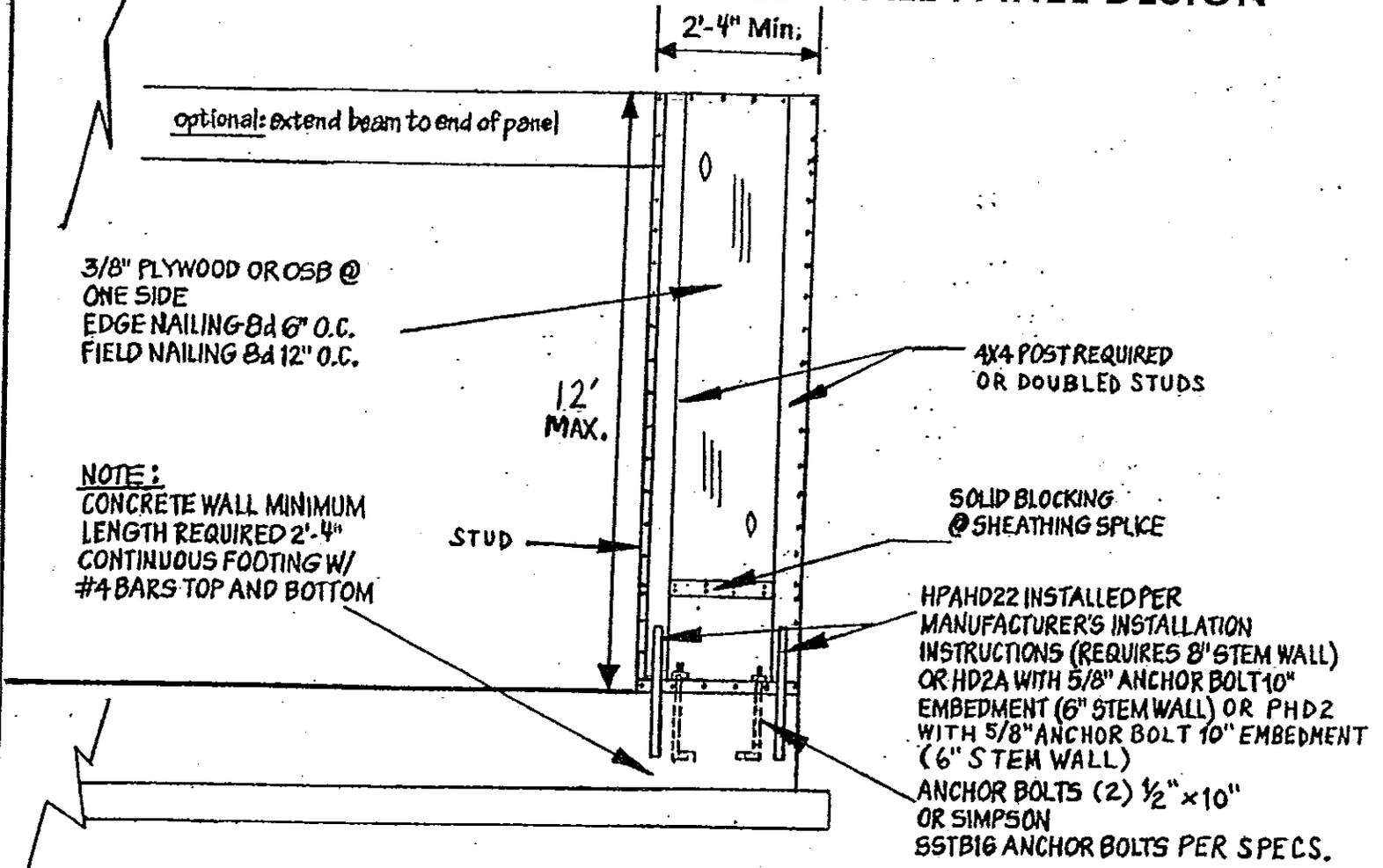
TABLE R602.10.6  
MINIMUM WIDTHS AND TIE-DOWN FORCES OF ALTERNATE BRACED WALL PANELS

SEISMIC DESIGN CATEGORY AND WINDSPEED	TIE-DOWN FORCE (lb)	HEIGHT OF BRACED WALL PANEL				
		Sheathed Width				
		8 ft. 2' - 4"	9 ft. 2' - 8"	10 ft. 2' - 8"	11 ft. 3' - 2"	12 ft. 3' - 6"
SDC A, B, and C Windspeed < 110 mph	R602.10.6.1, Item 1	1800	1800	1800	2000	2200
	R602.10.6.1, Item 2	3000	3000	3000	3300	3600

Please contact the Latah County Department of Planning and Building if you have any questions.



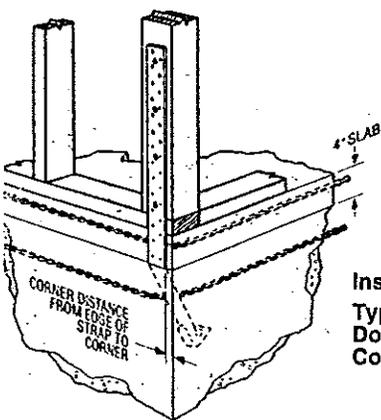
# ONE (1) STORY 2'-4" BRACED WALL PANEL DESIGN



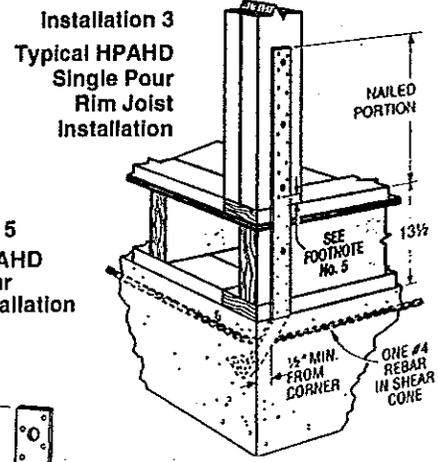
◆ IBC/IRC 2308.9.3.1 [602.10.6] ALTERNATE BRACING  
 ◆ HOLD-DOWN DEVICE SHALL BE CAPABLE OF PROVIDING AN UPLIFT CAPACITY OF NOT LESS THAN 1,800 lbs.

## 2'-4" SINGLE STORY ALTERNATE BRACED WALL PANEL

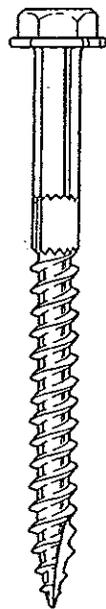
# HOLD-DOWN DEVICE EXAMPLE OPTIONS (SINGLE STORY ALTERNATE BRACE WALL PANELS) CAPABLE OF PROVIDING AN UPLIFT CAPACITY OF NOT LESS THAN 1,800 lbs.



**Installation 5**  
Typical HPAHD  
Double Pour  
Corner Installation

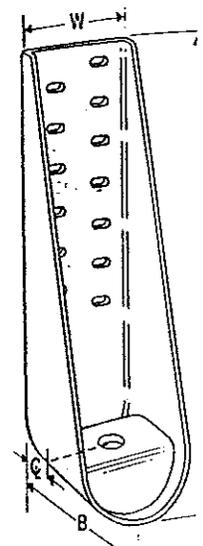


**Installation 3**  
Typical HPAHD  
Single Pour  
Rim Joist  
Installation

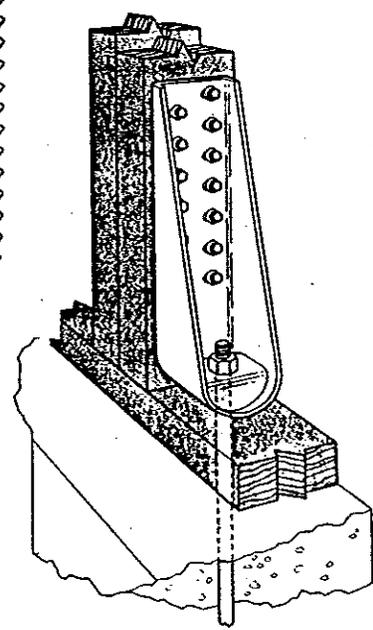


**SDS 1/4 X 3**  
Patent Pending

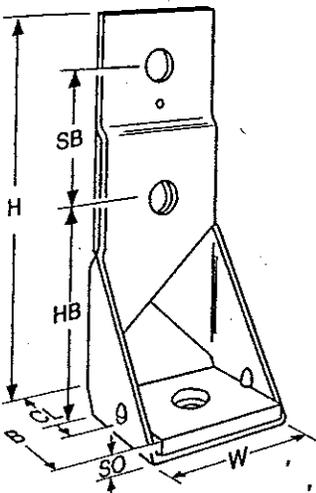
Identification on all screw heads



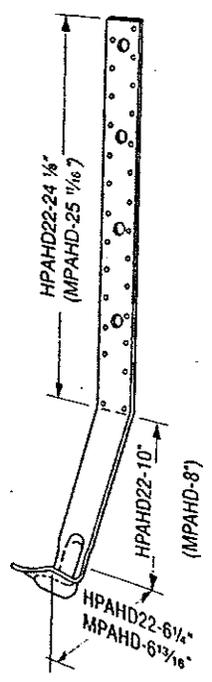
**PHD5**  
(others similar)  
Patent Pending



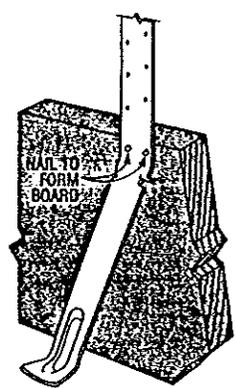
Typical PHD Installation  
as a Holddown



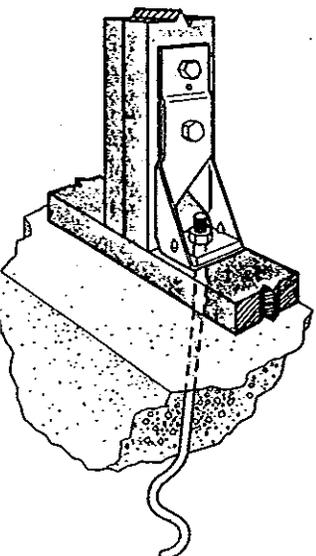
**HD5A**  
(HD2A similar)  
U.S. Patent 4,665,672  
Canada Patent 1,253,481



**HPAHD22**  
(MPAHD similar)

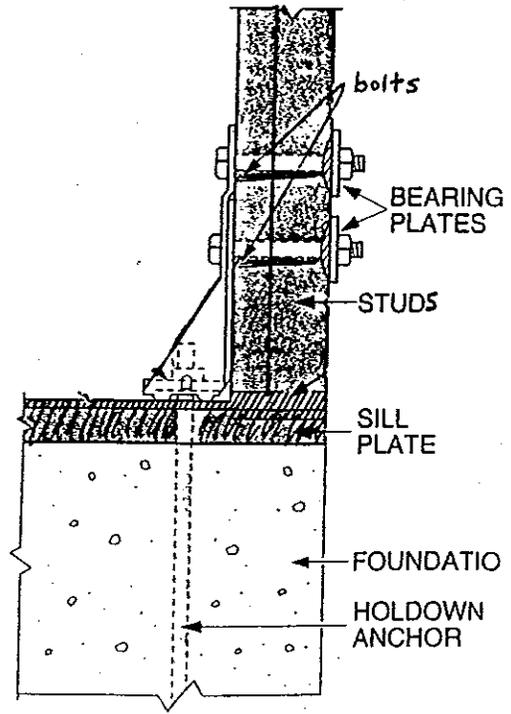
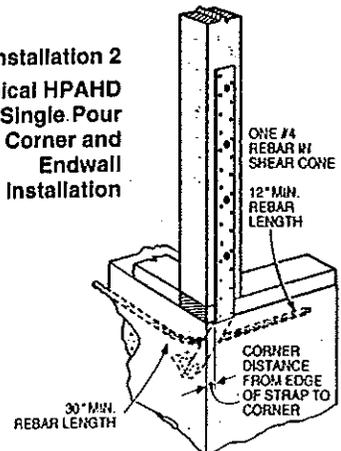


Typical  
**HPAHD22-2P**  
before the  
Concrete Pour  
(MPAHD and  
HPAHD similar)



Typical HD5A  
Holddown  
Installation with  
SSTB anchor bolt.  
Washers are not  
required at base.

**Installation 2**  
Typical HPAHD  
Single Pour  
Corner and  
Endwall  
Installation



## Single and Double Portal Frames

(Alternate Braced Wall Panels Adjacent to a Door or Window Opening)

### ONE AND TWO STORY BUILDINGS

Alternate braced wall panels constructed in accordance with one of the following provisions are also permitted to replace each 4 feet of braced wall panel as required by Section R602.10.4 for use adjacent to a window or door opening with a full-length header:

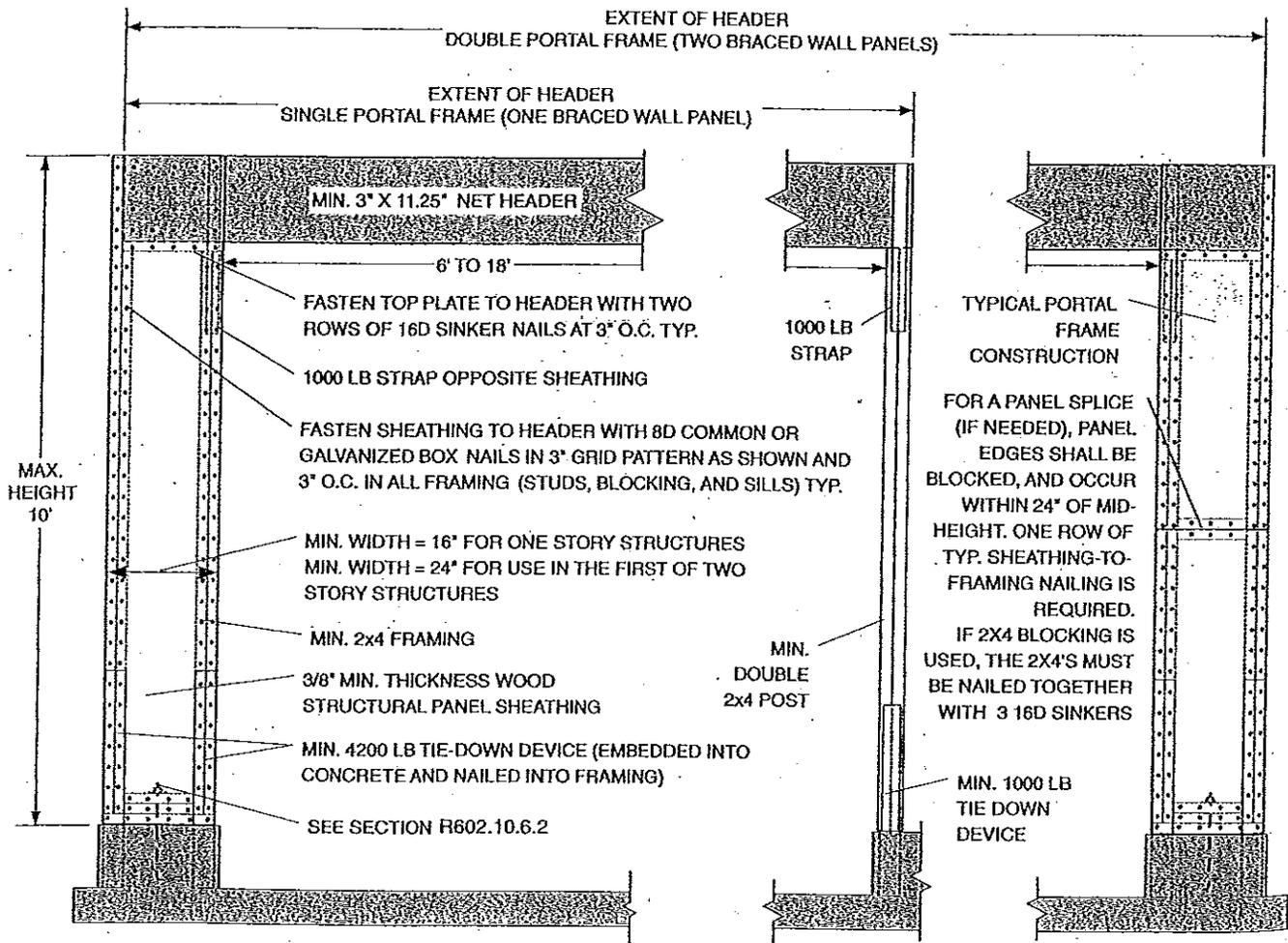
**Item 1.** In one-story buildings, each panel shall have a length of not less than 16 inches and a height of not more than 10 feet. Each panel shall be sheathed on one face with a layer of 3/8-inch-minimum-thickness (10mm) wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Figure R602.10.6.2. The wood structural panel shall extend up over the the solid sawn or glue-laminated header. Use of a built up header consisting of at least two 2 x 12s shall be permitted. A spacer if used shall be placed on the opposite side of the sheathing. The header shall extend between the inside faces of the first full-length outer studs of each panel. The clear span of the header between the inner studs of each panel shall be not less than 6 feet or more than 18 feet in length. A strap with an uplift capacity of not less than 1000 pounds shall fasten the header to the side of the inner studs opposite the sheathing. One anchor bolt not less than 5/8-inch diameter shall be installed in the center of each sill plate. The studs at each end of the panel shall have a tie-down device fastened to the foundation with an uplift capacity of not less than 4,200 pounds.

Where a panel is located on one side of the opening, the header shall extend between the inside face of the first full-length stud of the panel and the bearing studs at the other end of the opening. A strap with an uplift capacity of not less than 1000 pounds shall fasten the header to the bearing studs. The bearing studs shall also have a tie-down device fastened to the foundation with an uplift capacity of not less than 1000 pounds.

The tie-down devices shall be an embedded-strap type, installed in accordance with the manufacturer's recommendations. The panels shall be supported directly on a foundation which is continuous across the entire length of the braced wall line. The foundation shall be reinforced with one #4 bar top and bottom.

**Item 2.** In the first story of two-story buildings, each wall panel shall be braced in accordance with Item 1 above, except that each panel shall have a length of not less than 24 inches.

Please contact the Latah County Department of Planning and Building if you have any questions.



MINIMUM LENGTH OF BRACED WALL PANEL (Inches)			MAXIMUM OPENING HEIGHT NEXT TO THE BRACED WALL PANEL (% of wall height)
8-foot wall	9-foot wall	10-foot wall	
48	54	60	100
32	36	40	85
24	27	30	65

For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 pound per square foot = 0.0479kPa.

- Linear interpolation shall be permitted.
- Full-height sheathed wall segments to either side of garage openings that support light frame roofs only, with roof covering dead loads of 3 psf or less shall be permitted to have a 4:1 aspect ratio.
- Walls on either or both sides of openings in garages attached to fully sheathed dwellings shall be permitted to be built in accordance with Section R602.10.6.2 and Figure R602.10.6.2 except that a single bottom plate shall be permitted and two anchor bolts shall be placed at 1/3 points. In addition, tie-down devices shall not be required and the vertical wall segment shall have a maximum 6:1 height-to-width ratio (with height being measured from top of header to the bottom of the sill plate). This option shall be permitted for the first story of two-story applications in Seismic Design Categories A through C.