CLASSIFICATION REPORT EFR-24-005115 - CR

Issuing body	EFECTIS France Espace Technologique Bâtiment Explorer Route de l'Orme des Merisiers 91190 SAINT-AUBIN | FRANCE
Notified body	1812
Concerning	Glazed curtain wall from the serie VISS FIRE (JANSEN) in line. Glazing: Pyrobel-T EW30-16 (AGC) Pyrobel-T EW30-16 TGU (AGC)
Sponsor	AGC GLASS EUROPE 4, Avenue Jean Monnet B - 1348 LOUVAIN-LA-NEUVE

1. SCOPE

This fire resistance classification report defines the classification assigned to the component VISS FIRE (JANSEN) according to the paragraph 7.5.3 of the standard EN 13501-2: 2023.

The element is classified for the first time.

2. CLASSIFIED PRODUCT DETAILS

The element VISS FIRE (JANSEN) is a type of curtain wall according to EN 13830: 2015 : curtain walling – product standard.

Its function is to resist fire according to the characteristic fire performance of clause 5 of standard EN 13501-2 from the inside to the outside or vice versa. The classification is made for both direction of fire (i ->o and o ->i).

The classification includes horizontal and vertical connections.

The element is described below in test reports mentioned in the paragraph 3. to prove the classification.

3. TEST REPORTS / EXTENDED FIELD OF APPLICATION REPORT

3.1. REFERENCE DOCUMENTS

Laboratory	Sponsor	Reference of the document	Standard
EFECTIS France	AGC	EFR-19-G-004491	EN 1364-3 : 2014
EFECTIS France	AGC	EFR-19-G-004492	EN 1364-3 : 2014

3.2. RESULTS

The tests mentioned below have been realized in accordance with the current standard EN 1364-3: 2014.

Note: all test reports are mentioned in detail in extended field of application report EFR-24-005115-EXAP.

Reference of test report	Laboratory	Sponsor	Standard
EFR-19-G-004491	EFECTIS France Notified body: 1812	AGC	EN 1364-3 : 2014
	Supporting construction	concrete according to EN 1364-3 and cellular concrete on its bottom	
	Fire direction	o →i	
	Fire resistance criteria	**Duration**	
	E – Sustained flaming (S1)	35 minutes	
	E – Gap gauge (S1)	45 minutes	
	E – Cotton wool pad (S1)	45 minutes	
	I – Mean temperature (S1)	30 minutes	
	I – Maximal temperature (S1)	26 minutes	
	W – Maximal radiation (15 kW/m²)	45 minutes	

Reference of test report	Laboratory	Sponsor	Standard
EFR-19-G-004492	Efectis France Notified body: 1812	AGC	EN 1364-3 : 2014
	Supporting construction	Reinforced concrete according to EN 1364-3	
	Fire direction	i -> o	
	Fire resistance criteria	**Duration**	
	E – Sustained flaming (S2)	34 minutes	
	E – Gap gauge (S2)	40 minutes	
	E – Cotton wool pad (S2)	40 minutes	
	I – Mean temperature (S2)	/	
	I – Maximal temperature (S2)	/	
	W – Maximal radiation (15 kW/m²)	40 minutes	

4. DESCRIPTION OF THE PRODUCT

4.1. FRAMEWORK

The framework of the curtain wall is made of steel profiles from the VISS FIRE TVS (JANSEN) series.

The mullions and the transoms forming the "+" junction and the "⊥" junction are made of steel profiles of reference 76.694 (JANSEN) with a section of 50 x 50 mm and a thickness of 1.5 mm.

All the other mullions and transoms are made of steel profiles of reference 76.697 (JANSEN) with a section of 95 x 50 mm and a thickness of 1.5 mm.

All the profiles present a groove equipped with stainless steel fastening anchors of reference 452.427 (JANSEN) located every 400 mm at maximum.

The transoms are fixed to the mullions by welding. There is no possible dilatation between the transoms and the mullions.

The inner transoms may also be fixed with a connecting spigot bolt, reference 452.062 (JANSEN).

4.2. INFILL ELEMENTS

4.2.1. Glazing

The curtain wall defines openings filled with:

- Either Pyrobel-T EW30-16 (AGC) glazing whose exact composition is in the possession of the laboratory

- Or Pyrobel-T EW30-16 TGU (AGC) glazing composed of:
  - a Pyrobel-T EW30-16 (AGC) glazing
  - a 15 mm thick steel spacer;
  - a 6 mm toughened glazing;
  - a 15 mm thick steel spacer;
  - a 44.2 laminated glazing made of:
    - a 4 mm thick float glazing;
    - two 0.38 mm thick standard PVB-layers;
    - a 4 mm thick float glazing.

All around of each Pyrobel-T EW30-16 (AGC), an intumescent tape of reference FLAMISEAL G (ETANCHEITE JUNG) with a section of 16 x 2 mm is applied.

Each Pyrobel-T EW30-16 TGU (AGC) corner is protected horizontally and vertically by an intumescent tape of reference FLAMISEAL® G (ETANCHEITE-JUNG) with dimensions of 62 x 2 x 100 mm.

4.2.2. Panels

The openings of the curtain wall in the part exposed to fire may be filled by:

- a 75 mm thick opaque panel is made of:
  - a 1.5 mm thick steel sheet;
  - a 12 mm thick calcium silicate plate of reference PROMATECH-H (PROMAT);
  - a (40+20) mm thick mineral wool layer of reference ROCKFACADE (ROCKWOOL) with a density of 35-39 kg/m^3, opposite to the pressure plates side;
  - a 1.5 mm thick steel sheet.

The components are assembled together by glue (PYROCOL) at a rate of 60 g/m² and to the profiles by steel screws Ø4.2 x 50 mm every 300 mm.

Face-fixed to the slab, each opening has to be filled with a 15 mm thick opaque panels made of:

- a 1.5 mm thick steel sheet;
- a 12 mm thick calcium silicate plate of reference PROMATECT-H (PROMAT);
- a 1.5 mm thick steel sheet.

The components are assembled together by glue (PYROCOL) at a rate of 60 g/m² and to the profiles by steel screws Ø4.2 x 38 mm every 300 mm.

4.2.3. Infill elements holding system

The infill elements are held in place by 1.5 mm thick steel pressure plates, reference 400.867 (JANSEN) with section 47 x 10 mm, fixed by stainless steel fastening anchors of reference:

- 452.453 (JANSEN) for Pyrobel-T EW30-16 (AGC) and panels.
- 452.587 (JANSEN) for Pyrobel-T EW30-16 TGU (AGC).

placed every 400 mm, after interposition of two intumescent tapes of reference 451.080 (JANSEN) of section 14.4 x 1.8 mm installed side by side.

The pressure plates are covered with:

- For Pyrobel-T EW30-16 (AGC) and panels:
  - a 1.5 mm thick aluminium cover profile, reference 407.861 (JANSEN) with a section of 50 x 18 mm, for the mullions;
  - a 1.5 mm thick aluminium cover profile, reference 407.860 (JANSEN) with a section of 50 x 12 mm, for the transoms.
- For Pyrobel-T EW30-16 TGU (AGC):
  - a 1.5 mm thick aluminium cover profile, reference 407.862 (JANSEN) with a section of 50 x 25 mm for the mullions;
  - a 1.5 mm thick aluminium cover profile, reference 407.861 (JANSEN) with a section of 50 x 18 mm for the transoms.

The mullions are provided with an EPDM gasket, reference 455.558 (JANSEN) and section 50 x 10 mm. The transoms are provided with an EPDM gasket, reference 455.537 (JANSEN) and section 50 x 10 mm.
The pressure plates associated to the mullions are provided with two EPDM gaskets, reference 455.520 (JANSEN).
The pressure plates associated to the transoms are provided on the top with an EPDM gasket reference 455.520 (JANSEN) and on the bottom with an EPDM gasket reference 455.521 (JANSEN).

The Pyrobel-T EW30-16 (AGC) and panels are supported by setting blocks, section 80 x 19 x 6 mm, reference 453.027 (JANSEN), in their lower part, set on:

- For the biggest glazing, 10 mm thick steel plates of dimensions 100 x 44 mm axed at 200 mm from the extremity of the opening and welded in the groove of the transom;
- For the other infill elements, stainless steel glazing supports reference 452.454 (JANSEN) axed at 200 mm from each extremity of each opening and fixed in the groove of the transoms with one steel screw M4 x 10 mm placed in one stainless steel fastening bolt of reference 452.453 (JANSEN).

The Pyrobel-T EW30-16 TGU (AGC) are supported by 80 x 60 x 5 mm reference 453.070 (JANSEN) in their lower part, set on steel plates with dimensions of 100 x 88 x 10 mm axed at 200 mm from each extremity of each opening and welded in the groove of the profiles.

Infill element rebate bottom clearance:
- Lateral : 7 mm;
- Top : 8 mm;
- Bottom : 9 mm.

Edge cover of the infill elements:
- Lateral : 14 mm;
- Top : 13 mm;
- Bottom : 12 mm.

4.2.4. Fastening

4.2.4.1. Between slabs

Each mullion is fixed at each extremity to the corresponding concrete slab by a system made of one 3 mm thick steel tube of section 45 x 75 mm and 150 mm length, welded on a 10 mm thick steel plate of section 50 x 125 mm, itself screwed on the corresponding slab by two steel anchor bolts 100 HT Ø 10 x 72 mm (HILTI). At the bottom of the curtain wall, a PROMATECT-H (PROMAT) plate of section 90 x 20 mm are placed under the bottom transom close to each mullion. Each mullion can thus dilate from 20 mm.

The 30 mm thick gap between the transoms and the supporting construction is sealed with mineral wool of reference PROMAGLAF HTK 1100 (PROMAT) with a theoretical density of 96 kg/m^3.

The whole periphery of the curtain wall is filled with spacers made of one layer of PROMATECT-H boards (PROMATECT-H) and section 58 x 25 mm. They are fixed between the holding system of the curtain wall after insertion of steel angle profiles of overall section 25 x 25 x 2 mm on the fire side on the transom levels. See figures n°4 to 5.

4.2.4.2. Face-fixed to the slabs

4.2.4.2.1. Higher fixation system

Mullions of the exposed horizontal part of the glazed curtain wall are cut at the high of the mid-height of the upper slab of the supporting construction. The mullions are fixed to the supporting construction by steel anchoring systems made of two steel plates with dimensions of 140 x 80 mm and a thickness of 8 mm, placed on each side of each mullion and welded on a third steel plate with dimensions of 140 x 230 mm. These last steel plates are fixed to the supporting construction by two dowels M10 x 90 mm of reference HST3 (HILTI). The mullions are fixed to the steel anchoring systems by a stainless steel screw associated with a steel bolt M10 x 90 mm, placed in a Ø 11 x 31 mm vertical oblong hole.

Mullions of the unexposed horizontal part of the glazed curtain wall are cut at the high of the mid-height of the upper slab of the supporting construction. The mullions are fixed with the previous system, but the stainless steel screw associated with a steel bolt M10 x 90 mm is inserted in a Ø 11 mm hole and also fixed on the upper face of the slab of the supporting construction by a system composed of:
- a steel plate with dimensions of 140 x 230 x 10 mm (L x W x TH) fixed to the supporting construction by two dowels of reference HST3 (HILTI) of dimensions M10 x 90 mm;
- a steel square tube with a section of 50 x 50 mm, and a thickness of 4 mm. It is fixed to the mullions and to the steel plates by welding.

The two mullions are spaced of 20 mm and assembled by a sleeve system made by 2,5 mm thick "U" steel profiles with overall dimensions of 22 x 74 mm (W x H x TH) and 200 mm long associated with mineral wool of reference ROCKFACADE (ROCKWOOL) with a theoretical density of 35-39 kg/m^3.

4.2.4.2.2. Lower fixation system

The mullions are fixed to the supporting construction by steel anchoring systems made of two steel plates with dimensions of 80 x 80 mm and a thickness of 8 mm, placed on each side of each mullion and welded on a third steel plate with dimensions of 80 x 230 mm. These last steel plates are fixed to the supporting construction by two dowels of reference HST3 (HILTI) of dimensions M10 x 90 mm. The mullions are fixed to the steel anchoring systems by a stainless steel screw associated with a steel bolt M10 x 90 mm, placed in a Ø 11 mm hole.

4.2.1. Linear gap seal (for mounting face-fixed to the slab)

4.2.1.1. Vertical linear gap seal

4.2.1.1.1. Vertical linear gap seal on the unexposed glazed elevation side

The mullion at the junction between the exposed part of the glazed curtain wall and the non-exposed part is protected:

- at the back by one 20 mm thick PROMATECT-H® (PROMAT) plates range, fixed to the concrete by neutral silicone and covered on the fire side with a 15/10 mm thick aluminum plate fixed by neutral silicone;
- two 20 mm thick PROMATECT-H® (PROMAT) plates ranges fixed to the mullion by two ranges of steel screws Ø 4,2 x 50 mm located every 300 mm.

4.2.1.1.2. Vertical linear gap seal on the exposed glazed elevation side

The 37 mm thick gap between the framework and the supporting construction is filled with mineral wool of reference ROCKFACADE (ROCKWOOL) with a theoretical density of 35-39 kg/m^3. The sealing is completed by a 15/10 mm thick "L" steel sheet, with overall section of 164 x 70 mm reinforced by 15/10 mm thick steel plates every 600 mm and fixed on the concrete frame by steel screws Ø 7,5 x 82 mm every 600 mm.

4.2.1.2. Horizontal linear gap seal

4.2.1.2.1. Upper horizontal linear gap seal

The space between the transoms placed below and up to the concrete upper slab is filled with a mineral wool layer wool of reference ROCKFACADE (ROCKWOOL), with a theoretical density of 35-39 kg/m^3. A 15/10 mm thick steel L-sheet with section 55 x 50 mm is respectively placed below the transom placed up to the concrete upper slab and up to the transom placed below to the concrete upper slab. The steel sheets are fixed to the supporting construction by steel screws FFS Ø 7,5 x 82 mm (FISCHER), every 600 mm and to the transoms by self-drilling screws of dimensions Ø 4,8 x 22 mm every 600 mm.

4.2.1.2.2. Lower horizontal linear gap seal

The space under the transom placed up to the concrete bottom slab is filled on a length of 270 mm with a mineral wool layer wool of reference ROCKFACADE (ROCKWOOL), with a theoretical density of 35-39 kg/m^3 associated to a panel made as the 15 mm thick ones excepted that the external 1,5 mm steel sheet is an S-folded one of dimensions 30 x 140 x 280 mm fixed to the concrete slab by steel screws FFS Ø 7,5 x 82 mm (FISCHER).

A 15/10 mm thick steel L-sheet with section 55 x 50 mm is placed below the transoms placed up to the concrete bottom slab and is fixed to the supporting construction by steel screws FFS Ø 7,5 x 82 mm (FISCHER), every 600 mm and to the transoms by self-drilling screws of dimensions Ø 4,8 x 22 mm every 600 mm.

5. CLASSIFICATION AND FIELD OF APPLICATION

5.1. CLASSIFICATION REFERENCE

This classification has been carried out in accordance with paragraph 7.5.3. of standard EN 13501-2: 2023.

5.2. CLASSIFICATION

The element is classified according to the following combinations of performance parameters and classes:

R	E	I	W		T	-	M	C	S	G	K
	E		**W**	**(i ↔o)**	**30**						
	E			**(i ↔o)**	**30**						

5.3. FIELD OF APPLICATION

The variations of the product are defined as follows according to the field of direct application of the test results for the classification stated in paragraph 4.2.

The field of direct application below is mentioned for reference tests described in paragraph 3.1 and the additional variants and end-use details are given in extended field of application report.

The design parameters specified therein are not limited by the following field of application.

<table>
<tr><th>Standard of reference EN 1364-3 : 2014</th><th>Permitted changes to element tested</th></tr>
<tr><td>13.1</td><td>Generals rules</td></tr>
<tr><td>13.1.1</td><td>General
The rules given in 13.2 to 13.4 apply to stick constructions only. For rules for unitised constructions see Annex A.

The rules given in 13.2 to 13.4 shall not be used for curtain walling constructions with glued infill panels (e.g. Structural Sealant Glazing Systems - SSGS).

Rules which result in higher weight of the curtain walling are only applicable if the fixing of the framing system used in practice has been designed for the higher load.

The measured temperature at the fixing of the framing system shall be taken into account.</td></tr>
<tr><td>13.1.2</td><td>Exposure conditions
Test results from tests using the standard temperature time curve cover a test condition using the external fire curve but not vice versa.</td></tr>
<tr><td>13.1.3</td><td>Overrun time
For some rules to be applicable an overrun time in the fire test result compared to the envisaged classification time is required. The required overrun time is shown in Table 2.

The overrun time is required for the following criteria:
- E classification: integrity
EW classification: integrity and radiation
Table 2: overrun time

<table>
<tr><th>Classification time</th><th>Overrune time</th></tr>
<tr><td>≤ 20 min</td><td>Minimum 3 min</td></tr>
<tr><td>30, ~~45 and 60 min~~</td><td>~~Minimum 6 min~~</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td>13.2</td><td>Rules for the complete construction</td></tr>
<tr><td>13.2.2</td><td>Height of the curtain walling
Test results are valid for a curtain walling of increased overall height, i.e. repetition of the tested construction in vertical direction provided the construction is the same as the one tested.

Note: Height refers to the heated area of the test specimen.</td></tr>
<tr><td>13.2.4</td><td>Installation angle (vertical/sloped)
Test results on a vertical curtain walling cover curtain walling sloped inside or sloped outside to a maximum angle of 10° from the vertical axis for both exposure orientations (o → i and i → o).
Test results on a vertical curtain walling with an E or EW classification cover curtain walling sloped inside or sloped outside to a maximum angle of 12,5° from the vertical axis provided an overrun time was achieved according to Table 2 and the screws for fixing the infill panels / spandrel panels penetrate the mullions/transoms.</td></tr>
<tr><td>13.2.5</td><td>Facet angles of horizontally faceted curtain walling</td></tr>
<tr><td>13.2.5.1</td><td>Installation tolerance
Facet angles between 0 and 1,5° (angle β in Figure 1) is covered by a test on a straight curtain walling. In case the curtain walling includes fire resistant translucent or transparent infill panels the rule is only applicable if the overlap of the pressure plate and/or the edge cover on the inner side of a fire resistant translucent or transparent infill panel, whatever is smaller, is minimum the same as tested for infill panels with E or EW classification (see Figure 20).</td></tr>
<tr><td>13.3</td><td>Framing system</td></tr>
<tr><td>13.3.1</td><td>Distance between mullions and transoms
The distance between the mullions and transoms is defined by the rules for the infill panels, based on test results on straight specimens.
Test results on a higher distance between the mullions and/or transoms cover smaller distances.
Test results cover a higher distance between mullions and/or transoms than tested subject to the rules given in 13.4, provided that all of the relevant frame junctions have been tested in accordance with this standard.</td></tr>
<tr><td>13.3.2</td><td>Geometry/dimension of mullions and transoms
Test results cover higher wall thickness of mullions and transoms made of metal subject to a maximum of 1,5 times the thickness used in the test.
Decrease of wall thickness is not permitted.
Test results cover width and depth ranges of mullions and transoms as given in Table 3.
A decrease of width and /or depth of mullions and transom is not permitted.
The values given in Table 3 refer to the factor the width and depth may be higher in comparison to the width and/or depth used in the test.

Table 3 – Factor for width and depth of mullions and transoms
<table>
<tr><th rowspan="3">Framing material</th><th colspan="4">Classification E and EW</th></tr>
<tr><th colspan="2">Transom</th><th colspan="2">Mullion</th></tr>
<tr><th>Width</th><th>Depth</th><th>Width</th><th>Depth</th></tr>
<tr><td>Steel</td><td>1,25</td><td>1,5 [b]</td><td>1,25</td><td>1,5</td></tr>
</table>
[a] in case the transom or mullion contains a core material for the purpose of improving the fire resistance the dimensions of this core material shall be increased so that the contact area with the aluminium remains minimum the same and the overlap between the infill panel and the core material remains minimum the same.

[b] But maximum to the depth of the mullion.

[c] Provided the pressure plate system is changed accordingly so that the overlap remains the same subject to the rules given in 11.3.7.</td></tr>
</table>

13.3.3	**Connection between mullions and transoms**
13.3.3.1	**Connection geometry** Figure 21 shows a cross connection, vertical T-connection, horizontal/standing and horizontal/hanging T- connection. Test results for a cross-connection do not cover T-connections and vice versa. A horizontal T-connection does not cover a vertical one and vice versa. A standing T-connection does not cover a hanging T-connection and vice versa. Test results for cross connections or T-connections with an angle of 90° between mullions and transoms cover situations where the angle between mullions and transoms is minimum 80° and maximum 100° disregarding whether the mullions are vertically oriented or not or the transoms are horizontally oriented or not. This rule also applies to corner connections of unitised systems.
13.3.3.2	**Connection system between framing members** Test results for a particular connection system are only valid for connection systems of the same construction principle. The dimensions of the connection system may be varied as required in relation to dimension changes of mullions and transoms according to 13.3.2.
13.3.4	**Framing material**
13.3.4.1	**Metal framing** Test results for steel do not apply to Aluminium and vice versa.
13.3.5	**Decorative frame surface treatments/covering/coating** Decorative frame surface treatments/coverings/coatings which achieve minimum class A2 according to EN 13501-1 together with the relevant frame component may be added or changed without restrictions. Decorative frame surface treatments/coverings/coatings of more than 1,5 mm thickness other than covered by the rule given in the first paragraph shall be included in the test as part of the test specimen. Test results of such decorative frame coverings/coatings apply only to decorative frame coverings/coatings made of the same material type and thickness. Decorative frame surface treatments/coverings/coatings other than covered by the rule given in the first paragraph for curtain walling classified E or EW shall be included in the test as part of the test specimen. Test results of such decorative frame coverings/coatings apply to all types of decorative frame coverings/coatings of minimum the same reaction to fire class according to EN 13501-1 and of maximum the same thickness as used in the test if the framing system was at the unexposed side of the test specimen. Otherwise the results apply only to decorative frame coverings/coatings made of the same material type and thickness.

13.3.6

Fixing of the framing system (anchoring)
Fixing system made of steel: change of alloy within construction steels (unalloyed / low alloy steels) is permitted.

Combinations of fixing positions in relation to the floor (in front, on top or below) and positions of the fixed and loose anchor (hanging or standing curtain walling) are covered by test results on a particular combination according to Table 5. Table 5 is applicable for internal exposure.
Test results on a particular fixing system type (anchored or cast-in or welded) are not applicable to another type.

Change in geometrical shape and/or linear dimensions within a fixing system type is permitted on the basis of a proper static calculation.

The temperature at the fixing measured in the fire test shall be taken into account.

If no temperature data of the fixing are available only increase in linear dimensions is permitted.
Test results for a non-insulated fixing system (not embedded in insulation material) apply equally to the same fixing system embedded in insulation material of reaction to fire class A1 or A2 according to EN 13501-1 but not vice versa.

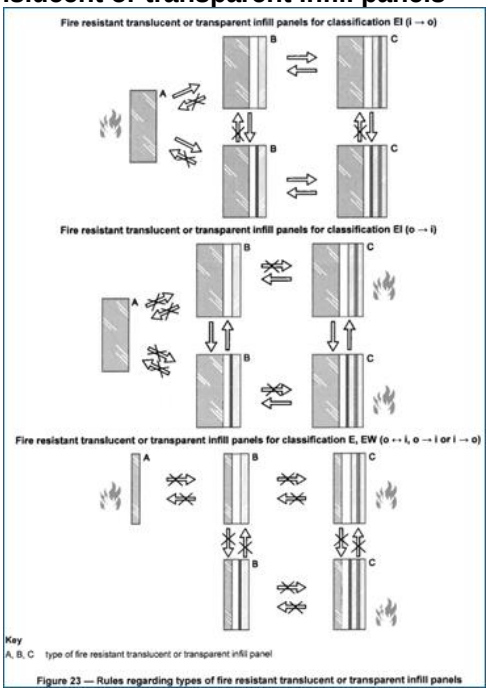
Table 5 – Field of application rules for fixing positions

Tested ↓	Covered →										
	AF/AL	BF/BL	CF/AL	CF/BL	CF/CL	AL/AF	AL/BF	BL/BF	CL/AF	CL/BF	CL/CF
AF/AL		N	N	N	N	Y	N	N	N	N	N
AF/BL	Y	Y	N	N	N	Y	N	N	Y1	N	Y1
AF/CL	Y1	N	N	N	N	Y1	N	N	N	N	N
BF/AL	Y1	N	N	N	N	Y1	N	N	N	N	N
BF/BL	Y1		N	N	N	Y1	N	N	Y1	N	Y
BF/CL	Y1	N	N	N	N	Y1	N	N	N	N	N
CF/AL	Y	N		N	Y	Y	Y	Y	N	N	N
CF/BL	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y
CF/CL	Y1	N	Y1	N		Y	Y	Y	N	N	N
AL/AF	Y	N	N	N	N		N	N	N	N	N
AL/BF	Y	N	N	N	N	Y		Y	N	N	N
AL/CF	N	N	N	N	N	N	N	N	N	N	N
BL/AF	N	N	N	N	N	N	N	N	N	N	N
BL/BF	Y1	N	N	N	N	Y1	Y1		N	N	N
BL/CF	Y1	N	N	N	N	Y1	N	N	N	N	N
CL/AF	Y	Y	N	N	N	Y	N	N		N	Y
CL/BF	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y
CL/CF	Y1	Y	N	N	N	Y1	N	N	Y1	N	

	A Fixing in front of the floor (see Figure 22 of EN 1364-3: 2014) B Fixing on top of the floor (see Figure 22 of EN 1364-3: 2014) C Fixing on bottom of the floor (see Figure 22 of EN 1364-3: 2014) N not covered Y covered without restriction Y1 covered, provided the fixing is completely made of steel F Fixed bearing L Floating bearing (to allow thermal extension) The first position indicates the type of fixing on the upper floor, the second position the type of fixing on the lower floor, e.g: AF/BL: Fixed bearing in front of the floor used on the upper floor / floating bearing on top of the floor used on the lower floor (hanging curtain walling) AL/BF: Floating bearing in front of the floor used on the upper floor / fixed bearing on top of the floor used on the lower floor (standing curtain walling) For further explanation, see B.7.6.3. of EN 1364-3: 2014 Test results on a particular fixing system type (anchored or cast-in or welded) are not applicable to another type. Change in geometrical shape and/or linear dimensions within a fixing system type is permitted on the basis of a proper static calculation. The temperature at the fixing measured in the fire test shall be taken into account. If no temperature data of the fixing are available only increase in linear dimensions is permitted. Test results for a non-insulated fixing system (not embedded in insulation material) apply equally to the same fixing system embedded in insulation material of reaction to fire class A1 or A2 according to EN 13501-1 but not vice versa.
13.3.7	**Pressure plate**
13.3.7.1	**Edge cover / overlap of pressure plate** Results from tests with a smaller edge cover / overlap of the pressure plate on the infill panel are also valid for a higher edge cover / overlap but not vice versa. This rule applies for both, the outer and inner edge cover (Figure 20).
13.3.7.2	**Size of pressure plate** Smaller and higher widths of the pressure plate are covered provided the moment of inertia of the pressure plate in the axis as shown in Figure 20 is minimum the same as tested and the overlap is minimum the same as tested subject to the rules given in 13.3.7.1.

13.3.7.3	**Material of pressure plate** Results for aluminium pressure plates are also valid for steel pressure plates of the same width, but not vice versa. The flexural strength of the pressure plate shall be equal or higher than the flexural strength used in the test.
13.3.7.4	**Screws** The screws shall have minimum the same effective screw depth (i.e. depth in the mullion/transom) and minimum the same cross section as used in the test. The distance between the screws may be reduced but not increased.
13.3.7.5	**Mullion and transom cover cap** Test results on any cover cap are equally valid for all other types of cover plates of minimum the same classification according to EN 13501-1 , subject to maximum the same width in case of classifications E and EW.
13.4	**Infill panels**
13.4.1	**Opque (non translucent/non-transparent) infill panels**
13.4.1.1	**Type/Construction** Test results cover only the type / construction of the infill panel(s) used in the test.
13.4.1.2	**Dimensions** Test results cover smaller panel width and height. Test results cover a higher thickness of the panel. Test results cover a higher thickness of the panel insulation. For classification times 30 mina factor 1,1 may be used to calculate the covered range of height, width and area, if the overrun time achieved in the test is less than the 6 min required in Table 2 but minimum 3 min. Test results cover smaller distances in between fixing centres, vertical and horizontal.
13.4.1.3	**Aspect ratio of individual infill panels** Test results for rectangular panels with portrait as well as landscape format cover all aspect ratios subject to the rules given in 13.4.1.2 provided that all panels have been tested in an identical framing system.

13.4.1.4	**Geometrical shapes** Test results for a rectangular panel cover all other shapes provided that their size can be cut out of the tested rectangular size, subject to the rules given in 13.3.3.1.
13.4.1.5	**Materials** The thickness of the board may be increased. Test results of a non-faced mineral wool board are equally applicable to an aluminium faced version of this mineral wool board but not vice versa. The insulation material as used in the test shall not be changed. The thickness of the insulation may be increased. The type of fixing of the components to each other (e.g. gluing) shall not be changed. External layers for optical reasons (e.g. metal, stone, concrete, glass) may be added or changed without restriction to the material. Increased weight of the infill panels as a result of changes according to the rules above shall be considered for the anchoring, the dimensioning of mullions and transoms and the fixing system for the panels.
13.4.1.6	**Back panel metal sheeting** Change of thickness of metal sheeting is not permitted
13.4.2	**Sandwich panels** The thickness of the insulation material may be increased. Change in thickness of metal sheeting is not permitted. Increased weight of the infill panels as a result of changes according to the rules above shall be considered.

13.4.3	**Translucent or transparent infill panels**
13.4.3.1	**Type of fire resistant translucent or transparent infill panels**  Figure 23 — Rules regarding types of fire resistant translucent or transparent infill panels
13.4.3.1.1	**General** Three major types of fire resistant translucent or transparent infill panels were identified: - a fire resistant translucent or transparent infill panel consisting only of the glass component that gives the fire resistance; this may be a monolithic pane, a laminated pane or a gel type glass depending on the required classification (E, EW or EI), indicated A in Figure 23; - an IGU consisting of the part that gives the fire resistance and a single pane for UV/acoustic/safety performance (counter pane), with or without additional coatings on either side of the counter pane, indicated B in Figure 23 (example shown with coating inside); - an IGU consisting of the part that gives the fire resistance and a laminated pane for UV/acoustic/safety performance (counter pane), with or without additional coatings on either side of the counter pane, indicated C in Figure 23 (example shown with coating inside).
13.4.3.2	**Dimensions of individual rectangular fire resistant translucent or transparent infill panels** Test results cover smaller panel width and height. Test results cover a higher thickness of the panel. The framing system under consideration shall be able to support the additional weight due to the increased thickness of the panel. For classification times 30 min a factor 1,1 may be used to calculate the covered range of height, width and area, if the overrun time achieved in the test is less than the 6 min required in Table 2 but minimum 3 min. For fire resistant translucent or transparent infill panels with EW classification the rules given above are only applicable if: - the mean unexposed face temperature remained below 300° C (see EN 1363-2), or - the test specimen was glazed over its full area and the measured radiation did not exceed 12,5 kW/m^2 (for further explanation see B.7.7.1).

13.4.3.3	**Aspect ratio of individual rectangular fire resistant translucent or transparent infill panels** Test results for rectangular translucent or transparent infill panels with portrait as well as landscape format cover all aspect ratios up to an area A ≤ 1/2 * (Aportrait + Alandscape) provided that: - all translucent or transparent infill panels have been tested in an identical framing system, - the largest tested width as well as the largest tested height is not exceeded. - In case an overrun time has been achieved according to Table 2 the values for Aportrait and Alandscape may be determined by using the rules for dimensions given in 13.4.3.2.
13.4.3.4	**Geometrical shapes** Test results for a rectangular translucent or transparent infill panel cover all other shapes provided that their size can be cut out of the tested rectangular size subject to the rules given in 13.3.3.1.
13.4.3.5	**Asymmetry in thickness** If the translucent or transparent infill panel is asymmetrical in an axis perpendicular to the surface the test result is only valid for the direction and type of exposure (internal or external exposure) as tested.
13.4.4	**Glazing materials**
13.4.4.1	**Gaskets**
13.4.4.1.1	**General** Gaskets with a higher material cross sectional area in the uncompressed state cover gaskets with a smaller cross sectional area but not vice versa. The cross-sectional area in the uncompressed state may be increased by maximum 50 % compared to what was tested. Test results from particular gasket geometry are also applicable to other geometries. Test results cover only the gasket material used in the test.
13.4.4.1.2	**Sealants** Change in type of material (e.g. acrylic, silicone) is not permitted. Test results cover a lower sealant height (for definition see Figure 20) and a higher sealant height up to a maximum of 1,2 times the height used in the test. The sealant depth (for definition see Figure 20) shall be minimum the same as tested.
13.4.4.1.3	**Intumescent strips/layers** Changes to intumescent strips/layers are not permitted.
13.5	**Perimeter seals / vertical linear joint seals**
13.5.1	**General** Perimeter seals tested according to this standard shall not be used where in practice movement of the perimeter joint is expected. Note: form information on test requirements for perimeter seals in case of required movement capability see B7.8.
13.5.2	**Orientation** Results from tests on perimeter seals (horizontal linear gap seals) are only valid for perimeter seals. Results from tests on vertical linear gap seals are only valid for vertical linear gap seals.

13.5.3	Material Test results for non-faced mineral wool are equally applicable to an aluminium faced version of the same mineral wool product (brand designation) but not vice versa. Test results for mineral wool are valid for a version with higher density of the same mineral wool product (brand designation) as long as it is compressible to the same extent as in the test, subject to restrictions depending on the direction of compression given in 13.5.5.4. Test results for compressed mineral wool are equally applicable to mineral wool of higher compression, subject to restrictions depending on the direction of compression given in 13.5.5.4. Changes to other materials or components are not permitted.
13.5.4	**Width/depth** For definition of width and depth of the perimeter seal see Figure 22. For definition of width and depth of the vertical linear gap seal see Figure 7C. Test results for linear joint seals or seal components with lower depth are equally applicable to linear joint seals with higher depth but not vice versa. For membrane forming coatings and elastomeric strips the results apply for all thicknesses within the tolerance band for the membrane/strip and higher depth of mineral wool (or other backing material). Test results for linear joint seals with higher nominal width are equally applicable to linear joint seals with narrower nominal width but not vice versa, subject to the depth of the seal or its components being minimum the same as tested and subject to the rules regarding compression (see 13.5.5.4). For membrane forming coatings and elastomeric strips the overlap on the floor and the spandrel shall be in practice minimum the same as tested. Test results for linear joint seals with an overrun according to Table 2 cover a nominal width range up to 1,2 times the tested nominal width, except for products with distinct sizes for specific gap widths and preformed products which are kept in place by compression (no additional mechanical fixing provided). In case an intumescent sealant is used as component of the perimeter seal its depth may be increased. For definition of depth see Figure 22.
13.5.5	**Fixing of the perimeter seal**
13.5.5.1	For mechanically fixed seals the fixing of the perimeter seal is restricted to the fixing used in the test.
13.5.5.2	For self-adherent seals or seal components, e.g. membrane forming coatings and sealants, as well as for adhesion fixed seals or seal components, e.g. elastomeric strips, the results apply for all substrates for which the adhesion is shown to be equal to or better than that in the fire test. Note: an example for adhesion fixing is the use of a glue to fix the seal or seam component.
13.5.5.3	For friction fixed seals or seal components, e.g. mineral wool and compressible strips, minimum the same compression shall be used in practice as used in the test, subject to the following rule.
13.5.5.4	For mineral wool with compression direction B-B or C-C according to Figure 24 the compression shall be minimum the same as tested but sufficiently low not to induce a mechanical failure of the seal, e.g. by de-lamination fracture.
13.5.6	**Covering** Tests without steel sheet covering cover perimeter seal systems including steel sheet covering, provided it is not force-fit fixed to the curtain walling, disregarding whether the steel sheet covering is installed on top or on bottom of the seal, but not vice versa. Test results are only valid for the covering material used in the test. No additional coverings of reaction to fire classification B to F according to EN 13501-1 are permitted on bottom side of perimeter seals and on both sides of vertical linear gap seals.

13.6	**Supporting floor** Test results obtained with the standard supporting floor construction may be applied to concrete floors of a thickness and density equal to or greater than that of the floor construction used in the test. The test results of a curtain walling specimen tested in front of a non-standard supporting floor are valid for other floors of the same type provided the thickness as well as the fire resistance with respect to loadbearing capacity, integrity and insulation of these floors are equal to or greater than that of the non-standard floor used in the test.
13.7	**Walls abutting the curtain walling** Test results obtained with rigid standard wall constructions according to 7.3.1 may be applied to concrete or masonry separating wall constructions of a thickness and density equal to or greater than that of the wall construction used in the test. Test results obtained with a standard flexible wall construction cover all flexible wall constructions of the same fire resistance classification provided: - the construction is classified in accordance with EN 13501-2; - the stud depth is higher than that used in the test, subject to the rules given in EN 1363-1; - the number of board layers and the overall board layer thickness is equal or greater than that tested when no aperture framing on the joint face is used; - flexible wall constructions with timber studs are constructed with at least the same number of layers as used in the test, no part of the joint seal is closer than 100 mm to a stud, the cavity is closed between the joint seal and the stud, and minimum 100 mm of insulation of class A1 or A2 according to EN 13501-1 is provided within the cavity between the joint seal and the stud.

6. LIMITATIONS

This classification document does not represent type approval or certification of the product.

These conclusions relate only to the fire resistance performance of the element covered by this classification report. They do not prejudge, in any case, other performances related to its incorporation in a work.

Saint-Aubin, February 17th, 2025

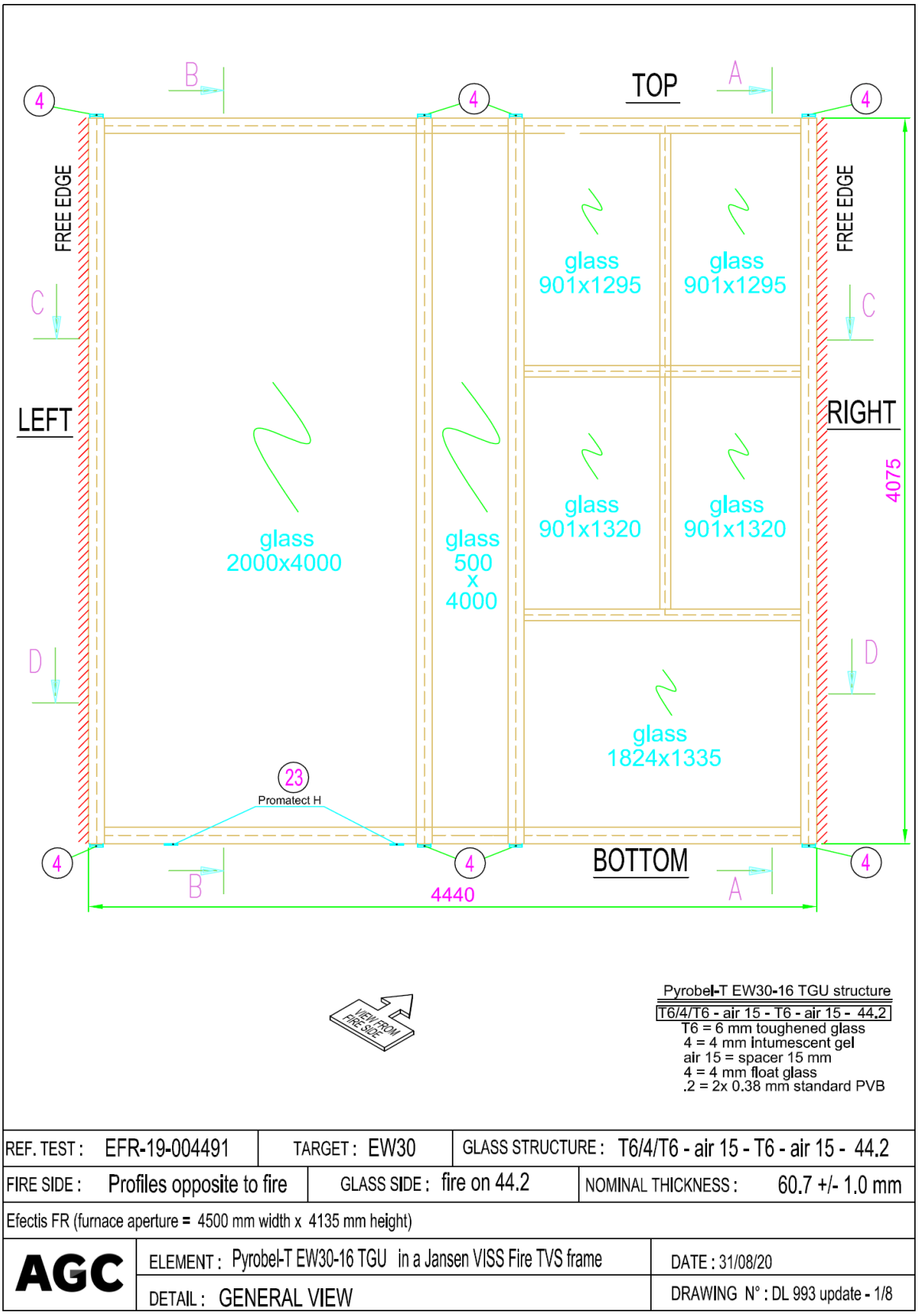
X Andréa VIARD

Project leader
Signé par : Andréa VIARD

X Régis KORYLUK

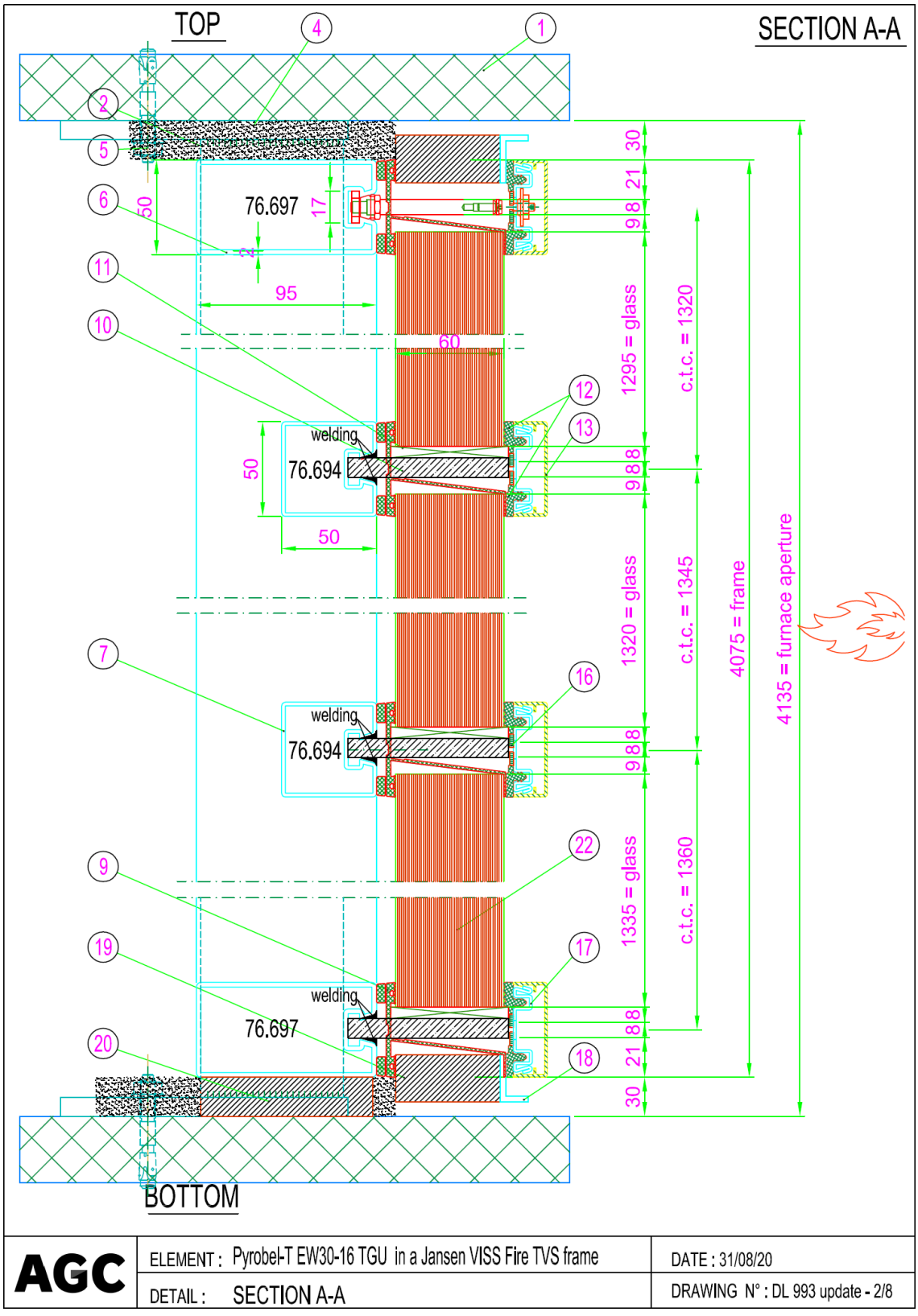
Supervisor
Signé par : Régis KORYLUK

DRAWINGS APPENDIX: Plate No. 1

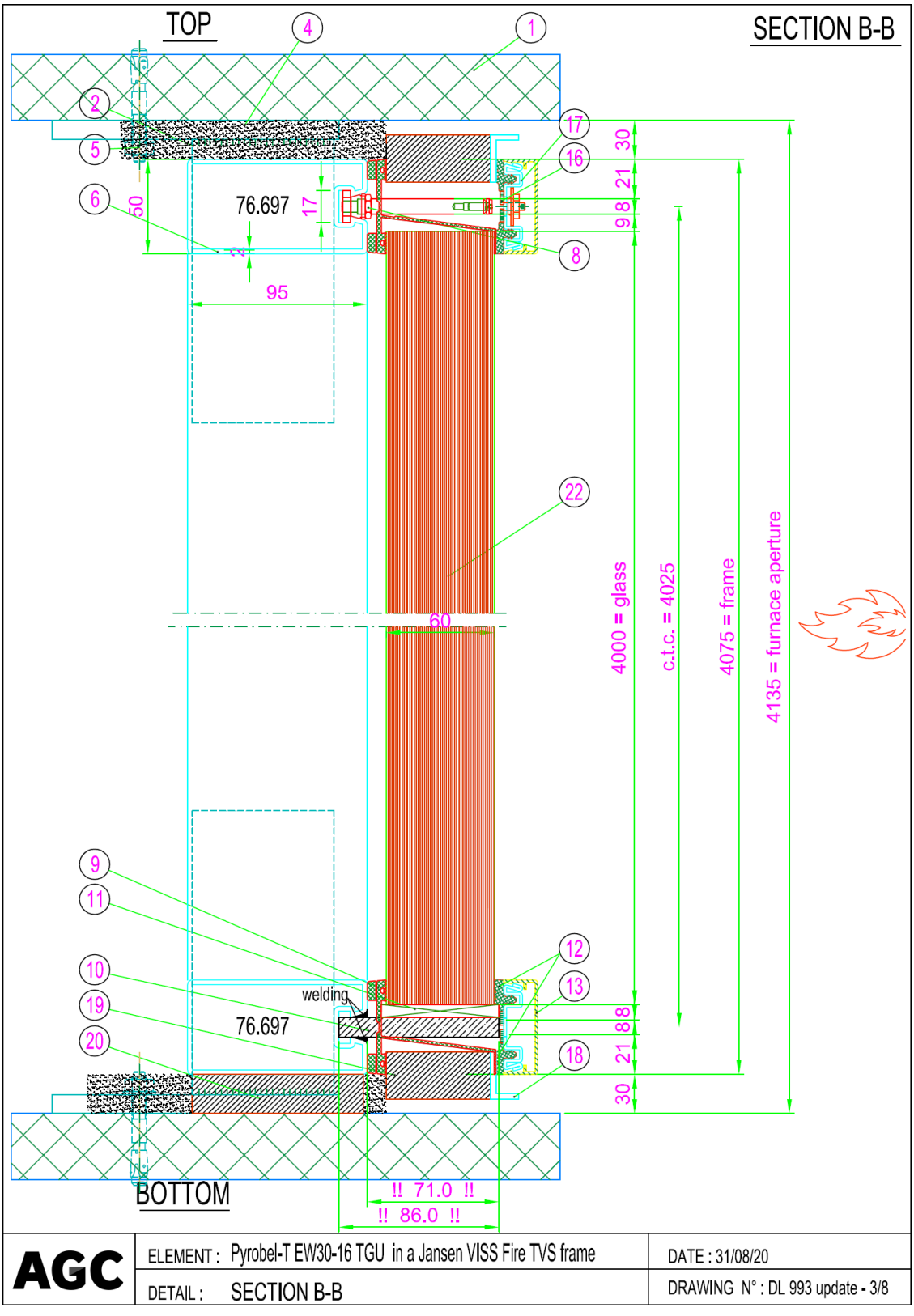


REF. TEST : EFR-19-004491	TARGET : EW30	GLASS STRUCTURE : T6/4/T6 - air 15 - T6 - air 15 - 44.2
FIRE SIDE : Profiles opposite to fire	GLASS SIDE : fire on 44.2	NOMINAL THICKNESS : 60.7 +/- 1.0 mm
Efectis FR (furnace aperture = 4500 mm width x 4135 mm height)		
AGC	ELEMENT : Pyrobel-T EW30-16 TGU in a Jansen VISS Fire TVS frame	DATE : 31/08/20
	DETAIL : GENERAL VIEW	DRAWING N° : DL 993 update - 1/8

DRAWINGS APPENDIX: Plate No. 2



DRAWINGS APPENDIX: Plate No. 3



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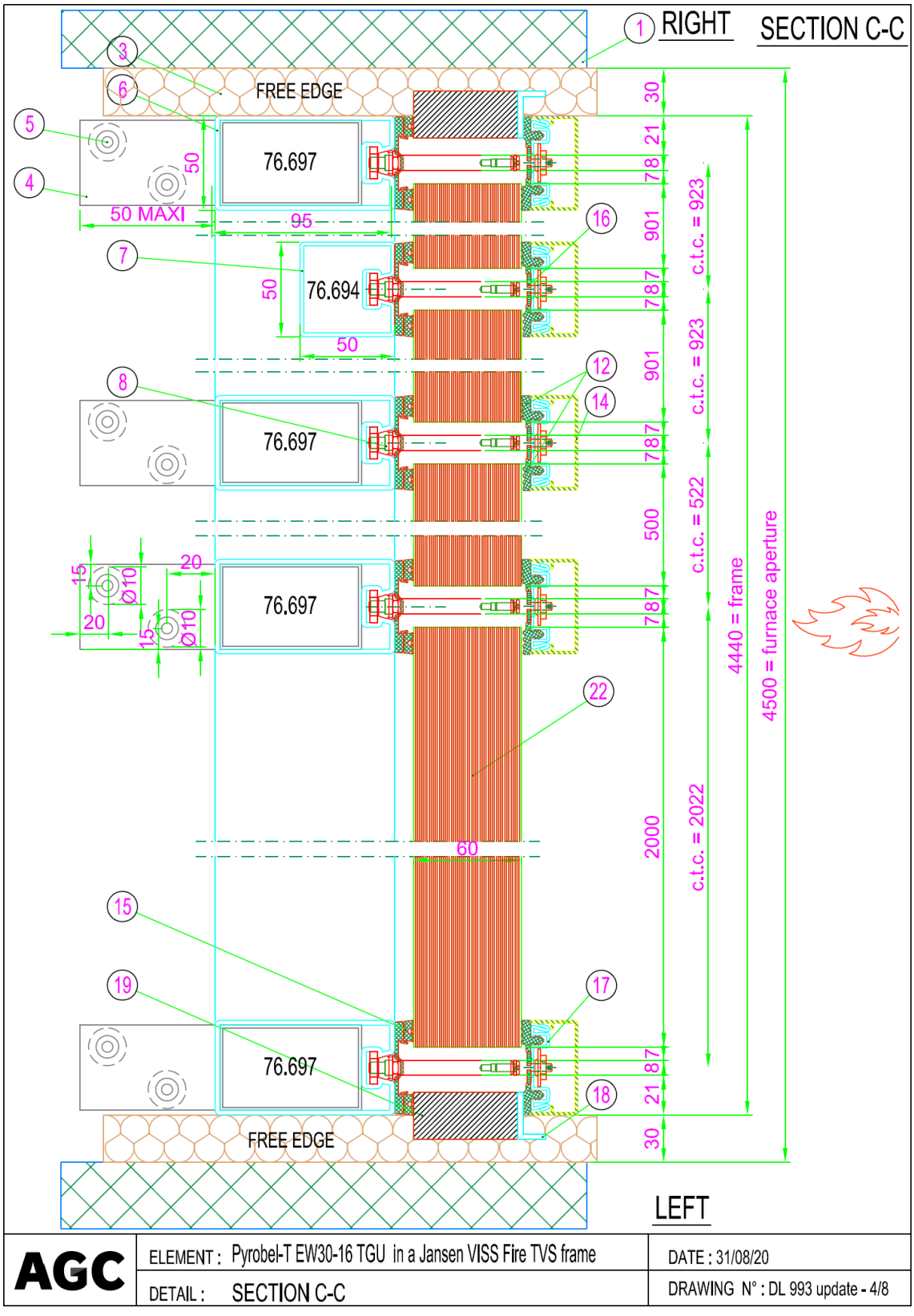

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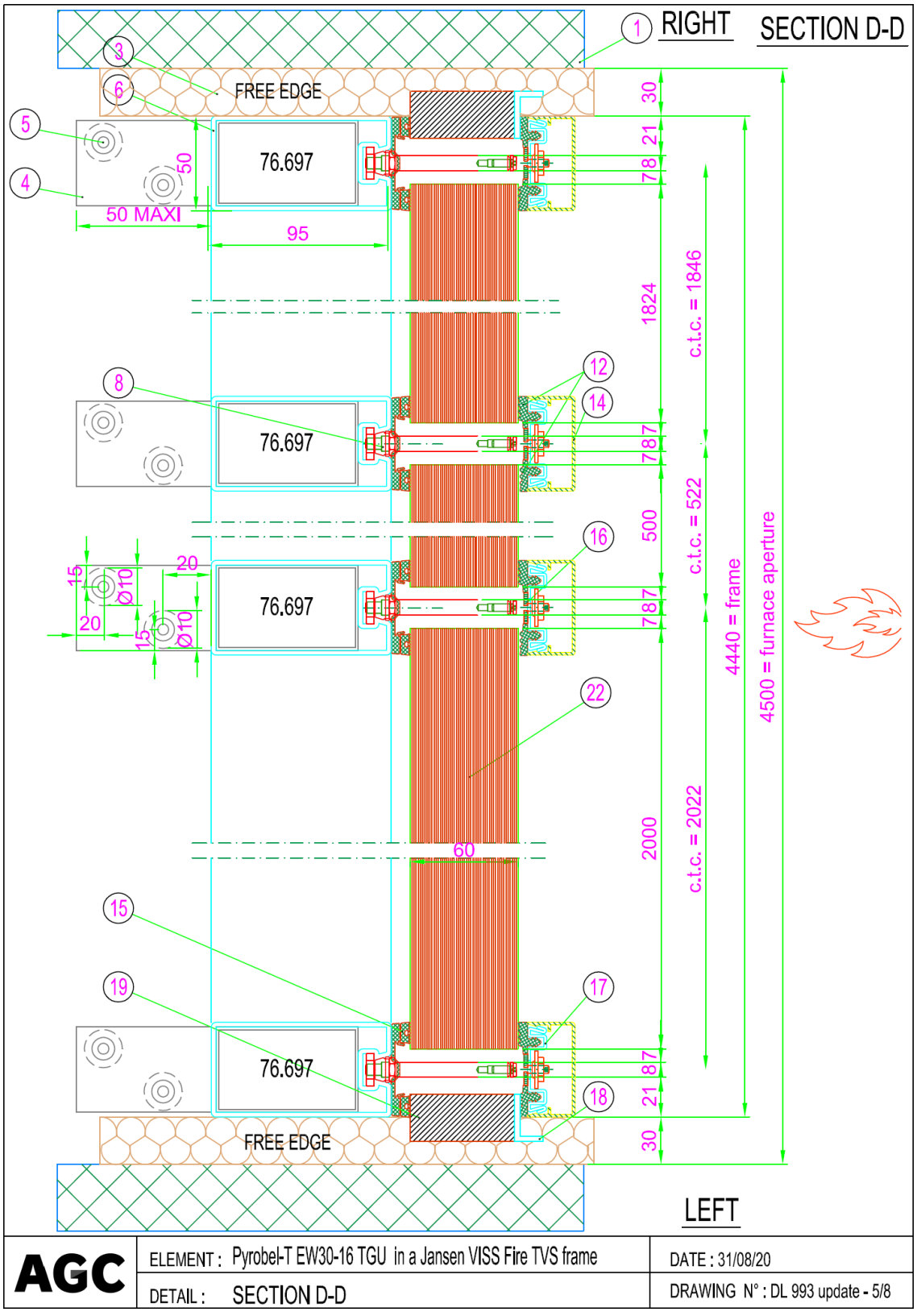

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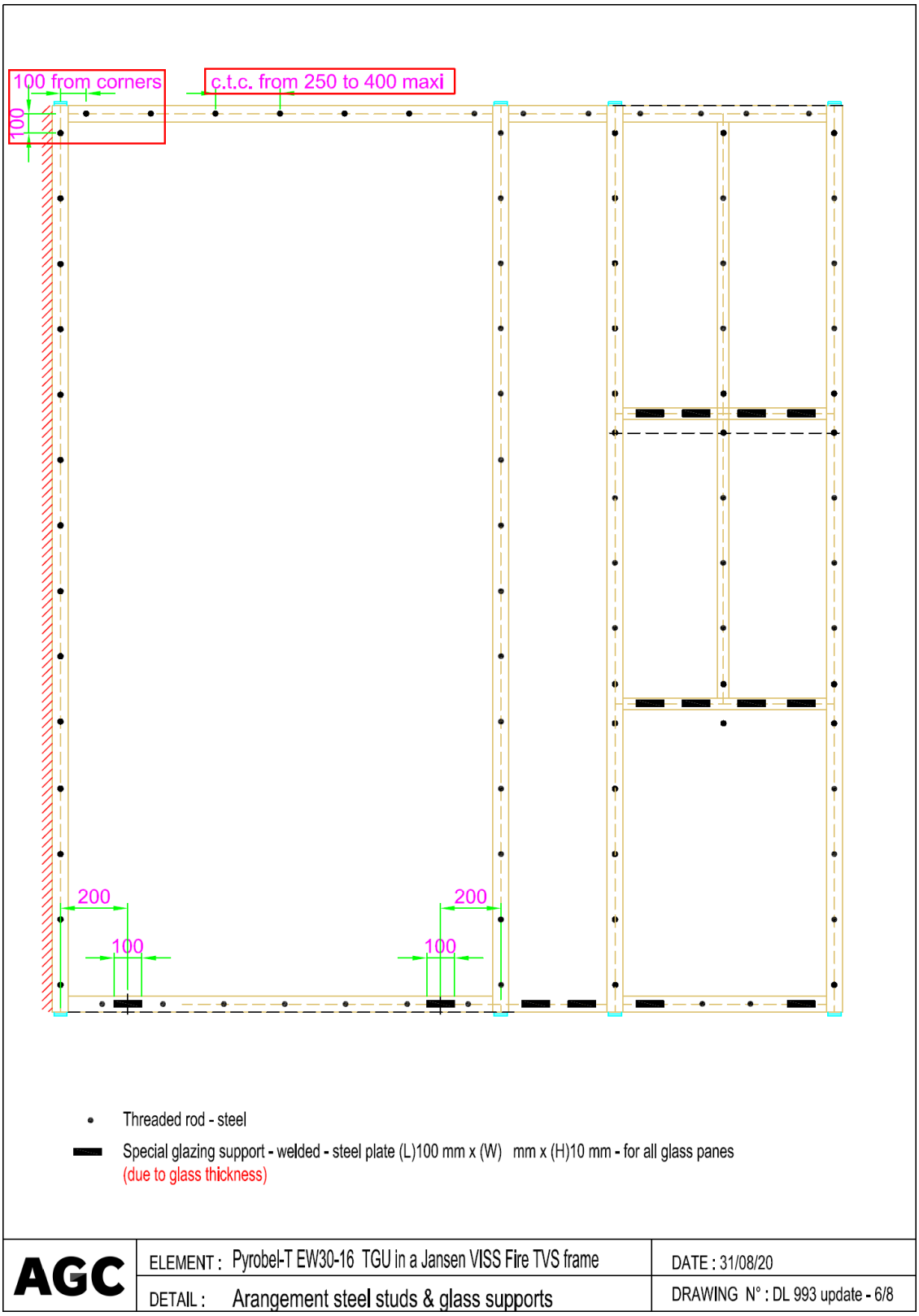
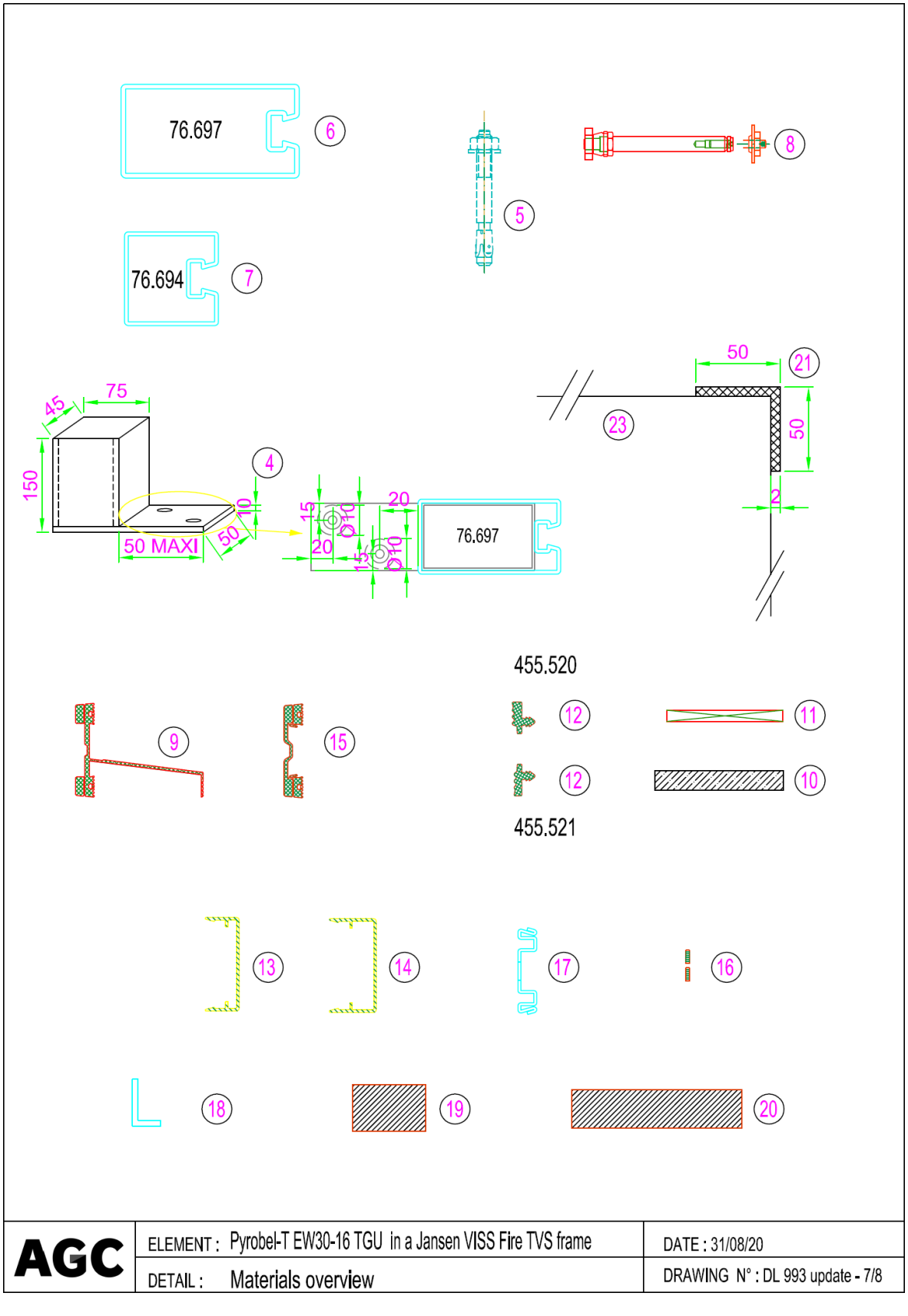


DRAWINGS APPENDIX: Plate No. 7

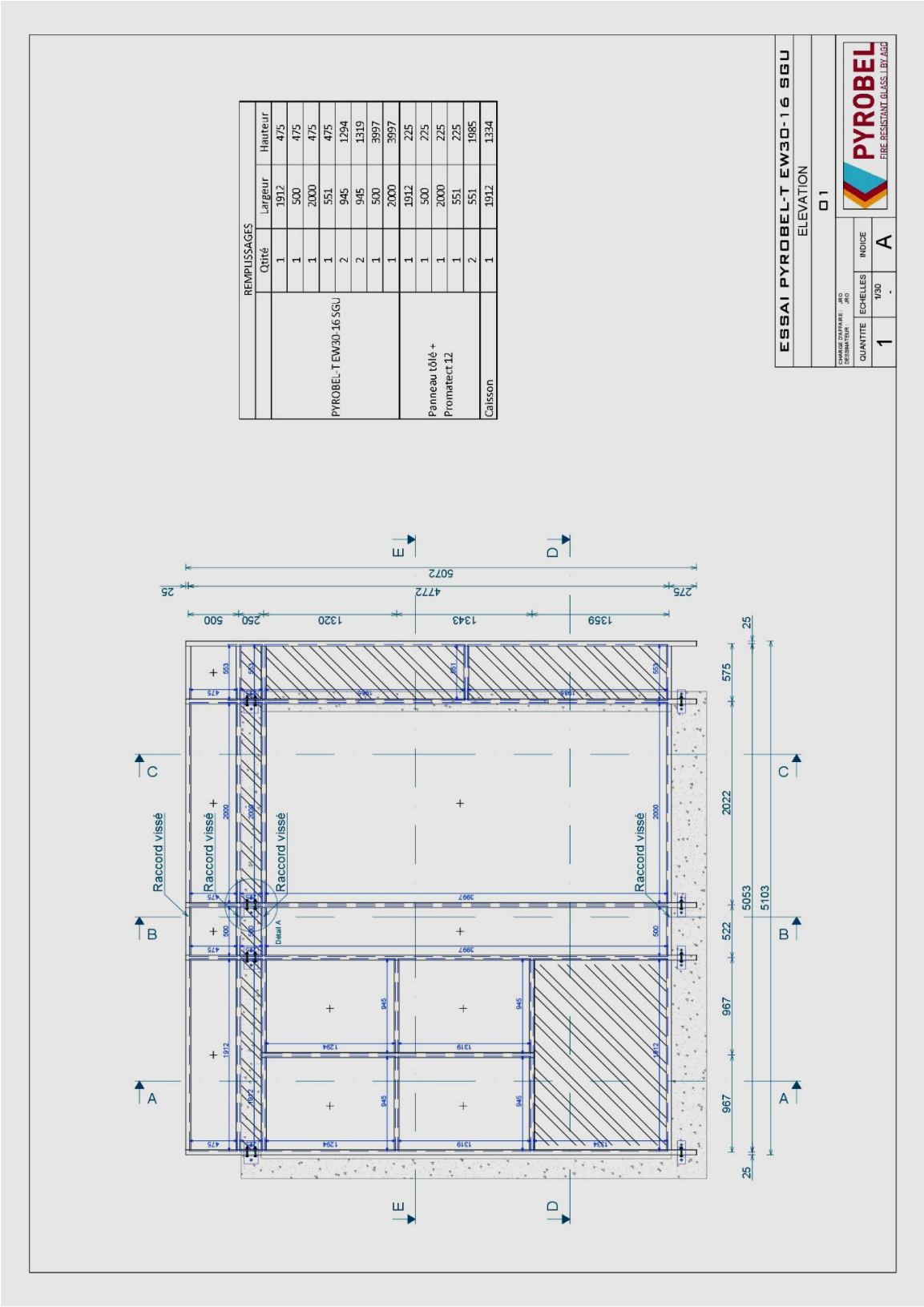


LIST OF THE COMPONENTS APPENDIX: Plate No. 8

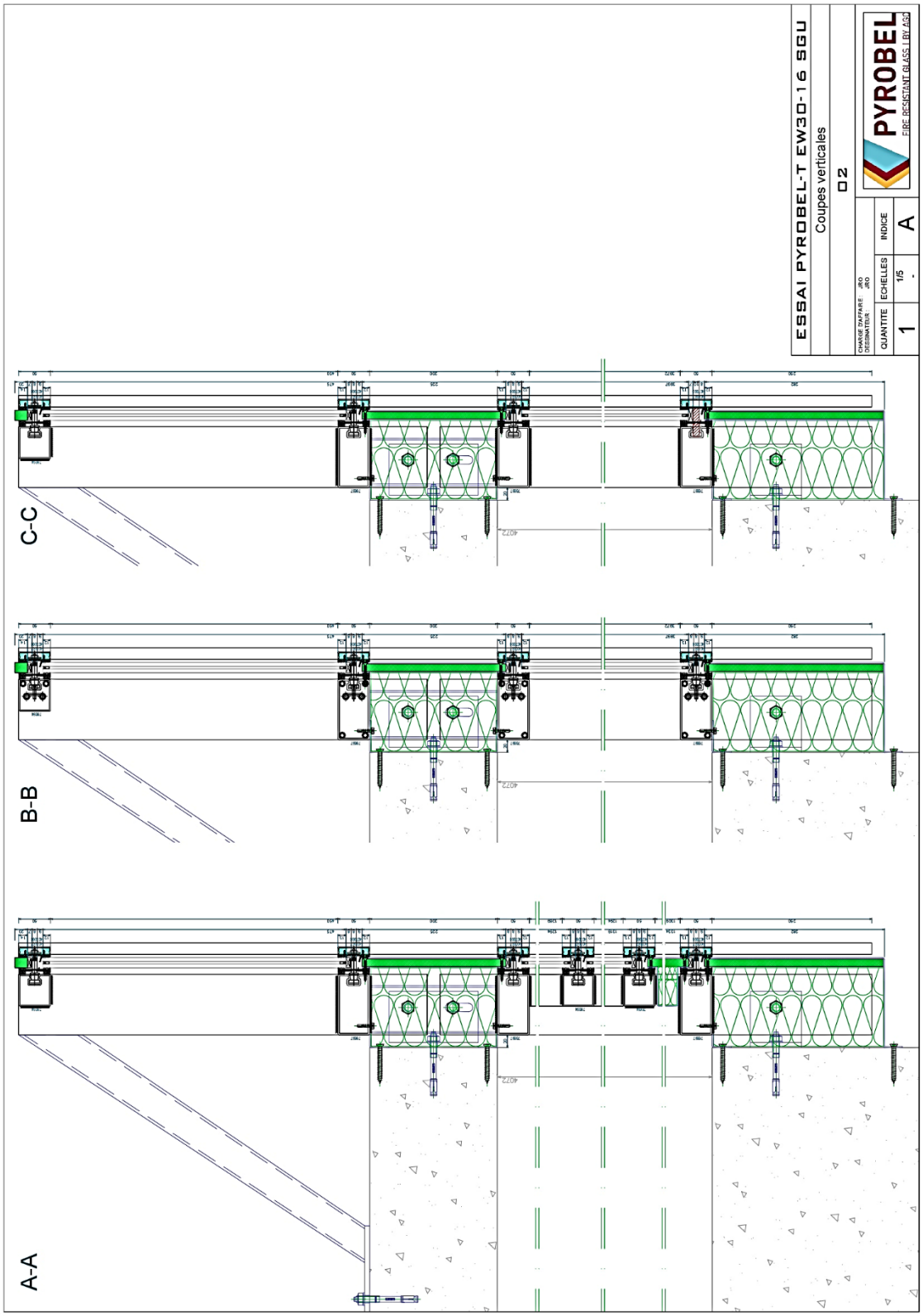
# REF.	COMPONENTS
1	Concrete frame - inner dimensions : 4500 (width) x 4135 (height) mm
2	Thermal insulation - Promat Promaglaf HTK1100 : 96 kg/m³
3	Thermal insulation - mineral wool : 120 kg/m³
4	Mounting console
5	Anchor bolt - Hilti 100 HT : Ø10 x L 72 mm
6	Profile - steel - Jansen VISS Fire TVS : ref. 76.697
	=> outer dimensions of section : 95 x 50 mm
	=> inner dimensions of groove : 17 x 6 mm
7	Profile - steel - Jansen VISS Fire TVS : ref. 76.694
	=> outer dimensions of section : 50 x 50 mm
	=> inner dimensions of groove : 17 x 6 mm
8	Fire-proof anchor - Jansen : ref. 452.427
	=> stainless steel, with pre-assembled key and tenon block, set screw M4,
	centring nut M4
9	Inner gasket horizontal - EPDM - Jansen : ref. 455.558
10	Special glazing support - welded - steel plate (L)100 mm x (W) see drawing x (H)10 mm -
	(for all glass panes <=> thickness)
11	Glazing setting block - Jansen : ref.453.070
12	Outer gasket - EPDM - Jansen : ref. 455.520 / 455.521
13	Aluminium cover sections - Jansen : ref.407.861
14	Aluminium cover sections - Jansen : ref.407.862
15	Inner gasket vertical - EPDM - Jansen : ref. 455.537
16	Fire protection laminate, self adhesive - Jansen : ref. 451.080 - dimensions 14.4 x 1.8 mm
17	Steel section - Jansen : ref. 400.867
18	Steel or aluminium angle profile. 25x25x2
19	Calcium silicate - Promatect H 58x25 mm
20	Calcium silicate - Promatect H 90x20 mm
21	Jung Flamiseal G - 60x2x100 (at each glass pane corner)
22	Pyrobel-T EW30-16 TGU (T6/4/T6 - air 15 - T6 - air 15 - 44.2)

AGC	ELEMENT : Pyrobel-T EW30-16 TGU in a Jansen VISS Fire TVS frame	DATE : 31/08/20
	DETAIL : COMPONENTS LIST	DRAWING N° : DL 993 update - 8/8

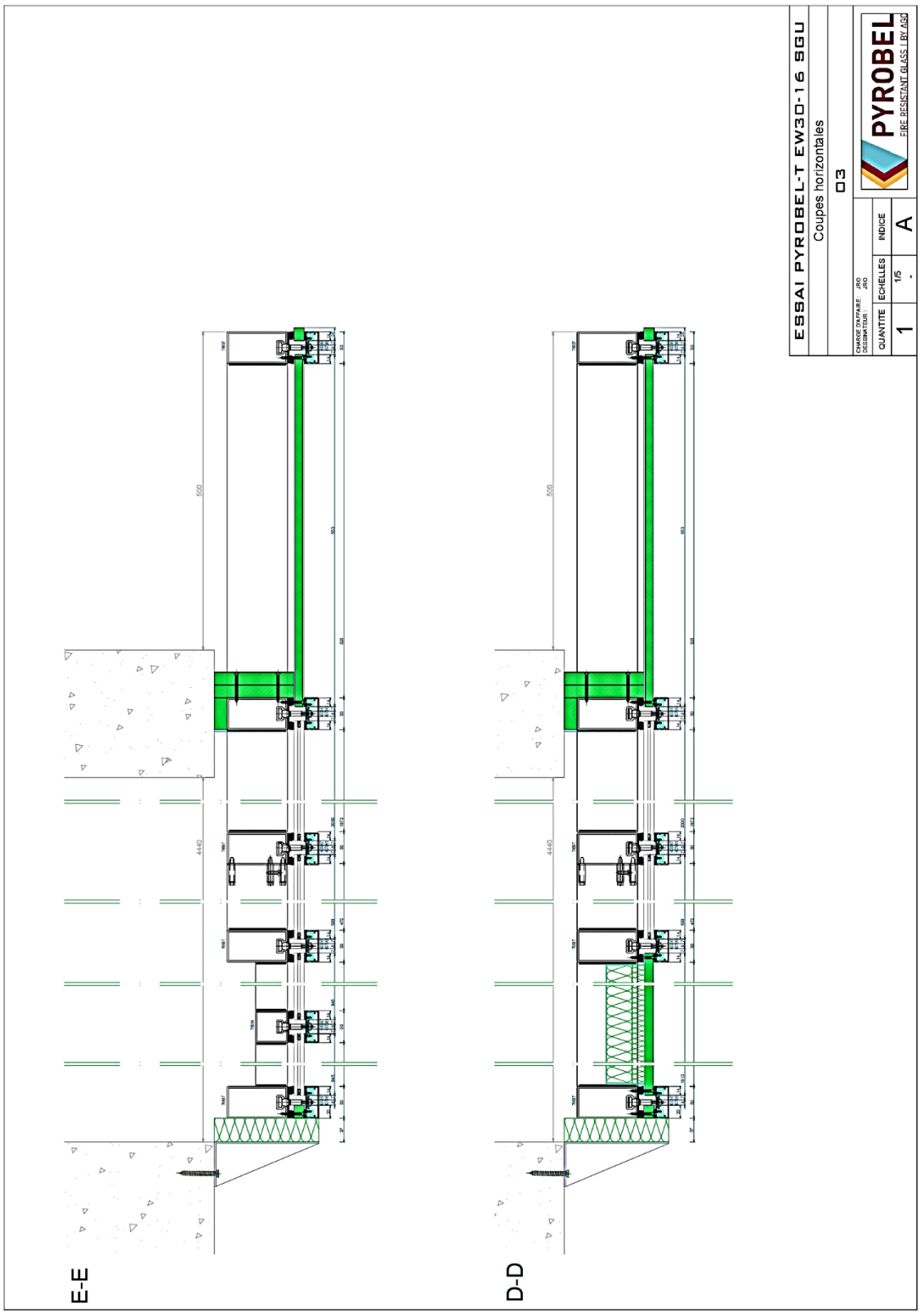
DRAWINGS APPENDIX: Plate No. 9



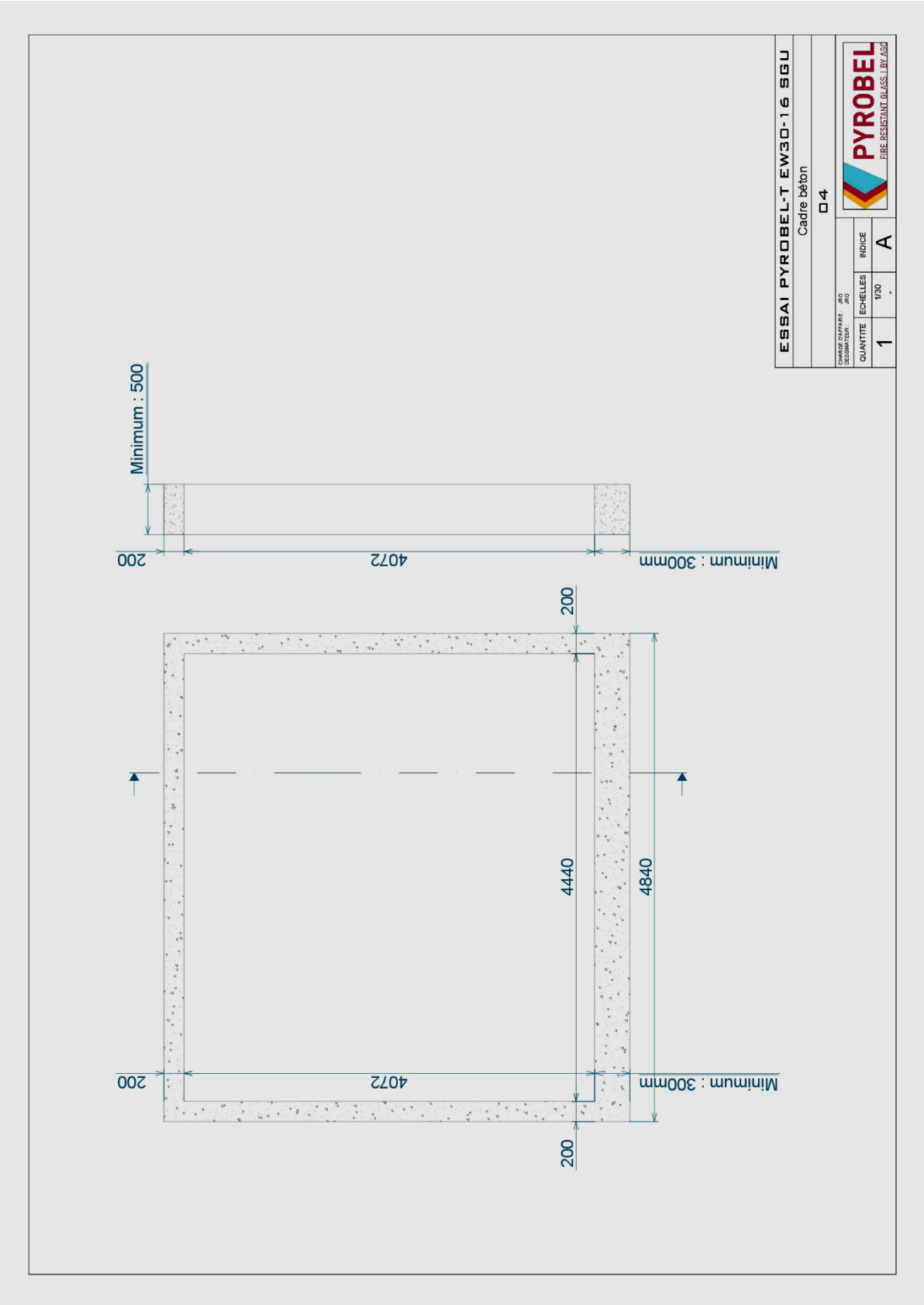
DRAWINGS APPENDIX: Plate No. 10



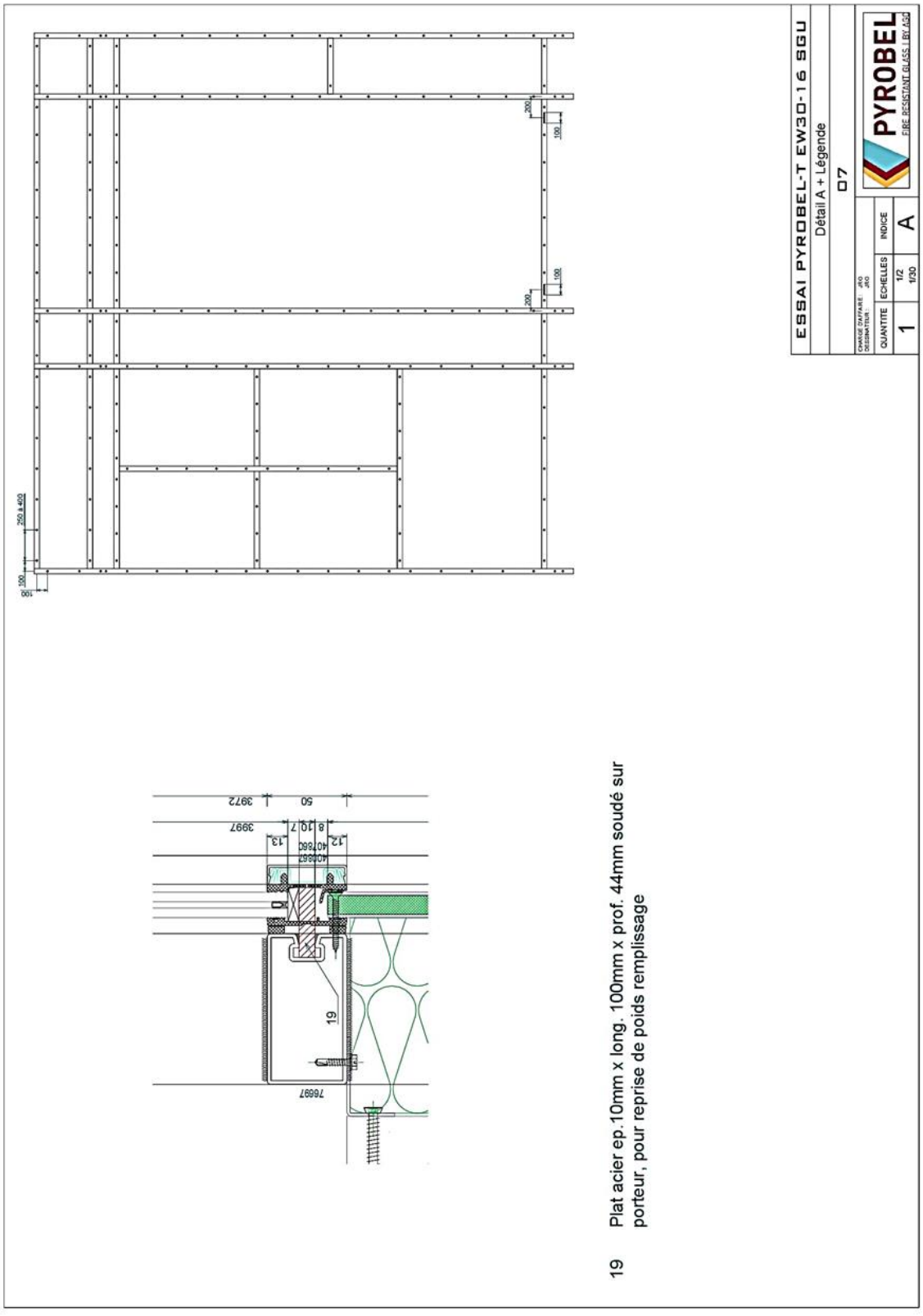
DRAWINGS APPENDIX: Plate No. 11



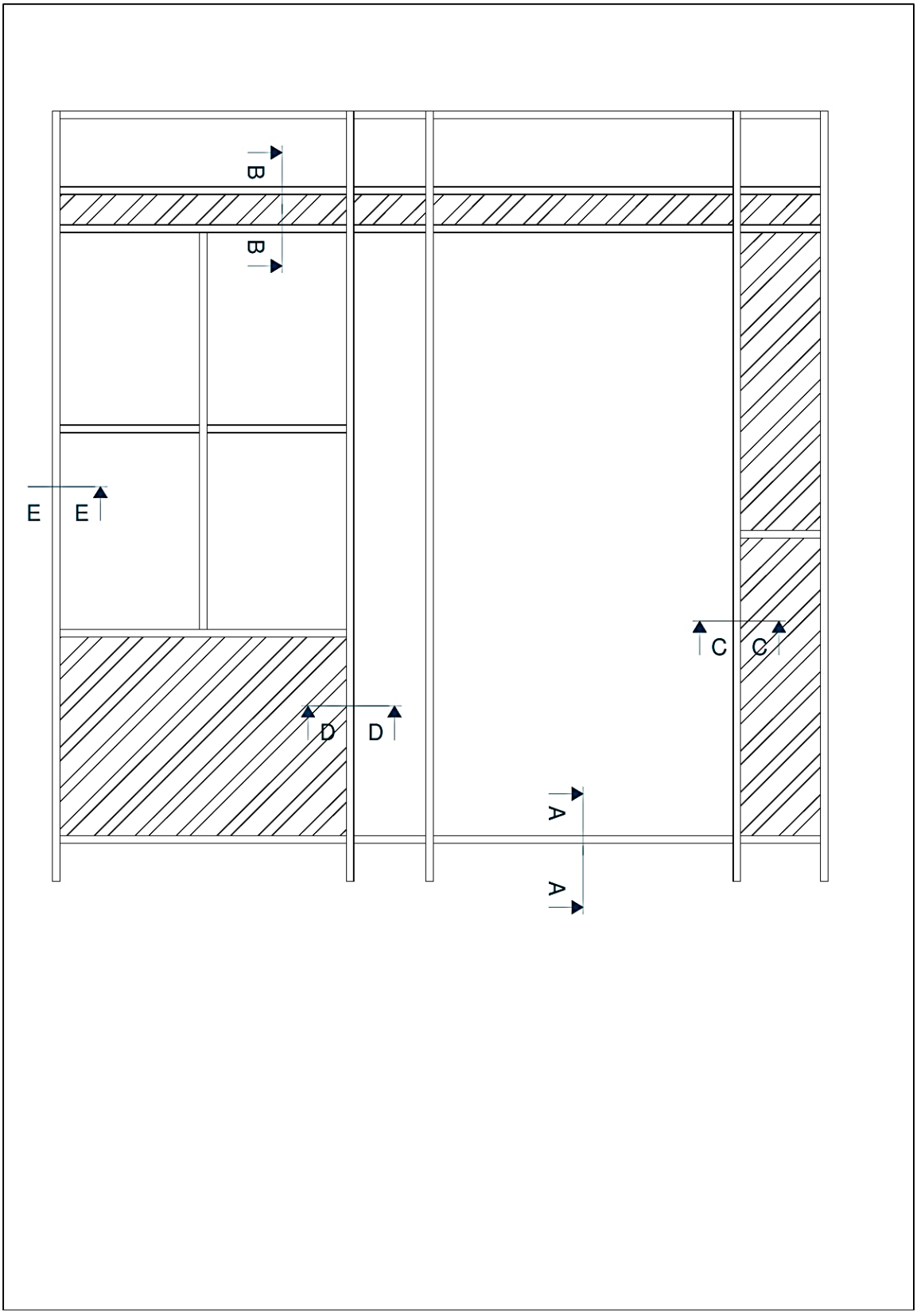
DRAWINGS APPENDIX: Plate No. 12



DRAWINGS APPENDIX: Plate No. 13



DRAWINGS APPENDIX: Plate No. 14



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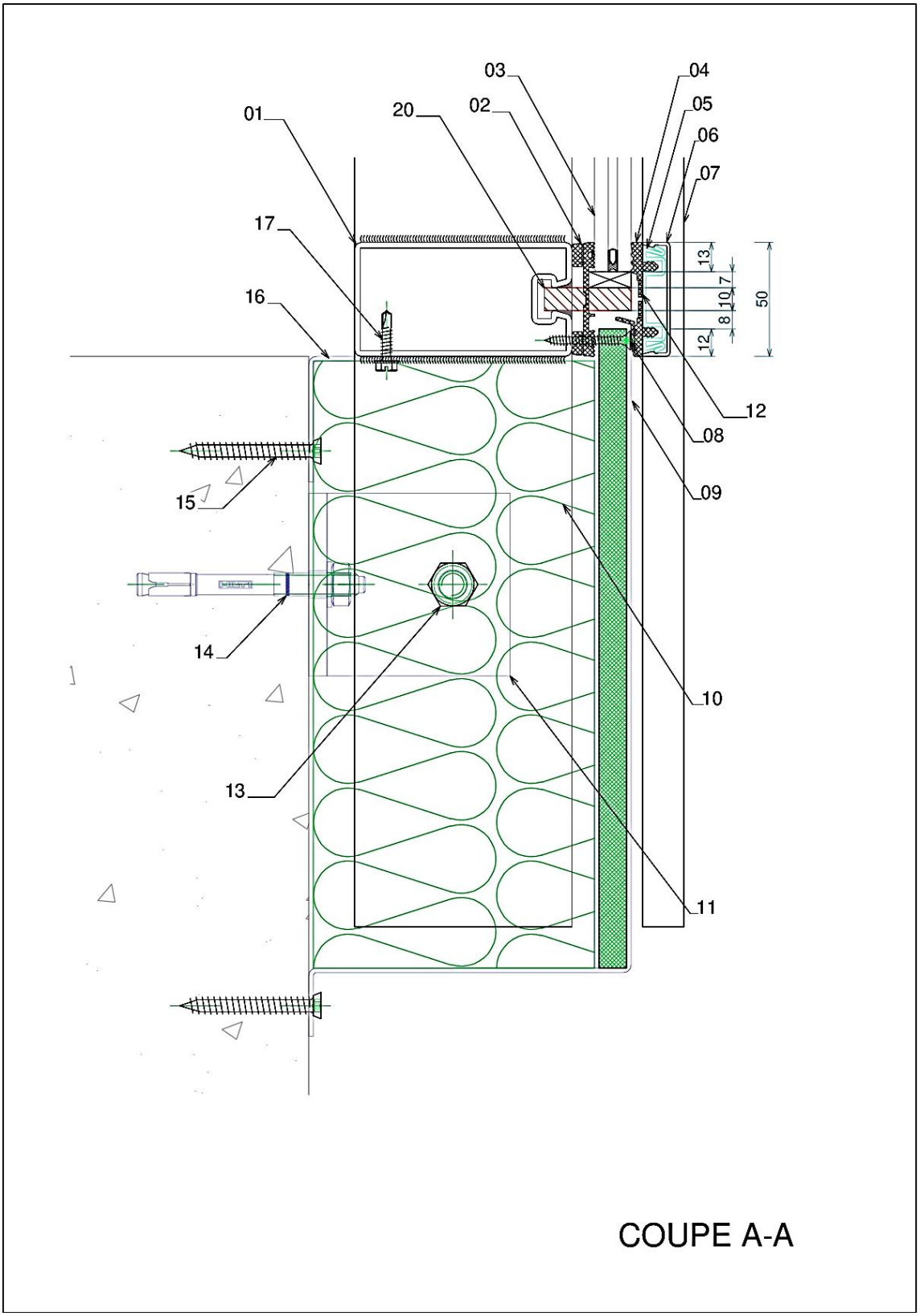

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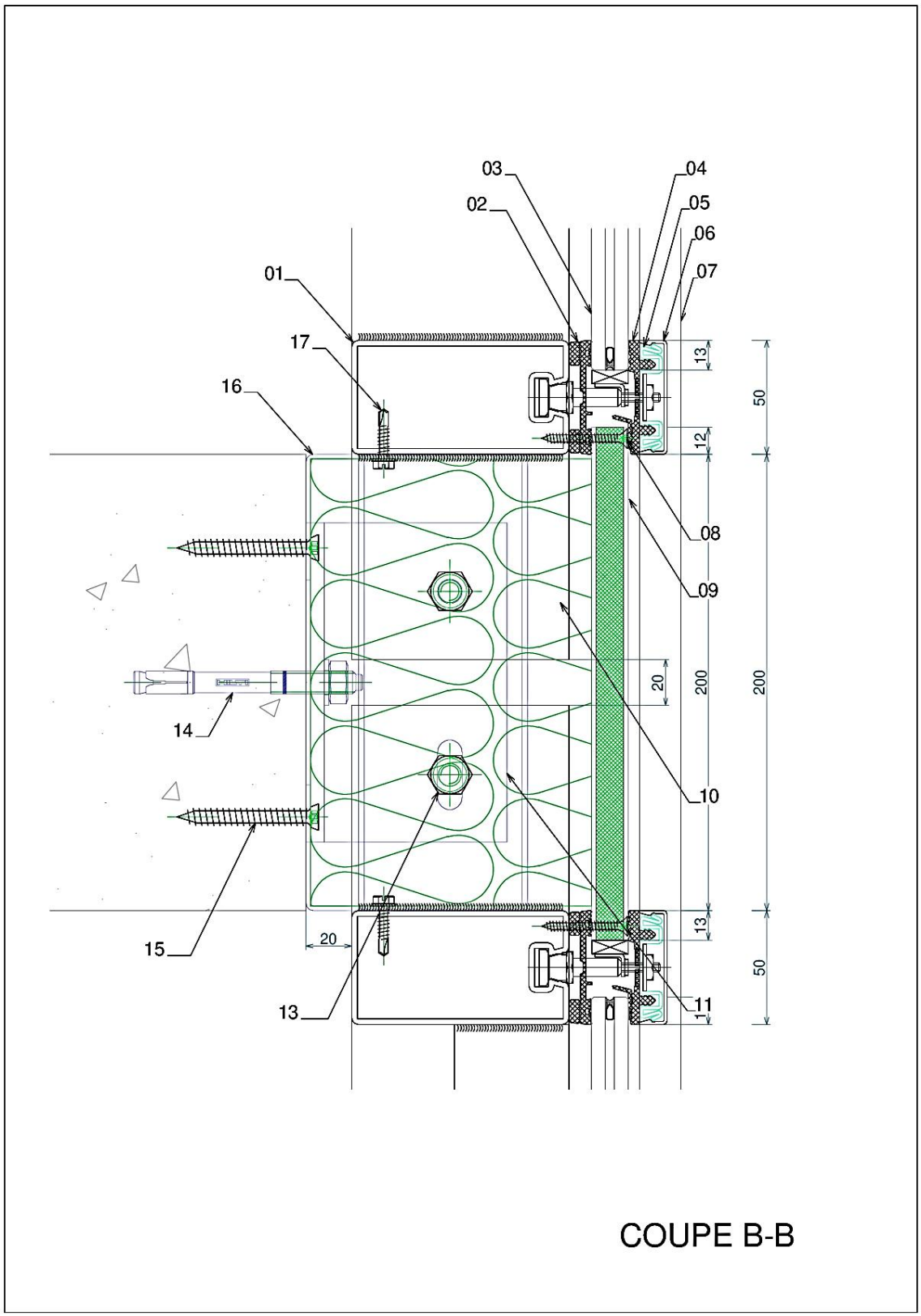

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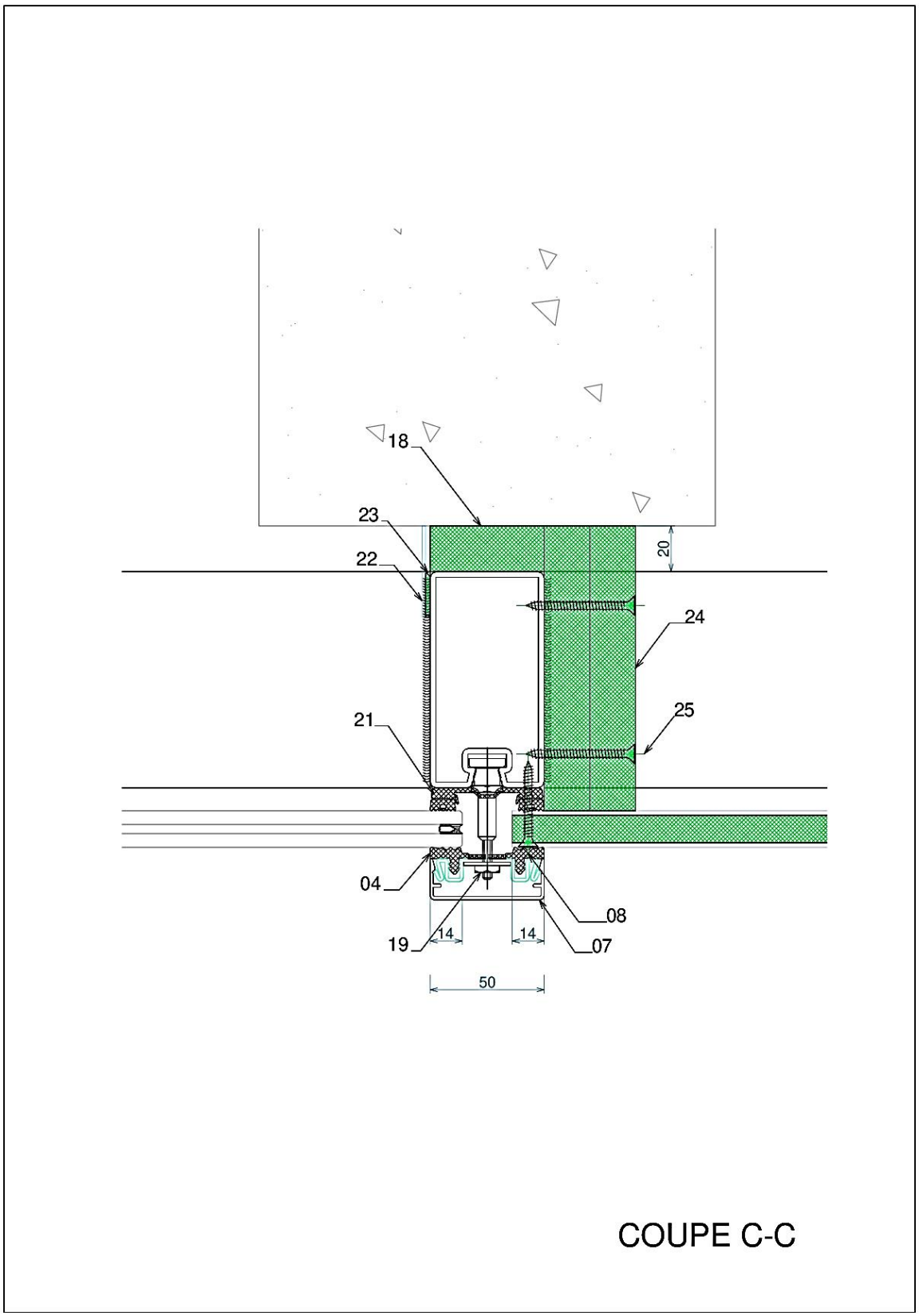
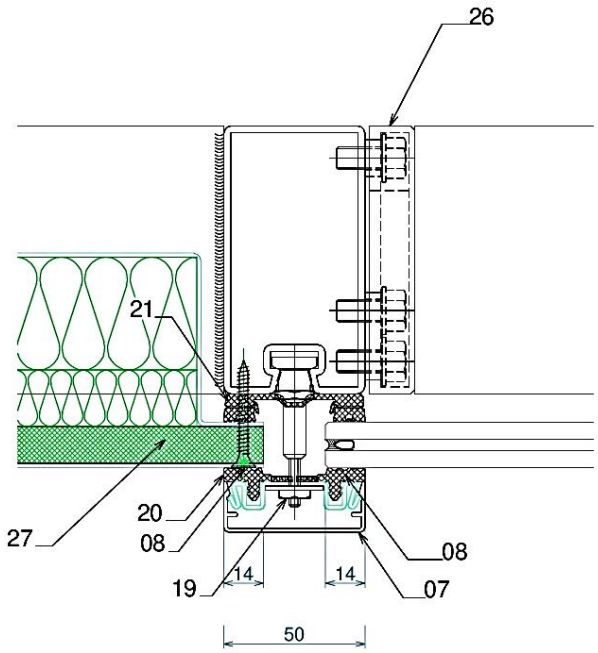
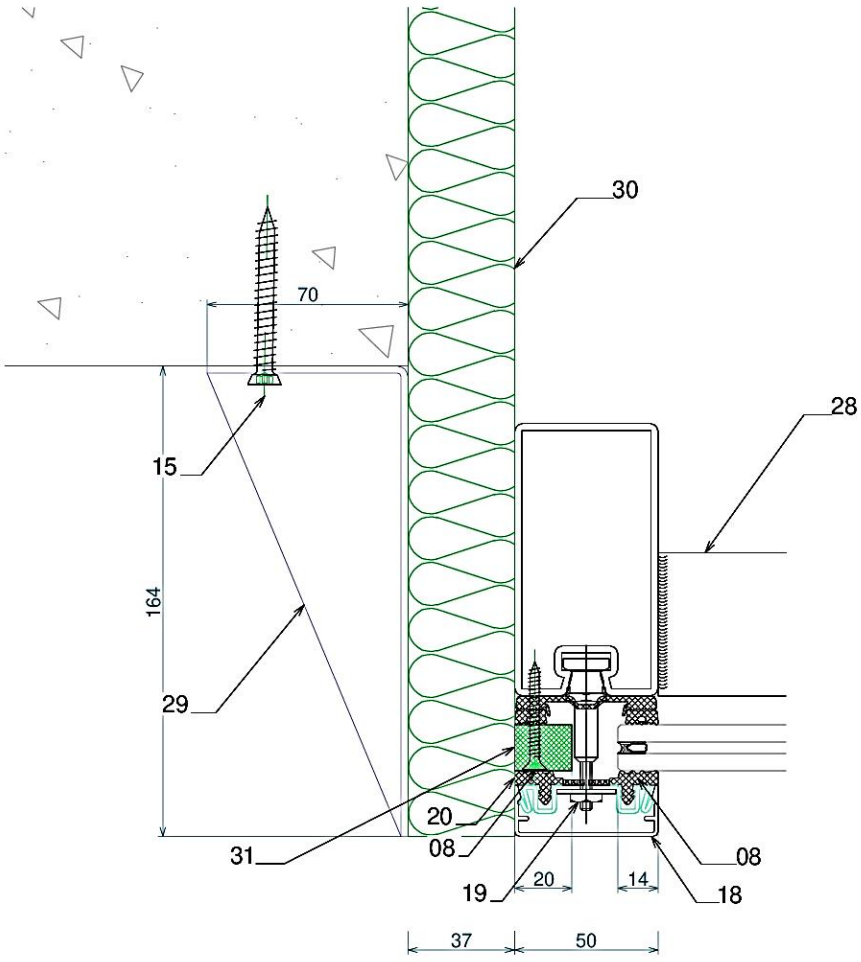


DRAWINGS APPENDIX: Plate No. 18



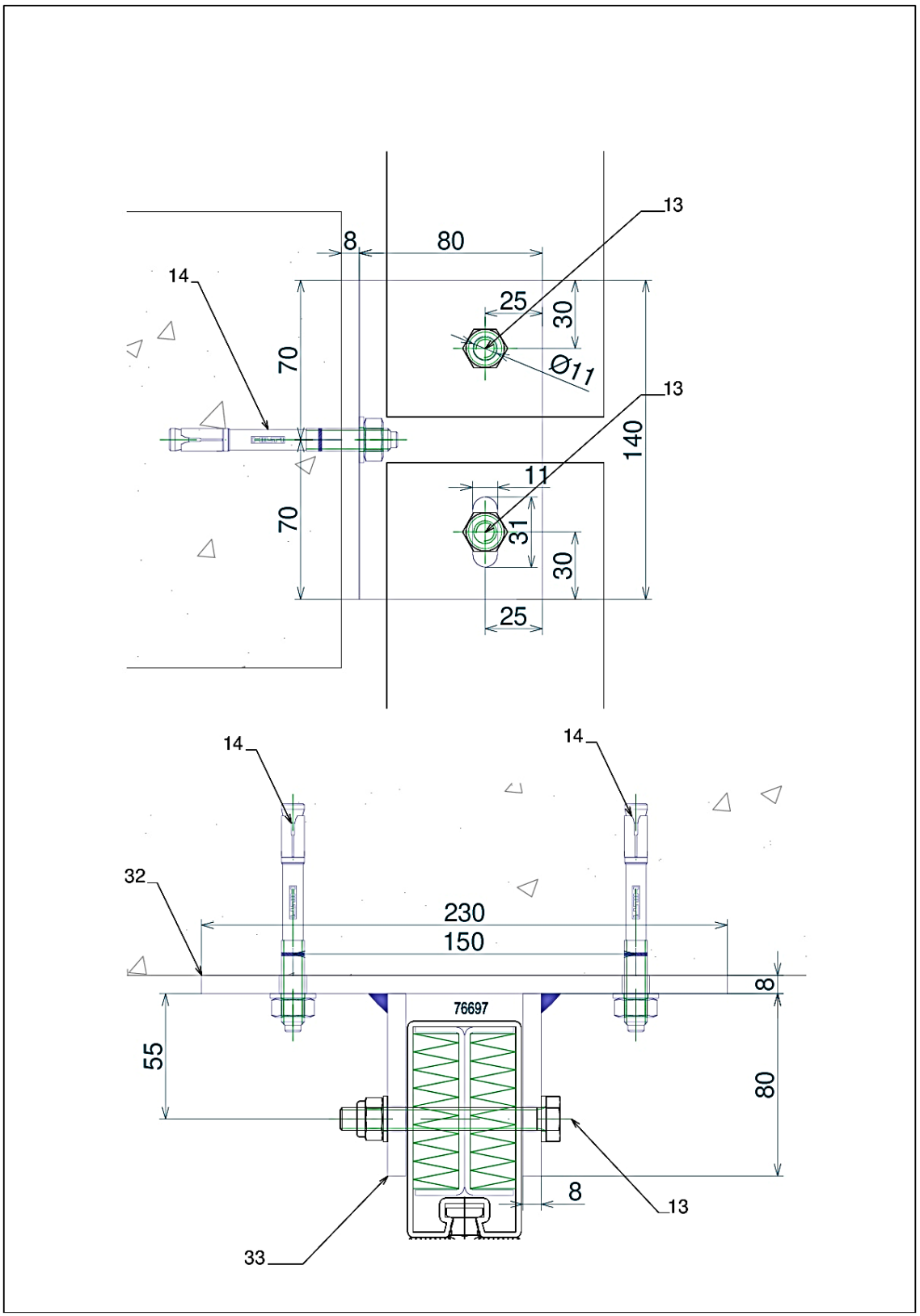
COUPE D-D

DRAWINGS APPENDIX: Plate No. 19



COUPE E-E

DRAWINGS APPENDIX: Plate No. 20



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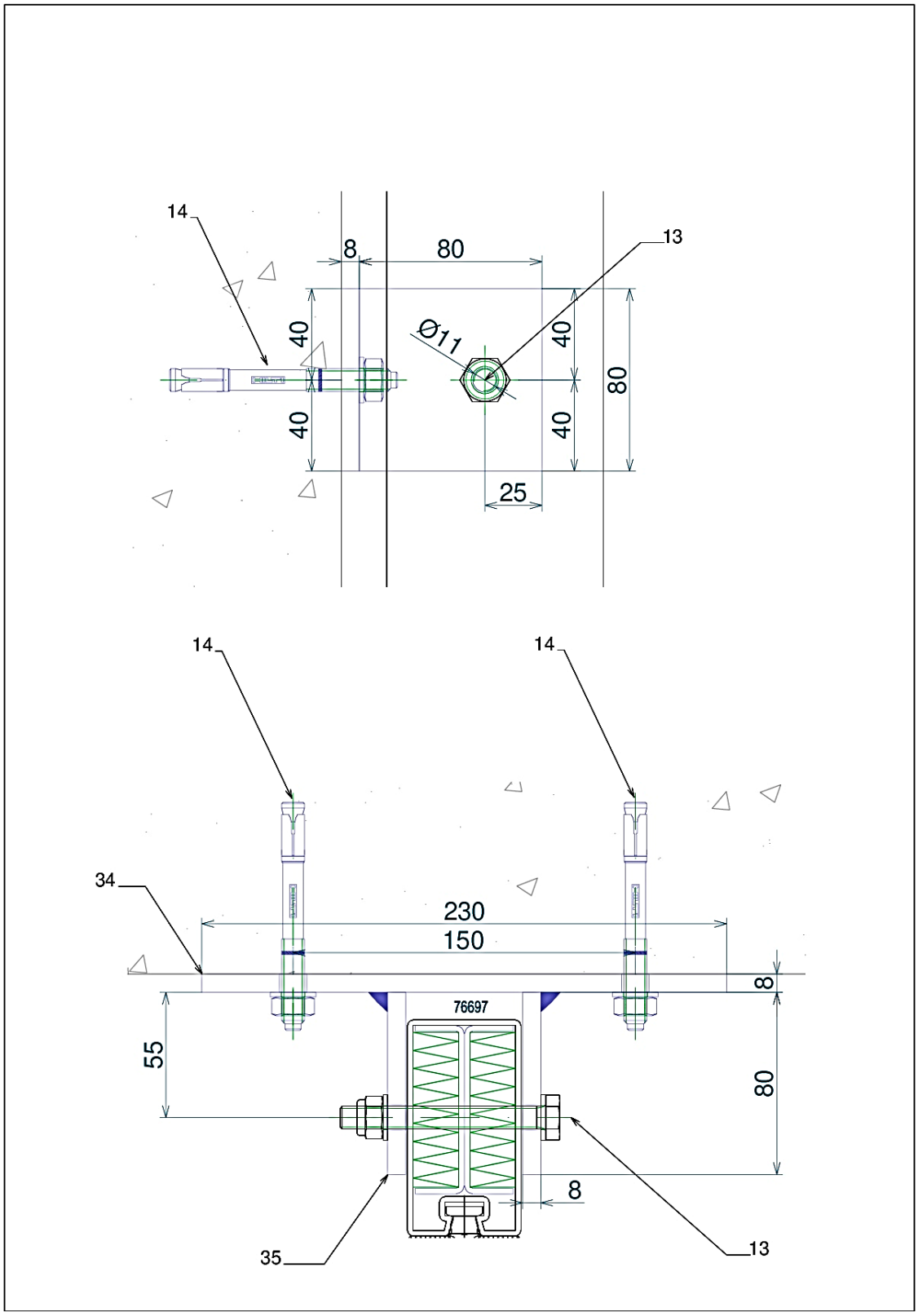

LIST OF THE COMPONENTS APPENDIX: Plate No. 22

01	Steel profile 76.697
02	Inner gasket, horizontal EPDM black 455.558
03	Pyrobel-T EW30-16 SGU
04	Outer gasket EPDM black 455.520
	Outer gasket EPDM black 455.521
05	Stainless steel clamp
06	Aluminum cover 407.860
07	Aluminum cover 407.861
08	Zinc-plated steel countersunk head self-drilling Wurth screw 4.2 x 50
09	Panel: 15/10 steel sheet + 12 mm Promatect + 15/10 steel sheet + Pyrocol-A glue
10	Mineral wool Rockfacade (Rockwool) 3 x 40 mm
11	Low plate in flat iron steel 8 mm
12	Fire protection laminate 451.080
13	stainless steel bolt M10 x 90
14	Stud Hilti HST3 - M10 x 90
15	Screw Fischer FFS 7.5 x 82
16	Steel sheet 15/10
17	Zinc-plated steel self-drilling screw with hexagonal head 4.8 x 22
18	Promatect 20 x 50 mm
19	Fire-proof anchor 452.453
20	Steel plate 10 x 100 depth. 41 mm welded
21	Inner gasket, vertical EPDM black 455.537
22	Steel sheet 15/10 width 40 mm
23	Neutral sealant
24	Promatect 20 x 125 + Promatect 20 x 125 + Pyrocol-A glue
25	Zinc-plated steel countersunk head self-drilling Wurth screw 4.8 x 60
26	Fixing part transom 452.062
27	Panel : 15/10 steel sheet + Promatect 12 mm + mineral wool 20 mm + mineral wool 40 mm + 15/10 steel sheet + Pyrocol-A glue
28	Steel profile 76.694
29	15/10 steel sheet folded 70 x 164 + 15/10 gussets every 600 mm
30	Mineral wool Rockfacade (Rockwool) 40 mm
31	Promatect 20 x 16 mm
32	Steel plate 8 mm thick : 140 x 230
33	Steel plate 8 mm thick : 140 x 80
34	Steel plate 8 mm thick : 80 x 230
35	Steel plate 8 mm thick : 80 x 80