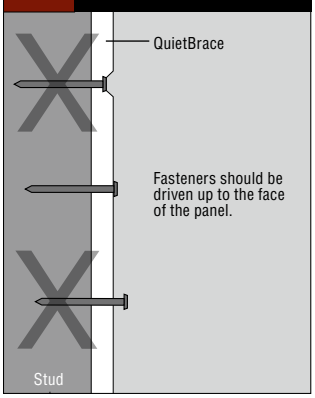
Overdriven Fasteners with ½" QuietBrace™ Structural Wall Sheathing

FIG. 1 QUIETBRACE NAIL DEPTH



Normal field installation of QuietBrace™ sound-deadening structural wall sheathing may result in some fasteners in each panel being overdriven (nail heads or staple crowns imbedded in face of sheet). **(FIG. 1)**

Overdriving is caused by one or a combination of factors:

- improperly adjusted pneumatic gun
- variable and/or excessive air pressure
- malfunctioning compressor
- variable wood stud density
- carelessness of builder/installer
- lack of understanding by builder/installer that building codes and Temple-Inland, as the manufacturer, require that each fastener be driven snugly up to the face of the panel
- lack of enforcement of same by the inspector

In practice, however, especially with pneumatic drivers, 100% flush driving is difficult to achieve consistently. Fastener overdriving is neither condoned nor encouraged, but it is frequently observed in the field. It weakens the connection between two materials and reduces the holding power of the fastener. Following is an engineering analysis for estimating the effect of overdriving on bracing performance of QuietBrace.

Required installation calls for 126 fasteners for a 4' x 8' QuietBrace panel applied to 16" o.c. studs. Resulting shear values are (from AFA 'Fiberboard Sheathing' and PFS/TECO Report 96-60):

Roofing Nails:
230 plf or 920 lb/panel

7/16" crown staples:
200 plf or 800 lb/panel

1" crown staples:
300 plf or 1200 lb/panel

(Specific fasteners are listed in QuietBrace product literature.)

When properly installed with any of these fastener types, QuietBrace is recognized and fully acceptable under the codes as structural wall bracing for many applications. The shear values result after a 2.8 safety factor is applied to the ultimate failure loads, so the failure loads are actually 280% of the design loads above.

With this is mind, the table below is a guide for determining the acceptability of installed wall bracing panels when overdriven fasteners are observed.

For an installation using correctly spaced 1" crown staples, for example, if 25 fasteners (20% of the total required) were overdriven by 1/8", the shear performance of the QuietBrace bracing panel would be reduced by 5.0%, from 300 plf to 285 plf. At this reduced level the installation would still easily surpass the prescriptive shear requirement in the codes.

A QuietBrace installation with no more than 25-30% overdriven fasteners is acceptable and will perform as intended. However, good building practice and quality workmanship includes use of the correct fasteners, flush-driven and properly spaced. This will assure the full benefits of QuietBrace are utilized for structural bracing. Where bracing panels are installed with overdriven fasteners, these guidelines will assist in assessing the installation.

ACCEPTABILITY GUIDE FOR OVERDRIVEN FASTENERS

Overdriven by 1/8"			
FASTENERS (% OF FASTENERS)	13 (10%)	25 (20%)	63 (50%)
PANEL SHEAR PERFORMANCE REDUCTION	2.6%	5.0%	12.5%
Overdriven by 3/16"			
FASTENERS (% OF FASTENERS)	13 (10%)	25 (20%)	63 (50%)
PANEL SHEAR PERFORMANCE REDUCTION	3.9%	7.5%	18.75%