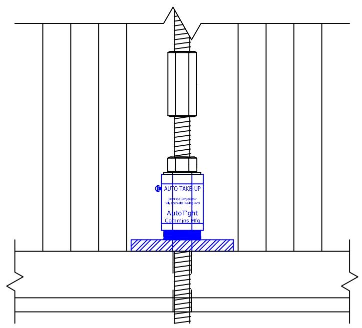
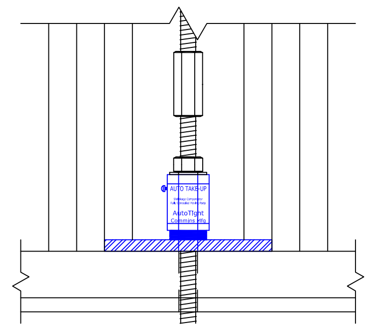
Bearing Plate Installation & Fit



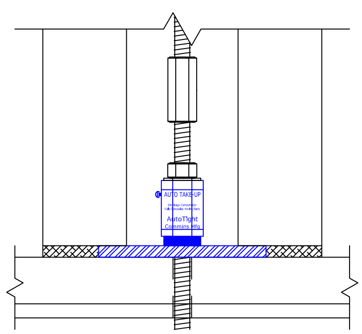
Bearing Plate Between Posts

Posts normally bear on the sill plate with 6" between them. Bearing Plate fits between them on the sill plate.
If bearing plate is longer than 6" the posts are moved apart as needed to allow the Bearing Plate to fit between them.
The final distance between the compression posts is quite flexible. Spacing is typically between about 3" and about 10". For other spacings call the factory.



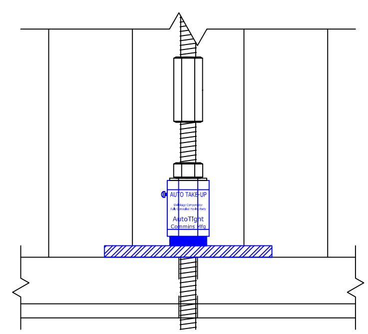
Large Bearing Plate Full Bearing

If the posts must be closer than the Bearing Plate length, the posts may be moved closer to the rod by one or more post widths. This allows the posts to rest completely on the Bearing Plate.
This arrangement is often built with stacks of 2x posts with some of the 2x posts resting on the Bearing Plate and the others on the sill plate.



Large Bearing Plate Shimmed

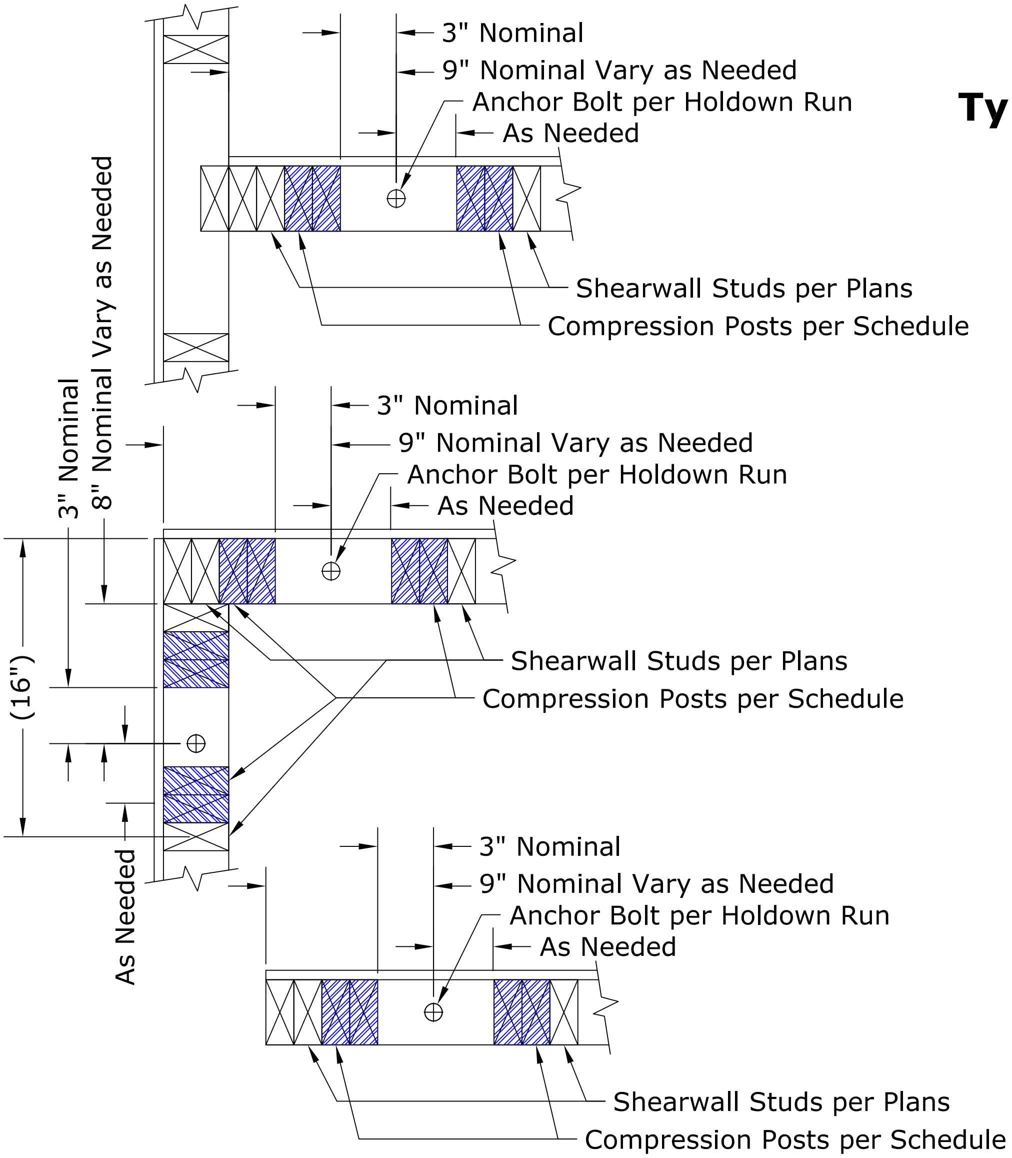
If neither of the above configurations will work, shim under the bottoms of the posts with plywood the exact same thickness as the Bearing Plate.



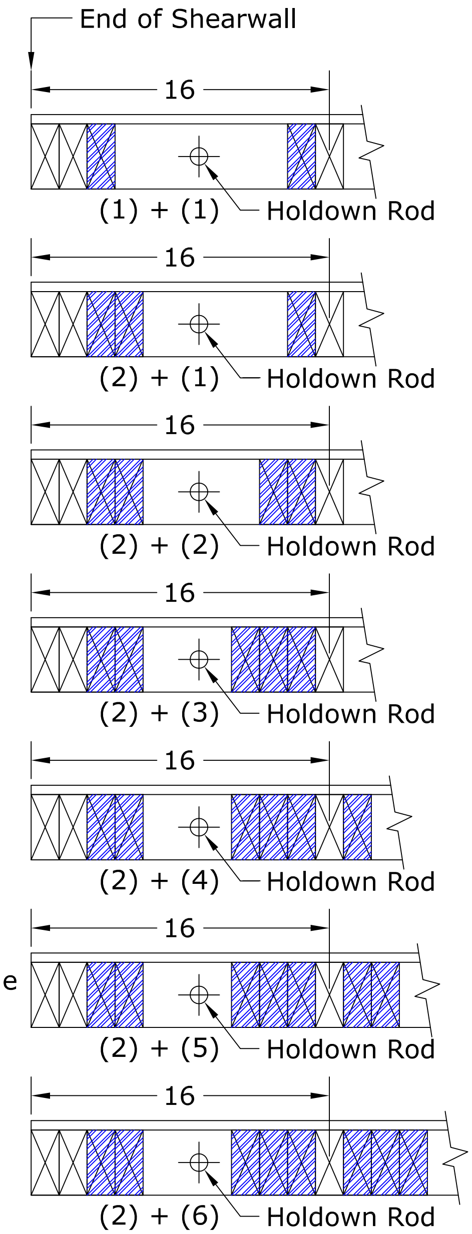
Large Bearing Plate Notched

If none of the other configurations will work. Notch the bottom of the compression posts. Part of the post will rest on the Bearing Plate and the other part of the post will rest on the sill plate.
This option is more time consuming and it is harder to get a good fit.

Typ. Tie-Down and Post Layout



Typical Post Stacking



When 6 or more 2x posts are stacked, either place some in the next bay or adjust end bay spacing to fit.

Compression Post Calculations

The allowable compression load is the lower of the Sill Plate Cross Grain Crushing or Post Buckling.

Crushing:

Allowable Crushing Load = (Fcperp x Cfrt x A)

Where:
Fcperp = Perpindicular to Grain Allowable Load for sill plate wood species per NDS 2005, Table 4A
Cfrt = Fire Retardant Treated factor = Obtain Cfrt from the the fire retardant treatment supplier
A = Total bearing Area of ends of posts = post width * post depth * post qty

Buckling:

Allowable Buckling Load = Parallel To Grain Value * Total Area of ends of compression posts (F'c x A)

Where:
F'c := Fc* x Cp

Fc* := Fc x Cd x Cf x Cfrt
Fc = Species Compression Strength Parallel to Grain per NDS 2005, Table 4A
Cd = Load Duration Factor = 1.6 (seismic) per NDS 2005, Table 2.3.2 (10 minutes seismic)
Cf = Size Factor per NDS 2005, Table 4A p.30 Adjustment Factors per species and post size
Use the through-wall thickness of the post. The shearwall construction constrains the post to bend in the thin direction of the whole wall.
4x wall: Cf= 1.15, 6x wall: Cf= 1.1, 8x wall: Cf= 1.05
Cfrt = Fire Retardant Factor = 1.0 (untreated) Obtain Cfrt from fire retardant treatment supplier.

Cp := $(1 + (FcE / Fc^*) / 2 \times c) - \text{sqrt}[(1 +(FcE / Fc^*) / 2 \times c)^2 - ((FcE / Fc^*) / c)]$
FcE = $0.822 \times E'min / (le / d1)^2$
Emin = Species Minimum Modulus of Elasticity per NDS 2005, Table 4A
le = effective length of post
d1 = depth of post (through the wall direction)
Fc* = see above
c = 0.8 for sawn lumber

A = Total bearing Area of ends of posts = post width * post depth * post qty

Excerpts from NDS (2005) Table 4A			
Wood Species	Fc perp psi	Fc parallel psi	Emin psi
DFL #1	625	1550	620,000
DFL #2	625	1350	580,000
HF #1	405	1350	550,000
HF #2	405	1300	470,000
SPF #1/#2	425	1150	510,000