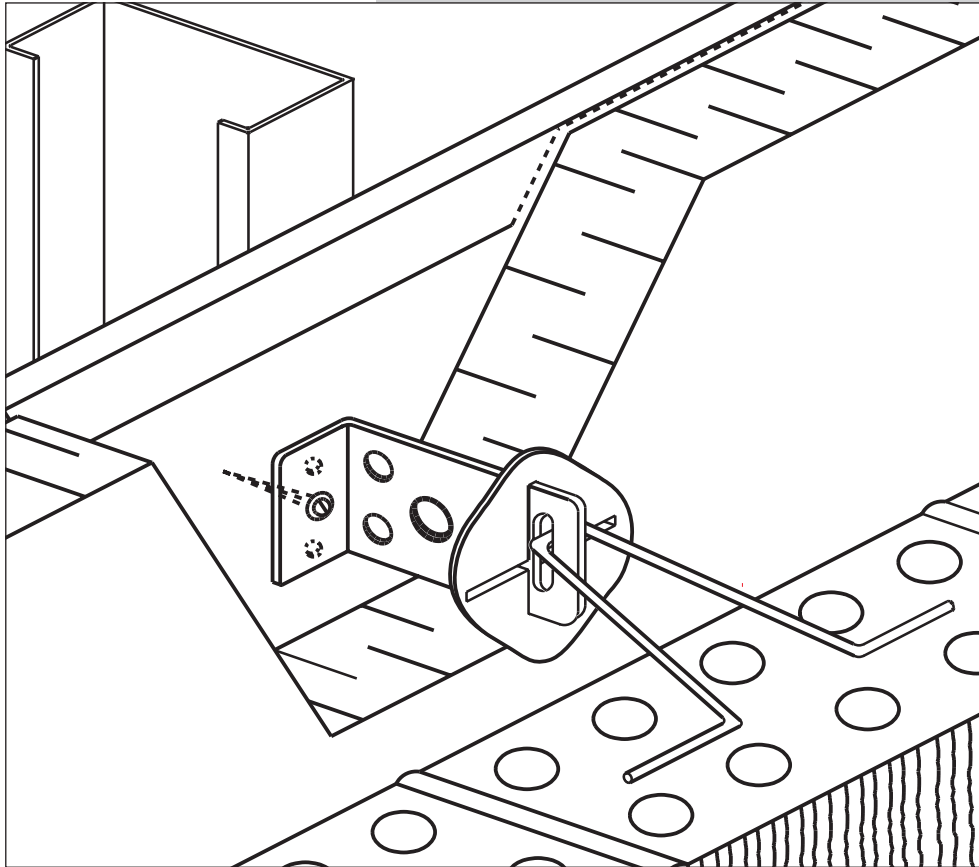


SLOTTED RAP-TIE

SLOTTED RAP-TIE APPLICATION



Introduction

The Slotted Rap-Tie System consists of a Slotted L-Plate, a V-Tie™ and an Insulation Support (optional). See *Figures 1, 2, and 3* respectively.

Lateral loads applied to the brick veneer are transferred through the V-Tie™ to the Slotted L-Plate, which bears onto and is fastened to the structural backup wall, as shown in *Figures 4 and 5*, for attachment directly to the steel studs and on top of the protected drywall respectively. Note that “protected drywall” is defined by CSA Standard CAN3-A370 “Connectors for Masonry”, ACI/ASCE/TMS/518 and U.B.C.

The vertically orientated slot in the Slotted L-Plate through which the V-Tie™ is placed provides for 30 mm (1.2”) of construction adjustability and differential movement between the masonry veneer and the structural backup wall system.

The Slotted Rap-Tie can accommodate a range of insulation thickness of 0 (0”) to 105 mm (4”), and air space width of 25 mm (1”) and greater. For thicker insulation verification of structural performance is required. Please contact Fero.

Components

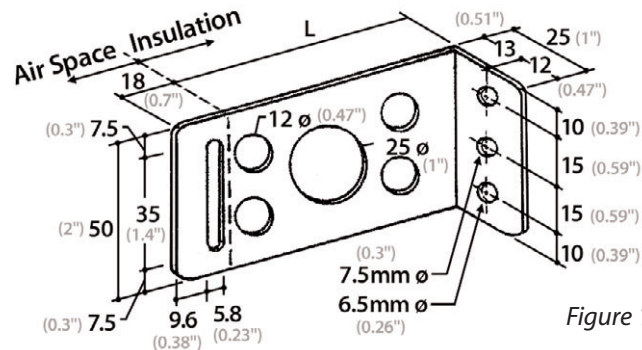


Figure 1 Slotted L-Plate

P = Plate Air Space Projection (18 or 24mm)

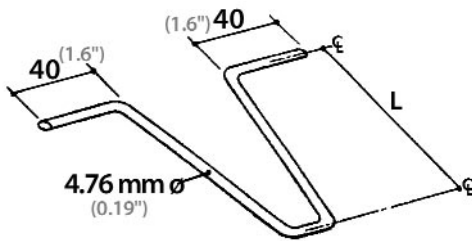


Figure 2 V-Tie™

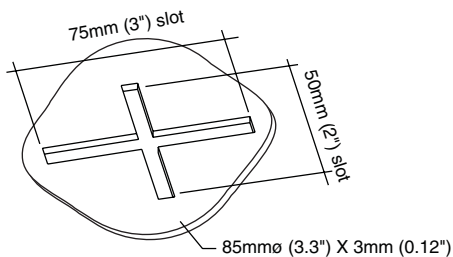


Figure 3 Insulation Support

The V-Tie™ is inserted in the slotted hole of the Slotted L-Plate to run horizontally into the mortar joint of the brick veneer, with the legs of the V-Tie™ located at the centerline of the brick veneer.

Slotted L-Plate. The Slotted L-Plate 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 and stainless steel. The hot dipped galvanized finish conforms to the CSA CAN3-A370 and ASTM A153 requirement of 458 g/m²/side (1.5 oz/ft²/side) of zinc coating. The incorporation of voids in the Slotted L-Plate minimizes thermal conductivity through the tie.

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 and stainless steel. The hot dipped galvanized finish conforms to the CSA CAN3-A370-04 and ASTM A153 requirement of 458 g/m²/side (1.5 oz/ft²/side) of zinc coating.

Insulation Support. The Insulation Support is manufactured from polyethylene. The Insulation Support is inserted over the L-Plate and pressed up against the insulation sheathing, preventing the insulation from separating from the backup wall. The friction fit between the Insulation Support and the Slotted L-Plate provides for the support of the insulation sheathing during construction, while the resistance provided to the Insulation Support by the V-Tie™, ensures a reliable, durable structural insulation support system upon installation of the V-Tie™.

Specification Guidelines

The Slotted L-Plate specification length (L) refers to the total distance between the exterior face of the insulation sheathing and the exterior face of the structural backup wall component that the Slotted L-Plate is fastened on top of.

The 80 mm (3.1") V-Tie™ is utilized in the Slotted Rap-Tie system consisting of 25 mm (1") air space and 90 mm (3.5") brick veneer. Other available V-Tie™ sizes are: 60 (2.4"), 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").

The Insulation Support is standard.

Slotted Rap-Tie Applications

The Slotted Rap-Tie system can be utilized in the applications shown in Figures 4, 5 and 6.

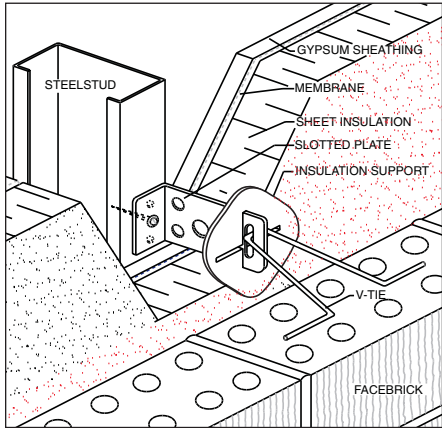


Figure 4
Slotted Rap-Tie Attached Directly to Steel Stud

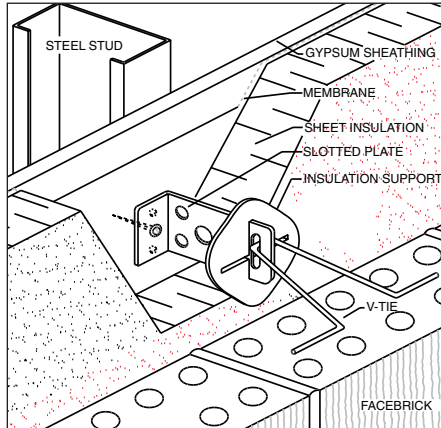


Figure 5
Slotted Rap-Tie Attached on Top of Protected Drywall

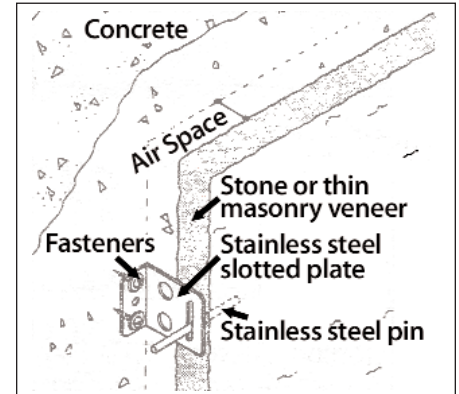


Figure 6
Slotted Rap-Tie System for Sawn Stone Veneer

Recommended Design Loads and Deflections

| Design Parameter | Mounted Directly On Metal Stud | | Mounted on Top of Protected Drywall | |
|--|--|--------------|---|--------------|
| | Horiz. | Vert. | Horiz. | Vert. |
| 1. Free Play (mm) | 1.04 (max.) (0.041") | | 1.04 (max.) (0.041") | |
| 2. 0.45 kN(100 lbs) Deflection (mm) - free play not included: - includes free play: | 0.63 (0.025") 1.67 (max.) (0.066") | | 0.66 (0.026") 1.7 (max.) (0.067") | |
| 3. Recommended Design Load (kN) | 0.76 (171 lbs) | | 0.67 (150 lbs) | |
| 4. Recommended Design Load Deflection (mm) (free play not included) | 0.94 (0.037") | | 0.83 (0.033") | |
| 5. Maximum Recommended Spacing (mm) | Horiz. | Vert. | Horiz. | Vert. |
| | 800 (32") | 600 (24") | 800 (32") | 600 (24") |

Notes

- i) The design values reflect both the windward and leeward capacity of the system, with the governing values listed.
- ii) The tie system recommended design load values were formulated following the procedures of CSA CAN3-A370-04 "Connectors for Masonry", ACI/ASCE/TMS/518 and U.B.C. The values have been corrected 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 Slotted Rap-Tie tests, "protected drywall" consisted of Perma-Barrier (W.R. Grace) adhered to 12.7 mm (0.5") drywall. 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 FERO tie components. A compatible fastener (or fasteners) capable of resisting the design loads must be selected.
- vi) The above design values are based on test results utilizing a 127 mm (5") cavity (102 mm [4"] Slotted L-Plate and 25 mm [1"] air space), and one fastener located in the center hole. 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.

