PRODUCT MANUAL

May 2016

NEWYORK

BALUSTRADE

crealco
creative aluminium

A product of
WISPECO Aluminium

LEGAL DISCLAIMER

General Documentation Disclaimer

This manual is intended as a manufacturing and installation advisory document. For correct specifications, sizing of profiles and structural information please consult the StarFront Application. If the information you require is not available through the StarFront Application, please contact your stockist before proceeding. It is advisable to have all sizing and performance criteria checked by a qualified structural engineer to ensure that the required criteria will be met.

All information, recommendations or advice contained in this documentation is given in good faith to the best of Wispeco's knowledge and is based on current procedures in effect.

Since the actual use of this documentation by the user is beyond the control of Wispeco, such use is within the exclusive responsibility of the user. Wispeco cannot be held responsible for any loss incurred through incorrect or faulty use of this documentation. Training of Wispeco systems is important for ensuring correct procedures in the manufacturing of products.

Great care has been taken to ensure that the information provided is correct.

Ensure that you have the latest available manual. The revision number and date can be checked on the latest StarFront version.

Wispeco will accept no responsibility for any errors and/or omissions, which may have inadvertently occurred.

Specifications concerning products and applications

This manual is based on standard configurations only. As there are many configurations not covered in this manual, contact your stockist with regards to a configuration not represented herein if required.

AutoDesk drawings (CAD Symbol Library) are available on request and can be issued with the consent of the Wispeco Technical Department.

All mechanical joints must be sealed with a **Crealco approved joint sealer**. Failure to correctly seal the joints can affect the performance of the system. Information on joint sealing can be found in the Cleaning & Maintenance Manual available for download from the Wispeco website or from StarFront.

All drawings in the Wispeco Documentation are NOT to scale and are used for illustrative purposes only.

Wispeco will not accept responsibility for the use of standard products since Wispeco does not know where these products are being installed.

The hardware recommended in this documentation is suitable for use in most atmospheric environments. When hardware is used in severe coastal environments the manufacturer of the hardware must be consulted.

The use of non-specified hardware or incorrect mechanical fasteners can adversly affect the mechanical and weathering performance of the system and we strongly advise against deviations. A Wispeco Consultant can advise you of any hardware issues and limitations with regard to this system.

The use of anti-magnetic stainless steel screws and aluminium pop rivets is recommended to reduce galvanic corrosion in harsh environments.

Fixing lugs on frames must be positioned as per the user manual and used in accordance to the AAMSA specifications. When profiles are screwed together the screw centres must also be according to the user manual or as specified by an engineer.

All glass used within Wispeco products must comply with SAGGA regulations. Laminated glass must not stand in water.

By continuing to use this documentation you acknowledge that you understand and accept the legal disclaimer.

This manual must be read in conjunction with the Installation, Cleaning & Maintenance Document and the Performance Certificates for the relevant system. The manual must also be used in conjunction with the design and cutting list from the latest version of StarFront.

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System Restrictions

When manufacturing and/or installing the NewYork Balustrade System.
It needs to comply with the National Building Regulations of South Africa.

The regulations that apply is as follows:

1. All balustrades except for swimming pools shall have a height of not less than 1m from ground level and shall not have any opening that allow a 100mm diameter steel ball to pass through.

2. All balustrades for swimming pools shall have a height of not less than 1.2m from ground level and shall not have any openings that allow a 1000mm diameter steel ball to pass through.

3. All balustrades are subject to a maximum allowable deflections of 1/125th of height or span of 25mm, whichever is the lesser one.

4. Any secondary rail on a balustrade with vertical bars, must be able to withstand a vertical load of 1kN to avoid damage by a person standing on it.

5. Any balustrade containing glass must be fitted with laminated or toughened glass, which has to withstand an impact of 400J delivered by means of a 250mm diameter bag filled with dry sand to a mass of 30kg.

Wispeco Aluminium STRONGLY recommend that a qualified structural engineer be consulted on ALL balustrade installations. It is the manufacture's sole responsibility to ensure that the manufacturing and installation of the balustrade complies totally with the National Building Regulation - SANS 10160 and SANS 10137.

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1. CORROSION RESISTANCE

Balustrade that is exposed to an external or aggressive environment shall be treated to resist corrosion.
Regular inspections need to be done for possible corrosion.

2. MAINTENANCE

Balustrade shall be periodically inspected for evidence of excessive wear, damage or reduced strength.
Any element, connection or anchorage that shows a loss of strength or a loss of stiffness of 20% or more shall be either replaced or restored to its initial condition. The loss of strength shall be determined by comparing the deflection of the balustrade under a certain load with the deflection of a new replicate under the same load.

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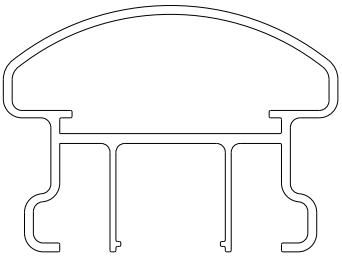
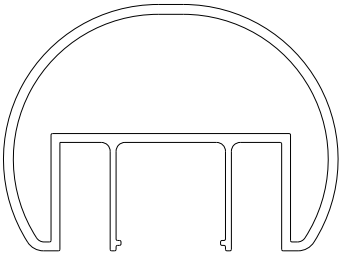
Profile Identification

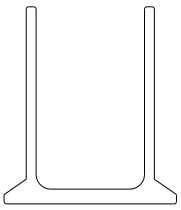
New York Window Profiles



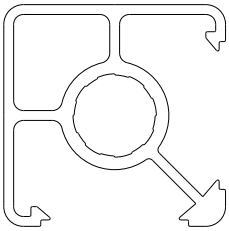
DIE No. W55828 | New York Hand Rail



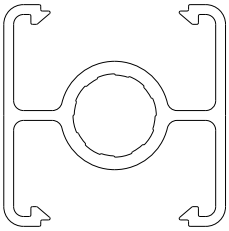
DIE No. W55830 | New York Rounded Hand Rail



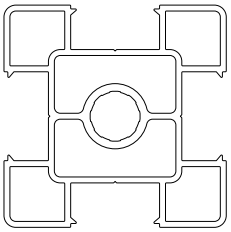
DIE No. W32324 | New York Side Bracket



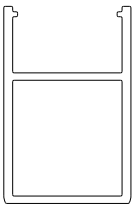
DIE No. W55827 | New York Corner Stanchion



DIE No. W55826 | New York Stanchion



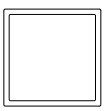
DIE No. W57554 | New York H/D Stanchion



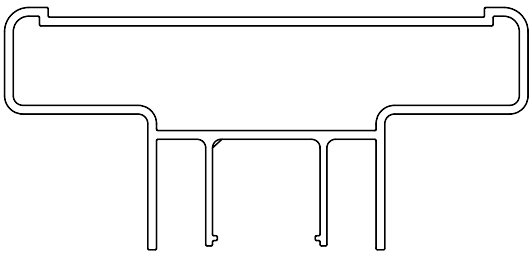
DIE No. W55829 | New York Bottom Rail

DIE No. W32320 | New York Big Cover

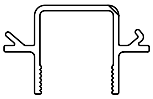
DIE No. W32321 | New York Small Cover



DIE No. W42179 | New York 20x20 Square Tube



DIE No. W56812 | New York York Rail Flat



DIE No. W32323A | New York York Clip Small

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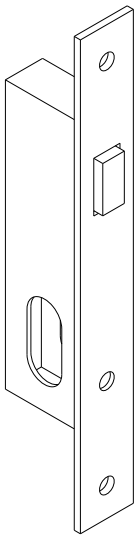
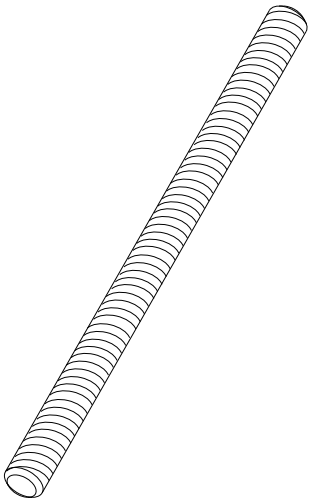
Hardware Components

RECOMMENDED NEW YORK COMPONENTS

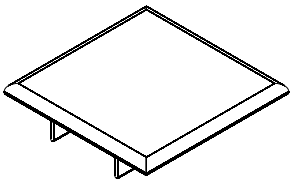
All hardware is available through our Stockists as well as through Crealco Components, and can be viewed on www.crealco-components.com



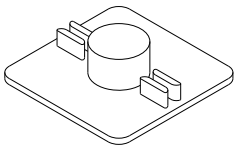
LCH-PD20
with Cylinder Lock



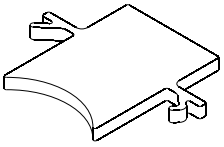
FSN-16
Ø16mm x 500mm Threaded Rod



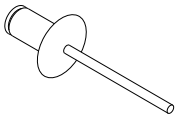
PEC-NYDS-BLK
H/D Stanchion Endcap



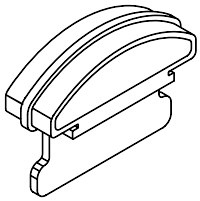
PEC-SC
Stanchion Endcap 300



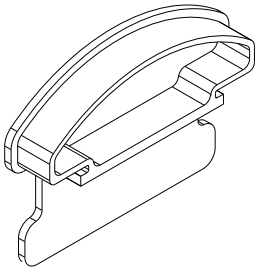
PEC-GP
Glass Packer



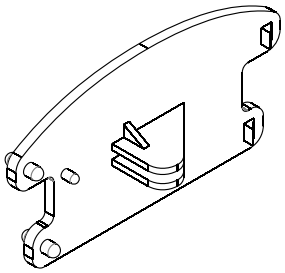
FRC-4810
4.8mm Rivet



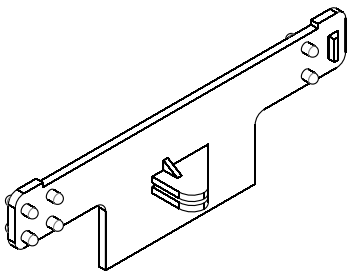
PEC-EXM
Rail Extender Mushroom 900



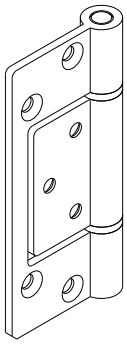
PEC-ECM
Rail Endcap Mushroom 500



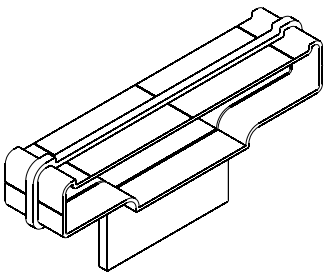
PEC-JM45
Mushroom Rail 45° Joint



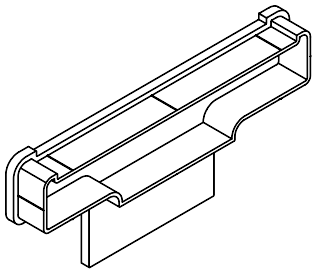
PEC-JFR45
Flat Rail 45° Corner Joint



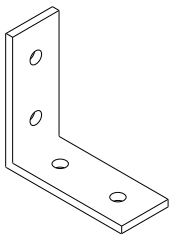
CSH-A100-NAT



PEC-EXFR
Rail Extender Flat



PEC-EFR
Rail End Cap Flat



W28464
Equal Angle 50x50x3 20mm

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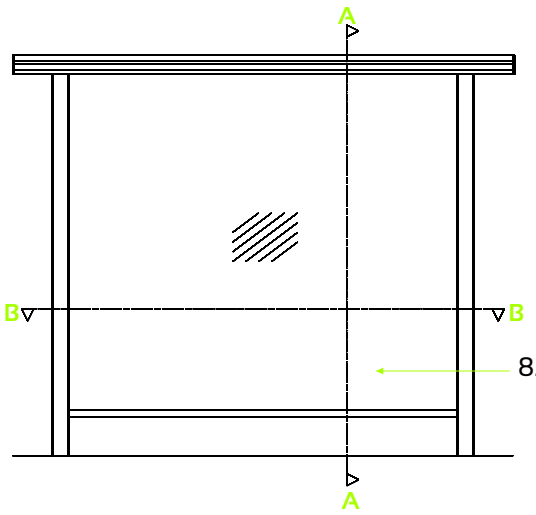
Location Of Wedges



SECTION A-A
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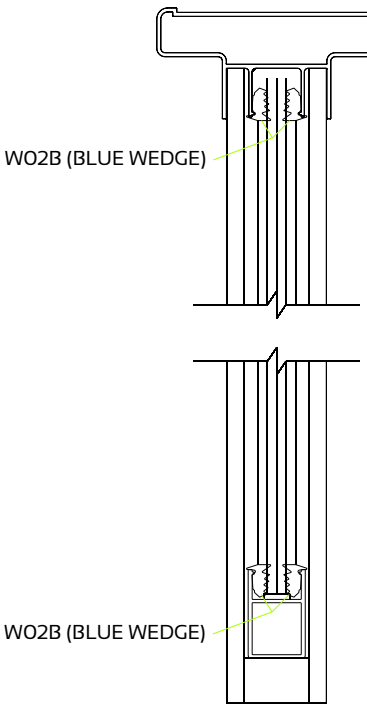

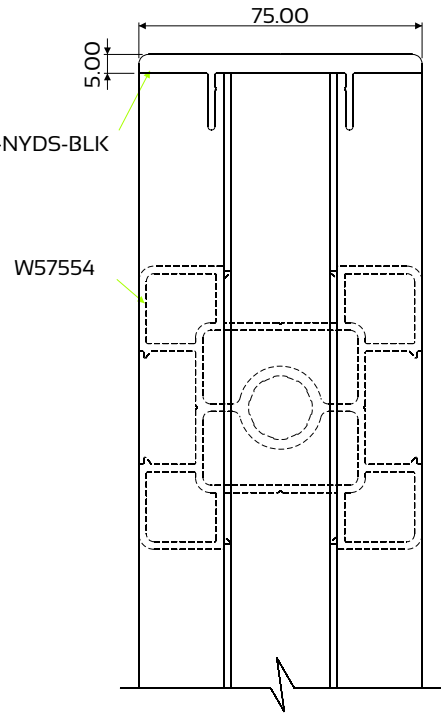

Detail showing H/D Stanchion with end cap

SECTION B-B
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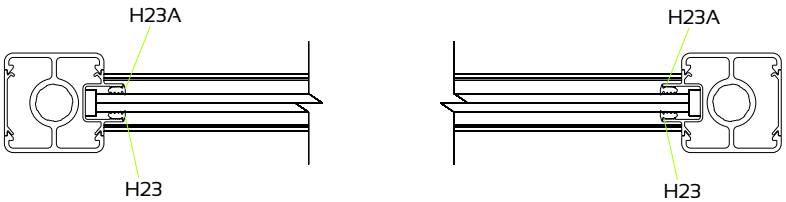

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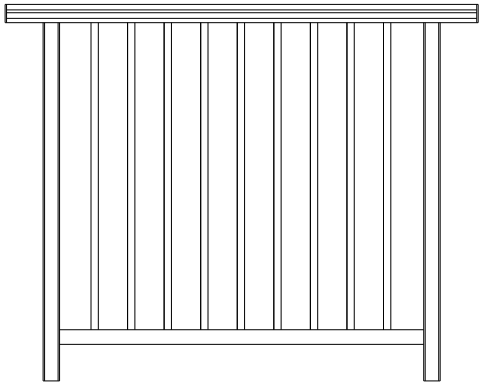
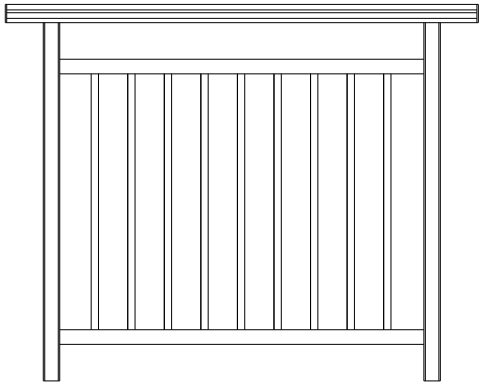
Typical Configurations

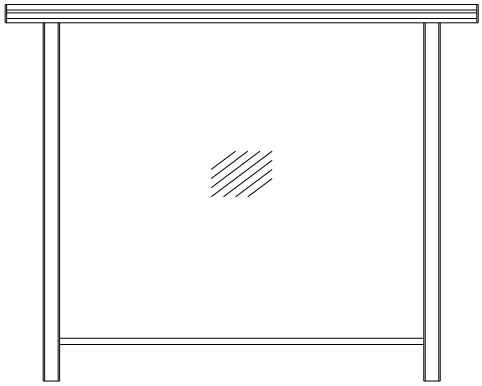
SQUARE TUBE RAILING NO GAP



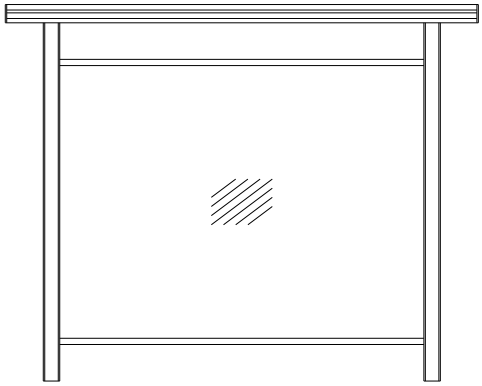
SQUARE TUBE RAILING WITH GAP



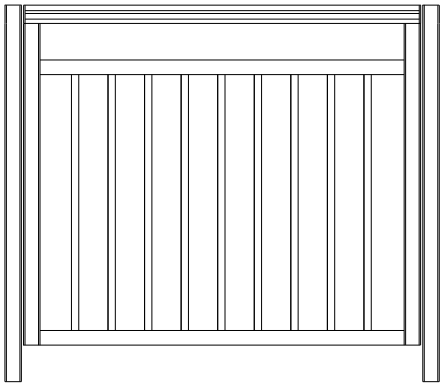
GLASS RAILING NO GAP



GLASS RAILING WITH GAP



SQUARE TUBE GATE



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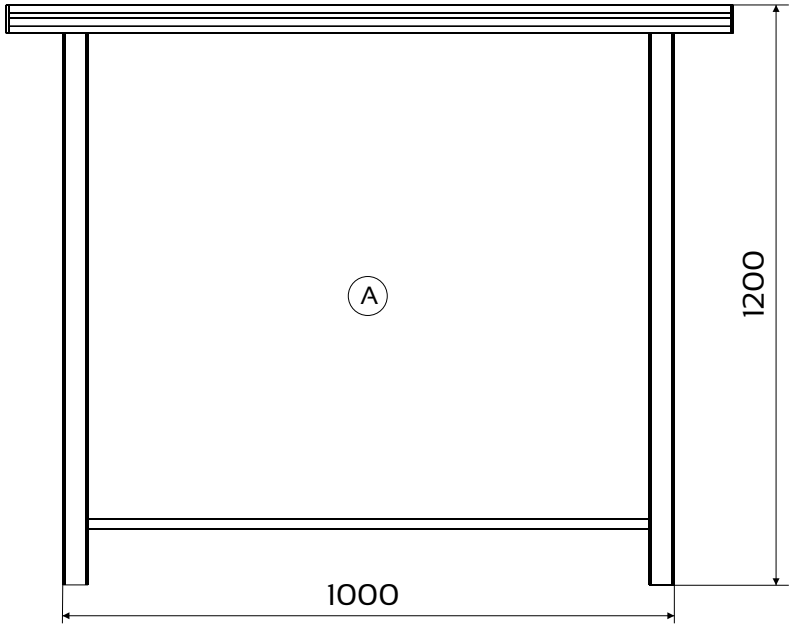
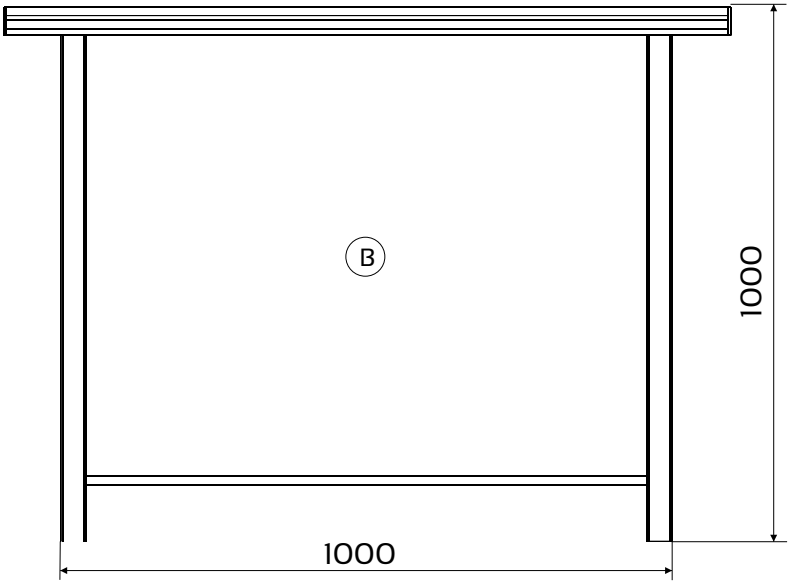
Balustrade Limitations



MINIMUM HEIGHT : (A) 1.2m ABOVE FFL FOR SWIMMING POOL ENCLOSURES
(B) 1m ABOVE FFL FOR ALL OTHER ENCLOSURES
MAXIMUM WIDTH : 1m BETWEEN STANCHIONS

TESTED WITH 8.38mm LAMINATED GLASS



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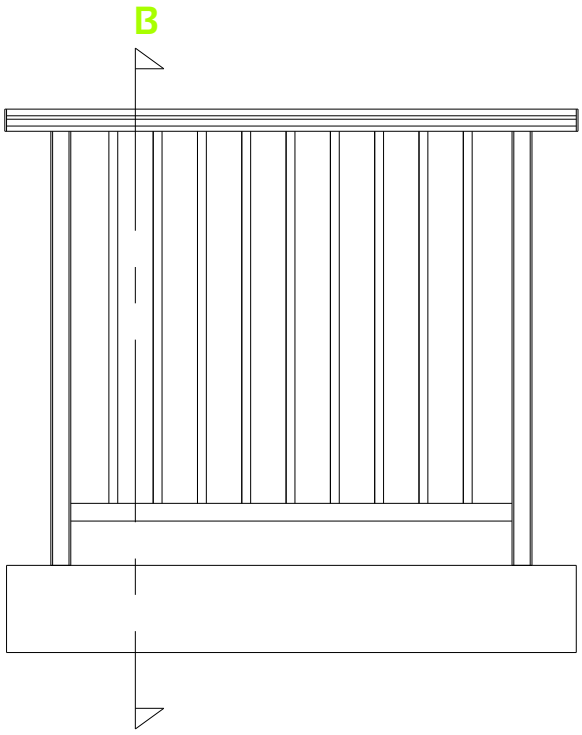
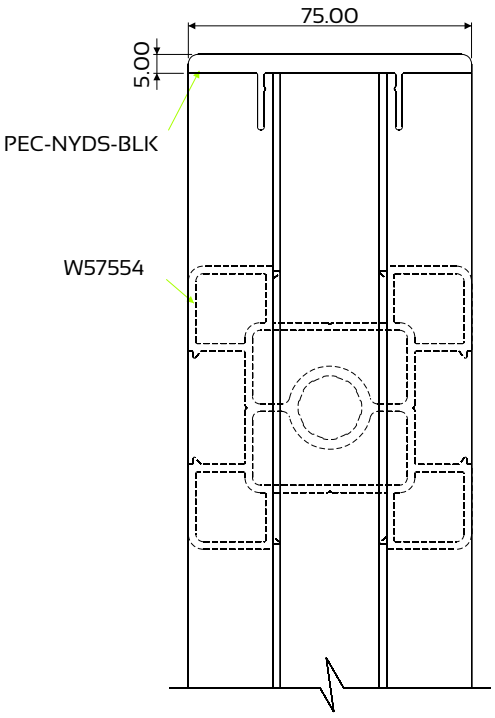
Vertical Cross-Sectional Detail

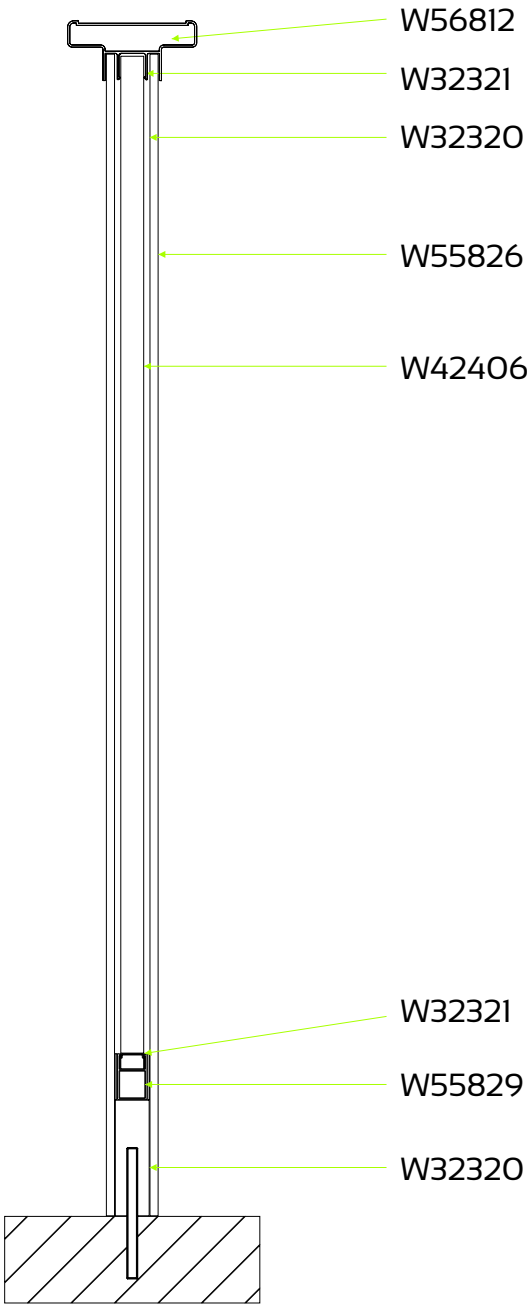
Square Tube Droppers





Detail showing H/D Stanchion with end cap

SECTION B-B
Section not to scale



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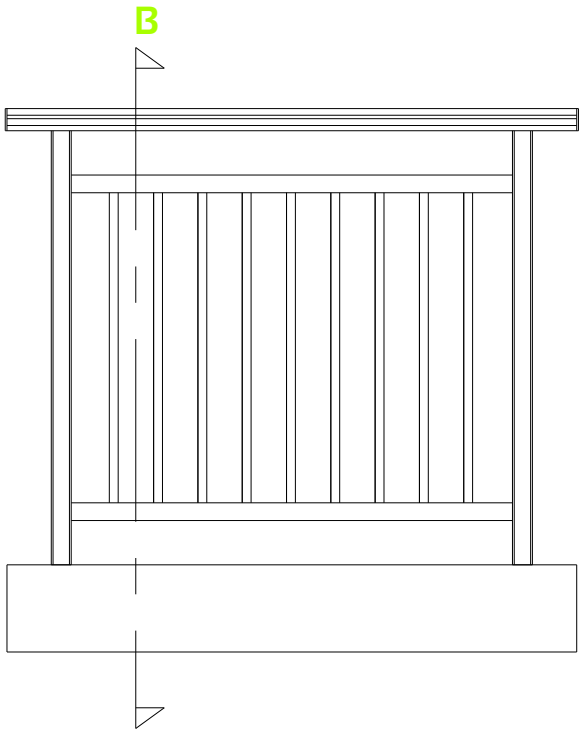
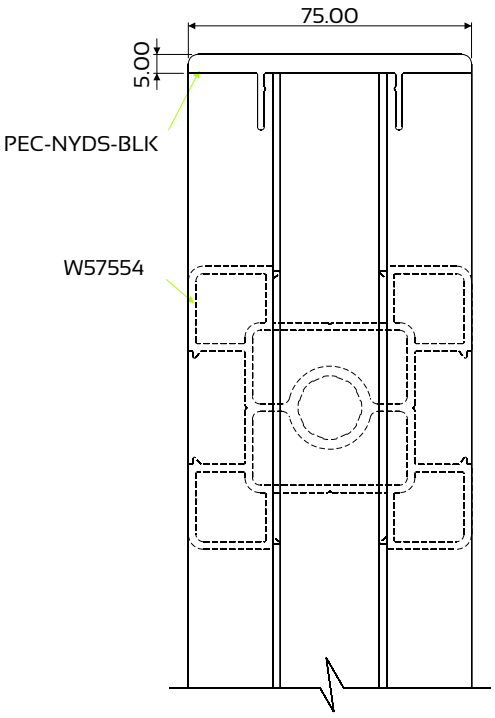
Vertical Cross-Sectional Detail

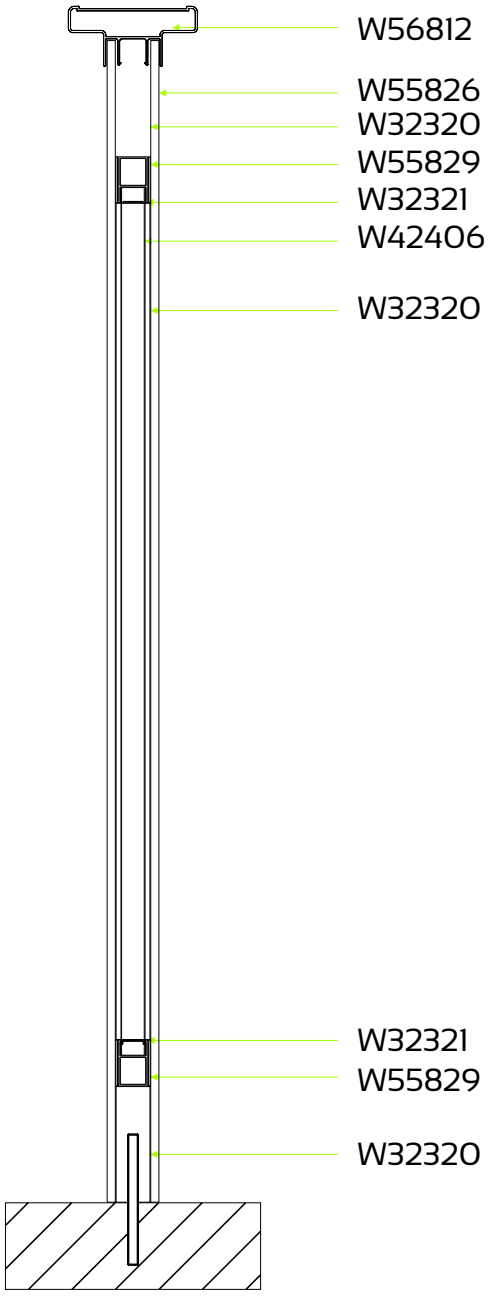
Square Tube Droppers With Gap





Detail showing H/D Stanchion with end cap

SECTION B-B
Section not to scale



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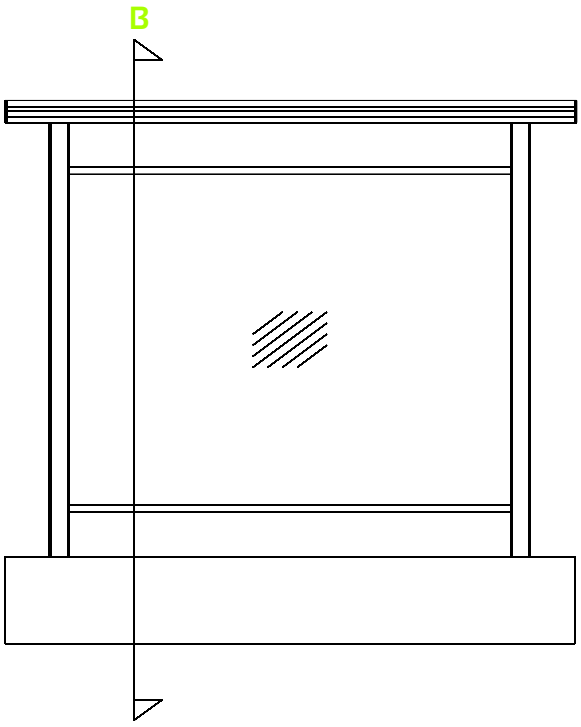
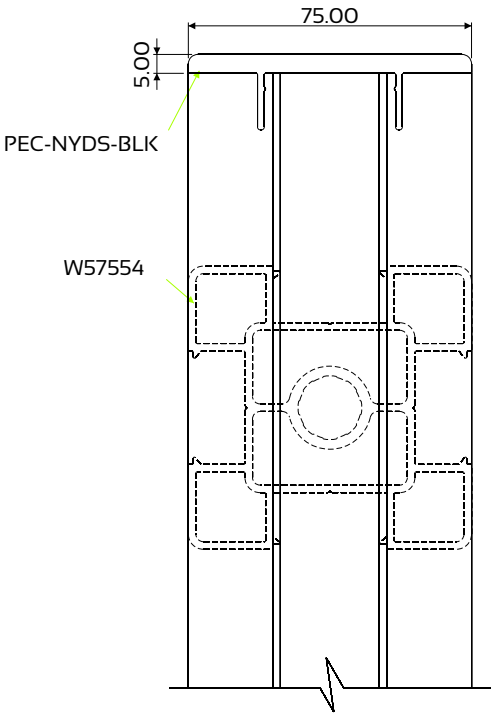
Vertical Cross-Sectional Detail

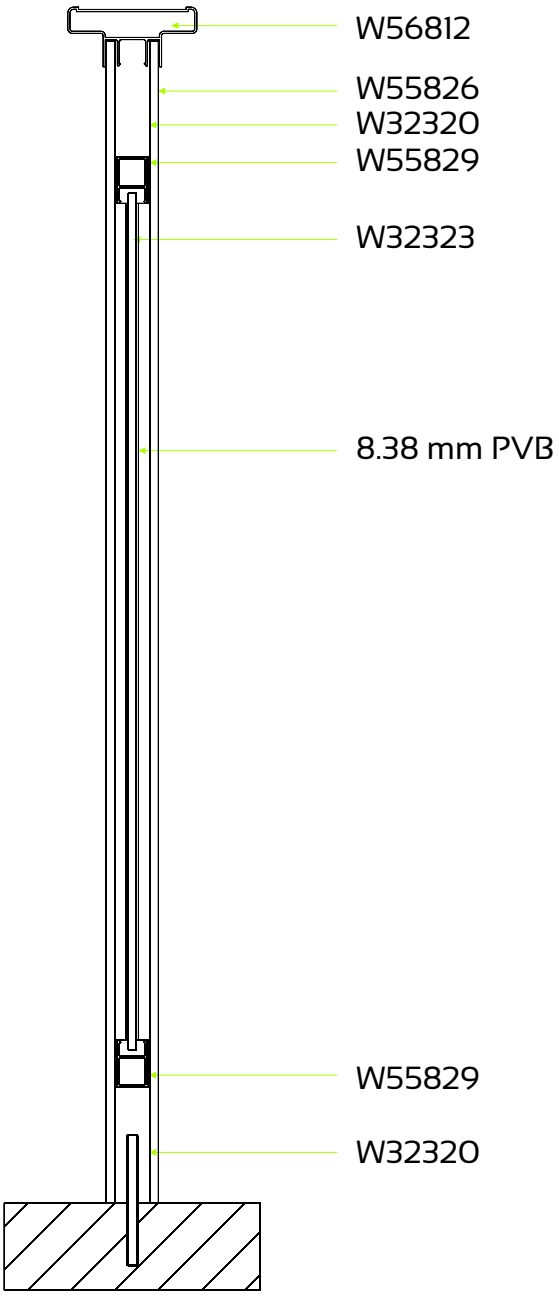
Glass Railing With Gap





Detail showing H/D Stanchion with end cap

SECTION B-B
Section not to scale



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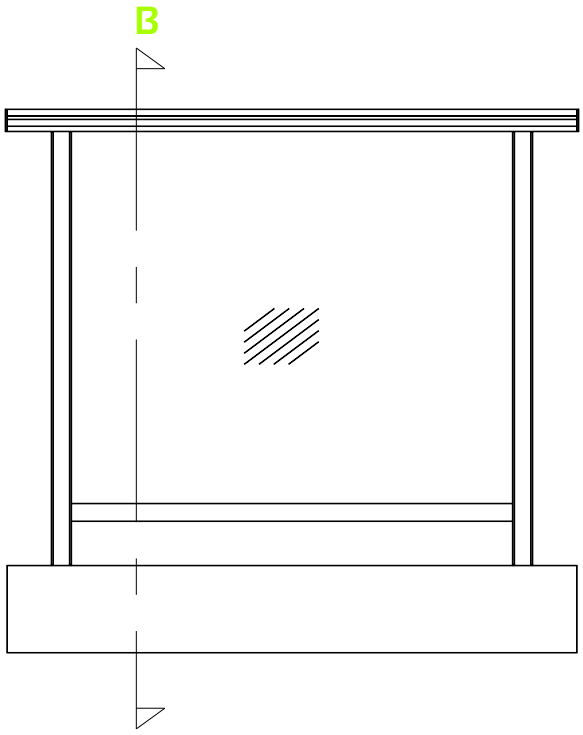
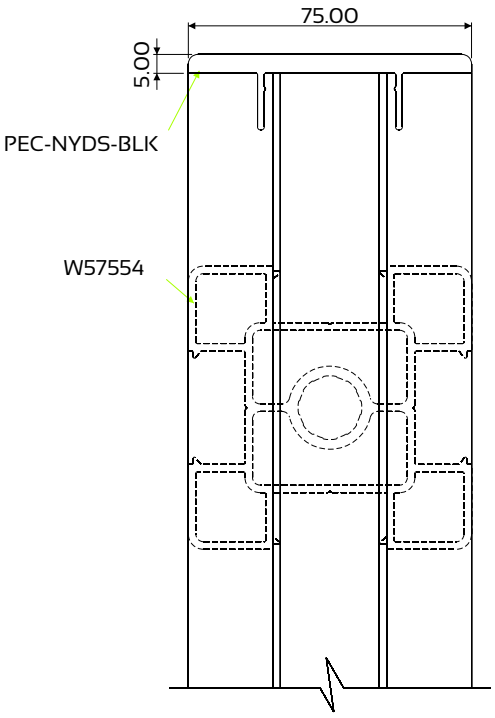
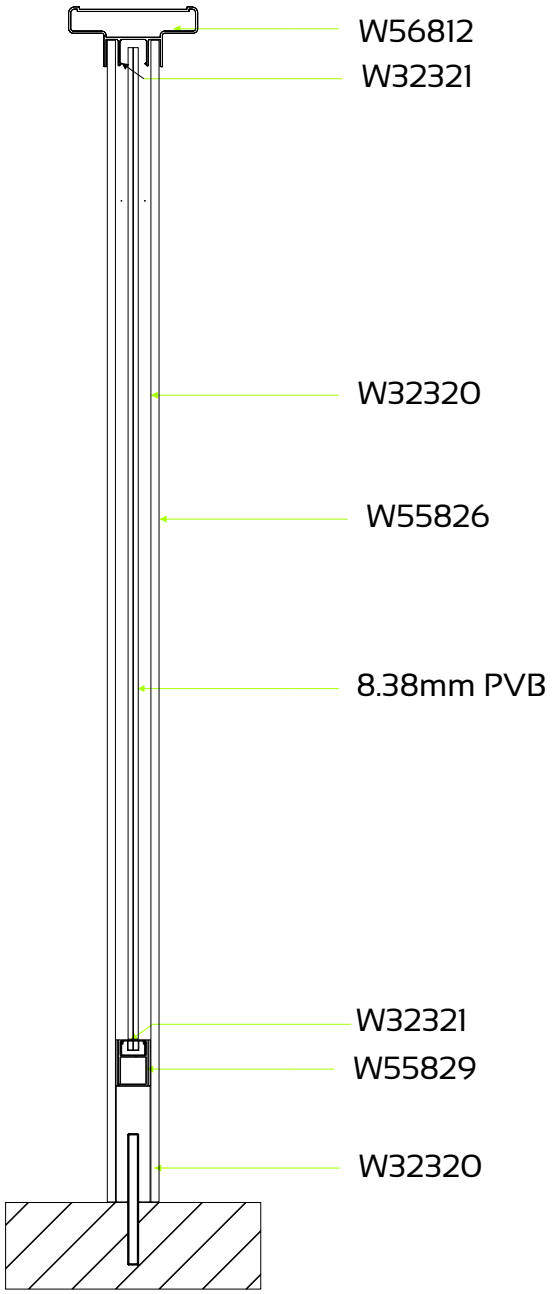
Vertical Cross-Sectional Detail





Detail showing H/D Stanchion with end cap

SECTION B-B
Section not to scale



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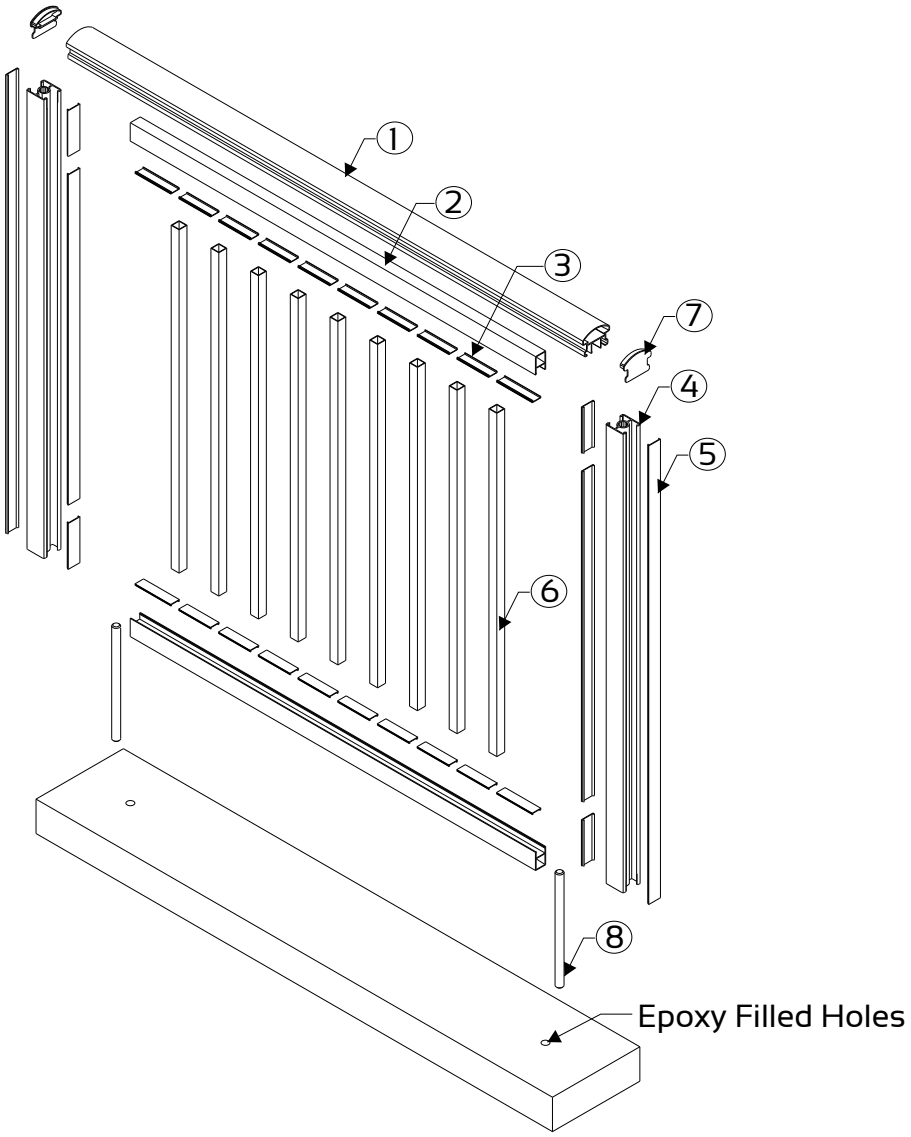
Assembly Detail

Square Tube Droppers With Gap And Double Railing



System Profiles

ITEM	QTY	DIE No.	DESCRIPTION
1	1	W55828	Hand Rail
2	2	W55829	Bottom Rail
3	10	W32321	Small Cover
4	3	W55826	Stanchion
5	2	W32320	Big Cover
6	9	W42406	SQ Tube 20x1.10

Hardware

ITEM	QTY	COMPONENT DESCRIPTION
7	2	Rail Endcap
8	2	Threaded Rod S/S

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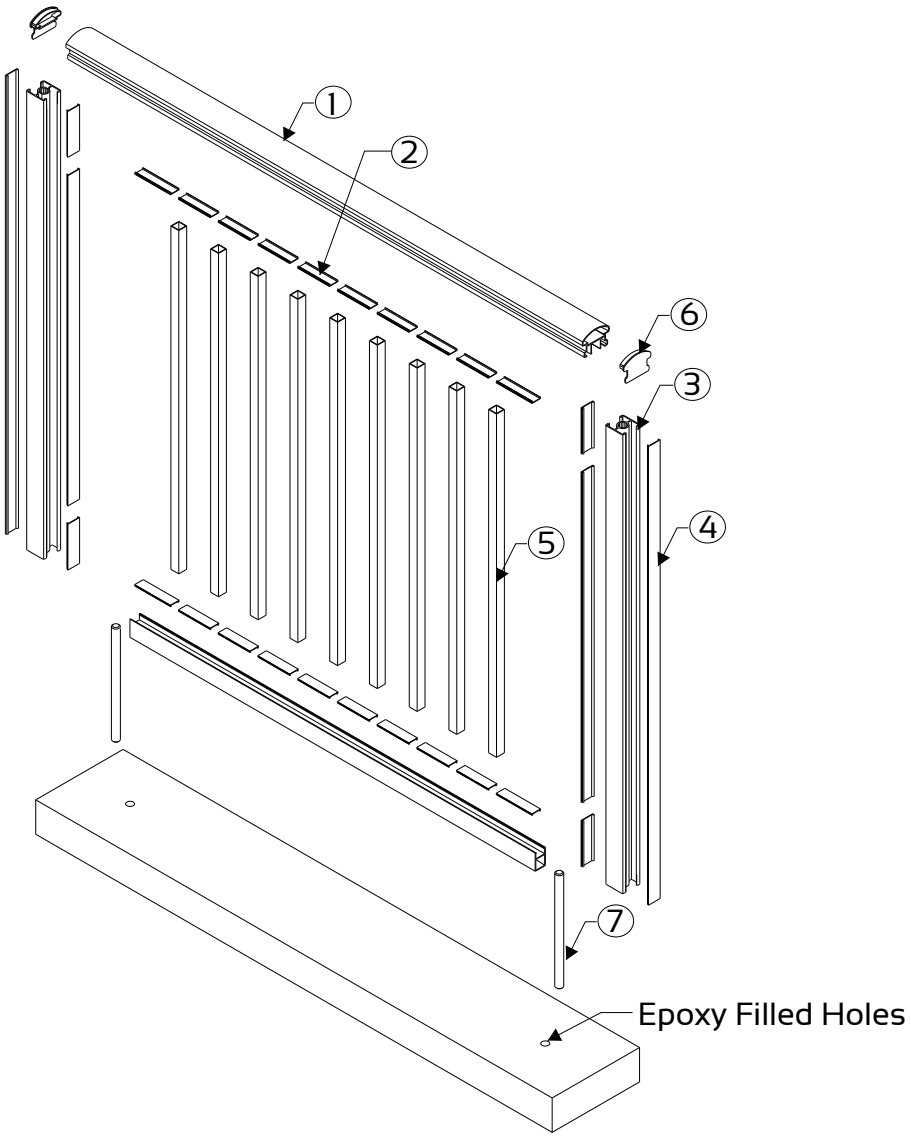
Assembly Detail

Square Tube Droppers With No Gap And Double Railing



System Profiles

ITEM	QTY	DIE No.	DESCRIPTION
1	1	W55828	Hand Rail
2	10	W32321	Small Cover
3	3	W55826	Stanchion
4	2	W32320	Big Cover
5	9	W42406	SQ Tube 20x1.10

Hardware

ITEM	QTY	COMPONENT DESCRIPTION
6	2	Rail Endcap
7	2	Threaded Rod S/S

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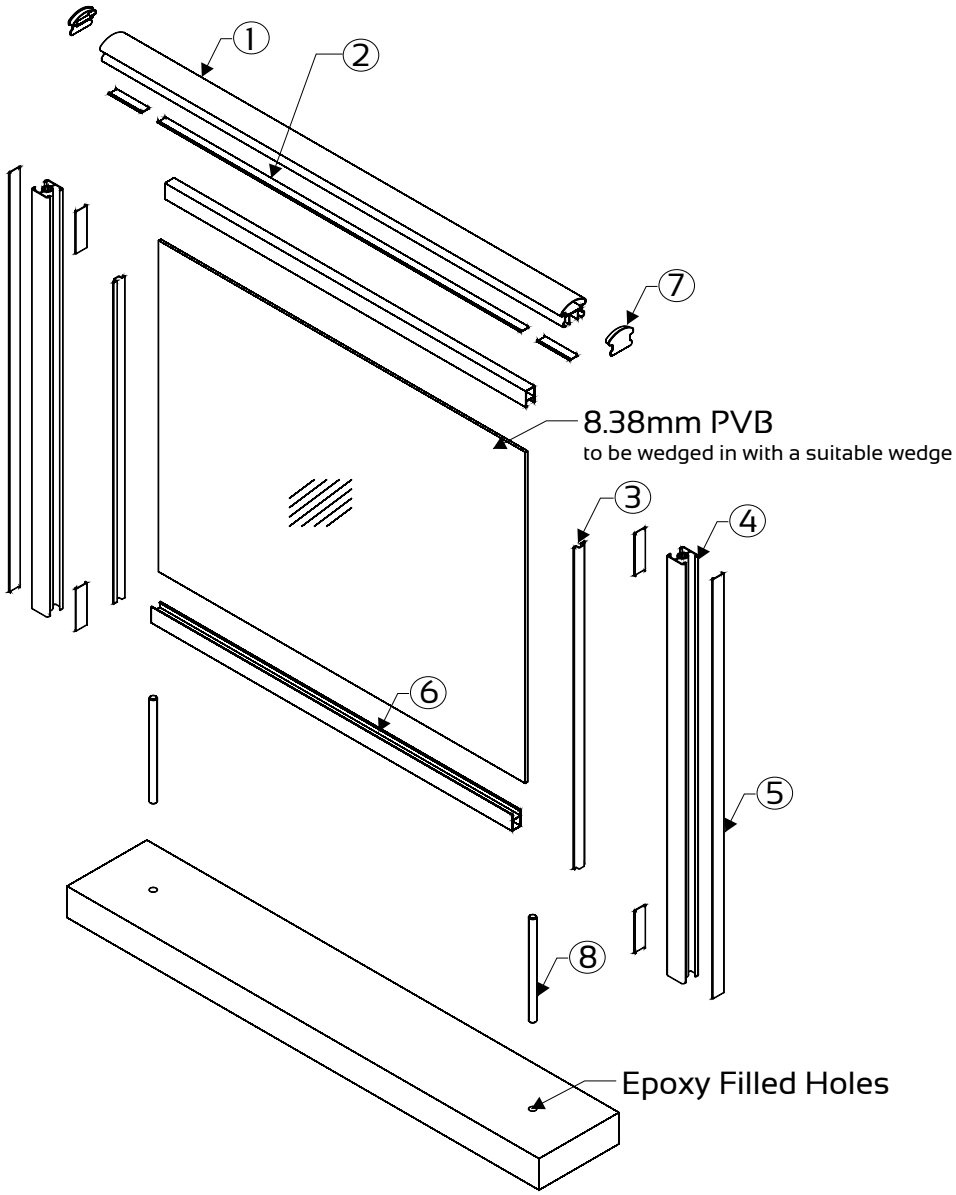
Assembly Detail

Glass Rail With Gap



System Profiles

ITEM	QTY	DIE No.	DESCRIPTION
1	1	W55828	Hand Rail
2	1	W32321	Small Cover
3	2	W32323A	York Clip Small
4	2	W55826	Stanchion
5	4	W32320	Big Cover
6	1	W55829	Bottom Rail

Hardware

ITEM	QTY	COMPONENT DESCRIPTION
7	2	Rail Endcap
8	2	Threaded Rod S/S

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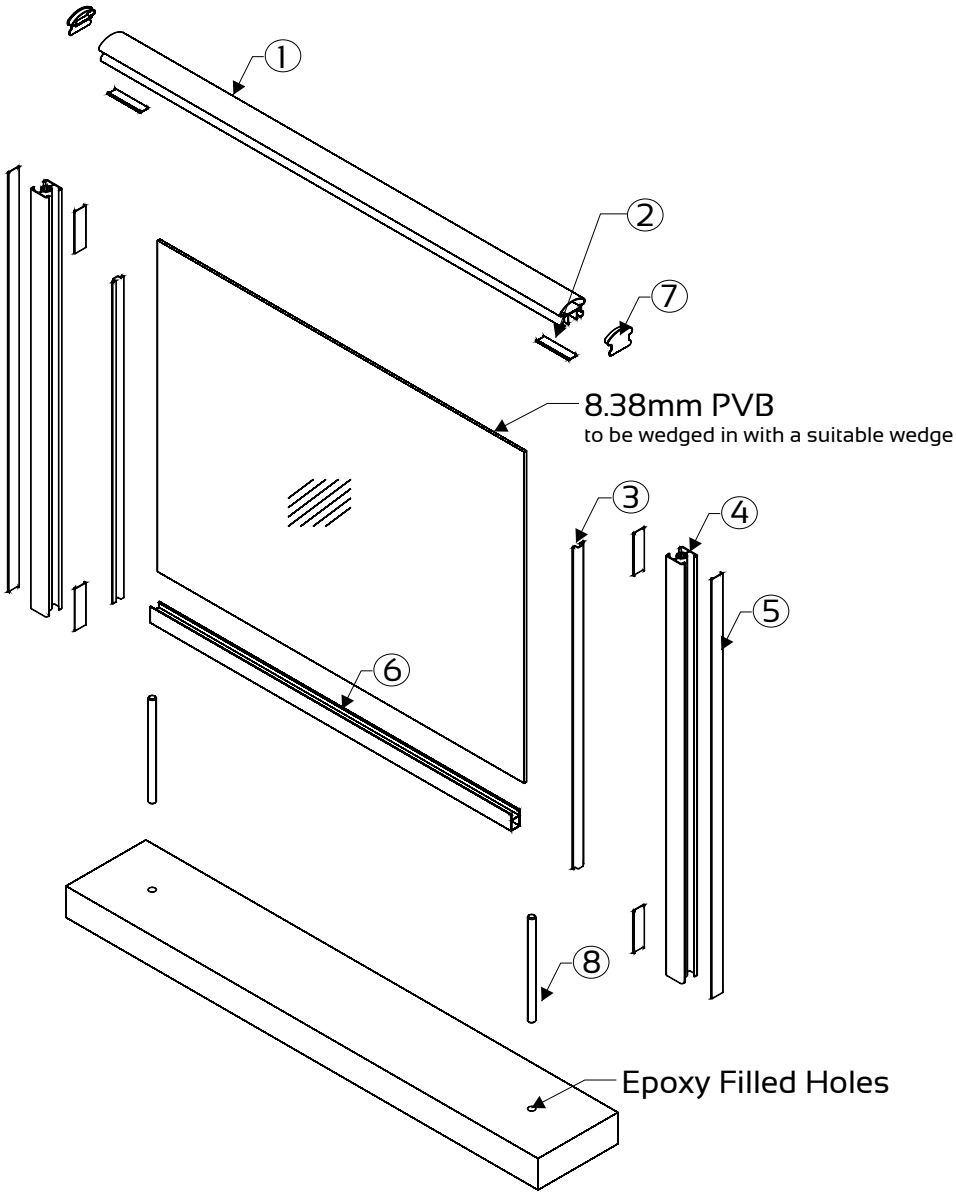
Exploded Detail

Glass Panel



System Profiles

ITEM	QTY	DIE No.	DESCRIPTION
1	1	W55828	Hand Rail
2	1	W32321	Small Cover
3	2	W32323A	York Clip Small
4	2	W55826	Stanchion
5	4	W32320	Big Cover
6	1	W55829	Bottom Rail

Hardware

ITEM	QTY	COMPONENT DESCRIPTION
7	2	Rail Endcap
8	2	Threaded Rod S/S

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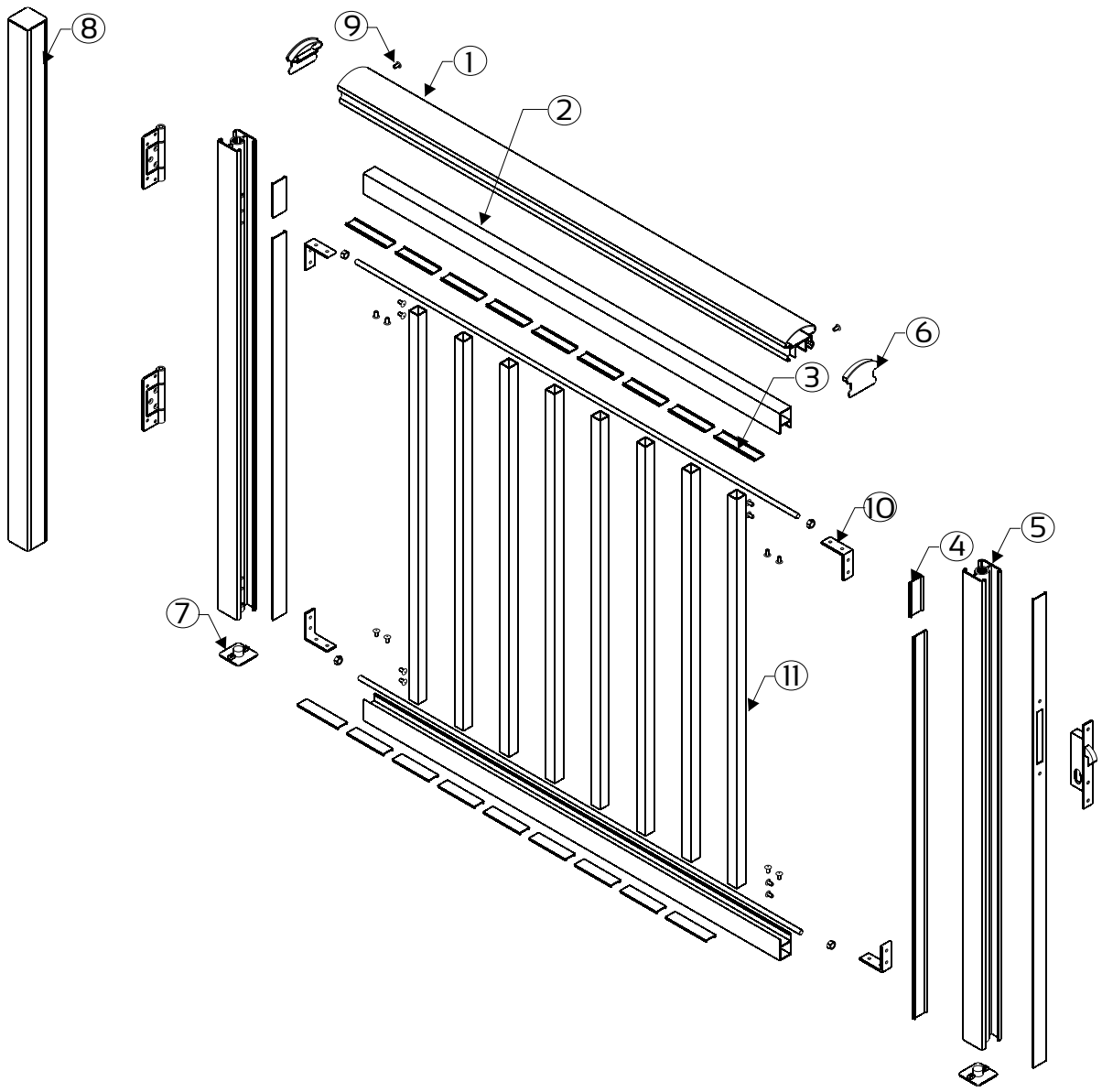
Assembly Detail

Square Tube Gate



System Profiles

ITEM	QTY	DIE No.	DESCRIPTION
1	1	W55828	Hand Rail
2	2	W55829	Bottom Rail
3	18	W32321	Small Cover
4	2	W32320	Big Cover
5	2	W55826	Stanchion

Hardware

ITEM	QTY	COMPONENT DESCRIPTION
6	2	Rail Endcap
7	1	Stanchion Cap
8	1	Stanchion Cover
9	2	4.8mm Rivet
10	4	50x50x3x20
11	8	SQ Tube 20x1.10

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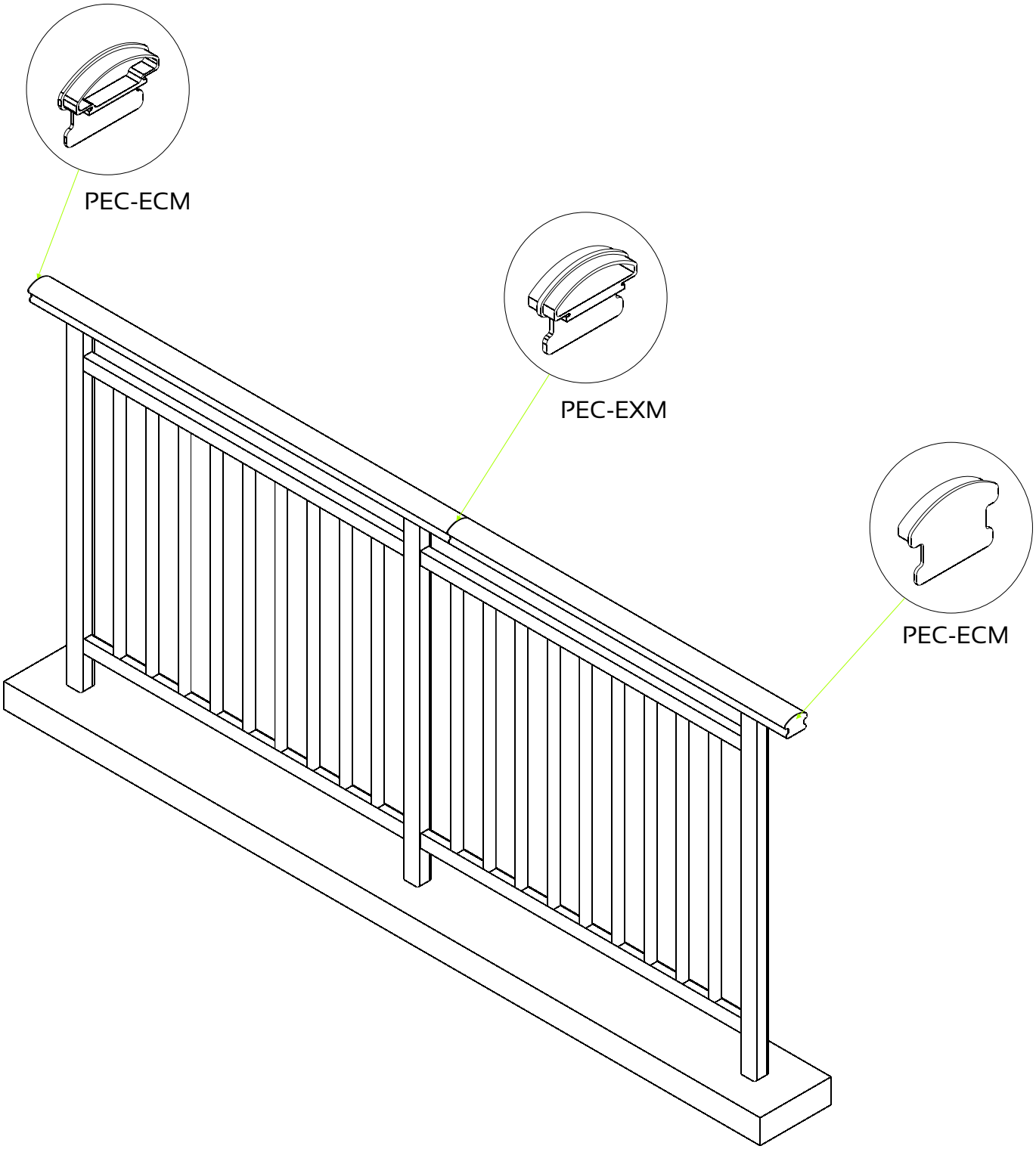
Endcap and Extender



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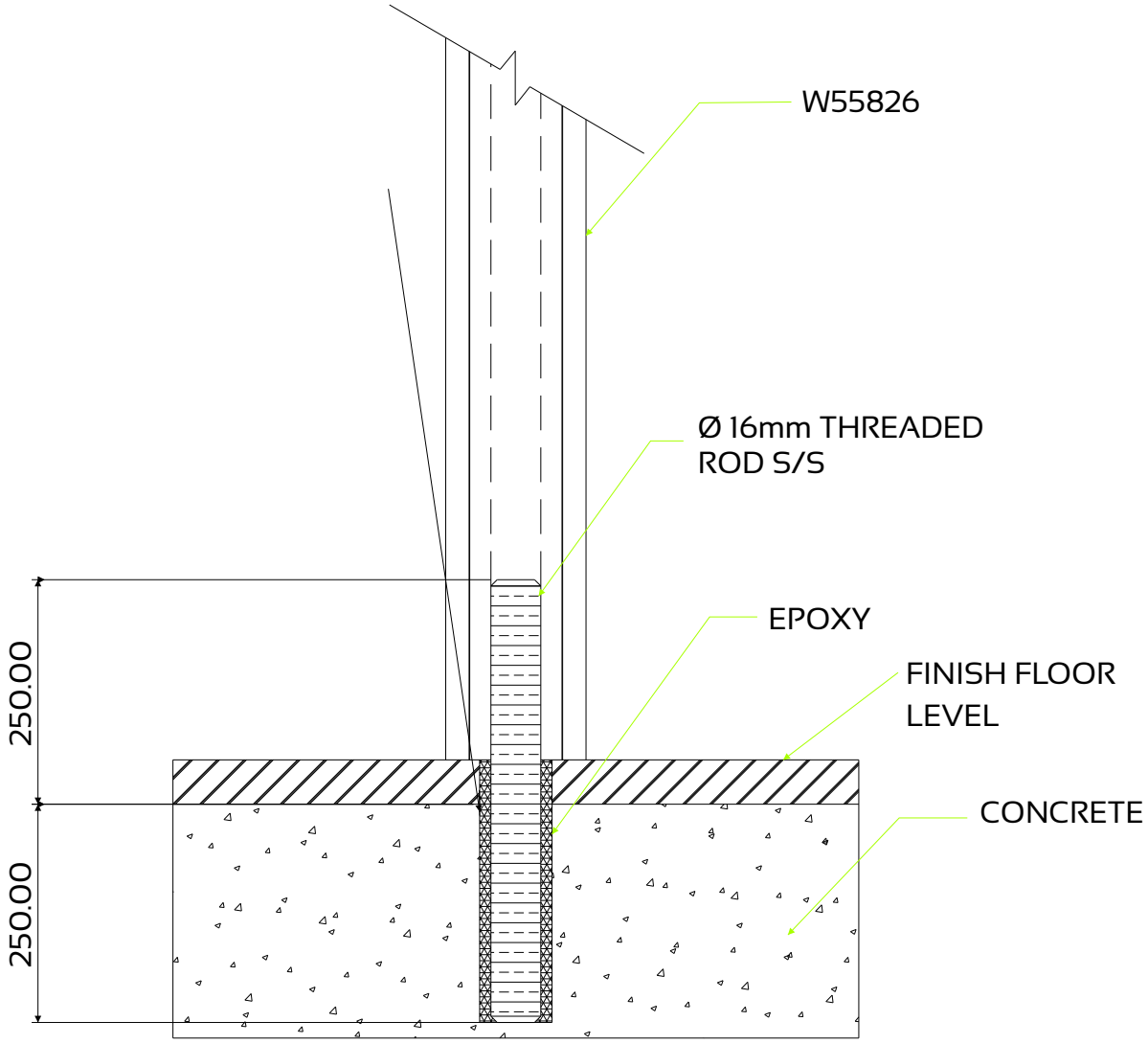
Stanchion Fixing Detail

Apply epoxy (abe Epidermix 372) as per the instructions to the area of the stanchion into which the threaded rod will be inserted as well as the portion of rod which goes into the stanchion & allow to dry. Then apply epoxy (Fischer FIS VS 300 T)into the pre-drilled hole where the stanchion will be located & insert the remaining portion of threaded rod protruding from the stanchion into the hole, ensuring the stanchion is level & at the correct height etc.

Always follow the instructions when applying the relevant epoxy as Wispeco cannot be held for any liability.



NB: EPOXY INSERTED INTO STANCHION & HOLE

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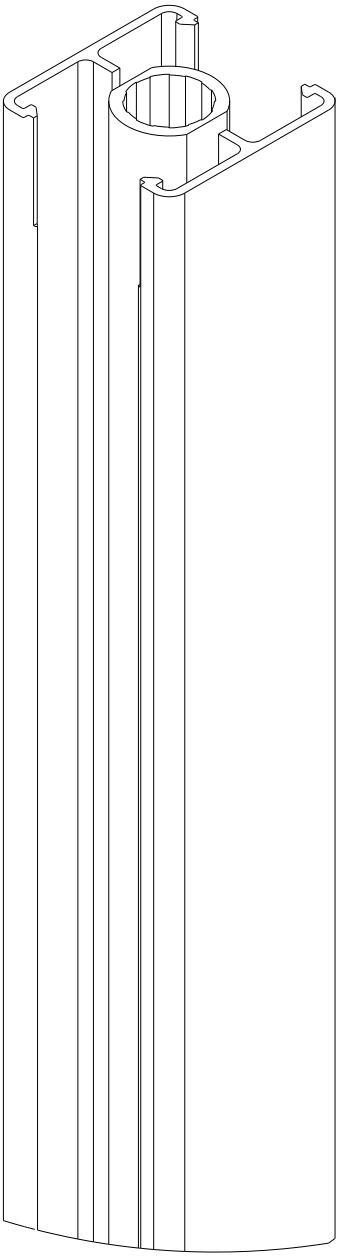
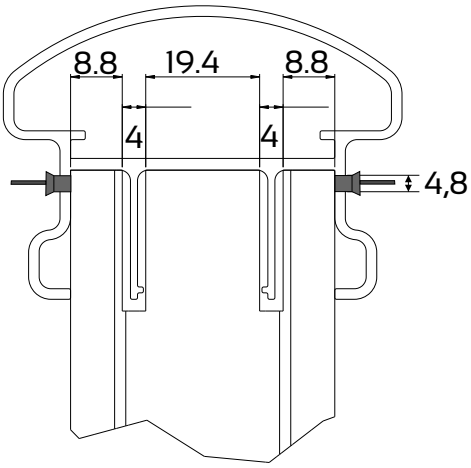
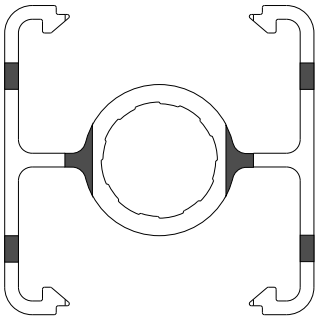
Stanchion Machining Detail







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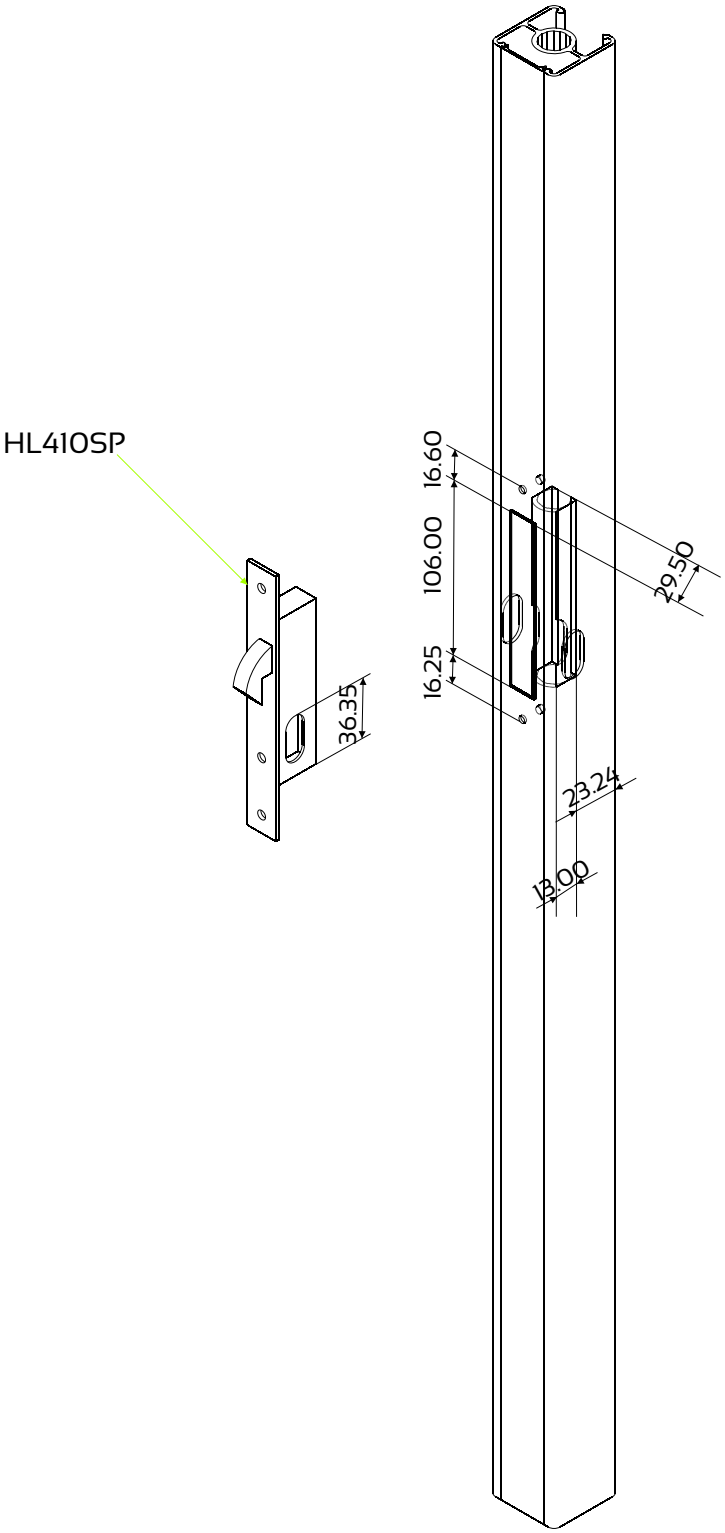
Machining Detail

Gate Lock



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GLAZING

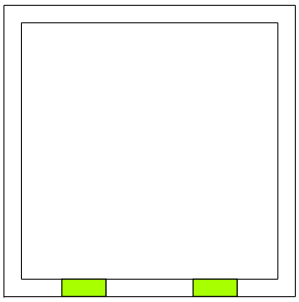
1. SELECTION OF GLAZING METHODS

1.1 SETTING AND LOCATION BLOCKS

Glass-to-metal contact must be avoided at all times by using setting and location blocks having a hardness of 50° to 90° shore A durometer. Use only blocks made of Neoprene, EPDM, Silicone or other elastomeric material.

Setting blocks are to have a minimum thickness of 3mm and must be at least 27mm in length per square metre of glass area.

The position of the setting and location blocks is illustrated in Figure 2.



a) Fixed Light

FIGURE 2 - POSITION OF SETTING AND LOCATION BLOCKS

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NickWrightConsulting

Consultation

Impact test was conducted on the prototype aluminium balustrade to be offered by Wispeco, at Wispeco premises Alrode on Monday 28th November 2011.

The sand bag impact test was applied to a balustrade panels. Sand bag was weighed at 30 kg and dropped from the height of no less than 1.36 metres to impart impact energy of 400 joules as required for SANS 10160 Part 2 for perpendicular approach distance of more than 1.5 metres.

The following comments apply:

1. In the first test the impact point was at the geometric centre of the aluminium droppers.
2. The second test the impact point was at the middle of the top edge of the balustrade just below the hand rail.
3. The aluminium balustrade glass was 1040mm above nominal finished floor height and the stanchion posts were 1045mm apart (centre to centre). The test is considered to be critical as there was only one balustrade section installed and therefore lacked the mutual support of adjacent balustrade panels.
4. The balustrade stanchion poles were fixed to the concrete slab using 16mm threaded rod into epoxy filled holes.

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Both impacts were successfully withstood by the balustrade though at each impact the balustrade was bent. Between first and second impacts the balustrade was straightened up as the threaded rod was bent.

Because the bag did not pass through the plane of the balustrade the tests are considered to be satisfactory.

It is recommended that the following be investigated:

1. Changing the floor fixing by assessing the performances of the aluminium stanchion pole core drilled directly into the floor, omitting the threaded rod and fixed used epoxy. This may speed up and strengthen the base fixing whilst reducing the complexity of the installation.
2. Installation method must be accurately and simply documented such that any customer can install this system once trained.

Videos of the impact tests are attached.

Do not hesitate to contact me if you need more information or clarification.

President and Member South African Glass Institute.

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1. The test site

2. After the first impact - the impactor is hanging vertically

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3. After second impact. Note the position of the impactor and the bend from this and the previous test.

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NickWrightConsulting

Consultation

Impact test was conducted on two "New York" prototype glass balustrade framed in aluminium to be offered by Wispeco, at Wispeco premises Alrode on Monday 23rd July 2012.
The sand bag impact test was applied to a balustrade panel. Sand bag was weighed at 30 kg and dropped from the height of no less than 1.36 meters to impart impact energy of 400 joules as required for SANS 10160 Part 2 for perpendicular approach distance of more than 1.5 metres.

The following comments apply:

1. The impact point toward the bottom edge of the glazed panel.
2. The glass as installed was 8.38 mm laminated safety glass.
3. The glass was framed all around using two part gaskets of PVC.

Both of the impacts caused the glass to fracture. However the bottom rails stayed in place and did not appear to be permanently distorted. A new bottom rail has been used and this has been fixed into position.

Both balustrade arrangements are therefore considered to be suitable for the requirements of the impact section of the National Building Regulations.

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On the second test the gaskets fell from the aluminium sections and the bag nearly passed through the plane of the balustrade. This was attributed to the smaller gaskets used in the installation.

It is recommended that the following be considered:

1. The use of 6.38 mm glass should be considered as this is significantly cheaper than 8.38 mm glass. Impact resistance is unlikely to be affected too much.
2. The use of PVC gaskets must be discussed. PVC shrinks over time and it is likely that given the choice a client may be tempted to use cheap grade PVC. The glass panels may then over time rattle in the frame and impact resistance will be compromised. Other gasket material should therefore be investigated. The second test indicates the effect of smaller gaskets - the glass was not retained in the frame to the same extent, even though the test was successful.
4. Installation method must be accurately and simply documented such that any customer can install this system once trained.

Videos of the impact tests are attached.

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1. The test site

2. First glass after impact - note that the glass and gaskets are retained in position.

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3. Second test. Note the glass and gaskets have pulled loose.

4. Second test from the other side.

5. After the impact - second installation was not tested as the results were expected to be similar as the bottom rail is identical.

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