

## TEST REPORT

**Lucideon Reference:** 174989 (QT-47953/1/GMB & QT-48520/1/GMB)/Ref. 1

**Project Title:** Simulated Wind Loading of Pure Vista MegaGrip Balustrade System

**Client:** Pure Vista Ltd  
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**Work Location:** Lucideon UK

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## 1 INTRODUCTION

Lucideon Limited were commissioned by the client, Pure Vista Ltd, to carry out simulated wind loading testing using an air bag system to apply a uniformly distributed load.

The testing was carried out at Lucideon's facilities at Queens Road, Penkhull, Stoke on Trent.

This report summarises the test results obtained during the test programme and does not provide interpretation of those results.

## 2 TEST SAMPLES

The system tested was designated as follows:

- MegaGrip.

The systems and glass were installed by Pure Vista personnel.

## 3 TEST PROGRAMME

The MegaGrip system was mounted on to a 10 mm thick steel I-section the appropriate thickness glass panel installed and subjected to a Positive wind load.

The following glass panels having dimensions 1800 mm x 1000 mm (h x w) were tested:

- 25.5 mm Sentry Glass.
- 31.5 mm PVB Glass.

## 4 TEST PREPARATION

The channel was bolted to the top of a piece of 10 mm thick steel I-section, which was welded to a steel anvil that was bolted to the floor of the test facility. The 1.00 m length of MegaGrip channel was bolted to the steel section at 200 mm centres using 13 mm bolts set in pre drilled counter sunk holes.

The appropriate thickness glass panel was fitted into the channel using the glass slip clamping system and clamping bar. The clamps were fitted at 4 per metre and spaced 100 mm from the edge with 200 mm between the clamps (See Plate 1).

## 5 TEST METHOD

An air bag was positioned on the face of the test panel and a reaction board was placed over this butting up-to and braced backed to the steel frame.

Two linear displacement transducers were located on an independent scaffold frame reading onto the rear of the panel with one positioned at the mid-point of the panel and the second positioned at the mid-point of the top edge of the glass panel.

A load was applied to the balustrade system via the air bags until a minimum deflection of 25mm was recorded at the centrally positioned transducer.

## 6 RESULTS

Tables 1 and 2 give the results for the applied load versus deflection of the panels.

At 25 mm mid-point deflection the 31.5 mm PVB glass panel achieved a maximum load of 5.52 kN/m<sup>2</sup> and the 25.5 mm Sentry glass achieved a maximum load of 6.12 kN/m<sup>2</sup>.

At the midpoint top edge of the 31.5 mm PVB glass panel at the maximum load of 5.52 kN/m<sup>2</sup> a deflection of 55.44 mm was recorded. At the mid-point top edge of the 25.5 mm Sentry glass panel at the maximum load of 6.12 kN/m<sup>2</sup>, a deflection of 58.94 mm was recorded.

## 7 DISCUSSION

Under wind loading there is no pass or fail criteria, the system will either be adequate or inadequate in any particular situation. So for example a system installed on a building at the top of an escarpment in the North of Scotland will be expected to resist much greater wind forces than one in the centre of London. However, as an indication, the speed of a 3 second gust of wind in the North of Scotland could reach 56 m/s at 10 m above the ground with a likely incidence of return of once in 50 years. This is typical of the level that would be incorporated into design in the U.K. This gust has a dynamic pressure equivalent to 1.68 kN/m<sup>2</sup>.

The 31.5 mm PVB glass panel achieved a maximum load of 5.52 kN/m<sup>2</sup> at mid-point deflection of 25 mm

The 25.5 mm Sentry glass panel achieved a maximum load of 6.12 kN/m<sup>2</sup> at mid-point deflection of 25 mm

**NOTE: The results given in this report apply only to the samples that have been tested.**

**END OF REPORT**



## TABLES

**Table 1** - Summary of Performance of Pure Vista MegaGrip Balustrade 31.5 mm PVB Glass Top Mounted into Steel Tested for Simulated Wind Load

Applied Load (kN/m <sup>2</sup> )	Equivalent Simulated Wind Speed (m/S)	Deflection Mid-Point (mm)	Deflection at Mid-Point Top (mm)
0.05	9	0.16	0.29
0.18	17	0.48	1.07
1.72	54	1.06	2.39
2.25	61	2.41	5.36
3.19	73	3.71	8.17
3.44	76	8.51	18.44
5.04	92	23.25	49.88
5.52	96	25.00	55.44

**Table 2** - Summary of Performance of Pure Vista MegaGrip Balustrade 25.5 mm Sentry Glass Top Mounted into Steel Tested for Simulated Wind Load

Applied Load (kN/m <sup>2</sup> )	Equivalent Simulated Wind Speed (m/S)	Deflection Mid-Point (mm)	Deflection at Mid-Point Top (mm)
0.06	10	0.66	1.69
0.82	37	1.17	2.71
1.36	48	4.52	10.53
3.18	73	9.69	22.15
4.81	89	15.3	34.48
5.21	93	16.54	37.24
5.70	97	17.87	40.14
5.97	100	18.33	41.19
6.12	101	25.00	58.94

## PLATE

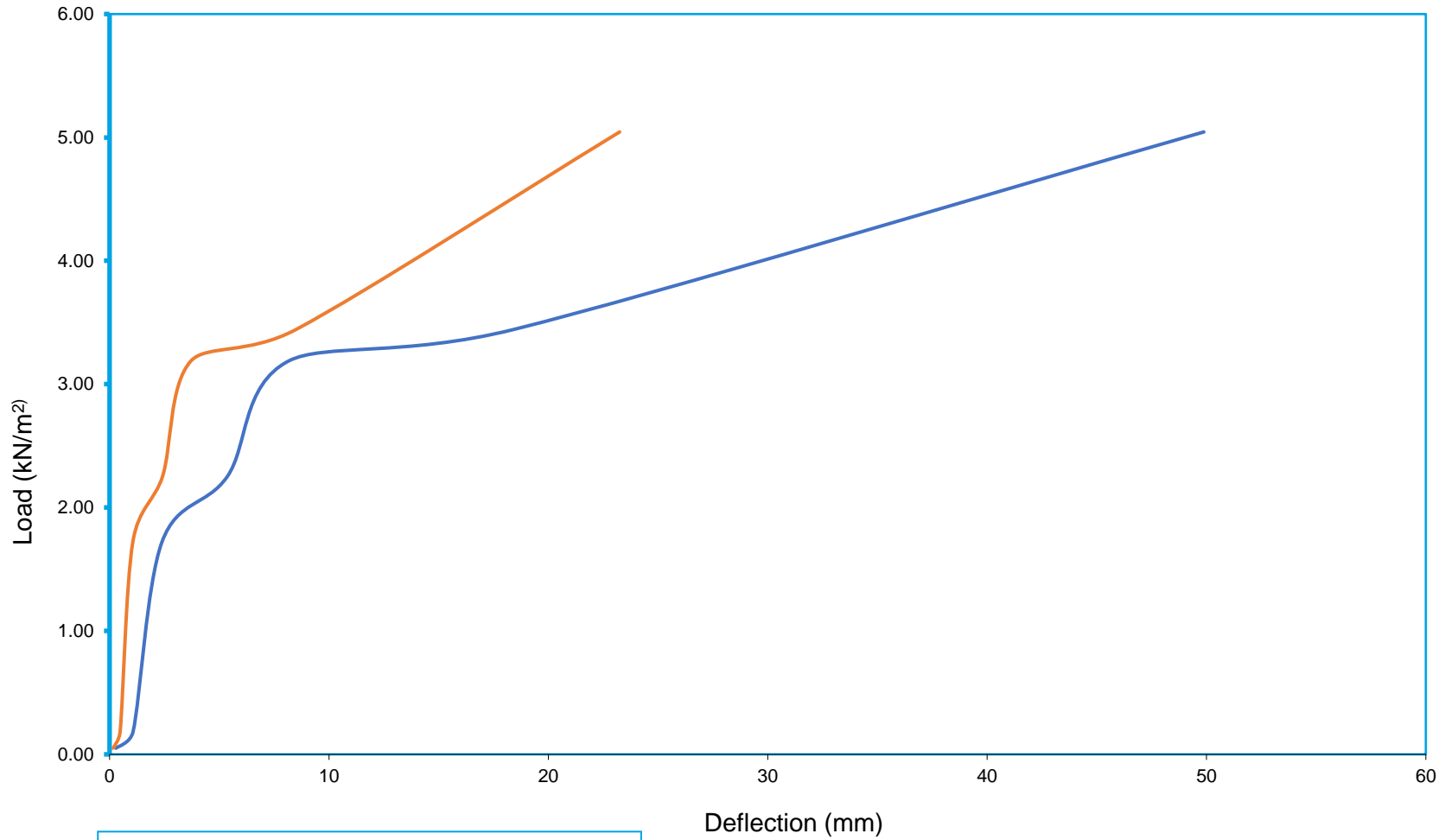


**Plate 1 - General Test Configuration**



**Chart 1 - Load Deflection Curve for Simulated Wind Load of Pure Vista Mega Grip Incorporating 31.5 mm PVB Glass Fixed Into Steel**

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**Key**

- UDL Deflection Top
- Centre UDL



**Chart 2 - Load Deflection Curve for Simulated Wind Load of Pure Vista Mega Grip Incorporating 25.5 mm Sentry Glass fixed Into Steel**

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