

FIRE RESISTANCE CLASSIFICATION REPORT No. 22613C

OWNER OF THE CLASSIFICATION REPORT

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INTRODUCTION

This classification report defines the classification assigned to a non-loadbearing partition wall consisting of vertical sandwich panels (type: JI TF Wall 1100, thickness: 100 mm, stitched on both sides), in accordance with the procedures given in EN 13501-2:2023: Fire classification of products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services.

This classification report consists of 15 pages and 2 annexes and may only be used or reproduced in its entirety.

1 Details of classified product

1.1 General

The element, type: JI TF Wall 1100, thickness: 100 mm, stitched on both sides, is defined as a non-loadbearing partition wall consisting of vertical sandwich panels with fire resistance characteristics.

1.2 Description

The element, JI TF Wall 1100, thickness: 100 mm, stitched on both sides, is fully described below, in support of this classification. The drawings of the test element as it was tested, are enclosed in the annexes 1 and 2 of this classification report.

1.2.1 Composition of the test specimen as tested

The test specimen is a symmetrical non-loadbearing wall consisting of vertically placed sandwich panels. The sandwich panels are fixed to the concrete furnace frame by means of L-profiles. The panels are stitched to each other at both sides.

Outer dimensions of the test specimen:

- height: 3000 mm;
- width: 3000 mm;
- thickness: 100 mm.

1.2.1.1 Supporting structure

1. L-profiles	
Material	Steel
Thickness	0.5 mm
Section dimensions	80 mm x 80 mm
Fixing to the concrete frame	with sealing anchors (reference: HILTI DBZ 6/4.5, material: steel, diameter: 6 mm, length: 37 mm), c/c distance: 300 mm

1.2.1.2 Sandwich panels

2. Sandwich panel	
Manufacturer	Joris Ide NV
Reference	JI TF WALL 1100 100 mm

Thickness	100 mm
Dimensions	1100 mm (w) x 2970 mm (h)
Density	10.8 kg/m ²
Joint system	See annex 3
Joint overlap	- unexposed side: 16 mm - exposed side: 16 mm
Panel orientation	vertical
Composed of:	- Exposed panel skin - Insulation core - Unexposed panel skin
Number	3
Fixing to the L-profiles	with self-drilling screw with bonded washer (brand and type: Joris Ide Fastovis 6 + VG16, material: steel, diameter: 6.3 mm, length: 32 mm), c/c: 300 mm.
Panel to panel stitching at both sides	with self-drilling screw with bonded washer (brand and type: Joris Ide Fastovis 6 + VG16, material: steel, diameter: 6.3 mm, length: 32 mm), c/c: 1000 mm.
3. Unexposed panel skin	
Reference	Linear
Profile depth	2.0 mm (NV)
Material	polyester coated steel
Sheet thickness	0.37 mm (NV)
Coating thickness	15 µm (NV)
Fixing to the core	glue (material: PIR) applied before application of the insulation core

4. Insulation core	
Manufacturer	Joris Ide NV
Reference	Jl51G
Material	Polyisocyanurate foam
Thickness (d _c)	98 mm
Density	39.5 kg/m ³

5. Exposed panel skin	
Reference	Linear
Profile depth	2.0 mm (NV)
Material	polyester coated steel
Sheet Thickness	0.37 mm (NV)
Coating thickness	15 µm (NV)
Fixing to the core	panel skin applied directly to the insulation core

1.2.1.3 Joint sealing

6. Sealant	
Manufacturer	Kingspan
Reference	Safire Intumescent Mastic
Material	flexible water-based intumescent mastic
Quantity	one bead per flange, along the full height of the sandwich panel.
Position	inside of the tongue-and-groove of the flanges, exposed and unexposed side

1.2.1.4 Free edge cap

7. Free edge cap	
Profile type	L-profile
Number	2
Material	steel
Thickness	0.70 mm
Dimensions	80 mm x 81 mm
Fixing	with self-drilling screw with bonded washer (brand and type: Joris Ide Fastovis 6 + VG16, material: steel, diameter: 6.3 mm, length: 160 mm) and sound washer (material: steel, thickness: 0.8 mm, dimensions: Ø 70 mm), c/c: 375 mm on both exposed and unexposed side.
8. Insulation	
Manufacturer	UNIFRAX
Reference	FIBERFRAX Durablanket Z
Material	Zirconia stabilised ceramic fibre

Thickness	25 mm
Density	96 kg/m ³ (NV)
Position	at the free edge under the free edge cap.

1.2.1.5 Insulation

9. Insulation	
Manufacturer	Rockwool
Reference	Rocktect Floor Strip
Material	Stone wool
Initial thickness	10 mm
Width	100 mm
Initial density	144 kg/m ³
Position	at the lower horizontal edge, between the concrete furnace frame and the sandwich panels, covered by the L-profiles

10. Insulation	
Manufacturer	Rockwool
Reference	Rockflex 214
Material	Stone wool
Initial thickness	80 mm / compressed 25 - 35 mm
Initial density	38.8 kg/m ³ (NV)
Position	at the fixed vertical edge and at the fixed top edge, between the concrete furnace frame and the sandwich panels, covered by the L-profiles.

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
WFRGENT nv	22613A	Joris Ide nv	27/03/2023	EN 1364-1:2015
WFRGENT nv	22613B	Joris Ide nv	-	EN 15254-5:2018

Exposure conditions during the fire resistance test:

Temperature/time curve: standard as in EN 1363-1:2020.

Direction of exposure: The test specimen is a symmetrical construction.

No extra load supplementary to the own weight of the non-loadbearing partition wall consisting of vertical sandwich panels was applied during the test.

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

2.2 Test results

Parameters	Results
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	42 minutes
$\Delta T_M = 180^\circ\text{C}$	31 minutes
Integrity – E	
Spontaneous and sustained flaming	52 minutes
Failure with \varnothing 6 mm gap gauge	52 minutes, no failure ⁽¹⁾
Failure with \varnothing 25 mm gap gauge	52 minutes, no failure ⁽¹⁾
Ignition of cotton pad	52 minutes, no failure ⁽²⁾
Radiation – W	
Radiation intensity = 15 kW/m ²	52 minutes, no failure ⁽¹⁾

⁽¹⁾ The test was discontinued after 52 minutes at the request of the sponsor.

⁽²⁾ No failure until the moment of failure of the thermal insulation (I).

3 Classification and field of application

3.1 Reference of classification

This classification has been carried out in accordance with clause 7 of EN 13501-2:2016.

3.2 Classification

The element, type: JI TF Wall 1100, thickness: 100 mm, stitched on both sides, is classified according to the following combinations of performance parameters and classes as appropriate. No other classifications are permitted.

The classifications are valid for both sides of the non-loadbearing partition wall consisting of vertical sandwich panels.

EI 30 span 4 m, **EI 20** span 7.5 m, **EI 15** span 7.5 m

EW 30 span 7.5 m, **EW 20** span 7.5 m, **EW 15** span 7.5 m

E 30 span 7.5 m, **E 20** span 7.5 m, **E 15** span 7.5 m

Explanation:

span x m: the span length = the vertical length of the vertically placed sandwich panels is limited to x m for that particular classification.

3.3 Field of direct application

This classification is valid for the following end use applications according to EN 1364-1:2015.

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 in width of the wall
- b) unlimited decrease in span length/height of the wall of 3 m;
- c) increase in span length/height of the wall up to 4 m up to a classification of 30 minutes, if the expansion allowances are increased pro-rata;
- d) increase in the thickness of the wall (total thickness: ≥ 100 mm);
- e) increase in the thickness of the component materials:
 - thickness L-profile (≥ 0.5 mm);
- f) decrease in linear dimensions of the panels, but not the thickness:
 - span length (≤ 3000 mm);
 - width (≤ 1100 mm);
- g) decrease in distance of fixing centres:
 - of the L profiles to the edges of the surrounding building structure (≤ 300 mm);
 - of the screws fixing the panels to the L-profiles (≤ 300 mm);
 - of the panel-to-panel stitching (≤ 1000 mm);
- h) increase in the number of vertical joints;
- i) the use of surface fittings and fixtures is not permitted;
- j) only vertical joints (of the type tested) are permitted;
- k) the non-loadbearing sandwich panel may be installed in a high density rigid supporting construction which has the same or greater classified fire resistance as the test specimen:
 - density (≥ 2000 kg/m³).

3.4 Field of extended application

The situation with combined variations is always very complex and shall be considered case by case. To be able to combine variations there shall be an overrun of at least 20 % subject to a minimum 10 minutes compared to the classification.

3.4.1 Metal facing: Chemical composition of coating

Unexposed side:

- A change in emissivity of - 10 % for a new coating compared to the tested one is allowed for following classification and lower:
 - EI 30, EW 30, E 30.
- Coatings with higher emissivity values compared to the tested one are allowed.
- If modifications in the coatings on the unexposed side are made compared to the tested one, the reaction to fire classification of the product shall be the same or better than the tested one. Test results are though valid for all colours of the same type of coating.

Exposed side:

- The test results are valid for all coatings.

Limitation: When a change in coating is made the manufacturer of the coated sheet shall provide emissivity properties for the products.

3.4.2 Metal facing: Change from coated to non-coated metal

Unexposed side:

- A change from a coated to a non-coated sheet is not allowed.

Exposed side:

- A change from a coated to a non-coated sheet is allowed.

3.4.3 Metal facing: Sheet thickness

Allowed up to ± 0.2 mm of tested thickness.

3.4.4 Metal facing: Change from one metal to another

The test results are valid for all grades of steel.

3.4.5 Metal facing: Change in sheet geometry

Panels with different metal thicknesses on both sides are regarded as symmetrical if the difference in thickness is max. 0.2 mm.

3.4.6 Metal facing: Changes in profile geometry of facing

Any change in the range 0 mm to 5 mm profiling is allowed if the declared tensile strength value is equal or higher than for the tested panel. The panels are regarded as symmetrical.

3.4.7 Changes in core material: Type

Changes from one core material to another are not allowed.

It is not possible to extend the results from one core material producer to another core material producer.

3.4.8 Changes in core material: Change in composition: Polyisocyanurate (PIR)

The results are valid for the same chemical system and blowing agent.

The test results are valid for $\pm 10\%$ of tested density.

3.4.9 Span length: Decrease/Increase

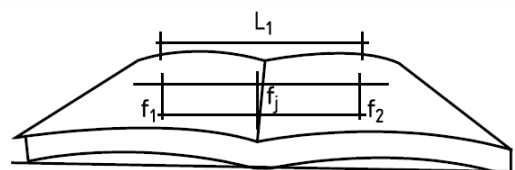
A decrease in span length is allowed.

An increase in span length of up to 7.5 m is allowed for following classification and lower:

- EI 20, EW 30 and E 30.

Calculation of Δf :

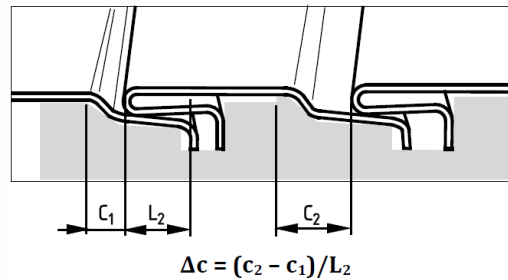
Time (min)	Δf
15	0.0
20	0.0
30	0.0
45	0.1



$$\Delta f = (f_j - 0,5x(f_1 + f_2))/L_1$$

Calculation of Δc :

Time (min)	Δc
15	0.1
20	0.2
30	0.3



To determine the amount of fasteners (n) required to support the extended weight up to 7.5 m the calculation below is used.

Tensile force:

$$F_{t,Ed} = \frac{Lbq}{2} = \frac{7.5\text{m} \times 1.10\text{m} \times 0.3\text{kPa}}{2} = 1.238\text{kN}$$

Shear force:

$$F_{v,Ed} = Lb(q + g) = 7.5\text{m} \times 1.00\text{m} \times (0.3\text{kPa} + 0.106\text{kPa}) = 3.350\text{kN}$$

with:

L = the panel span length (m)

b = the panel width (m)

q = the air pressure (0.3 kPa if nothing is specified) (kPa)

g = the own weight (kPa)

$F_{t,Ed}$ and $F_{v,Ed}$ = the calculated forces acting on the fasteners (kN)

Calculation for the amount of fasteners (n):

$$\frac{F_{t,Ed}}{F_{t,Rd}} + \frac{F_{v,Ed}}{F_{v,Rd}} \leq n k_{y,\theta}$$

$$\frac{1.238\text{kN}}{F_{t,Rd}} + \frac{3.350\text{kN}}{F_{v,Rd}} \leq n k_{y,\theta}$$

with:

$F_{t,Rd}$ and $F_{v,Rd}$ = the design tensile load on the used fastener in practice at normal temperature (kN)

$k_{y,\theta}$ = the decrease on the yield strength of the used steel according to EN 1993-1-2 ($k_{y,\theta} = 1$ for steel temperature up to 400 °C, below 1 for steel temperature above 400 °C)

n = the number of fasteners

Limitation: It has to be noted that extension in span length is only allowed with tested panel orientation.

3.4.10 Variations in orientation

The test results are only valid for the tested orientation.

3.4.11 Panel width: Decrease/Increase

A decrease in panel width is allowed.

An increase in panel width is allowed up to 20 % of the tested width.

3.4.12 Panel thickness: Decrease/Increase

A decrease in panel thickness is not allowed.

An increase in panel thickness is allowed.

3.4.13 Joint Construction: Type

Even small changes in the joint construction can easily affect the integrity of the wall and shall not be allowed with the following exception:

- An increase in the overlap in the metal facing at the joint is allowed if other dimensions remain unchanged.

3.4.14 Joint Construction: Panel to panel stitching decrease/increase

A decrease in amount of stitching is not allowed.

An increase in amount of stitching is allowed.

3.4.15 Joint construction: Sealants

The result is only valid for joints with the same type of sealing materials and shall not be valid for joints without sealants.

3.4.16 Fixing to the surrounding building structure: Decrease/Increase

Minor changes in the boundary conditions and fixing system (for example an increased amount of fasteners, increased diameter of fasteners; but material cannot be changed) are allowed provided that it can be shown that the bearing capacity is not reduced and the risk of collapse is not increased according to calculations as given in paragraph 3.4.9.

3.4.17 Protection of the fixings decrease/increase

An increase in protection ability is allowed.

3.4.18 Length of assembly: Vertical installation

The length of the wall can be freely increased.

3.4.19 Change of support structure

In practice, the panel assembly can be fixed to different types of support structures. The test results shall be valid if the following requirements on the support structure are fulfilled:

- the support structure has at least the same fire resistance classification time for loadbearing capacity (R) as the panel assembly has for insulation and/or integrity;
- the fixing system has the same loadbearing capacity (R) in the support structure as in the frame used in the reference test.

The fixation area can also be protected with thermal insulation. If such thermal insulation is used in the test, thermal insulation with at least same fire performance shall also be used in end use conditions.

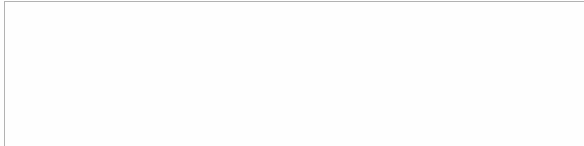
3.4.20 Change of support structure

A test carried out according to the standard heating curve given in EN 1363-1 is also valid for the external fire exposure curve given in EN 1363-2.

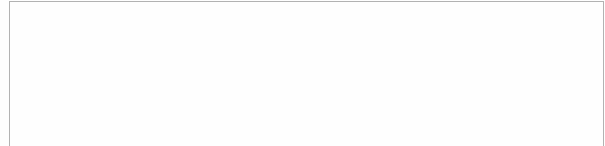
4 Limitations

This classification report does not represent type approval nor certification on the product.

SIGNED



APPROVED



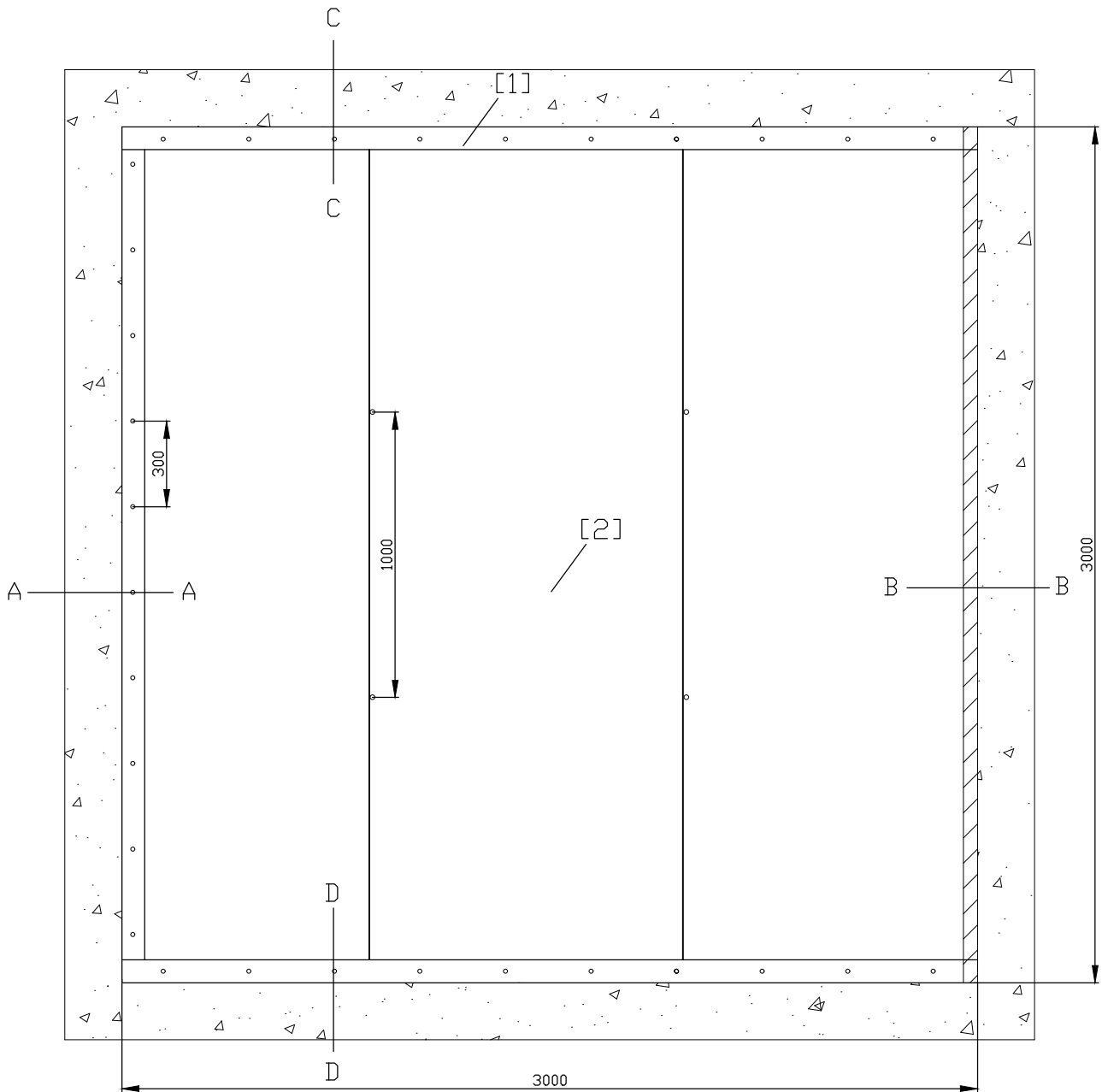
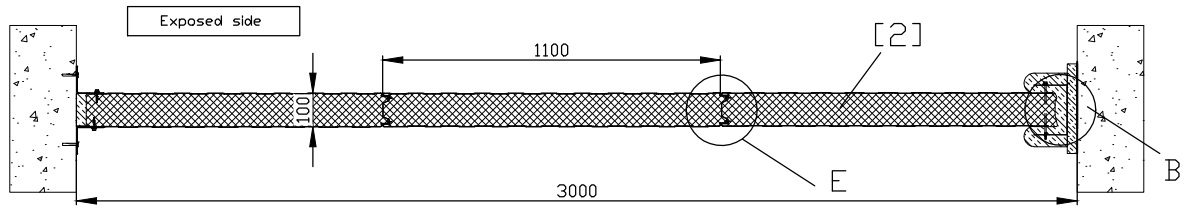
This document is the original version of the classification report and is written in English.

In case of doubt, the most recent version prevails, originally issued in English.

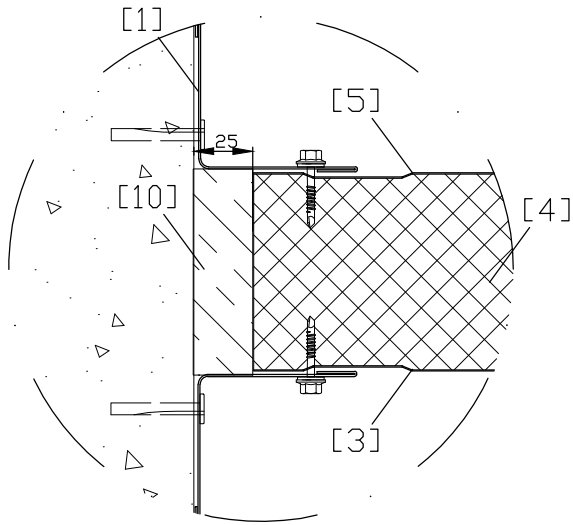
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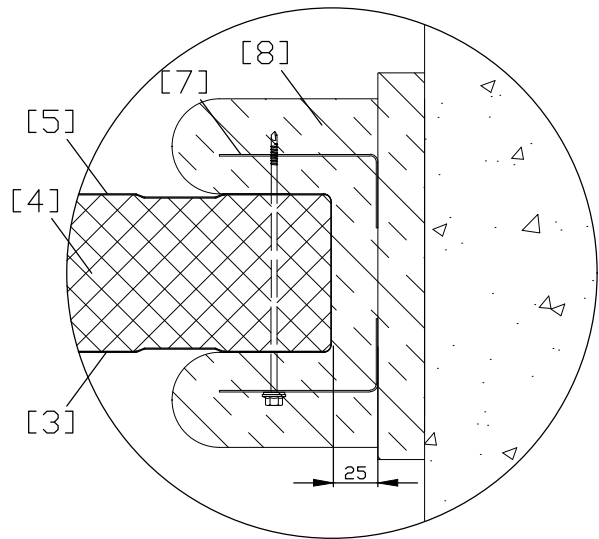
Front view (unexposed side) - dimensions - positions



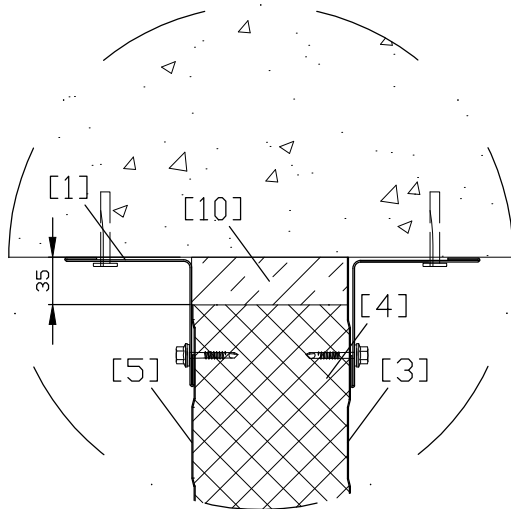
Section details A-A, B-B, C-C, D-D and E - dimensions - positions



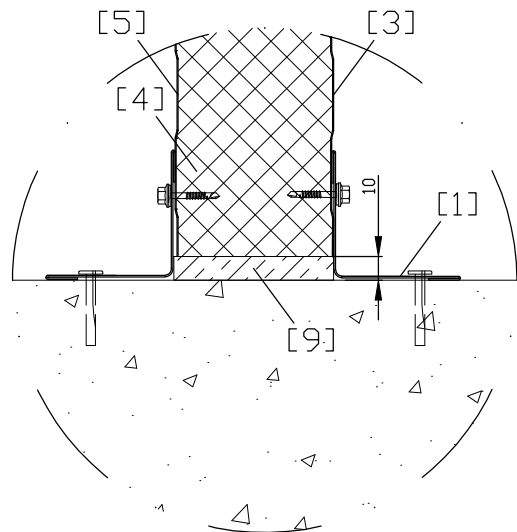
A:A
 FIXED SIDE
 L 80*80*0,5 mm



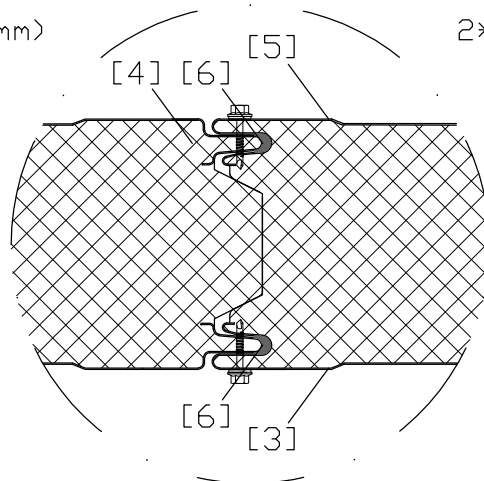
B:B
 FREE SIDE
 2*L 80x80x1 mm



C:C TOP
 2*L (80*80*0,5mm)



D:D BOTTOM
 2*L (80x80x0,5mm)



DETAIL E