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TECHNOLOGY CENTRE

Technical Report

Title: Product wind resistance, dynamic watertightness and impact resistance testing of a LineAL-F rainscreen sample

Report No: N950-21-18098

Technical Report

Title: Product wind resistance, dynamic water tightness and impact resistance testing a LineAL-F rainscreen sample

Customer: Ash & Lacy, Bromford Lane, West Bromwich
West Midlands, B70 7JJ

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(confidential) 1 copy to project file

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1 INTRODUCTION

This report describes tests carried out at VINCI Technology Centre UK Limited at the request of Ash & Lacy.

The test sample consisted of a sample of a LineAL-F rainscreen system manufactured by Ash & Lacy.

The tests were carried out on 13 May 2021 and were to determine the wind, water and impact resistance of the test sample. The test methods were in accordance with the CWCT Standard Test Methods for building envelopes, 2005, for:

Wind resistance – serviceability & safety.

Watertightness – dynamic pressure.

Impact resistance.

The testing was carried out in accordance with Technology Centre Method Statement C8429/MS rev 0.

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 is not assessed by these test methods.

VINCI Technology Centre UK Limited is accredited to ISO/IEC 17025:2017 by the United Kingdom Accreditation Service as UKAS Testing Laboratory No. 0057.

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- ISO 9001:2008 Quality Management System,
- ISO 14001:2004 Environmental Management System,
- BS OHSAS 18001:2007 Occupational Health and Safety Management System.

The tests were witnessed by:

Yisheng Tian - Ash & Lacy

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 and 8.

2.1 SUMMARY OF TEST RESULTS

TABLE 1

Date	Test number	Test description	Result
13 May 2021	1	Wind resistance – serviceability	Pass
13 May 2021	2	Wind resistance – safety	Pass
13 May 2021	3	Watertightness - dynamic	Pass
13 May 2021	4	Impact resistance	Pass

2.2 CLASSIFICATION

TABLE 2

Test	Standard	Classification / Declared value
Wind resistance	CWCT	±2400 pascals serviceability ±3600 pascals safety
Watertightness - dynamic	CWCT	600 pascals
Impact resistance	CWCT TN76	2 mm thick panels Class 2 serviceability Negligible risk safety 3 mm thick panels Class 1 serviceability Negligible risk safety

3 DESCRIPTION OF TEST SAMPLE

3.1 GENERAL ARRANGEMENT

The sample was as shown in the photo below and the Ash & Lacy technical report included as an appendix to this report.

The test sample measured 5.0 m high by 5.0 m wide.

The sample was mounted on a backing wall supplied by Technology Centre, comprising of 100 x 100 mm steel angle and 19 mm thick plywood boards.

PHOTO 164135

TEST SAMPLE ELEVATION

3.2 CONTROLLED DISMANTLING

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

PHOTO 8317

TEST SAMPLE DURING DISMANTLE

PHOTO 8320

VIEW INSIDE CAVITY

PHOTO 8322

PANELS REMOVED FROM TEST RIG

PHOTO 8323

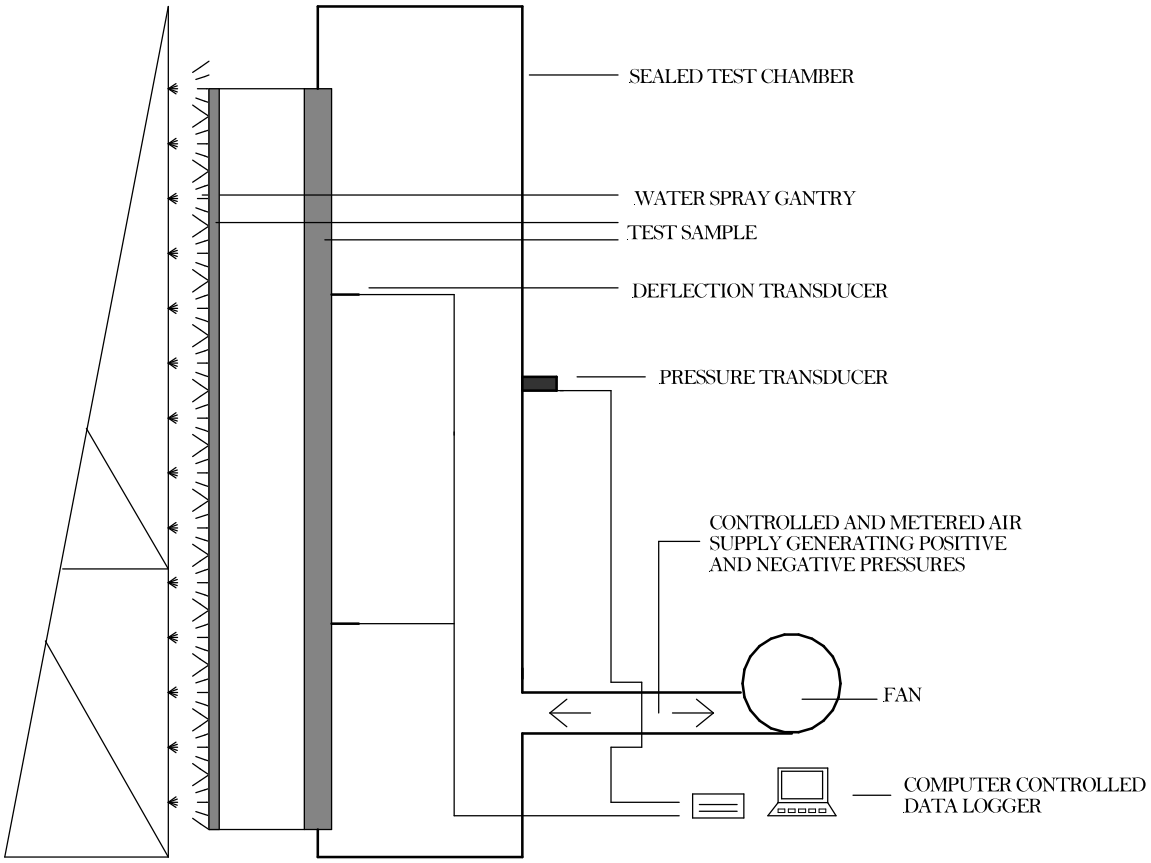
TEST SAMPLE DURING DISMANTLE

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 Ash & Lacy 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) Wind resistance – serviceability

(2) Wind resistance - safety

(3) Watertightness – dynamic

(4) Impact resistance

6 WIND RESISTANCE 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 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 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 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.

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

6.3.1 Wind Resistance – serviceability

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.

6.3.2 Wind Resistance – safety

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.

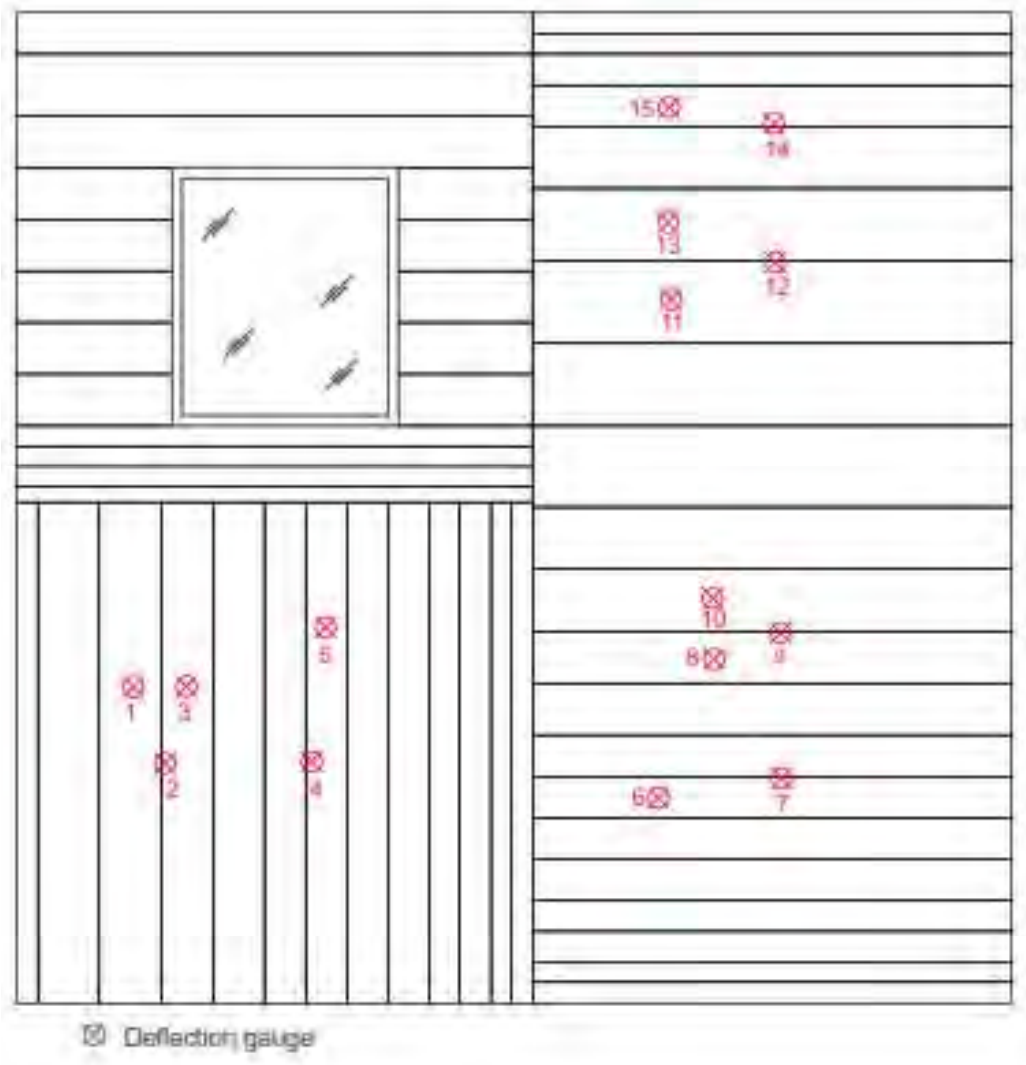
Any damage or functional defects were recorded.

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

FIGURE 2

DEFLECTION GAUGE LOCATIONS

External View



6.4 PASS/FAIL CRITERIA

6.4.1 Calculation of permissible deflection/summary

Serviceability Test TABLE 3

Gauge number	Member	Diagonal span (L) (mm)	Permissible deflection (mm)	Measure deflection at 2400/-2400 pascals (mm)
1	Panel P14	671 (between fixings)	L/90 = 7.5	2.4 -3.0
3	Panel P13	650 (between fixings)	L/90 = 7.2	2.2 -2.5
5	Panel P12	1217 (between fixings)	L/90 = 13.5	2.7 -3.7
6	Panel P5	1217 (between fixings)	L/90 = 13.5	2.3 -3.0
8	Panel P6	650 (between fixings)	L/90 = 7.2	1.5 -1.9
10	Panel P7	671 (between fixings)	L/90 = 7.5	2.2 -2.5
11	Panel C1	1265 (between fixings)	L/90 = 14.1	6.1 -5.8
13	Panel C2	1250 (between fixings)	L/90 = 13.9	4.5 -4.9
15	Panel C4	1217 (between fixings)	L/90 = 13.5	2.7 -3.3

6.5 RESULTS

Test 1 (serviceability) Date: 13 May 2021

The deflections measured during the wind resistance test, at the positions shown in Figure 2, are shown in Tables 4 and 5.

No damage to the test sample was observed.

Ambient temperature = 11°C
Chamber temperature = 11°C

Test 2 (safety) Date: 13 May 2021

The deflections measured during the structural safety test, at the positions shown in Figure 2, are shown in Table 6.

No damage to the sample was observed.

Ambient temperature = 11°C
Chamber temperature = 11°C

TABLE 4

WIND RESISTANCE – POSITIVE **SERVICEABILITY** TEST RESULTS

Position	Pressure (pascals) / Deflection (mm)				
	619	1210	1796	2420	Residual
1	0.6	1.1	1.7	2.4	0.1
2	0.2	0.5	0.8	1.1	0.2
3	0.4	1.0	1.6	2.2	0.2
4	0.3	0.5	0.9	1.3	0.3
5	0.5	1.0	1.8	2.7	0.3
6	0.7	1.2	1.7	2.3	0.1
7	0.4	0.7	0.9	1.1	0.1
8	0.4	0.8	1.2	1.5	0.1
9	0.1	0.3	0.4	0.4	0.1
10	0.5	1.1	1.6	2.2	0.1
11	1.7	3.2	4.5	6.1	0.1
12	0.8	1.3	1.5	1.8	0.1
13	1.2	2.3	3.3	4.5	0.2
14	0.7	1.2	1.6	2.0	0.1
15	0.7	1.3	2.0	2.7	0.1

TABLE 5

WIND RESISTANCE – NEGATIVE **SERVICEABILITY** TEST RESULTS

Position	Pressure (pascals) / Deflection (mm)				
	-609	**-1208**	**-1799**	**-2388**	**Residual**
1	-0.6	-1.2	-2.3	-3.0	-0.5
2	-0.3	0.6	-1.4	-1.8	-0.5
3	-0.5	-1.0	-1.9	-2.5	-0.4
4	-0.5	-1.1	-2.0	-2.7	-0.1
5	-0.8	-1.6	-2.8	-3.7	-0.2
6	-0.7	-1.3	-2.3	-3.0	-0.4
7	-0.5	-0.9	-1.5	-2.1	-0.2
8	-0.4	-0.8	-1.4	-1.9	-0.3
9	-0.1	-0.3	-0.6	-0.9	-0.2
10	-0.5	-1.1	-1.9	-2.5	-0.2
11	-1.5	-2.8	-4.4	-5.8	-0.6
12	-0.7	-1.3	-2.4	-3.4	-0.6
13	-1.2	-2.2	-3.8	-4.9	-0.6
14	-0.7	-1.3	-2.4	-3.1	-0.4
15	-0.7	-1.4	-2.5	-3.3	-0.3

TABLE 6

WIND RESISTANCE - **SAFETY** TEST RESULTS

Position	Pressure (pascals) / Deflection (mm)			
	3597	Residual	-3607	Residual
1	4.3	0.4	-4.7	-0.6
2	2.3	0.4	-2.8	-0.5
3	3.9	0.5	-4.0	-0.5
4	2.5	0.7	-5.1	-1.0
5	4.9	0.6	-6.5	-1.1
6	3.6	0.2	-4.5	-0.6
7	1.8	0.2	-3.1	-0.4
8	2.6	0.1	-3.0	-0.4
9	0.9	0.0	-1.6	-0.3
10	3.7	0.1	-4.1	-0.4
11	9.4	0.3	-9.5	-1.5
12	3.1	0.2	-6.4	-1.9
13	7.3	0.4	-8.0	-1.3
14	3.3	0.3	-5.2	-0.8
15	4.3	0.3	-5.4	-0.6

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 1°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

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

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.

7.4 PROCEDURE

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 backing wall throughout testing. At the completion of the test there shall be no standing water in locations intended to remain dry.

7.6 RESULTS

Test 3 Date: 13 May 2021

Minor water leakage observed down back of rainscreen panels.

The water drained out at the base of the cavity.

No water penetration was observed around the window perimeter or through the backing wall.

Chamber temperature = 12°C
Ambient temperature = 12°C
Water temperature = 10°C

PHOTO 0312

DYNAMIC WIND GENERATOR

8 IMPACT TESTING

8.1 IMPACTOR

8.1.1 Soft body

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.

8.1.2 Hard body

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.

8.2 PROCEDURE (CWCT TN76)

8.2.1 Soft body

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 3. The impact energies were 120 Nm for serviceability and 350 Nm and 500 Nm for safety.

8.2.2 Hard body

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 3. The impact energies were 3 Nm, 6 Nm and 10 Nm.

8.3 PASS/FAIL CRITERIA

Note: Tables 1 to 2 are taken from CWCT TN76.

Table 1 - Classes for serviceability performance

Class	Definition	Explanation/Examples
1	No damage.	No damage visible from 1m, and Any damage visible from closer then 1m 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 5m (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 5m 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 5m, 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 2 - 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 50g, and Maximum mass of particle that may fall subsequent to impact 50g, and No sharp edges produced that would be likely to cause severe injury during impact.
Moderate risk	Maximum mass of falling particle less than 500g, and Maximum mass of particle that may fall subsequent to impact less than 500g, 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 500g, or Cladding penetrated by impact, or Sharp edges produced that would be likely to cause severe injury during impact.

8.4 RESULTS

Test 4 Date: 13 May 2021

The impact test results are shown in Tables 7 and 8.

Ambient temperature = 11°C

FIGURE 3

IMPACT TEST LOCATIONS

External View

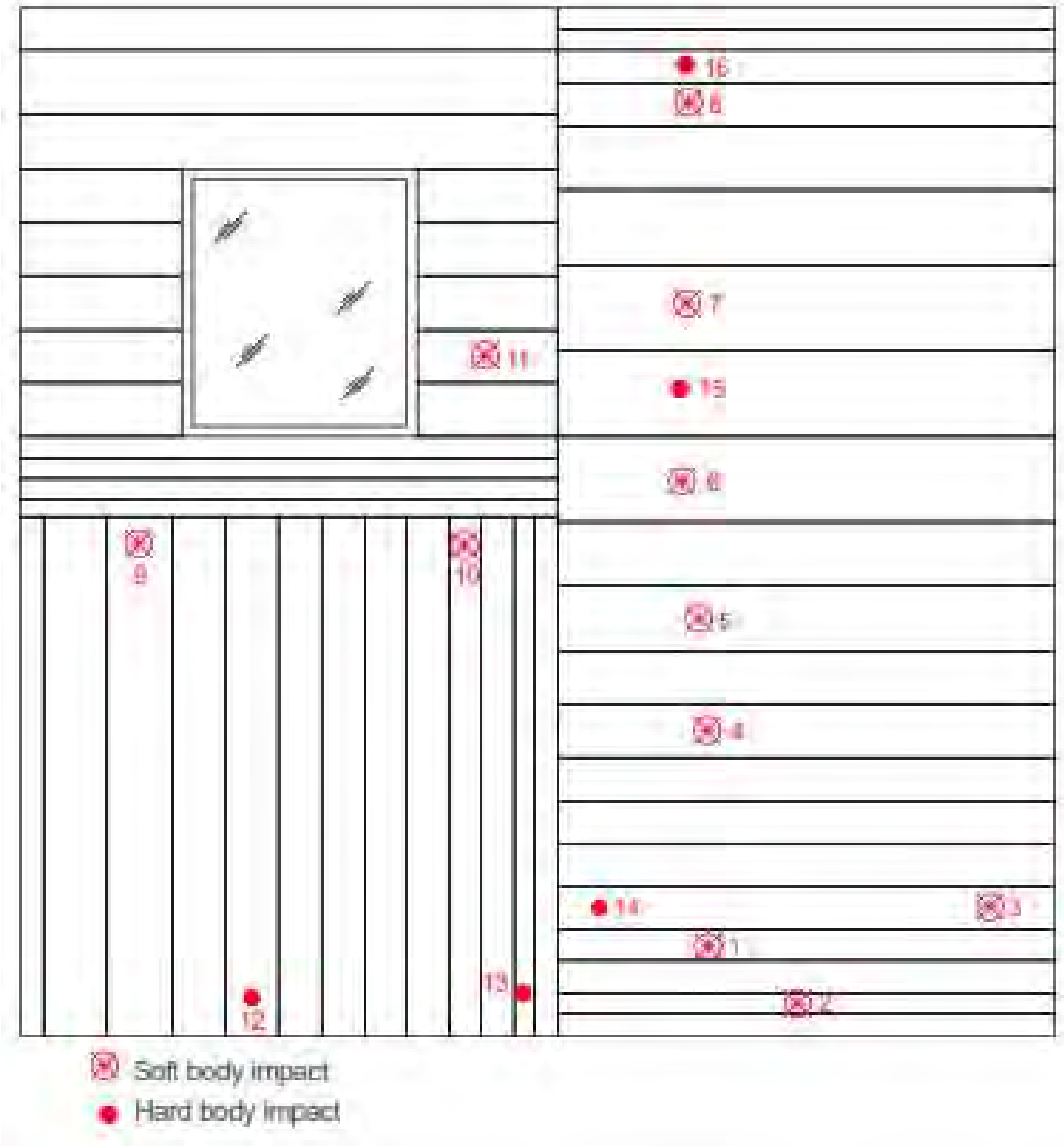


TABLE 7

SOFT BODY IMPACT RESISTANCE TEST RESULTS

Impact location	Impact energy (Nm)	Observations	Classification
1	120 x 3 350 500	No damage observed 3 mm indent 10 mm indent	Class 1 Negligible risk Negligible risk
2	120 x 3 350 500	No damage observed No damage observed No damage observed	Class 1 Negligible risk Negligible 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 3 mm indent 5 mm indent	Class 1 Negligible risk Negligible risk
5	120 x 3 350 500	No damage observed 4 mm indent 11 mm indent	Class 1 Negligible risk Negligible risk
6	120 x 3 350 500	No damage observed 3 mm indent 7 mm indent	Class 1 Negligible risk Negligible risk
7	120 x 3 350 500	No damage observed 1 mm indent 2 mm indent	Class 1 Negligible risk Negligible risk
8	120 x 3 350 500	No damage observed 1 mm indent 2 mm indent	Class 2 Negligible risk Negligible risk
9	120 x 3 350 500	4 mm indent 10 mm indent 16 mm indent	Class 1 Negligible risk Negligible risk
10	120 x 3 350 500	2 mm indent 3 mm indent 4 mm indent	Class 1 Negligible risk Negligible risk
11	120 x 3 350 500	No damage observed 3 mm indent 10 mm indent	Class 1 Negligible risk Negligible risk

TABLE 8

HARD BODY IMPACT RESISTANCE TEST RESULTS

Impact location	Impact energy (Nm)	Observations	Classification
12	3 6 10	Minor indent Minor indent Minor indent	Class 1, Negligible risk Class 1 Class 1, Negligible risk
13	3 6 10	Minor indent Minor indent Minor indent	Class 1, Negligible risk Class 2 Class 2, Negligible risk
14	3 6 10	Minor indent Minor indent Minor indent	Class 2, Negligible risk Class 2 Class 2, Negligible risk
15	3 6 10	Minor indent Minor indent Minor indent	Class 1, Negligible risk Class 1 Class 1, Negligible risk
16	3 6 10	Minor indent Minor indent Minor indent	Class 1, Negligible risk Class 1 Class 1, Negligible risk

PHOTO 0729

SOFT BODY IMPACTOR

PHOTO 0731

SOFT BODY IMPACT AT LOCATION 1

PHOTO 0741

HARD BODY IMPACTS AT LOCATION 12

PHOTO 0744

HARD BODY IMPACTS AT LOCATION 13

PHOTO 0748

HARD BODY IMPACTS AT LOCATION 14

PHOTO 0749

SOFT BODY IMPACT AT LOCATION 9

PHOTO 0754

SOFT BODY IMPACT AT LOCATION 5

PHOTO 0755

SOFT BODY IMPACT AT LOCATION 6

PHOTO 0756

HARD BODY IMPACTS AT LOCATION 15

PHOTO 0758

HARD BODY IMPACTS AT LOCATION 16

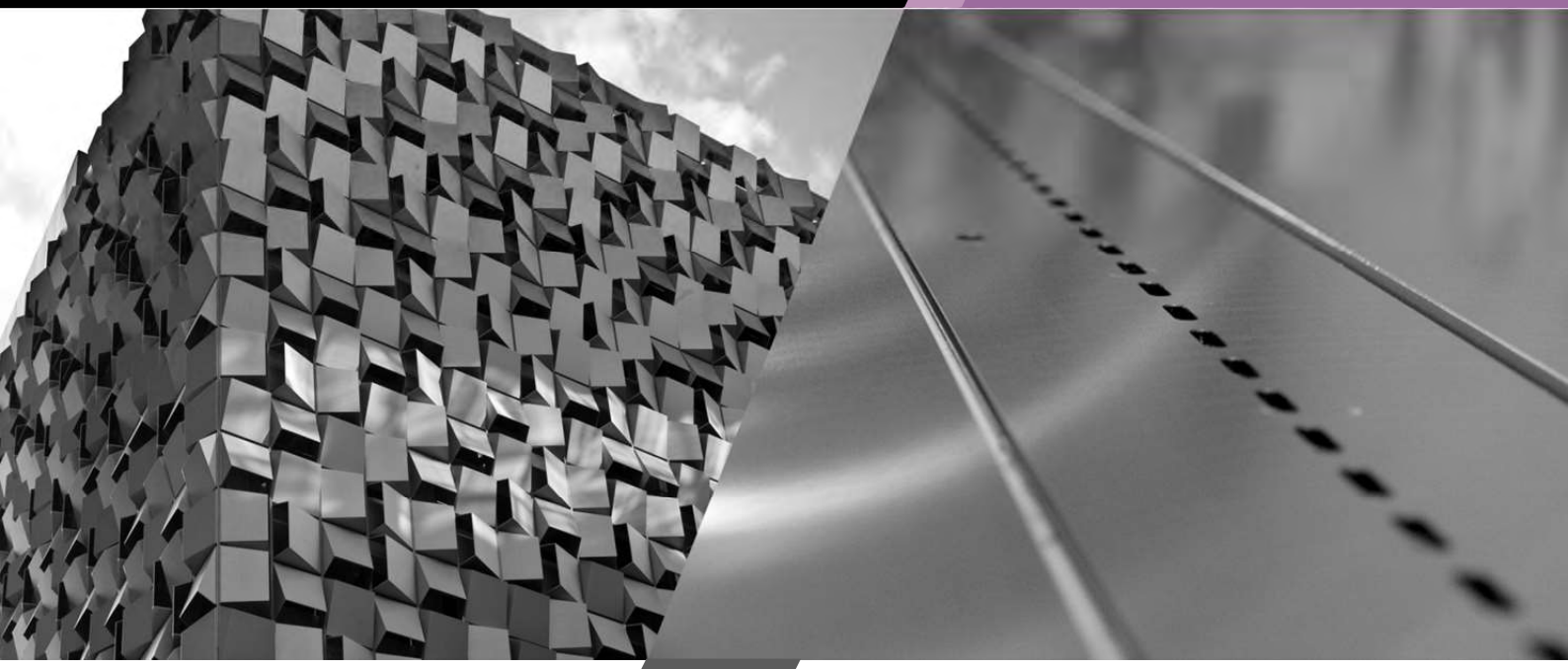
PHOTO 0759

SOFT BODY IMPACT AT LOCATION 11

9 APPENDIX – ASH & LACY TECHNICAL REPORT

The following 24 unnumbered pages are copies of Ash & Lacy Façade product development technical report V1.0 dated 06/05/2021.

END OF REPORT



Ash & Lacy Façade

PRODUCT DEVELOPMENT TECHNICAL REPORT

ED REF: ED-Facade-201

LineAL-F CWCT Test Set Up And Procedure

V1.0 – 06/05/2021

ASH & LACY

VERSION HISTORY

Below is recorded the revision history of this document;

Version	By	Date	Description
1.0	AG	06/05/2021	First Issue

EXECUTIVE SUMMARY

This report summarised test sequence and sample drawings for LineAL-F CWCT test, which will be used as CWCT assessment and panel installation.

Report Prepared by	Report Checked by
Name:	**Name:**
Position:	**Position:**
Signature:	**Signature:**
Date:	**Date:**

Managers Approval to Issue

Signature:

Date:

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1. Background

This document summarised LineAL-F metal facade layout, features in the systems, supporting system for CWCT test and discussion with testing house Vinci.

2. Test Method

The testing will be in accordance with CWCT Standard for systemised building envelopes. The detailed test sequence is given below.

3. Test sequence:

For rainscreen system, the test sequence is referred to Section 8.12.2 Standard Sequence B. Based on the technical note in the standard, technical help conversation with CWCT, and test house recommendation (Vinci Quote Q22804), the air permeability and water penetration resistance-static tests are mainly for the backing wall system, which are not applicable for the ventilated rainscreen system. After consideration of the actual application of the system, the test sequence is listed as:

1) Wind resistance – serviceability
2) Wind resistance – safety
3) Watertightness – dynamic
4) Impact test
5) Controlled dismantle, inspect and record

4. Test Sample

LineAL-F facade system will be tested on the test rig in Vinci Technology Centre. The overall sample area is about approximately 5 m high by 5 m wide. The test sample includes features as:

- Test area: approximately 5 m X 5 m
- Panel layout: vertical & horizontal
- Material: 2 mm and 3 mm 1050A H14
- Standard panel size for the assessment – 2 mm thickness:
    - 90mmx2500mm
    - 100mmx2500mm
    - 150mmx2500mm
    - 200mmx2500mm
    - 250mmx2500mm

    - 300mmx2500mm
- Standard panel size for the assessment – 3 mm thickness:
    - 100mmx2500mm
    - 150mmx2500mm
    - 200mmx2500mm
    - 300mmx2500mm
    - 350mmx2500mm
    - 400mmx2500mm
- Max panel size: 400mmx2500mm
- Horizontal movement joint: 20 mm
- Horizontal panel joint: 10 mm / 20 mm / 30 mm – Horizontal arrangements
- Vertical panel joint: 10mm/20 mm/30 mm – Vertical arrangements
- About 1.0 m (W) X 1.1 m (H) window installed in the test
- Two supporting system installed in test rig
- AX1 System
    - AXL-HB300S-TP/ AXL-HB300D-TP Bracket
    - AXL-L60X60X2.2 Rail
    - AXL-T60X80X2.2 Rail
- AX2 System
    - AXL-HB270S-TP Bracket
    - AXL-HB270D-TP Bracket
    - AXL-HBD80 Adaptor
    - AXL-L60X60X2.2 Rail
- Max bracket centre 600 mm
- Max rail centre: 1200 mm

More details can be found in the sample drawing attached.

IF IN DOUBT - ASK

Material List For LineAL-F CWCT Test

Part 1: Frame

Ref	Length (mm)	Qty
AXL-L60X40X2.2	2445	3
AXL-L60X40X2.2	2430	4
AXL-L60X40X2.2	1430	4
AXL-L60X40X2.2	2480	3
AXL-T60X80X2.2	792	1
AXL-T60X80X2.2	425	1
AXL-T60X80X2.2	2430	2
AXL-L60X40X2.2	50	7
AXL-HB300S-TP		42
AXL-HB300D-TP		13
AXL-HB270S-TP		14
AXL-HB270D-TP		4
AXL-HDB80		18

Part 2: LINEAL-F PANEL

Panel Ref	Drawing No	Qty
P1	ED-Façade-2017-1.0.B	1
P2	ED-Façade-2017-1.0.B	4
P3	ED-Façade-2017-1.0.B	2
P4	ED-Façade-2017-1.0.B	2
P5	ED-Façade-2017-1.0.B	3
P6	ED-Façade-2017-1.0.B	3
P7	ED-Façade-2017-1.0.B	2
P8	ED-Façade-2017-1.0.B	1
P9	ED-Façade-2017-1.0.B	2
P10	ED-Façade-2017-1.0.B	2
P11	ED-Façade-2017-1.0.B	1
P12	ED-Façade-2017-1.0.B	3
P13	ED-Façade-2017-1.0.B	2
P14	ED-Façade-2017-1.0.B	2
P15	ED-Façade-2017-1.0.B	1
P16	ED-Façade-2017-1.0.B	5
P17	ED-Façade-2017-1.0.B	5
C1	ED-Façade-2017-1.0.C	2
C2	ED-Façade-2017-1.0.C	1
C3	ED-Façade-2017-1.0.C	1
C4	ED-Façade-2017-1.0.C	1
C5	ED-Façade-2017-1.0.C	1
C6	ED-Façade-2017-1.0.C	1
C7	ED-Façade-2017-1.0.C	1
S1	ED-Façade-2017-1.0.D	1
S2	ED-Façade-2017-1.0.E	1

Part 3: Window Steel Frame

Ref	Length (mm)	Qty
AU204070200	1400	2
AC200070200	1000	2
AC200070200	1320	2
AHC88L		6

Part 4: Accessories

Name	Drawing No	Length (mm)	Qty
Window frame	ED-Façade-2017-1.5		
Window Cill	ED-Façade-2017-1.6	1045	1
Window Cill Support	ED-Façade-2017-1.7	1045	1
Window Head Plate	ED-Façade-2017-1.7	1045	1
Window Reveal	ED-Façade-2017-1.7.1	1220	2
Z100X350X100X2 Flashing	ED-Façade-2017-1.7.2	2500	2
Z100X340X100X2 Flashing	ED-Façade-2017-1.7.2	2500	6
Start Bar 2 mm Aluminium	ED-Façade-2017-1.3.1	2500	2
Start Bar 2 mm Aluminium	ED-Façade-2017-1.3.1	2410	1
Start Bar 2 mm Aluminium	ED-Façade-2017-1.3.1	100	1
Start Bar 3 mm Aluminium	ED-Façade-2017-1.3.1	2500	1
VCF-EXT-FTRIM (F Trip)		1400	1
VCF-EXT-FTRIM (F Trip)		1260	2

Part 5: Fixings

Ref	Qty
SS-LS22	252
BM-HS75	199
RIV-K11-5-12	100
LP-BM-LS28	350

Part 6: One UPVC Window to Suit for Window Frame Openning with 1062 mm W X 1197 mm H

General Notes:

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Drawing Status: Information

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Material List

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

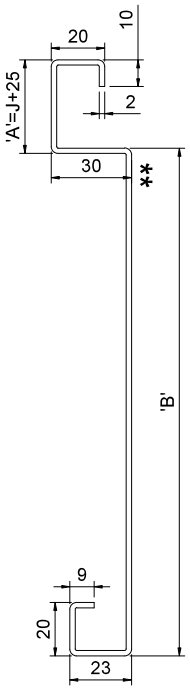
Scale : NTS @ A3

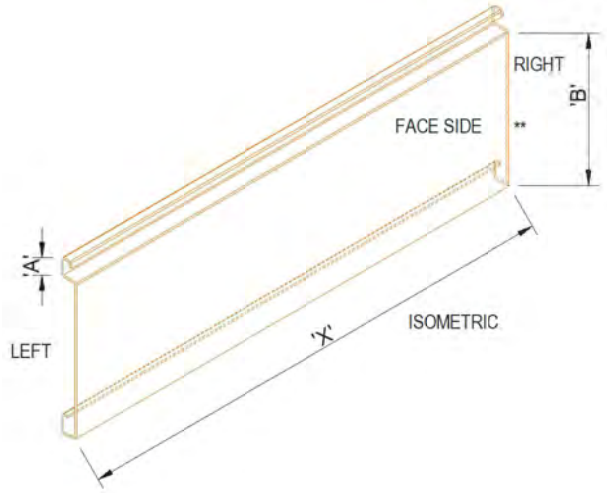
Drawing No : ED-FACADE-2017-1.0.A

Rev: [-]

IF IN DOUBT - ASK

Material List For LineAL-F CWCT Test





LineAL-F Standard Plank - 2 mm Aluminium - 1050H14

	Face Dimensions				
Panel Ref	Dim 'X'	J	Dim 'A'	Dim 'B'	Qty
P1	2500	30	55	70	1
P2	2500	10	35	90	4
P3	2500	10	35	140	2
P4	2500	10	35	190	2
P5	2500	20	45	180	3
P6	2500	10	35	240	3
P7	2500	20	45	280	2
P8	2410	30	55	70	1
P9	2410	10	35	90	2
P10	2410	10	35	140	2
P11	2410	10	35	190	1
P12	2410	20	45	180	3
P13	2410	10	35	240	2
P14	2410	20	45	280	2

	Face Dimensions				
Panel Ref	Dim 'X'	J	Dim 'A'	Dim 'B'	Qty
P15	2500	10	35	80	1
P16	780	10	35	240	5
P17	590	10	35	240	5

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Material List - 2 mm Plank

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.0.B

Rev: [-]

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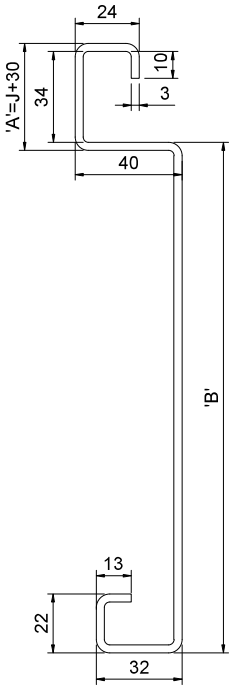
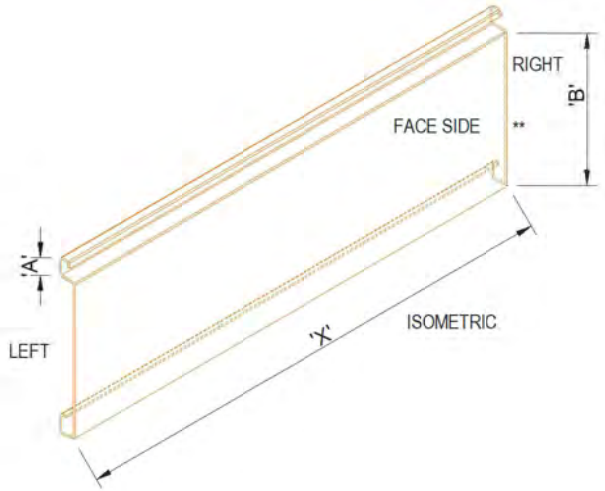
Material List For LineAL-F CWCT Test





LineAL-F Standard Plank
3 mm Aluminium - 1050H14

	Face Dimensions				
Panel Ref	Dim 'X'	J	Dim 'A'	Dim 'B'	Qty
C1	2500	10	40	390	2
C2	2500	10	40	340	1
C3	2500	20	50	280	1
C4	2500	10	40	190	1
C5	2500	10	40	140	1
C6	2500	30	60	70	1
C7	2500	10	40	90	1

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Material List- 3 mm Plank

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.0.C

Rev: [-]

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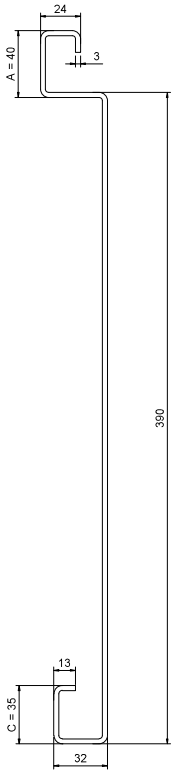
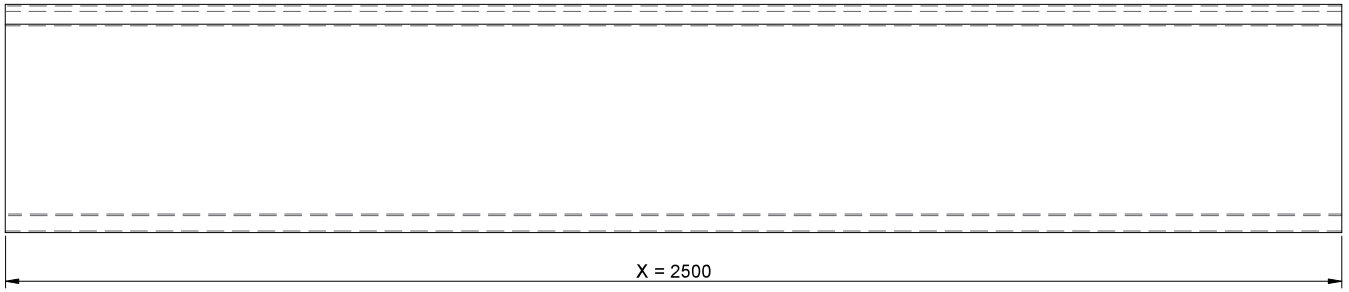
Material List For LineAL-F CWCT Test





Starting Plank for 20 mm Horizontal movement Joint
3 mm Aluminium - 1050H14

Face Dimensions						
Panel Ref	Dim 'X'	J	Dim 'A'	Dim 'B'	Dim 'C'	Qty
S2	2500	10	40	390	35	1

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Drawing Title : LineAL-F CWCT Test S2 3 mm Plank

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.0.D

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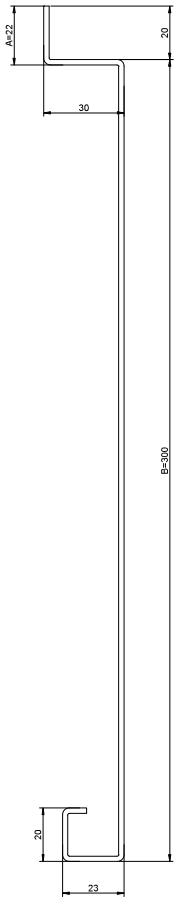
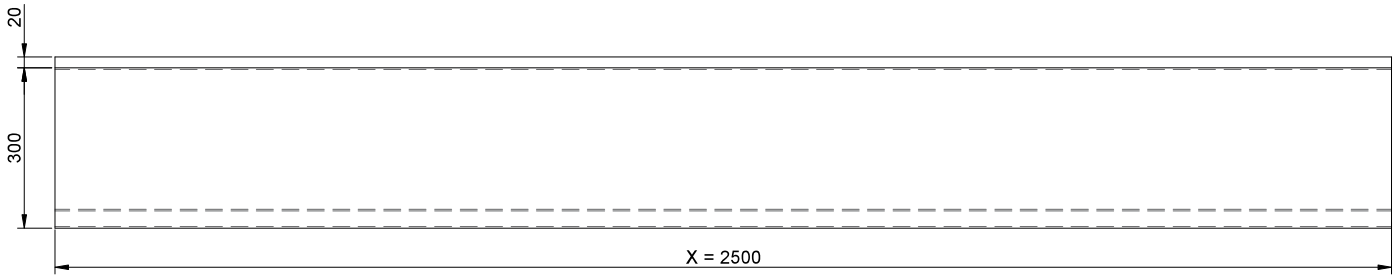
Material List For LineAL-F CWCT Test





Top Plank for 20 mm Horizontal movement Joint
2 mm Aluminium 1050H14

Face Dimensions					
Panel Ref	Dim 'X'	J	Dim 'A'	Dim 'B'	Qty
S1	2500	20	22	300	1

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Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test S1 2 mm Plank

Drawn By:	Checked By:	Date :
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Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.0.E

Rev: [-]

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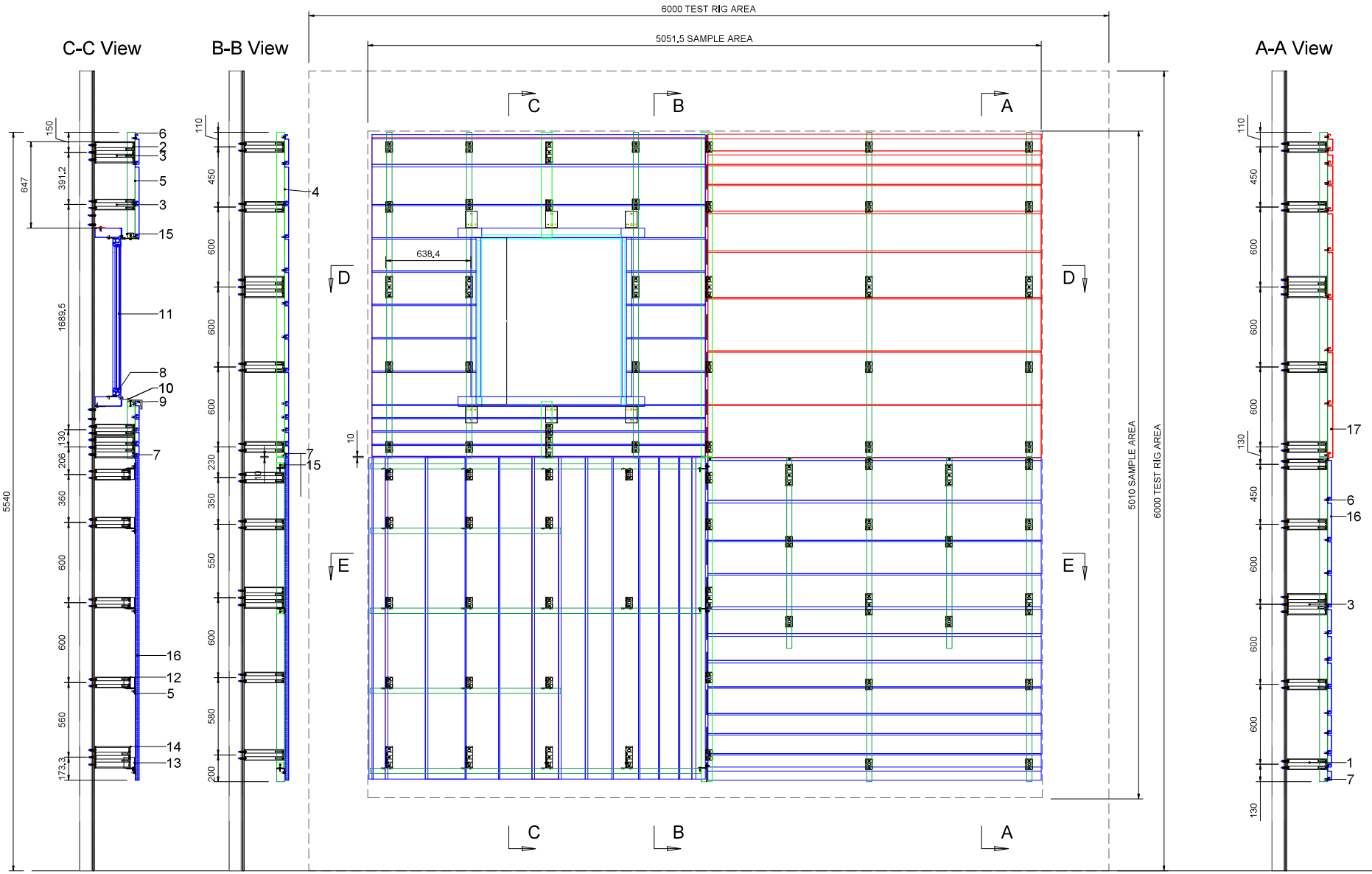

Material List:

1. AXL-HB300S Bracket
2. SS-LS22 Fixing
3. AXL-HB300D Bracket
4. AXL-T60X80X2.2 Rail
5. AXL-L60X40X2.2 Rail
6. LP-BM-LS28 Fixing
7. Start Bar
8. Window Support Frame
9. Window Cill Support
10. Window Cill
11. Glass Window with UPVC Frame
12. AXL-HB270S Bracket
13. AXL-HDB80 Adapter
14. AXL-HB270D Bracket
15. 50X50X70 2 mm Aluminium Cleat
16. LineAL-F 2 mm plank
17. LineAL-F 3 mm plank

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Rev	Description	Drawn	Check	Date
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A	First issue	AG	YT	26.04.2021

Drawing Status: Information

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Test Rig Layout - 1

Drawn By:	Checked By:	Date :
AG	YT	26/04/2021

Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.1

Rev: [-]

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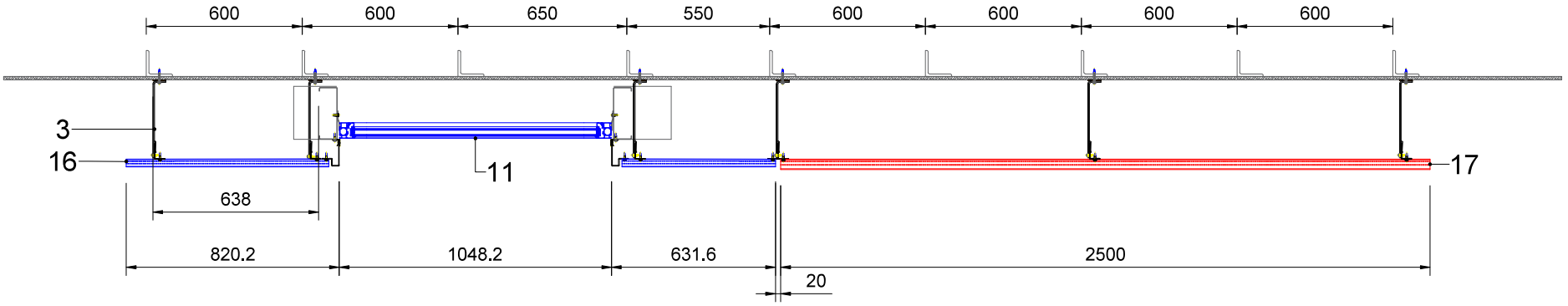
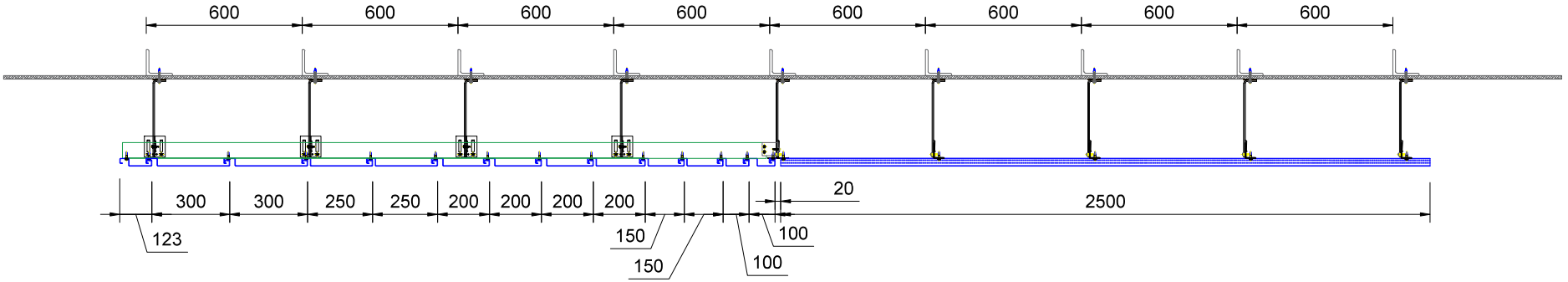


D-D View



E-E View

Material List:

1. AXL-HB300S Bracket
2. SS-LS22 Fixing
3. AXL-HB300D Bracket
4. AXL-T60X80X2.2 Rail
5. AXL-L60X40X2.2 Rail
6. LP-BM-LS28 Fixing
7. Start Bar
8. Window Support Frame
9. Window Cill Support
10. Window Cill
11. Glass Window with UPVC Frame
12. AXL-HB270S Bracket
13. AXL-HDB80 Adapter
14. AXL-HB270D Bracket
15. 50X50X70 2 mm Aluminium Cleat
16. LineAL-F 2 mm plank
17. LineAL-F 3 mm plank

Rev	Description	Drawn	Check	Date
C				
B				
A				

Drawing Status: Information

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL F CWCT Test Test Rig Layout - 2

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.2

Rev: [-]

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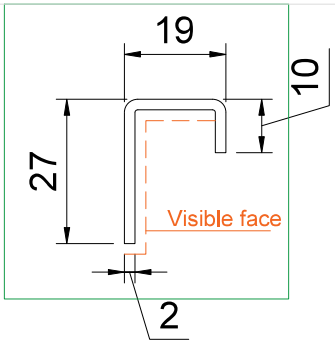
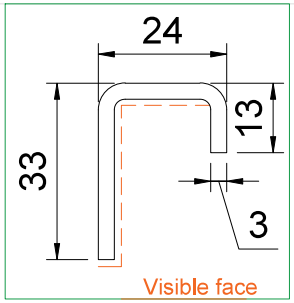


LineAL-F Start Bar
2 mm Aluminium - 1050H14



LineAL-F Start Bar
3 mm Aluminium - 1050H14

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Client :
Ash & Lacy

Project :
ED-Facade-2017

Drawing Title :
LineAL-F CWCT Test
Start Bar 2 mm / 3 mm

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : 1:1 @ A3

Drawing No : ED-FACADE-2017-1.3.1

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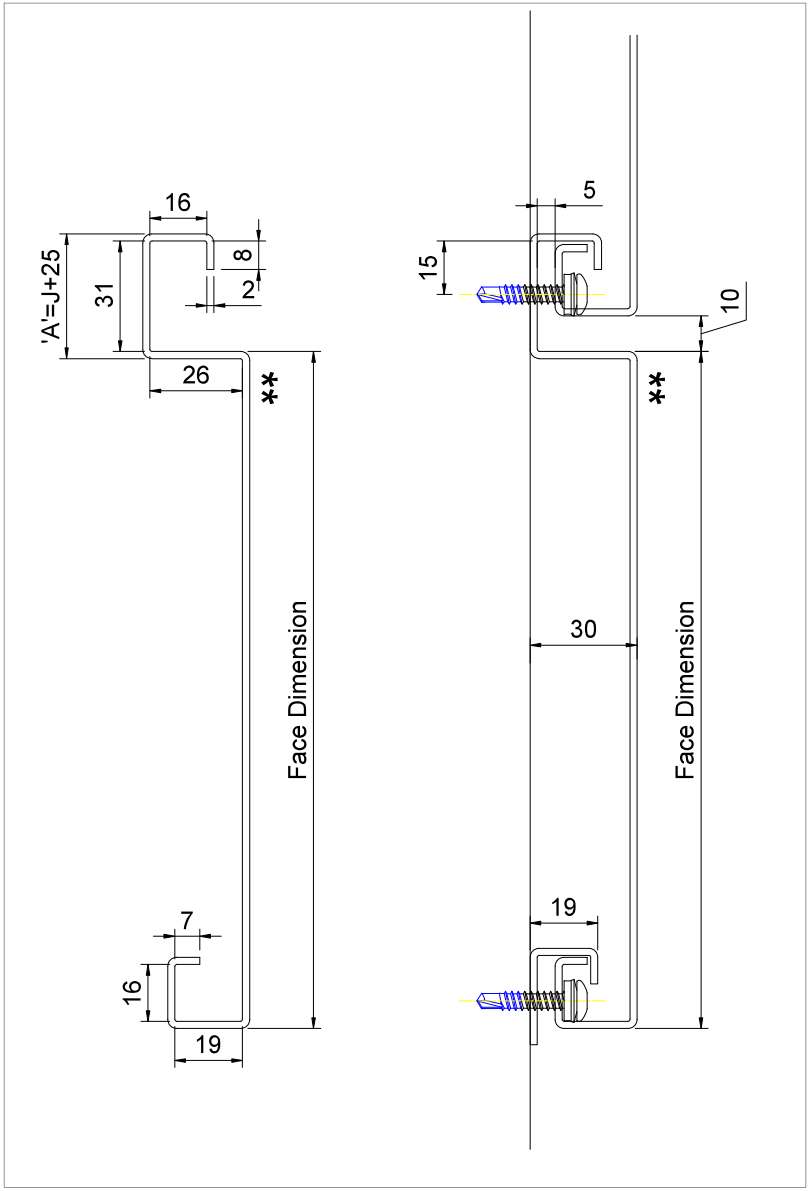
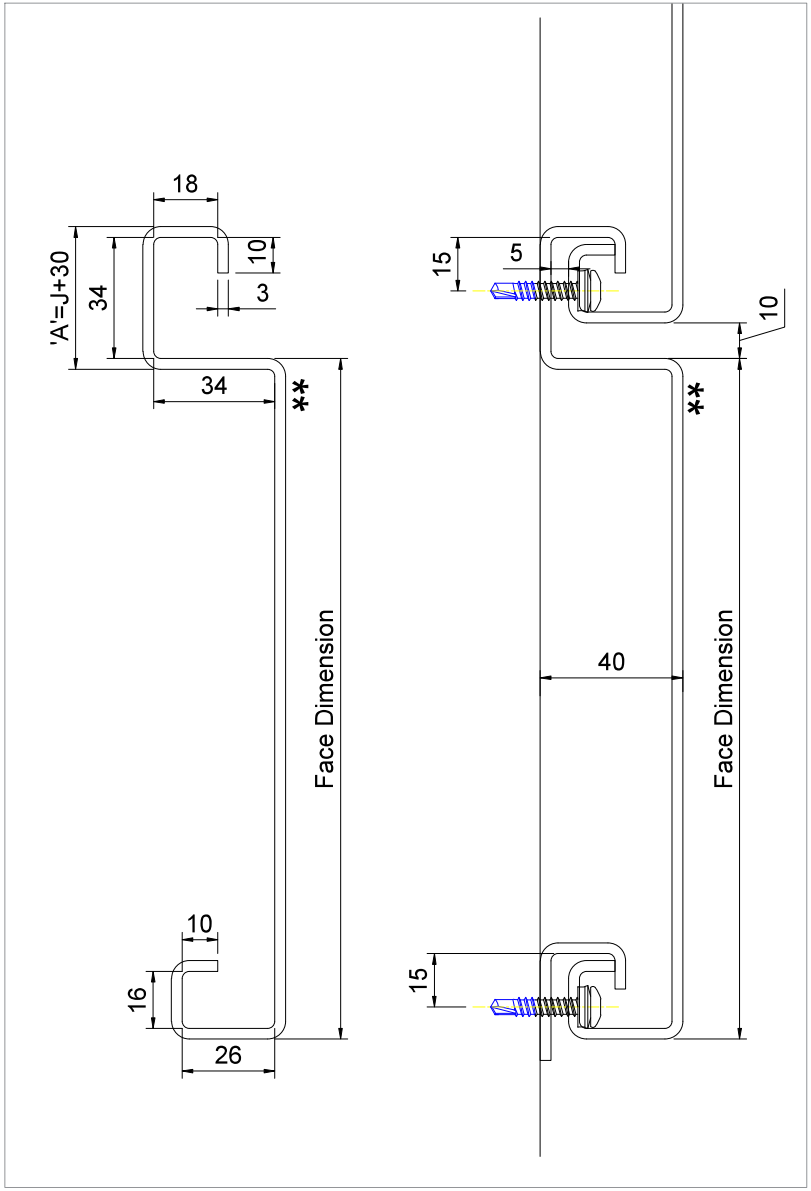


2 mm Aluminium Plank



3 mm Aluminium Plank

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Standard LineaL-F Panel

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : 1:5 @ A3

Drawing No : ED-FACADE-2017-1.3.2 Rev: [-]

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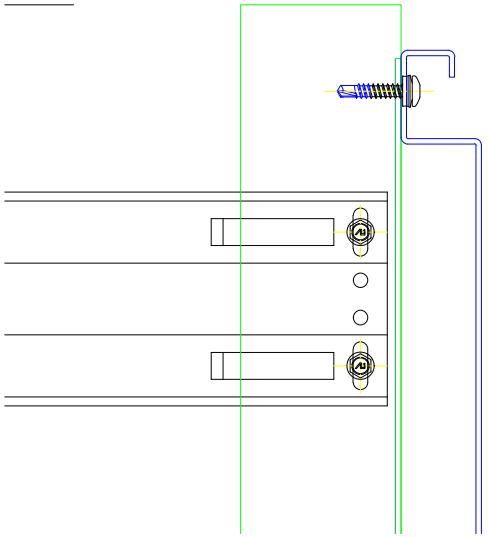
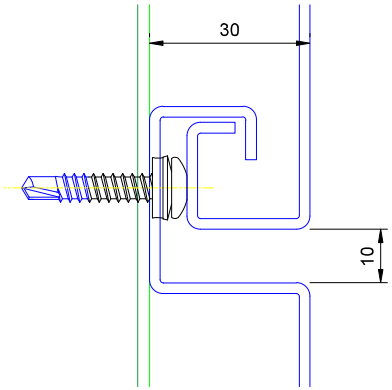
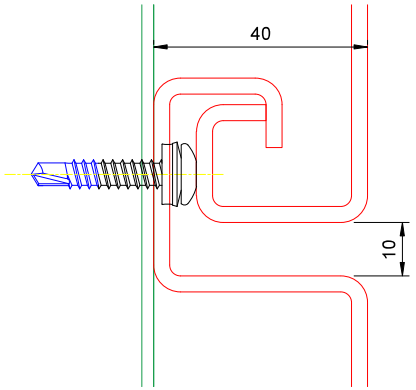


Top Detail

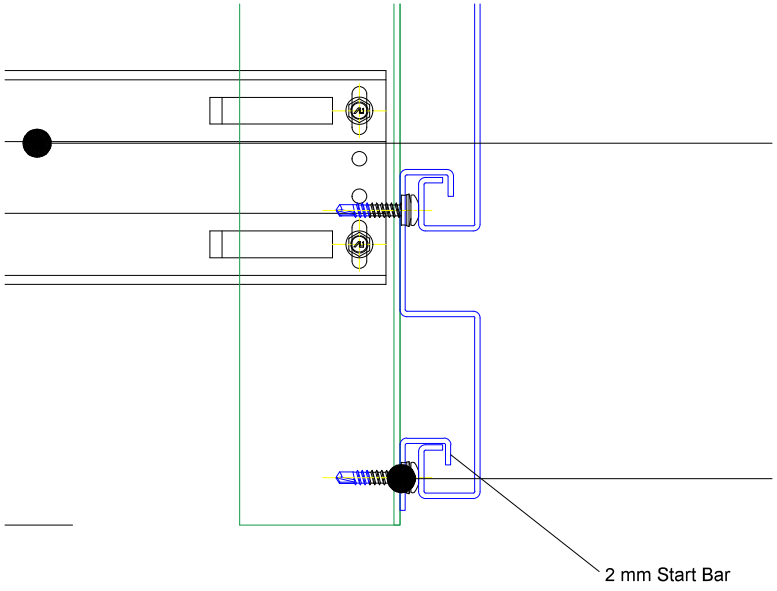


LineAL-F-Plank 2 mm

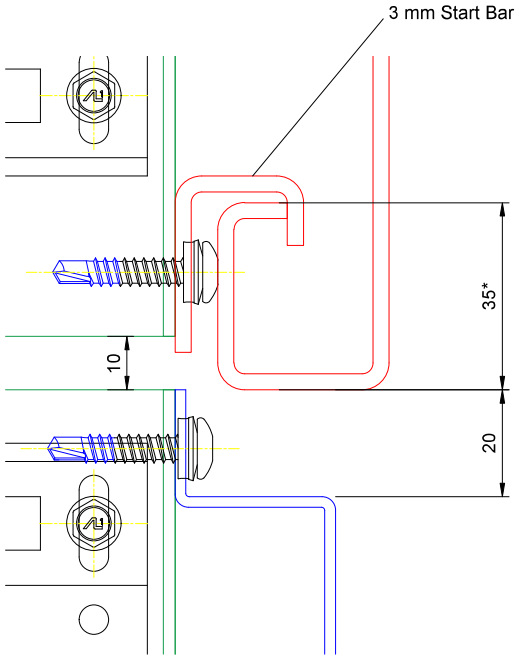


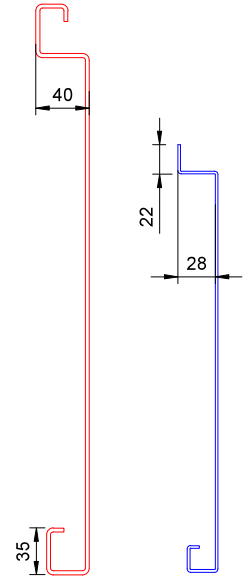
LineAL-F-Plank 3 mm

Horizontal Joint



Bottom Detail





Start-LineAL F Plank 3 mm

Top-LineAL F Plank 2 mm

Horizontal Movement Joint

Rev	Description	Drawn	Check	Date
C				
B				
A				

Drawing Status: Information

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Test Rig Layout - 3

Drawn By:	Checked By:	Date :
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Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1,3,3

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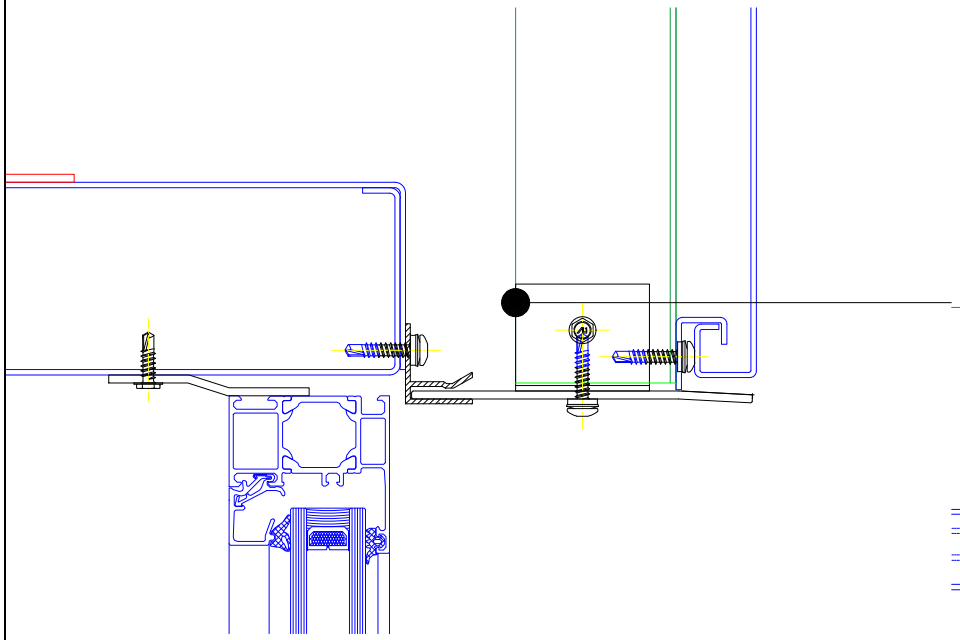
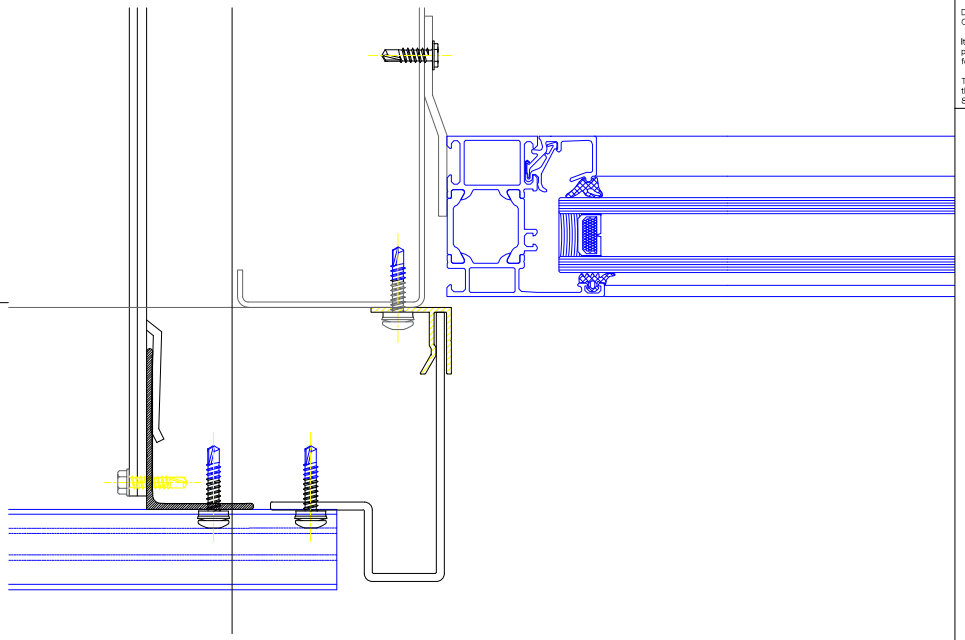
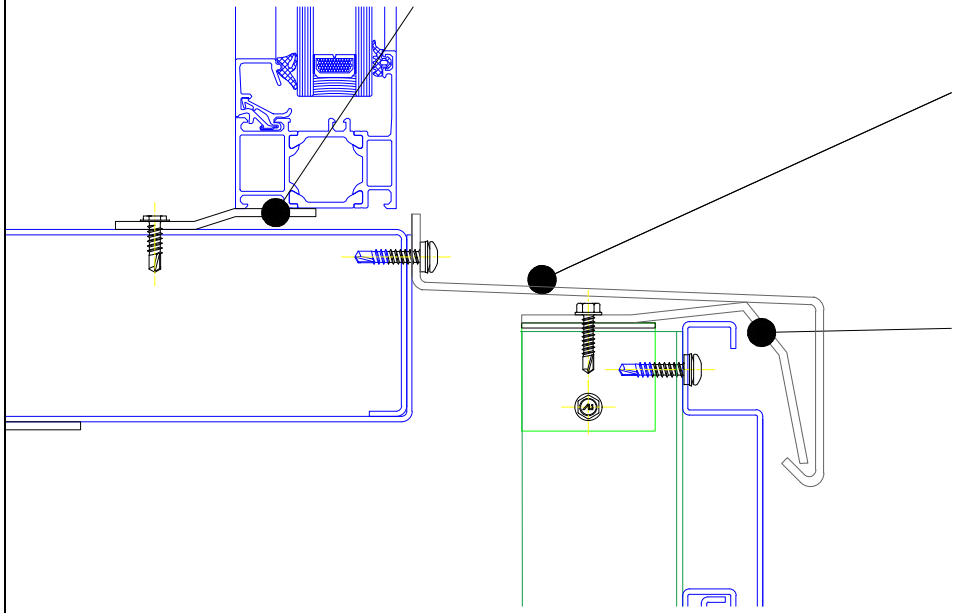


Window Head Detail



Window Jamb Left Return Joint



Window Cill Detail

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C				
B				
A				

Drawing Status:
Information

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FAX: 0121 525 3444 WWW.ASHANDLACY.COM

Client :
Ash & Lacy

Project :
ED-Facade-2017

Drawing Title :
LineAL-F CWCT Test
Test Rig Layout - 4

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

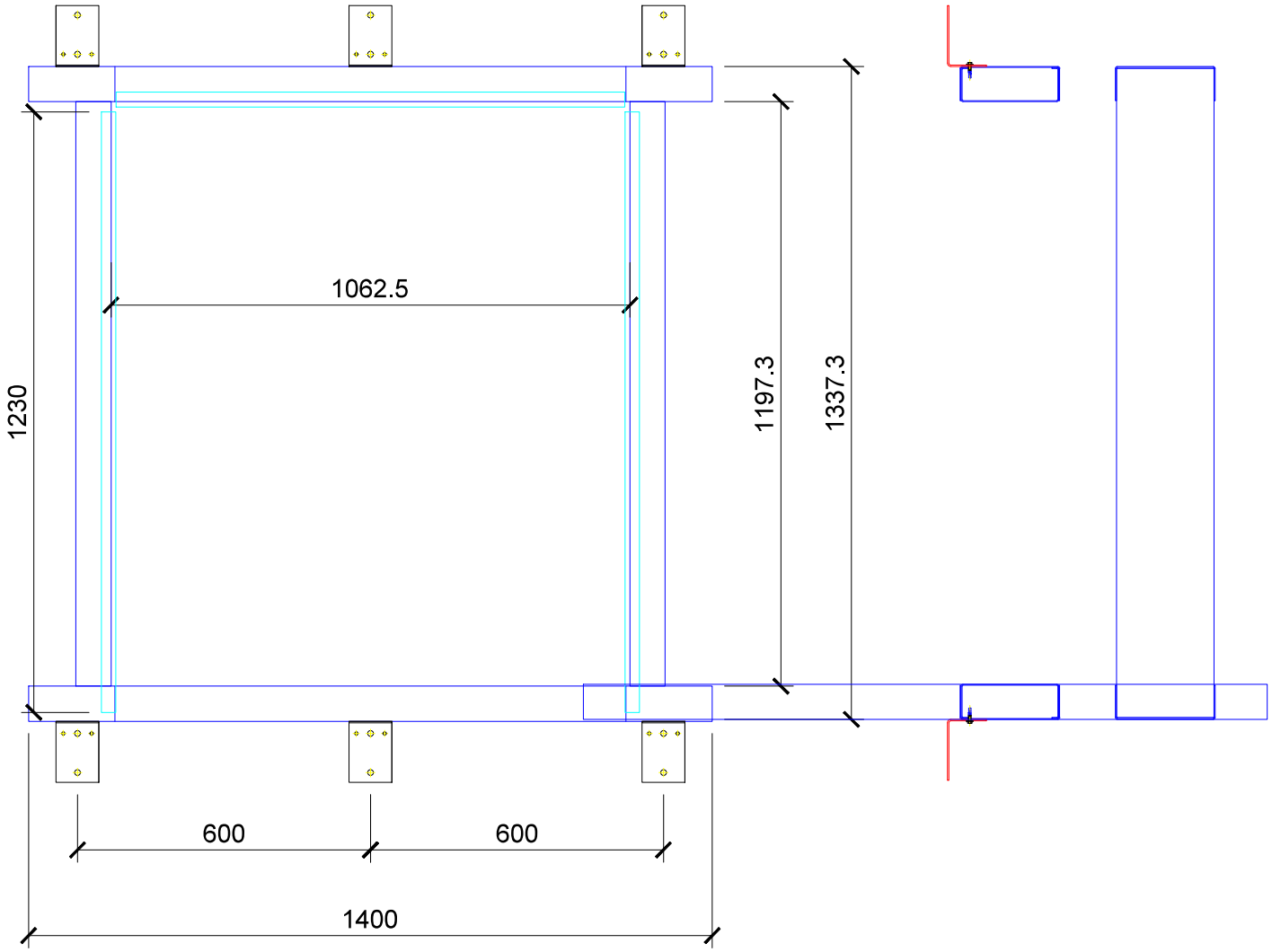
Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.4

Rev: [-]

Window Frame

IF IN DOUBT - ASK



Material List:

1. 2 off AU204070200 140mm long
2. 2 off AC200070200 1000mm long
3. 2 off AC200070200 1330mm long
4. 6 off AHC88L

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Window Frame

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.5

Rev: [-]

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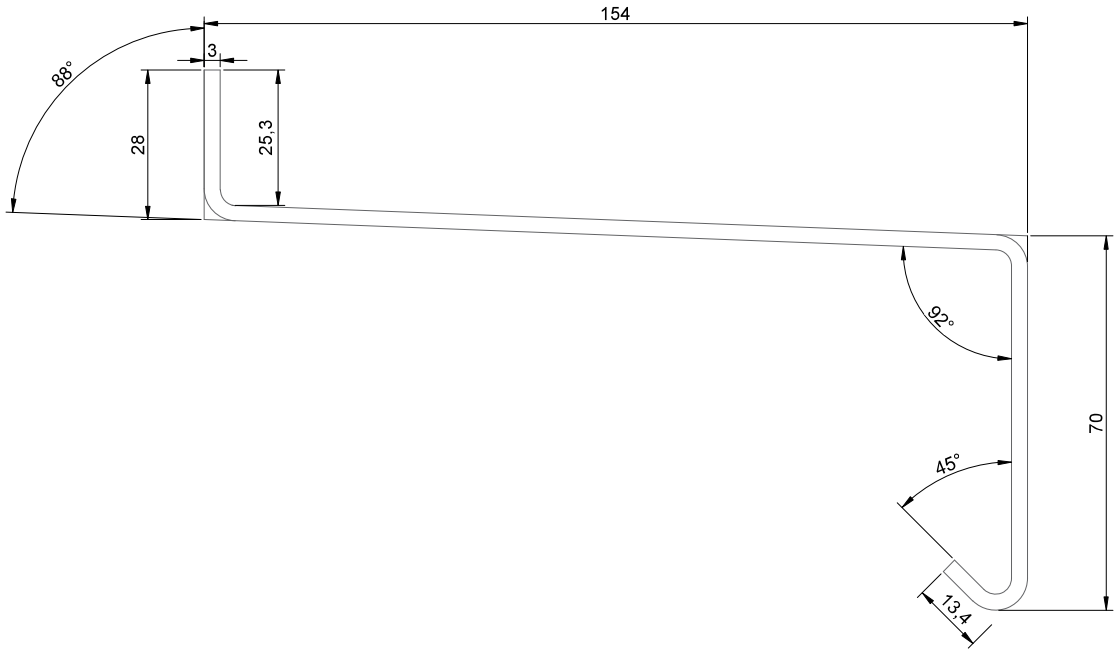

Window Cill:

1. Material: alum 1050H14
2. Thickness 3mm
3. Length: 1045 mm
4. Finish: Mill

Rev	Description	Drawn	Check	Date
C				
B				
A				

Drawing Status: Information

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Window Cill Support

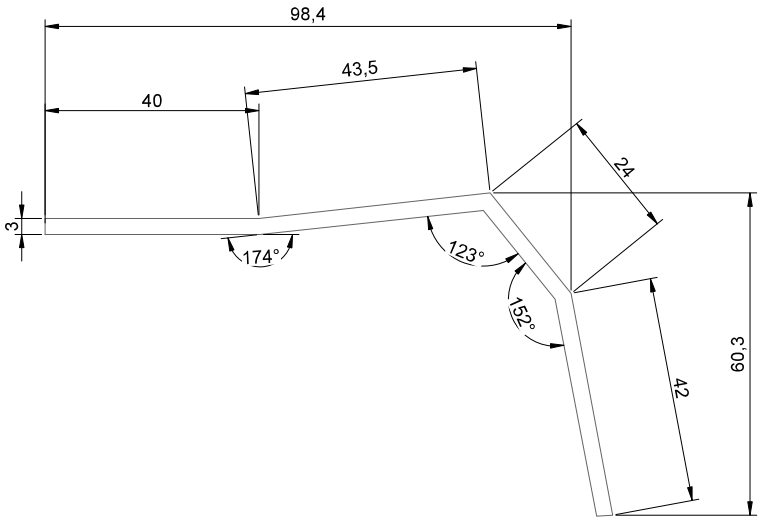
Drawn By:	Checked By:	Date :
AG	YT	28/04/2021

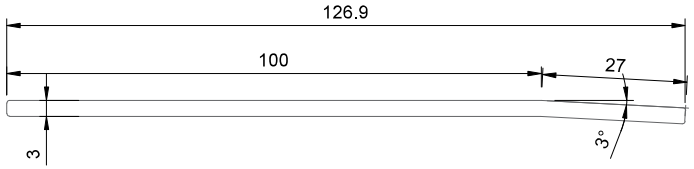
Scale : 1:1 @ A3

Drawing No : ED-FACADE-2017-1.6

Rev: [-]

IF IN DOUBT - ASK





Window Cill support:

1. Material: alum 1050H14
2. Thickness 3mm
3. Length: 1045 mm
4. Finish: Mill Finish

Window Head Plate:

1. Material: alum 1050H14
2. Thickness 3mm
3. Length: 1045 mm
4. Finish: Mill Finish

General Notes:

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Window Cill / Head components

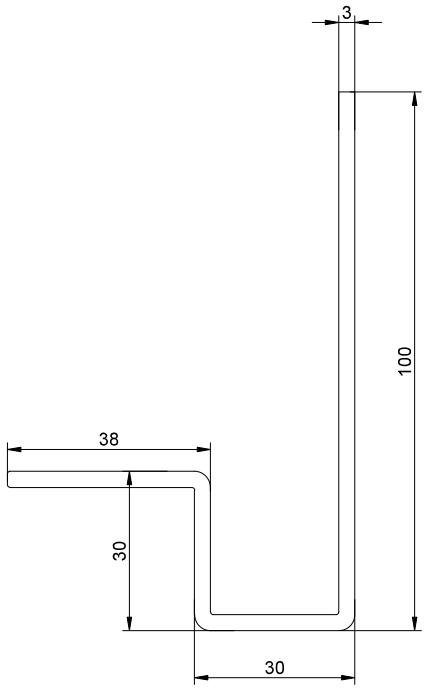
Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : 1:1 @ A3

Drawing No : ED-FACADE-2017-1.7

Rev: [-]

IF IN DOUBT - ASK



Window Reveal:

1. Material: alum 1050H14
2. Thickness 3mm
3. Length: 1220 mm
4. Finish: Mill Finish

General Notes:

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Drawing Status: Information

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Window Reveal

Drawn By:	Checked By:	Date :
AG	YT	28/04/2021

Scale : 1:1 @ A3

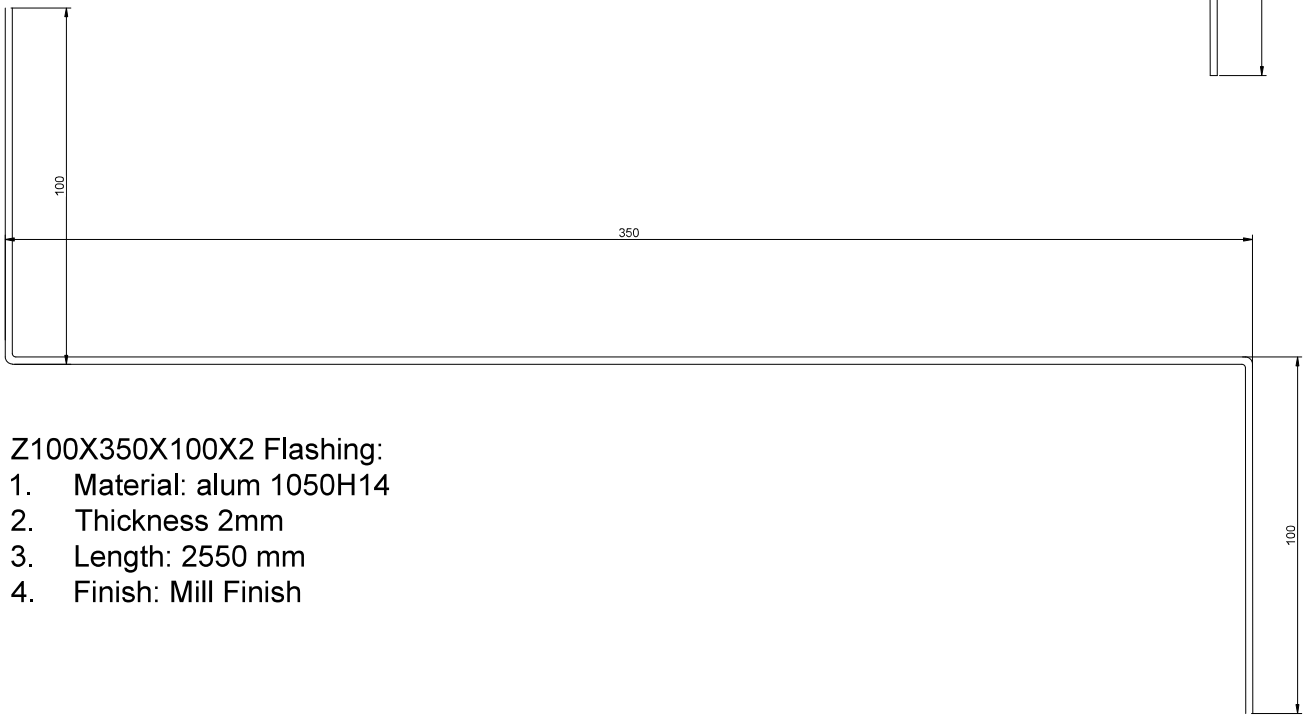
Drawing No : ED-FACADE-2017-1.7.1

Rev: [-]

IF IN DOUBT - ASK

Z100X340X100X2 Flashing:

1. Material: alum 1050H14
2. Thickness 2mm
3. Length: 2550 mm
4. Finish: Mill Finish



Z100X350X100X2 Flashing:

1. Material: alum 1050H14
2. Thickness 2mm
3. Length: 2550 mm
4. Finish: Mill Finish

General Notes:

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A				

Drawing Status: Information

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Z-PROFILE

Drawn By:	Checked By:	Date :
AG	YT	28/04/2021

Scale : 1:1.5 @ A3

Drawing No : ED-FACADE-2017-1.7.2

Rev: [-]

FACADE

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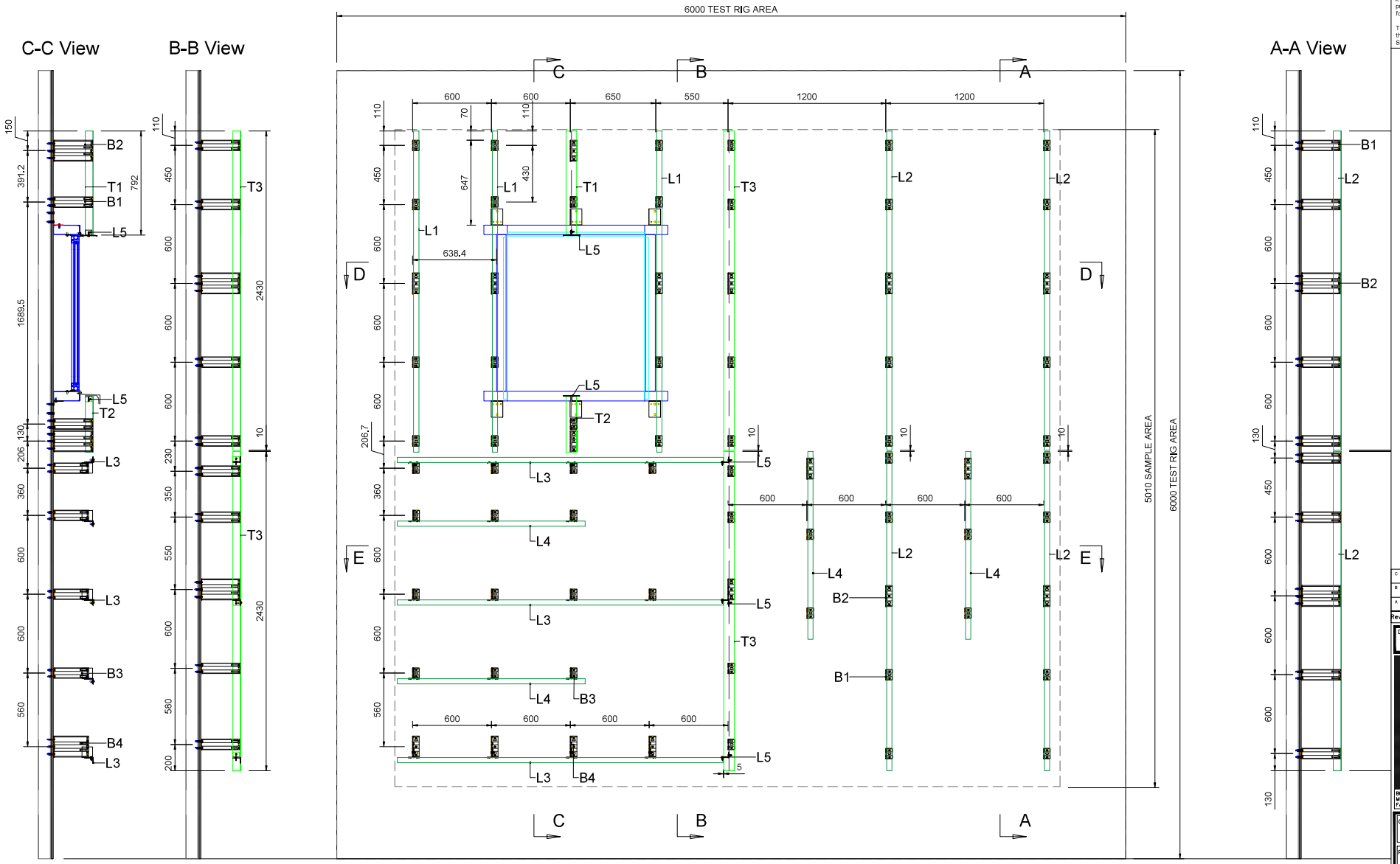

L Rail (AXL-L60X40X2.2) List:
L1 - 2445 mm 3pcs
L2-2430 mm 4 pcs
L3 - 2480 mm 3pcs
L4-1430mm 4 pcs

L5-50 mm 7 pcs

T Rail (AXL-T60X80X2.2) List
T1 - 792 mm 1pcs
T2 - 425 mm 1pcs
T3- 2430 mm 2 pcs

Brackets:
B1 - HB300S+AXL-TP80L
B2 - HB300D+AXL-TP160L
B3 - HBD80+HB270S+AXL-TP80L+2 off SS-LS22
B4 - HBD80+HB270D+AXL-TP80L+2 off SS-LS22

Rev	Description	Drawn	Check	Date
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B				
A				

Drawing Status: Information

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Supporting Frame Layout - 1

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.8

Rev: [-]

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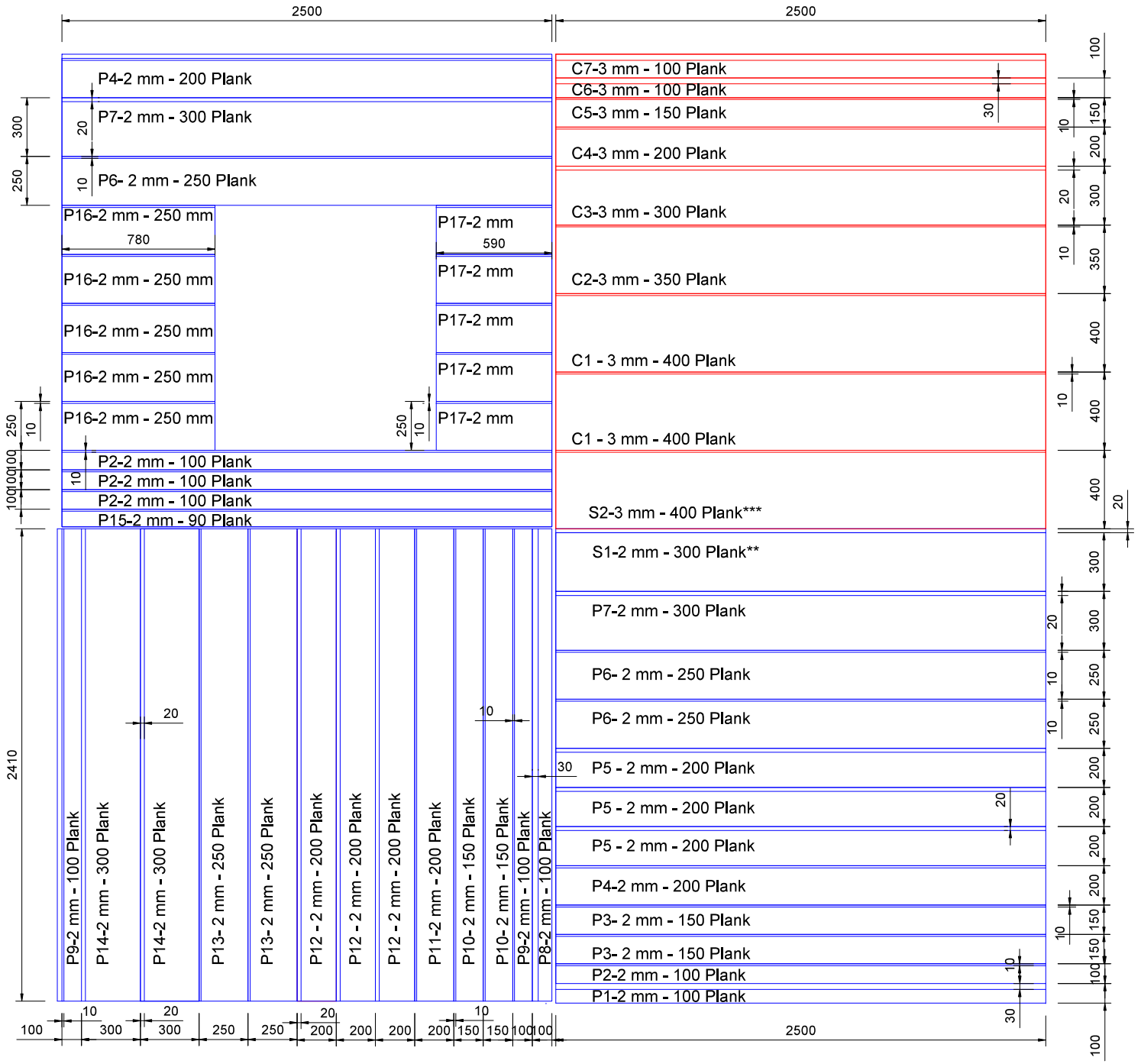

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Client : Ash & Lacy

Project : ED-Facade-2017

Drawing Title : LineAL-F CWCT Test Panel Layout

Drawn By:	Checked By:	Date :
AG	YT	27/04/2021

Scale : NTS @ A3

Drawing No : ED-FACADE-2017-1.9

Rev: [-]

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E-mail: sales@ashandlacy.com

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0333 5669000

info@technology-centre.co.uk

www.technology-centre.co.uk

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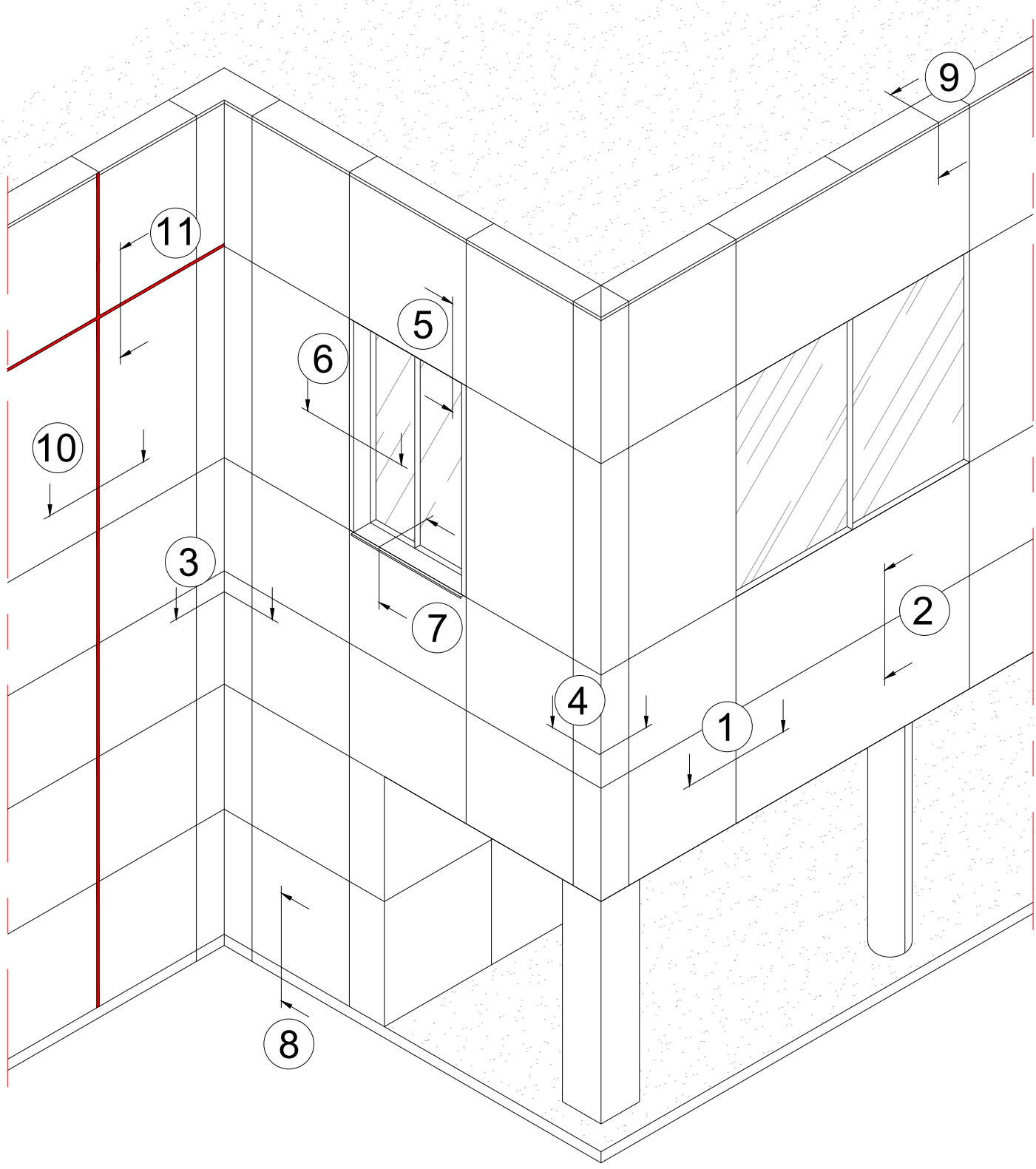

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Drawing Title :
Typical Details Keys

Drawn By:	Checked By:	Date :
AG		06/07/2021

Scale : NTS @ A4

Drawing Status:
Information

Client :

Project :
LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-00

Rev:

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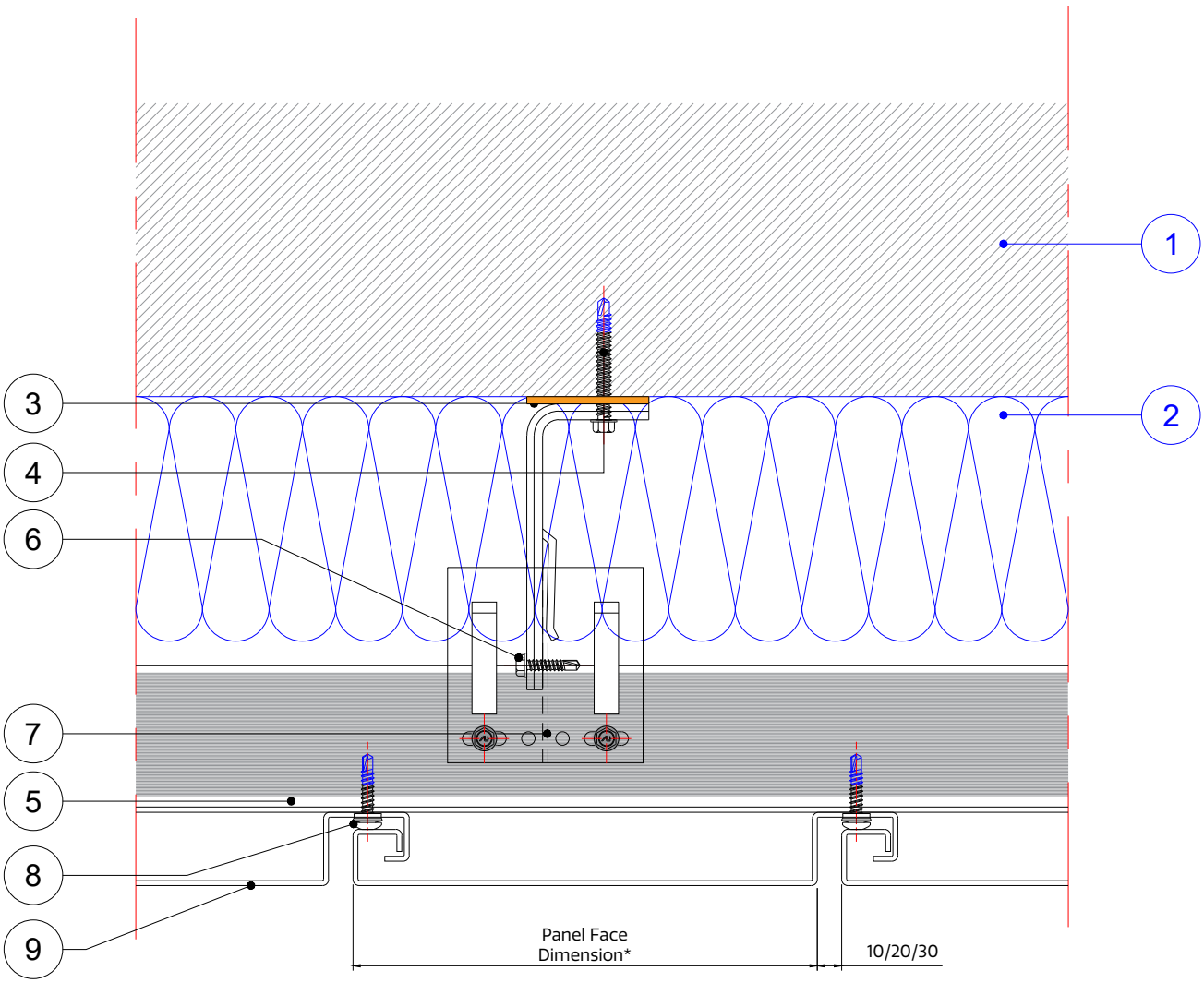

* PANEL FACE DIMENSION: min 50 - max 400 mm

1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
7. Horizontal Adapter Bracket
8. Panel fixing - LP-BM-LS28
9. LineAL-F plank
10. Window Flashing
11. "F" Trim support
12. Cleat (to be site cut)
13. Aluminium Angle
14. Insect mesh/Ventilated section
15. Coping
16. Starter profile
17. Rivet K11/K14

Note: All fixings, insulation and membranes indicated are for guidance only and need to be checked for each individual

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Notes:

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Drawing Title : VERTICAL JOINT

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-01

Rev:

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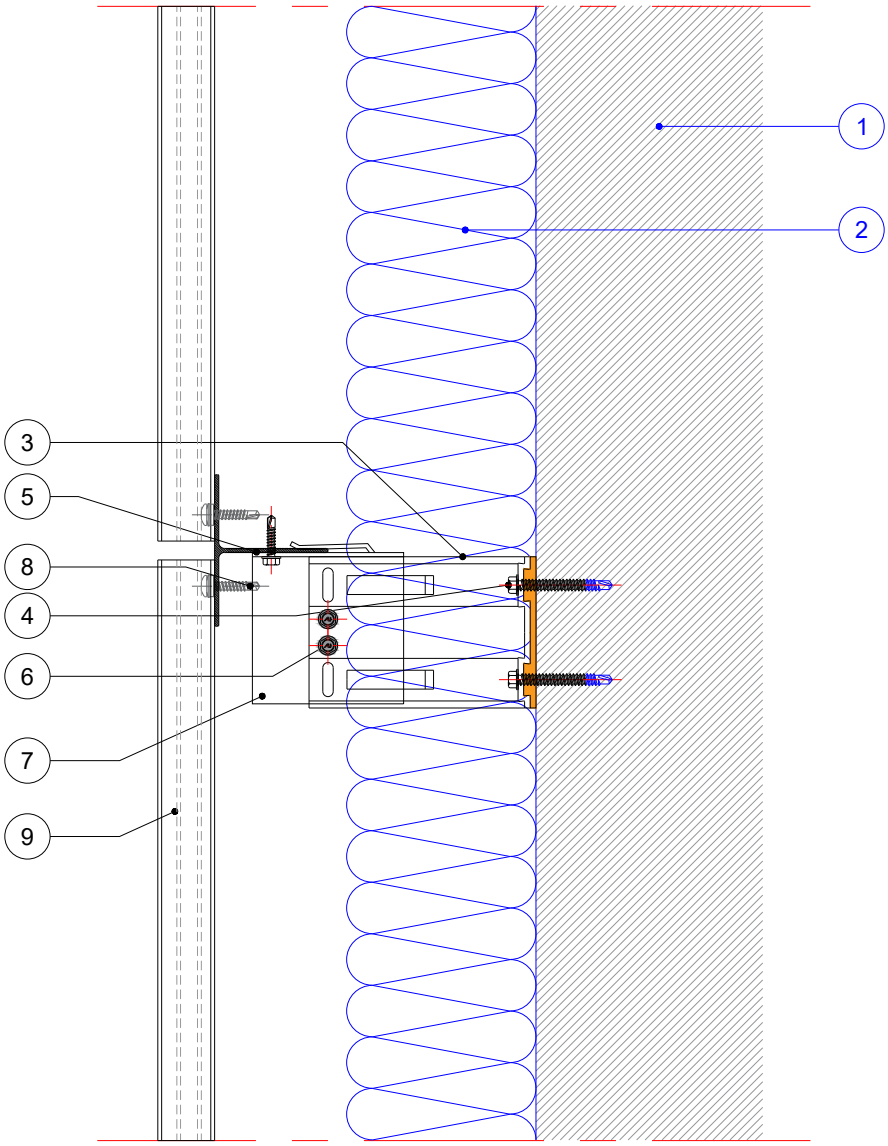

1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
7. Horizontal Adapter Bracket
8. Panel fixing - LP-BM-LS28
9. LineAL-F plank
10. Window Flashing
11. "F" Trim support
12. Cleat (to be site cut)
13. Aluminium Angle
14. Insect mesh/Ventilated section
15. Coping
16. Starter profile
17. Rivet K11/K14

Note: All fixings, insulation and membranes indicated are for guidance only and need to be checked for each individual

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Notes:

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A				
B				
C				

Drawing Title : HORIZONTAL JOINT

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-02

Rev:

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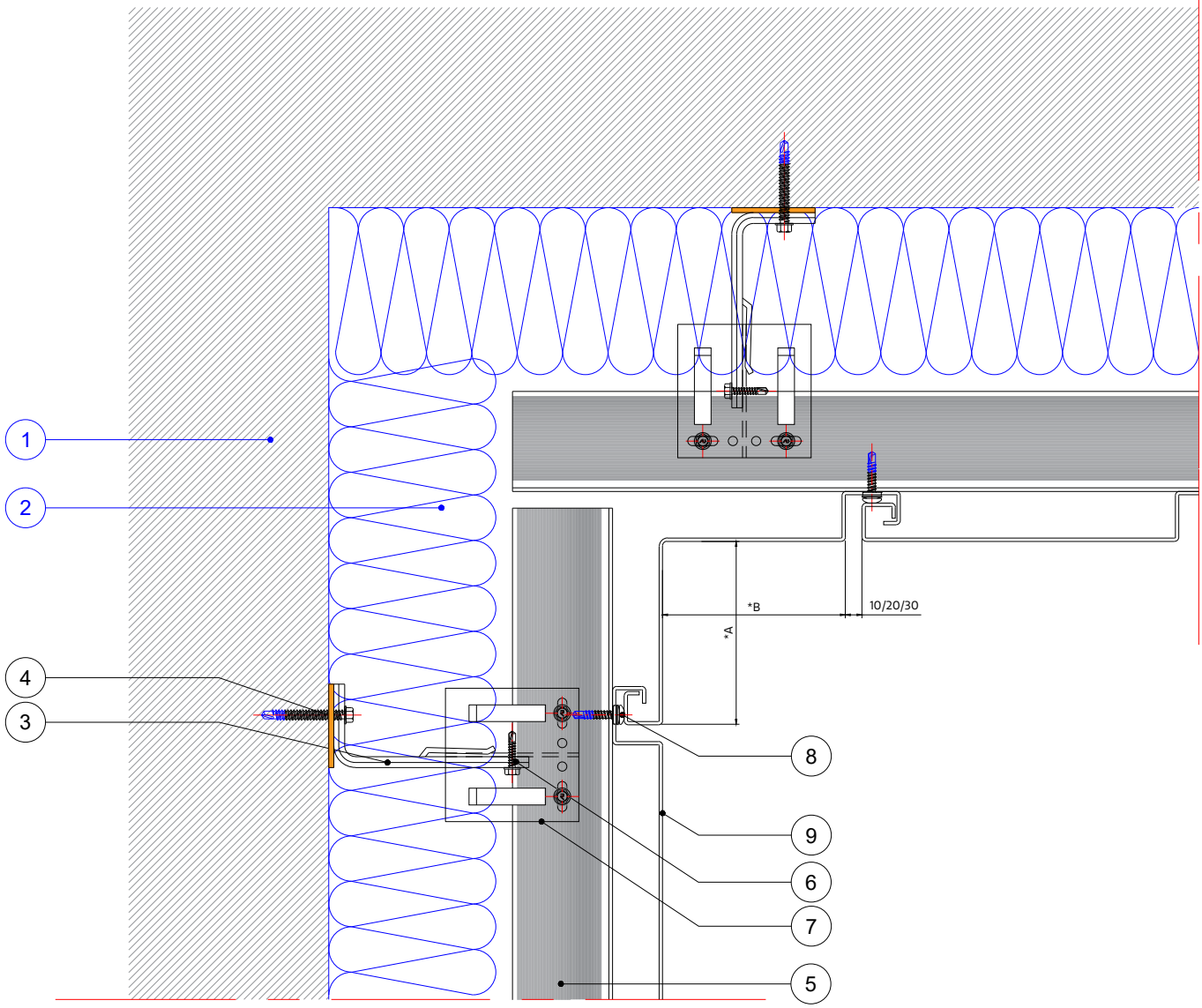

* PANEL FACE DIMENSION:
* dim A: min 50 mm - max 300 mm
* dim B: min 50 mm - max 300 mm

1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
7. Horizontal Adapter Bracket
8. Panel fixing - LP-BM-LS28
9. LineAL-F plank
10. Window Flashing
11. "F" Trim support
12. Cleat (to be site cut)
13. Aluminium Angle
14. Insect mesh/Ventilated section
15. Coping
16. Starter profile
17. Rivet K11/K14

Note: All fixings, insulation and membranes indicated are for guidance only and need to be checked for each individual

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Notes:

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A				
B				
C				

Drawing Title : INTERNAL CORNER

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-03

Rev:

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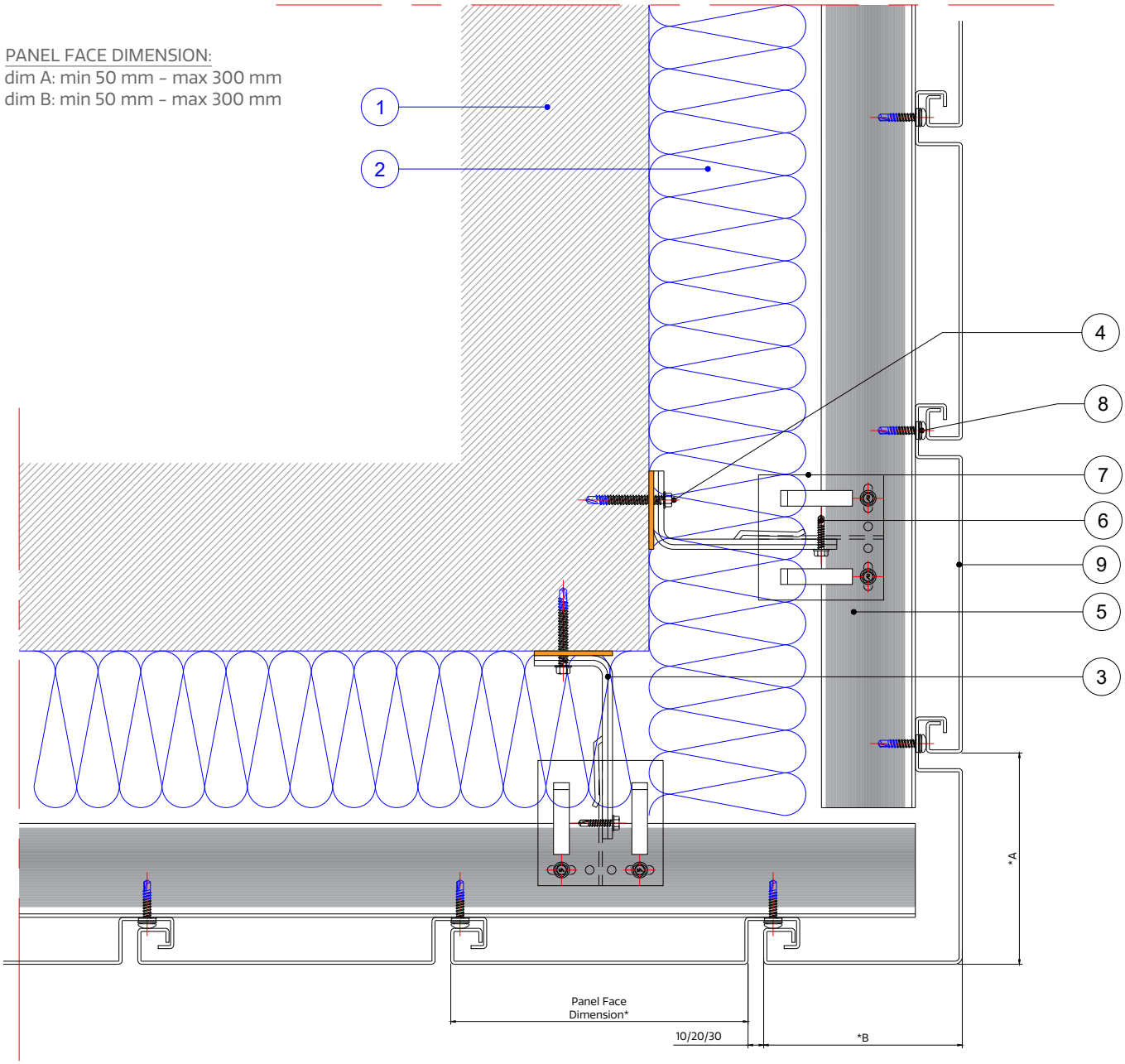
NOTE: All objects in blue are done by others

* PANEL FACE DIMENSION:
* dim A: min 50 mm - max 300 mm
* dim B: min 50 mm - max 300 mm



1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
7. Horizontal Adapter Bracket
8. Panel fixing - LP-BM-LS28
9. LineAL-F plank
10. Window Flashing
11. "F" Trim support
12. Cleat (to be site cut)
13. Aluminium Angle
14. Insect mesh/Ventilated section
15. Coping
16. Starter profile
17. Rivet K11/K14

Note: All fixings, insulation and membranes indicated are for guidance only and need to be checked for each individual

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Notes:

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A				
B				
C				

Drawing Title : EXTERNAL CORNER

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-04

Rev:

IF IN DOUBT - ASK

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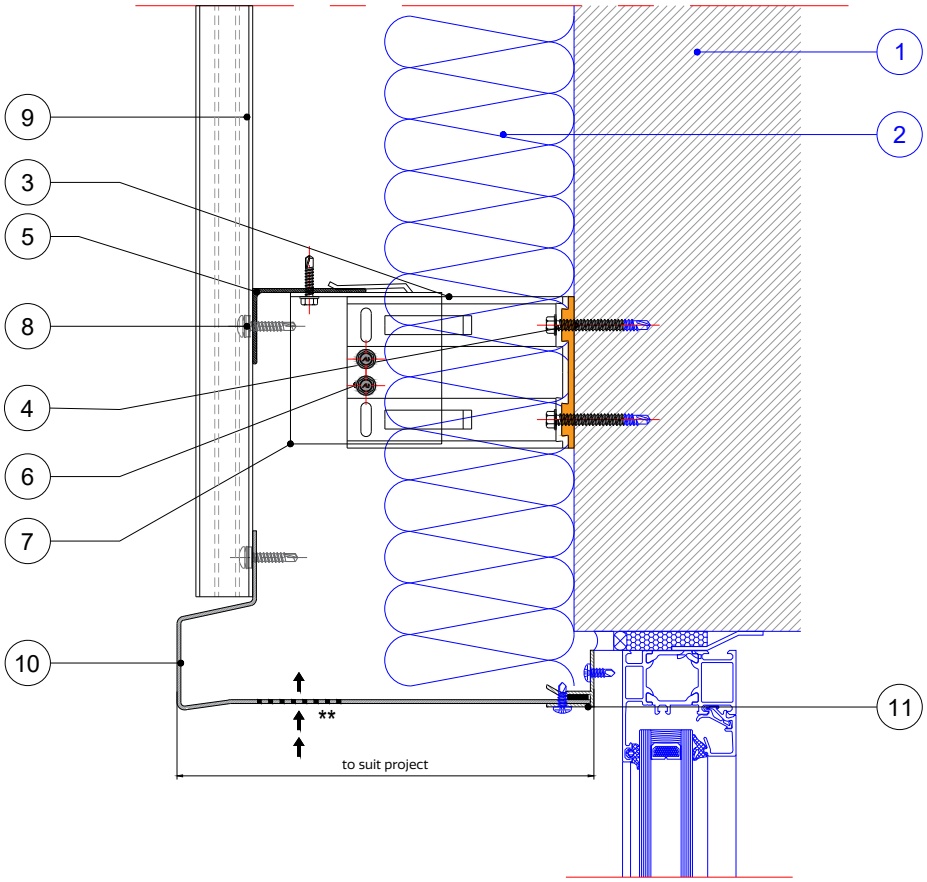

*ventilation profile

1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
7. Horizontal Adapter Bracket
8. Panel fixing - LP-BM-LS28
9. LineAL-F plank
10. Window Flashing
11. "F" Trim support
12. Cleat (to be site cut)
13. Aluminium Angle
14. Insect mesh/Ventilated section
15. Coping
16. Starter profile
17. Rivet K11/K14

Note: All fixings, insulation and membranes indicated are for guidance only and need to be checked for each individual

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Notes:

Rev	Description	Drawn	Check	Date
A				
B				
C				

Drawing Title : WINDOW HEAD

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-05

Rev:

IF IN DOUBT - ASK

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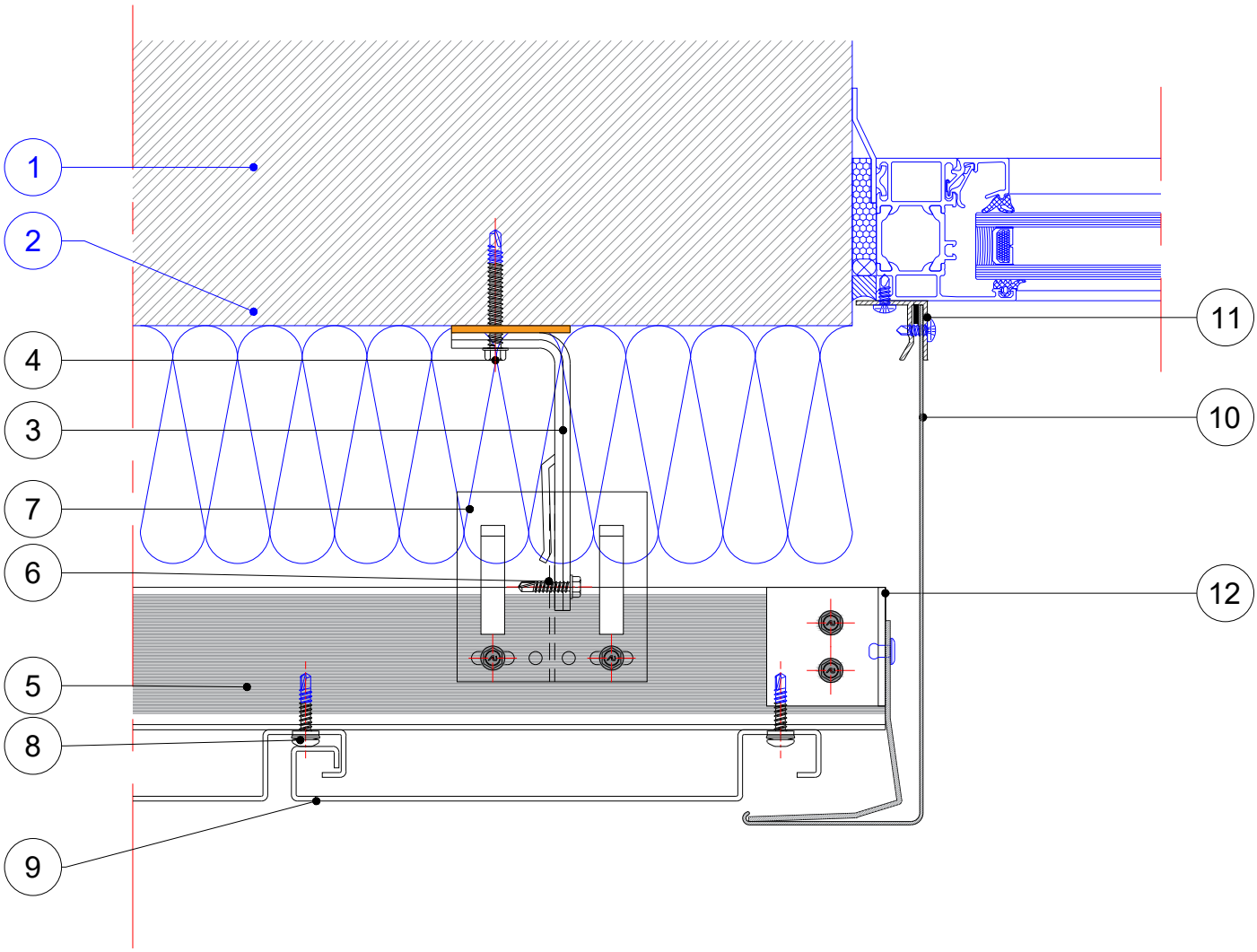

*ventilation profile

1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
7. Horizontal Adapter Bracket
8. Panel fixing - LP-BM-LS28
9. LineAL-F plank
10. Window Flashing
11. "F" Trim support
12. Cleat (to be site cut)
13. Aluminium Angle
14. Insect mesh/Ventilated section
15. Coping
16. Starter profile
17. Rivet K11/K14

Note: All fixings, insulation and membranes indicated are for guidance only and need to be checked for each individual

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Notes:

Rev	Description	Drawn	Check	Date
A				
B				
C				

Drawing Title : WINDOW JAMB

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-06

Rev:

IF IN DOUBT - ASK

General Notes:

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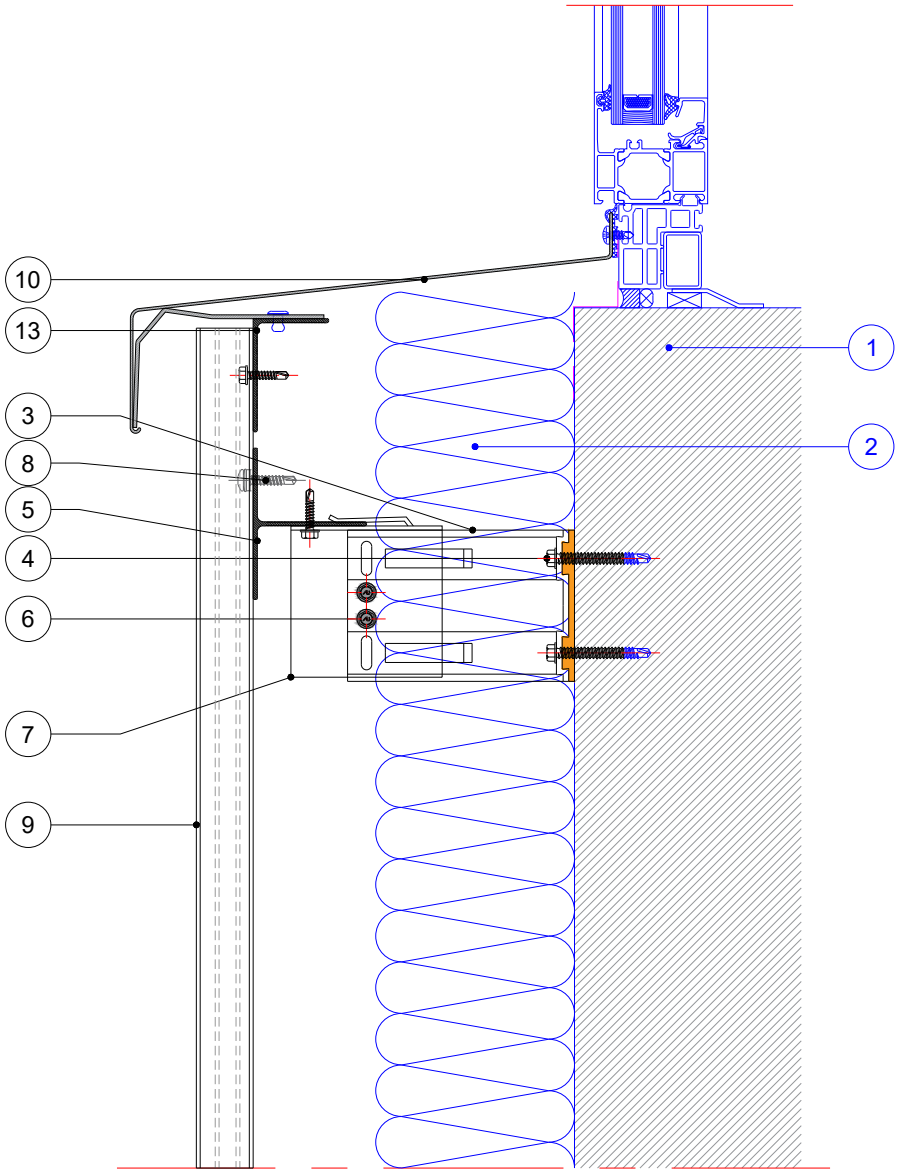
NOTE: All objects in blue are done by others



1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
7. Horizontal Adapter Bracket
8. Panel fixing - LP-BM-LS28
9. LineAL-F plank
10. Window Flashing
11. "F" Trim support
12. Cleat (to be site cut)
13. Aluminium Angle
14. Insect mesh/Ventilated section
15. Coping
16. Starter profile
17. Rivet K11/K14

Note: All fixings, insulation and membranes indicated are for guidance only and need to be checked for each individual

ASH & LACY
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WEST MIDLANDS
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FAX: 0121 525 3444
WWW.ASHANDLACY.COM

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Drawing Title : WINDOW CILL

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-07

Rev:

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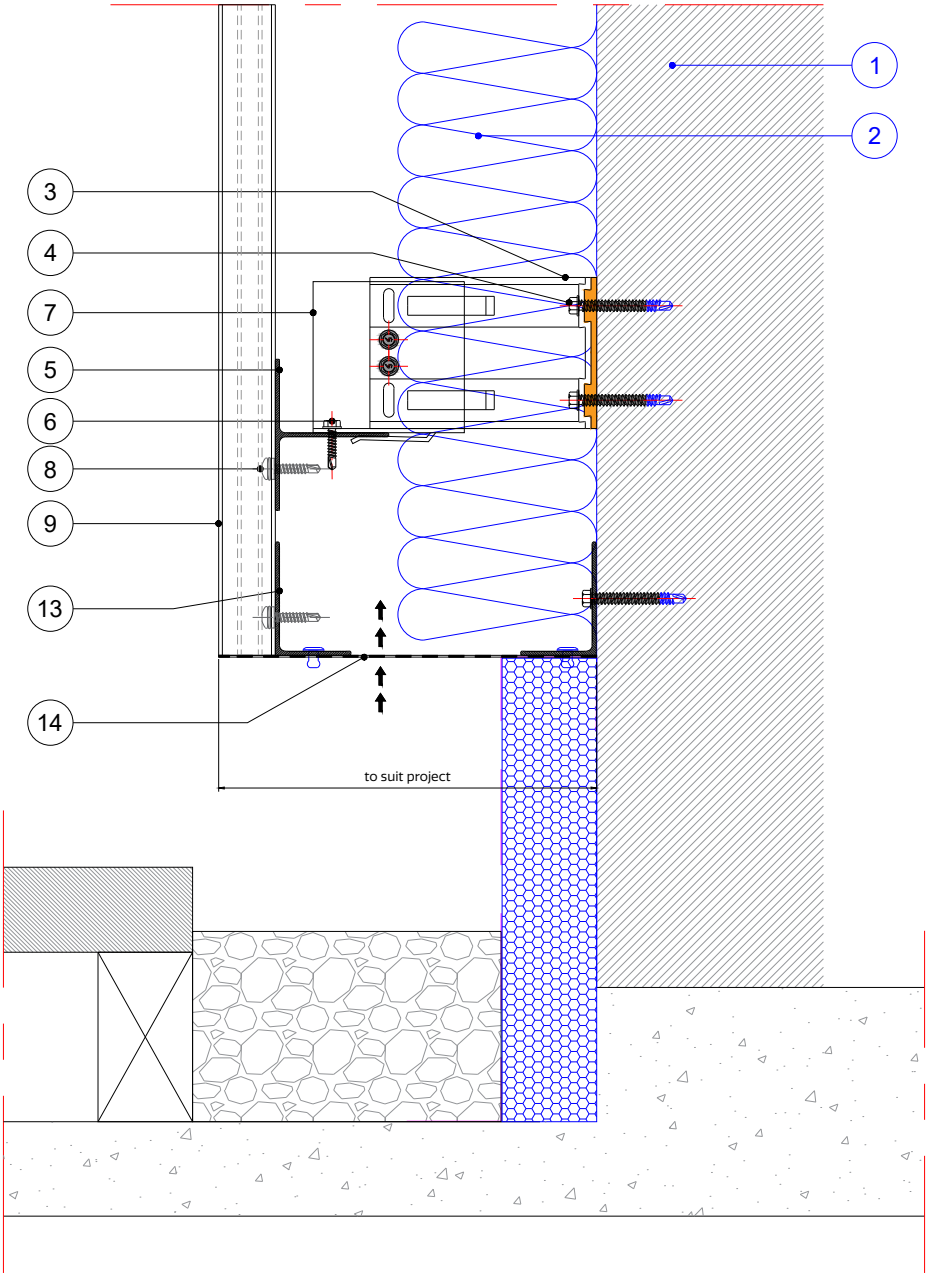

1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
7. Horizontal Adapter Bracket
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Drawing Title : BASE DETAIL

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-08

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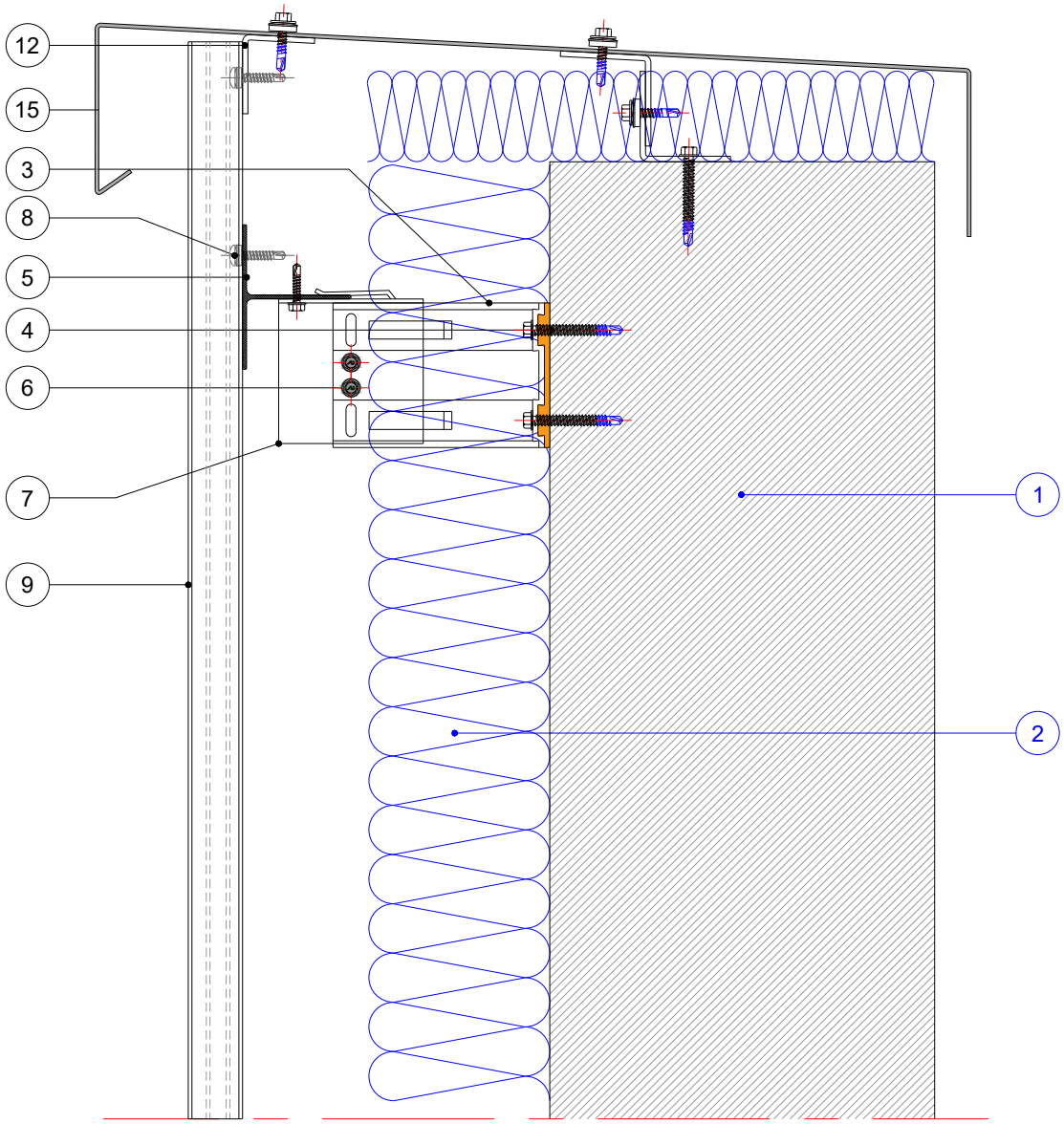

1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
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Drawing Title : PARAPET DETAIL

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-09

Rev:

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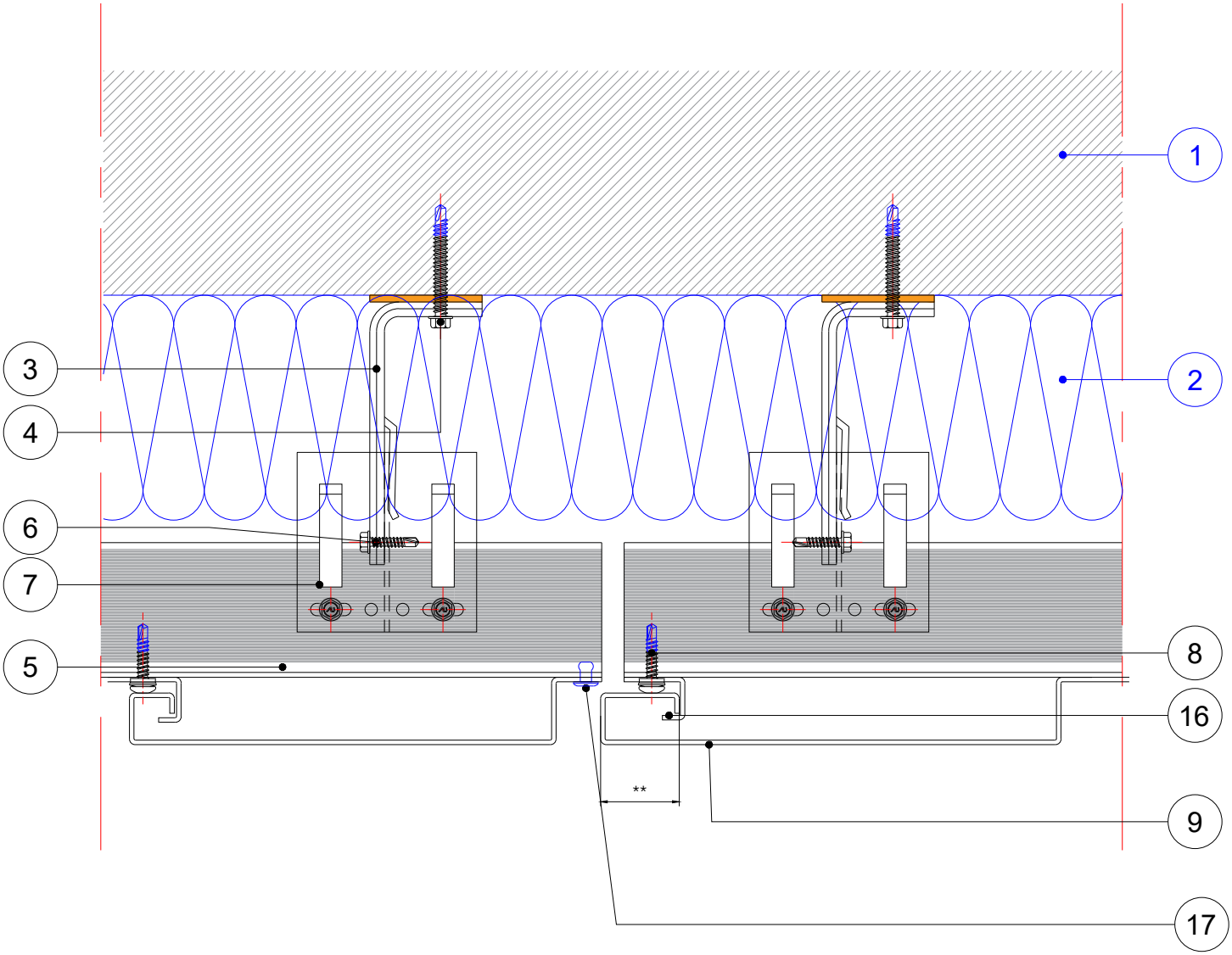

*TO SUIT JOINT DIMENSION

1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
5. Mullion
6. Bracket/Mullion Fixing
7. Horizontal Adapter Bracket
8. Panel fixing - LP-BM-LS28
9. LineAL-F plank
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11. "F" Trim support
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Note: All fixings, insulation and membranes indicated are for guidance only and need to be checked for each individual

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Drawing Title : VERTICAL MOVEMENT JOINT

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-10.00

Rev:

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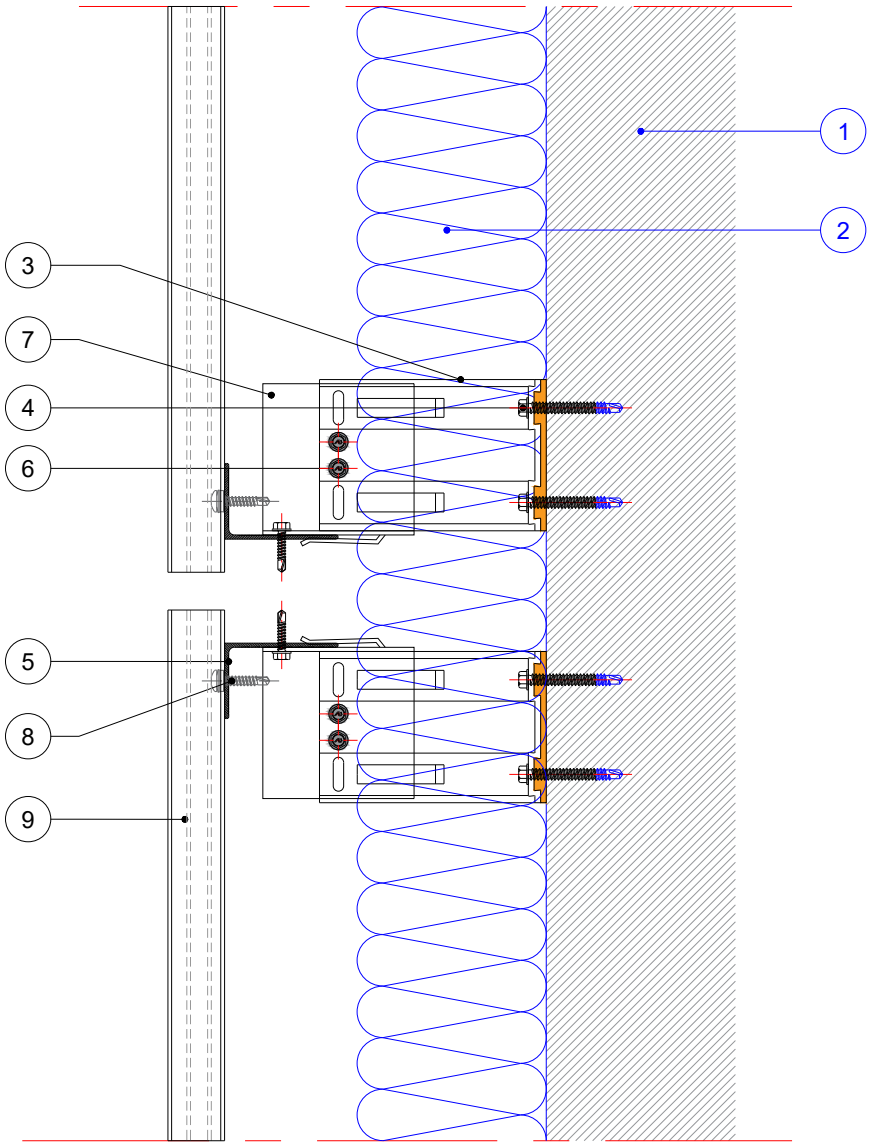

1. Substrate
2. Insulation
3. Bracket + Thermal Pad
4. Bracket/Wall Fixing (Depending on Substrate)
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Note: All fixings, insulation and membranes indicated are for guidance only and need to be checked for each individual

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Notes:

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C				

Drawing Title : HORIZONTAL MOVEMENT JOINT

Drawn By: AG | Checked By: | Date : 06/07/2021

Scale : NTS @ A4

Drawing Status: Information

Client :

Project : LineAL-F Typical Details
2 mm Alu
AX2- Generic Substrate

Drawing No : TD.LF.P.2G.A-11.00

Rev:

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warringtonfire.com

Title:

CLASSIFICATION OF REACTION TO FIRE PERFORMANCE USING THE PRINCIPLES OF EN 13501-1:2018

Notified Body No:

0833

Product Name:

"AxiAL Aluminium Supporting System"

Report No:

WF 413768

Issue No:

2

Prepared for:

Ash & Lacy Solutions Ltd
Bromford Lane
West Bromwich
West Midlands
B70 7JJ

Date:

21st May 2019

1. Introduction

This classification report defines the indicated classification assigned to "AxiAL Aluminium Supporting System", a façade supporting system, using the principles of EN 13501-1:2018.

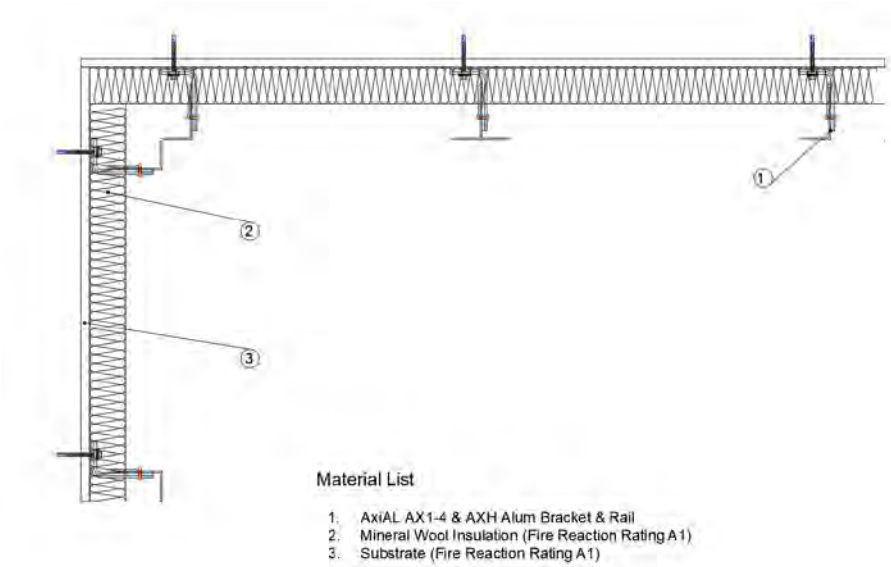
2. Details of classified product

2.1 General

The product, "AxiAL Aluminium Supporting System", a façade supporting system, is defined as being suitable for construction applications.

2.2 Product description

The product, "AxiAL Aluminium Supporting System", a façade supporting system, is described below.



Typical Details for AxiAL Alum Supporting System

Generic type		Façade Supporting System
Product reference		AxiAL Aluminium Supporting System
Name of manufacturer		Ash & Lacy Solutions Ltd
Façade Panel	Not included in the report – should be A1	
Mounting System	Reference	AX1-4, AXH
	Material	6063T6 Alum
	Max cladding zone*	365 mm
Cavity	Depth	25-100 mm
Insulation	Generic type	Mineral wool of Classification A1
	Facing	With or without one of the following facings: 70g/m2 black tissue ref: 201/0250 70-100g/m2, white tissue ref: 201/0261/0256 90g/m2 aluminium foil ref: 201/0220
	Thickness	50-340 mm
	Binder content	<5%
	Density	19-220 kg/m3
Substrate	Not included in the report – should be A1	

* Cladding zone is the distance between the back of bracket to the front face of rails

Note 1: The sponsor has confirmed that no flame retardant additives were utilised in the Various elements of the system.

Note 2: This system does not include a vapour barrier or a breather membrane, since these components are not Class A1. If a vapour barrier is required guidance as to the required fire classification is given in Approved Document B

Note 3: The cavity should be closed at each floor slab using a cavity barrier in accordance with B3 of Approved Document B

3. Documentation in support of classification

Product (Component Part of External Wall System)	Reports and other Information
Mounting system	Stainless Steel or Aluminium- Classified without further testing as A1 Commission Decision 96/603/EC, as amended 2000/605/EC
Insulation	Class A1 mineral wool Commission Decision 96/603/EC, as amended 2000/605/EC Insulation should have a binder content of <5% and a density 19 to 220 kg/m^2.

3.2 Test results

Test method & test number	Parameter	No. tests	Results	
			Continuous parameter - mean (m)	Compliance parameters
EN ISO 1182	ΔT	5	<30	Compliant
	Δm		<50%	
	t_f		No flaming	
EN ISO 1716	PCS (a), (e)	3	<2.0 MJ/kg	Compliant

4. Classification and field of application

4.1 Reference of classification

This classification has been carried out following the principles of EN 13501-1:2018 based on products which form a façade system which individually are deemed to be Class A1 in accordance with Commission Decision 96/603/EC, as amended 2000/605/EC or that have been tested and certificated as having an A1 performance.

4.2 Classification

The product, "AxiAL Aluminium Supporting System", a façade supporting system, in relation to its reaction to fire behaviour is classified:

Reaction to fire classification: A1

4.3 Field of application

This classification is valid for the following end use applications:

i) Construction applications

This classification is also valid for the following product parameters:

System thickness or depth	No variation from the described system allowed
Insulation thickness	≤ 340mm
Insulation Density	19 to 220 kg/m^3
Insulation Binder Content	<5%
Cavity Depth	≤ 100mm
System Composition	No variation allowed
Substrate	Class A1 only

SIGNED

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Katherine Williams
Certification Engineer

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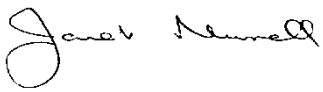

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Janet Murrell
Technical Manager
on behalf of **Warringtonfire**

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Issue 2: Updating to EN 13501-1: 2018, 13th November 2019. K. Williams

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WA1 2DS

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Title:

CLASSIFICATION OF REACTION TO FIRE PERFORMANCE USING THE PRINCIPLES OF EN 13501-1:2018

Notified Body No:

0833

Product Name:

"Metal Façade – PPC Coating

Report No:

WF 410807

Issue No:

3

Prepared for:

Ash & Lacy Solutions Ltd
Bromford Lane
West Bromwich
West Midlands
B70 7JJ

Date:

21st May 2019

1. Introduction

This classification report defines the indicated classification assigned to "Metal Façade – PPC Aluminium", a metal faced rainscreen façade system, in accordance with the procedures given in EN 13501-1: 2018.

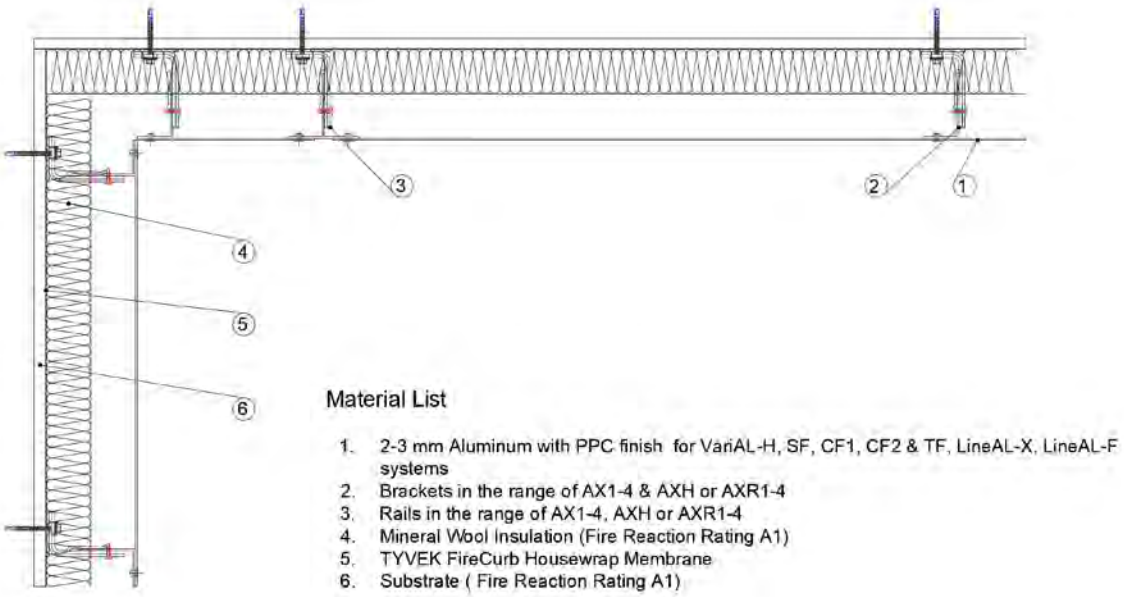
2. Details of classified product

2.1 General

The product, "Metal Façade – PPC Aluminium", a metal faced rainscreen façade system, is defined as being suitable for construction applications.

2.2 Product description

The product, "Metal Façade – PPC Aluminium", a metal faced rainscreen façade system, is described below.



Typical Details of Metal Façade – PPC Coating

Generic type		Metal faced rainscreen façade system
Product reference		Metal Façade – PPC Coating
Name of manufacturer		Ash & Lacy Solutions Ltd
Thickness		Variable
Façade Facing	Generic type	Flat Sheet, Cassette & Plank
	Applied System	VariAL-H, VariAL-SF, VariAL-CF1, VariAL-CF2, VariAL-CF3 VariAL-TF, LineAL-X, LineAL-F
	Material	Aluminium
	thickness	2-3 mm
PPC Coating	thickness	80 µm - 100 µm
Mounting System	Reference	AX1-4, AXH, AXR1-4
	Material	6063T6 Alum for AX1-4, AXH, 316 Stainless Steel for AXR1-4
	Max cladding zone*	365 mm
Cavity	Depth	25-100 mm
Insulation	Generic type	Mineral wool of Classification A1
	Facing	With or without one of the following facings: 70g/m2 black tissue ref: 201/0250 70-100g/m2, white tissue ref: 201/0261/0256 90g/m2 aluminium foil ref: 201/0220
	Thickness	50-340 mm
	Binder content	<5%
	Density	19-220 kg/m3
Membrane	Type	Tyvek FireCurb Hoursewrap
	Thickness	0.175 mm
Substrate	Note included in the report – A1 only	

*Cladding zone is the distance between the back of bracket to the front face of rails

Note 1: The cavity should be closed at each floor slab using a cavity barrier in accordance with B3 of Approved Document B

3. Documentation in support of classification

Name of Laboratory	Name of sponsor	Test reports/extended application report Nos.	Test method / extended application rules & date
Warringtonfire	**Ash & Lacy Solutions**	WF 409955, 411175	EN 13823
LNE	**Axalta Coating Systems**	P155748	EN 13501-1 (EN 1716)

3.2 Test results

Test method & test number	Parameter	No. tests	Results	
			Continuous parameter - mean (m)	Compliance parameters
EN 13823	FIGRA 0.2MJ	3, 1	0.00	Compliant
			0.00	
	FIGRA 0.4MJ		0.00	
			0.00	
	THR 600s		0.51	
			0.93	
	LFS		None	
	SMOGRA		2.90	
			0.00	
	TSP 600s		35.64	
			14.08	
	Flaming droplets lasting >10s?		None	
EN ISO 1716	Coating		2.297 MJ/m^2	Compliant
	Façade Facing (paint on aluminium sheet)		0.81 MJ/kg	
	Mounting System		0.00	
	Insulation		1.4 MJ/kg	
	System as a whole		1.33-1.4 MJ/kg	

4. Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with clause 8 of EN 13501-1:2018.

4.2 Classification

The product, "Metal Façade – PPC Aluminium", a metal faced rainscreen façade system, in relation to its reaction to fire behaviour is classified:

A2

The additional classification in relation to smoke production is:

s1

The additional classification in relation to flaming droplets / particles is:

d0

The format of the reaction to fire classification for construction products excluding flooring and linear pipe thermal insulation is:

Fire Behaviour		Smoke Production			Flaming Droplets	
A2	-	s	1	,	d	0

i.e. A2 – s1 , d0

Reaction to fire classification: A2-s1, d0

4.3 Field of application

This classification is valid for the following end use applications:

i) Construction applications

This classification is also valid for the following product parameters:

System thickness or depth	No variation from the described system allowed
Insulation thickness	≤ 340mm
Insulation Density	19 to 220 kg/m^3
Insulation Binder Content	<5%
PPC Colour Applied	Any
Cavity Depth	≤ 100mm
System Composition	No variation allowed
Substrate	Class A1 only

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Katherine Williams
Certification Engineer

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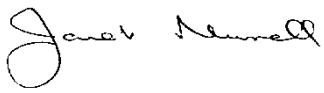

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Technical Manager
on behalf of **Warringtonfire**

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Issue 2: Updating to EN 13501-1: 2018, 13th November 2019. K.Williams
Issue 3: Amendment to description table at request of client. 1st May 2020. K.Williams