



INSPIRE | DESIGN | CREATE

Acoustics Strategy

Applicant:

Al-Raza Foundation
8-16 Park Grove
Levenshulme
Manchester
M19 3AQ

Site Address:

8-16 Park Grove
Levenshulme
Manchester
M19 3AQ

Proposal:

Planning application for the erection of a new community centre with a place to worship, with ancillary education facilities and demolition of existing building. No change to existing established use.

Agent:

ML Design
4 Fairview Avenue
Levenshulme
Manchester
M19 2AN

Prepared by:

Mr. Muneeb Z Lokasher
T: +44 (0) 161 8182 786
M: +44 (0) 772 2524 205

Date:

29/06/2020

Revisions:

Revision	Date	By	Notes
A	29/06/20	ML	Issue for Planning Application



Contents

Sound Insulation Proposal

Documentation of Component

Rockwool Full Fill Cavity Batt – Manufacture specification sheet

CONDITION 8:

The premises shall be acoustically insulated and treated to limit the break out of noise in accordance with a noise study of the premises and a scheme of acoustic treatment that has been submitted to and approved in writing by the City Council as local planning authority, prior to first use of the development and thereafter retained and maintained.

Where entertainment noise is proposed the LAeq (entertainment noise) should be controlled to 10dB below the LA90 (without entertainment noise) at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63Hz and 125Hz octave frequency bands should be controlled so as not to exceed (in habitable rooms) 42dB and 36dB, respectively.

Reason - To safeguard the amenities of the occupiers of nearby residential accommodation, pursuant to saved policy DC26 of the Manchester City Council Unitary Development Plan, policies DM1 and SP1 of the Manchester Core Strategy.

Sound Insulation Prediction (v8.0.1)

Program copyright Marshall Day Acoustics 2014

Rockwool International A/S - Key No. 2589

Margin of error is generally within $R_w \pm 3$ dB

Job Name: ACHE

Job No.: 1039

Page No.:

Date: 8 Jul 20

Initials:heva

File Name: insul

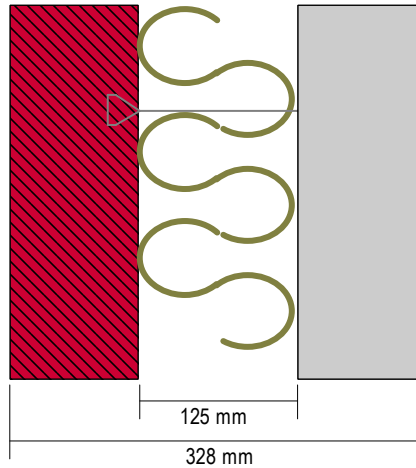


Notes:

Longsight Mosque
(NCDL3321)

Wall - Airborne

Ref- MD-ML-EW-1



R_w 56 dB

C -1 dB

C_{tr} -4 dB

D_{nTw} 58 dB [V:50m3]
[A:11m2]

System description

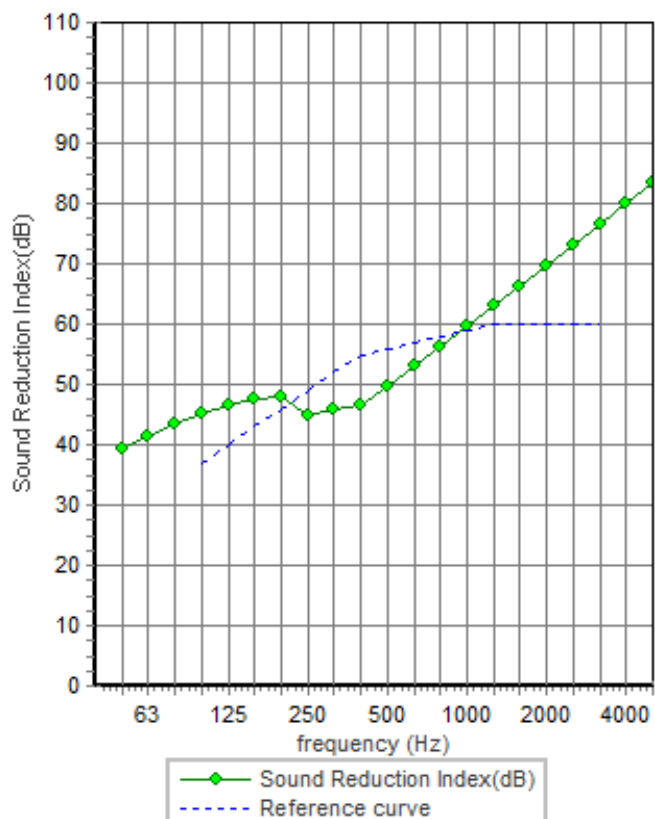
Panel 1 : 1 x 103.0 mm Brick (ρ :1700 kg/m³, E:8.9GPa, η :0.02)

Cavity : Butterfly Tie , Stud spacing 450 mm , Infill ROCKWOOL Cavity Thickness 125 mm (ρ :38 kg/m³, Rf:15421 Pa.s/m²)
Panel 2 + 1 x 100.0 mm Concrete Block (Dense) (ρ :1800 kg/m³, E:8.3GPa, η :0.03)

Mass-air-mass resonant frequency =15 Hz

Panel Size 2.7x4 m

frequency (Hz)	R(dB)	R(dB)
50	39	
63	42	41
80	43	
100	45	
125	47	46
160	48	
200	48	
250	45	46
315	46	
400	46	
500	50	49
630	53	
800	56	
1000	60	59
1250	63	
1600	66	
2000	70	69
2500	73	
3150	77	
4000	80	79
5000	84	





Documentation of the component

Thermal transmittance (U-value) according to BS EN ISO 6946

Source: **own catalogue - External walls**

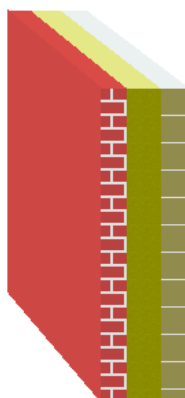
Component: **NCDL3321-Longsight Mosque-MD-ML-EW 1**

8. July 2020

Page 1/3

OUTSIDE

INSIDE



Assignment: External wall

	Manufacturer	Name	Thickness [m], number	Lambda [W/(mK)]	Q	R [m²KW]	
☒	1	Rse Generic Building Materials	Brick outer leaf & Mortar outer leaf (f = 0.000 / automatic disregarding acc. BRE 4.4.3)	0.1020	0.770	D	0.0400 0.1325
☒	2	Rockwool Ltd	Cavity -variable thickness	0.0500	0.037	A	1.3514
		Fixings	TeploTie Type 1 50-150mm cavity No./m²:	2.5/m²	0.710	C	-
		Fixings	equivalent diameter: 6.99959E-03 m / alpha: 0.800				
☒	3	Rockwool Ltd	Cavity -variable thickness	0.0750	0.037	A	2.0270
		Fixings	TeploTie Type 1 50-150mm cavity No./m²:	2.5/m²	0.710	C	-
		Fixings	equivalent diameter: 6.99959E-03 m / alpha: 0.800				
☒	4	Generic Building Materials	Concrete block (dense) inner leaf (1800 kg/m³) & Mortar inner leaf (f = 0.000 / automatic disregarding acc. BRE 4.4.3)	0.1000	1.130	D	0.0885
		Rsi					0.1300
				0.3270			



Documentation of the component

8. July 2020

Thermal transmittance (U-value) according to BS EN ISO 6946

Page 2/3

Source: **own catalogue - External walls**Component: **NCDL3321-Longsight Mosque-MD-ML-EW 1**

$$R_T = R_{si} + \sum R_i + R_{se} = 3.77 \text{ m}^2\text{K/W}$$

Correction to U-value for	according to	delta U [W/(m²K)]
Mechanical fasteners	BS EN ISO 6946 Annex D	~~0.000~~
Air gaps	BS EN ISO 6946 Annex D	~~0.000~~
		0.000

$$U = 1/R_T + \sum \Delta U = 0.27 \text{ W/(m}^2\text{K)}$$

- Q .. The physical values of the building materials has been graded by their level of quality. These 5 levels are the following
- A** .. A: Data is entered and validated by the manufacturer or supplier. Data is continuously tested by 3rd party.
- B** .. B: Data is entered and validated by the manufacturer or supplier. Data is certified by 3rd party
- C** .. C: Data is entered and validated by the manufacturer or supplier.
- D** .. D: Information is entered by BuildDesk without special agreement with the manufacturer, supplier or others.
- E** .. E: Information is entered by the user of the BuildDesk software without special agreement with the manufacturer, supplier or others.

 $U_{\max} = 0.30 \text{ W/(m}^2\text{K)}$
 $U = 0.27 \text{ W/(m}^2\text{K)}$
 $R_T = 3.77 \text{ m}^2\text{K/W}$
Source of U_{max} value: England and Wales Approved Document L1A 2010 Tab 2 Dwellings New

Calculated with BuildDesk 3.4.5



Documentation of the component

8. July 2020

Heat capacity

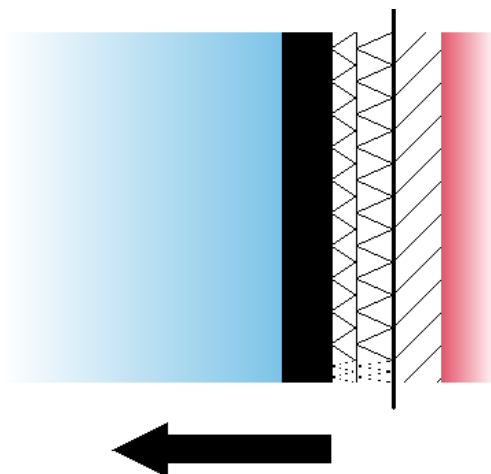
Page 3/3

Source: own catalogue - External walls

Component: NCDL3321-Longsight Mosque-MD-ML-EW 1

OUTSIDE

INSIDE



The list of materials shown below may differ from those in the U-value calculation printout. Only material layers which are used in the heat capacity calculation are listed.

Single material layers shown in the U-value calculation printout may be separated to meet the exclusion criteria:

- A .. The total thickness of the layers exceed 0.1 m.
- B .. The mid point in the construction is reached.

For insulation layers the following criteria applies:

- C .. An insulating layer is reached (defined as $\lambda \leq 0.08 \text{ W/(mK)}$).

Name	Thickness [m]	lambda [W/(mK)]	Q	Thermal capacity [kJ/(kgK)]	Q	Density [kg/m³]	Q	Thermal mass kJ/(m²K)	Criteria Exclusion
End of calculation - Cold									
1 Brick outer leaf & Mortar outer leaf (f = 0.000 / automatic disregarding acc. BRE 4.4.3)	0.1020	0.770	D	0.80	D	1700.0	D	~~138.7~~	A, -, C
2 Cavity -variable thickness	0.0500	0.037	A	1.03	C	38.0	C	~~0.0~~	A, -, C
3 Cavity -variable thickness	0.0750	0.037	A	1.03	C	38.0	C	~~0.0~~	A, -, C
4 Concrete block (dense) inner leaf (1800 kg/m³) & Mortar inner leaf (f = 0.000 / automatic disregarding acc. BRE 4.4.3)	0.1000	1.130	D	1.00	D	1800.0	D	180.0	-, -, -
Start of calculation - Warm									
	0.3270							180.0	

Heat capacity = 180.0 kJ/(m²K)

The following exclusion criteria apply:

- A .. The total thickness of the layers exceed 0.1 m.
- C .. An insulating layer is reached (defined as $\lambda \leq 0.08 \text{ W/(mK)}$).

Q .. The physical values of the building materials has been graded by their level of quality. These 5 levels are the following

A .. A: Data is entered and validated by the manufacturer or supplier. Data is continuously tested by 3rd party.

B .. B: Data is entered and validated by the manufacturer or supplier. Data is certified by 3rd party

C .. C: Data is entered and validated by the manufacturer or supplier.

D .. D: Information is entered by BuildDesk without special agreement with the manufacturer, supplier or others.

E .. E: Information is entered by the user of the BuildDesk software without special agreement with the manufacturer, supplier or others.

CAVITY

Insulation for masonry cavity walls



CAVITY

ROCKWOOL® Cavity insulation is a semi-rigid, full-fill insulation solution for masonry cavity wall construction, suitable for use in new builds or extensions.

Lightweight and easy to handle, the batts are simple to install and provide a close fit against brick and blockwork. ROCKWOOL Cavity full fill insulation batts are non-combustible and contain water repellent additives which prevent moisture transmission between the outer and inner leaf.





Advantages

- Outstanding thermal, fire and acoustic insulation
- Acts as a cavity barrier
- Water repellent - prevents water transmission from outer to inner leaf
- Non-combustible - Euroclass A1
- Superior fit against blockwork
- Dimensional stability - no sagging or slumping

Description

ROCKWOOL Cavity Batts provide thermal protection for external masonry walls, and thermal and sound protection within masonry party walls, between dwellings. The batts are quick and easy to accurately cut, and provide a great fit; reducing installation time, avoiding gaps and cold spots, and maximising long term performance. ROCKWOOL Cavity Batts are also used in masonry party walls to prevent the thermal bypass effect, and so achieve a zero U-value, while also providing the required sound protection and fire resistance.

Applications

ROCKWOOL Cavity is batts are used for thermal insulation of external masonry cavity walls, and for the thermal insulation and acoustic protection of masonry party walls between dwellings.

ROCKWOOL Cavity has been examined by the British Board of Agrément (BBA) and granted Certificate 94/3079 for use in all exposure zones for domestic and non-domestic buildings that are up to 25m in height.

The NHBC accepts the use of ROCKWOOL Cavity Batt, other than in very severe exposure locations with fair-faced masonry, provided it is installed, used and maintained in accordance with the BBA Certificate, in relation to NHBC Standards, Chapter 6.1, External masonry walls.

Building standards have also recognised that where party cavity-walls between connected buildings are untreated, considerable heat can escape through them. Using ROCKWOOL Cavity Batt to fully fill the party wall will reduce the u-value to 0.00 W/m²K.

Performance

Thermal

ROCKWOOL Cavity Batt has a thermal conductivity of 0.037 W/mK.

Fire classification

Achieves a reaction to fire classification of A1, as defined in EN13501-1. Resistance to fire spread between and within cavities. ROCKWOOL Cavity is non-combustible and therefore suitable for use in buildings of every purpose group. It also acts as an effective cavity barrier when tightly fitted between masonry leaves where an insulated wall connects with an uninsulated wall cavity.

Water resistance and moisture

The product will resist the transfer of water across the cavity. The orientation of the water repellent fibres prevent water crossing the wall construction, provided the batts are correctly installed and sound building techniques are applied to the cavity wall construction (see installation notes). Any water penetrating the outer leaf will drain down the surface of the batts.

Condensation

Will contribute to limiting the risk of condensation.

Durability

The product will have a life equivalent to the wall structure in which it is incorporated.

U-Values:

Approved Document L (2013 edition England and 2014 Wales) – U-value requirements for walls:

- New build dwellings:
England 0.25-0.18W/m²K / Wales 0.21-0.18W/m²K
- New build non-domestic:
England 0.26-0.22W/m²K / Wales 0.26-0.22W/m²K
- Extensions to dwelling:
England 0.28W/m²K / Wales 0.21W/m²K
- Extensions to non-domestic:
England 0.28W/m²K / Wales 0.26W/m²K

ROCKWOOL Cavity Slab (thermal conductivity 0.037 W/mK)

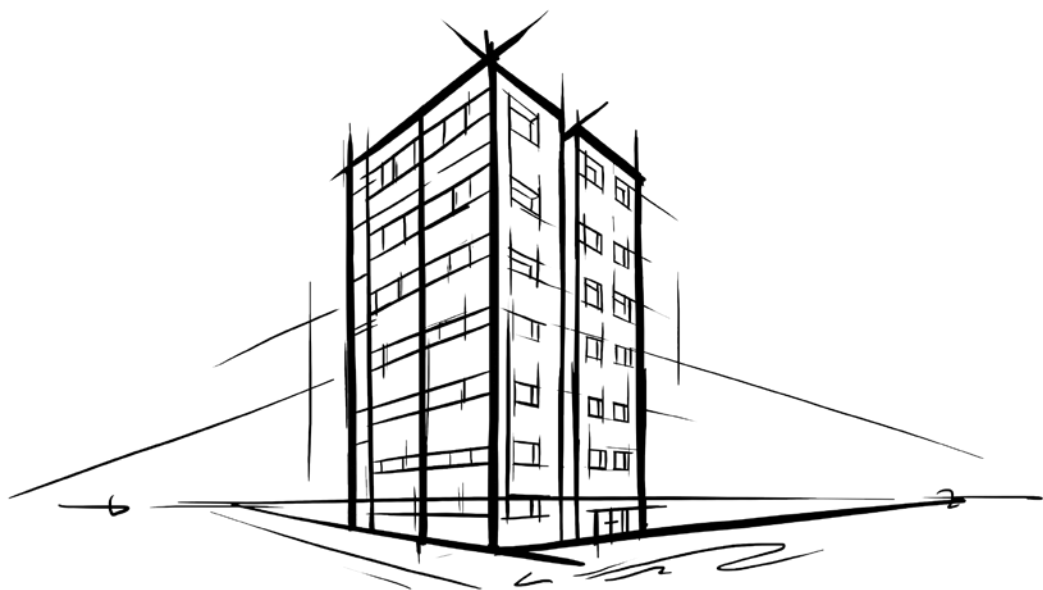
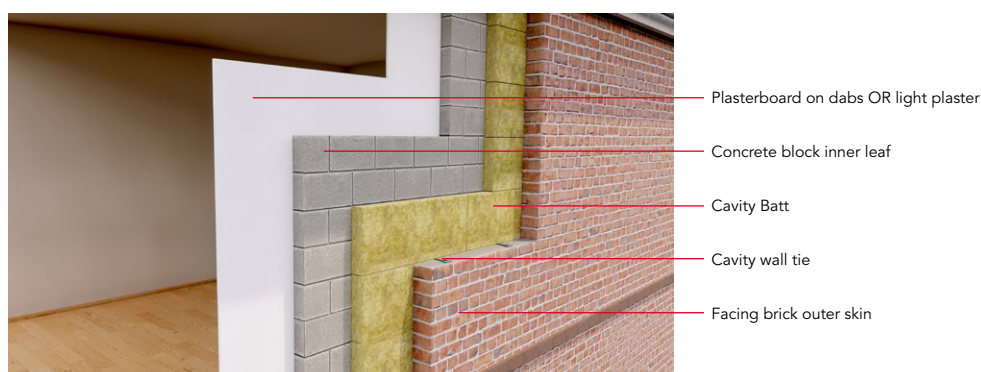


Table 1 - Construction 1:

102mm Facing brick outer skin, ROCKWOOL Cavity full fill, 100mm internal concrete block (various densities) Internal finishes: light plaster or plasterboard on dab.

Inner block W/mK Internal finish Cavity (mm)	Dense 1900-2250 kg/m ³ 1.130 W/mK		Medium dense 1400-1450kg/m ³ 0.470 W/mK		Aircrete Hi Strength 750kg/m ³ 0.190 W/mK		Aircrete Std 600kg/m ³ 0.150 W/mK	
	Light plaster	P/board on dab	Light plaster	P/board on dab	Light plaster	P/board on dab	Light plaster	P/board on dab
	U-value W/m ² K	U-value W/m ² K	U-value W/m ² K	U-value W/m ² K	U-value W/m ² K	U-value W/m ² K	U-value W/m ² K	U-value W/m ² K
100	0.32	0.30	0.31	0.29	0.28	0.27	0.28	0.27
130	0.25	0.24	0.25	0.24	0.23	0.22	0.23	0.22
150	0.22	0.22	0.22	0.21	0.21	0.20	0.20	0.20
175	0.19	0.19	0.19	0.18	0.18	0.17	0.18	0.17


Table 2 - Construction 2:

Render on 100mm medium dense block outer, ROCKWOOL Cavity full fill, 100mm internal concrete block (medium dense or Standard Aircrete) Internal finishes: light plaster or plasterboard on dab.

Inner block W/mK Internal finish Cavity (mm)	Medium dense - 1400-1450kg/m ³ 0.470 W/mK		Aircrete Hi Strength - 750kg/m ³ 0.190 W/mK	
	Light plaster	P/board on dab	Light plaster	P/board on dab
	U-value W/m ² K	U-value W/m ² K	U-value W/m ² K	U-value W/m ² K
100	0.3	0.29	0.26	0.26
130	0.24	0.23	0.22	0.22
150	0.21	0.21	0.19	0.19
175	0.19	0.18	0.17	0.17

The U-values shown in the constructions above are based on the following:

- Internal face of walls is lined with either plasterboard on dab or 13mm lightweight plaster
- Block sizes assumed to be 440 x 215mm, mortar joints assumed to be 10mm wide
- Wall ties are stainless steel with a cross-sectional area of 12.5mm² for cavities up to 170mm wide
- For cavities widths greater than 170mm, the cross-sectional area of tie is assumed to be 25mm

Party wall “thermal bypass effect” - achieving a zero heat loss

Approved Documents L1A & L2A of England and Wales and Section 6 of Scotland’s Building standards have recognised that where party cavity-walls between connected buildings are untreated, considerable heat can escape through them.

A key feature of the SAP calculation is that party wall cavities should have a zero heat loss (U-value 0.0W/m²K). If these cavities are left unfilled and unsealed, a U-value of 0.5W/m²K will automatically be applied, making it extremely difficult to meet the TER compliance.

In calculating the DER for a Dwelling, the party wall U-value to be assumed for the type of construction adopted is set out in the Table 3 below.

Table 3:

Party wall construction	U-value W/m ² K
Unfilled cavity with no effective edge sealing	0.50
Unfilled cavity with effective edge sealing only	0.20
Fully filled cavity and effective edge sealing	0.0

Robust detail approval for use as acoustic insulation in masonry party wall constructions

Robust Details Limited was formed in December 2003 in response to the housebuilding industry’s request for an alternative to pre-completion sound testing, as a means of satisfying the sound insulation requirements of the Building Regulations. Below are the constructions to achieve the referenced Robust detail for masonry construction.

Robust detail wall reference - masonry	Party wall construction	Party wall cavity size (mm)
E-WM- 1	Dense blocks 1850-2300kg wet plaster	75-100
E-WM- 2	Light agg. blocks 1350-1600kg wet plaster	75-100
E-WM- 3	Dense blocks 1850-2300kg render faces/plasterboard on dab	75-100
E-WM- 4	Light agg. blocks 1350-1600kg render/plasterboard on dab finish	75-100
E-WM- 5	Besblock “Star Performer” dense aggregate cellular blocks/render /plasterboard on dab	75-100
E-WM-11	Lightweight 1350-1600kg agg. or nominated hollow or cellular blocks render/plasterboard on dab	75-100
E-WM- 16	Dense aggregate blocks 1850-2300kg render/plasterboard on dab	100
E-WM- 18	Dense blocks 1850-2300kg wet plaster	100
E-WM- 19	Monarfloor Bridgestop System 100mm Dense or lightweight blocks or nominated hollow or cellular blocks/render/plasterboard on dab	100

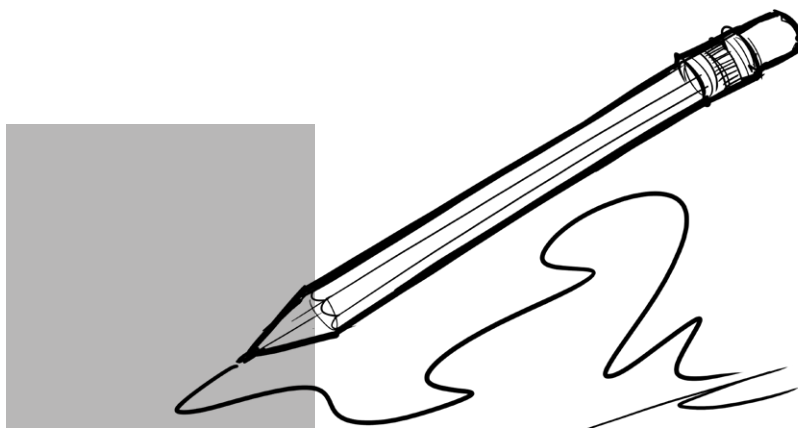
Installation

Designing the cavity wall

The use of ROCKWOOL Cavity does not affect the choice of wall ties to BS EN 845-1 or DD140. Ties should be selected according to structural requirements, cavity size, building height and location.

The outer leaf is the first line of defence against rain and the following will help to improve its effectiveness:

1. Consider the dimensional tolerances of the wall before designing the width of the cavity. An extra 5mm above the nominal batt thickness will normally be sufficient.
2. Select porous bricks, which in periods of brief, heavy showers will absorb the moisture. A non-absorbent brick will channel water into the mortar joints. There are two British Standards of notable importance for clay bricks:
 - BS EN772 (Material Specification Standards)
 - BS 5628 (Part 3): Masonry Design and Detailing.
3. Select a lime mortar mix that does not contain detergent-type plasticisers, which reduce the water resistance of the joints.
4. Specify weather-struck, flush or bucket-handle joints. Recessed joints increase the risk of water penetration. Ensure all bed and perpend joints in the external wall are fully filled with mortar.
5. Cavity trays should incorporate stop ends, have weep holes at approximately 450mm centres (or a maximum of 900mm centres) and be continuous across closely spaced openings (Figure 2).
6. Vertical damp proof courses at wall openings should project at least 25mm into the cavity (see ROCKWOOL ROCKCLOSE® data sheet for details).



Installing ROCKWOOL Cavity

- 1.** The installation of the batts should commence below the damp proof course (preferably by at least 150mm) with no risk of capillary action to minimise cold bridging. The bottom row of ties should be at 450mm centres horizontally. If necessary, the width of the first course of batts can be cut to suit the height of the next row of wall ties. The width of cut batts should always be 5mm greater than the width to be insulated, e.g. wall tie centres.
- 2.** It is recommended that the external leaf be constructed ahead of the internal one so that any mortar protruding into the cavity space from the back of the external leaf can be cleaned off before installing the batts.
- 3.** Build up a complete section of the leading leaf to one course above the next row of wall ties spaced at a maximum of 900mm horizontally (Figure 1). Ensure that all mortar joints are properly filled, particularly the perpend.
- 4.** Before installing each course of batts, excess mortar must be removed from the inside face of the leading leaf, and mortar droppings cleaned from the exposed edges of the batts. This is made easier by the use of a cavity board (Figure 2). This sequence should be maintained progressively until it reaches the wall plate or cavity tray. It is important for the insulation to be carried to the highest level possible (Figure 5).
- 5.** It is essential that all the joints between ROCKWOOL Cavity batts are clean and tightly butted.

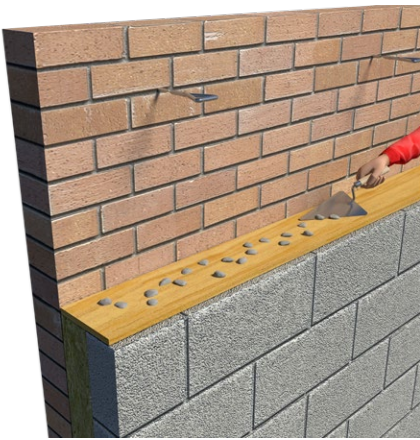


Figure 1

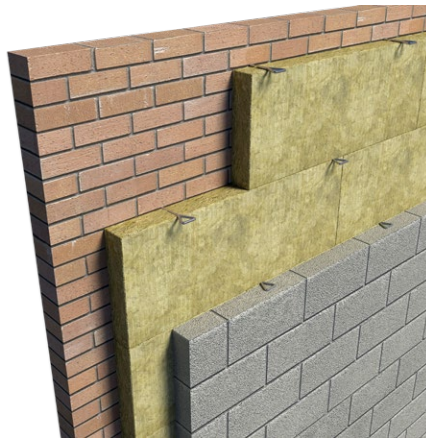


Figure 2

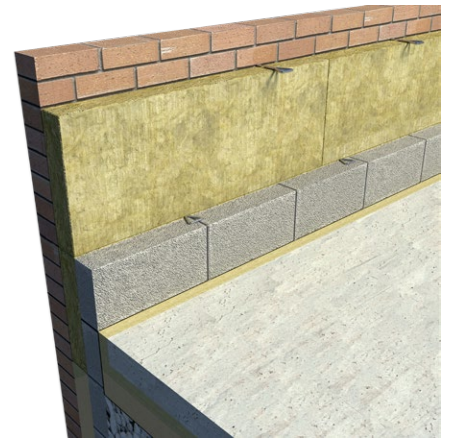


Figure 3

6. Raise the second leaf to the same level as the batts.
7. The as-built cavity width must not exceed the following dimensions:

Nominal Batt thickness (mm)	Permitted deviation maximum as built cavity widths (mm)
80-120	0-10
125-150	0-15
160-300	0-20

Please note: Where two layers of ROCKWOOL Cavity batts are used, ensure that the vertical joints between the outer batts are staggered to those of the inner batts.

8. Repeat this sequence to the top of the wall (see Figure 5). Alternatively, the top of the batts can be protected by using a cavity tray.
9. To minimise water penetration to the inner leaf during driving rain, it is essential that no gaps are left between the batts.
10. Cut the batts cleanly, using a sharp, long bladed knife and a straight edge.
11. Fit the batts closely around wall openings. Slit them neatly where additional wall ties occur and be careful not to impale or tear them. At corner joints, edges must be cut accurately to ensure close butting (see Figure 4).

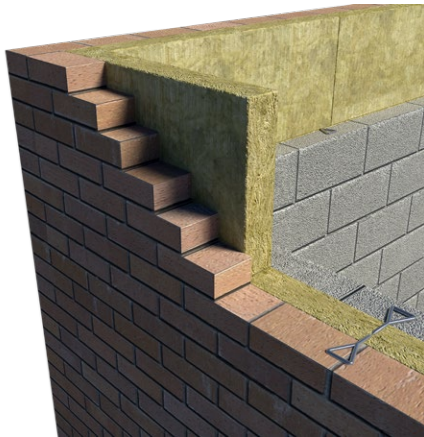


Figure 4



Figure 5

Technical information

The following NBS clauses include ROCKWOOL Cavity:
F30:10, F30:150

Sustainability

As an environmentally conscious company, ROCKWOOL promotes the sustainable production and use of insulation and is committed to a continuous process of environmental improvement.

All ROCKWOOL products provide outstanding thermal protection as well as four added benefits:



Fire resistance



Acoustic comfort



Sustainable materials



Durability

Health & Safety

The safety of ROCKWOOL stone wool is confirmed by current UK and Republic of Ireland health & safety regulations and EU directive 97/69/EC: ROCKWOOL fibres are not classified as a possible human carcinogen.

A Material Safety Data Sheet is available and can be downloaded from www.rockwool.co.uk to assist in the preparation of risk assessments, as required by the Control of Substances Hazardous to Health Regulations (COSHH).

Environment

Made from a renewable and plentiful naturally occurring resource, ROCKWOOL insulation saves fuel costs and energy in use and relies on trapped air for its thermal properties.

ROCKWOOL insulation does not contain (and has never contained) gases that have ozone depletion potential (ODP) or global warming potential (GWP).

ROCKWOOL is approximately 97% recyclable. For waste ROCKWOOL material that may be generated during installation or at end of life, we are happy to discuss the individual requirements of contractors and users considering returning these materials to our factory for recycling.



Interested?

For further information, contact the Technical Solutions Team on 01656 868490 or email technical.solutions@rockwool.co.uk

Visit www.rockwool.co.uk to view our complete range of products and services.

Copyright ROCKWOOL September 2018.

The ROCKWOOL Trademark

ROCKWOOL® - our trademark

The ROCKWOOL trademark was initially registered in Denmark as a logo mark back in 1936. In 1937, it was accompanied with a word mark registration; a registration which is now extended to more than 60 countries around the world.

The ROCKWOOL trademark is one of the largest assets in the ROCKWOOL Group, and thus well protected and defended by us throughout the world.

If you require permission to use the ROCKWOOL logo for your business, advertising or promotion. You must apply for a Trade Mark Usage Agreement. To apply, write to:
marketcom@rockwool.com.

Trademarks

The following are registered trademarks of the ROCKWOOL Group:

ROCKWOOL®

ROCKCLOSE®

RAINSSCREEN DUO SLAB®

HARDROCK®

ROCKFLOOR®

FLEXI®

BEAMCLAD®

FIREPRO®

Disclaimer

ROCKWOOL Limited reserves the right to alter or amend the specification of products without notice as our policy is one of constant improvement. The information contained in this brochure is believed to be correct at the date of publication. Whilst ROCKWOOL will endeavour to keep its publications up to date, readers will appreciate that between publications there may be pertinent changes in the law, or other developments affecting the accuracy of the information contained in this brochure. The applications referred to within the brochure do not necessarily represent an exhaustive list of applications. ROCKWOOL Limited does not accept responsibility for the consequences of using ROCKWOOL in applications different from those described within this brochure. Expert advice should be sought where such different applications are contemplated, or where the extent of any listed application is in doubt.

© ROCKWOOL 2018. All rights reserved.

Photography and Illustrations

The product illustrations are the property of ROCKWOOL Ltd and have been created for indicative purposes only.

Unless indicated below, the photography and illustrations used in this guide are the property of ROCKWOOL Limited. We reserve all rights to the usage of these images.

If you require permission to use ROCKWOOL images, you must apply for a Usage Agreement. To apply, write to:
marketcom@rockwool.com.

September 2018

ROCKWOOL Limited

Pencoed
Bridgend
CF35 6NY

Tel: 01656 862 621

info@rockwool.co.uk

rockwool.co.uk

