

## TEST REPORT

**Lucideon Reference:** N251398 (QT-77834/1/KNA)/Ref. 4

**Project Title:** Testing of Pure Vista Spig-Lite Balustrade System Base Mounted onto Steel in Accordance with BS 6180:2011 Barriers In and About Buildings

**Client:** Pure Vista  
Pendewey  
Stony Lane  
Bodmin  
Cornwall  
PL31 2QX

**For the Attention of:** Mr Adam Oakes

**Author(s):** Miss Lisa Cobden

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**Purchase Order No.:** 3868

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Mr Justin Fryer  
**Testing Team  
Reviewer**



Miss Lisa Cobden  
**Testing Team  
Project Manager**



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## 1 INTRODUCTION

Lucideon Limited were commissioned by the client, Pure Vista, to carry out line load testing, in accordance with BS 6180:2011 Barriers In and About Buildings to allow their balustrade system to be classified for use, in accordance with the Code of Practice included within the Standard.

The testing was performed at the Lucideon Structures Laboratory at Queens Road, Penkhull, Stoke-on-Trent, Staffordshire, ST4 7LQ, UK on 13 August 2025.

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

## 2 TEST SAMPLES

A single system was tested designated as follows:

- Spig-Lite.

The system had been designed and intended to be used as a base mount system for free standing balustrades.

Pure Vista Personnel installed the systems and glass.

## 3 TEST PROGRAMME

A horizontal line load was applied to the system with each individual test utilising a single glazed section, as detailed below:

- Spig-Lite Steel Mounted:
  - 12 mm Mono Glass.
  - 15 mm Mono Glass.
  - 13.5 mm PVB Glass.
  - 17.5 mm PVB Glass.
  - 21.5 mm PVB Glass.

## 4 TEST EQUIPMENT

- 5 kN Load Cell Reference FOR023.
- Linear Displacement Voltage Transducer reference TDR026.
- 15 Tonne Capacity Hydraulic Ram.
- DaisyLab Data Logger DAQ 0029.

## 5 TEST PREPARATION

For the Uniformly Distributed Line Load (UDLL) test, the Spig-Lite System was installed to manufacturer's specifications.

The system was bolted to the top of a piece of reinforced steel C-Section, measuring 1500 mm x 90 mm x 5 mm. The section was welded to a steel anvil, which in turn was bolted to the floor of the test facility

The system consisted of two spigots, which were bolted to the reinforced steel C-Section at 800 mm centres using a single M12 Bolt per spigot.

The tests were conducted at the widths and heights specified in Table 1.

**Table 1 – Test Parameters**

| Glass                 | Glass Width | Glass Height | Test Height |
|-----------------------|-------------|--------------|-------------|
| 12 mm Mono            | 1500 mm     | 500 mm       | 500 mm      |
| 15 mm Mono            | 1500 mm     | 1100 mm      | 1100 mm     |
| 13.5 mm PVB Laminated | 1800 mm     | 500 mm       | 500 mm      |
| 17.5 mm PVB Laminated | 1800 mm     | 500 mm       | 500 mm      |
|                       | 1000 mm     | 1100 mm      | 1100 mm     |
| 21.5 mm PVB Laminated | 1500 mm     | 1100 mm      | 1100 mm     |
|                       | 1000 mm     | 1100 mm      | 1100 mm     |

The sample for each test was assembled onto the substrate by Pure Vista.

A rigid steel frame was assembled and bolted to the Laboratory Strong Floor, adjacent to the substrate.

The hydraulic ram was secured horizontally onto this steel frame, at the height of the required line load and connected to a hydraulic pump.

The load cell was fitted in-line with the ram and connected to the Data Logger.

A rigid steel pole, mounted in a stand, was placed on the Strong Floor opposite to the loading equipment, and the Linear Voltage Displacement Transducer (LVDT) was affixed to it and connected to the Data Logger.

Data was recorded during testing at a frequency of 1 Hz.

## 6 TEST METHOD

A uniformly distributed horizontal line load was applied along the length of the balustrade, using the hydraulic ram and timber load spreader beam.

The load was applied at a range of heights and test widths as specified by the client, measured from the base of the profile. The height of each test is specified in Table 1.

The LVDT was connected to the surface of the glass balustrade system at the horizontal centre, at a range of height specified by the client.

The load was measured using the calibrated load cell, and deflection was measured using the LVDT. Data was recorded using the DaisyLab Data Logger.

As per the Standard, the balustrade sample was tested until the desired design load was achieved, or 25 mm of deflection was reached.

The applied load for each test is displayed with the results.

The general test arrangement can be seen in Plate 1.

The samples were tested until either destruction occurred, or 25 mm of deflection was recorded, or the desired line load was achieved at which point, the test was stopped.

A generic test configuration can be seen in Plate 1.

## **7 TEST REQUIREMENTS**

The tests were carried out, in accordance with the guidance given in BS 6180:2011 Barriers In and About Buildings – Code of Practice.

Section 6.4.1 of the Standard states that the maximum allowable deflection of barriers for the protection of people, should not exceed 25 mm at any point on the barrier, when tested at a height of 1100 mm, for the required design load.

Testing at a height above this, is seen as a more onerous test than one which is conducted at 1100 mm.

Tables 3 and 4 gives the minimum required horizontal imposed loads, depending on type of building occupancy or structure, in accordance with BS 6180:2011.

## **8 RESULTS**

The loads achieved by the Pure Vista Spig-Lite System, tested under horizontal imposed line load are given in Table 2.

All figures quoted in the Tables contain no safety factors and are direct loads, as achieved by the system under test conditions.

## TABLES

**Table 2** – Loads Achieved by Pure Vista Spig-Lite Balustrade System Base Mounted into Steel

| System    | Fix   | Glass       | Glass Width | Load Application Height (mm) | Working Line Load for System (kN/m) | Deflection at Working Line Load (mm) |
|-----------|-------|-------------|-------------|------------------------------|-------------------------------------|--------------------------------------|
| Spig-Lite | Steel | 12 mm Mono  | 1500        | 500                          | 0.36                                | 1.61                                 |
|           |       |             | 1000        | 1100                         | 0.36                                | 16.20                                |
|           | Steel | 15 mm Mono  | 1000        | 1100                         | 0.74                                | 21.00                                |
|           | Steel | 13.5 mm PVB | 1800        | 500                          | 0.36                                | 3.95                                 |
|           |       |             | 1800        | 500                          | 0.74                                | 8.60                                 |
|           |       |             | 1000        | 1100                         | 0.36                                | 10.81                                |
|           | Steel | 21.5 mm PVB | 1500        | 1100                         | 0.36                                | 12.90                                |
|           |       |             | 1000        | 1100                         | 0.74                                | 21.58                                |

**Table 3 – Summary of Suitability for Use of Pure Vista Spig-Lite Balustrade System Base Mounted into Steel**  
Tested at a height of 500 mm in Accordance with Table 2 of BS 6180:2011

| Type of Occupancy for Part of the Building                                    | Examples of Specific Use                                                                                                                                             | Horizontal Uniformly Distributed Line Load (kN/m) | Steel                                     |                                            |                                            |
|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------|--------------------------------------------|--------------------------------------------|
|                                                                               |                                                                                                                                                                      |                                                   | 12 mm Mono Glass 500 mm High 1100 mm Wide | 13.5 mm PVB Glass 500 mm High 1100 mm Wide | 17.5 mm PVB Glass 500 mm High 1100 mm Wide |
| Domestic and residential activities                                           | (i) all areas within or serving exclusively one single family dwelling, including stairs, landings, etc. but excluding external balconies and edges of roofs         | 0.36                                              | ✓                                         | ✓                                          | ✓                                          |
|                                                                               | (ii) other residential, i.e. houses of multiple occupancy and balconies, including Juliette balconies and edges of roofs in single family dwellings                  | 0.74                                              | X                                         | X                                          | ✓                                          |
| Offices and work areas not included elsewhere, including storage areas        | (iii) light access stairs and gangways not more than 600 mm wide                                                                                                     | 0.22                                              | ✓                                         | ✓                                          | ✓                                          |
|                                                                               | (iv) light pedestrian traffic routes in industrial and storage buildings, except designated escape routes                                                            | 0.36                                              | ✓                                         | ✓                                          | ✓                                          |
|                                                                               | (v) areas not susceptible to overcrowding in office and institutional buildings, also industrial and storage buildings, except as given above                        | 0.74                                              | X                                         | X                                          | ✓                                          |
| Areas where people might congregate                                           | (vi) areas having fixed seating within 530 mm of the barrier, balustrade or parapet                                                                                  | 1.50                                              | X                                         | X                                          | X                                          |
| Areas with tables or fixed seating                                            | (vii) restaurants and bars                                                                                                                                           | 1.50                                              | X                                         | X                                          | X                                          |
| Areas without obstacles for moving people and not susceptible to overcrowding | (viii) stairs, landings corridors ramps                                                                                                                              | 0.74                                              | X                                         | X                                          | ✓                                          |
|                                                                               | (ix) external balconies, including Juliette balconies, edges of roofs, footways, pavements within building cartilage adjacent to basement/sunken areas               | 0.74                                              | X                                         | X                                          | ✓                                          |
| Areas susceptible to overcrowding                                             | (x) footways or pavements less than 3 m wide adjacent to sunken areas                                                                                                | 1.50                                              | X                                         | X                                          | X                                          |
|                                                                               | (xi) theatres, cinemas, discotheques, bars, auditoria, shopping malls, assembly areas, studios; footways or pavements greater than 3 m wide adjacent to sunken areas | 3.00                                              | X                                         | X                                          | X                                          |

| Type of Occupancy for Part of the Building | Examples of Specific Use                                                                                                   | Horizontal Uniformly Distributed Line Load (kN/m) | Steel                                     |                                            |                                            |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------|--------------------------------------------|--------------------------------------------|
|                                            |                                                                                                                            |                                                   | 12 mm Mono Glass 500 mm High 1100 mm Wide | 13.5 mm PVB Glass 500 mm High 1100 mm Wide | 17.5 mm PVB Glass 500 mm High 1100 mm Wide |
|                                            | (xii) grandstands and stadia                                                                                               | (Note 1)                                          | -                                         | -                                          | -                                          |
| Retail areas                               | (xiii) all retail areas, including public areas of banks/building societies or betting shops                               | 1.50                                              | X                                         | X                                          | X                                          |
| Vehicular                                  | (xiv) pedestrian areas in car parks, including stairs, landings, ramps, edges of internal floors, footways, edges of roofs | 1.50 (Note 2)                                     | X                                         | X                                          | X                                          |
|                                            | (xv) horizontal loads imposed by vehicles                                                                                  | 3.0 (Note 2)                                      | -                                         | -                                          | -                                          |

Note 1 – See requirements of the appropriate certifying authority.

Note 2 – Clause 8.1.1 of BS 6180:2011 states that “glass should not be used for vehicle protection barriers”.

**Table 4 – Summary of Suitability for Use of Pure Vista Spig-Lite Balustrade System Base Mounted into Steel**  
Tested at a height of 1100 mm in Accordance with Table 2 of BS 6180:2011

| Type of Occupancy for Part of the Building | Examples of Specific Use                                                                                                                                     | Horizontal Uniformly Distributed Line Load (kN/m) | Steel                                      |                                            |                                             |                                             |                                             |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------|--------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
|                                            |                                                                                                                                                              |                                                   | 12 mm Mono Glass 1000 mm Wide 1100 mm High | 15 mm Mono Glass 1000 mm Wide 1100 mm High | 17.5 mm PVB Glass 1000 mm Wide 1100 mm High | 21.5 mm PVB Glass 1500 mm Wide 1100 mm High | 21.5 mm PVB Glass 1000 mm Wide 1100 mm High |
| Domestic and residential activities        | (i) all areas within or serving exclusively one single family dwelling, including stairs, landings, etc. but excluding external balconies and edges of roofs | 0.36                                              | ✓                                          | ✓                                          | ✓                                           | ✓                                           | ✓                                           |

| Type of Occupancy for Part of the Building                                    | Examples of Specific Use                                                                                                                                             | Horizontal Uniformly Distributed Line Load (kN/m) | Steel                                      |                                            |                                             |                                             |                                             |
|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------|--------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
|                                                                               |                                                                                                                                                                      |                                                   | 12 mm Mono Glass 1000 mm Wide 1100 mm High | 15 mm Mono Glass 1000 mm Wide 1100 mm High | 17.5 mm PVB Glass 1000 mm Wide 1100 mm High | 21.5 mm PVB Glass 1500 mm Wide 1100 mm High | 21.5 mm PVB Glass 1000 mm Wide 1100 mm High |
|                                                                               | (ii) other residential, i.e. houses of multiple occupancy and balconies, including Juliette balconies and edges of roofs in single family dwellings                  | 0.74                                              | X                                          | ✓                                          | X                                           | X                                           | ✓                                           |
| Offices and work areas not included elsewhere, including storage areas        | (iii) light access stairs and gangways not more than 600 mm wide                                                                                                     | 0.22                                              | ✓                                          | ✓                                          | ✓                                           | ✓                                           | ✓                                           |
|                                                                               | (iv) light pedestrian traffic routes in industrial and storage buildings, except designated escape routes                                                            | 0.36                                              | ✓                                          | ✓                                          | ✓                                           | ✓                                           | ✓                                           |
|                                                                               | (v) areas not susceptible to overcrowding in office and institutional buildings, also industrial and storage buildings, except as given above                        | 0.74                                              | X                                          | ✓                                          | X                                           | X                                           | ✓                                           |
| Areas where people might congregate                                           | (vi) areas having fixed seating within 530 mm of the barrier, balustrade or parapet                                                                                  | 1.50                                              | X                                          | X                                          | X                                           | X                                           | X                                           |
| Areas with tables or fixed seating                                            | (vii) restaurants and bars                                                                                                                                           | 1.50                                              | X                                          | X                                          | X                                           | X                                           | X                                           |
| Areas without obstacles for moving people and not susceptible to overcrowding | (viii) stairs, landings corridors ramps                                                                                                                              | 0.74                                              | X                                          | ✓                                          | X                                           | X                                           | ✓                                           |
|                                                                               | (ix) external balconies, including Juliette balconies, edges of roofs, footways, pavements within building cartilage adjacent to basement/sunken areas               | 0.74                                              | X                                          | ✓                                          | X                                           | X                                           | ✓                                           |
| Areas susceptible to overcrowding                                             | (x) footways or pavements less than 3 m wide adjacent to sunken areas                                                                                                | 1.50                                              | X                                          | X                                          | X                                           | X                                           | X                                           |
|                                                                               | (xi) theatres, cinemas, discotheques, bars, auditoria, shopping malls, assembly areas, studios; footways or pavements greater than 3 m wide adjacent to sunken areas | 3.00                                              | X                                          | X                                          | X                                           | X                                           | X                                           |

| Type of Occupancy for Part of the Building | Examples of Specific Use                                                                                                   | Horizontal Uniformly Distributed Line Load (kN/m) | Steel                                            |                                                  |                                                   |                                                   |                                                   |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------|--------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
|                                            |                                                                                                                            |                                                   | 12 mm Mono Glass<br>1000 mm Wide<br>1100 mm High | 15 mm Mono Glass<br>1000 mm Wide<br>1100 mm High | 17.5 mm PVB Glass<br>1000 mm Wide<br>1100 mm High | 21.5 mm PVB Glass<br>1500 mm Wide<br>1100 mm High | 21.5 mm PVB Glass<br>1000 mm Wide<br>1100 mm High |
|                                            | (xii) grandstands and stadia                                                                                               | (Note 1)                                          | -                                                | -                                                | -                                                 | -                                                 | -                                                 |
| Retail areas                               | (xiii) all retail areas, including public areas of banks/building societies or betting shops                               | 1.50                                              | X                                                | X                                                | X                                                 | X                                                 | X                                                 |
| Vehicular                                  | (xiv) pedestrian areas in car parks, including stairs, landings, ramps, edges of internal floors, footways, edges of roofs | 1.50<br>(Note 2)                                  | X                                                | X                                                | X                                                 | X                                                 | X                                                 |
|                                            | (xv) horizontal loads imposed by vehicles                                                                                  | 3.0<br>(Note 2)                                   | -                                                | ✓                                                | -                                                 | -                                                 | ✓                                                 |

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

**END OF REPORT**

## PLATE



**Plate 1** – Generic Test Configuration

**Chart 1** - Load Deflection Curve for Spig-Lite Balustrade System Base Mounted into Steel at 800 mm Centres

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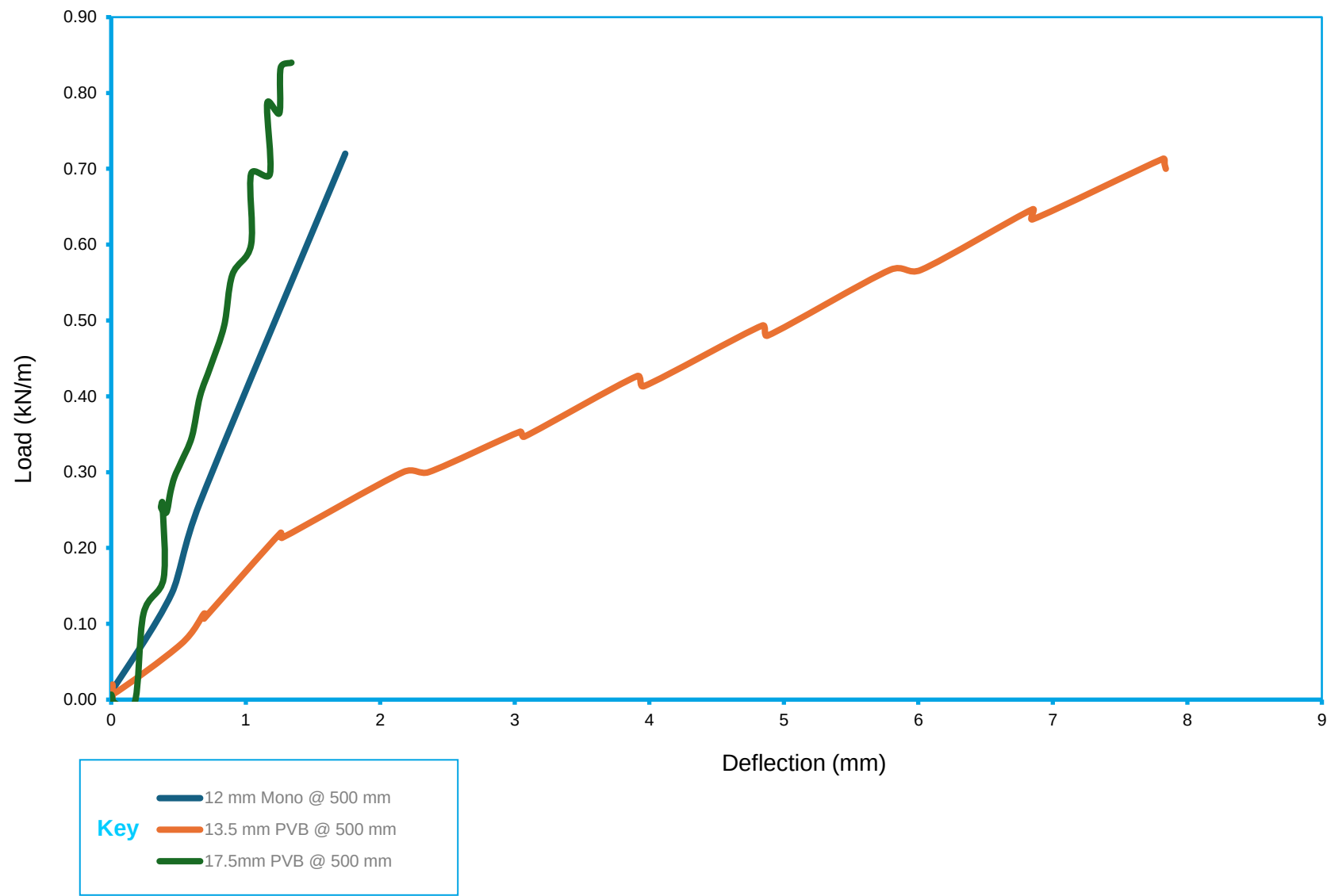


**Chart 2** - Load Deflection Curve for Spig-Lite Balustrade System Base Mounted into Steel at 800 mm Centres

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