



NATIONAL TEST REPORT
(BS 6180 : 2011)

EASY GLASS[®] MAX

F-PROFILE

MOD.6929

TEST REPORT

Lucideon Reference: 15469 (QT34585/1/SL)/Ref. 4/CR1

Project Title: Testing of Q-Railing Europe Glass Balustrade System to BS 6180:2011 - Easy Glass Max "F" Top Mount

Client: Q-railing Europe GmbH & Co.KG
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Work Location: Lucideon UK

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Miss Joanne Booth
Consultancy Team
Reviewer



Mr Drew Bennett
Consultancy Team
Project Manager



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DBe/LMP/N15TRE04
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1 INTRODUCTION

Lucideon were commissioned by the client, Q-Railing Europe GmbH and Co KG, to carry out 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 carried out at Q-Railing Europe GmbH and Co KG's facilities at 8-14 Marie-Curie Straße 46446 Emmerich am Rhein Germany.

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

2 TEST SAMPLES

The aluminium channel tested was designated as Easy Glass Max "F" Top Mount (6929). The system is shown in Figure 1.

The channel was installed by Q-Railing Personnel.

3 TEST PROGRAMME

A horizontal line load was applied to the aluminium channel with the following glass types:

- 19 mm glass - size (w x h):1000 mm x 1000 mm (monolith glass heat toughened).
- 19 mm glass - size (w x h):1000 mm x 1100 mm (monolith glass heat toughened).
- 19 mm glass - size (w x h):1000 mm x 1200 mm (monolith glass heat toughened).
- 25.52 mm glass - size (w x h):1000 mm x 1000 mm (laminated PVB glass heat toughened).
- 25.52 mm glass - size (w x h):1000 mm x 1200 mm (laminated PVB glass heat toughened).
- 25.52 mm Sentury glass - size (w x h): 1000 mm x 1200 mm (laminated Sentury glass heat toughened).
- 31.52 mm glass - size (w x h):1000 mm x 1200 mm (laminated PVB glass heat toughened).

4 TEST METHOD

The channel was bolted to the top of a concrete block, which was fixed to the floor of the test facility. The 1.0 m length of channel was bolted to the block at 200 mm centres by the client using the appropriate fixings (see Figure 2).

A horizontal imposed line load was applied to the glass at a height of either 1.1 m or 0.9 m above the datum level of the floor and the deflection measured at the top central point of the panel 1.1 m or 0.9 m above the datum level of the floor. The load was applied via a hydraulic ram and the deflection measured using a linear voltage displacement transducer (see Plate 1).

5 RESULTS

The test was carried out in accordance with the guidance given in BS 6180 Barriers in and about buildings – Code of Practice. The standard states that the maximum allowable deflection for a free standing glass protective barrier panel is 25 mm.

Table 2 of BS 6180 Barriers in and about buildings – Code of Practice categorises parapets, barriers and balustrades for areas of use depending on the loads they have achieved under testing.

The loads achieved by the Q-Railing Europe GmbH and Co KG glazing system tested under horizontal imposed line load to the maximum deflection of 25 mm are given in Table 1.

All figures quoted in Table 1 contain no safety factors and are direct loads as achieved by the system under test conditions.

Tables 2 and 3 summarises the suitability of the tested systems in accordance with Table 2 of BS 6180:2011.

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

END OF REPORT

Table 1 - Summary of Performance of Q-Railing Europe GmbH and Co. KG Balustrade System Tested under Horizontal Imposed Line Load

| System | Glass | Imposed Line Load at 25 mm Deflection (kN/m) | Working Line Load for System (kN/m) | Deflection at Working Line Load for System (mm) |
|------------------------------|---|--|-------------------------------------|---|
| Easy Glass Max "F" Top Mount | 19 mm glass - size: 1000 mm x 1000 mm | 3.37 | 3.00 | 21.88 |
| | 19 mm glass - size: 1000 mm x 1100 mm | 2.83 | 1.50 | 11.71 |
| | 19 mm glass - size: 1000 mm x 1200 mm | 1.98 | 1.50 | 19.56 |
| | 25.52 mm glass - size: 1000 mm x 1000 mm | 3.33 | 3.00 | 21.40 |
| | 25.52 mm glass - size: 1000 mm x 1200 mm | 2.64 | 1.50 | 12.12 |
| | 25.52 mm Sentury glass- size: 1000 mm x 1200 mm | 3.38 | 3.00 | 21.92 |
| | 31.52 mm glass- size: 1000 mm x 1200 mm | 3.25 | 3.00 | 21.52 |

Table 2 - Summary of Suitability of Q-Railing Europe Systems 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) | Easy Glass Max “F” Top Mount | | | |
|--|---|---|--|--|--|---|
| | | | 19 mm Glass - Size: 1000 mm x 1000 mm | 19 mm Glass - Size: 1000 mm x 1100 mm | 19 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Glass - Size: 1000 mm x 1000 mm |
| 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 | ✓ | ✓ | ✓ | ✓ |

| Type of Occupancy for Part of the Building | Examples of Specific Use | Horizontal Uniformly Distributed Line Load (kN/m) | Easy Glass Max "F" Top Mount | | | |
|--|---|---|--|--|--|---|
| | | | 19 mm Glass - Size: 1000 mm x 1000 mm | 19 mm Glass - Size: 1000 mm x 1100 mm | 19 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Glass - Size: 1000 mm x 1000 mm |
| 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 | ✓ | ✓ | ✓ | ✓ |

| Type of Occupancy for Part of the Building | Examples of Specific Use | Horizontal Uniformly Distributed Line Load (kN/m) | Easy Glass Max "F" Top Mount | | | |
|---|---|---|---------------------------------------|---------------------------------------|---------------------------------------|--|
| | | | 19 mm Glass - Size: 1000 mm x 1000 mm | 19 mm Glass - Size: 1000 mm x 1100 mm | 19 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Glass - Size: 1000 mm x 1000 mm |
| Areas where people might congregate | (vi) areas having fixed seating within 530 mm of the barrier, balustrade or parapet | 1.50 | ✓ | ✓ | ✓ | ✓ |
| Areas with tables or fixed seating | (vii) restaurants and bars | 1.50 | ✓ | ✓ | ✓ | ✓ |
| Areas without obstacles for moving people and not susceptible to overcrowding | (viii) stairs, landings corridors ramps | 0.74 | ✓ | ✓ | ✓ | ✓ |
| | (ix) external balconies including Juliette balconies and edges of roofs; footways and pavements within building cartilage adjacent to basement/sunken areas | 0.74 | ✓ | ✓ | ✓ | ✓ |

| Type of Occupancy for Part of the Building | Examples of Specific Use | Horizontal Uniformly Distributed Line Load (kN/m) | Easy Glass Max “F” Top Mount | | | |
|--|--|---|--|--|--|---|
| | | | 19 mm Glass - Size: 1000 mm x 1000 mm | 19 mm Glass - Size: 1000 mm x 1100 mm | 19 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Glass - Size: 1000 mm x 1000 mm |
| Areas susceptible to overcrowding | (x) footways or pavements less than 3 m wide adjacent to sunken areas | 1.50 | ✓ | ✓ | ✓ | ✓ |
| | (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 | ✓ |
| | (xii) grandstands and stadia | (Note 1) | - | - | - | - |
| Retail areas | (xiii) all retail areas including public areas of banks/building societies or betting shops | 1.50 | ✓ | ✓ | ✓ | ✓ |

| Type of Occupancy for Part of the Building | Examples of Specific Use | Horizontal Uniformly Distributed Line Load (kN/m) | Easy Glass Max "F" Top Mount | | | |
|--|---|---|--|--|--|---|
| | | | 19 mm Glass - Size: 1000 mm x 1000 mm | 19 mm Glass - Size: 1000 mm x 1100 mm | 19 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Glass - Size: 1000 mm x 1000 mm |
| Vehicular | (xiv) pedestrian areas in car parks, including stairs, landings, ramps, edges of internal floors, footways, edges of roofs | 1.50 (Note 2) | ✓ | ✓ | ✓ | ✓ |
| | (xv) horizontal loads imposed by vehicles | (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 3 - Summary of Suitability of Q-Railing Europe Systems 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) | Easy Glass Max "F" Top Mount | | |
|--|--|---|--|--|--|
| | | | 25.52 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Sentury Glass - Size: 1000 mm x 1200 mm | 31.52 mm Glass - Size: 1000 mm x 1200 mm |
| 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 | ✓ | ✓ | ✓ |

| Type of Occupancy for Part of the Building | Examples of Specific Use | Horizontal Uniformly Distributed Line Load (kN/m) | Easy Glass Max "F" Top Mount | | |
|--|--|---|--|--|--|
| | | | 25.52 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Sentury Glass - Size: 1000 mm x 1200 mm | 31.52 mm Glass - Size: 1000 mm x 1200 mm |
| 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 | ✓ | ✓ | ✓ |

| Type of Occupancy for Part of the Building | Examples of Specific Use | Horizontal Uniformly Distributed Line Load (kN/m) | Easy Glass Max "F" Top Mount | | |
|---|---|---|--|--|--|
| | | | 25.52 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Sentury Glass - Size: 1000 mm x 1200 mm | 31.52 mm Glass - Size: 1000 mm x 1200 mm |
| Areas where people might congregate | (vi) areas having fixed seating within 530 mm of the barrier, balustrade or parapet | 1.50 | ✓ | ✓ | ✓ |
| Areas with tables or fixed seating | (vii) restaurants and bars | 1.50 | ✓ | ✓ | ✓ |
| Areas without obstacles for moving people and not susceptible to overcrowding | (viii) stairs, landings corridors ramps | 0.74 | ✓ | ✓ | ✓ |
| | (ix) external balconies including Juliette balconies and edges of roofs; footways and pavements within building cartilage adjacent to basement/sunken areas | 0.74 | ✓ | ✓ | ✓ |

| Type of Occupancy for Part of the Building | Examples of Specific Use | Horizontal Uniformly Distributed Line Load (kN/m) | Easy Glass Max "F" Top Mount | | |
|--|--|---|--|--|--|
| | | | 25.52 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Sentury Glass - Size: 1000 mm x 1200 mm | 31.52 mm Glass - Size: 1000 mm x 1200 mm |
| Areas susceptible to overcrowding | (x) footways or pavements less than 3 m wide adjacent to sunken areas | 1.50 | ✓ | ✓ | ✓ |
| | (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 | ✓ | ✓ |
| | (xii) grandstands and stadia | (Note 1) | - | - | |
| Retail areas | (xiii) all retail areas including public areas of banks/building societies or betting shops | 1.50 | ✓ | ✓ | ✓ |

| Type of Occupancy for Part of the Building | Examples of Specific Use | Horizontal Uniformly Distributed Line Load (kN/m) | Easy Glass Max "F" Top Mount | | |
|--|--|---|--|--|--|
| | | | 25.52 mm Glass - Size: 1000 mm x 1200 mm | 25.52 mm Sentury Glass - Size: 1000 mm x 1200 mm | 31.52 mm Glass - Size: 1000 mm x 1200 mm |
| Vehicular | (xiv) pedestrian areas in car parks, including stairs, landings, ramps, edges of internal floors, footways, edges of roofs | 1.50 (Note 2) | ✓ | ✓ | ✓ |
| | (xv) horizontal loads imposed by vehicles | (Note 2) | - | - | |

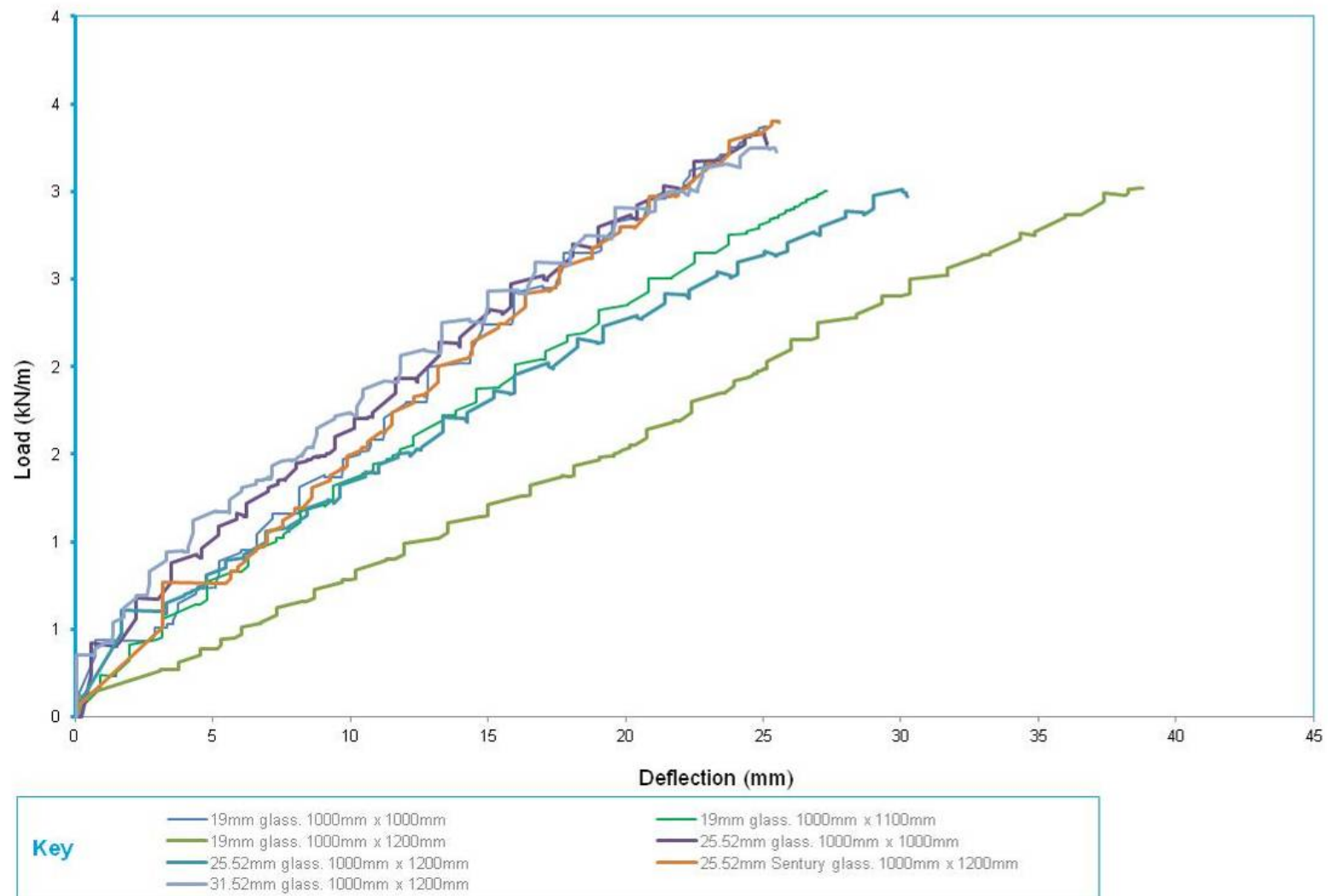
Note 1 – See requirements of the appropriate certifying authority

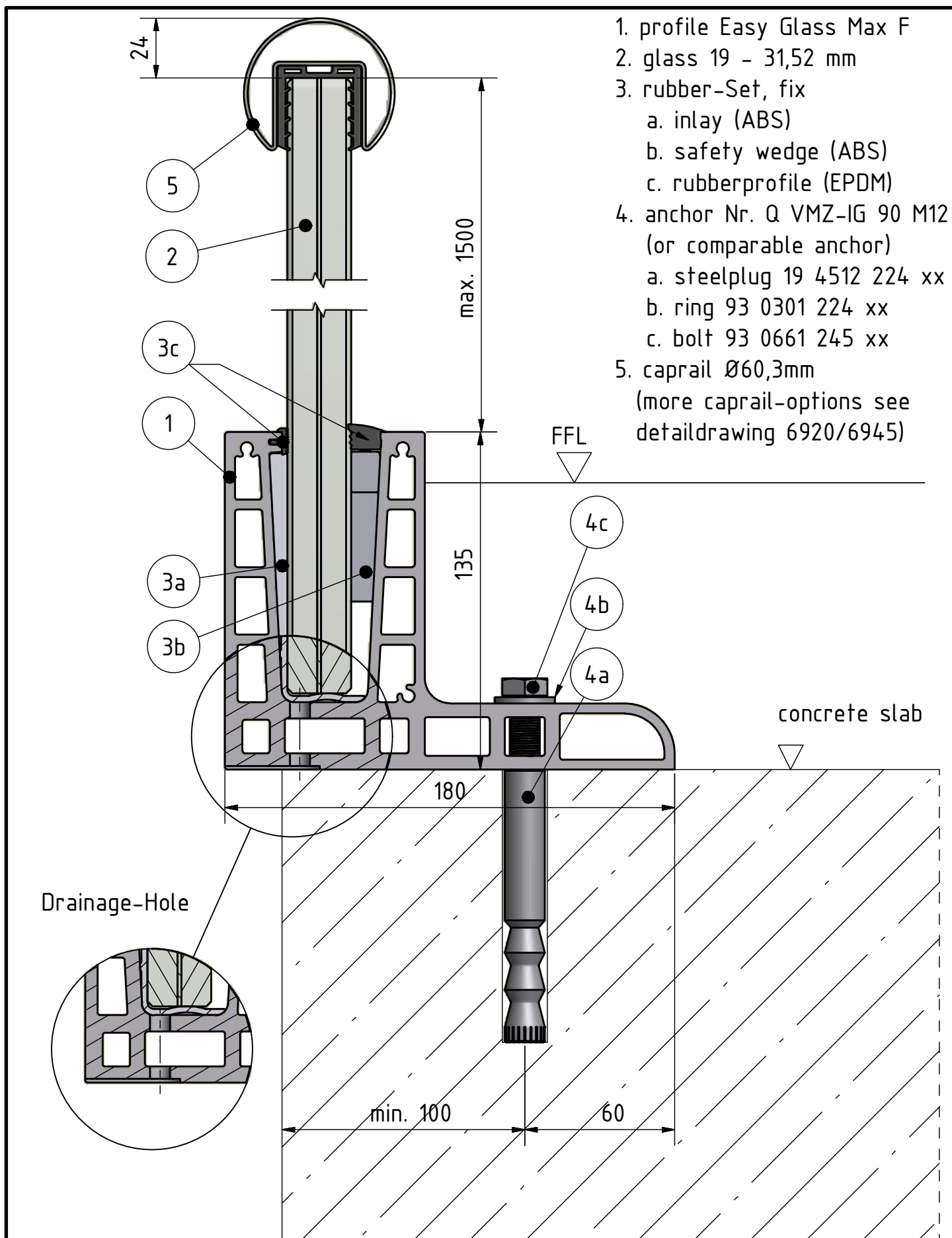
Note 2 – Clause 8.1.1 of BS 6180:2011 states that "glass should not be used for vehicle protection barriers"



Plate 1 - Generic Test Arrangement

Chart 1 - Load-Deflection Curve for Q-Railing Easy Glass Max "F" Top Mount





Article: Easy Glass Max

MOD: 6929

Drawn: LKA

Date: 13.01.2015

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Project: topmount

Detail: 6929-002

Edited:

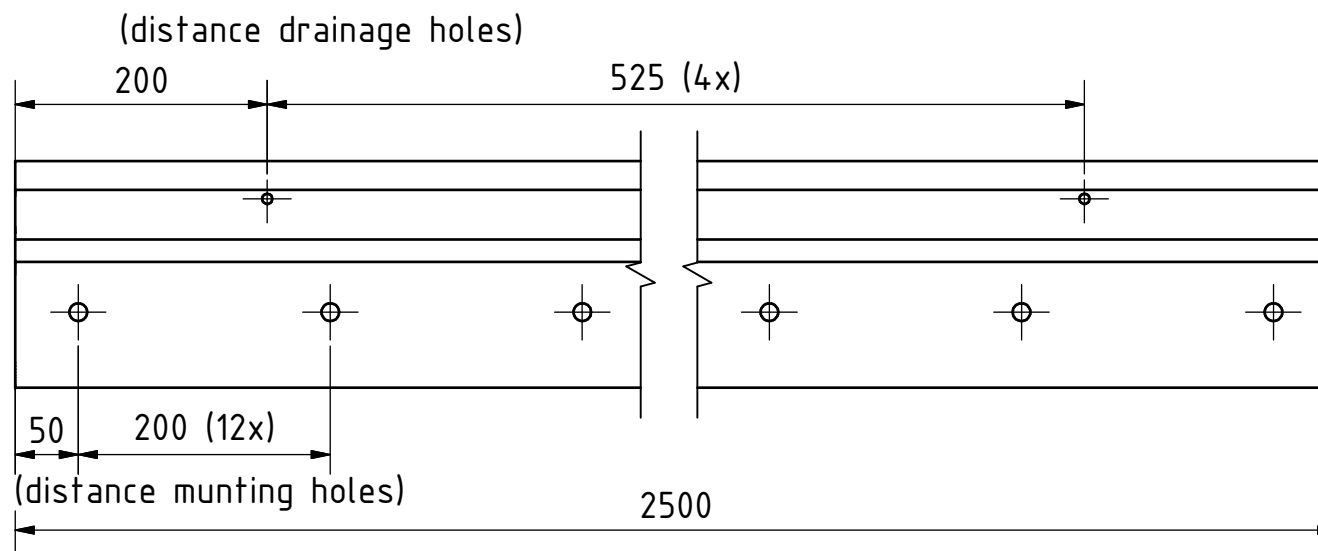
Date:

Scale: 1:2

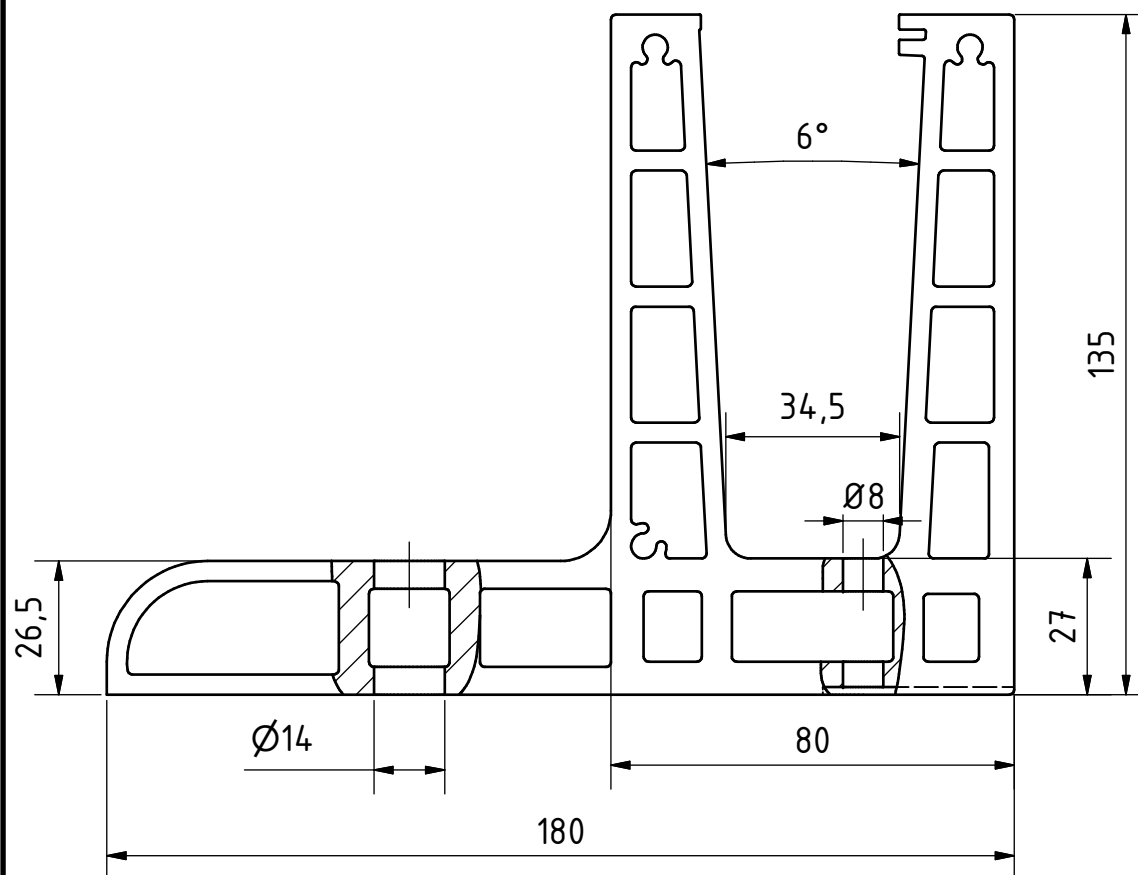
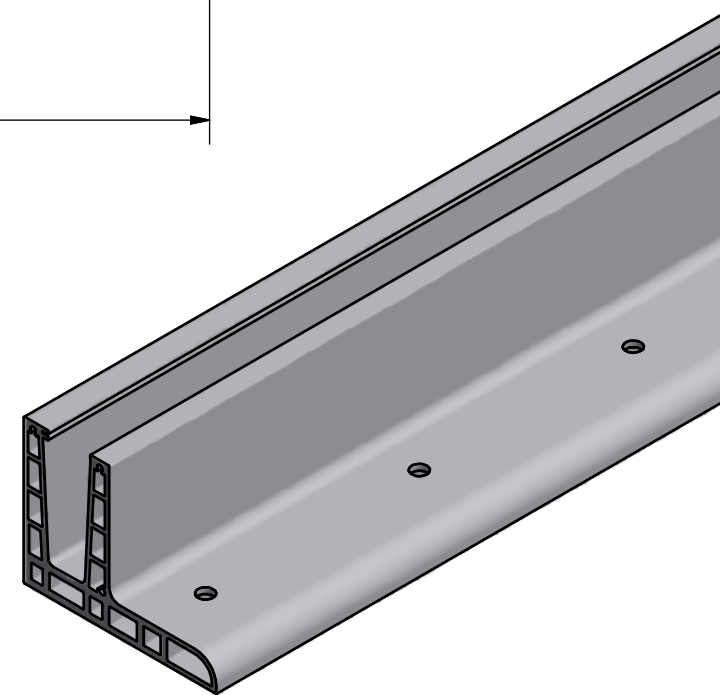
Your choice in railing systems


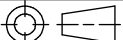


Q-DESIGNS BY Q-RAILING



3D view



| | | | | | | |
|--|--|--|----------------------------------|--|---|------------|
|  | | | Scale: 1 : 1,5 Weight: 33240 g | |  | Rev.No.: 0 |
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| | | | Finish: sample no ~18 | | | |
| | | | Product line: Easy Glass Max | | | |
| | | | Description: Base Shoe F | | | |
| | | | Drawing no.: CD-16692900018 | | Sheet: 1 / 1 | |
| | | | | | A4 | |
| | | | | | | |

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VIEL ERFOLG MIT
IHRER MONTAGE!

SUCCES MET
DE INSTALLATIE!