Technical Details
Belgrave Balcony

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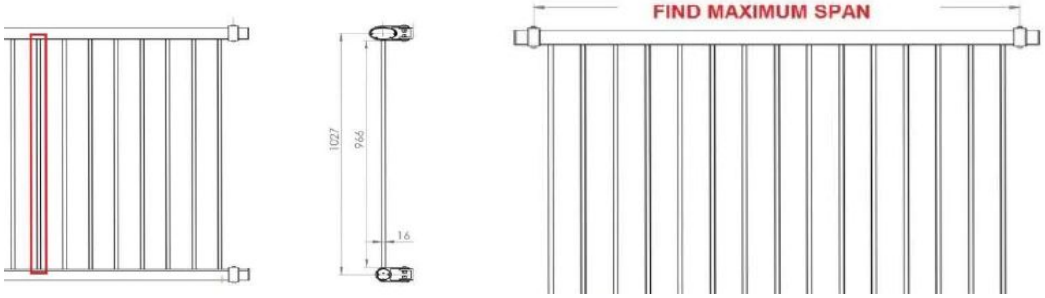
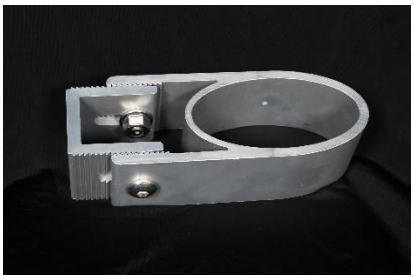


LOADING	**RESIDENTIAL / DOMESTIC**	**COMMERCIAL**
Handrail load	0.74 kN/m	1.5 kN/m
Safety factor to BS 8118 for wind load	1.2	1.2
Design strength	172 N/mm2	172 N/mm2
Youngs modulus	70,000 N/mm2	70,000 N/mm2
TOP RAIL		
Handrail length	3.100mm	2.450mm
Factored design MT	1.06671 kNm	1.3505625 kNm
Deflection	14.78mm < 15.50mm	11.69mm < 12.25mm
Moment	2.96 kNm > 1.06671 kNm	2.96 kNm > 1.350563 kNm
UPRIGHT		
Vertical Spacing	1,027mm	1,027mm
Factored design MT	0.01399734 kNm	0.02099601 kNm
Deflection	3.2 mm < 4.83mm	4.8 mm < 4.83mm
Moment	0.08 kNm > 0.013997 kNm	0.08 kNm > 0.020996 kNm

From these calculations we can see that the standard Juliet Balcony has the following span capabilities:

- **In a domestic setting 3.100m governed by the top handrail**
- **In a commercial setting 2.450m governed by the top handrail**

Connection Extrusion Design



The Belgrave balcony will be connected via a male and female extrusion system allowing for the balcony to be quickly located and then bolted into place.

From the handrail designs we can see that the maximum loading in these connections will be from the commercial lin eload on a 2.45m long handrail.
Assume this is a 2.5m long handrail for a conservative design.

This gives a tension load in the above extrusion of 1.25 x 1.5 = 1.875kn unfactored or 2.25kn factored.
The tension capacity of the 5mm extrusion, 50mm wide is 86Kn > 2.25Kn so OK
Check bolt bearing, based on a M10 Grade 8.8 bolt, is 17.2Kn > 2.25Kn so again OK

Therefore the 50mm wide extrusion bolted to the wall connection via a M10 Grade 8.8 bolt is adequate.

Source: Independent testing results from Stark Consulting Engineers Ltd.