TECHNICAL REPORT

Title: **Weathertightness testing of a sample of T.I.DF-2 rainscreen cladding**

Report No: **N950-25-18986**

Technical Report

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Customer: TI Tiles International

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Rev.	Date	Status	Amendment	By	Checked	Approved
01	05/09/2025	Issued	Section 3, description of the test sample	CE	NM	SM

CONTENTS

1 INTRODUCTION

This report describes tests carried out at Initivo Consultancy Limited at the request of TI Tiles International Ltd.

The test sample consisted of a facade manufactured and installed by TI Tiles International Ltd.

The tests were carried out during July 2025 and were to determine the weathertightness of the test sample. The test methods were in accordance with the CWCT Standard Test Methods for building envelopes, 2005, for:

Air permeability.

Watertightness – static pressure, dynamic pressure.

Wind resistance – serviceability & safety.

Impact resistance.

The testing was carried out in accordance with Initivo Consultancy Limited Method Statement C10622-TMS-REV00.

This test report relates only to the actual sample as tested and described herein.

The results are valid only for sample(s) tested and the conditions under which the tests were conducted.

The long-term durability of the façade system was not tested by these test methods.

Initivo Consultancy Limited is accredited to ISO/IEC 17025:2017 by the United Kingdom Accreditation Service as UKAS Testing Laboratory No. 0057 for a schedule of tests. Tests listed above marked with an asterisk are not on our schedule.

Initivo Consultancy Limited is Approved Body No. 1766.

Initivo Consultancy Limited is certified by BSI for:

- ISO 9001:2015 Quality Management System,
- ISO 14001:2015 Environmental Management System,
- ISO 45001:2018 Occupational Health and Safety Management System.

The tests were witnessed wholly or in part by:

Rober Hamilton of TI Tiles International Ltd

2 SUMMARY AND CLASSIFICATION OF TEST RESULTS

The following summarises the results of the tests carried out. For full details refer to Sections 6, 7, 8, and 8.

2.1 SUMMARY OF TEST RESULTS

TABLE 1

Date	Test number	Test description	Result
15 July 2025	1	Air permeability	Pass
15 July 2025	2	Watertightness – static	Pass
29 July 2025	3	Wind resistance – serviceability & safety	Pass
29 July 2025	4	Watertightness – dynamic	Pass
29 July 2025	5	Impact resistance	Pass

2.2 CLASSIFICATION

TABLE 2

Test	Standard	Classification / Declared value
Air permeability	CWCT (2005)	A4 / 600 pascals
Watertightness	CWCT (2005)	R7 / 600 pascals
Wind resistance	CWCT (2005)	2400/-2400 pascals serviceability 3600/-3600 pascals safety
Impact resistance	CWCT TN76 (2012)	See section 9 below

<u>Statement of uncertainty</u>

The above declared results have been taken from the actual measured values without the uncertainty being applied. The measurements have been taken using suitably calibrated equipment that allows measurements to be taken as outlined in the following sections of this report.

3 DESCRIPTION OF TEST SAMPLE

3.1 GENERAL ARRANGEMENT

The sample was as shown in the photo below and the drawings included as an appendix to this report.

The test sample comprised of an array of rainscreen panels of varying sizes set in a landscape style, sizes were as follows:

1200 x 600mm

1200 x 590mm

590 x 600mm

590 x 590mm

The 1200 x 600mm panels from right to left were 6nr Engineered Stone panels 20mm thick c/w fibreglass reinforcement imbedment.

Following this was 6nr Aerolite Stonework 20mm thick comprising of a 5mm thick natural stone veneer, 15mm thick granite backer and fibreglass reinforced backing.

The last column of 1200 x 600mm panels was 6nrAerolite Granite panels 20mm thick c/w fibreglass reinforced backing.

All other panels on the rig of varying sizes are Aerolite Stonework 20mm thick comprising of 5mm thick natural stone veneer, 15mm thick granite backer and fibreglass reinforced backing.

The panels had kerfs cut along horizontal edges to allow engagement with the TI-DF2 carrier rail which were spaces at required module heights as per layout drawing included in appendix.

The TI-DFI subframe comprised of Helping hand brackets fixed to appropriately designed backing structure which comprised of 10mm vertical steel profiles and a plywood facing fixed externally. These were installed as per layout drawing included in appendix.

T/L metal extrusions were affixed to the helping hands using tek screws.

The TI-DF2 rail was fixed to T/L profiles at required module setting out with 2nr tek screws per vertical profile.

The sample was installed by representatives of TI Tiles International Ltd in accordance with their installation method statement TIDF-2 REV00.

The backing wall was provided by Initivo and was designed to provide typical generic performance.

PHOTO 3320

TEST SAMPLE ELEVATION

3.2 CONTROLLED DISMANTLING

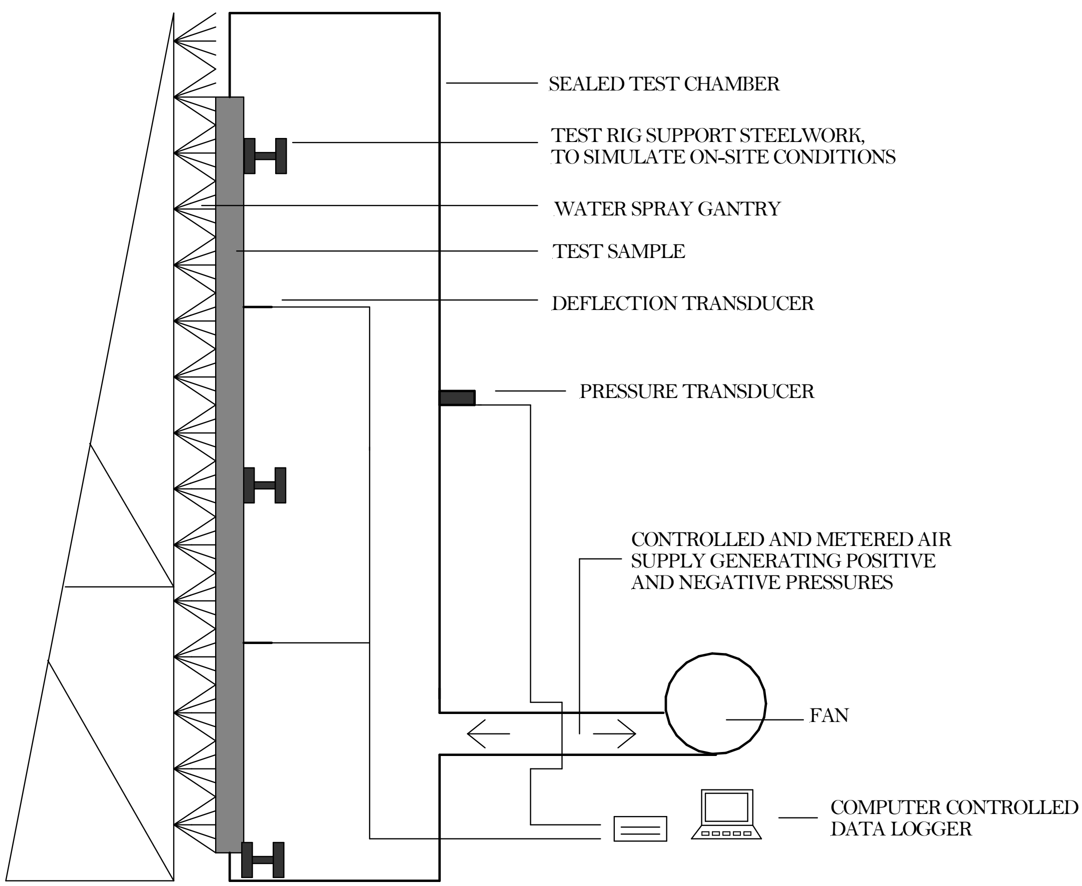
During the dismantling of the sample no water penetration or discrepancies from the drawings were found.

4 TEST RIG GENERAL ARRANGEMENT

The test sample was mounted on a rigid test rig with support steelwork designed to simulate the on-site/project conditions. The test rig comprised a well sealed chamber, fabricated from steel and plywood. A door was provided to allow access to the chamber. Representatives of TI Tiles International Ltd installed the sample on the test rig. See Figure 1.

FIGURE 1

TEST RIG SCHEMATIC ARRANGEMENT



SECTION THROUGH TEST RIG

5 TEST SEQUENCE

The test sequence was as follows:

(1) Air permeability

(2) Watertightness – static

(3) Wind resistance – serviceability & safety

(4) Watertightness – Dynamic

(5) Impact resistance

6 AIR PERMEABILITY TESTING

6.1 INSTRUMENTATION

6.1.1 Pressure

One static pressure tapping was provided to measure the chamber pressure and was located so that the readings were unaffected by the velocity of the air supply into or out of the chamber. A pressure transducer, capable of measuring rapid changes in pressure to within 2% was used to measure the differential pressure across the sample.

6.1.2 Air Flow

A laminar flow element mounted in the air system ductwork was used with a pressure transducer to measure the air flow into the chamber. This device was capable of measuring airflow through the sample to within 2%.

6.1.3 Temperature

Platinum resistance thermometers (PRT) were used to measure air temperatures to within 1°C.

6.1.4 General

Electronic instrument measurements were recorded using a computer controlled data logger.

All measuring instruments and relevant test equipment were calibrated and traceable to national standards.

The air flow readings are reported in terms of flow at standard conditions.

6.2 FAN

The air supply system comprised a variable speed centrifugal fan and associated ducting and control valves to create positive and negative static pressure differentials. The fan provided essentially constant air flow at the fixed pressure for the period required by the tests and was capable of pressurising at a rate of approximately 600 pascals in one second.

6.3 PROCEDURE (CWCT (2005))

Three positive pressure pulses of 660 pascals were applied to prepare the test sample.

The average air permeability was determined by measuring the rate of air flow through the chamber whilst subjecting the sample to positive pressure differentials of 50, 100, 150, 200, 250, 300, 450 and 600 pascals. Each pressure increment was held for at least 10 seconds.

Extraneous leakage through the test chamber and the joints between the chamber and the test sample was determined by sealing the sample with adhesive tape (polythene sheet as mentioned in CWCT clause 5.10.3.1 was not used on this occasion) and measuring the air flow at the pressures given above.

The test was then repeated with the complete sample unsealed; the difference between the readings being the rate of air flow through the whole sample respectively.

The test was then repeated using negative pressure differentials.

6.4 PASS/FAIL CRITERIA

The permissible air flow rate, Q_o, at peak test pressure, p_o, could not exceed 1.5 m^3 per hour per m^2 (or 0.5 m^3 per hour per metre length of fixed joint for BS EN 12152:2023).

At intermediate pressures, p_n, flow rates, Q_n, were calculated using $Q_n = Q_o(p_n/p_o)^{2/3}$

The area of the sample was 37.8 m^2.

At peak test pressure the positive difference in air leakage between the first and second air tests shall not exceed by more than 0.3 m^3/hour/m^2 (or 0.1 m^3/hour/m length of fixed joint for BS EN 13116:2001/2024).

6.5 RESULTS

Test 1 Date: 15 July 2025: Time 06:28

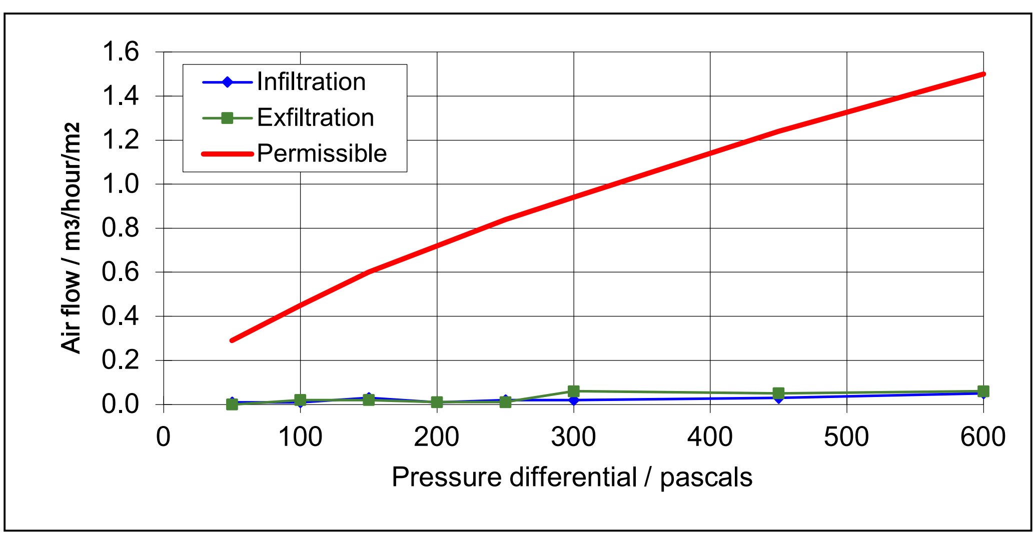
TABLE 3

Pressure differential (pascals)	Measured air flow through sample (m^3/hour/m^2)	
	Infiltration	Exfiltration
50	0.01	0.00
100	0.01	-0.02
150	0.03	-0.02
200	0.01	-0.01
250	0.02	-0.01
300	0.02	-0.06
450	0.03	-0.05
600	0.05	-0.06
Temperatures	Ambient = 15°C Chamber = 16°C	Ambient = 16°C Chamber = 17°C

The results are shown graphically in Figure 2.

FIGURE 2

Fixed panels – air permeability test results



7 WATERTIGHTNESS TESTING

7.1 INSTRUMENTATION

7.1.1 Pressure

One static pressure tapping was provided to measure the chamber pressure and was located so that the readings were unaffected by the velocity of the air supply into or out of the chamber.

A pressure transducer, capable of measuring rapid changes in pressure to within 2% was used to measure the differential pressure across the sample.

7.1.2 Water Flow

An in-line water flow meter was used to measure water supplied to the spray gantry to within 5%.

7.1.3 Temperature

Platinum resistance thermometers (PRT) were used to measure air and water temperatures to within 2°C.

7.1.4 General

Electronic instrument measurements were scanned by a computer controlled data logger, which also processed and stored the results.

All measuring instruments and relevant test equipment were calibrated and traceable to national standards.

7.2 FAN

7.2.1 Static Pressure Testing

The air supply system comprised a variable speed centrifugal fan and associated ducting and control valves to create positive and negative static pressure differentials. The fan provided essentially constant air flow at the fixed pressure for the period required by the tests and was capable of pressurising at a rate of approximately 600 pascals in one second.

7.2.2 Dynamic Pressure Testing

A wind generator was mounted adjacent to the external face of the sample and used to create positive pressure differentials during dynamic testing. The wind generator comprised a piston type aero-engine fitted with 4 m diameter contra-rotating propellers.

7.3 WATER SPRAY

7.3.1 Spray Gantry

The water spray system comprised nozzles spaced on a uniform grid not more than 700 mm apart and mounted approximately 400 mm from the face of the sample. The nozzles provided a full-cone pattern with a spray angle between 90° and 120°. The spray system delivered water uniformly against the exterior surface of the sample.

7.3.2 Hose test

The water was applied using a brass nozzle that produced a full-cone of water droplets with a nominal spray angle of 30°. The nozzle was used with a ¾" hose and provided with a control valve and a pressure gauge between the valve and nozzle.

7.4 PROCEDURE

7.4.1 Watertightness – static (CWCT (2005))

Three positive pressure pulses of 660 pascals were applied to prepare the test sample.

Water was sprayed onto the sample using the method described above at a rate of at least 3.4 litres/m^2/minute for 15 minutes at zero pressure differential. With the water spray continuing the pressure differential across the sample was then increased in increments of: 50, 100, 150, 200, 300, 450 and 600 pascals, each held for 5 minutes.

Throughout the test the interior face of the sample was examined for water penetration.

7.4.2 Watertightness – dynamic (CWCT (2005))

Water was sprayed onto the sample using the method described above at a flow rate of at least 3.4 litres/m^2/minute.

The aero-engine was used to subject the sample to wind of sufficient velocity to produce average deflections in the principle framing members equal to those produced by a static pressure differential of 600 pascals. These conditions were maintained for 15 minutes. Throughout the test the inside of the sample was examined for water penetration.

7.5 PASS/FAIL CRITERIA

There shall be no water penetration to the internal face of the sample throughout testing. At the completion of the test there shall be no standing water in locations intended to remain dry.

7.6 RESULTS

Test 2 (Static pressure) Date: 15 July 2025 Time: 10:00

No water penetration was observed throughout the test.

Chamber temperature = 23 °C
Ambient temperature = 23 °C
Water temperature = 11 °C

Test 6 (Dynamic pressure) Date: 29 July 2025 Time: 13:50

No water penetration was observed throughout the test.

Chamber temperature = 17 °C
Ambient temperature = 16 °C
Water temperature = 11 °C

PHOTO 134920

DYNAMIC AERO ENGINE

8 WIND RESISTANCE TESTING

8.1 INSTRUMENTATION

8.1.1 Pressure

One static pressure tapping was provided to measure the chamber pressure and was located so that the readings were unaffected by the velocity of the air supply into or out of the chamber.

A pressure transducer, capable of measuring rapid changes in pressure to within 2% was used to measure the differential pressure across the sample.

8.1.2 Deflection

Displacement transducers were used to measure the deflection of principle framing members to an accuracy of 0.1 mm. The gauges were set normal to the sample framework at mid-span and as near to the supports of the members as possible and installed in such a way that the measurements were not influenced by the application of pressure or other loading to the sample. The gauges were located at the positions shown in Figure 3.

8.1.3 Temperature

Platinum resistance thermometers (PRT) were used to measure air temperatures to within 2°C.

8.1.4 General

Electronic instrument measurements were scanned by a computer controlled data logger, which also processed and stored the results.

All measuring instruments and relevant test equipment were calibrated and traceable to national standards.

8.2 FAN

The air supply system comprised a variable speed centrifugal fan and associated ducting and control valves to create positive and negative static pressure differentials. The fan provided essentially constant air flow at the fixed pressure for the period required by the tests and was capable of pressurising at a rate of approximately 600 pascals in one second.

8.3 PROCEDURE

8.3.1 Wind Resistance – serviceability (CWCT (2005))

Three positive pressure differential pulses of 1200 pascals were applied to prepare the sample. The displacement transducers were then zeroed.

The sample was subjected to one positive pressure differential pulse from 0 to **2400** pascals to 0. The pressure was increased in four equal increments each maintained for 15 ±5 seconds. Displacement readings were taken at each increment. Residual deformations were measured on the pressure returning to zero.

Any damage or functional defects were recorded.

The test was then repeated using a negative pressure of -**2400** pascals.

8.3.2 Wind Resistance – safety (CWCT (2005))

Three positive pressure differential pulses of 1200 pascals were applied to prepare the sample. The displacement transducers were then zeroed.

The sample was subjected to one positive pressure differential pulse from 0 to **3600** pascals to 0. The pressure was increased as rapidly as possible but not in less than 1 second and maintained for 15 ±5 seconds. Displacement readings were taken at peak pressure. Residual deformations were measured on the pressure returning to zero.

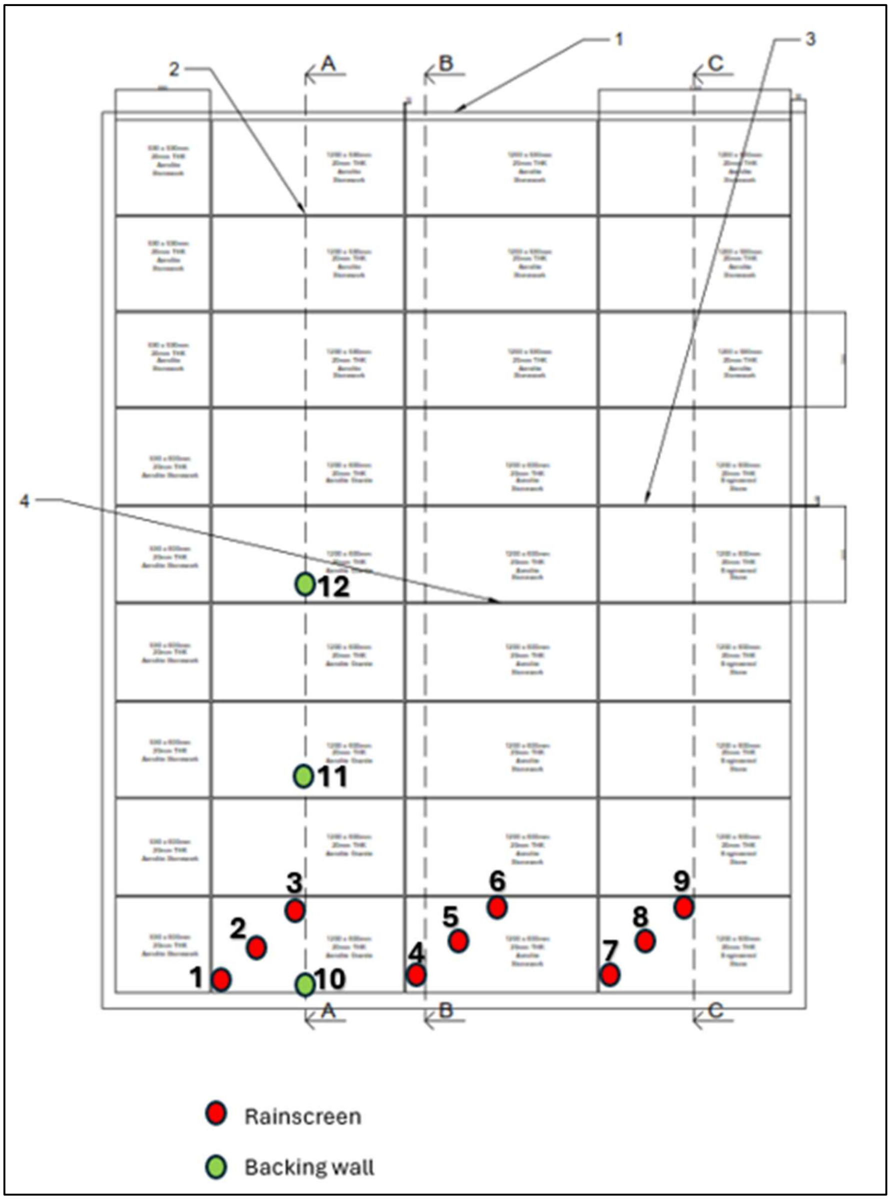
Any damage or functional defects were recorded.

The test was then repeated using a negative pressure of –**3600** pascals.

FIGURE 3

DEFLECTION GAUGE LOCATIONS

External View



8.4 PASS/FAIL CRITERIA

8.4.1 Calculation of permissible deflection

TABLE 4

Serviceability Test

Gauge number	Member	Span (L) (mm)	Permissible deflection (mm)	Permissible residual deformation
2	Vertical	820	L/360 = 2.3	BS EN 13116:2024 5% of measured deflection CWCT: 1 mm
5	Vertical	820	L/360 = 2.3	
8	Vertical	820	L/360 = 2.3	
11	Backing wall	3300	L/360 = 8.0	

TABLE 5

Safety Test

Gauge number	Member	Span (L) (mm)	Permissible deflection (mm)	Permissible residual deformation
2	Vertical	820	n/a	L/500 = 1.6 mm
5	Vertical	820	n/a	L/500 = 1.6 mm
8	Vertical	820	n/a	L/500 = 1.6 mm
11	Backing wall	3300	n/a	L/500 = 5.8 mm

8.5 RESULTS

Test 3 (serviceability) Date: 29 July 2025 Time: 10:04

The deflections measured during the wind resistance test, at the positions shown in Figure 3, are shown in Tables 8 and 9.

No damage to the test sample was observed.

Ambient temperature = 18 °C
Chamber temperature = 19 °C

TABLE 6

Serviceability Test Summary

Gauge number	Member	Pressure differential (Pa)	Measured deflection (mm)	Residual deformation (mm)
2	Vertical	2417 -2486	0.0 -0.2	0.0 0.0
5	Vertical	2417 -2486	1.2 -1.0	0.0 -0.1
8	Vertical	2417 -2486	0.6 -0.3	0.0 0.0
11	Backing wall	2417 -2486	9.2 -10.5	0.2 -0.2

Test 8 (safety) Date: 29 July 2025 Time 10:53

The deflections measured during the structural safety test, at the positions shown in Figure 4, are shown in Table 10.

No damage to the sample was observed.

Ambient temperature = 19 °C
Chamber temperature = 20 °C

TABLE 7

Safety Test summary

Gauge number	Member	Pressure differential (Pa)	Measured deflection (mm)	Residual deformation (mm)
2	Vertical	3602 -3604	0.0 -0.2	0.0 0.0
5	Vertical	3602 -3604	2.4 -4.1	0.1 -0.7
8	Vertical	3602 -3604	0.8 -0.4	0.0 0.0
11	Backing wall	3602 -3604	15.7 -15.1	0.4 -0.4

TABLE 8

WIND RESISTANCE – POSITIVE **SERVICEABILITY** TEST RESULTS

Position	Pressure (pascals) / Deflection (mm)				
	604	**1188**	**1818**	**2417**	**Residual**
1	0.6	1.2	1.9	2.6	0.1
2	1.4	2.7	4.3	5.8	0.2
3	2.3	4.3	6.8	9.2	0.3
4	0.7	0.7	0.6	1.0	0.1
5	1.7	3.2	4.9	6.6	0.2
6	2.7	4.8	7.3	9.9	0.3
7	0.7	1.3	2.3	3.3	0.3
8	1.8	3.1	4.8	6.4	0.3
9	2.7	4.4	6.4	8.4	0.3
10	0.1	0.2	0.4	0.5	0.0
11	2.4	4.7	7.4	10.1	0.3
12	0.1	0.1	0.1	0.2	0.0
2 *	0.0	0.0	0.0	0.0	0.0
5 *	0.0	0.4	0.9	1.2	0.0
8 *	0.1	0.3	0.5	0.6	0.0
11 *	2.3	4.5	7.2	9.8	0.2

* Mid-span reading adjusted between end support readings

TABLE 9

WIND RESISTANCE – NEGATIVE **SERVICEABILITY** TEST RESULTS

Position	Pressure (pascals) / Deflection (mm)				
	-620	**-1215**	**-1828**	**-2486**	**Residual**
1	-0.8	-1.9	-3.3	-4.8	-0.4
2	-2.0	-4.1	-6.5	-9.3	-0.4
3	-3.1	-6.0	-9.3	-13.2	-0.5
4	-0.1	-0.4	-3.7	-3.8	0.0
5	-2.1	-4.3	-6.8	-9.9	-0.4
6	-3.3	-6.3	-9.8	-13.9	-0.4
7	-1.0	-1.9	-3.3	-5.1	0.5
8	-1.7	-3.5	-5.7	-8.5	-0.5
9	-2.4	-4.8	-7.7	-11.3	-0.4
10	-0.1	-0.2	-0.4	-0.6	-0.0
11	-2.5	-4.9	-7.8	-10.9	-0.2
12	0.0	-0.1	-0.2	-0.2	0.0
2 *	-0.1	-0.1	-0.2	-0.2	0.0
5 *	-0.4	-0.9	0.0	-1.0	-0.1
8 *	0.0	-0.1	-0.2	-0.3	0.0
11 *	-2.4	-4.8	-7.5	-10.5	-0.2

* Mid-span reading adjusted between end support readings

TABLE 10

WIND RESISTANCE – **SAFETY** TEST RESULTS

Position	**Pressure (pascals) / Deflection (mm)**			
	3602	**Residual**	**-3604**	**Residual**
1	4.1	0.3	-7.0	-0.9
2	9.2	0.4	-13.3	-1.0
3	14.3	0.6	-19.1	-1.2
4	0.5	0.1	-0.8	-0.3
5	10.3	0.5	-14.7	-1.3
6	15.3	0.6	-20.4	-1.3
7	5.4	0.7	-7.3	-0.9
8	10.0	0.6	-12.6	-1.0
9	12.9	0.6	-17.0	-1.2
10	0.7	0.0	-0.8	0.0
11	16.3	0.5	-15.6	-0.4
12	0.3	0.0	-0.6	0.0
2 *	0.0	0.0	-0.2	0.0
5 *	2.4	0.1	-4.1	-0.7
8 *	0.8	0.0	-0.4	0.0
11 *	15.7	0.4	-15.1	-0.4

* Mid-span reading adjusted between end support readings

9 IMPACT TESTING

9.1 IMPACTOR

9.1.1 Soft body (CWCT TN76 (2012))

The soft body impactor comprised a canvas spherical/conical bag 400 mm in diameter filled with 3 mm diameter glass spheres with a total mass of 50 kg suspended from a cord at least 3 m long.

9.1.2 Hard body (CWCT TN76 (2012))

The hard body impactor was a solid steel ball of 50 mm or 62.5 mm diameter and approximate mass of 0.5 kg or 1.0 kg.

9.2 PROCEDURE

9.2.1 Soft body (CWCT TN76 (2012))

The impactor almost touched the face of the sample when at rest. It was swung in a pendular movement to hit the sample normal to its face. The test was performed at the locations shown in Figure 4. The impact energies were 120 J for serviceability and 350 J and 500 J for safety.

9.2.2 Hard body (CWCT TN76 (2012))

The impactor almost touched the face of the sample when at rest. It was swung in a pendular movement to hit the sample normal to its face. The test was performed at the locations shown in Figure 4. The impact energies were 3 J, 6 J and 10 J.

9.3 PASS/FAIL CRITERIA

9.3.1 CWCT TN76 (2012)

TABLE 11

Classes for serviceability performance

Class	Definition	Explanation/Examples
1	No damage.	No damage visible from 1 m, and any damage visible from closer than 1 m unlikely to lead to significant deterioration.
2	Surface damage of an aesthetic nature which is unlikely to require remedial action.	Dents or distortion of panels not visible from more than 5 m (note visibility of damage will depend on surface finish and lighting conditions. Damage will generally be more visible on reflective surfaces), and Any damage visible from closer than 5 m unlikely to lead to significant deterioration.
3	Damage that may require remedial action or replacement of components to maintain appearance or long-term performance but does not require immediate action.	Dents or distortion of panels visible from more than 5 m, or Spalling of edges of panels of brittle materials, or Damage to finishes that may lead to deterioration of the substrate.

4	Damage requiring immediate action to maintain appearance or performance. Remedial action may include replacement of a panel but does not require dismantling or replacement of supporting structure.	Significant cracks in brittle materials, e.g., cracks that may lead to parts of tile falling away subsequent to test, or Fracture of panels causing significant amounts of material to fall away during test.
5	Damage requiring more extensive replacement than 4.	Buckling of support rails.

TABLE 12

Classes for safety performance

Class	**Explanation/examples**
Negligible risk	No material dislodged during test, and No damage likely to lead to materials falling subsequent to test, and No sharp edges produced that would be likely to cause severe injury to a person during impact, and Cladding not penetrated by impactor.
Low risk	Maximum mass of falling particle 50 g, and Maximum mass of particle that may fall subsequent to impact 50 g, and No sharp edges produced that would be likely to cause severe injury during impact.
Moderate risk	Maximum mass of falling particle less than 500 g, and Maximum mass of particle that may fall subsequent to impact less than 500 g, and Cladding not penetrated by impact, and No sharp edges produced that would be likely to cause severe injury during impact.
High risk	Maximum mass of falling particle greater than 500 g, or Cladding penetrated by impact, or Sharp edges produced that would be likely to cause severe injury during impact.

9.4 RESULTS

Test 9 Date: 29 July 2025 Time: 14:30

Ambient temperature = 18 °C

FIGURE 4

IMPACT TEST LOCATIONS

External View

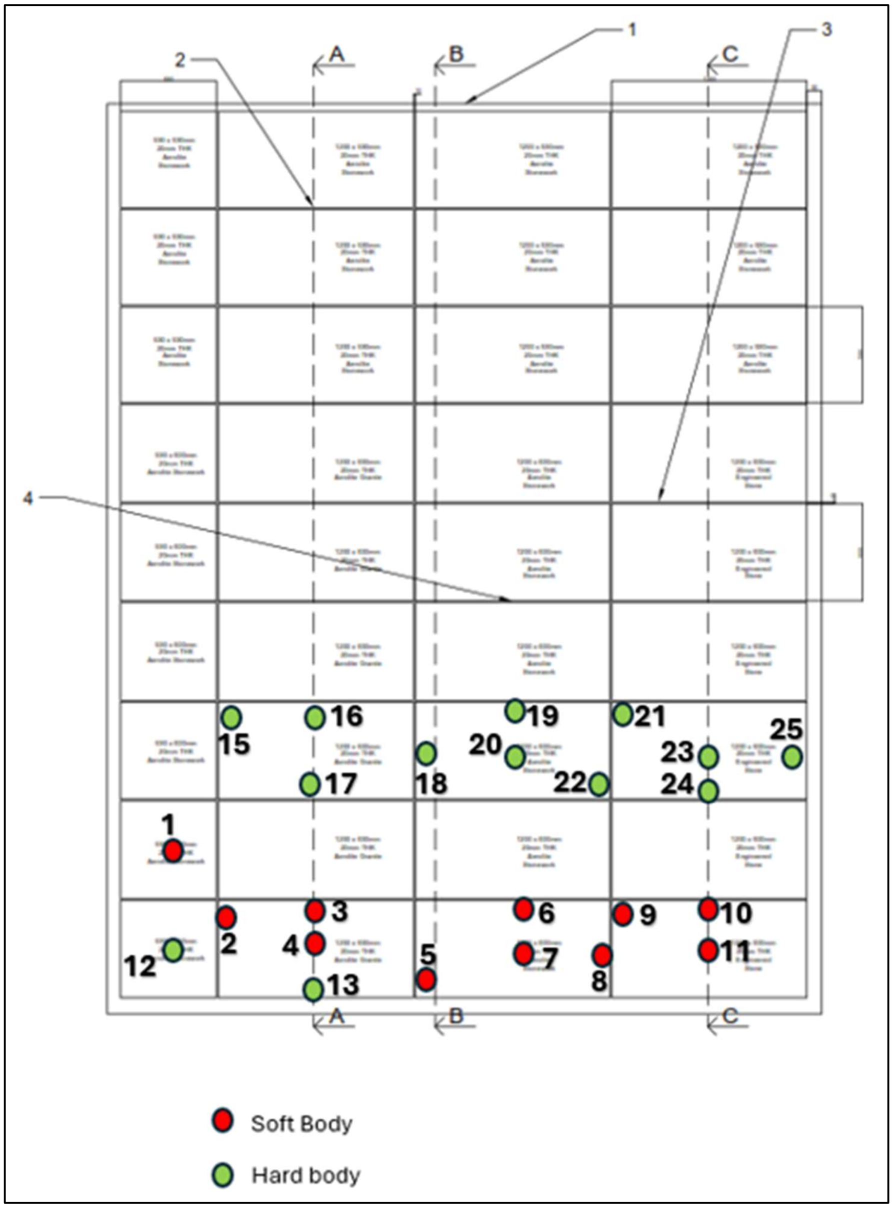


TABLE 13

SOFT BODY IMPACT TEST RESULTS

Location	Impact energy (J)	Observations	Classification
1	120 x 3 350 500	No damage observed No damage observed No damage observed	Class 1 Negligible risk Negligible risk
2	120 x 3 350 500	No damage observed No damage observed small chip 4g fragment	Class 1 Negligible risk Low risk
3	120 x 3 350 500	No damage observed No damage observed No damage observed	Class 1 Negligible risk Negligible risk
4	120 x 3 350 500	No damage observed No damage observed No damage observed	Class 1 Negligible risk Negligible risk
5	120 x 3 350 500	Smal chip 20g fragment No damage observed No damage observed	Class 4 Low risk Low risk
6	120 x 3 350 500	Smal chip 20g fragment No damage observed No damage observed	Class 4 Low risk Low risk
7	120 x 3 350 500	No damage observed No damage observed No damage observed	Class 1 Negligible risk Negligible risk
8	120 x 3 350 500	No damage observed No damage observed No damage observed	Class 1 Negligible risk Negligible risk
9	120 x 3 350 500	Smal chip 20g fragment No damage observed No damage observed	Class 4 Low risk Low risk
10	120 x 3 350 500	Tile cracked down the middle No damage observed No damage observed	Class 4 Low risk Low risk
11	120 x 3 350 500	No damage observed No damage observed No damage observed	Class 1 Negligible risk Negligible risk
12	120 x 3 350 500	No damage observed No damage observed No damage observed	Class 1 Negligible risk Negligible risk

PHOTO 15149

SOFT BODY IMPACT LOCATION 2

PHOTO 151908

SOFT BODY IMPACT

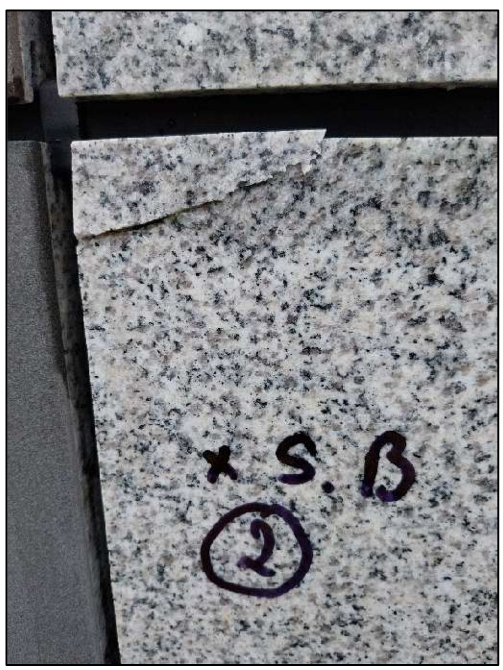


PHOTO 152614

SOFT BODY IMPACT LOCATION 5

PHOTO 152622

SOFT BODY IMPACT LOCATION 5

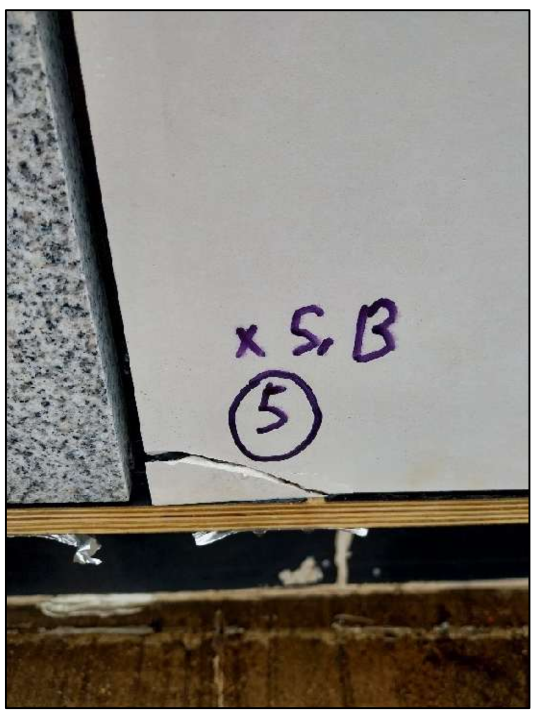


PHOTO 152211

SOFT BODY IMPACT LOCATION 6

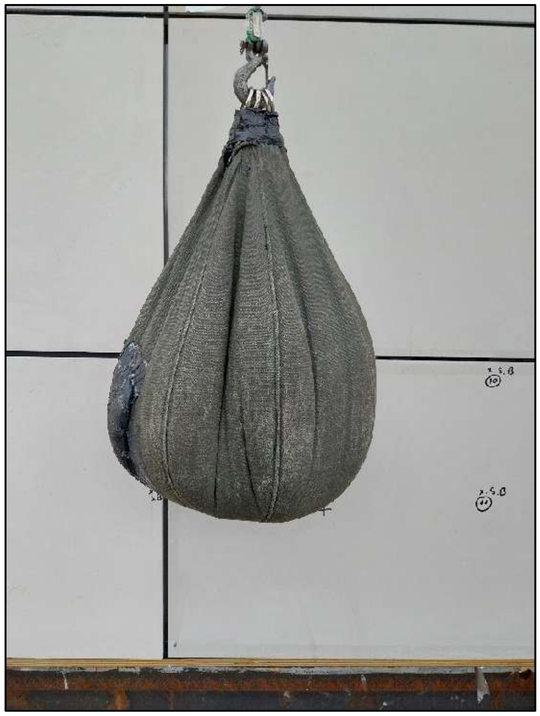


PHOTO 153046

SOFT BODY IMPACT LOCATION 6

PHOTO 153534

SOFT BODY IMPACT LOCATION 6

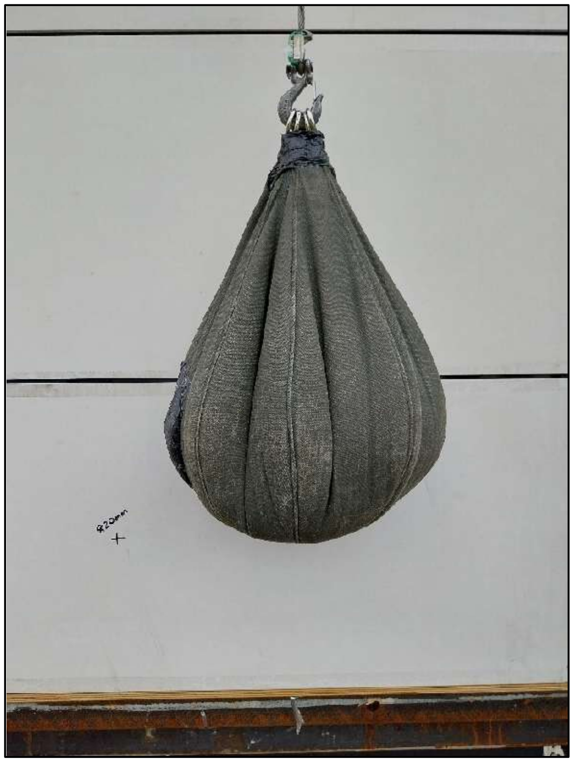


PHOTO 153744

SOFT BODY IMPACT LOCATION 6

TABLE 14

HARD BODY IMPACT TEST RESULTS

Location	Impact energy (J)	Observations	Classification
1	3 6 10	Slight mark Slight mark Slight mark	Class 2 Negligible risk Class 2 Negligible risk Class 2 Negligible risk
2	3 6 10	No damage observed No damage observed No damage observed	Class 1 Negligible risk Class 1 Negligible risk Class 1 Negligible risk
3	3 6 10	No damage observed No damage observed No damage observed	Class 1 Negligible risk Class 1 Negligible risk Class 1 Negligible risk
4	3 6 10	No damage observed No damage observed No damage observed	Class 1 Negligible risk Class 1 Negligible risk Class 1 Negligible risk
5	3 6 10	No damage observed No damage observed No damage observed	Class 1 Negligible risk Class 1 Negligible risk Class 1 Negligible risk
6	3 6 10	No damage observed Small indent small chip	Class 1 Negligible risk Class 2 Negligible risk Class 3 Low risk
7	3 6 10	No damage observed No damage observed Small indent	Class 1 Negligible risk Class 1 Negligible risk Class 2 Negligible risk
8	3 6 10	Small indent Small indent Small indent	Class 2 Negligible risk Class 2 Negligible risk Class 2 Negligible risk
9	3 6 10	Crack to tile Crack to tile Large fragment	Class 2 Moderate risk Class 2 High risk Class 2 High risk
10	3 6 10	Small indent Small indent Small indent	Class 2 Negligible risk Class 2 Negligible risk Class 2 Negligible risk
11	3 6 10	Small indent Small indent Crack to tile	Class 2 Negligible risk Class 2 Negligible risk Class 3 Low risk
12	3 6 10	Small indent Small indent Crack to tile	Class 2 Negligible risk Class 2 Negligible risk Class 3 Low risk
13	3 6	Crack to tile Crack to tile	Class 1 Negligible risk

PHOTO 154438

HARD BODY IMPACT LOCATION 1

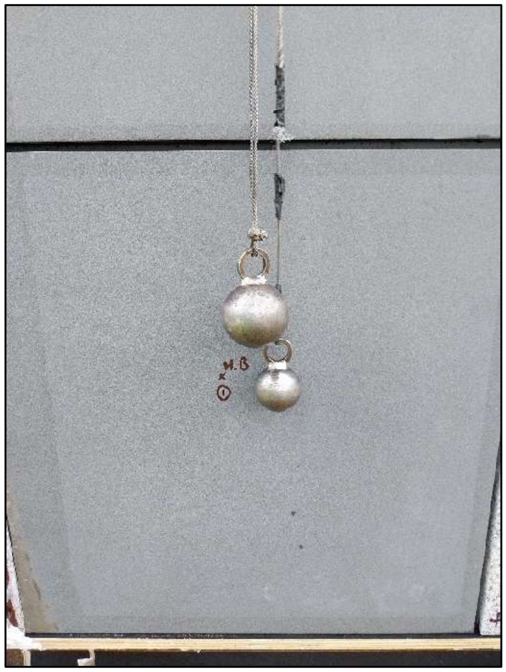


PHOTO 154729

HARD BODY IMPACT LOCATION 1

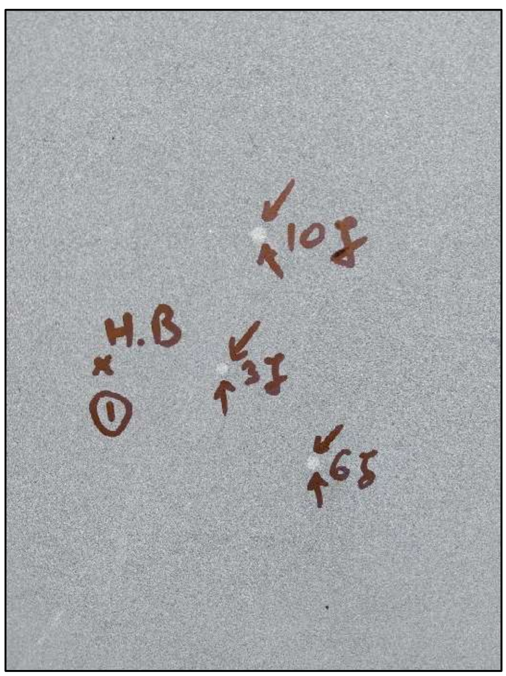


PHOTO 154831

HARD BODY IMPACT LOCATION 2

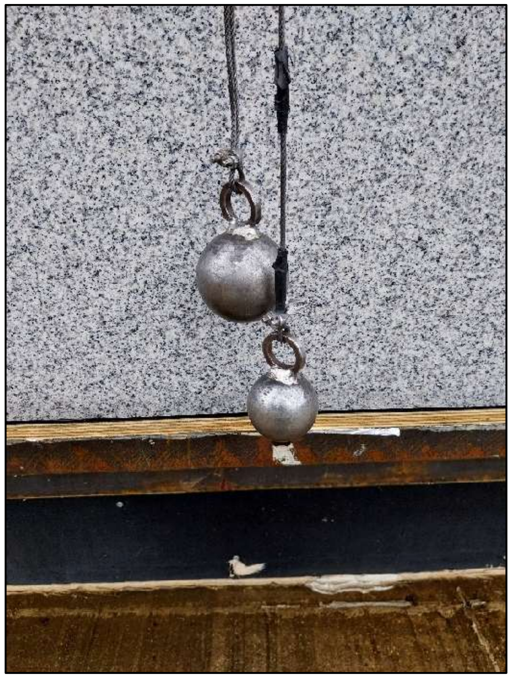


PHOTO 155152

HARD BODY IMPACT LOCATION 2

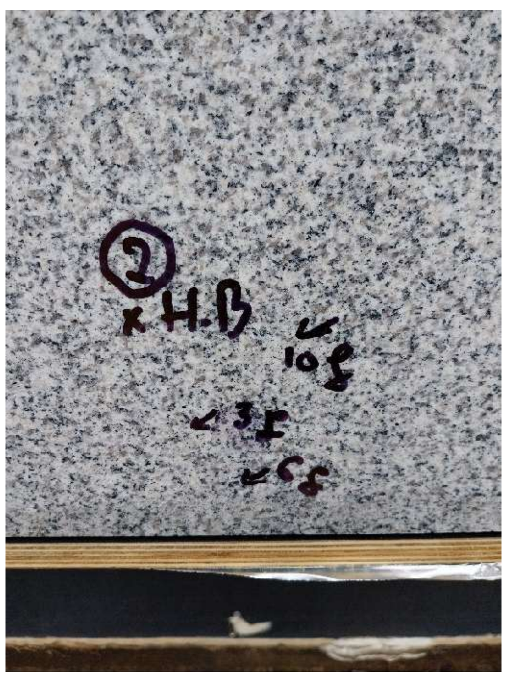


PHOTO 160752

HARD BODY IMPACT LOCATION 3

PHOTO 160756

HARD BODY IMPACT LOCATION 4

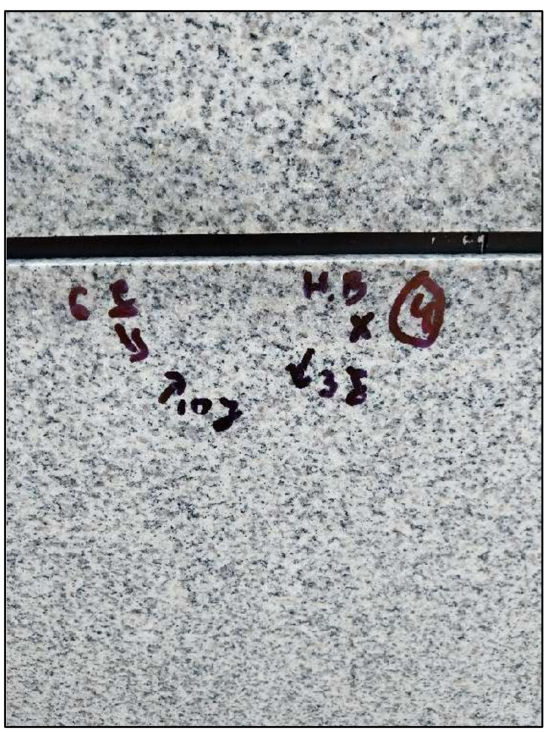


PHOTO 160907

HARD BODY IMPACT LOCATION 5

PHOTO 161458

HARD BODY IMPACT LOCATION 6

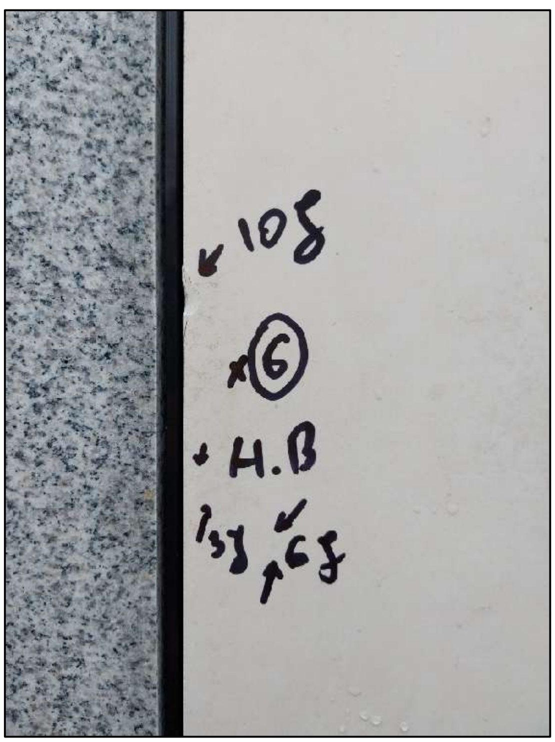


PHOTO 161928

HARD BODY IMPACT LOCATION 7

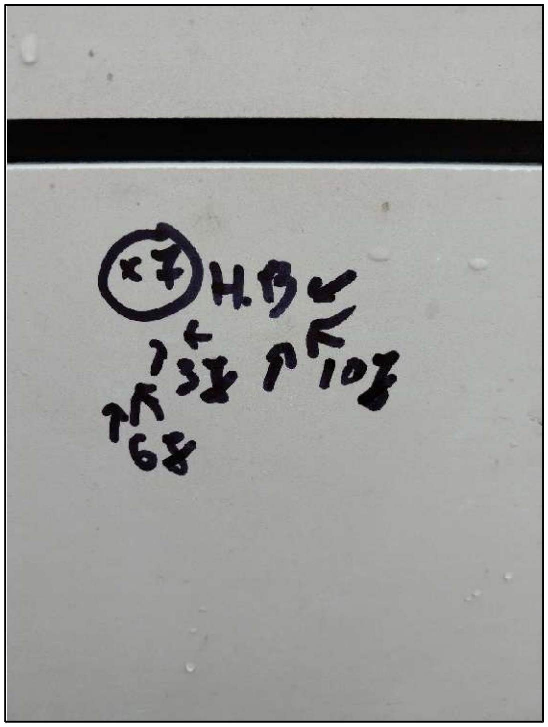


PHOTO 162213

HARD BODY IMPACT LOCATION 7

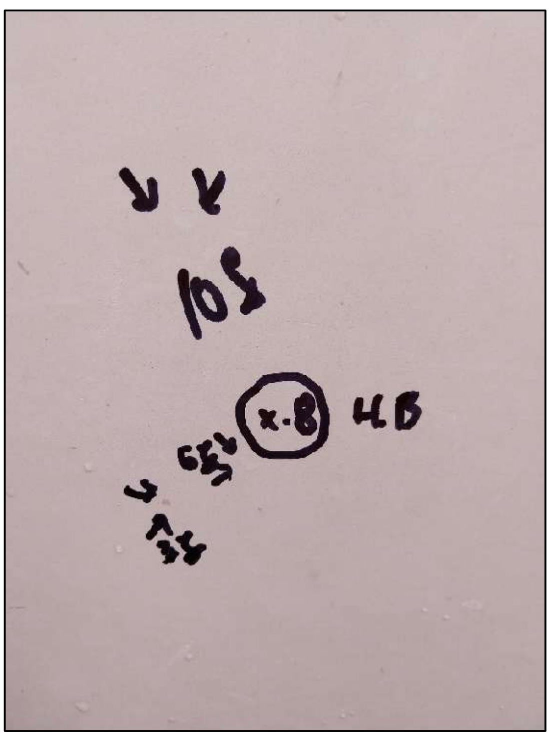


PHOTO 162718

HARD BODY IMPACT LOCATION 9

PHOTO 162549

HARD BODY IMPACT LOCATION 10

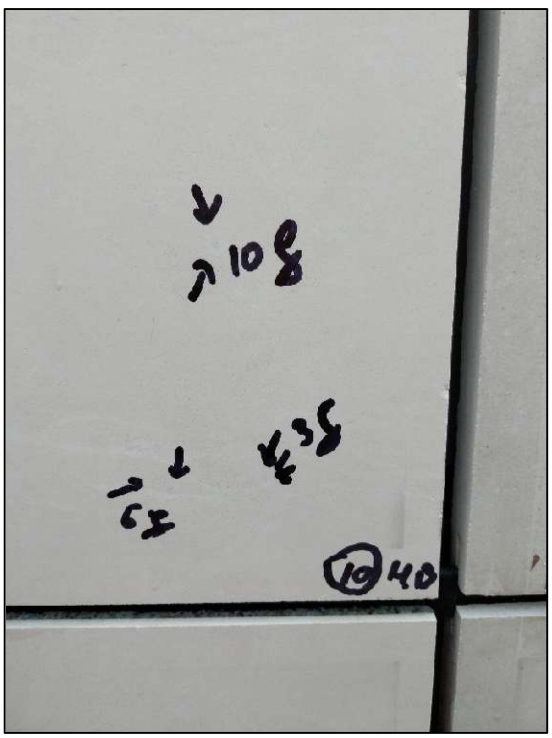


PHOTO 163751

HARD BODY IMPACT LOCATION 11

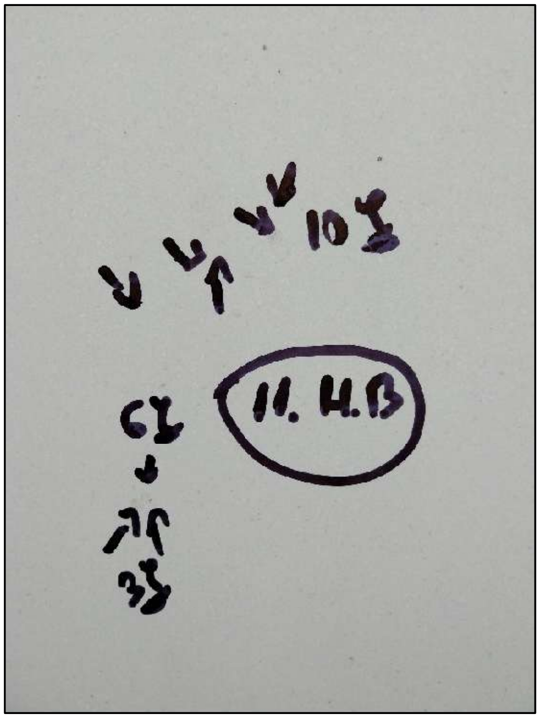


PHOTO 164153

HARD BODY IMPACT LOCATION 12

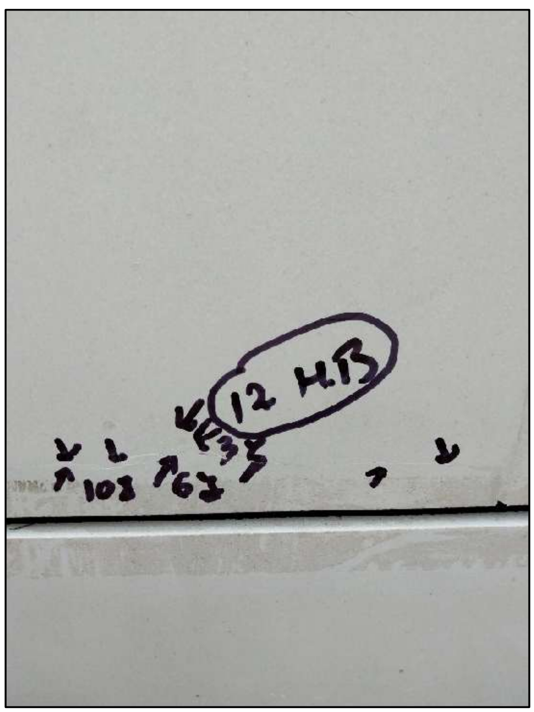
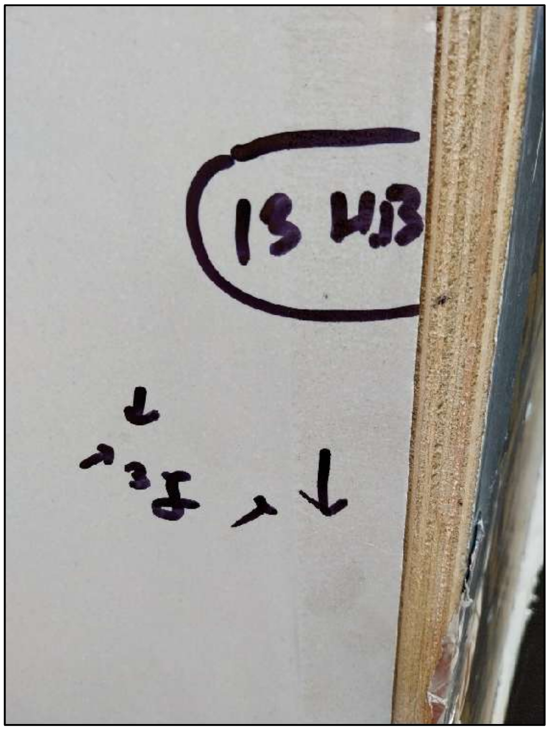


PHOTO 164350

HARD BODY IMPACT LOCATION 13

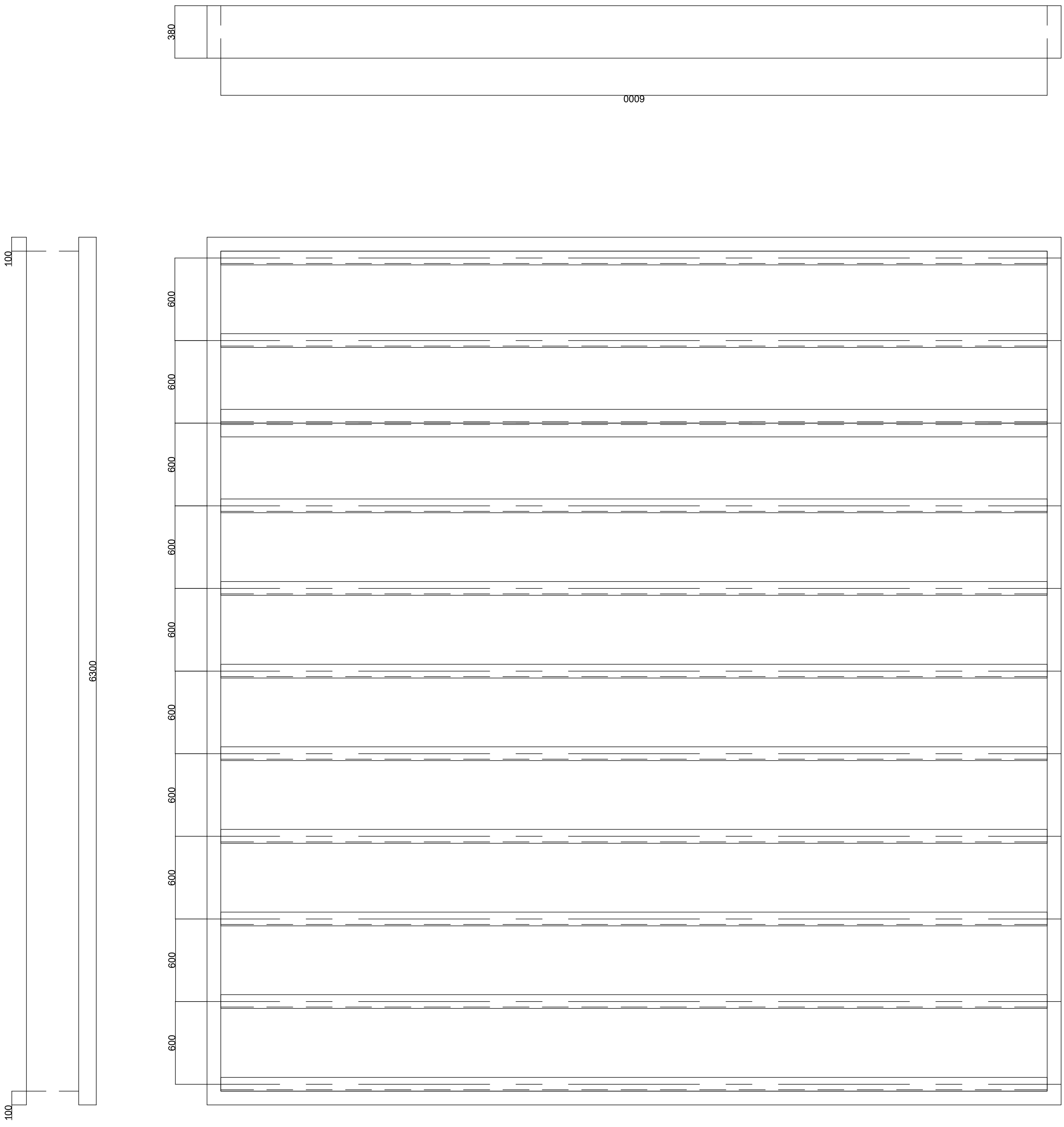


10 APPENDIX A – DRAWINGS

The following 12 unnumbered pages are copies of TI Tiles International Ltd drawings for the test sample.

END OF REPORT

ROTATE TO READ



Vinci Steel Layout For Test Rig (6.3m x 6.2m):
100mm wide vertical studs at 600mm centres -
4nr 380x100x54mm PFC framing the rig.

Vinci DWG - *"Rain Screen Test Rig Drawing (Rig 7)"*

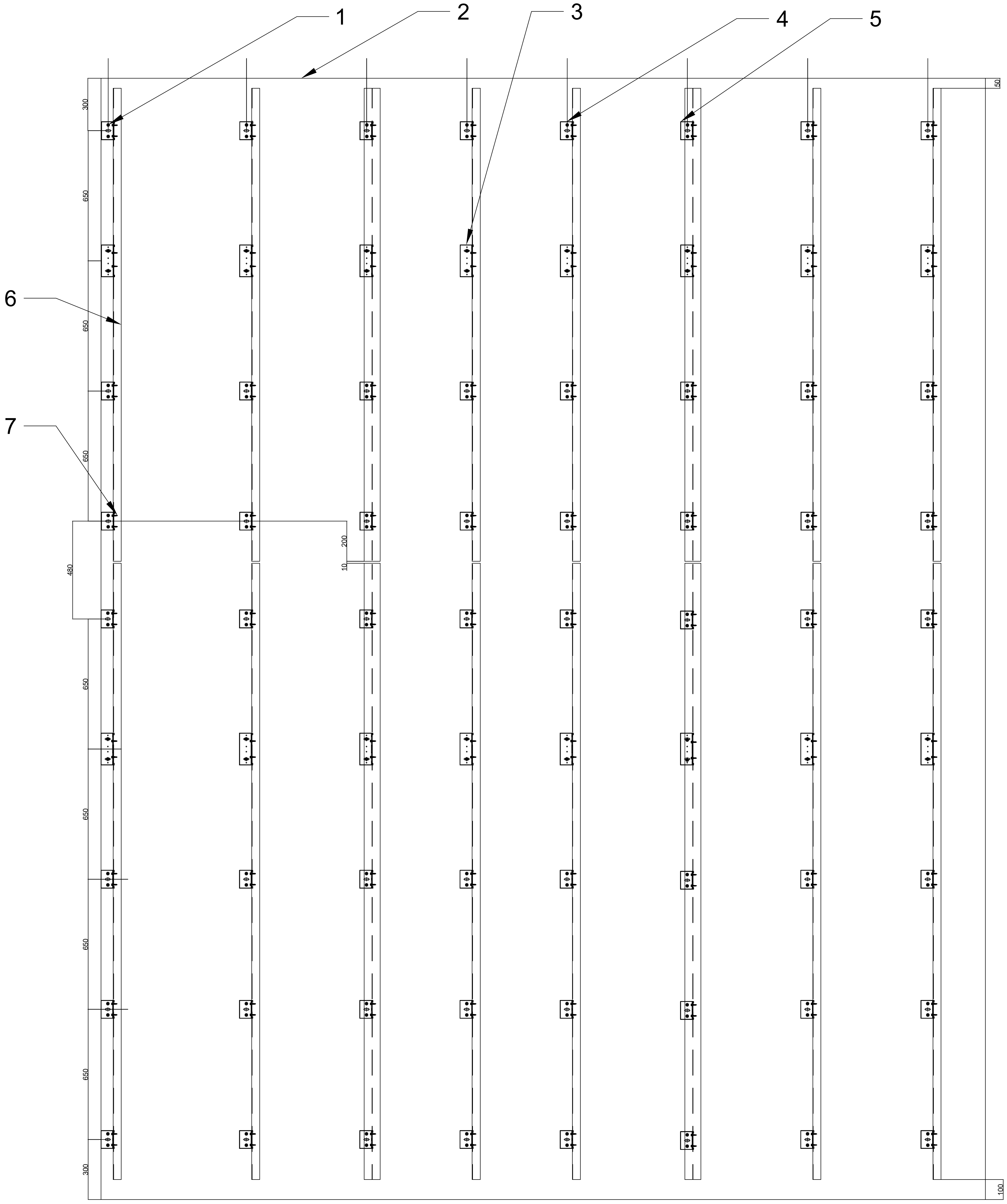
Drawing Title	1		
Scale	1:1 at A3	Date Drawn	May 2025
Drawing Number	0	Revision	1

Glasgow
tel 0330 094 5450
web https://dynamicfacades.co.uk

London
tel 0330 094 5450
email sales@tilesint.co.uk

Key	
1	Ejot JT3-12-5.5 X 67 S16
2	18mm Plywood Backing Board
3	270mm Double Bracket

4	270mm Single Bracket
5	Thermo Pad
6	T/L Rail
7	JT4-6-5.5 x 22 A15



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Drawing Number	0	Revision	1

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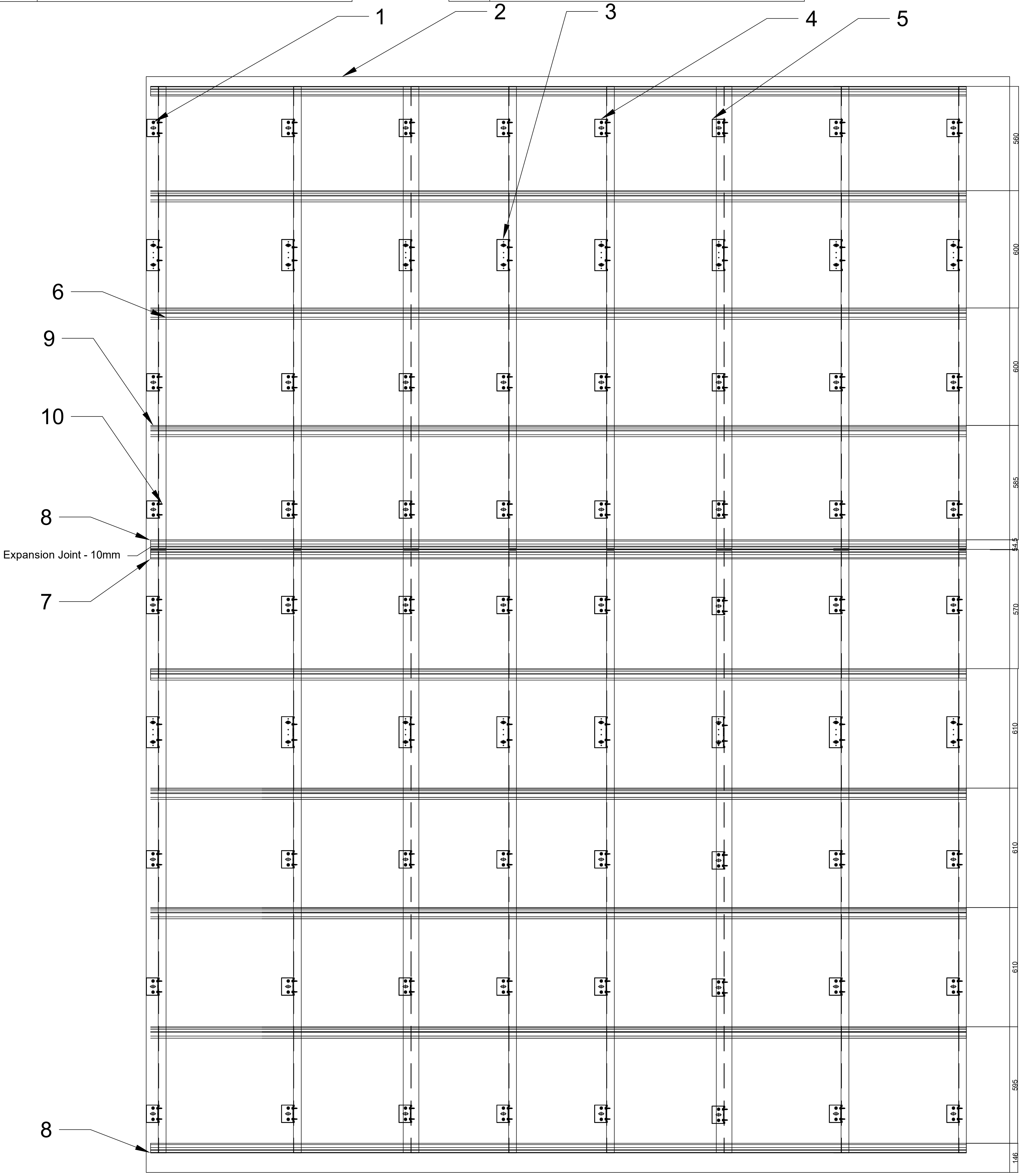
Key	
1	Ejot JT3-12-5.5 X 67 S16
2	18mm Plywood Backing Board
3	270mm Double Bracket
4	270mm Single Bracket
5	Thermo Pad
6	T/L Rail
7	TI-DF2 Top Rail
8	TI-DF2 Bottom Rail
9	TI-DF2 Mid Rail
10	JT4-6-5.5 x 22 A15



Drawing Title	3		
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Drawing Number	0	Revision	1

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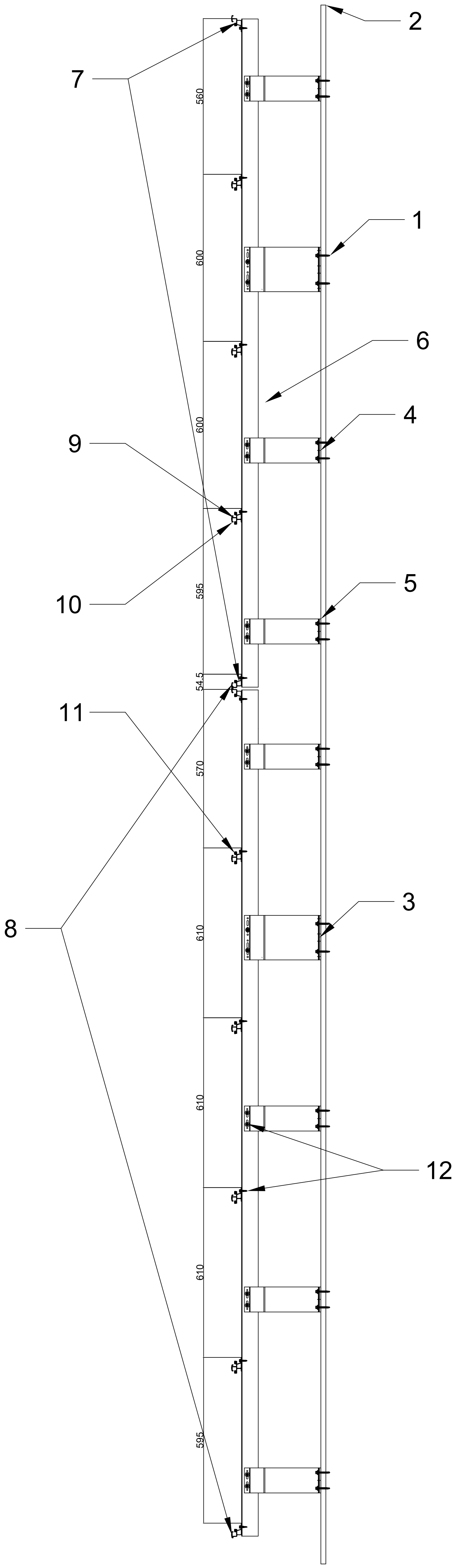
Key	
1	Ejot JT3-12-5.5 X 67 S16
2	18mm Plywood Backing Board
3	270mm Double Bracket
4	270mm Single Bracket
5	Thermo Pad
6	T/L Rail
7	TI-DF2 Top Rail
8	TI-DF2 Bottom Rail
9	TI-DF2 Mid Rail
10	10mm Spacer clip
11	Rubber Gasket
12	JT4-6-5.5 x 22 A15



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Drawing Number	0	Revision	1

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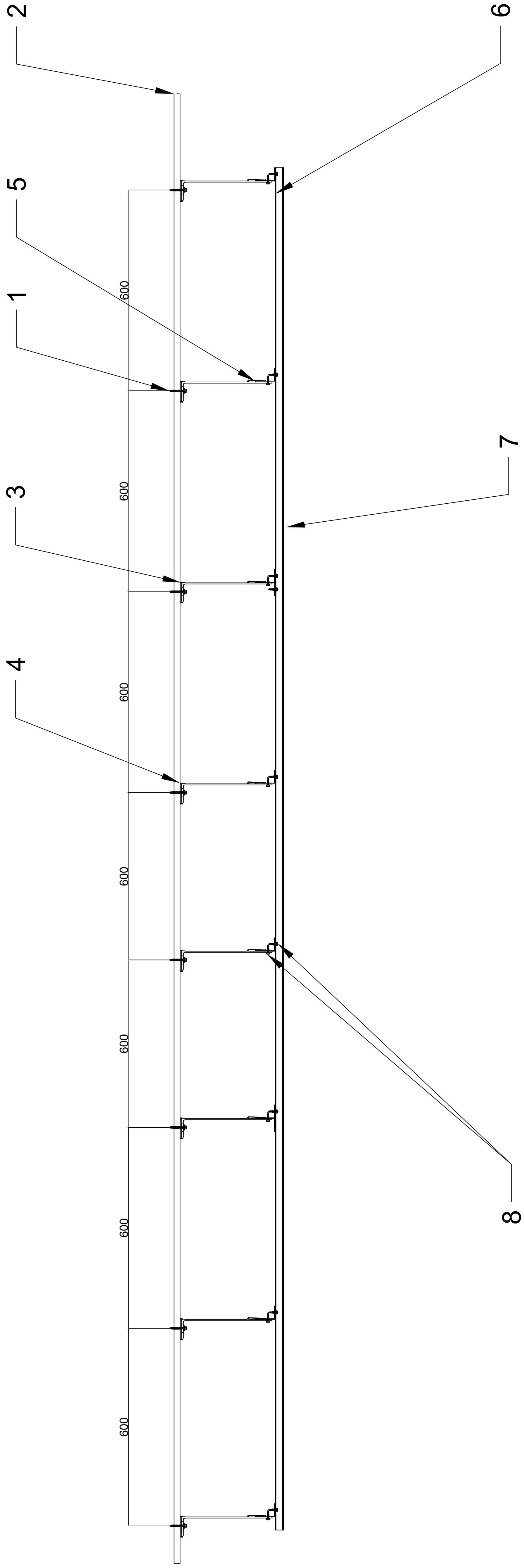
Key	
1	Ejot JT3-12-5.5 X 67 S16
2	18mm Plywood Backing Board
3	270mm Single Bracket
4	Thermo Pad
5	T/L Rail
6	TI-DF2 Top Rail
7	10mm Spacer clip
8	JT4-6-5.5 x 22 A15



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Drawing Number	0	Revision	1

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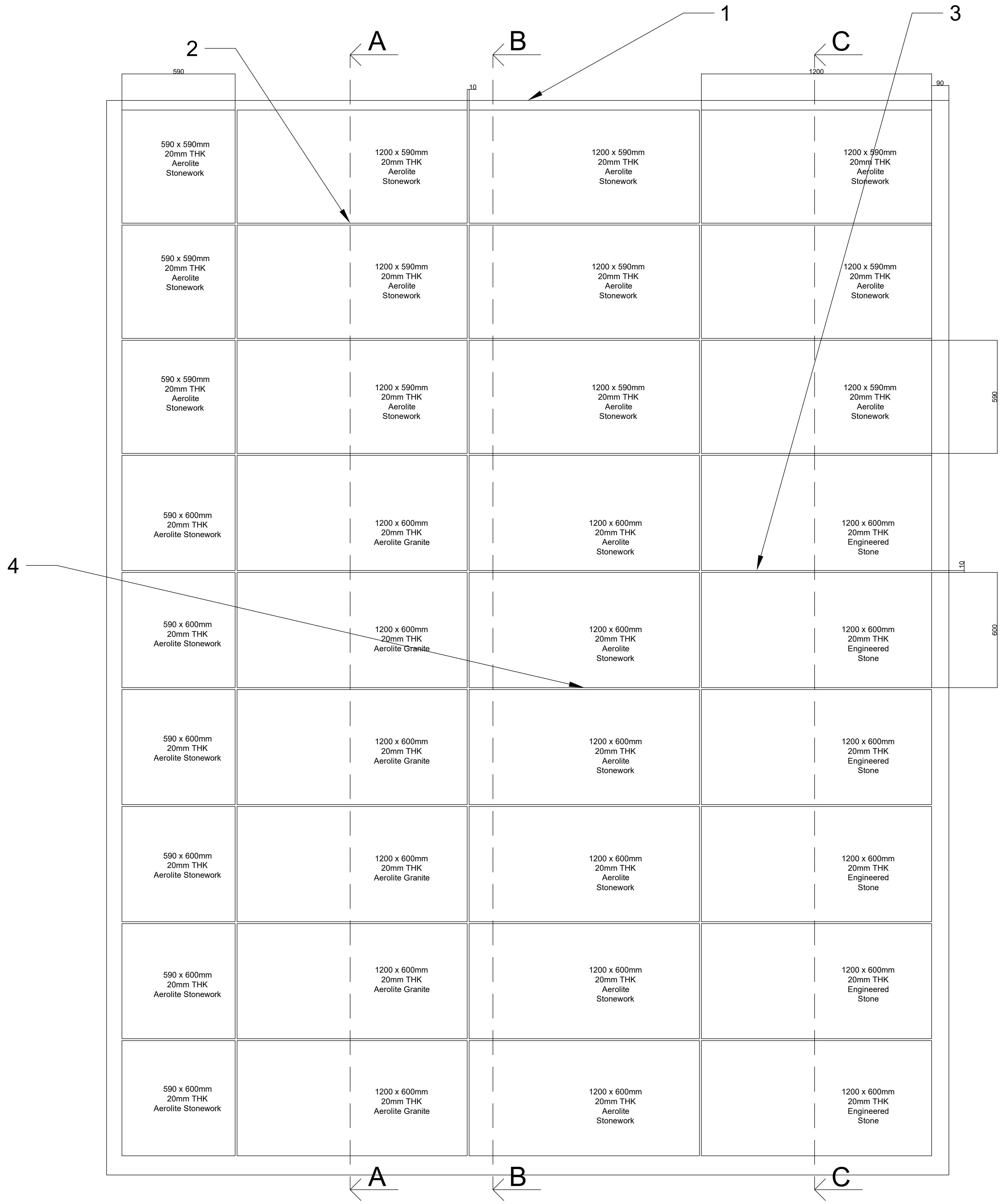
Key	
1	18mm Plywood Backing Board
2	20mm Aerolite Granite Panel
3	20mm Engineered Stone Panel
4	20mm Aerolite Stonework Panel



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Drawing Number	0	Revision	1

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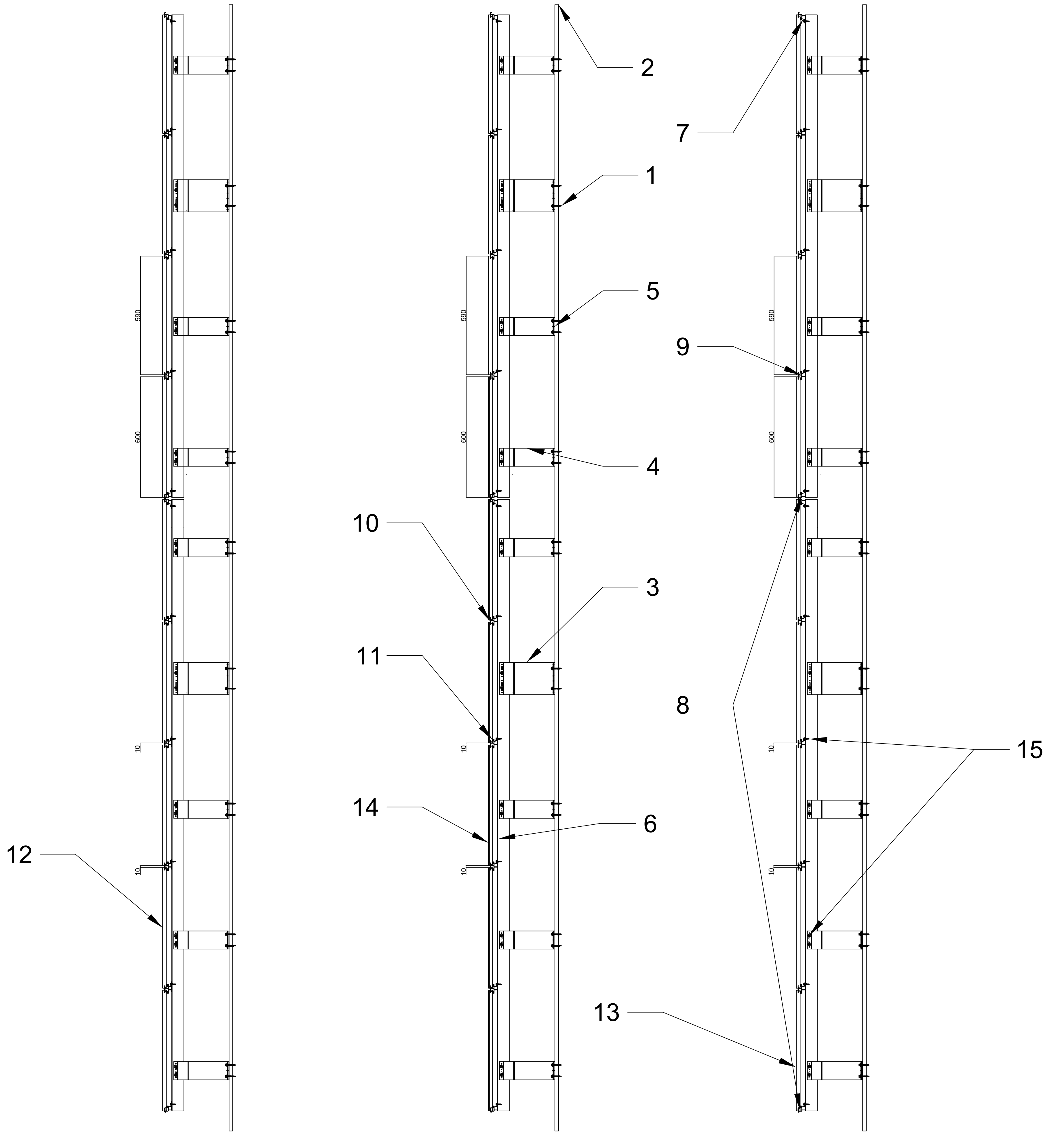
ROTATE TO READ

Key	
1	Ejot JT3-12-5.5 X 67 S16
2	18mm Plywood Backing Board
3	270mm Double Bracket
4	270mm Single Bracket
5	Thermo Pad
6	T/L Rail
7	TI-DF2 Top Rail
8	TI-DF2 Bottom Rail
9	TI-DF2 Mid Rail
10	10mm Spacer clip
11	Rubber Gasket
12	20mm Aerolite Granite Panel
13	20mm Engineered Stone Panel
14	20mm Aerolite Stonework Panel
15	JT4-6-5.5 x 22 A15



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Drawing Number	0	Revision	1

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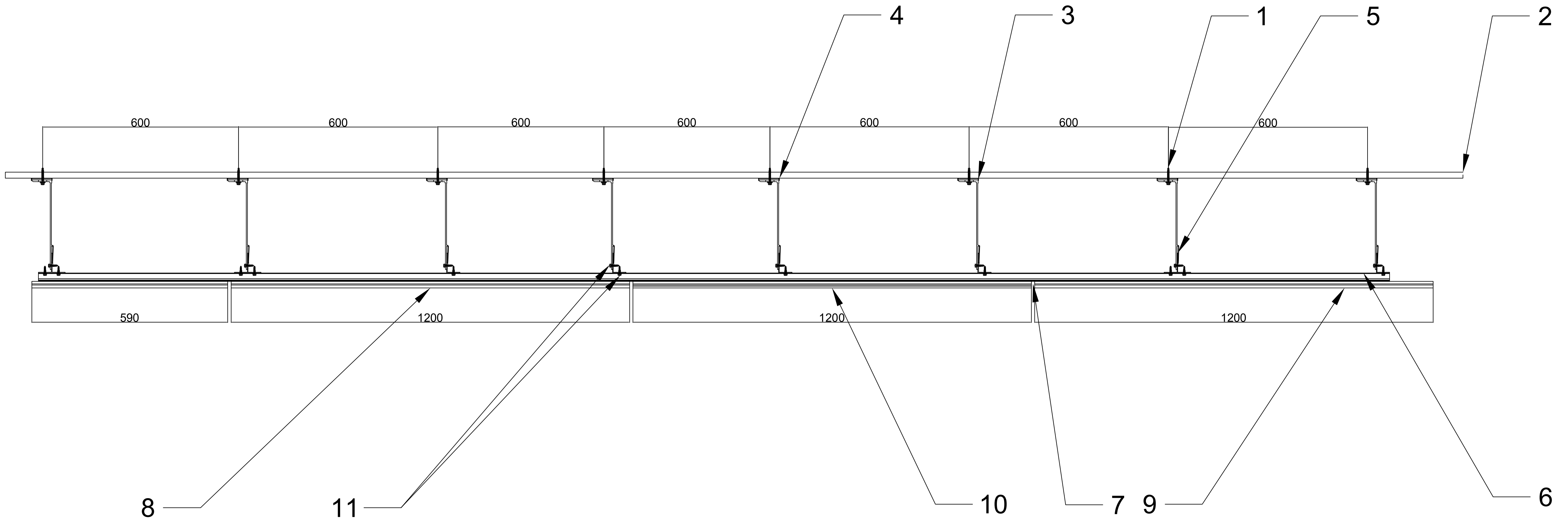
Key	
1	Ejot JT3-12-5.5 X 67 S16
2	18mm Plywood Backing Board
3	270mm Single Bracket
4	Thermo Pad
5	T/L Rail
6	TI-DF2 Top Rail
7	10mm Spacer clip
8	20mm Aerolite Granite Panel
9	20mm Engineered Stone Panel
10	20mm Aerolite Stonework Panel
11	JT4-6-5.5 x 22 A15



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Drawing Number	0	Revision	1

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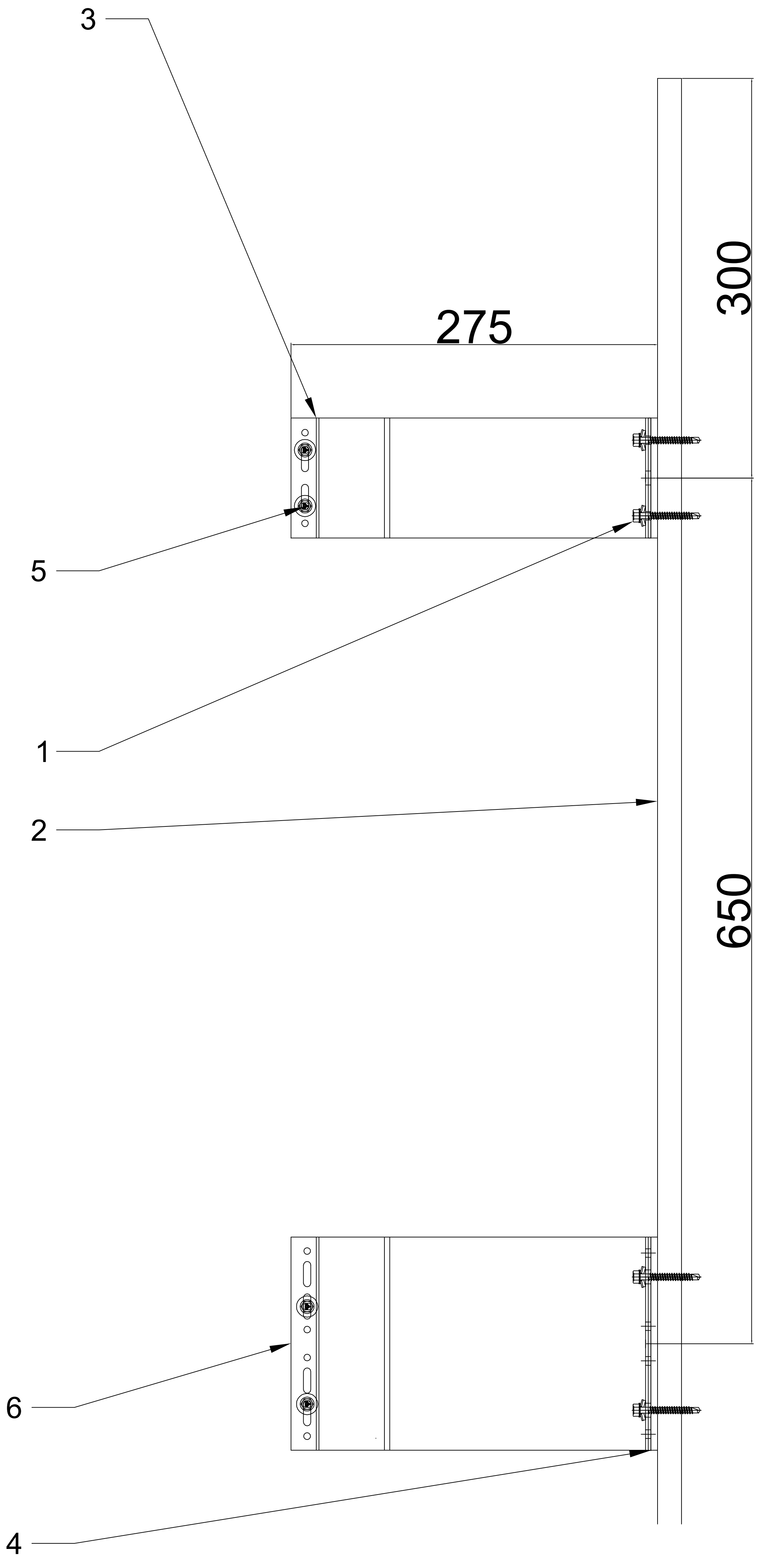
Key	
1	Ejot JT3-12-5.5 X 67 S16
2	18mm Plywood Backing Board
3	270mm Single Bracket
4	Thermo Pad
5	JT4-6-5.5 x 22 A15
6	270mm Double Bracket



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Drawing Number	0	Revision	1

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Key	
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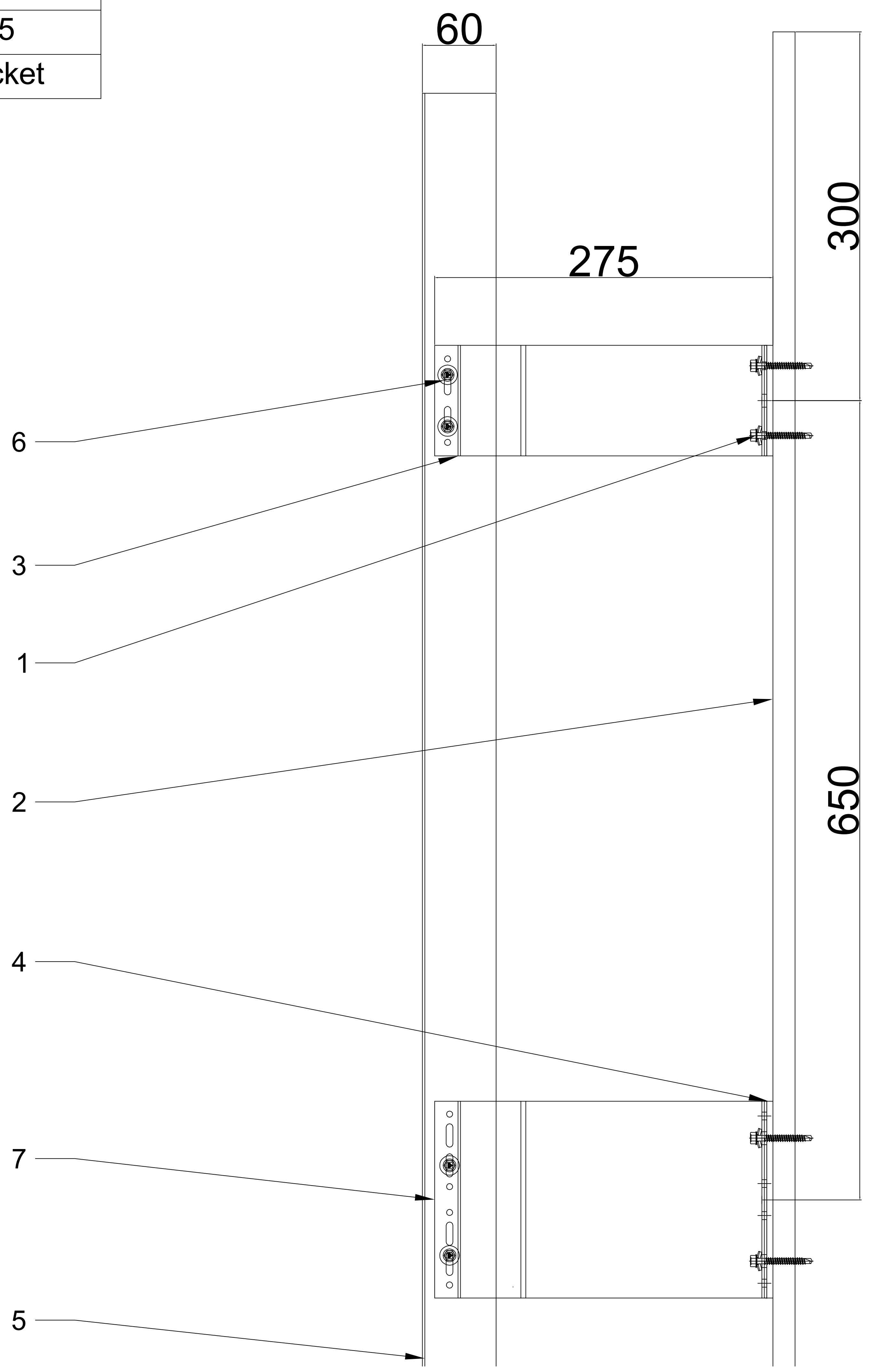
4	Thermo Pad
5	T/L Rail
6	JT4-6-5.5 x 22 A15
7	270mm Double Bracket



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Drawing Number	0	Revision	1

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Key	
1	Ejot JT3-12-5.5 X 67 S16
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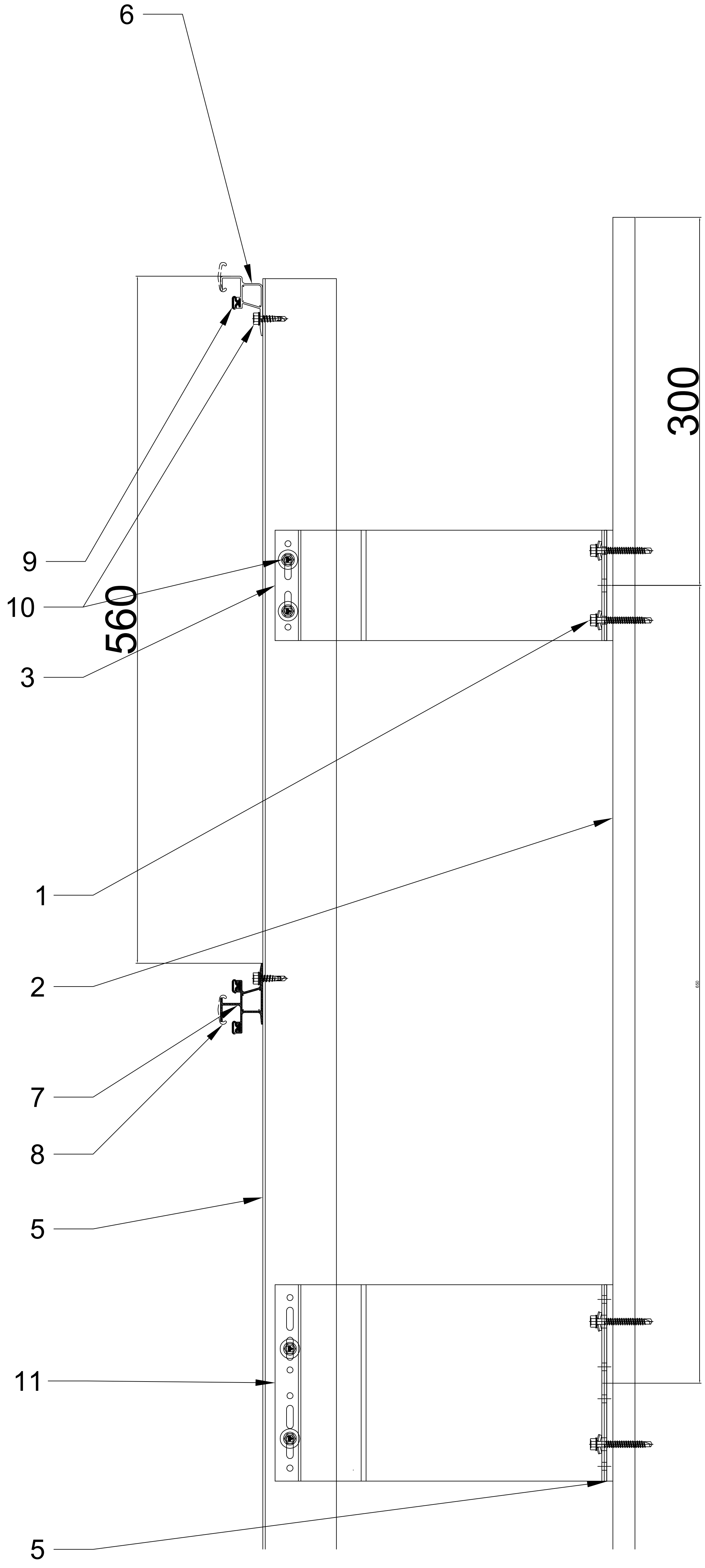
6	TI-DF2 Top Rail
7	TI-DF2 Mid Rail
8	10mm Spacer clip
9	Rubber Gasket
10	JT4-6-5.5 x 22 A15
11	270mm Double Bracket



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Drawing Number	0	Revision	1

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	Key
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2	18mm Plywood Backing Board
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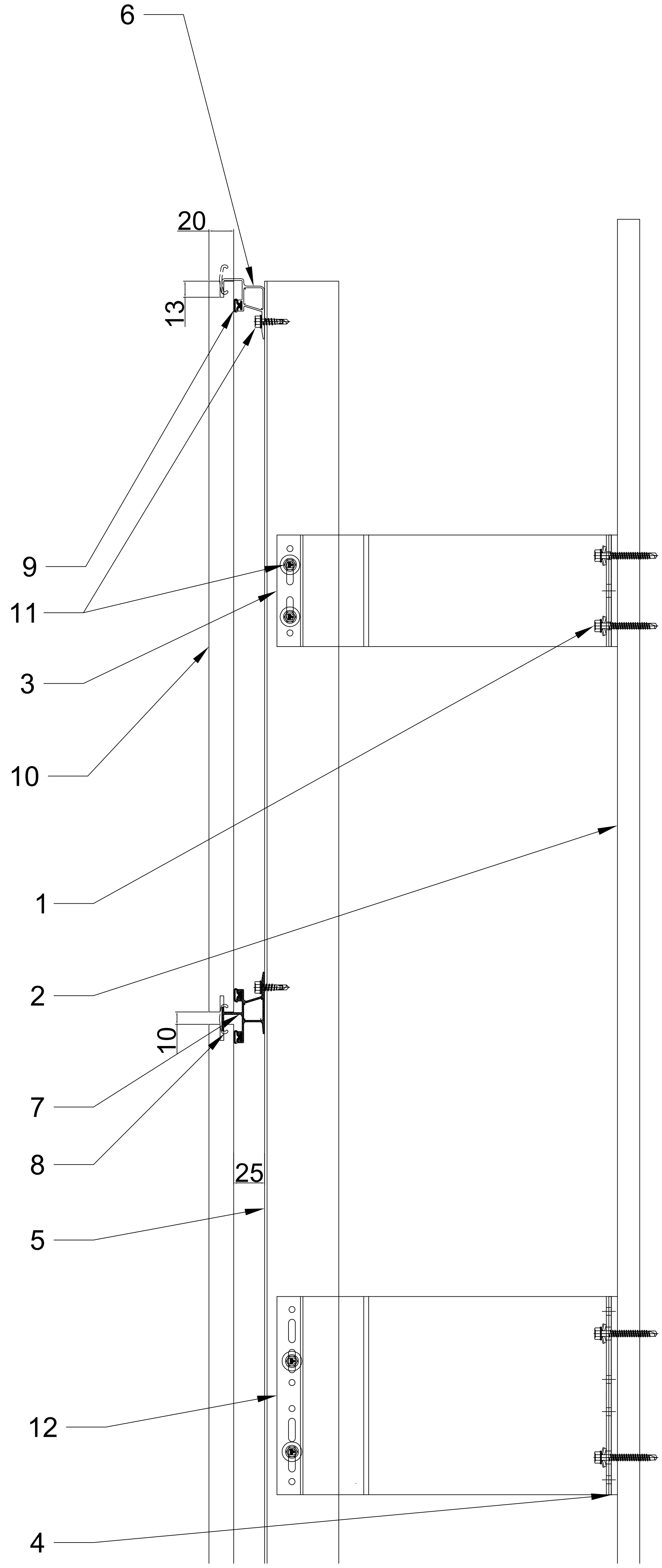
5	T/L Rail
6	TI-DF2 Top Rail
7	TI-DF2 Mid Rail
8	10mm Spacer clip
9	Rubber Gasket
10	20mm Aerolite Granite Panel
11	JT4-6-5.5 x 22 A15
12	270mm Double Bracket



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Drawing Number	0	Revision	1

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