

Lapish Enterprises Ltd.

1.06.17

Mr. Warwick Allen
Glass Vice Products Ltd
P O Box 65229
Mairangi Bay
Auckland 0754

Dear Warwick,

Re; Capacities of Face Fixed Frameless fixed to concrete and timber structures

Please find attached calculations and spacing of the Face Fixed Framesless brackets fixed to concrete, dry timber and wet timber boundary joist on decks.

The calculations are based on test results from SCION and HILTI – RE 500 injection adhesive recommendations. The top rail load is .75kN/m for both 1000mm and 1100mm high balustrades.

The spacing of the brackets fixed to concrete is 1100mm.

The spacing of brackets for dry and wet timber using two 90mm SS M10 lagscrews and four 90mm SS M 10 Lagscrews for different are as follows.

Dry timber:

1100mm high balustrade:	4 screws	Spacing 1100mm
1100mm high balustrade	2 screws	Spacing 550mm
1000mm high balustrade	4 screws	Spacing 1100mm
1000mm high balustrade	2 screws	Spacing 620mm

Wet timber

1100mm high balustrade:	4 screws	Spacing 875mm
1100mm high balustrade	2 screws	Spacing 440mm
1000mm high balustrade	4 screws	Spacing 1000mm
1000mm high balustrade	2 screws	Spacing 500mm

Drawings FB11, FB12, FB13, FB16 and FB17 would be considered as DRY timber applications.

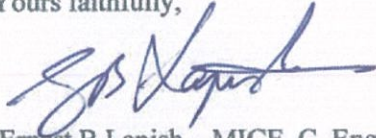
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Drawings FB14 and FB15 would be WET applications.

Please ensure that FB11 has a note of HILTI -RE 500 injection adhesive.

Yours faithfully,

A handwritten signature in blue ink, appearing to read 'E B Lapish', with a long horizontal flourish extending to the right.

Ernest B Lapish MICE C. Eng.(London) FIPENZ (Structural) CPEng IntPE(NZ)
Managing Director