



# PAC-TIE

## Pac-Tie System

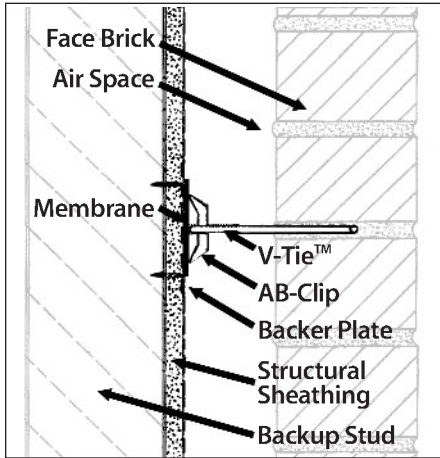


Figure 1 Pac-Tie Application

The Pac-Tie (Plate Adjustable Connector Tie) system is designed to facilitate the placement of an adjustable tie on top of protected drywall or structural sheathing. Protected drywall is defined as per CSA Standard CAN3-A370-04 "Connectors for Masonry", ACI/ASCE/TMS/518 and U.B.C. Structural sheathing is described in the National Building Code of Canada. The Pac-Tie system is illustrated in *Figure 1*.

The Pac-Tie system provides resistance to damage of the protected drywall or structural sheathing from the concentrated compressive loads, vibration, and other movements produced by the masonry veneer.

The Pac-Tie system provides for construction adjustability, allows for differential vertical movement between the backup wall and the veneer, and can accommodate cavity widths of 15 mm (0.59") up to 200 mm (8").

The Pac-Tie system is ideally suited for wood frame construction, as it can accommodate the frame shortening shrinkage of the wood structure, and for buildings where the maximum unsupported masonry veneer height approaches the allowable height of 11 meters (36') (CSA CAN3-S304-04).

## Pac-Tie Components

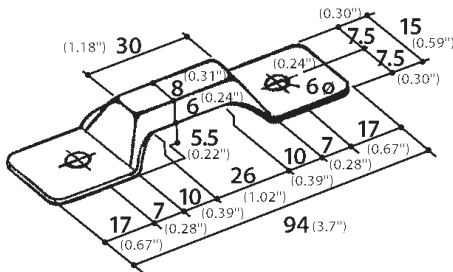


Figure 2 AB-Clip

The Pac-Tie system utilizes the adjustability of the AB-Clip and V-Tie™ in conjunction with a load distributing Backer Plate, as illustrated in *Figures 2* through *4*, respectively.

**AB-Clip:** The AB-Clip is manufactured from 16 gauge (1.61 mm [0.063"] thick) sheet metal conforming to ASTM A570, and is available in hot dipped galvanized finish (conforming to CSA CAN3-A370-04 and ASTM A153 requirement of 458 g/m<sup>2</sup>/side [1.5 oz/ft<sup>2</sup>/side] of zinc coating), and stainless steel.

**V-Tie™:** The V-Tie™ is manufactured from 4.76 mm (0.19") diameter wire conforming to CSA Standard G30.3, and is available in hot dipped galvanized finish (conforming to CSA CAN3-A370-04 and ASTM 153 requirement of 458 g/m<sup>2</sup>/side [1.5 oz/ft<sup>2</sup>/side] of zinc coating) and stainless steel. The V-Tie™ is available in 60 (2.4"), 80 (3.1"), 100 (3.9"), 120 (4.7"), 140 (5.5"), 160 (6.3"), 180 (7.1"), 200 (7.9"), 225 (8.9") and 250 mm (9.8") lengths.

**Backer Plate:** The Backer Plate is manufactured from 16 gauge (1.61 mm [0.063"] thick) sheet metal conforming to ASTM Standard A570, and is available in hot-dipped galvanized finish (conforming to CSA CAN3-A370-04 and ASTM A153 requirements of 458 g/m<sup>2</sup>/side [1.5 oz/ft<sup>2</sup>/side] of zinc coating), and stainless steel.

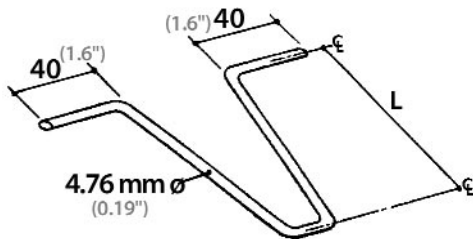


Figure 3 V-Tie™

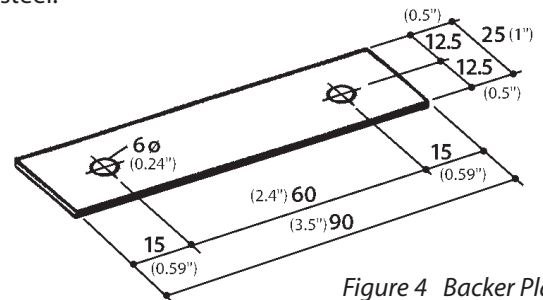


Figure 4 Backer Plate



# Pac-Tie Specification Guidelines

Specify the V-Tie™ size as the distance between the exterior face of the structural sheathing, or protected drywall, to the centerline of the brick veneer.

The Backer Plate and AB-Clip are standard.

## *Pac-Tie Recommended Design Load and Deflections*

Design Parameter	Mounted Directly On Metal Stud		Mounted on Top of Protected Drywall	
	1. Free Play (mm)	0.74 (max.) (0.029")		0.74 (max.) (0.029")
2. 0.45 kN (100 lbs) Deflection (mm)				
- free play not included:	0.45 (0.018")		1.13 (0.044")	
- includes free play:	1.19 (max.) (0.047")		1.87 (max.) (0.074")	
3. Recommended Design Load (kN)	0.67 (150 lbs)		0.67 (150 lbs)	
4. Recommended Design Load Deflection (mm) (free play not included)	0.76 (0.03")		1.32 (0.052")	
5. Maximum Recommended Spacing (mm)	Horiz.	Vert.	Horiz.	Vert.
	800 mm (32")	600 mm (24")	800 mm (32")	600 mm (24")

## Notes:

- (i) The design values reflect both the windward and leeward capacity of the Pac-Tie system, with the governing values listed.
- (ii) The Pac-Tie system recommended design load values were formulated using working stress design following the procedures of CSA CAN3-A370-04 "Connectors for Masonry", ACI/ASCE/TMS/518 and U.B.C. The values have been reduced to account for test result variation, and reflect a factor of safety of 2.25 (i.e., 75% of 3.0), as per Table 3 (A370).
- (iii) The allowable mortar pull-out or push-out design load for the V-Tie™ embedded at the centerline of 90 mm (3.5") brick veneer utilizing Type M, S or N mortar, exceeds or equals the recommended design loads listed above.
- (iv) For the Pac-Tie tests, "protected drywall" consisted of Perma-Barrier (W.R. Grace) adhered to 12.7 mm (0.5") drywall, which satisfies the proposed tie attachment definition and detail to be included in the next revision of CSA CAN3-A370-04, ACI/ASCE/TMS/518 and U.B.C. Note that this detail is not recommended for use in high humidity buildings such as swimming pools, etc.
- (v) The above design values relate to the capacity of the Pac-Tie components. Compatible fasteners capable of resisting the design loads must be selected.
- (vi) The above design values are based on test results utilizing the V-Tie™ located at the AB-Clip centerline, and a 100 mm (4") cavity. No insulation was used. Note that for smaller cavity widths and/or with the addition of insulation sheathing providing lateral tie support, increased tie system design loads and reduced tie system deflections may be realized.
- (vii) Maximum recommended spacing reflects the maximum allowable by CSA-A370-04, ACI/ASCE/TMS/518 and U.B.C. For stud construction every vertical stud should contain ties. Design will ultimately govern spacing.