

TEST REPORT

Lucideon Reference: 184360 (QT50784/2/GMB)/Ref. 2

Project Title: Weather-Tightness Testing of Forterra's Brick Slip Cladding System in Accordance with BS EN 12865:2001

Client: Forterra Building Products Ltd
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Work Location: Lucideon UK



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1 INTRODUCTION

Lucideon Limited were contracted by Forterra to evaluate the performance of their SureBrick cladding system under wind driven rain conditions in accordance with BS EN 12865:2001 Hygrothermal performance of building components and building elements - Determination of the resistance of external wall systems to driving rain under pulsating air pressure.

2 SAMPLE PREPARATION

Representatives from Forterra installed their brick slip cladding system into a 3200 mm x 2600 mm (L x H) steel ETAG frame.

The cladding system was installed onto a 2.6 m high x 3.2 m long steel test frame.

The galvanised metal frame was installed into the steel test frame at the designated centres as stated in Appendix B.

The system was fitted by an external contractor.

2400 x 1200 x 10 mm RCM Cement Particle Board was fixed to the galvanised metal frame at 300 mm vertical centres. Joints in the board were taped using tremco illbruck ME315 Contractors adhesive tape.

The wall was split vertically down the centre and a window opening (Height = 600 mm; Width = 400 mm) was incorporated into either side of the panel located 400 mm down from the top of the panel and 400 mm in from the side of the panel.

The window was fixed back to the frame using aluminium window straps. tremco illbruck ME501 Duo Membrane HD was installed using tremco illbruck SP525 adhesive to the exposed edge around the perimeter of the window. The window was sealed back to the cement particle board using ME501

tremco illbruck ME 011 breather membrane UV was dab fixed to the cement particle board using tremco illbruck SP525 adhesive.

Walker Steel Zed rails were fixed through the breather membrane and cement particle board into the galvanised steel frame. The zed rails were fixed to give 600 mm centres in the centre of the frame and 280 mm at either end. The rails were fixed using EJOT JT3 4.9 mm x 35 mm fixings at 300 mm vertical centres.

A timber frame constructed from 48 mm x 48 mm treated timber was fixed using EJOT TKE 4.8 mm x 100 mm to the wall above the window to enable vertical fixing of the brick slips to incorporate a soldier course detail above the window.

SureBrick stainless steel cladding rails were fixed to the Zed rails at a maximum of 106 mm vertical centres with EJOT JT3 5.5 mm x 25 mm fixings.

SureBrick Rails were fixed with butt joints located between the vertical zed rails. The maximum distance from a zed rail to a joint i.e. the end of a cantilevered SureBrick rail was 500 mm.

The wall was split vertically with Forterra Dark Multi Smooth brick slips used on one side of the installation and Forterra Chelsea Smoked Red used on the other. The brick slips were located in the metal cladding rails using a rubber mallet.

Multiple rows of projecting brick slips (up to 78 mm projections) were incorporated across the panel using Oakthorpe Red Multi and Dark Multi smooth brick slips.

25 Kg of mortar was mixed with 3.75 litres of water with a paddle mixer to produce a mortar with a consistency of finishing plaster. It was allowed to stand for 5 minutes and then remixed.

The brick slips were then pointed using a pointing gun. The mortar was allowed to cure for several hours and then finished by scraping with a spatula.

The wall was allowed to cure at a temperature of 20°C and 55% Relative Humidity for at least 28 days and was monitored daily for any signs of distress including blistering, cracking and detachment.

A list of all materials used within the construction, along with batch numbers where appropriate, can be seen in Appendix A.

3 TEST METHOD AND AREAS

Forterra’s brick slip cladding system was sealed into Lucideon’s CWCT rig.

A rain-screen was placed in front of the sample wall and the CWCT rig was sealed.

Water was sprayed onto the specimen at a rate of 1.5 litres per metre squared per minute (l/(m² x min)) and, after an initial period with no pressure difference a series of pulsating air cycles was applied positively as shown below.

Pressure difference Pa	Procedure A		Procedure B	
	Time interval min	Total time at end of steps min	Time interval min	Total time at end of steps min
0	20	20	60	60
0 to 150	10	30	60	120
0 to 300	10	40	60	180
0 to 450	10	50	60	240
0 to 600	10	60	60	300
600 + i · 150 i= 1,2,3,...n	10	60 + i · 10	60	300 + i · 60



Each pressure pulse consists of four stages: a rising pressure stage of (3 ± 1) secs, a maximum pressure stage of (5 ± 1) secs, a falling pressure stage of (2 ± 1) secs and a zero pressure stage of (5 ± 1) secs.

Procedure A was used for this testing at the request of BBA.

The sample was inspected at intervals of 10 minutes during testing so as to ascertain when there was a failure within the system.

4 RESULTS

There is no pass or fail criteria within BS EN 12865, however a pressure value of above 1200 Pascals is usually taken as the industry standard for this test.

The structural panel showed no signs of water ingress at 2400 Pascals.

At this point it was agreed with a representative from Forterra and BBA (British Board of Agrément) to stop the test so as not to damage the sample for further testing.

NOTE: The results given in this report apply only to the samples that have been tested.

END OF REPORT

PLATES

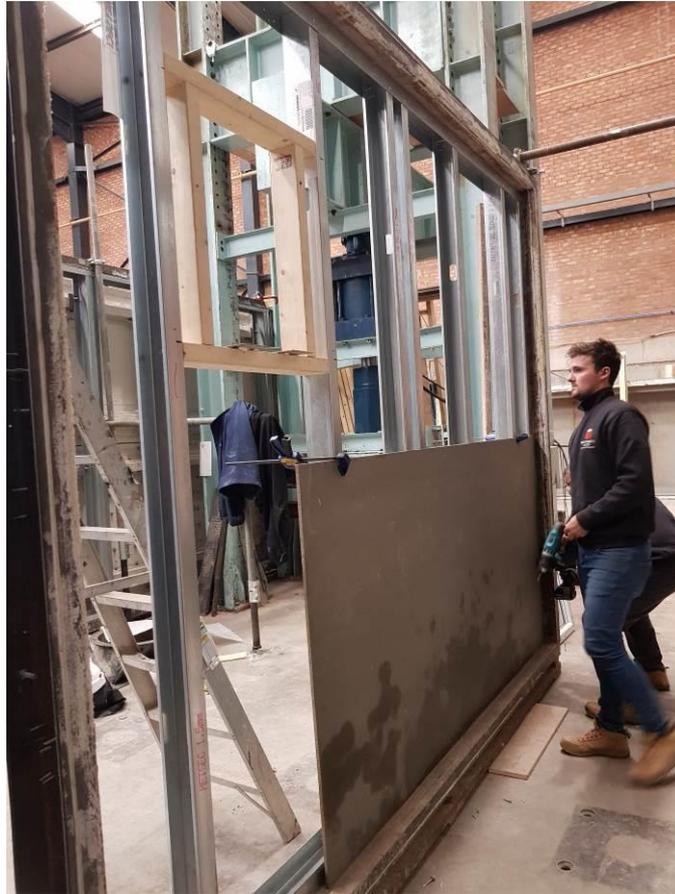


Plate 1 – Mechanically Fixing of the Cement Particle Board onto the Galvanised Metal Frame Previously Installed



Plate 2 – View of Joint Taping Cement Particle Board



Plate 3 – View of the 'DPC Installed to Window Perimeter



Plate 4 – View of the 'DPC Installed to Window Perimeter and Cement Particle Board



Plate 5 – View of Installation of Breather Membrane



Plate 6 – Installation of Frame for Soldier Detail



Plate 7 – Wall after Installation of Breather Membrane



Plate 8 – Installation of Zed Rails



Plate 9 – Wall on Completion of Zed Rail Install

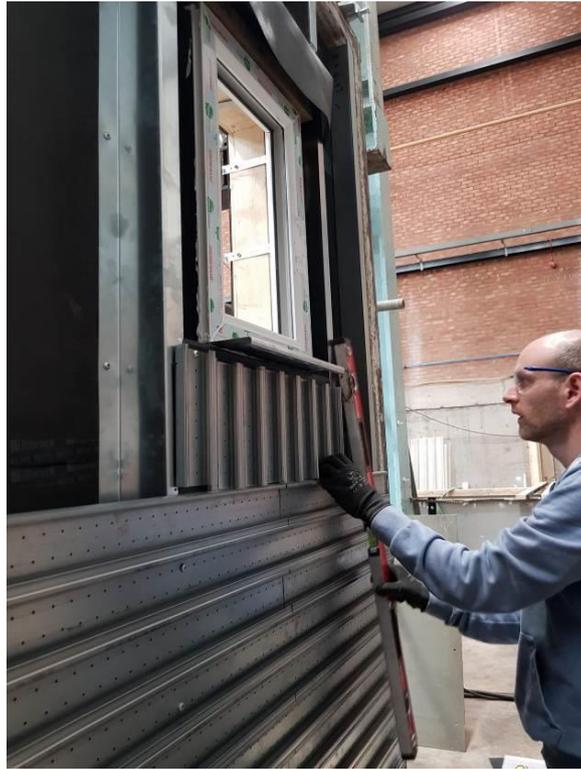


Plate 10 – Installation of Brick Rail



Plate 11 – Installation of Brick Slips



Plate 12 – Application of Pointing Mortar



Plate 13 – Finishing of Mortar Joint

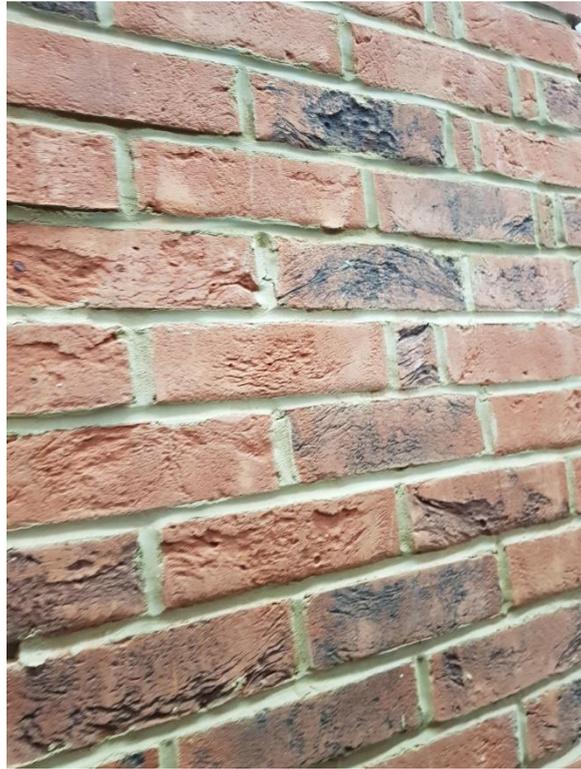


Plate 14 – Finished of Joints



Plate 15 – Finished Wall

APPENDIX A - Batch Details

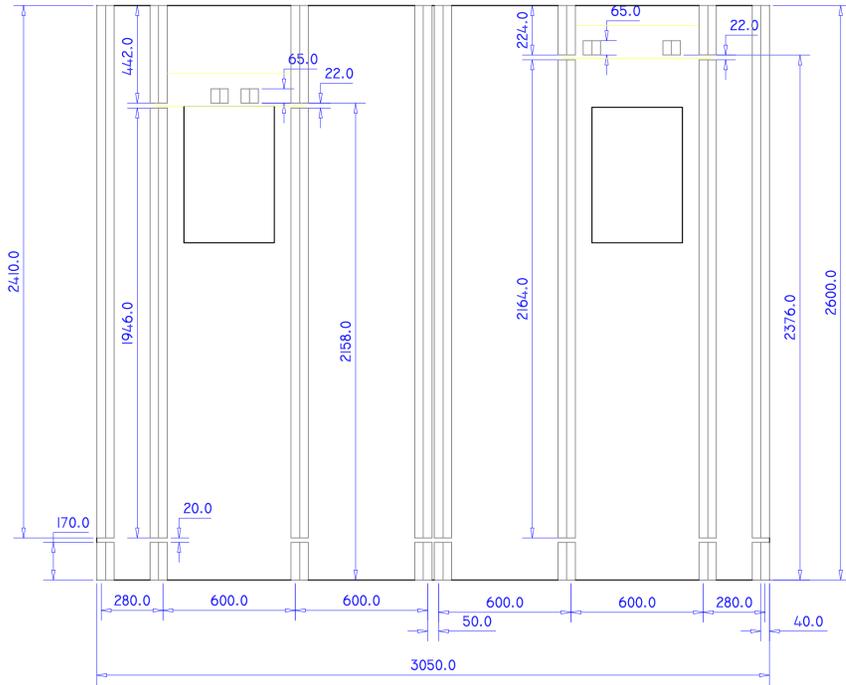
Product	Description	Batch Reference	Image of Label
Pointing Mortar	Parex - Historic KL EA250 Sandstone – 25 kg bag	M/O 87168	
Perpend Weep Vent	Manthorpe - Weep Vent Grey G950GR - Pack	MANG950GR (IN)	
Clay Brick Slips	Forterra Building Products Ltd - Dark Multi Smooth - Pallet	Manufactured to BS EN 771-1	
Clay Brick Slips	Forterra Building Products Ltd - Chelsea Smoked Red - Pallet	Manufactured to BS EN 771-1	
Clay Brick Slips	Forterra Building Products Ltd - Oakthorpe Red Multi – Pallet	Manufactured to BS EN 771-1	

Product	Description	Batch Reference	Image of Label
Clay Plinth Slips	Forterra Building Products Ltd - Smooth Red - Pallet	Manufactured to BS 4729	
Backing Rod	tremco illbruck - AW135 Backing Rod 10 mm x 1150 mm – Box	350593 (IN)	-
External Sealant	tremco illbruck - SP525 600 mL - Box	377887 (IN)	
SureBrick Rail	0.7 mm SureBrick Rails (comprising S220GD + ZM310 hot dip zinc-magnesium coating to BS EN 10346) – Pallet	-	
SureBrick Top Rail	0.7 mm SureBrick Rails (comprising S220GD + ZM310 hot dip zinc-magnesium coating to BS EN 10346) - Pallet	-	
SureBrick Stainless Rail	SureBrick Rails - 0.7 mm, 2.4 m 1.4301 Stainless Steel - Pallet	-	

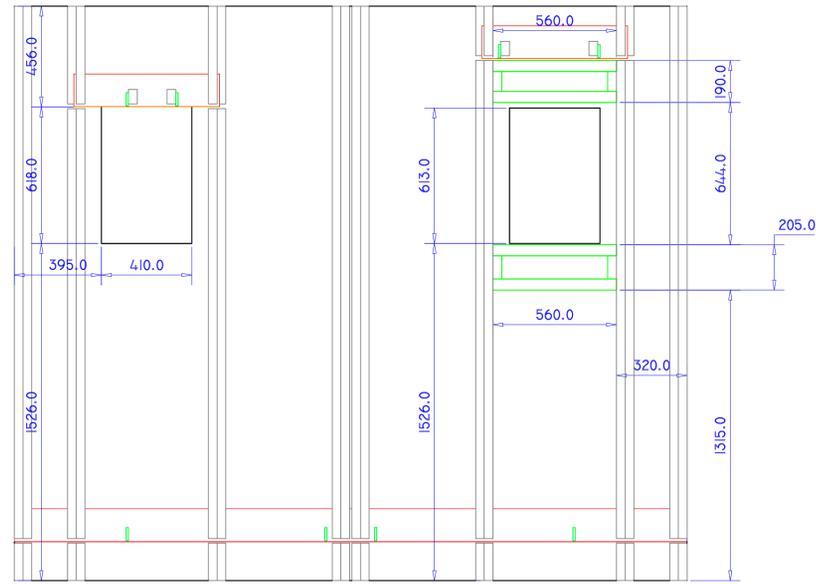
Product	Description	Batch Reference	Image of Label
SureBrick Stainless Top Rail	SureBrick Rail - 0.7 mm, 2.4 m 1.4301 Stainless Steel - Pallet	-	
SureBrick Rail Fixings	EJOT - JT3-LT3- 5.5 x 25 - Box	2565975	
SureBrick Rail Fixings	HILTI - S-MD01PS 5.5 x 22 - Box	1099500525	
Timber Batten Fixings	EJOT - TKE 4.8 x 80 mm - Box	0002165209 / 0002187364	
Timber Batten Fixings	EJOT - TKE 4.8 x 100 mm - Box	1852086	

Product	Description	Batch Reference	Image of Label
Timber Battens	Forterra Building Products Ltd – 48 mm Treated Timber – Pallet	N/A	
Zed Rails	Walker Steel - 1.5 mm Profiled Steel - Pallet	N/A	
Total Protection Tape	tremco illbruck - ME315 Contractors Adhesive Tape	398628 (IN)	
Breather Membrane	tremco illbruck - ME011 UV - Box	398873 (IN)	
Adhesive	tremco illbruck - SP525 600 mL - Box	377887 (IN)	

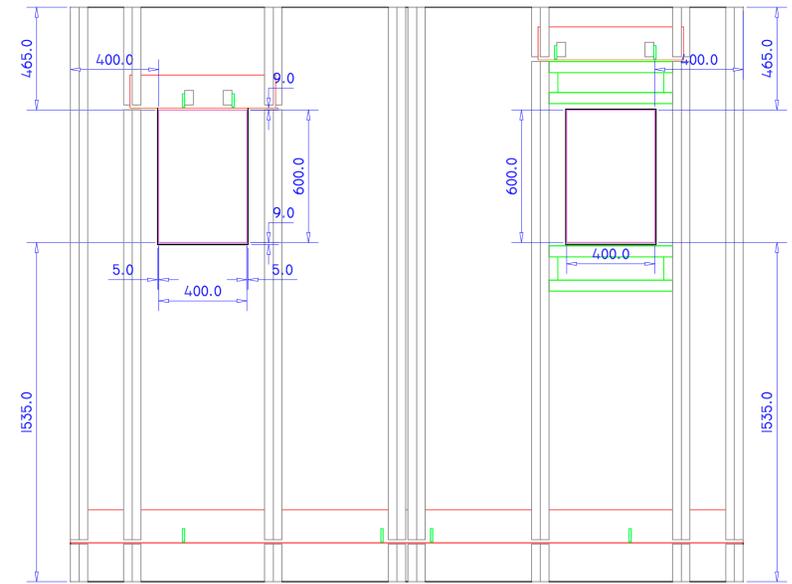
Product	Description	Batch Reference	Image of Label
DPC	Visqueen - Polythene 30 m x 450 mm - Roll	BUPDPC450 (IN)	
Window Primmer	tremco illbruck - AT150 500 mL EN – Box	342049 (IN)	
Window DPC	tremco illbruck - ME501 25 m Roll – Box	396578 (IN)	
Window Sealant	tremco illbruck - SP525 600 mL - Box	377887 (IN)	
Zed Rail Fixings	EJOT - JT3-FR-2- 4.9 x 35 - Box	2603402	
Cement Particle Board	RCM - Cemboard 2400 x 1200 x 10 mm – Pallet	ZZ-TRA002P2	



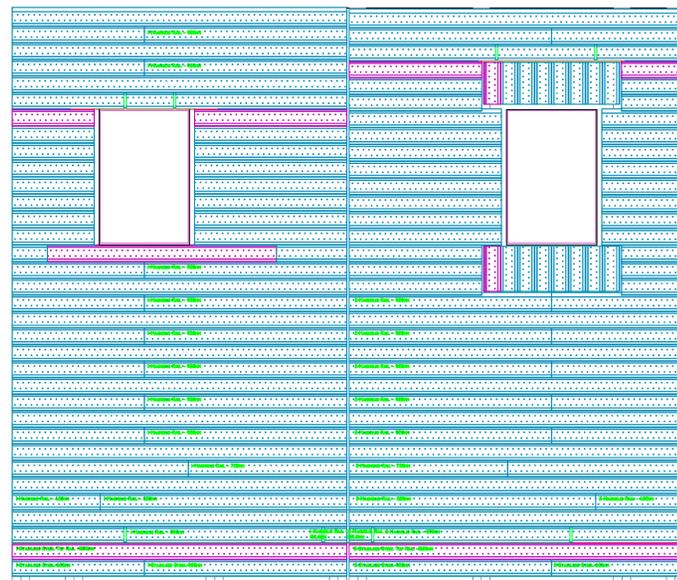
Front Elevation - Secondary Steel Layout



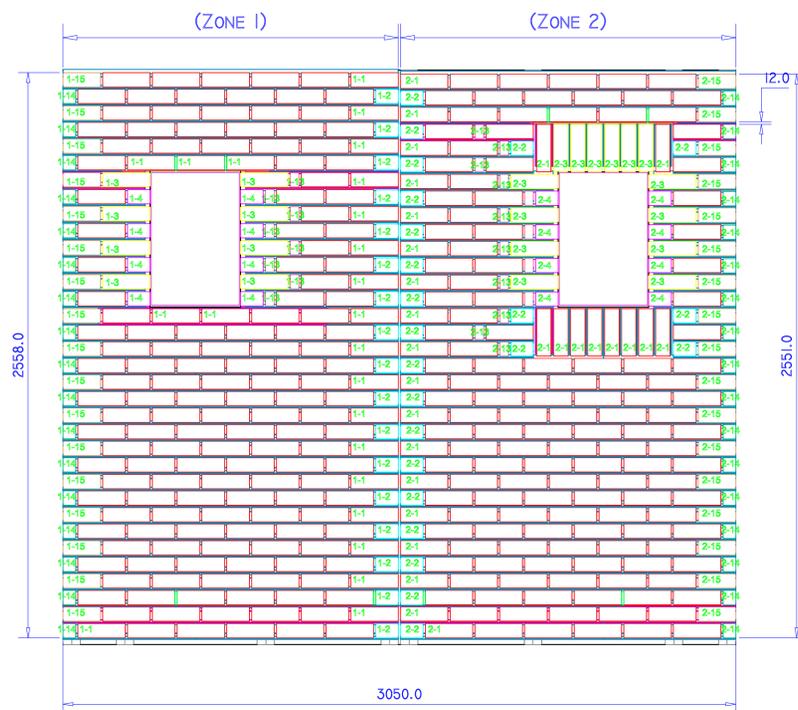
Front Elevation - Timber Batten, DPC & Perpend Vent / Drain Layout



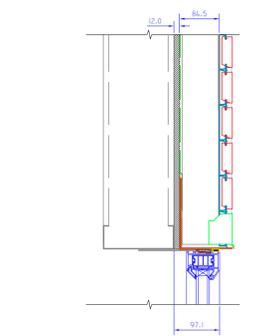
Front Elevation - Window Position



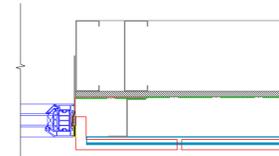
Front Elevation - Rail Layout



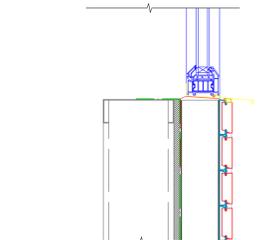
Front Elevation - Brickwork Layout



Section - Head Detail



Section - Jamb Detail



Section - Cill Detail

Rev.	Description	Date	By



Project:
Product Development
Customer:
Forterra Building Products Ltd

Drawing Title:
Test 17 - Basic Panel
Lucideon
SureBrick
Drawn By: GR Scale: (Paper Size A1)
Date: 18-08-19
Drawing No. 1700098 - 700 Rev. D

It is the contractor's sole responsibility to ensure that all design detailing shown above complies with the relevant requirements from the Building Regulations, British Standards and Codes of Practice. It is the contractor's sole responsibility to check that all specifications and quantities are correct prior to placement of order and any commencement of works on-site - all inaccuracies must be reported immediately to Forterra. Do not scale from this drawing.