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Super Stubbie Pty Ltd

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Engineering Advice

Masonry Veneer Ties with Steel Framing

I refer to our telephone conversation earlier today and photos of you sent showing an example of a masonry veneer tie used with a cold-formed steel stud. The photo below shows what appears to be a masonry cavity tie installed on the lip of the stud.



Figure 1: Tie fixing on lip of steel stud

Compliance to AS/NZS 2699.1:2000 Built-in components for masonry construction – Part 1: Wall ties, Section 2.7 Structural performance – strength and stiffness, requires that the tie and its fixing method be tested in accordance with AS/NZS 2699.1 Appendix B. The minimum characteristic strength of Type A veneer ties tested in accordance with that test method is shown in Table 1.



Table 1: Minimum Requirements

CLASSIFICATION	MIMIMUM CHARACTERISTIC STRENGTH (kN)	
	TENSION	COMPRESSION
LIGHT DUTY	0.20	0.24
MEDIUM DUTY	0.40	0.48
HEAVY DUTY	1.00	1.20

The test specimens are a construction of masonry couplet, the tie, its fixing, and a section of the structural stud member. The minimum characteristic strength is calculated from a set of individual test results from specimens of the same specification and construction. An individual result is the maximum force to failure with an upper bound limit of force at a maximum displacement of 1.5mm.

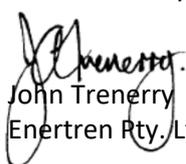
When it comes to steel framing, an inherent limitation following this test method is the local flexibility of the flange of the stud. Refer to Enertren report reference GEN-024 for how this has been considered in relation to the Super Stubbie face-fixed veneer tie. Fixing to the lip of a cold-formed steel stud (for thickness less than about 1.6mm) will not provide sufficient stiffness to satisfy the load at 1.5mm displacement requirement of the test.

The concerns I have with the masonry veneer tie arrangement shown in Figure 1 are as follows:

- The tie appears to be a cavity masonry tie, not a veneer tie.
- If the stud base metal thickness is less than about 1.6mm it would not be possible to resist the required force at a displacement of 1.5mm for even Type A.
- If the connection has any slack in either tension or compression, it would reduce the ability of the tie assembly to resist the required force at a displacement of 1.5mm. If the slack is equivalent to the gap between the end of the lip of the stud and the hook, it will not resist any load at 1.5mm displacement.
- The puncturing of the sarking to install the tie is not preferred when face-fixed options exist.

Please contact the undersigned if you have any queries regarding this document.

Yours sincerely,



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