

FIRE RESISTANCE CLASSIFICATION REPORT No. 16952B

Owner of the classification report:

AGC Glass Europe
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Introduction:

This classification report defines the classification assigned to a non-loadbearing glazed wall (type: Pyrobel 9 EG_Schüco ADS 65 NI FR 30 frame), in accordance with the procedures given in EN 13501-2: 2007+A1:2009: Fire classification of products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services.

This classification report consists of 12 pages and 9 annexes and may only be used or reproduced in its entirety.

1 Details of classified product

1.1 General

The element, Pyrobel 9 EG_Schüco ADS 65 NI FR 30 frame, is defined as a non-loadbearing glazed wall.

1.2 Description

The element, Pyrobel 9 EG_Schüco ADS 65 NI FR 30 frame, is fully described below in support of this classification. The drawings of the element are enclosed in the annexes 1 till 6 of this classification report.

1.2.1 Composition of the test specimen:

The test specimen is a non-loadbearing glazed wall composed of glass panes in an aluminium frame.

Dimensions of the wall:

- height: 3000 mm;
- width: 3000 mm;
- thickness: 65 mm.

1.2.2 Glazing system:

[1]-[5] Glass panes – type: Pyrobel 9 EG – nominal thickness: 12.06 mm ± 1.5 mm.

- position: shown in annex 1;
- fixing: clasped between the glazing beads;
- orientation: the glass panes are asymmetrical: PVB interlayer is positioned at the unexposed side.

	Dimensions of the glass panes: (width x height)	Dimensions of the exposed area: (width x height)
[1]	2240 mm x 1130 mm	2204 mm x 1094 mm
[2]	575 mm x 1130 mm	539 mm x 1094 mm
[3]	1096 mm x 1710 mm	1060 mm x 1674 mm
[4]	1096 mm x 1710 mm	1060 mm x 1674 mm
[5]	575 mm x 1710 mm	539 mm x 1674 mm

- [6] Setting block – material: calcium silicate – dimensions: 70 mm x 12 mm x 10 mm.
 - number: two per glass pane;
 - position: under the glass pane.

- [7] Clip-on bead – brand and type: Schüco glazing beads – material: aluminium.
 - position: at the exposed and unexposed side;
 - section dimensions:
 - exposed side: 18 mm x 25 mm (reference: 300 370);
 - unexposed side: 17 mm x 25 mm (reference: 173 820);
 - fixing: clicked into the (intermediate) tube profiles.

- [8] Thermal isolation – brand and type: Schüco fireboard – material: calcium silicate.
 - position: inside the clip-on beads;
 - section dimensions:
 - exposed side: 10 mm x 26 mm (reference: 266 603);
 - unexposed side: 9.5 mm x 26 mm (reference: 266 602).

- [9] Glazing gasket – brand and type: Schüco EPDM glazing gasket – material: rubber – thickness: 7 mm – reference: 246 510.
 - position: at the exposed side;
 - fixing: clipped on the exposed clip-on beads.

- [10] Glazing gasket – brand and type: Schüco EPDM glazing gasket – material: rubber – thickness: 4 mm – reference: 246 511.
 - position: at the unexposed side;
 - fixing: clipped on the unexposed clip-on beads.

1.2.3 Framing system:

The framing system includes the frame components, intumescent strip, thermal insulation and fixing parts.

[11] Tube profile – brand and type: Schüco profile – material: aluminium – outer dimensions: 59 mm x 65 mm – reference: 300 230.

- number: two horizontal and two vertical profiles;
- position: at the outer edges;
- fixing to the concrete frame:
 - with anchors [12] – material: steel – brand and type: Hilti 100 HT – diameter: 10 mm – length: 112 mm;
- fixing: the horizontal and vertical tube profiles are connected to each other by means of L-shaped aluminium corner cleats. The corner cleats are fixed to the horizontal and vertical profiles by means of nails.

[13] Intermediate tube profile – brand and type: Schüco profile – material: aluminium – outer dimensions: 84 mm x 65 mm – reference: 300 250.

- number: two horizontal and two vertical profiles;
- position: between the glass panes;
- fixing: intermediate tube profiles are connected to the other (intermediate) tube profiles by means of T- and X-shaped aluminium corner cleats. The corner cleats are fixed to the (intermediate) tube profiles by means of nails.

[14] Steel tube – brand and type: Schüco steel tube – steel thickness: 2 mm – outer dimensions: 50 mm x 15 mm – reference: St50x15x2.

- number: one;
- position: inside the largest vertical intermediate tube profile;
- fixing:
 - to the intermediate tube profile;
 - with screws [15] – brand: SCHÜCO – length: 19 mm – diameter: 4.8 mm – reference: 205 949;
 - Centre-to-centre: 400 mm.

[16] Intumescent strip – section dimensions: 24 mm x 2 mm – reference: 266 517.

- position: around the extremities of the glass panes on the (intermediate) tube profiles;
- fixing: self-adhesive to the (intermediate) tube profiles.

[17] Setting block – material: calcium silicate – dimensions: 100 mm x 80 mm x 15 mm – density: 960 kg/m³ (NV).

- position: under the aluminium frame.

[18] Mineral wool – brand and type: Thermal insulation Promat Promaglaf HTK 1100 – initial thickness: 25 mm – compressed thickness: 15 mm – initial density: 96 kg/m³ (NV).

- position: between the tube profiles and the concrete frame, at the fixed edges.

2 Test reports/EXAP-reports and test results in support of the classification

2.1 Test reports/EXAP-reports

Name of the laboratory	Report ref. no.	Name of the owner	Date of the test	Method
Efectis france	EFR-14-V-001922	AGC Glass Europe	17/10/2014	EN 1364-1:1999
WFRGENT nv	16952A	AGC Glass Europe	-	EN 15254-4:2008+A1:2011

Exposure conditions during the fire resistance test:

Temperature/time curve: standard as in EN 1363-1:2012.

Direction of exposure: The glazing system is asymmetrical: PVB interlayer at the unexposed side.

The framing system is asymmetrical: aluminium frame extension over the glazing beads at the unexposed side.

No load was applied.

One vertical edge is free, the other edges are fixed.

2.2 Test results

Parameters	Results
Integrity – E	
Spontaneous and sustained flaming	37 minutes
Failure with gap gauge \varnothing 6 mm	37 minutes, no failure ⁽²⁾
Failure with gap gauge \varnothing 25 mm	37 minutes, no failure ⁽²⁾
Ignition of cotton pad	37 minutes, no failure ⁽²⁾
Radiation – W	
Radiation intensity = 15 kW/m ²	37 minutes, no failure ⁽¹⁾

⁽¹⁾ The test was stopped after 37 minutes for safety reasons.

⁽²⁾ No failure until spontaneous and sustained flaming.

3 Classification and field of application

3.1 Reference of classification

This classification has been carried out in accordance with clause 7 of EN 13501-2:2007+A1:2009.

3.2 Classification

The element, Pyrobel 9 EG_Schüco ADS 65 NI FR 30 frame, is classified according to the following combinations of performance parameters and classes as appropriate. No other classifications are permitted.

The classifications are only valid for the direction of exposure, as described in § 2.1.

EW 30, EW 20

E 30, E 20

3.3 Field of direct application

This classification is valid for the following end use applications according to EN 1364-1:1999.

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability:

- a) unlimited increase and decrease of the width of the wall;
- b) unlimited decrease in height of the wall of 3 m;
- c) decrease in the linear dimensions of panes;
- d) change in the aspect ratio of panes provided that the largest dimension of the pane and its area are not increased;
- e) decrease in the distance between mullions and transoms;
- f) decrease in distance between fixing centres;
- g) increase in the dimensions of framing members;
- h) the use of screwed-on glazing beads;
- i) allowances for expansion;
- j) change in the angle of installation of up to 10° from the vertical.

3.4 Field of extended application

This classification is valid for the following end-use applications according to EN 15254-4:2008+A1:2011.

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made. Other changes are not permitted.

3.4.1 Exchange of the fire resistant glass

The “pyrobel 9 EG” glass panes can be replaced by thicker “pyrobel EG” glass panes, considering the rules listed in extended application report 16952A.

3.4.2 (A)symmetrical fire resistant glass

The fire resistant glass is asymmetrical and can only be used in the direction it was tested: PVB interlayer at the unexposed side.

3.4.3 Individual rectangular glass panes: integrity and terminal insulation

The maximum dimensions of the circular, triangular and four sided shaped glass panes are represented by the thickest lines in annex 7, for the indicated E classifications.

The maximum dimensions of the other non-rectangular glass panes are represented by the thinnest lines in annex 7, for the indicated E classifications.

3.4.4 Individual rectangular glass panes: radiation

The maximum dimensions of the circular, triangular and four sided shaped glass panes are represented by the thickest lines in annex 7, for the indicated EW classifications.

The maximum dimensions of the other non-rectangular glass panes are represented by the thinnest lines in annex 7, for the indicated EW classifications.

3.4.5 Exchange of metal glazing beads

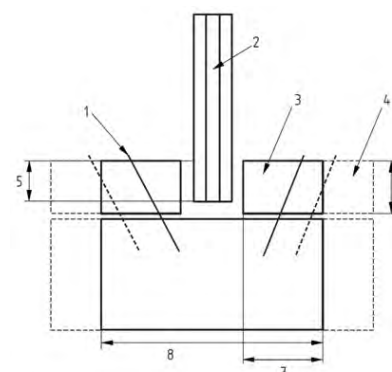
It is not allowed to exchange the type of material used for the glazing beads.

Changes in bead shape are only allowed if it can be demonstrated not to have a detrimental effect on the fire performance.

Clipped beads can be replaced by screw fixed or riveted beads.

Bead depth can be increased (see schematic drawing 1, item 7). The bead depth must be at least 18 mm on the exposed side and 17 mm on the unexposed side.

The bead height can be increased (see schematic drawing 1, item 6) provided that the edge cover doesn't change or the increase in edge cover can be shown, that it does not have a detrimental effect on the fire performance. The bead height must be at least 25 mm.



Key

- 1 bead fixing e.g. screws, nails etc;
- 2 glass;
- 3 bead;
- 4 bead extended in depth;
- 5 edge cover;
- 6 bead height;
- 7 bead depth;
- 8 frame section depth.

Schematic drawing 1

3.4.6 Exchange of glazing materials

Except for glazing beads, exchange of one glazing material (Gaskets/glazing, strips/setting blocks, ...) for another is allowed. But only if it can be demonstrated that the exchange does not have a detrimental effect on the fire performance within a comparable glazing system of the same product group.

3.4.7 Bead surface coverings

Decorative surface coverings of the glazing beads may be added where one does not exist, provided it can be demonstrated that the covering material achieves at least Class A2 when tested according to EN 13501-1. In addition it must be shown that they do not adversely affect the fire resistance performance of the fire resistant glazed element.

If the surface covering is not Class A2 then it has to be proven that it does not negatively affect the fire performance.

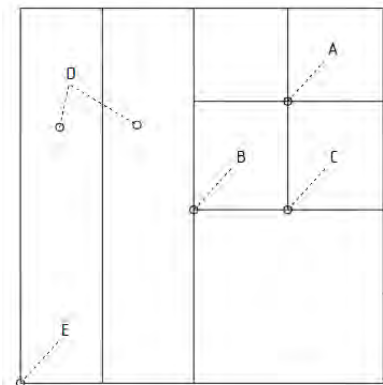
3.4.8 (A)symmetrical framing systems

The framing system is asymmetrical and can only be used in the direction it was tested: aluminium frame extension over the glazing beads at the unexposed side.

3.4.9 Exchange of frames

Frames can be manufactured using all or some of the following allowed junction types:

- | | |
|------------------------|---|
| type A is allowed: | four panes joining together; |
| type B is not allowed: | three panes joining together at one point including a full height vertical pane; |
| type C is allowed: | three panes joining together at one point including a full width horizontal pane; |
| type D is not allowed: | two full panes side by side; |
| type E is allowed: | corner junction. |



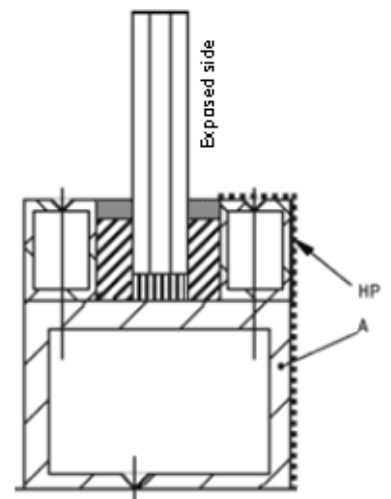
Schematic drawing 2

3.4.10 Metal frames

It is not allowed to exchange the type of material used to construct the frame.

The frame section may be changed provided that it can be demonstrated that:

- the axial stress levels in the vertical elements and the bending stress are not increased in cold state;
- the HP/A factor for the frame and bead is not increased; (HP = Heated perimeter [mm]; A = Heated cross section [mm²])
- the depth of the section is not reduced;
- the wall thickness and number of chambers in the frame are not reduced.



Schematic drawing 3

3.4.11 Frame surface coverings

Decorative surface coverings of the framing members may be added where one does not exist, provided it can be demonstrated that the covering material achieves at least Class A2 when classified according to EN 13501-1. In addition it must be shown that they do not adversely affect the fire performance of the fire resistant glazed partition, e.g. in the case of replacement of coverings that provide a contribution to insulation performance.

3.4.12 Increase in overall dimensions and area of the partition

The maximum overall dimensions of the fire resistant glazed partition are represented by the thickest lines in annex 8, for the indicated E classifications.

3.4.13 Increase in dimensions for the fire resistant glazed partitions: radiation

The maximum overall dimensions of the fire resistant glazed partition are represented by the thickest lines in annex 8, for the indicated EW classifications

3.4.14 Replication of the fire resistant glazed partition with reference to radiation

A wider construction achieved by replicating the fire resistant glazed partition as tested, by adding more units of the same fire resistant glazed partition side by side is allowed for the classifications listed in paragraph 3.2.

3.4.15 Changing in installation angle

A change in the angle of installation of up to ± 10 degrees from the vertical is allowed. No further increase in the installation angle is allowed.

4 Limitations

This classification document does not represent type approval nor certification of the product.

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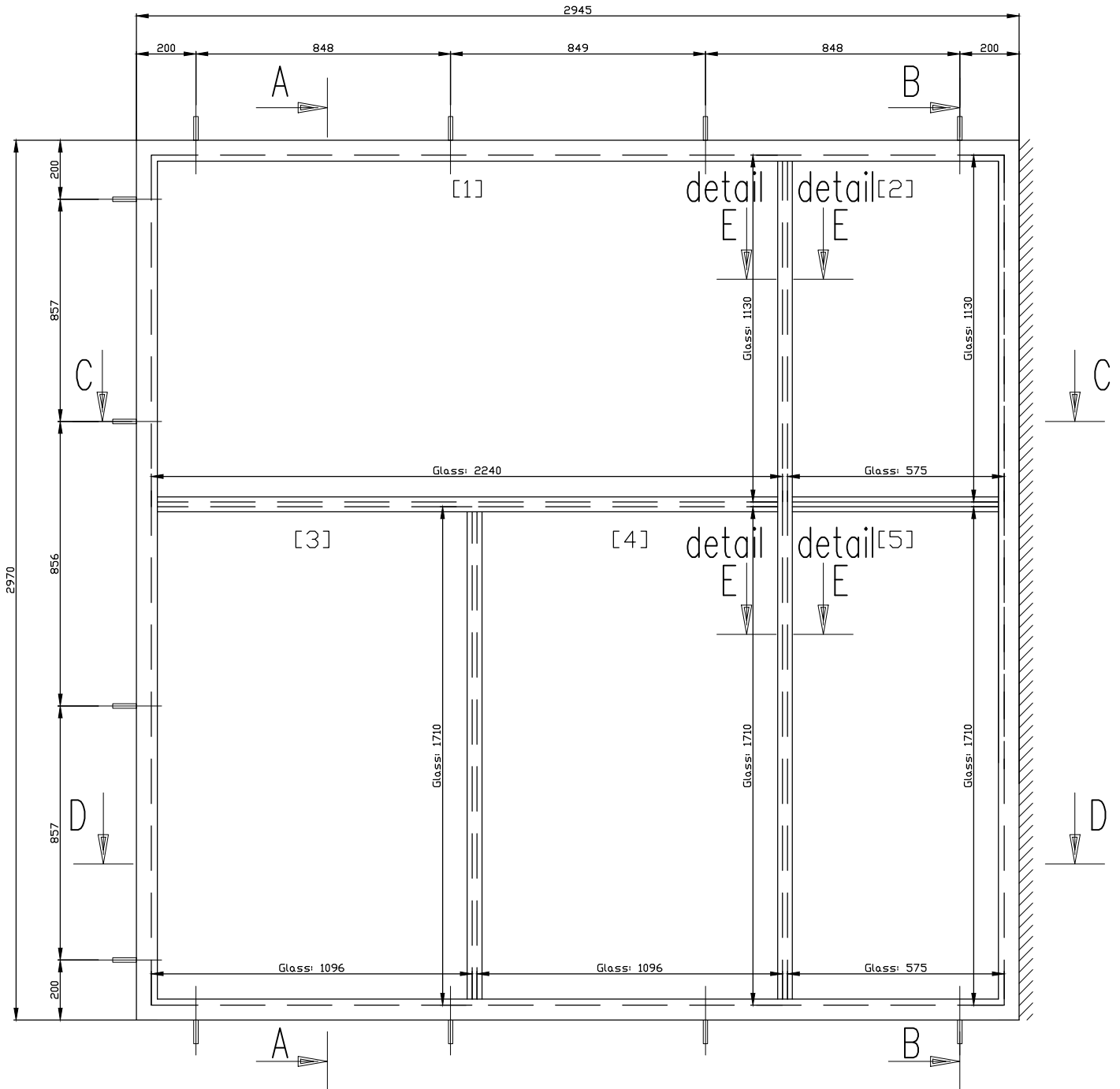
APPROVED

This document is the original version of this classification report and is written in English.

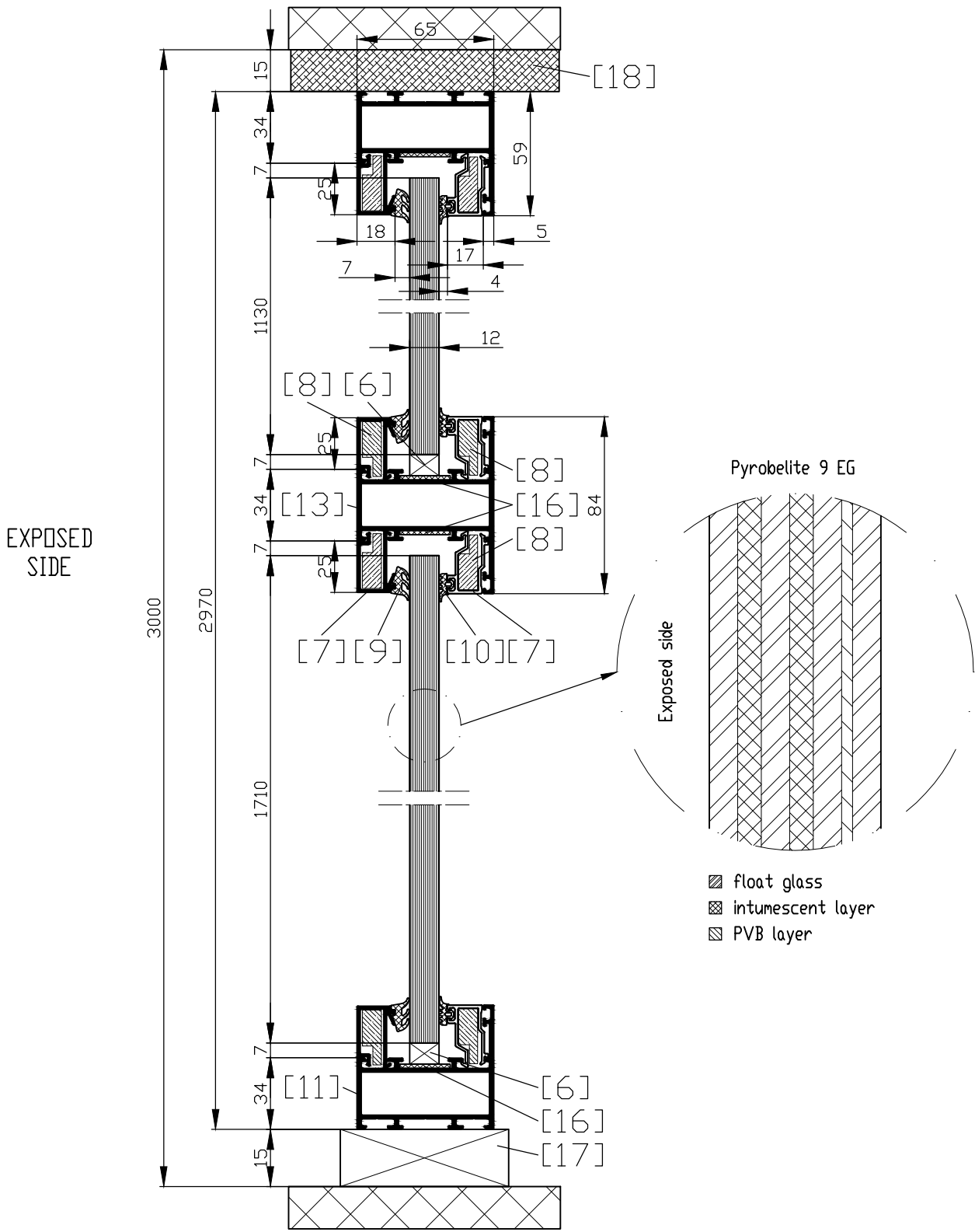
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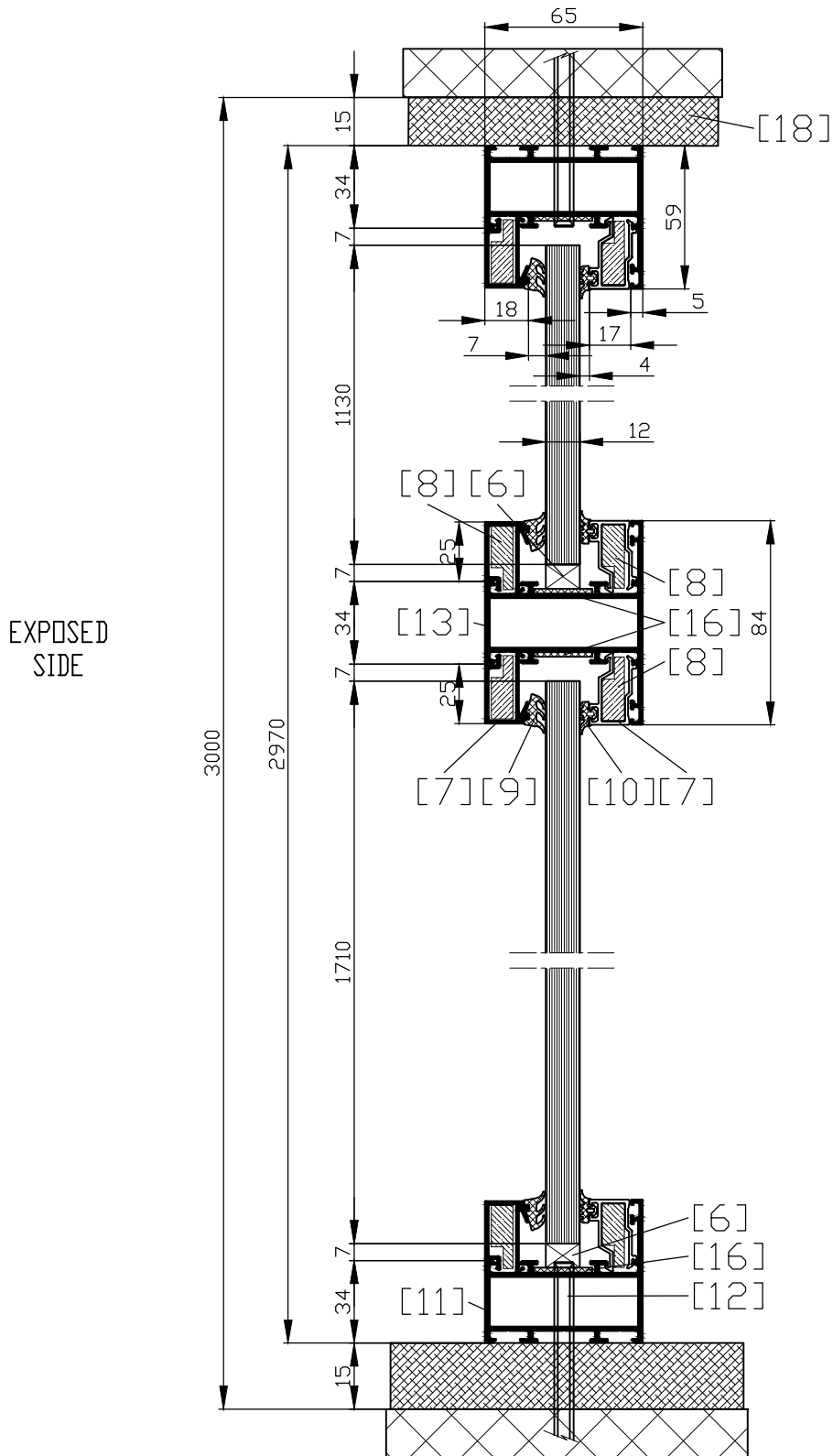
Front view (unexposed side) - dimensions



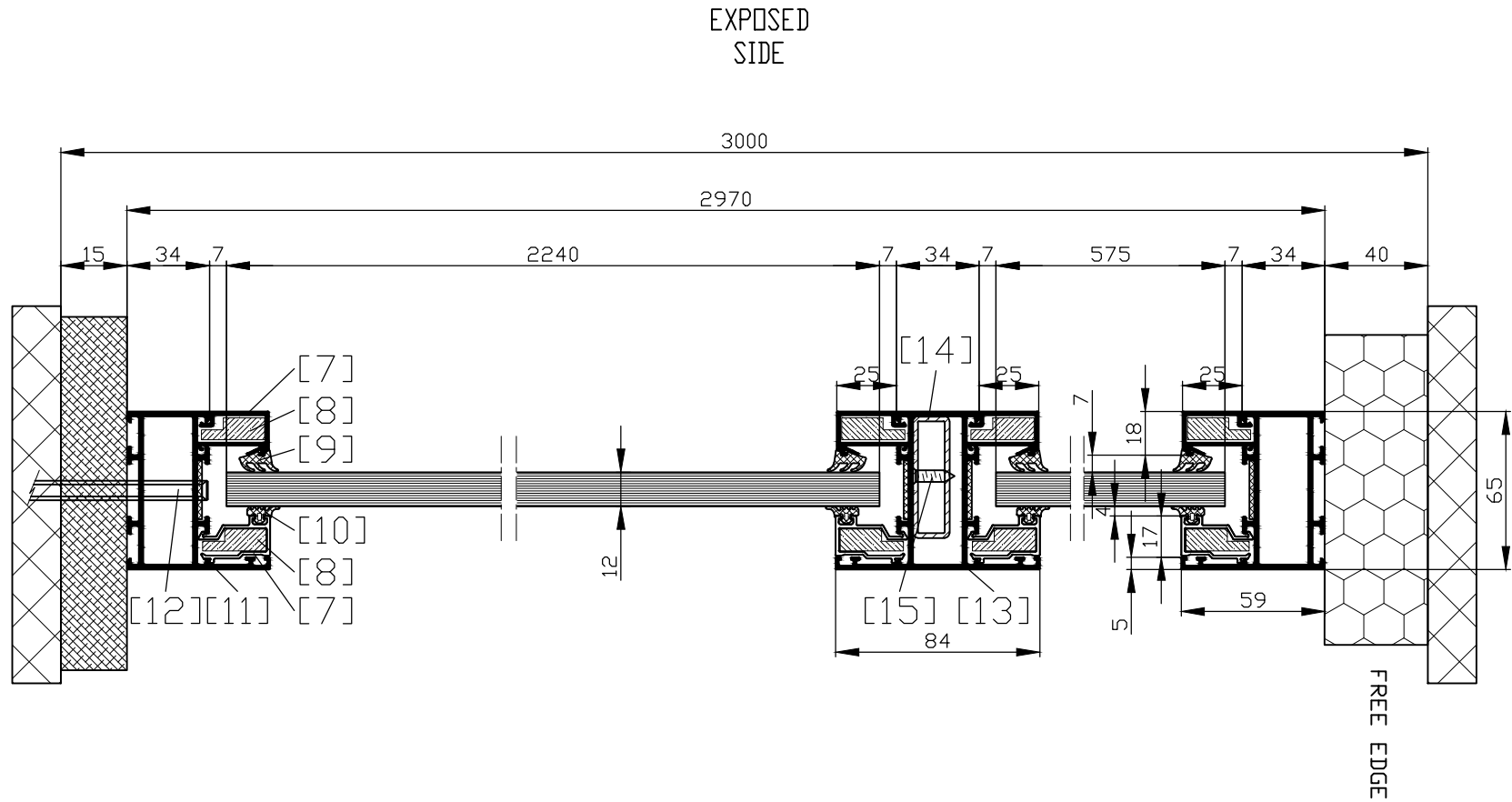
Section A-A - dimensions



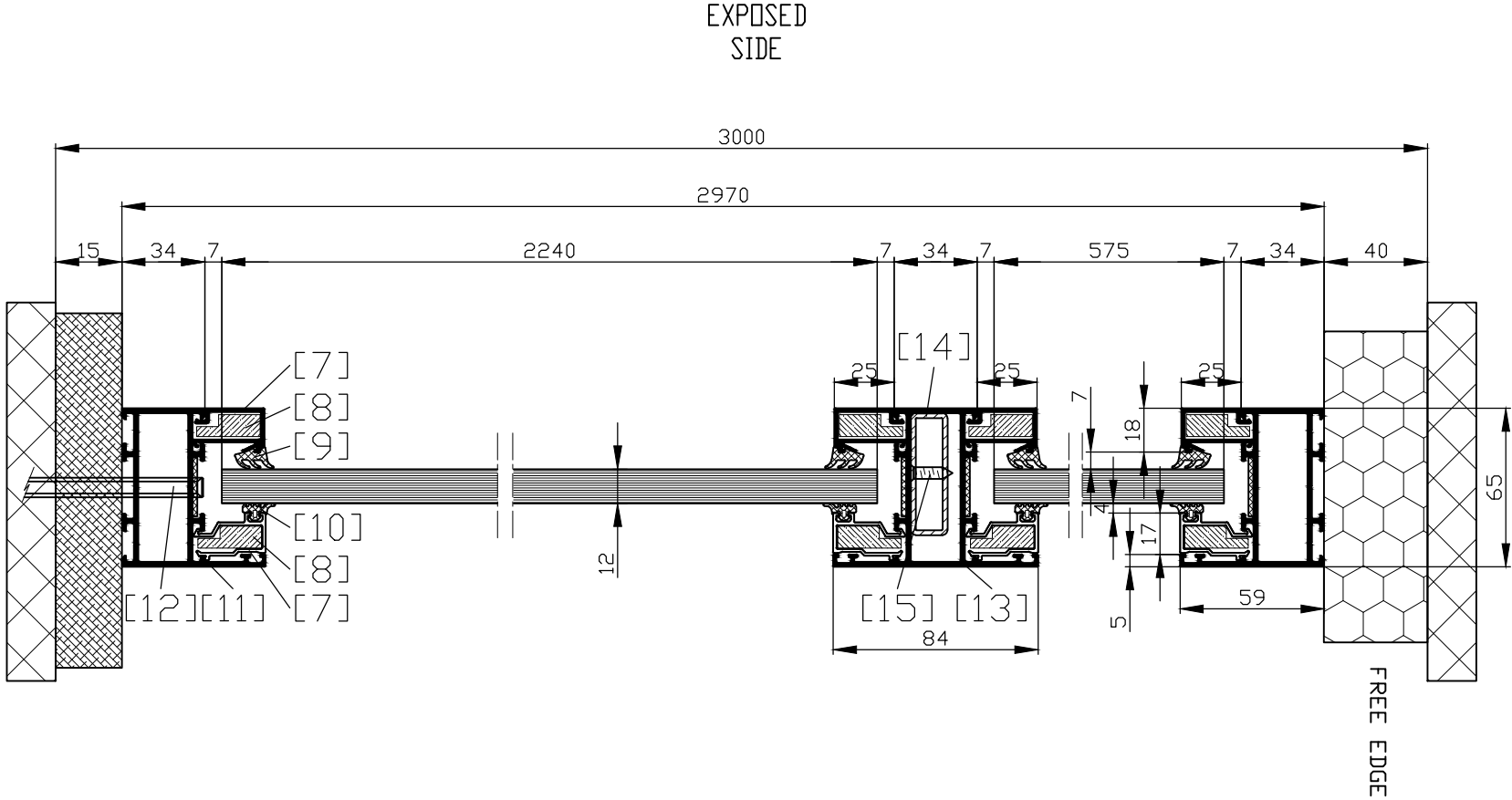
Section B-B - dimensions



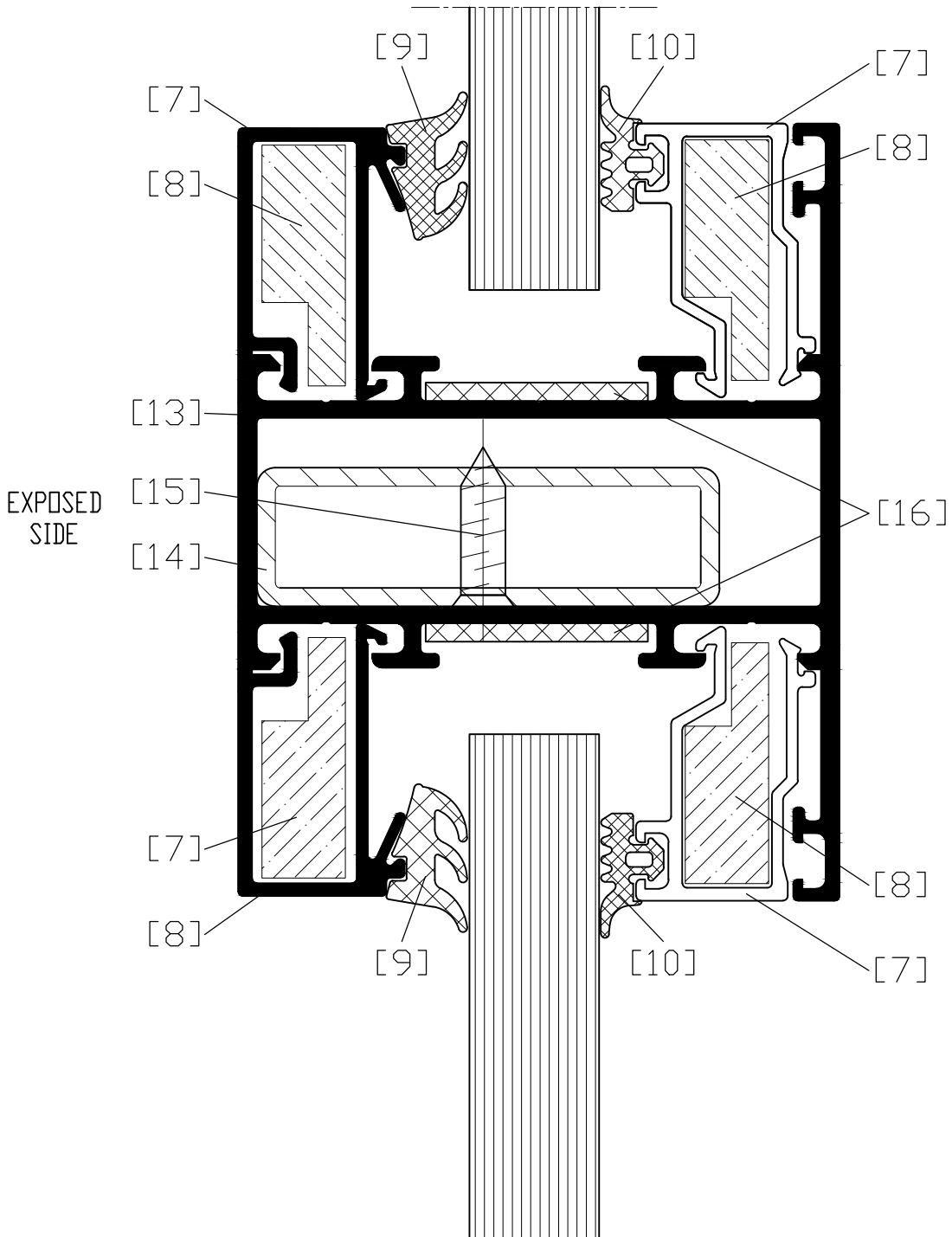
Section C-C - dimensions



Section D-D - dimensions



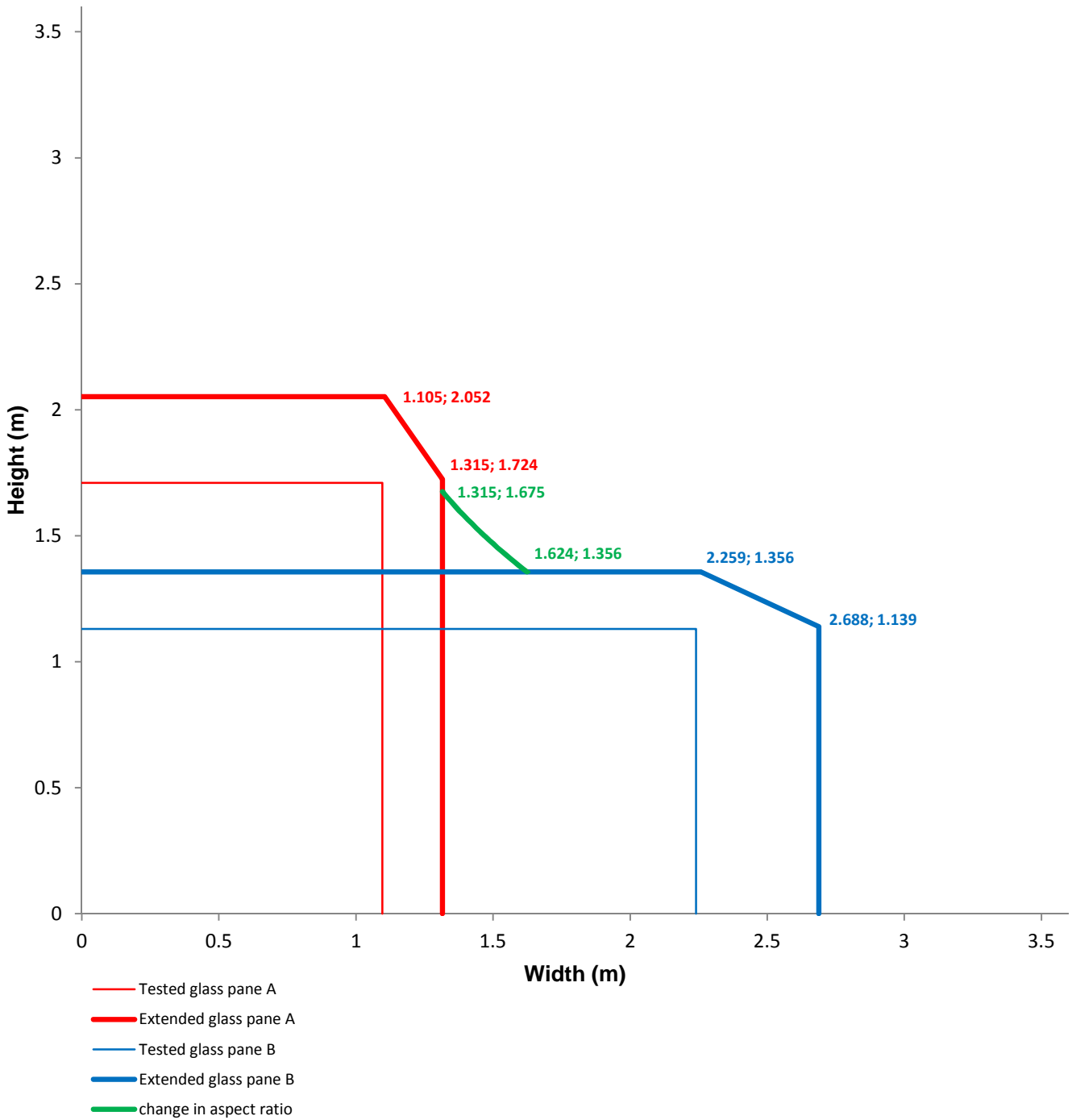
Detail E-E



Individual rectangular glass panes: aspect ratio and increase in area

The extended dimensions are only valid for the following classifications:

- E 30, E 20;
- EW 30, EW 20.



Note:

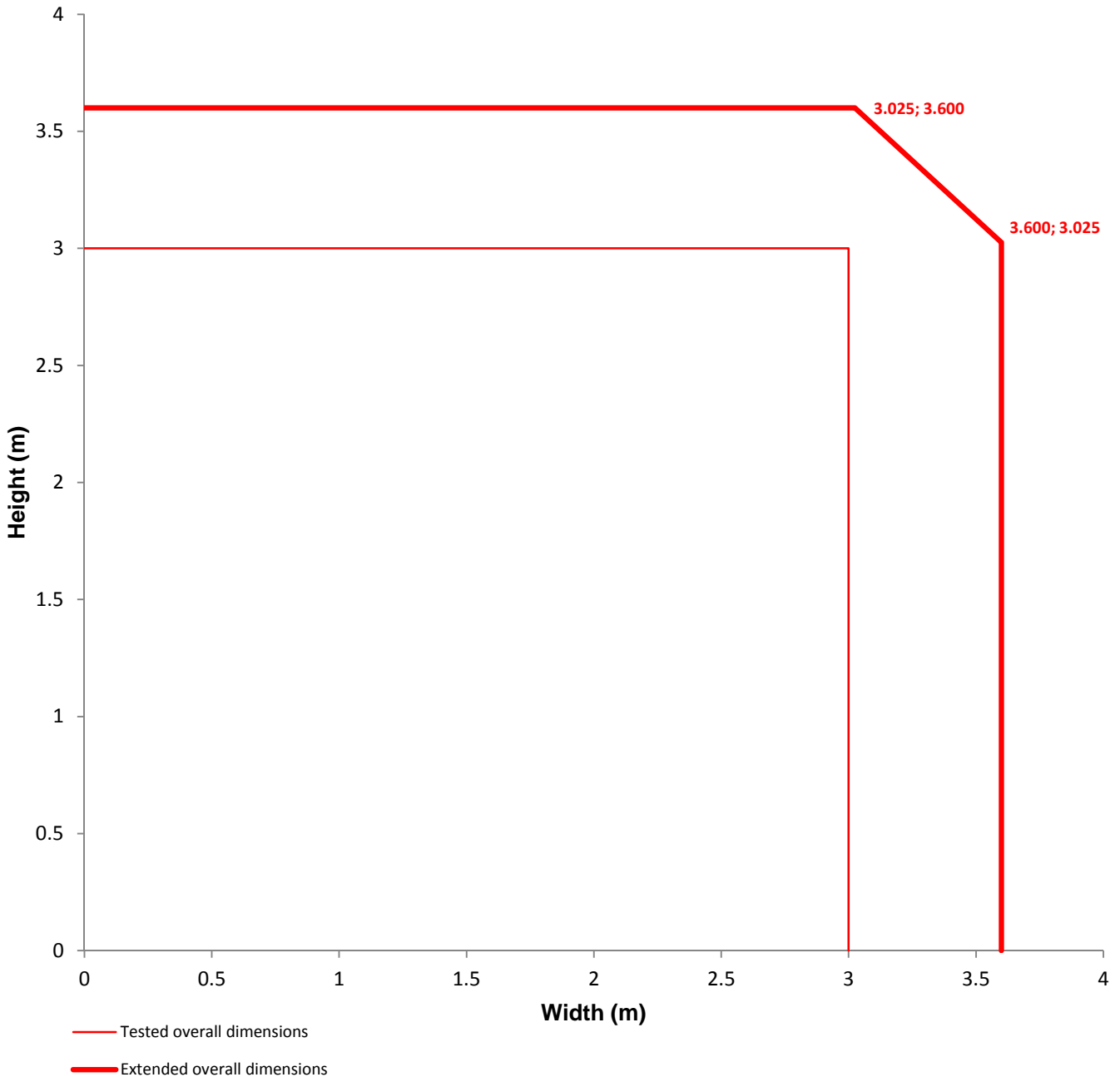
The maximum dimensions of circular, triangular and four sided shaped glass panes are represented by the thickest lines (extended dimensions). The maximum dimensions of the other non rectangular glass panes are represented by the thinnest lines (tested dimensions).



Increase in overall dimensions and area of the partition

The extended dimensions are only valid for the following classifications:

- E 30, E 20;
- EW 30, EW 20.



Note:

The maximum overall dimensions of the fire resistant glazed partition are represented by the thickest lines. A wider construction achieved by replicating the extended fire resistant glazed partition is allowed.

