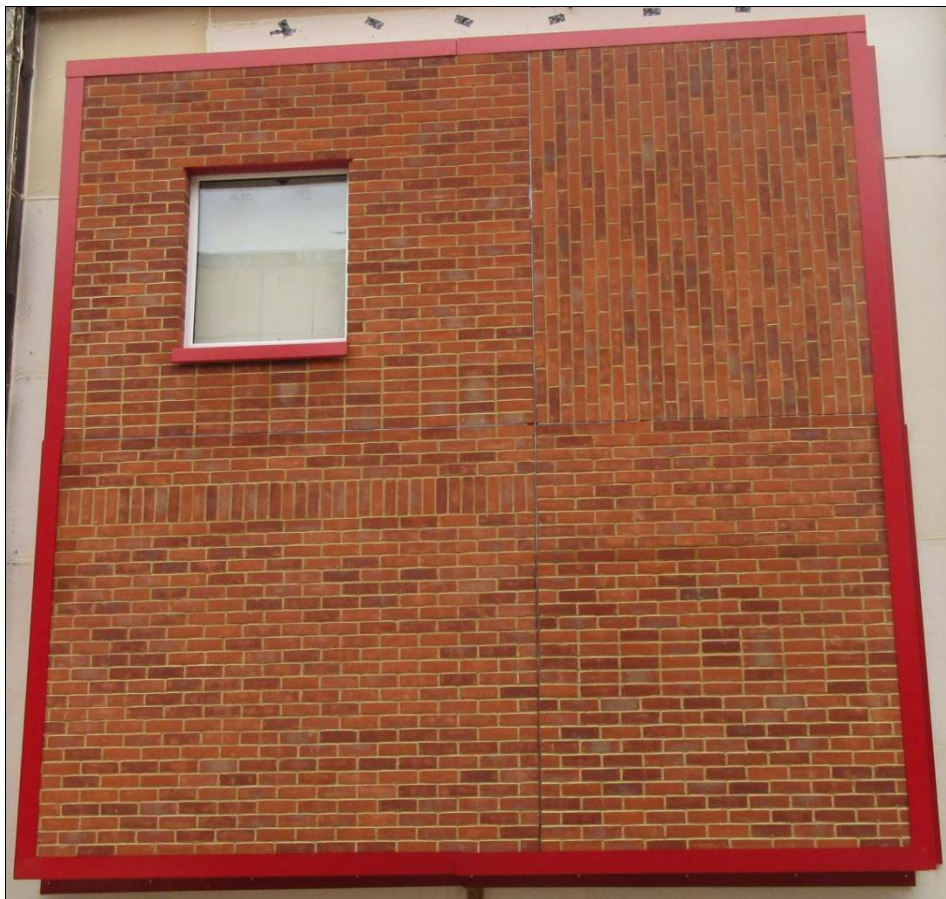


Technical Report

Title: Product wind resistance, dynamic watertightness and impact resistance testing of a Mechsliip Façade for Ash & Lacy

Report No: N950-19-17772




Technical Report


Title: Product wind resistance, dynamic water tightness and impact resistance testing a Mechslip Façade for Ash & Lacy


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

Issue date: 03 October 2019

VTC job no.: TR0141-3VH4

Author(s): D. Bennett - Technician 

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Authorised by: S. R. Moxon – Operations Director 

Distribution: 1 copy to Ash & Lacy
(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 Mechslip Façade manufactured by Ash & Lacy.

The tests were carried out on 28 August 2019 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 C7510MS 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.

VINCI Technology Centre UK Limited is Notified Body No. 1766.

VINCI Technology Centre UK Limited is certified by BSI for:

- 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:

Y. Tian	-	Ash & Lacy
L. Evans	-	Ash & Lacy
J. Evans	-	Ash & Lacy
A. Beament-Leferne	-	Ash & Lacy
A. Batterham	-	lbstock
M. Simevnouiny	-	lbstock

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
28 August 2019	1	Wind resistance – serviceability	Pass
28 August 2019	2	Wind resistance – safety	Pass
28 August 2019	3	Watertightness - dynamic	Pass
28 August 2019	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	See section 8.4

3 DESCRIPTION OF TEST SAMPLE

3.1 GENERAL ARRANGEMENT

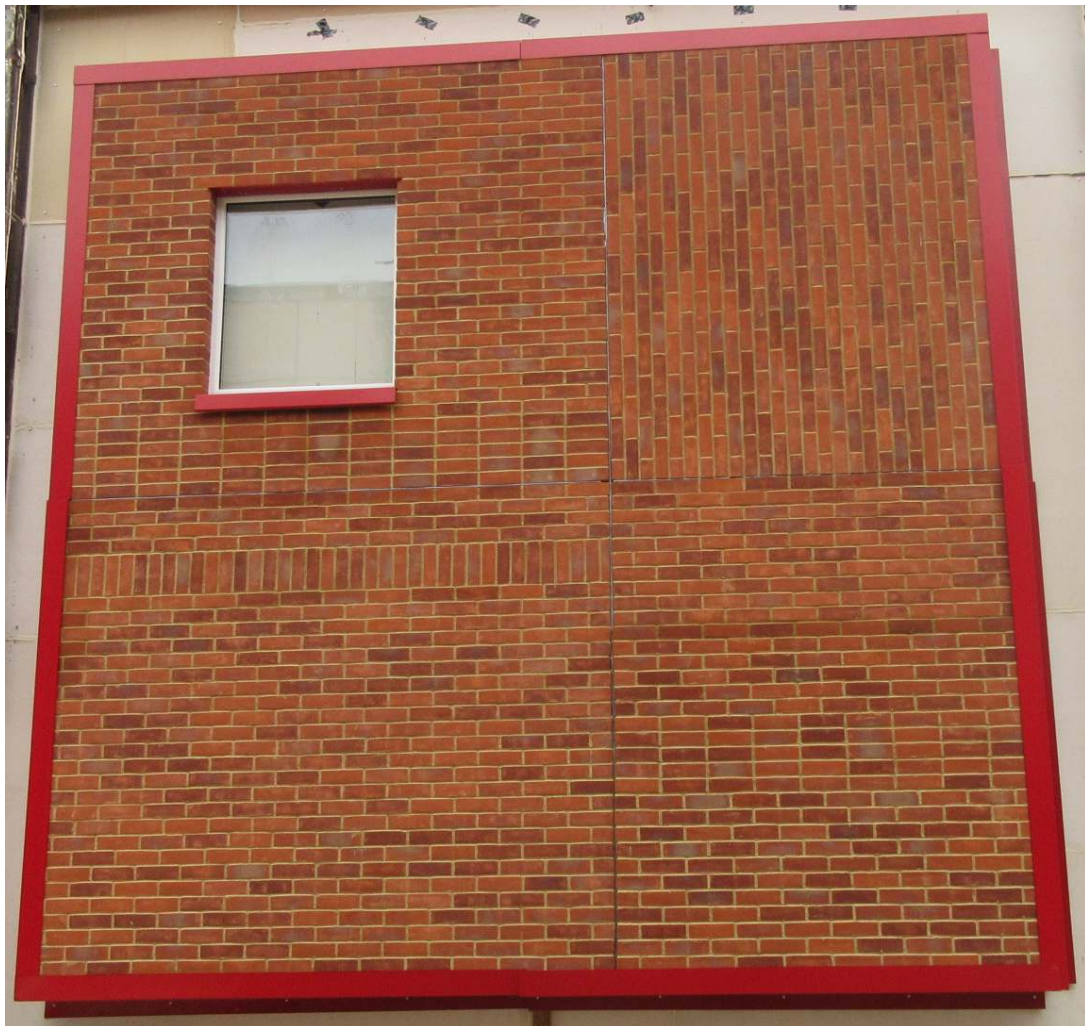
The sample was as shown in the photo below and the Ash & Lacy technical report included as an appendix to this report.

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 angle and RCM boards.

PHOTO 0030

TEST SAMPLE ELEVATION



3.2 CONTROLLED DISMANTLING

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

PHOTO 0180

TEST SAMPLE DURING DISMANTLE



PHOTO 0182

SUPPORT BRACKET



PHOTO 0183

SUPPORT BRACKET



PHOTO 0185

VIEW LOOKING DOWN INTO CAVITY



PHOTO 0186

TEST SAMPLE DURING DISMANTLE



PHOTO 0239

TEST SAMPLE DURING DISMANTLE

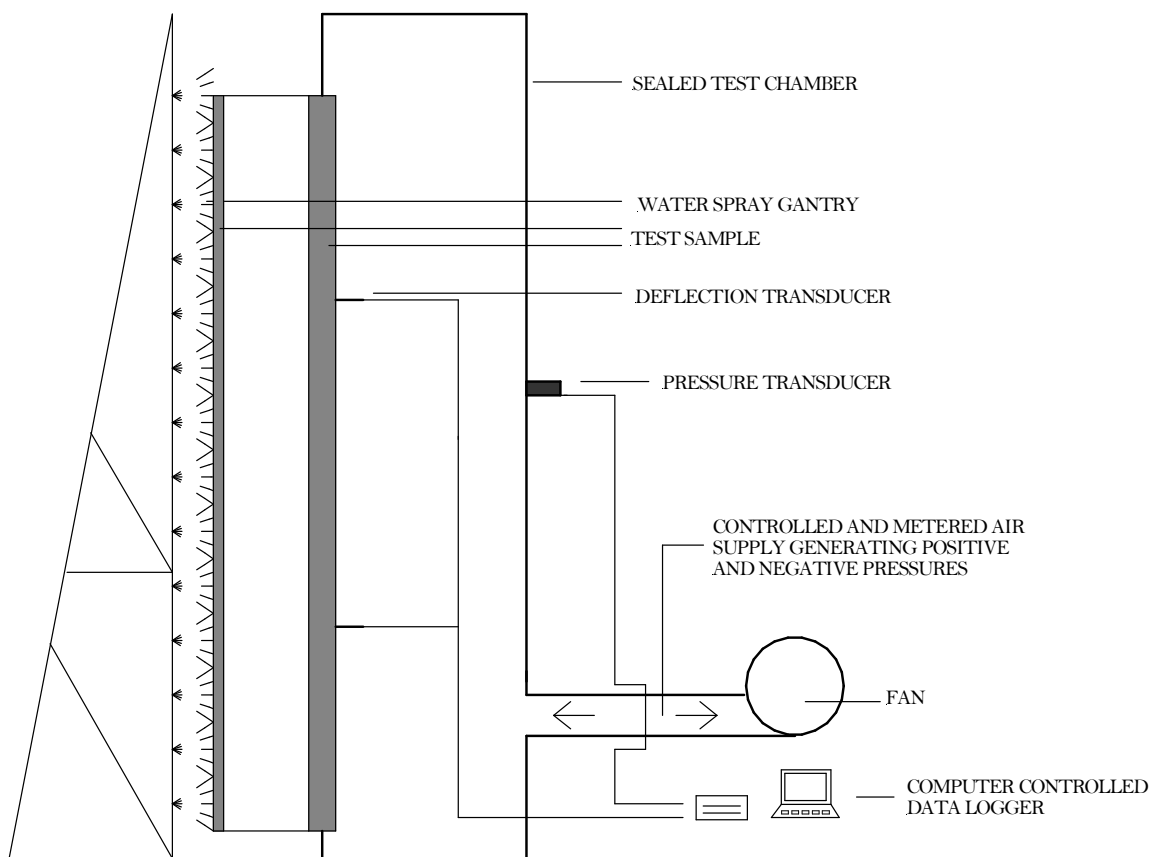


4 TEST RIG GENERAL ARRANGEMENT

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.

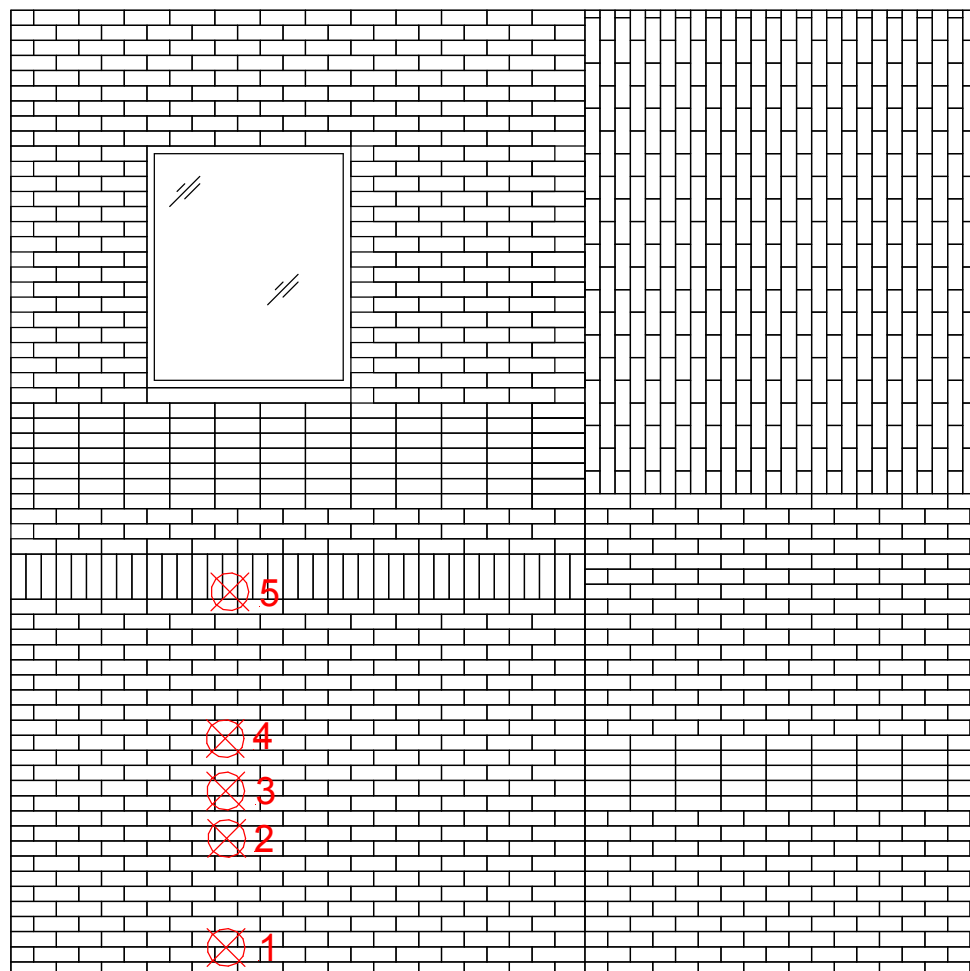
Any damage or functional defects were recorded.

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

FIGURE 2

DEFLECTION GAUGE LOCATIONS

External View



 Deflection gauge

6.4 PASS/FAIL CRITERIA

6.4.1 Calculation of permissible deflection

Serviceability Test

TABLE 3

Gauge number	Member	Span (L) (mm)	Permissible deflection (mm)	Permissible residual deformation
3	Vertical rail	600	$L/200 = 3.0$	1 mm

Safety Test

TABLE 4

Gauge number	Member	Span (L) (mm)	Permissible deflection (mm)	Permissible residual deformation
3	Vertical rail	600	n/a	$L/500 = 1.2$ mm

6.5 RESULTS

Test 1 (serviceability) Date: 28 August 2019

The deflections measured during the wind resistance test, at the positions shown in Figure 2, are shown in Tables 7 and 8.

Summary:

Serviceability Test

TABLE 5

Gauge number	Member	Pressure differential (Pa)	Measured deflection (mm)	Residual deformation (mm)
3	Vertical rail	2410 -2402	0.2 -0.2	0.0 0.0

No damage to the test sample was observed.

Ambient temperature = 21°C
Chamber temperature = 22°C

Test 2 (safety)

Date: 28 August 2019

The deflections measured during the structural safety test, at the positions shown in Figure 2, are shown in Table 9.

Summary

Safety Test

TABLE 6

Gauge number	Member	Pressure differential (Pa)	Measured deflection (mm)	Residual deformation (mm)
3	Vertical rail	3601 -3614	0.2 -0.2	0.0 0.0

No damage to the sample was observed.

Ambient temperature = 21°C

Chamber temperature = 23°C

TABLE 7

WIND RESISTANCE – POSITIVE SERVICEABILITY TEST RESULTS

Position	Pressure (pascals) / Deflection (mm)				
	611	1209	1817	2410	Residual
1	0.3	0.6	1.0	1.3	0.1
2	0.3	0.5	0.8	1.1	0.1
3	0.3	0.5	0.7	1.0	0.1
4	0.2	0.3	0.5	0.7	0.1
5	0.2	0.3	0.4	0.6	0.1
3 *	0.0	0.1	0.1	0.2	0.0

* Mid-span reading adjusted between end support readings

TABLE 8

WIND RESISTANCE – NEGATIVE SERVICEABILITY TEST RESULTS

Position	Pressure (pascals) / Deflection (mm)				
	605	1200	1799	2402	Residual
1	-0.4	-0.7	-1.1	-2.1	-0.5
2	-0.3	-0.6	-0.9	-1.5	-0.2
3	-0.3	-0.6	-0.9	-1.4	-0.3
4	-0.2	-0.4	-0.6	-1.0	-0.2
5	-0.2	-0.4	-0.6	-0.9	-0.1
3 *	-0.1	-0.1	-0.1	-0.2	0.0

* Mid-span reading adjusted between end support readings

TABLE 9

WIND RESISTANCE - SAFETY TEST RESULTS

Position	Pressure (pascals) / Deflection (mm)			
	3601	Residual	-3614	Residual
1	2.1	0.1	-3.0	-0.2
2	1.9	0.0	-2.2	-0.2
3	1.6	0.1	-2.1	-0.1
4	1.0	0.0	-1.6	-0.1
5	0.9	0.0	-1.5	-0.1
3 *	0.2	0.0	-0.2	0.0

* Mid-span reading adjusted between end support readings

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/m²/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: 28 August 2019

Water was observed down the back of the bricks.

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= 24°C

Ambient temperature = 23°C

Water temperature = 19°C

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 than 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: 28 August 2019

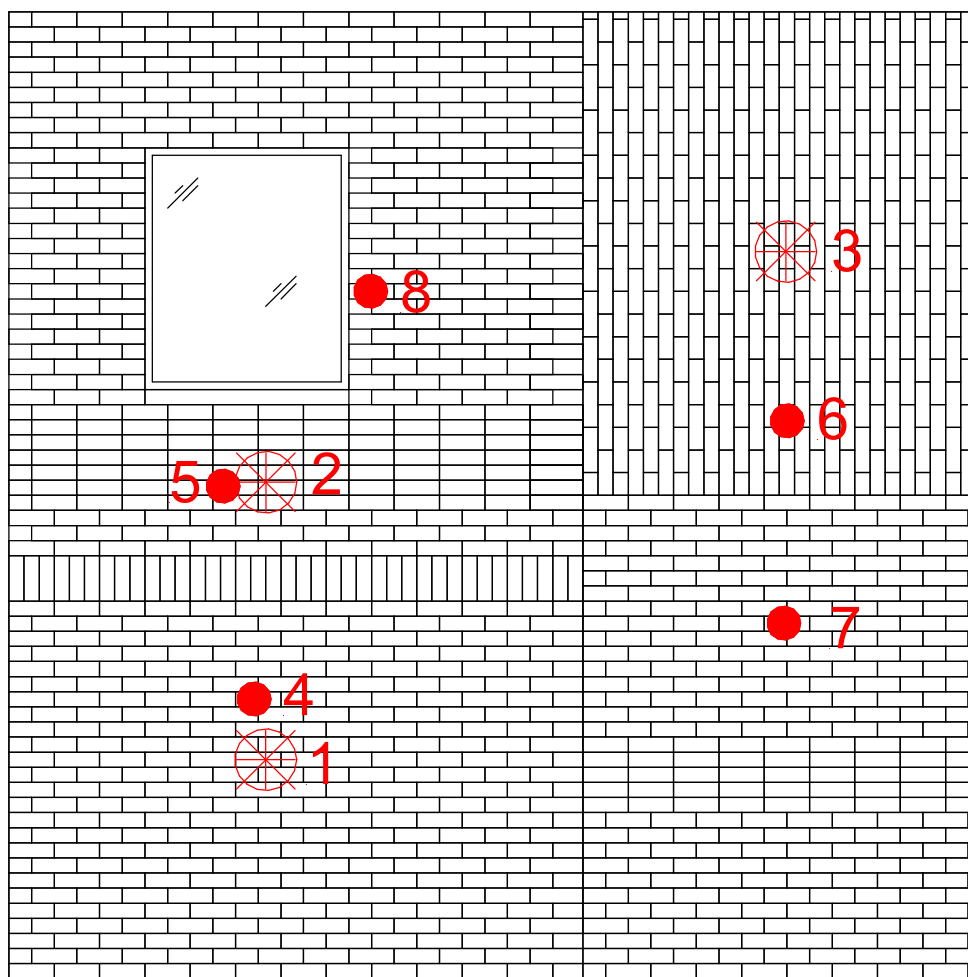
The impact test results are shown in Table 10.


Ambient temperature = 23°C

FIGURE 3

IMPACT TEST LOCATIONS

External View



 Soft body impact

 Hard body impact

TABLE 10

IMPACT RESISTANCE TEST RESULTS

Impact location	Impact energy (Nm)	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 Minor mortar cracks	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	3 6 10	No damage observed Minor crack in mortar Minor crack in mortar	Class 1 / Negligible risk Class 1 Class 1 / Negligible risk
5	3 6 10	Minor crack in mortar Minor crack in brick No damage observed	Class 1 / Negligible risk Class 1 Class 1 / Negligible risk
6	3 6 10	No damage observed No damage observed Small crack in corner of brick	Class 1 / Negligible risk Class 1 Class 1 / Negligible risk
7	10	Small crack in brick surface	Class 1 / Negligible risk
8	10	Crack in brick return	Class 2 / Negligible risk

PHOTO 0144

SOFT BODY IMPACT

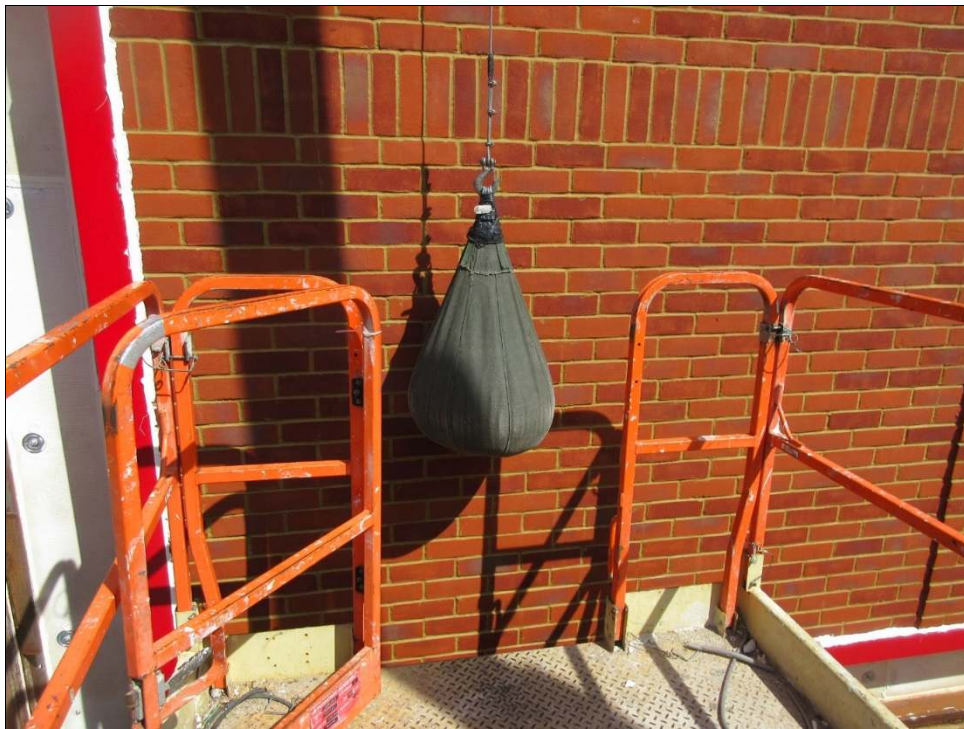


PHOTO 0145

SOFT BODY IMPACT



PHOTO 0146

SOFT BODY IMPACT

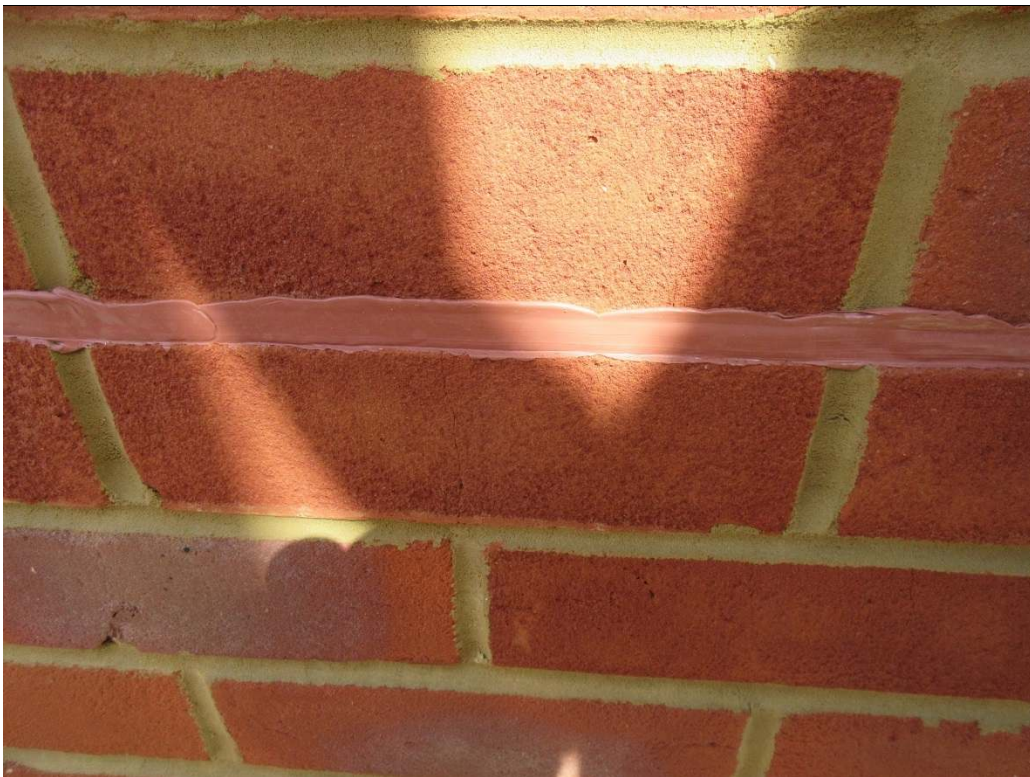


PHOTO 0148

SOFT BODY IMPACT



PHOTO 0150

SOFT BODY IMPACT



PHOTO 0152

HARD BODY IMPACT

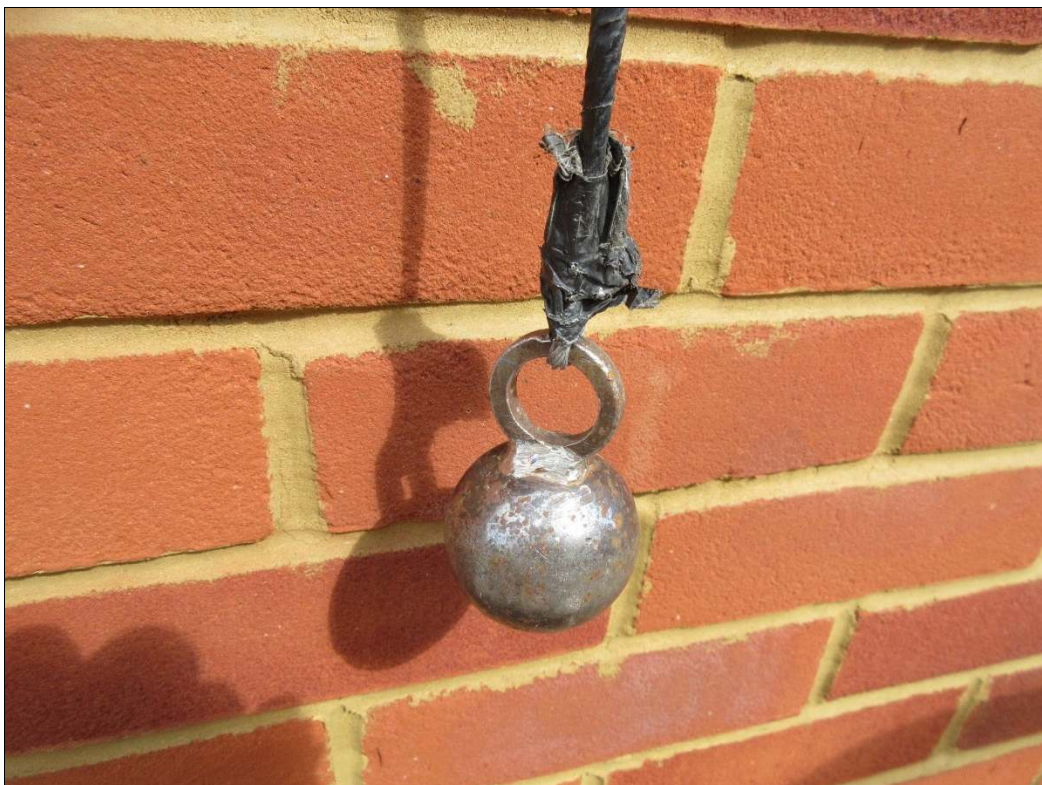


PHOTO 0153

HARD BODY IMPACT

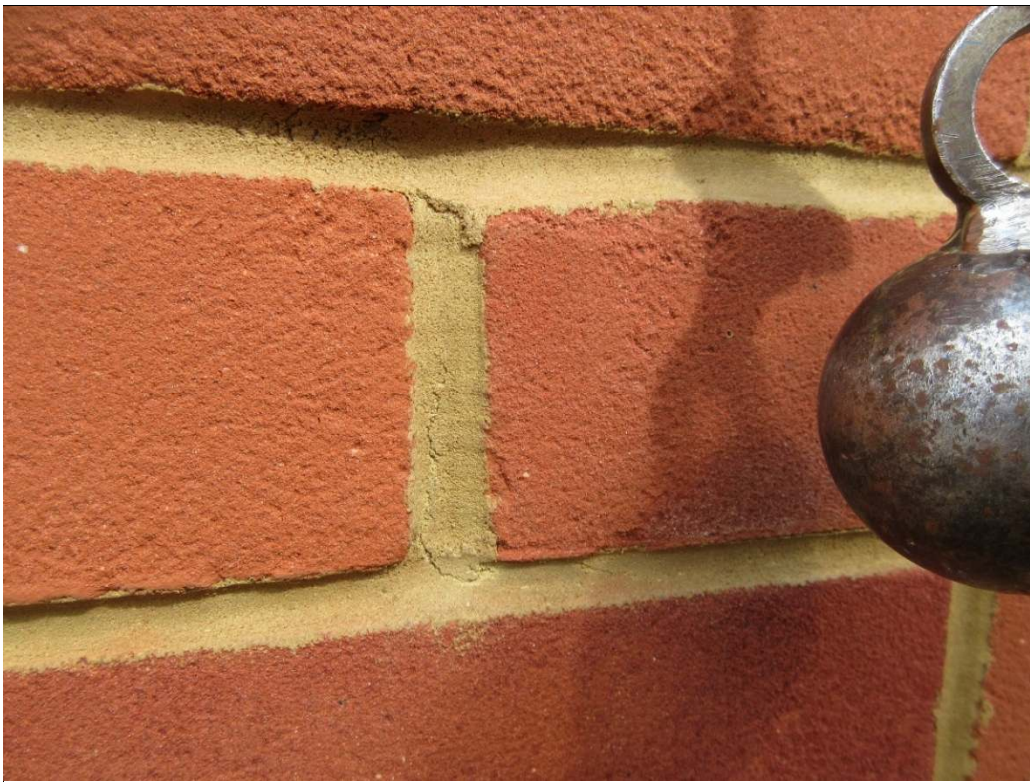


PHOTO 0154

HARD BODY IMPACT

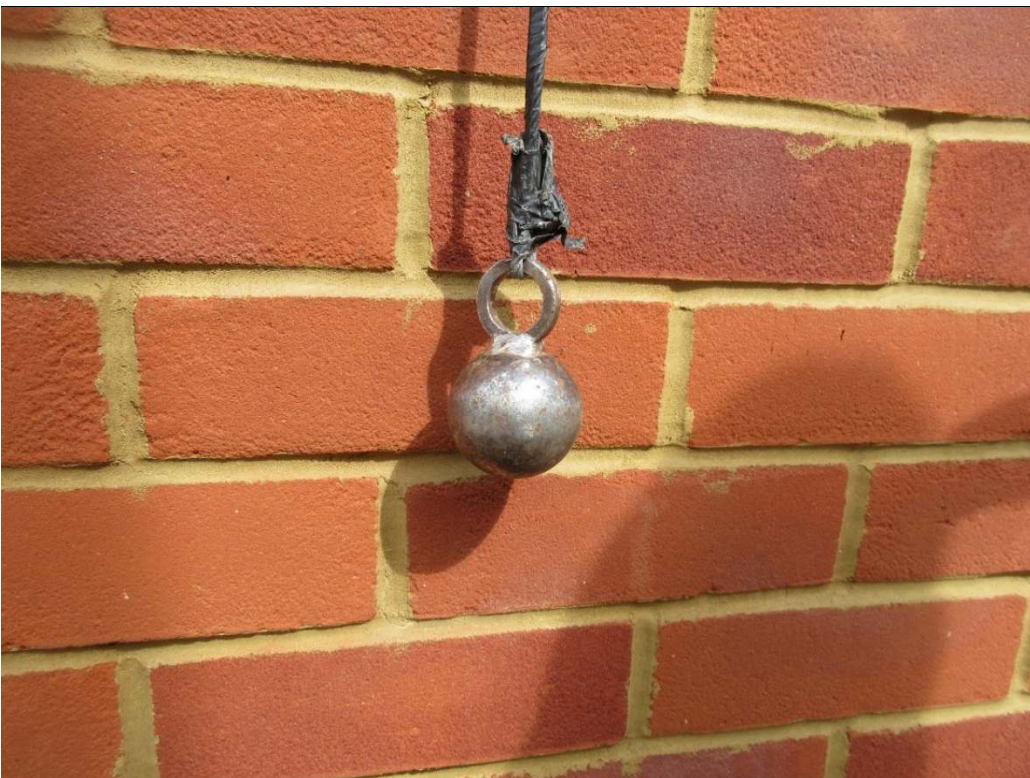


PHOTO 0155

HARD BODY IMPACT

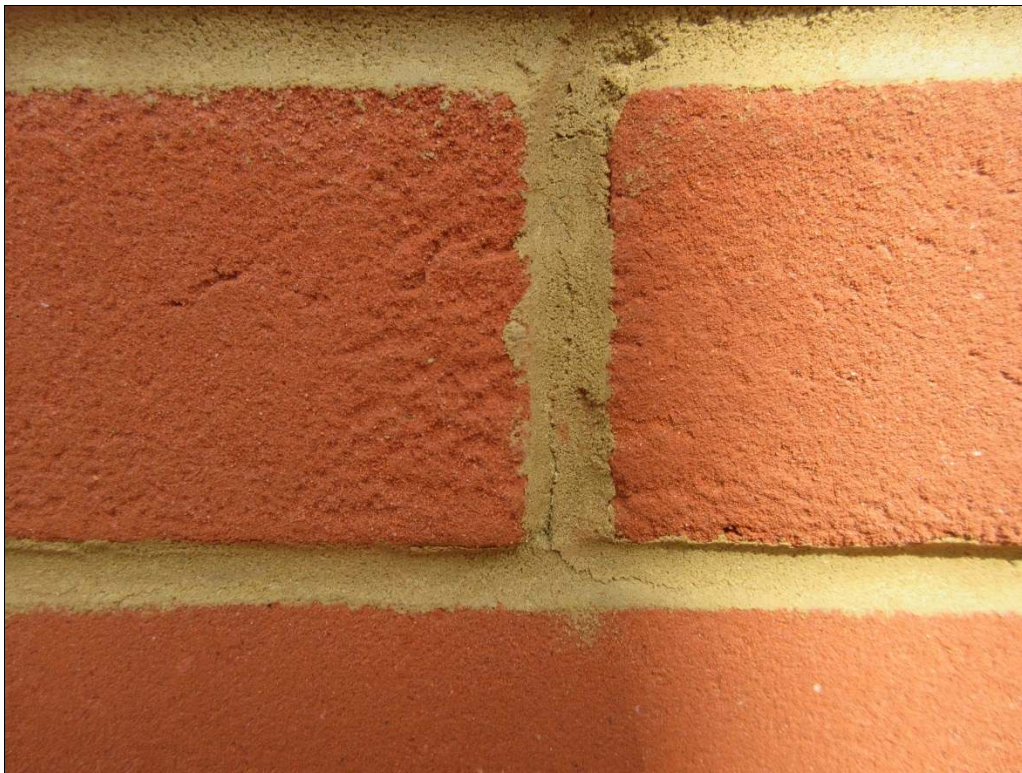


PHOTO 0156

HARD BODY IMPACT

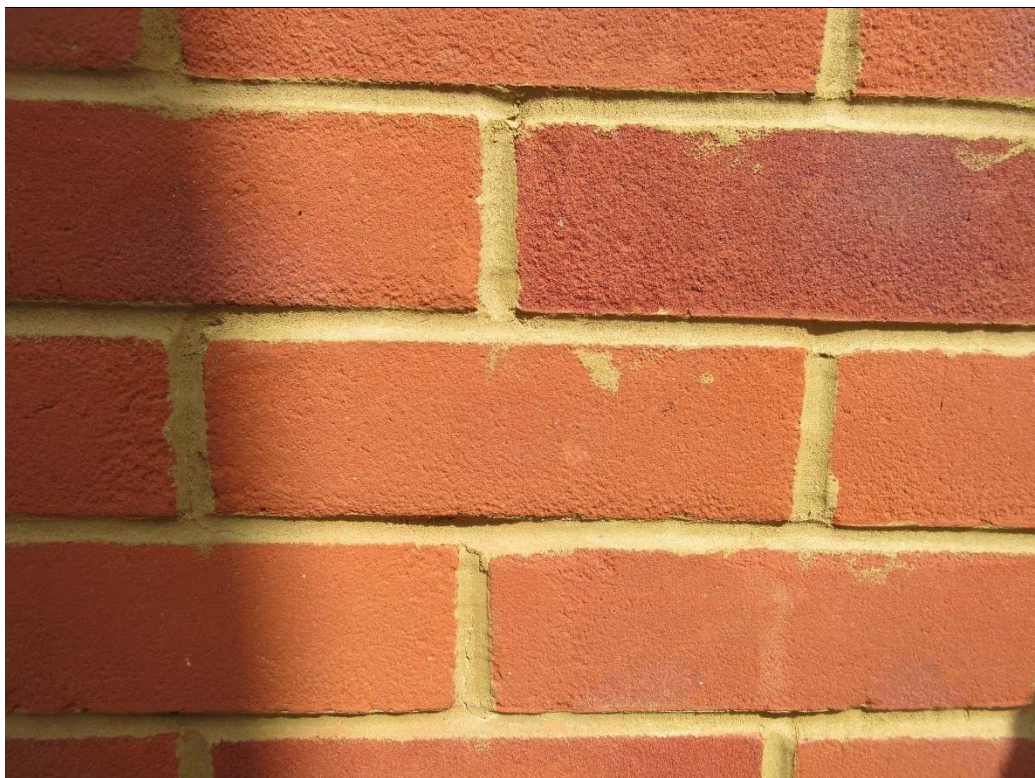


PHOTO 0161

HARD BODY IMPACT



PHOTO 0170

HARD BODY IMPACT

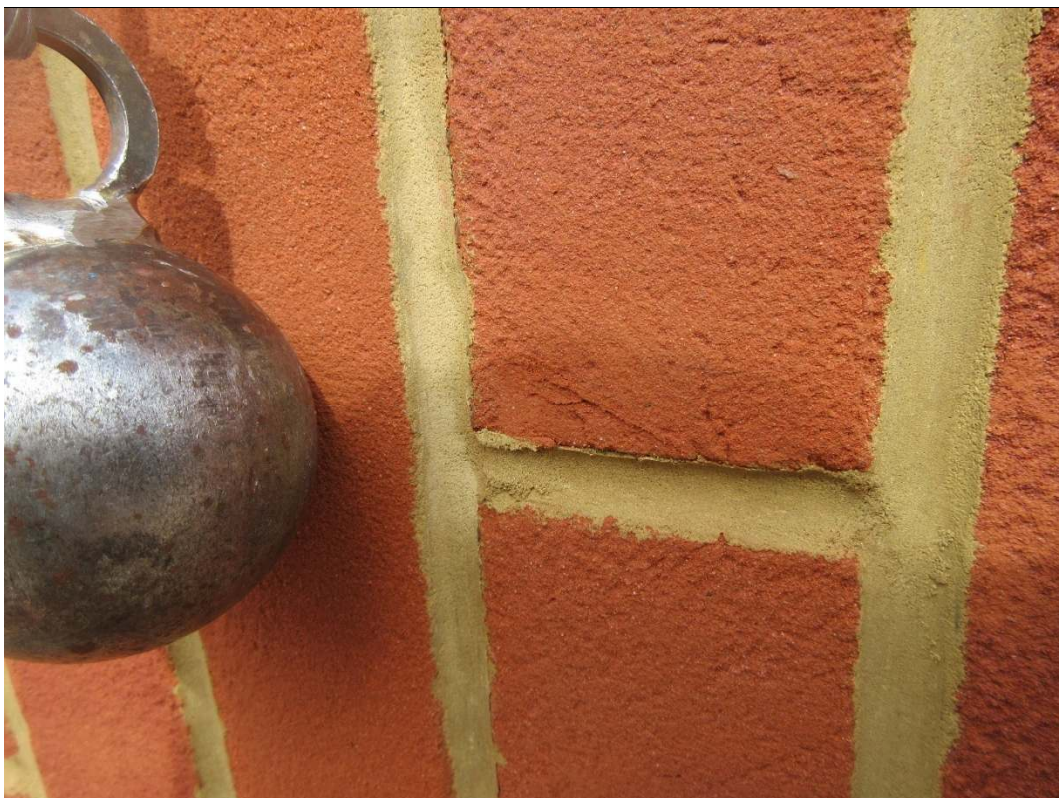


PHOTO 0176

HARD BODY IMPACT



9 APPENDIX – ASH & LACY TECHNICAL REPORT

The following 27 unnumbered pages are copies of Ash & Lacy Façade product development technical report V5.0 dated 06/08/2019.

END OF REPORT



Ash & Lacy Façade

PRODUCT DEVELOPMENT TECHNICAL REPORT

ED REF: ED-Facade-1823

Mechslip CWCT Test Set Up And Procedure

V5.0 06/08/2019



VERSION HISTORY

Below is recorded the revision history of this document;

Version	By	Date	Description
1.0	YT	31/5/2019	First Issue
2.0	YT	3/6/2019	Update the movement joint based on NHBC comments
3.0	YT	6/6/2019	Change the window return brick length from 80 mm to 102.5 mm, and add framing drawing in the document
4.0	YT	18/6/2019	Amend the bracket centre around window and correct the mistake for the bracket reference
4.1	YT	18/6/2019	Correct bracket reference on the drawing
5.0	YT	6/8/2019	Correct bracket and brick rail fixing reference on the material list

EXECUTIVE SUMMARY

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

Report Prepared by**Report Checked by**

Name:**Position:****Signature:****Date:****Name:****Position:****Signature:****Date:**

Managers Approval to Issue**Signature:****Date:**

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1. Background

This document summarised Mechslip brick layout, features in the systems, supporting system for CWCT test based on discussion with BBA, NHBC and testing house Vinci. The test result is the part of the technical assessment for BBA certificate.

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 on 31/5/2019, and test house recommendation (Vinci Quote Q20226), 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) Watertightness – dynamic
- 3) Wind resistance – safety
- 4) Impact resistance
- 5) Controlled dismantle, inspect and record

4. Test Sample

Mechslip brick slip 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
- Brick layout: vertical & horizontal
- Brick thickness: 28 mm and 48 mm
- About 1.0 m (W) X 1.1 m (H) window installed in the test with
- Window return: brick return
- Window head: flashing return
- Window cill: flashing cill

- 10 mm horizontal joint included
- 10 mm vertical joint included
- Soldier course brick
- The bracket centre: 600 mm max
- Rail centre: 600 mm rail max
- Typical rail: AXL-L40X60X2.2
- Bracket for horizontal brick: AXL-HB300S and AXL-HB300D
- Bracket for vertical brick: AXL-HB270S+AXL-HDB80 adaptor and AXL-HB270D+AXL-HDB80

More details can be found in the sample drawing attached.

Material List for Mechslip CWCT Test (Updated on 6/8/2019)							
Part 1: Frame				Part 2: Brick Rail & Brick Spacer for Mechslip			
Ref	Length (mm)	Qty		Name	Drawing No	Length (mm)	Qty
AXL-L60X40X2.2	6000	2		Brick Rail	A42	2925	45
AXL-L60X40X2.2	2475	15		Brick Rail	A42	2445	26
AXL-L60X40X2.2	2042	5		Brick Rail	A42	2015	32
AXL-L60X40X2.2	1170	2		Brick Rail	A42	1065	17
AXL-L60X40X2.2	748	2		Brick Rail	A42	742	17
AXL-L60X40X2.2	555	10		Brick Rail	A42	215	38
AXL-L60X40X2.2	534	2		Brick Rail	A42	72	32
AXL-L60X40X2.2	355	2		Brick Start Rail	A43	2925	5
AXL-L60X40X2.2	40	40		Brick Start Rail	A43	2445	1
AXL-HB300S-TP		52		Brick Start Rail	A43	2015	1
AXL-HB300D-TP		40		Brick Start Rail	A43	1117	1
AXL-HB270S-TP		12		Brick Start Rail	A43	215	1
AXL-HB270D-TP		12		Brick Top Rail	A44	2925	3
AXL-HB80D		20		Brick Top Rail	A44	2445	1
				Brick Top Rail	A44	2015	1
				Brick Top Rail	A44	1117	1
				Brick Top Rail	A44	215	1
				Brick Spacer	A45		1300
				Brick Spacer-Curved	A60		300
Part 3: Window Steel Frame				Part 4: Accessories			
Ref	Length (mm)	Qty		Name	Drawing No	Length (mm)	Qty
AU154070200	1400	2		Z120X345X120X2	ED-Façade-1823M.3-1	2500	8
AC150070200	1000	2		Angle L30X20X2.0	ED-Façade-1823M.3-2	2015	1
AC150070200	1320	2		Window head	ED-Façade-1823M.3-3	1060	1
AHC88L		6		Window cill	ED-Façade-1823M.3-4	1060	1
				Window cill support	ED-Façade-1823M.3-5	1060	1
Part 5: Fixings				Part 7: Mechslip Brick			
Ref	Qty			Name	Qty		
SS-LS22	1000			Full Brick 28X65X215 mm	1300		
BM-LS25	500			Half Brick 28X65X102.5	120		
BM-LS55	500			Left Corner (28 mm brick)	20		
LP-BM-LS28	200			Right Corner (28 mm brick)	20		
				Full Brick 48X65X215 mm	300		
Part 6: One UPVC Window to Suit for Window Frame Opening with 1062 mm W X 1197 mm H				Half Brick 48X65X102.5	40		



5. SFS Windlow Frame
6. Mechslip Brick with 48 mm thick
7. AXL-HB270D-TP + HDB80 Bracket
8. AXL-HB270S-TP + HDB80 Bracket
9. Flashing

C			
B	Correct bracket reference	YT	18/06/2019
A	Amend bracket center around window and bracket reference	YT	18/06/2019
Rev	Description	Drawn	Checked Date

Drawing Status:

Drawing Status:
Proposal


BROMFORD LANE WEST BROMWICH WEST
MIDLANDS B70 7JJ TEL: 0121 525 1444 OPTION:6
FAX: 0121 525 3444 WWW.ASHANDLACY.COM

Client :
Ash & Lacy Ltd.

Project :
ED-Facade-1823

Drawing Title :
Mechsllp- CWCT Test
Brick Layout -1

Drawn By: YT	Checked By:	Date : 20/5/2019
-----------------	-------------	---------------------

Scale : NTS @ N/A	
Drawing No : ED-Facade-1823M.1-1	Rev: B

General Notes:

All drawings to be read in conjunction with architects and engineers drawings.

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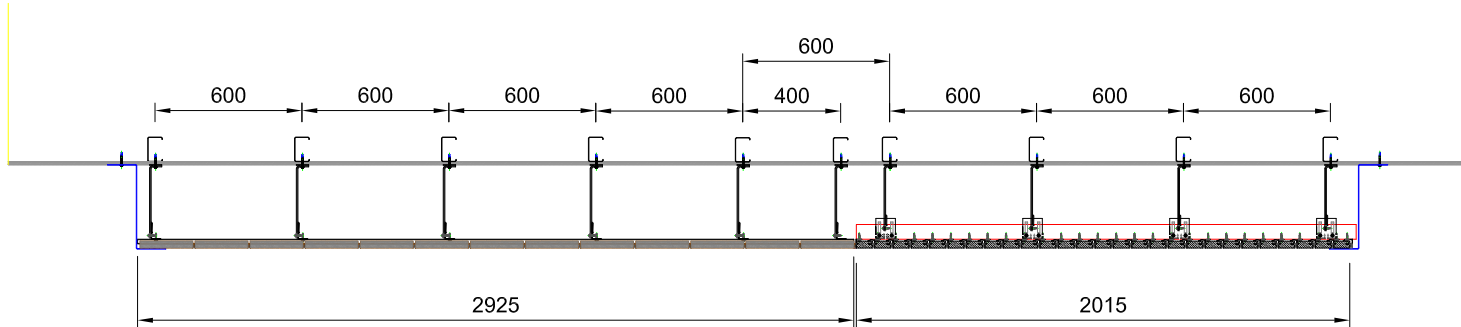
All dimensions to be confirmed prior to commencement of manufacture.

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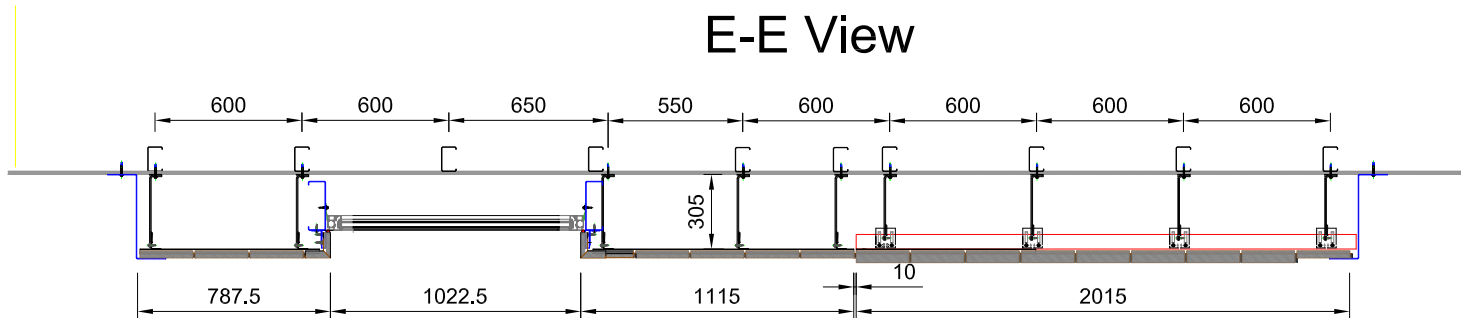
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E-E View



D-D View

C				
B				
A				
Rev	Description	Drawn	Checked	Date

Drawing Status:
Approval



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Client: Ash & Lacy Ltd.	
Project: ED-Facade-1823	
Drawing Title: Mechslp CWCT Test Brick Layout -2	
Drawn By: YT	Checked By: Date: 20/5/2019
Scale: NTS @ N/A	Rev: [-]
Drawing No: ED-Facade-1823M.1-2	

General Notes:

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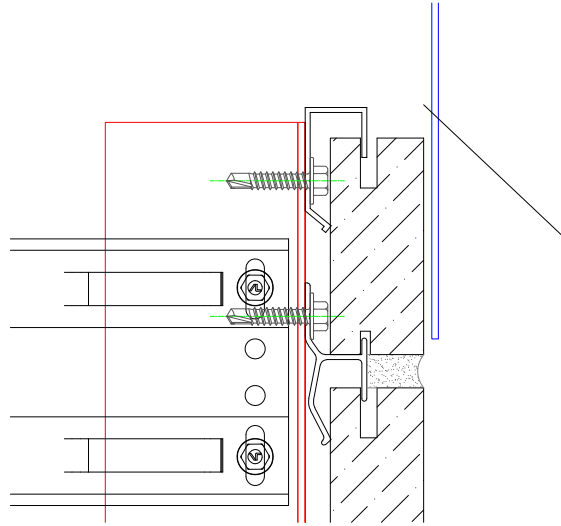
All dimensions to be confirmed prior to commencement of manufacture.

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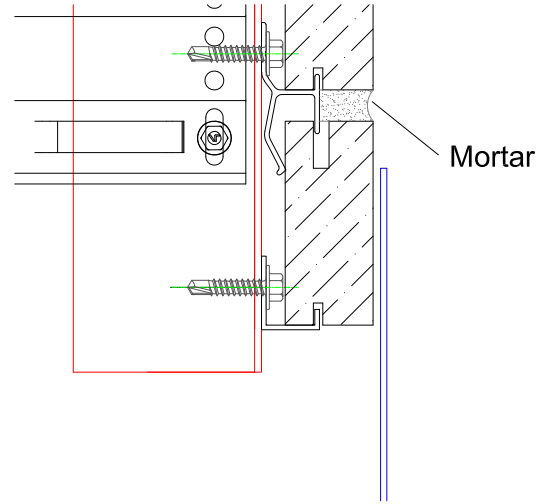
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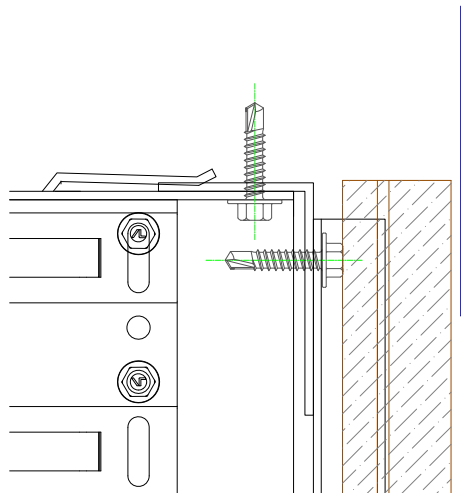
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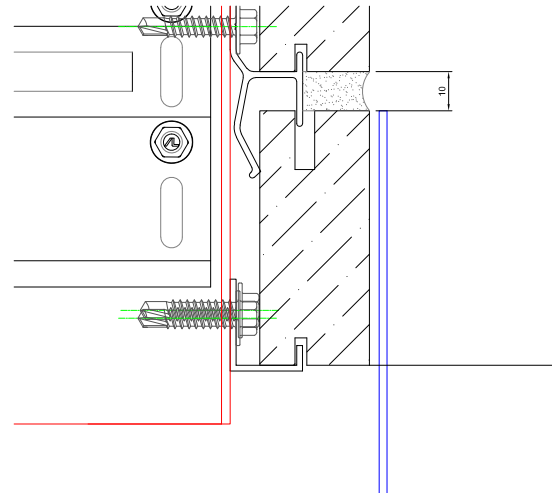
Top of Horizontal Brick



Bottom of Horizontal Brick



Top of Vertical Brick



Bottom of Vertical Brick

C				
B				
A				
Rev	Describe	Drawn	Checked	Date

Drawing Status:
Proposal

ASH & LACY

BROMFORD LANE WEST BROMWICH WEST
MIDLANDS B70 7JL TEL: 0121 525 1444 FAX: 0121 525 3444 WWW.ASHANDLACY.COM

Client : Ash & Lacy Ltd.		
Project : ED-Facade-1823		
Drawing Title : Mechslip CWCT Test Brick Layout - 3		
Drawn By: YT	Checked By:	Date : 20/5/2019
Scale : NTS @ A1		
Drawing No : ED-Facade-1823M.1-3	Rev: [-]	

General Notes:

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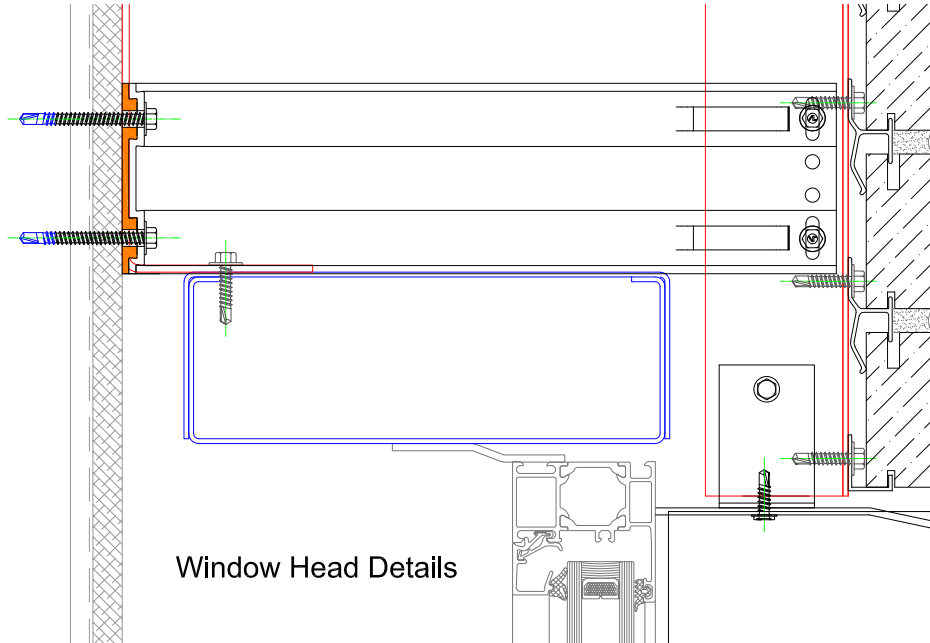
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All dimensions to be confirmed prior to commencement of manufacture.

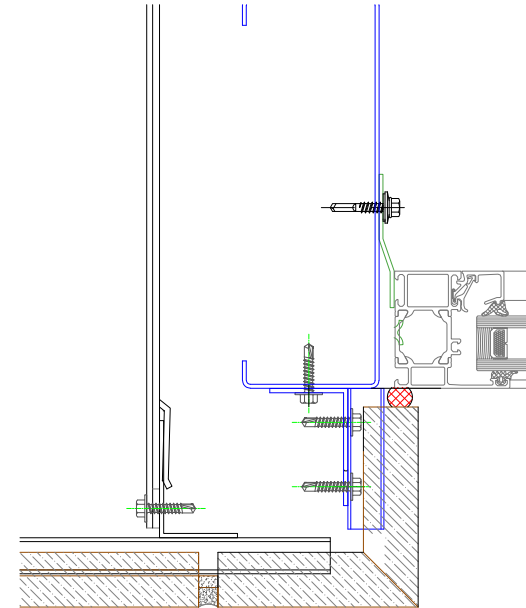
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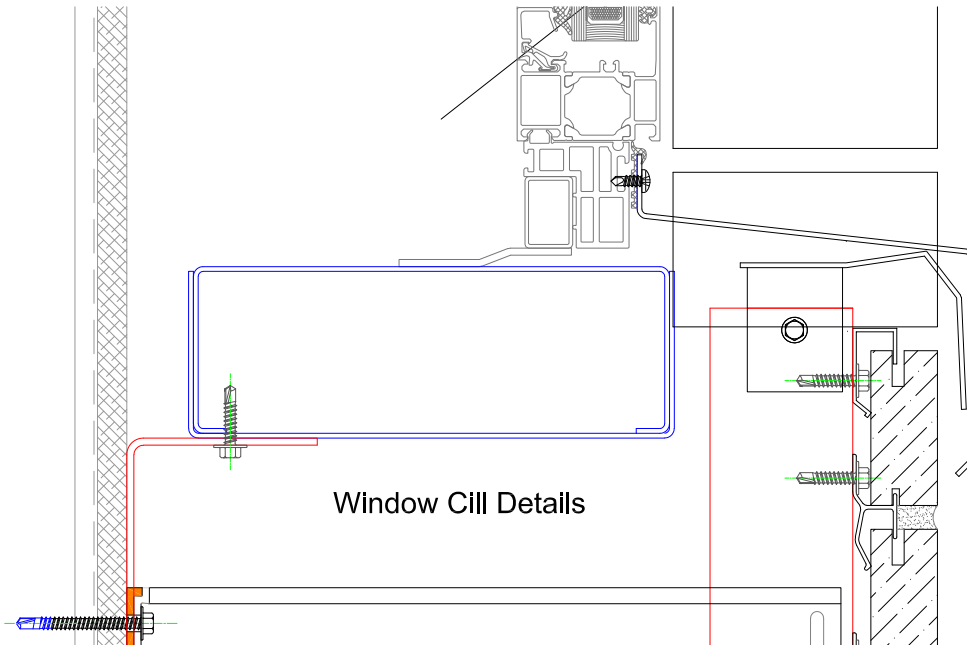
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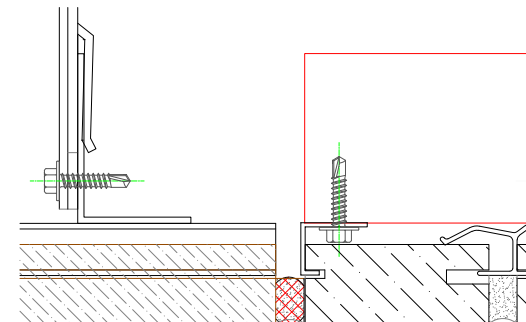
Window Head Details



Window Return Details



Window Cill Details



Standard brick and soldier brick joint

c				
B				
A	Amend bracket center around window	YT	14/09	2019
Rev	Revised	Drawn	Checked	Date

Drawing Status:

Proposal



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MIDLANDS B70 7J3 TEL: 021 525 3444 OPTIONS
FAX: 021 525 3444 WWW.ASHANDLACY.COM

Client:
Ash & Lacy Ltd.

Project:

ED-Facade-1823

Drawing Title:
Mechs: CWCT Test
Brick Layout - 4

Drawn By: YT Checked By: Date: 20/5/2019

Scale: NTS @ A1

Drawing No: ED-Facade-1823M.1-4 Rev: A

General Notes:

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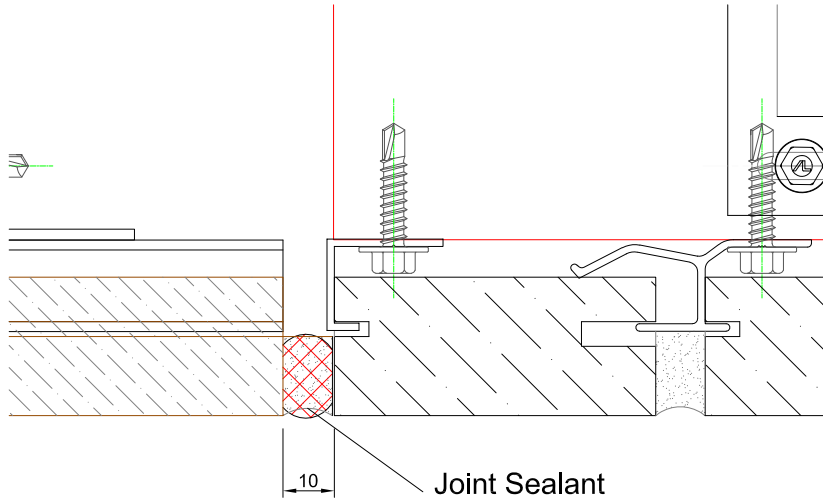
All dimensions to be confirmed prior to commencement of manufacture.

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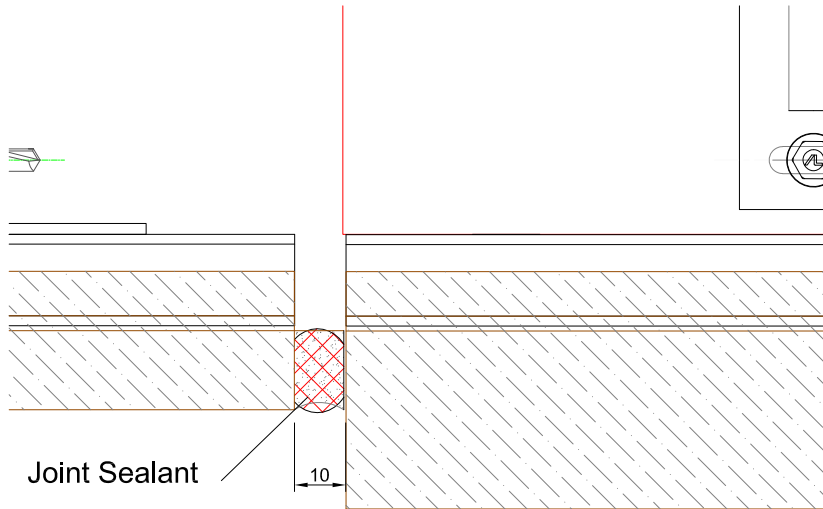
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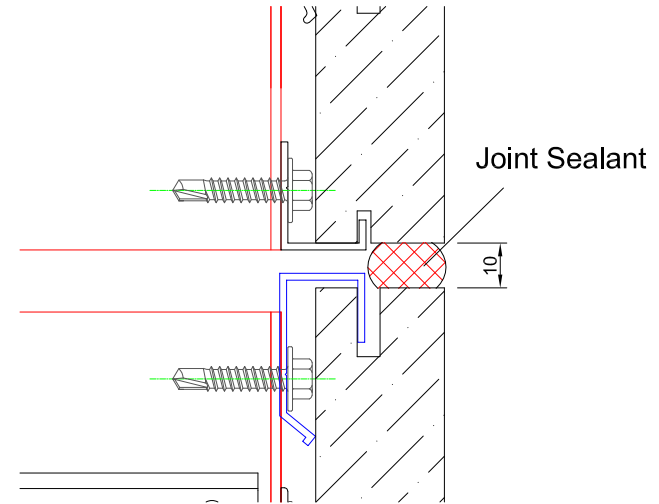
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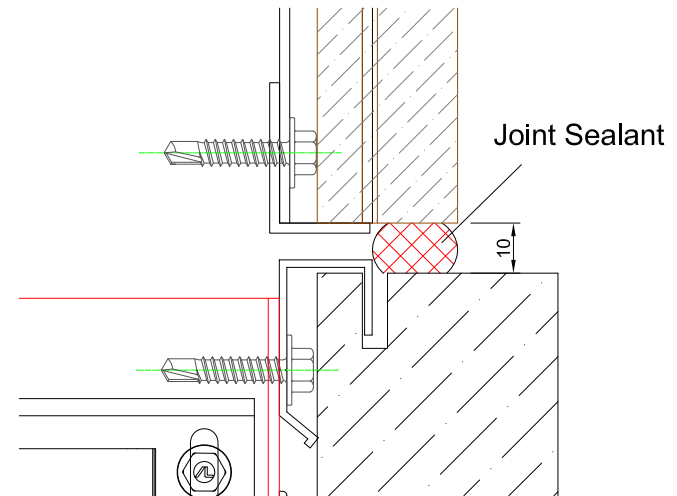
Vertical Movement Joint (D-D View)
(Between Horizontal 28 mm brick and vertical 28 brick)



Vertical Movement Joint (E-E View)
(Between horizontal 28 mm brick and horizontal 48 mm brick)



Horizontal Movement Joint (B-B View)
(Between Horizontal 28 mm brick and horizontal 28 brick)



Horizontal Movement Joint (A-A View)
(Between vertical 28 mm brick and horizontal 48 mm brick)

C				
B				
A				
Rev	Description	Drawn	Checked	Date

Drawing Status:
Proposal



Client: Ash & Lacy Ltd.			
Project: ED-Facade-1823			
Drawing Title: Mechslp CWCT Test Brick Layout - 3			
Drawn By: YT	Checked By:	Date: 03/5/2019	
Scale: NTS @ A1		Rev: [-]	
Drawing No: ED-Facade-1823M.1-5			





C			
B			
A			
Row	Description	Owner	Checker

Drawing Status:
Proposal



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Client : Ash & Lacy Ltd.		
Project : ED-Facade-1823		
Drawing Title : Mechslip- CWCT Test Frame Layout -1		
Drawn By : YT	Checked By :	Date : 20/5/2019
Scale : NTS @ N/A	 	
Drawing No : ED-Facade-1823M.2-1		Rev : [-]

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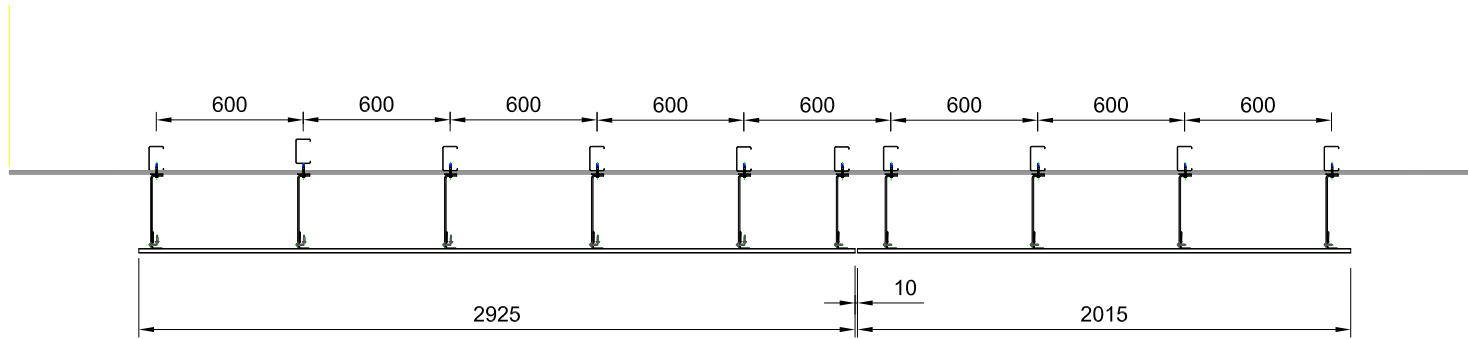
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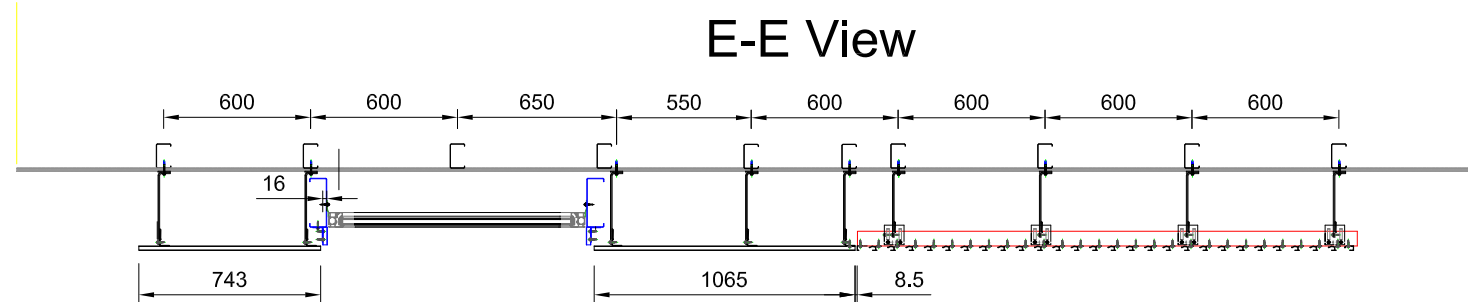
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E-E View




D-D View

C					
B					
A					
Rev	Description	Drawn	Checked	Date	

Drawing Status:
Approval



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Client : Ash & Lacy Ltd.		
Project : ED-Facade-1823		
Drawing Title : Mechs 1823 CWCT Test Frame Layout -2		
Drawn By : YT	Checked By : N/A	Date : 20/5/2019
Scale : NTS @ 1/4		
Drawing No : ED-Facade-1823M.2-2	Rev : [-]	

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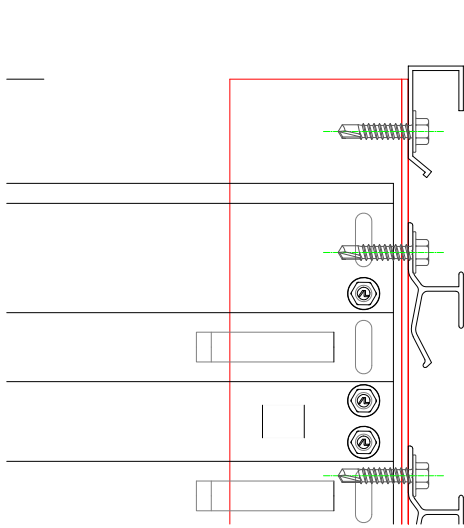
All dimensions to be confirmed prior to commencement of manufacture.

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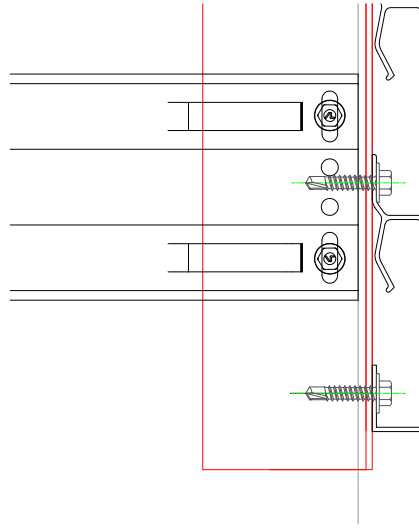
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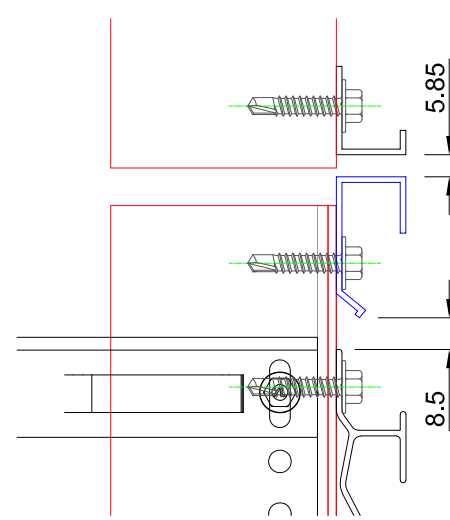
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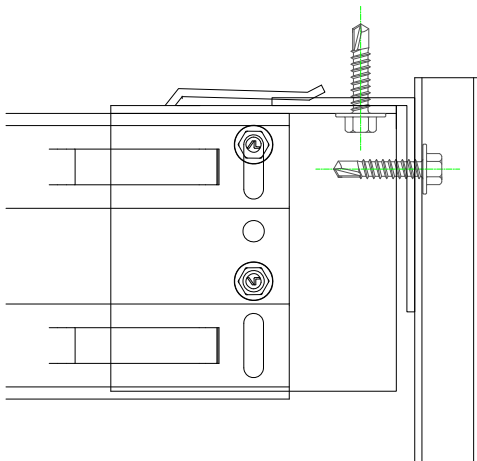
Top of Horizontal Brick



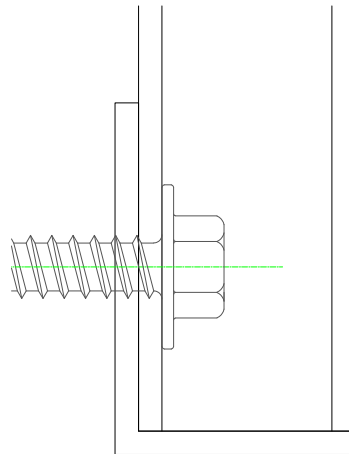
Bottom of Horizontal Brick



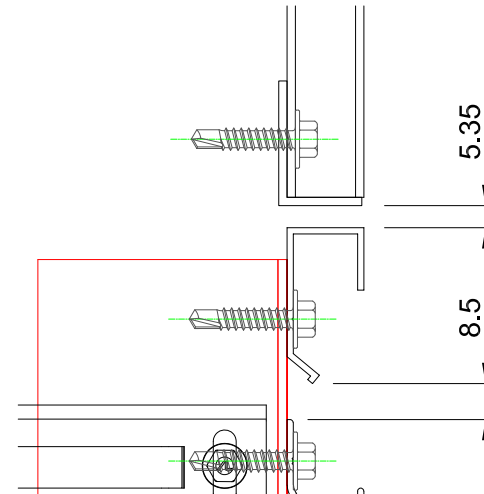
Joint for Horizontal Brick & Horizontal Brick



Top of Vertical Brick



Bottom of Vertical Brick



Joint for Horizontal Brick & Vertical Brick

1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Drawing Status:

Proposal



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Client:
Ash & Lacy Ltd.

Project:
ED-Facade-1823

Drawing Title:
Mechs Top CWCT Test
Frame Layout - 3

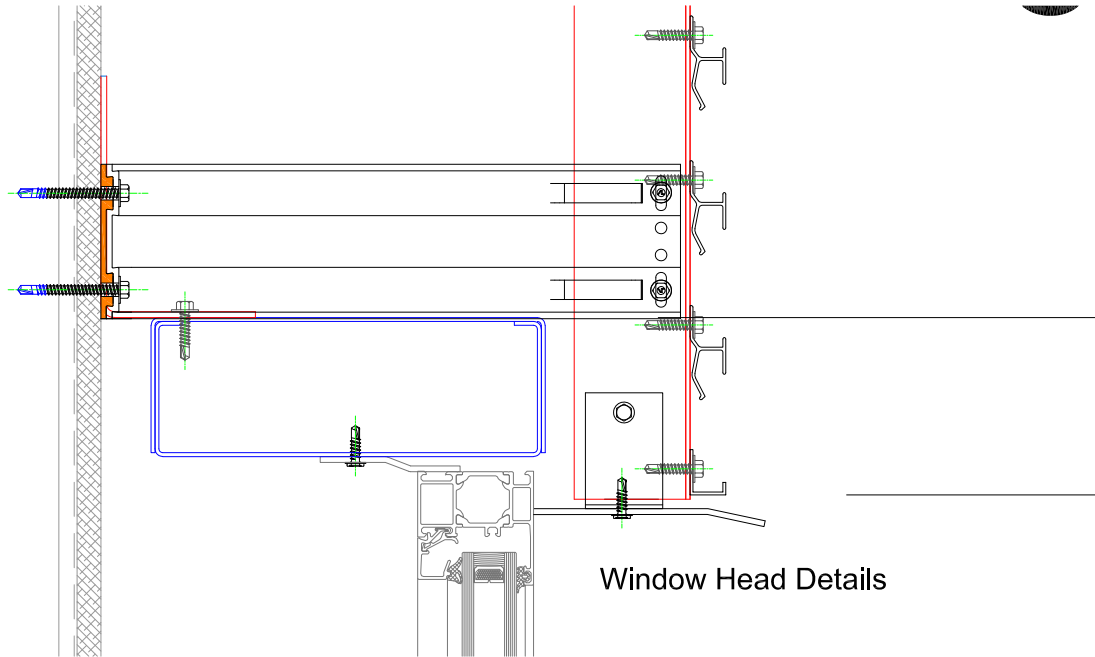
Drawn By: YT Checked By: Date: 20/5/2019

Scale: NTS @ A1

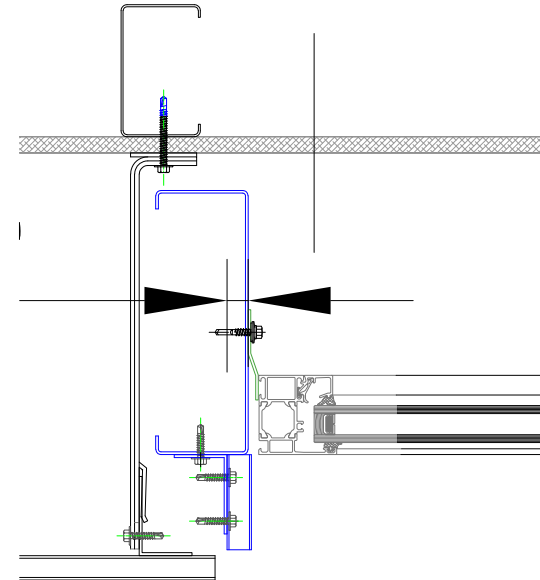
Drawing No: ED-Facade-1823M.2-3

Rev: []

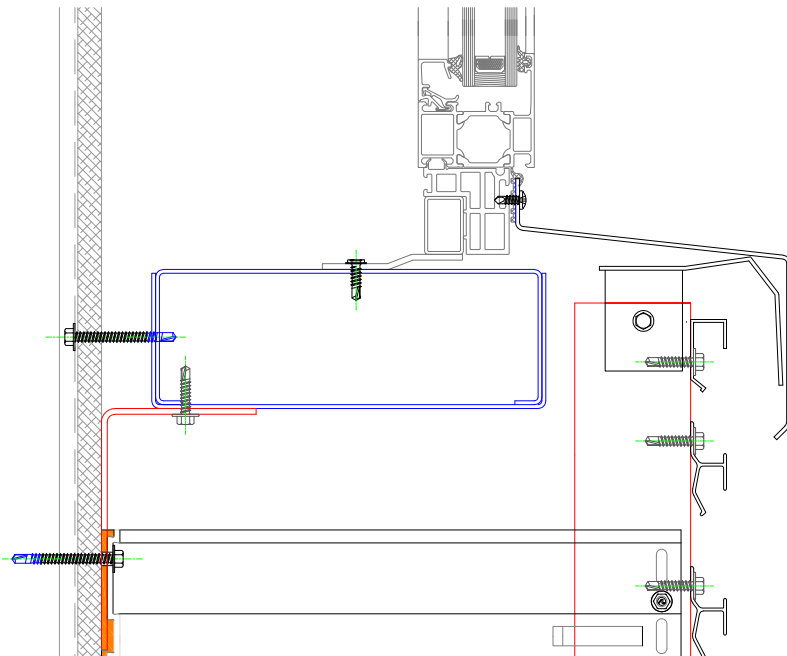
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Window Head Details



Window Return Details



Window Cill Details

C				
B				
A				
Rev	Description	Drawn	Checked	Date

Drawing Status:
Proposal



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Client : Ash & Lacy Ltd.		
Project : ED-Facade-1823		
Drawing Title : Mechsllp CWCT Test Frame Layout - 4		
Drawn By: YT	Checked By:	Date : 20/5/2019
Scale : NTS @ A1		
Drawing No : ED-Facade-1823M.2-4	Rev: [-]	





C			
B			
A	Amend the bracket centre around window	YT	18/06/2019
Rev	Description	Drawn	Checked Date

Drawing Status:
Proposal



BROMFORD LANE WEST BROMWICH WEST
MIDLANDS B70 7JJ TEL: 0121 525 1444 OPTION:8
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Client : Ash & Lacy Ltd.		
Project : ED-Facade-1823		
Drawing Title : Mechslip CWCT Test Frame Layout - 5		
Drawn By: YT	Checked By:	Date : 20/5/2019
Scale : NTS	@ A1	 
Drawing No : ED-Facade-1823M.2-5		Rev: A

General Notes:

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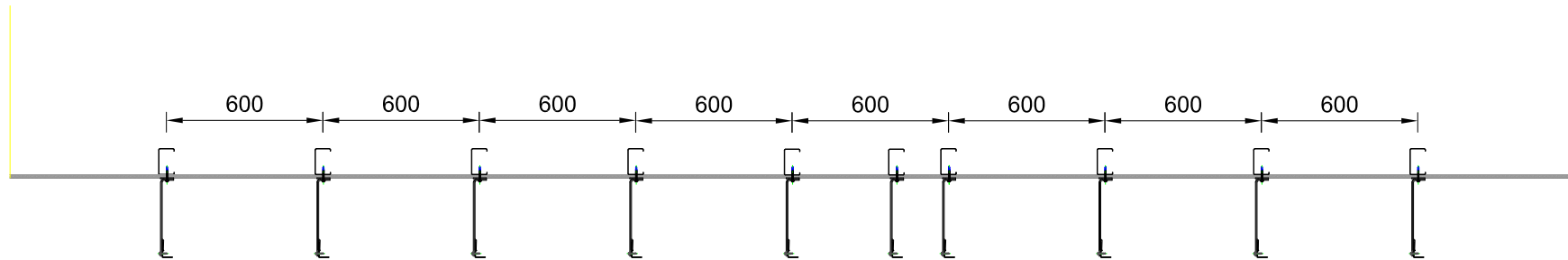
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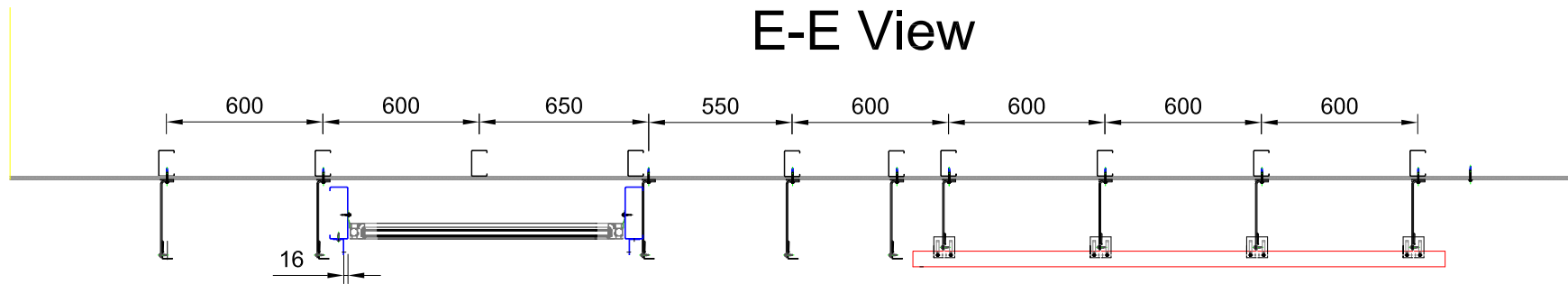
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E-E View



D-D View

C					
B					
A					
Rev	Description	Drawn	Checked	Date	

Drawing Status:
Proposal



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Client:
Ash & Lacy Ltd.

Project:
ED-Facade-1823

Drawing Title:
Mechslp CWCT Test
Frame Layout - 6

Drawn By: YT Checked By: Date: 20/5/2019

Scale: NTS @ A1

Drawing No:
ED-Facade-1823M.2-6



General Notes:

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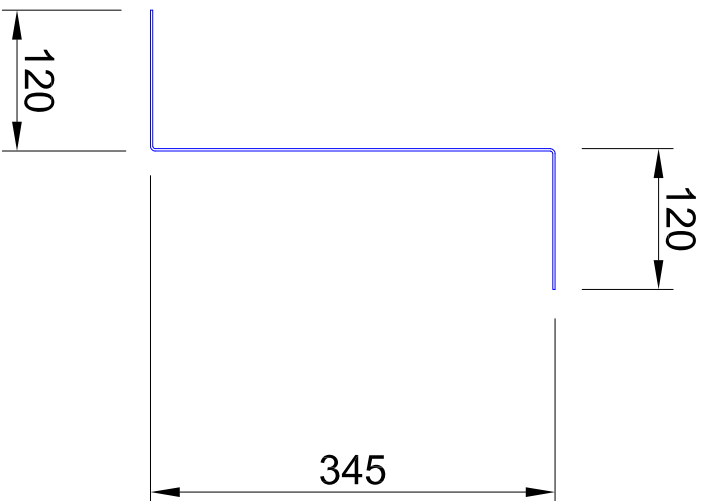
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1. Material: alum 1050H14
2. Thickness 2 mm
3. Length: 2500 mm
4. Finish: PPC RAL2013

Row	Question	Answer	Checklist	Date
C				
B				
A				

Proposal



BROMFORD LANE WEST BROMWICH WEST

FAX: 0121 525 3444 WWW.ASHANDLACY.COM

Client: _____

Ash & Lacy Ltd.

Project :

ED-Facade-1823

Drawing Title:

MEMBERSHIP COUNCIL 11651
A 7400Y04FY400Y0

.....

Drawn by:	Checked by:	Date :
YT		20/5/2019

[illegible][illegible]

Drawing No.:	REV.
ED-Exacode-1823M 3-1	[1]

General Notes:

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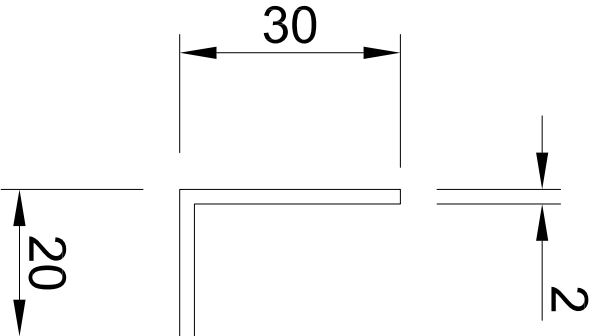
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1. Material: alum 1050H14
2. Thickness 2 mm
3. Length: 2015 mm
4. Finish: mill finish

C			
B			
A			
Device	Trans	Checked	Date

Drawing Status:
Proposal



BROWNE LINE WEST BROMWICH WEST
BRIDGEMAN ROAD
BIRMINGHAM B70 8AA
FAX: 0121 565 5444 WWW.ASHANDLACY.COM

Client :
Ash & Lacy Ltd.

Project :
EDF Facade 1823

Drawing Title :
MechShip CWCT Test
Accessory - L30X20X2

Drawn By :
2016/2019

Scale : NTS @ A1

Drawing No :
ED-Facade-1823M.3-2

Rev :
H

General Notes:

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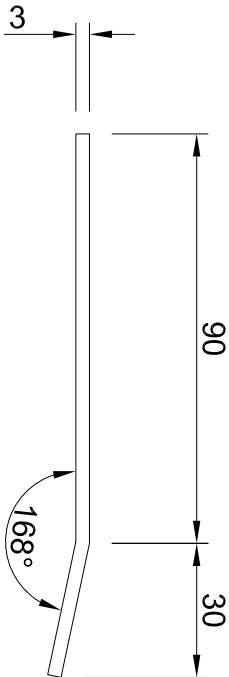
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1. Material: alum 1050H14
2. Thickness 3 mm
3. Length: 1060 mm
4. Finish: PPC RAL2013

C				
B				
A				
Description	Organ	Crusade	Date	

Drawing Status
Proposal



BROWNE GREEN WEST BROMWICH WEST
BRIDGEMAN ROAD
BIRMINGHAM B70 8JN
FAX: 0121 555 5444 WWW.ASHANDLACY.COM

Client :
Ash & Lacy Ltd.

Project :
EDF Facade-1823

Drawing Title :
MechShip CWCT Test
Accessory - Window Head

Drawn By :
2016/2019

Scale :
NTS @ A1

Drawing No :
ED-Facade-1823M.3-3

Rev :
H

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products are correctly installed and that they are suitable for the customers particular requirement and application.

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Row	Check for	Open	Cheese	Date
C				
B				
A				

1000



BROMFORD LANE WEST BROMWICH WEST

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11

Asn & Lacy Ltd.

• *reputa* :

ED-1 2000-1020

Drawing Title:

Accessory - Window Cl

Drawn by:
YT

Scale : NTS

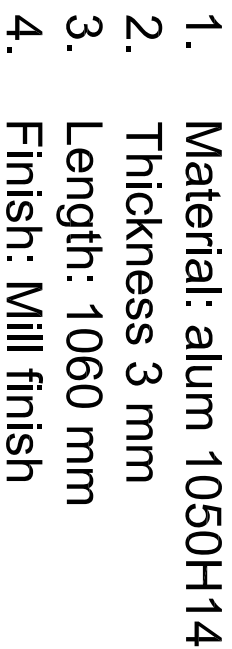
END-FOCUS

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Drawing Status:
ProposalBROMFORD LANE WEST BROMWICH WEST
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Client :
Ash & Lacy Ltd.

ED-Facade-1823

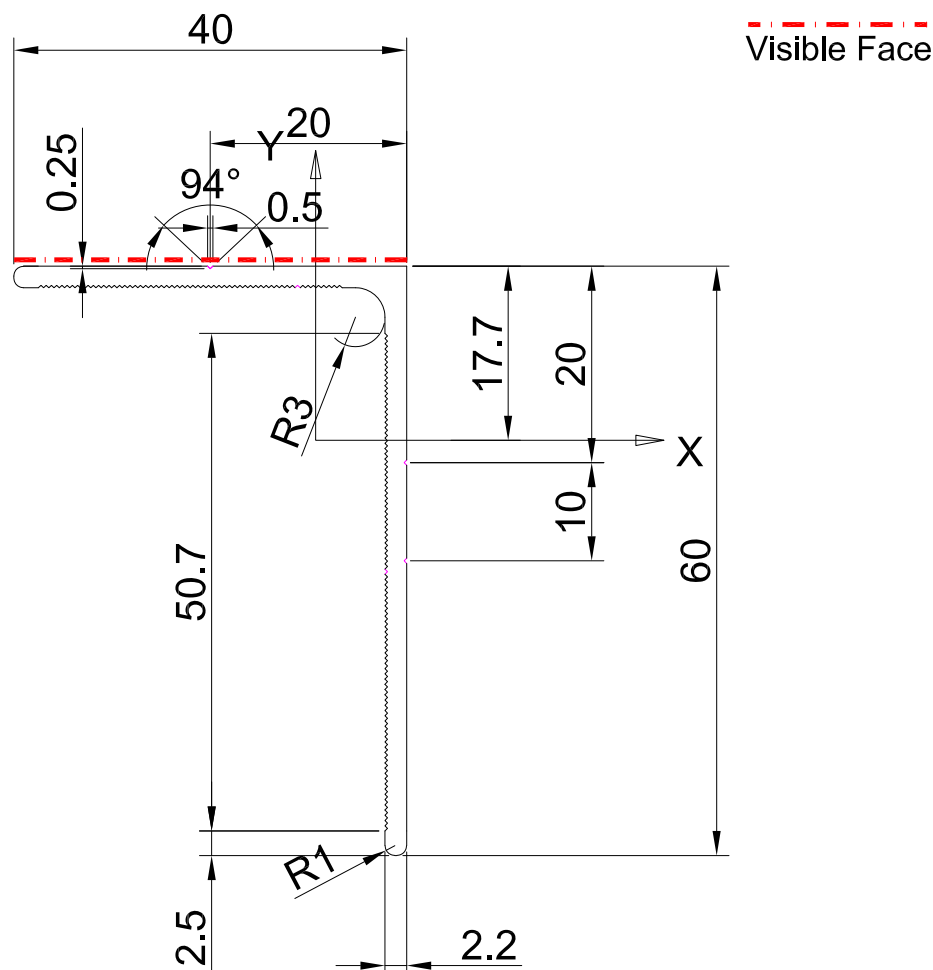
Drawing Title:

Mechslip CWC I Test
Accessory - Window CIII Support

Drawn By: YT	Checked By:	Date : 20/5/2019
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Scale : NTS @ A1

ED-Facade-1823M.3-5	[-]
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Section Properties:

1. Area: 205.8 mm²
2. Weight: 0.556 kg/m
3. Moment of Inertia X: 78271.5 mm⁴
4. Moment of Inertia Y: 28704.5 mm⁴

Tech Note:

1. Material: Alum 6063T6 with mechanical properties applied to BS EN755-2:2016
2. Profile dimension tolerance applied to BS EN 755-9:2016 unless stated on the drawing
3. Standard extrusion length 3000 mm - 4850 mm - 6000 mm
4. Remove sharp corner with 0.5 mm R



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General Notes:

Rev	Description	Drawn	Check	Date
A		CJB		28/5/14
B	Update tech info	CJB	YT	2/5/17
C	Update the issued year of standards	YT		9/4/18

Drawing Title :
L Rail L60X40X2.2
RSMUL15

Drawn By: CJB
Checked By: May 2014

Scale: @ A4



Drawing Status:

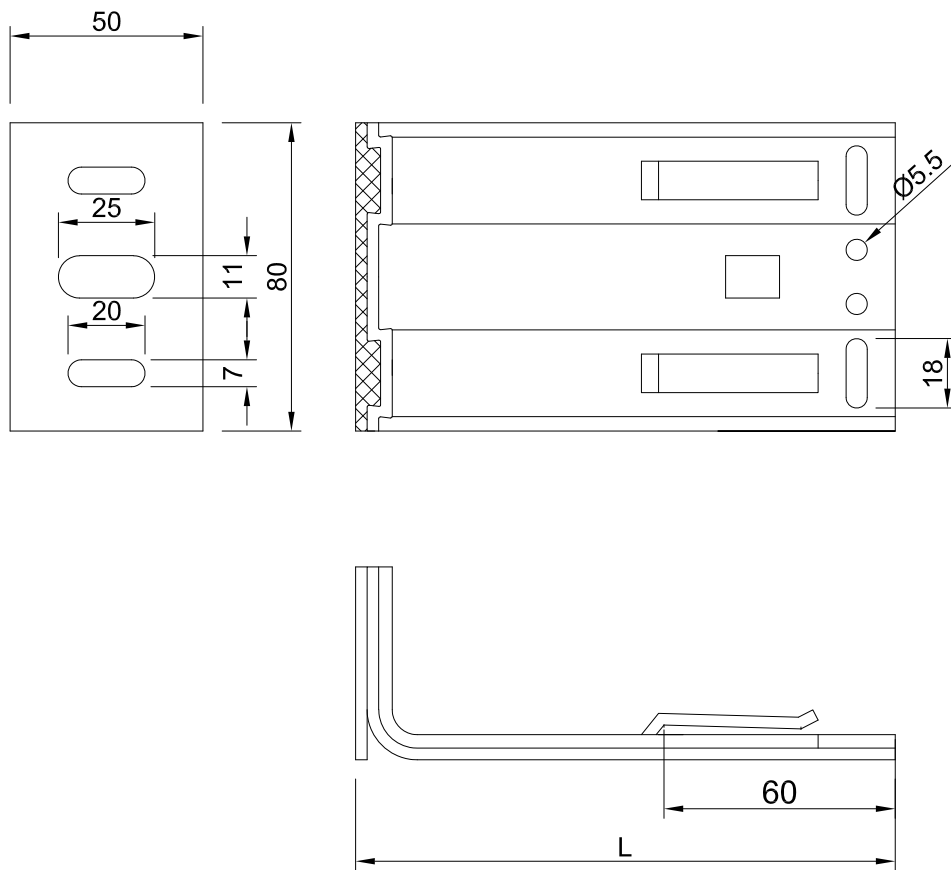
Construction

Client :
Internal

Project :
Standard Mullion

Drawing No :
M14

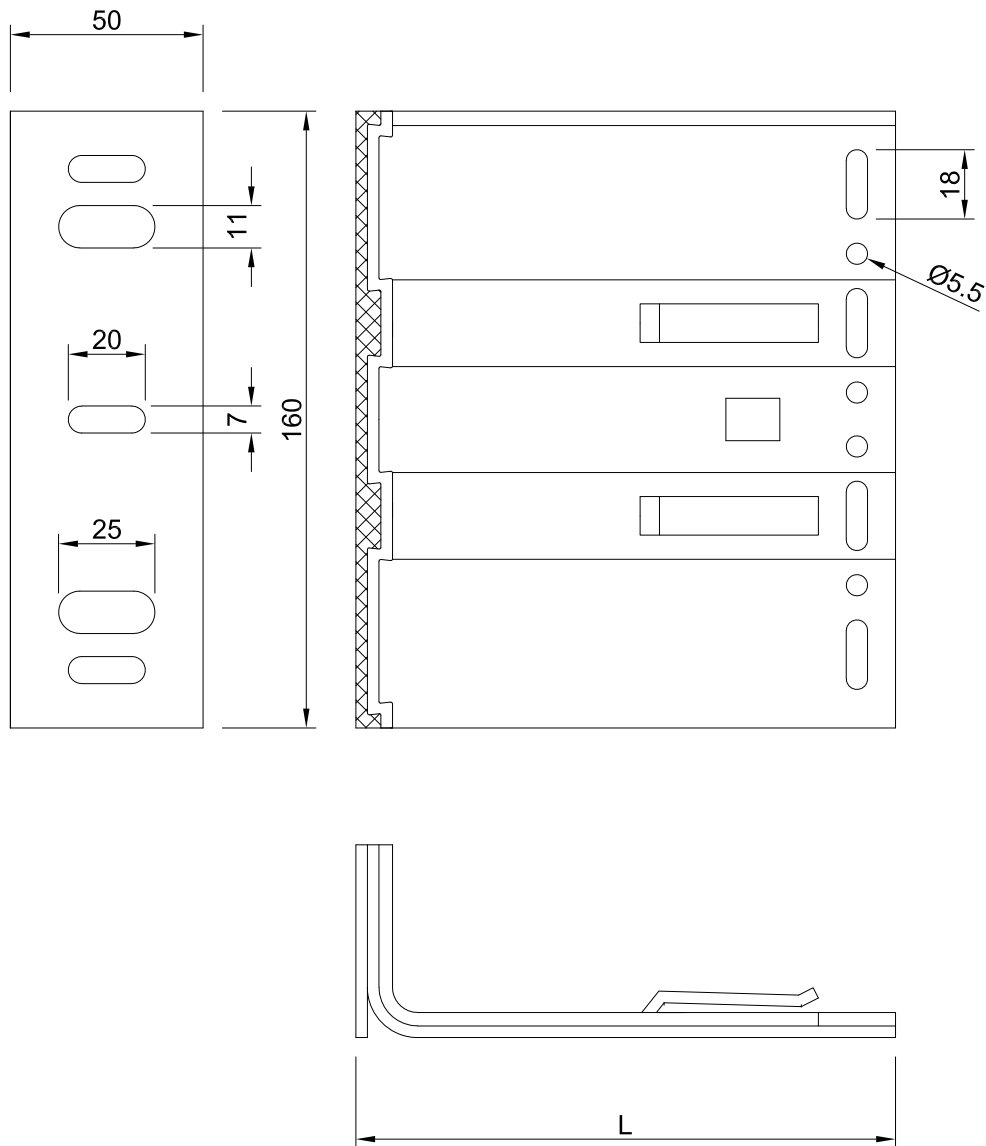
Rev: C



Bracket Ref	L (mm)	Components in Assembly
HB090S-TP	90	HB90S+TP80L
HB120S-TP	120	HB120S+TP80L
HB150S-TP	150	HB150S+TP80L
HB180S-TP	180	HB180S+TP80L
HB210S-TP	210	HB210S+TP80L
HB240S-TP	240	HB240S+TP80L
HB270S-TP	270	HB270S+TP80L
HB300S-TP	300	HB300S+TP80L

Rev	Description	Drawn	Check	Date
A	Development version	YT		09/05/2016
B	Update Tech Info	YT		02/05/2017
C				

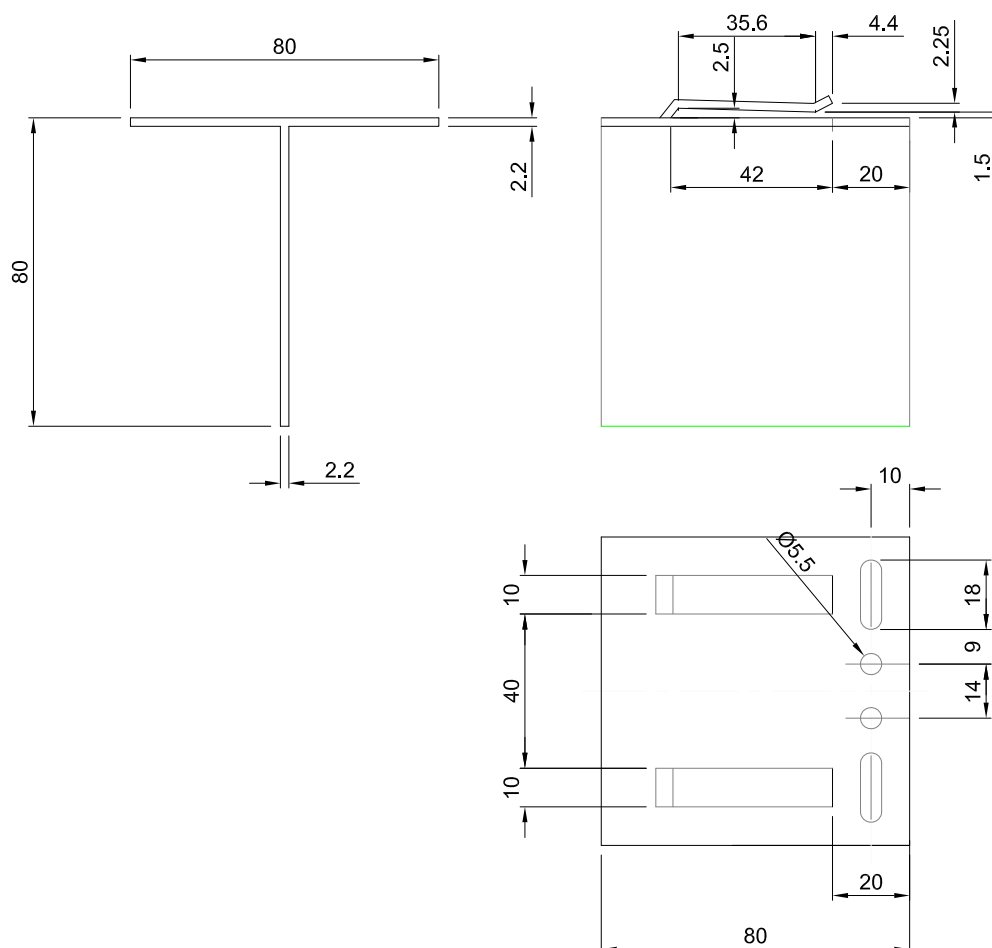




Bracket Ref	L (mm)	Components in Assembly
HB090D-TP	90	HB90D+TP160L
HB120D-TP	120	HB120D+TP160L
HB150D-TP	150	HB150D+TP160L
HB180D-TP	180	HB180D+TP160L
HB210D-TP	210	HB210D+TP160L
HB240D-TP	240	HB240D+TP160L
HB270D-TP	270	HB270D-TP160L
HB300D-TP	300	HB300D-TP160L

Rev	Description	Drawn	Check	Date
A	Development version	YT		09/05/2016
B	Update Tech Info	YT		02/05/2017
C				





1. Material: Alum 6063T6 with mechanical properties applied to BS EN 755-2:2016
2. Profile dimension tolerance applied to BS EN 755-9:2016
3. Overall dimension tolerance ± 1 mm



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General Notes:

Rev	Description	Drawn	Check	Date
A	Development version	YT		09/05/2016
B	Update Tech Info	YT		02/05/2017
C	Update the issued year of standards	YT		9/4/18

Drawing Title :

Horizontal Bracket Adaptor
HBD80

Drawn By:
YT

Checked By:

Date:
July 2015

Scale: @ A4



Drawing Status:

Construction

Client:
Internal

Project:
ED-Tech-1602-02.07

Drawing No:
B34

Rev:
C



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