

BRE Test Report

Watertightness test according to BS EN 1027:2016 on a Lonsdale Metal pitched rooflight

Prepared for: Viktoras Makarenko
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Date 01 May 2018

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1 Introduction

At the request of Viktoras Makarenko, Technical Design Assistant of Lonsdale Metal Company Ltd, Unit 40, Millmead Industrial Centre, Mill Mead Road, London, N17 9QU, BRE issued project number P111840 on the 12th February 2018. The proposal was accepted by Viktoras Makarenko, Technical Design Assistant of Lonsdale Metal Company Ltd, on the 27th February 2018. BRE received and stored the test specimen on the 5th April 2018 in BRE laboratory B21.2. The specimen was tested on the 9th April 2018.

BS EN 14351-1:2006+A2:2016 is the product standard that identifies mandated and non-mandated characteristics for windows and external pedestrian doors for the European market, and it enables products to be CE marked. Designers, specifiers, manufacturers and end users need to identify those characteristics and performance levels appropriate for the selected end use. These will vary from site to site and from country to country.

As requested BRE performed a watertightness test in accordance with BS EN 1027:2016 and classified the results based on those set by BS EN 12208:2000.

The tests on the specimen were carried out by Mr Ben J Holland under the BRE Standard Terms and Conditions of Business for testing and to the UKAS BRE Specific Procedures Series F, as BRE Project number P111840-1000.

Testing was witnessed by:

Viktoras Makarenko Lonsdale Metal Company



2 Test programme

The watertightness programme is carried in accordance to BS EN 1027:2016. This standard specifies the overall watertightness procedure and states the required test pressures and time under pressure. This follows the following format: 0 Pa / 15 minutes, 50 Pa / 5 minutes, 100 Pa / 5 minutes, 150 Pa / 5 minutes, 200 Pa / 5 minutes, 250 Pa / 5 minutes and 300 Pa / 5 minutes. After the 300 Pa pressure has been applied, the pressure increments will increase by 150 Pa and be applied for 5 minutes.



3 Classification of results

Table 1 below is taken from BS EN 12208:2000 which specifies the classes achievable when testing to BS EN 1027:2016. Any specimens that allow water penetration at zero test pressure before the expiration of 15 minutes cannot be classified. Specimens that are watertight to test pressures greater than 600 Pa for a minimum of 5 minutes shall be classified E xxx, where xxx is that maximum test pressure.

Test Pressure Pa	Classification Test Method A	Specifications
0	1A	Water spray for 15 minutes
50	2A	As class 1 + 5 minutes
100	3A	As class 2 + 5 minutes
150	4A	As class 3 + 5 minutes
200	5A	As class 4 + 5 minutes
250	6A	As class 5 + 5 minutes
300	7A	As class 6 + 5 minutes
450	8A	As class 7 + 5 minutes
600	9A	As class 8 + 5 minutes
>600	Exxx	Above 600 Pa in steps of 150 Pa, the duration at each step shall be 5 minutes

Table 1. Classification - taken from BS EN 12208:2000



4 Test Specimen

Identity:	Lonsdale Metal Company Ltd Rooflight
Condition:	Rooflight was delivered, installed and stored in BREs B21.2 Laboratory on the 5 th April 2018.
Type:	The test specimen had three glass panels installed with two meeting stiles running between inner joints.
Frame:	Aluminium framing
Glazing:	All glass panes used were double glazed units
Seals:	Neoprene/EPDM 3 mm x 60 mm single side adhesive tape around perimeter of specimen. Sikasil WS-605 S High performance weatherproofing sealant was used to seal the bottom joint between glazing and insulating panel (as shown in Figure 2). A bead of Sikasil WS-605 S was also used to seal the joint between draught excluder and glazing bar.
Hardware:	Aluminium TG50 snap on cover. Co-Ex PVC TG50 Pressure Plate Co-Ex PVC TG50 Carrier ral co-ex Aluminium TG50 Carrier rail DG Wood/Plastic spacers Co-Ex PVC TG50 Transom bar co-ex Aluminium TG50 Eaves transom flush
Fixings:	Non visible
Dimensions:	2520 mm high x 3060 mm wide. Area: 7.71 m ²

Disclaimer: Please note BRE have not carried out a full forensic examination of the described test specimens. The full details were provided by Viktoras Makarenko of Lonsdale Metal Company Ltd

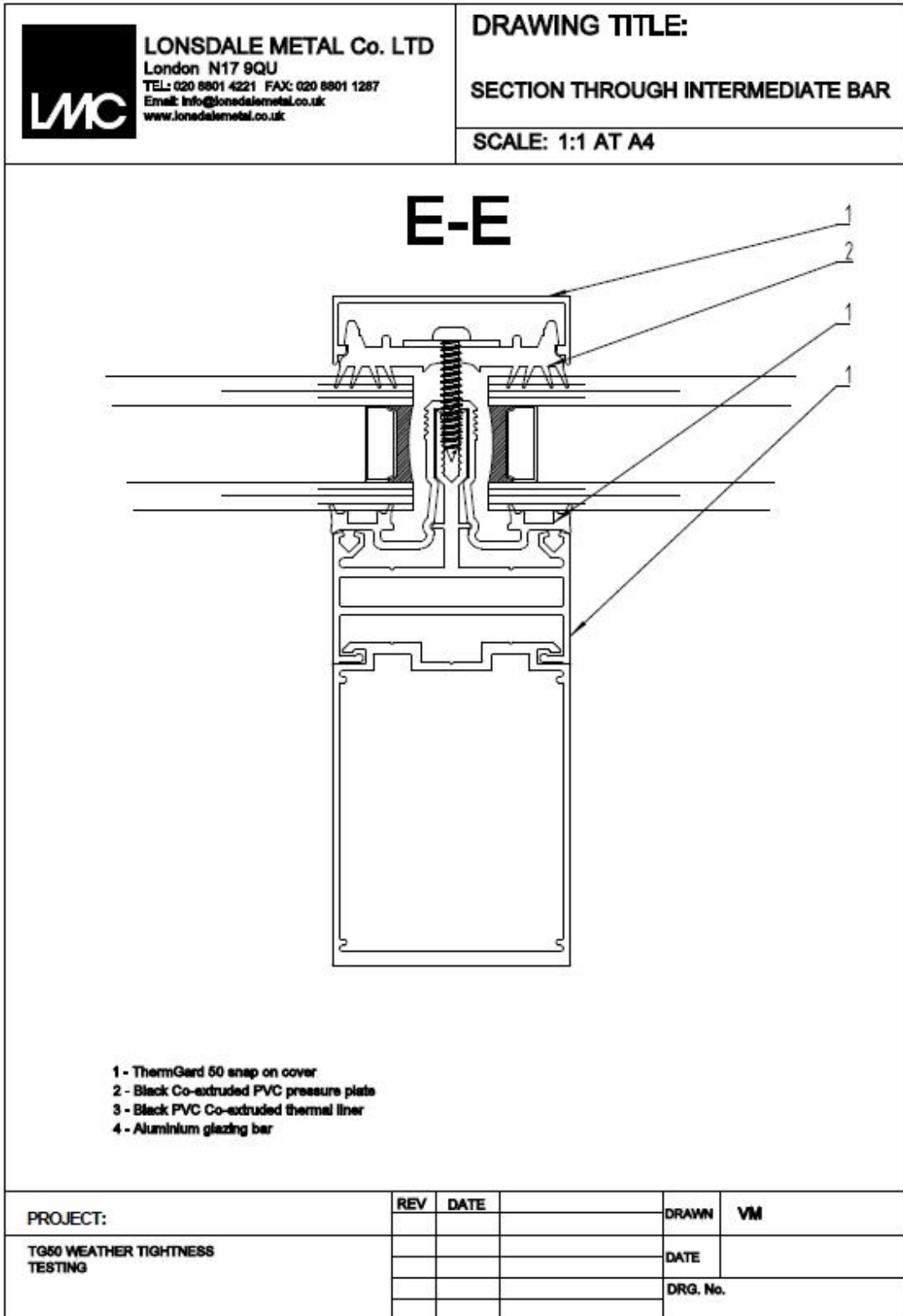


Figure 1. Intermediate bar section

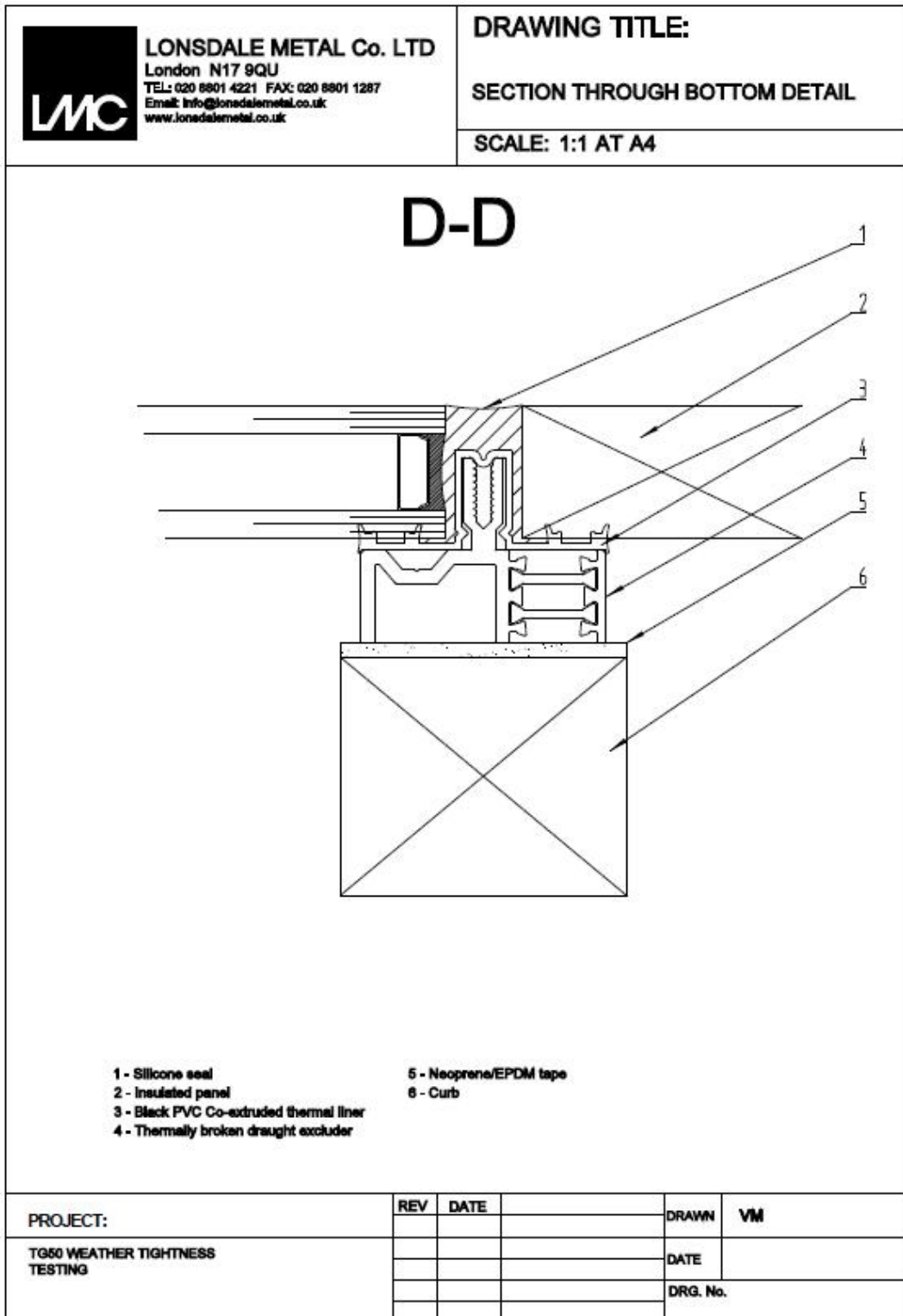


Figure 2. Section through bottom detail



5 Test rig and preparatory procedures

The test specimen was conditioned for at least 4 hours within temperature and humidity ranges specified in the test standards of 10°C to 30°C and 25% to 75% RH respectively.

The water temperature was within the specified range of 4°C to 30°C.

A bespoke timber test rig was built on BRE's ACR Test Rig in which the specimen was mounted horizontally.

A spray bar with eight full circular cone nozzles was mounted 200 mm above the specimen to apply water to the outside face of the specimen. The water flow rate per nozzle was 2 L/min in accordance with BS EN 1027:2016 spraying method 1A.



6 Summary of test results

The test results are summarised in Table 2. Figures show detail of the test specimen and detailed results are given in the Appendix of this report.

Watertightness	
Requirements	Results
Class E1650 at 1650 Pa	Met requirements to achieve Class E1650

Table 2. Summary of results for Lonsdale Metal Inclined Rooflight



7 Conclusions

When the test specimen was tested to the standards described herein it was found to be:

- Successful in meeting the BS EN 12208:2000 requirements for Class E1650 at 1650 Pa using test method 1A up to and at 1650 Pa.



8 References

1. BS EN 14351-1:2006 +A2:2016 Windows and doors – Product standard. British Standards Institution, London.
2. BS EN 1027:2016. Windows and doors – Watertightness – Test method. British Standards Institution, London.
3. BS EN 12208:2000. Windows and doors – Watertightness - Classification. British Standards Institution, London.



Appendix A Weathertightness Test Results

Lonsdale Metal Inclined Rooflight

Conditions in the test laboratory and test rig at the start of tests:

Barometric Pressure (mb) 1000 Temperature (°C) 19.1

Relative Humidity (%) 45

Water Temperature (°C) 18.4

Watertightness Results

Test Pressure (Pa)	Duration in minutes	Test Results
0	15	No Leakage
50	5	No Leakage
100	5	No Leakage
150	5	No Leakage
200	5	No Leakage
250	5	No Leakage
300	5	No Leakage
450	5	No Leakage
600	5	No Leakage
750	5	No Leakage
900	5	No Leakage
1050	5	No Leakage
1200	5	No Leakage
1350	5	No Leakage
1500	5	No Leakage
1650	5	No Leakage

Table A1. Watertightness test results



Figure A1. Lonsdale Metal Inclined Rooflight installed in airtight box on BREs ACR Rig