ACOUSTIC MEMO #03 02-15-51506-NC3

Project:	435 Barlow Moor Road, Chorlton
Subject:	Planning Condition 9
Date of Issue:	23/05/2016
Author:	Dan Cramond (Associate)
Checked:	Neil Turnbull (Head of Acoustics)

INTRODUCTION

Stroma Tech was instructed by Pochins to undertake an acoustic review of proposals for externally mounted plant regarding the discharge of Planning Condition 9.

Planning Condition 9 (PC9) relates to the control of external plant noise affecting nearby residential demises. Naturally, any atmospheric terminations from internal plant must also be considered.

This memo is limited to addressing the specific acoustic issues contained herein and is based on information and drawings provided. Advice has been provided for acoustic reasons only and it is recommended that appropriate expert advice be sought on all the ramifications e.g. fire, structural, thermal, interstitial condensation etc. associated with any proposals contained herein.

CRITERIA

Planning Condition 9

The following planning condition relating to noise breakout is attached to the Decision Notice:

'9) Before first occupation of the development the building, together with any externally mounted ancillary equipment, shall be acoustically insulated in accordance with a scheme submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the equipment.

Reason - To safeguard the amenities of the occupiers of nearby residential accommodation, pursuant to policies SP1 and DM1 of the Core Strategy.'

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EXTERNAL PLANT PROPOSALS

Retail Unit A

It is understood that the following plant associated with Retail Unit A is proposed to be installed to the rooftop:

- AC Unit – Hitachi XEKS1261_RAS-4-5-6HVRNSE 59 dB
- AC Unit – Hitachi RAC-50WPA 50 dB(A)
- AC Unit – Hitachi XEKS1358_RAS-8-10HRNSE 53 (51) / 55 dB(A)
- Refrigeration Pack – Space HT/LT Dual Temp 45 @ 10m
- Refrigeration Condenser – 3T ASR-ZAP-EC-136-ECMP-415-H 35 @ 10m

Retail Unit B

It is understood that the installation of rooftop plant associated with this unit is possible. However, the Tenant is not currently confirmed and therefore no details regarding externally mounted plant are available.

Retail Unit C

No current proposals for externally mounted plant.

In light of the above, the assessment has been based on the specific noise data available for the plant associated with Retail Unit A. If plant is proposed to other units, then once its location is known, suitable noise level limits can be set. Or alternatively, if the plant has been selected then an assessment of acoustic suitability can be undertaken.

Other than the above, we have no further details regarding noise levels for Retail Unit A plant. Therefore, it has been assumed that all quoted sound pressure levels are A-weighted and are based on hemispherical radiation. In one instance, there are several quoted sound pressure levels; in order to present a reasonable worst-case scenario, the highest sound pressure level has been adopted. Unless stated otherwise, it is assumed that all sound pressure levels are at 1 metre. Where sound pressure levels have a quoted distance in excess of 1m, these have been distance corrected based on a point source.

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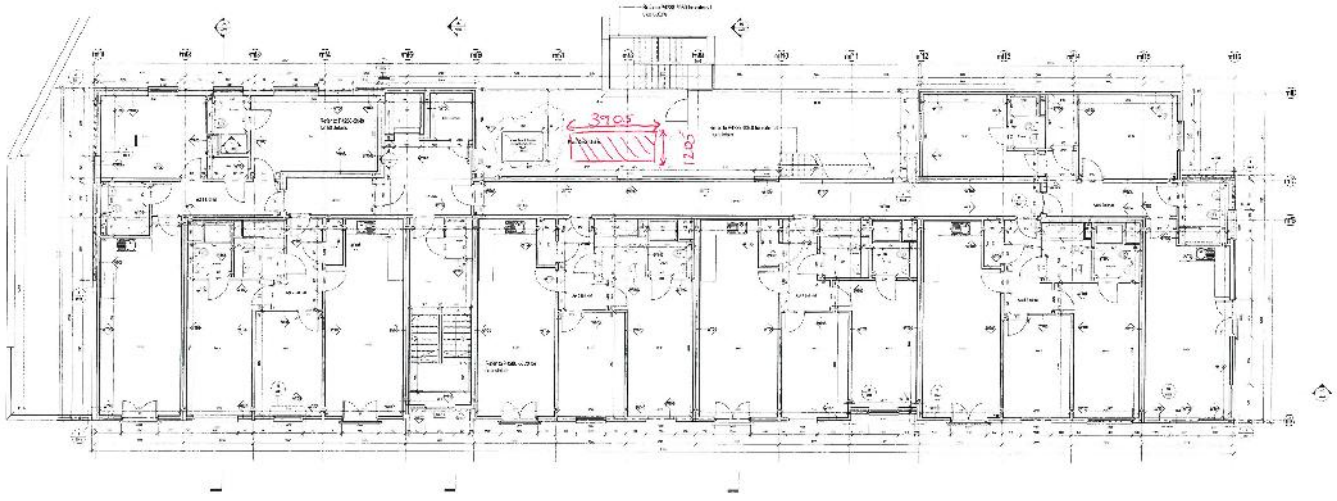
Therefore, based on the above assumptions, the following has been adopted:

▪ AC Unit – Hitachi XEKS1261_RAS-4-5-6HVRNSE	59 dB(A) @ 1m
▪ AC Unit – Hitachi RAC-50WPA	50 dB(A) @ 1m
▪ AC Unit – Hitachi XEKS1358_RAS-8-10HRNSE	55 dB(A) @1m
▪ Refrigeration Pack – Space HT/LT Dual Temp	65 dB(A) @ 1m
▪ Refrigeration Condenser – 3T ASR-ZAP-EC-136-ECMP-415-H	55 dB(A) @ 1m
TOTAL SOUND PRESSURE LEVEL	**67 dB(A) @ 1m**

The Retail Unit rooftop plant deck is located as shown below 'in red', between GL - mf7 and GL - mf9:



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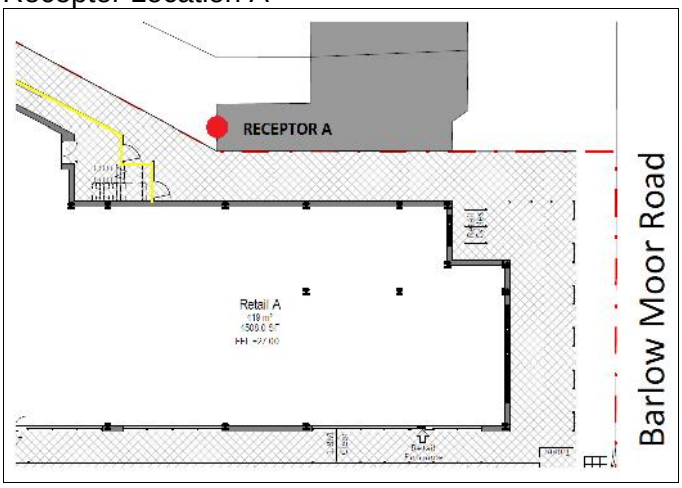
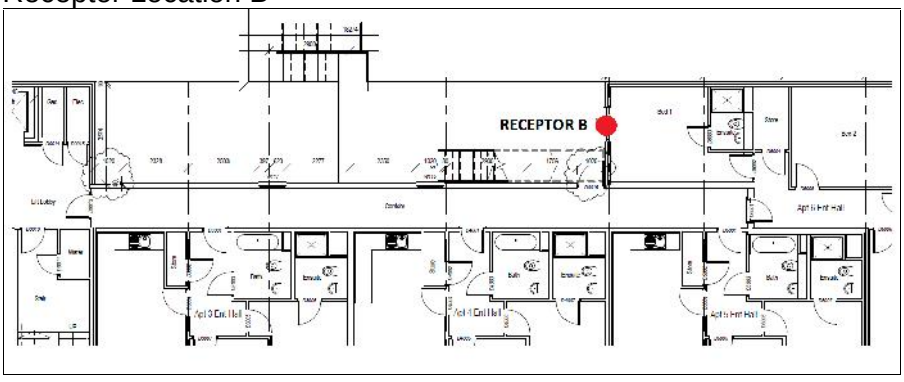
ASSESSMENT

An assessment of plant noise associated with Retail Unit A affecting noise-sensitive residential receptors has been undertaken in accordance with BS 4142:2014. The assessment is based on the nearest off-site noise-sensitive rector and the nearest on-site noise-sensitive receptor. These are depicted below as Receptor A and Receptor B respectively below. The distance from the plant to Receptor A and Receptor B is approximately 8 metres and 10.5 metres respectively. Although there is screening to the Plant Deck, grazing incidence screening to Receptor A has not been allowed for due to the opening for the external stair. It has been assumed that the plant noise is broadband in nature and does not exhibit any attention catching characteristics; a BS 4142 penalty is not therefore considered necessary.

Receptor Location A



Receptor Location B



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Daytime BS 4142 Assessment

The daytime BS 4142 assessment is presented below and is based on the lowest measured daytime background noise level as set out in the original AB Acoustics report for the site.

	Receptor A	Receptor B
Noise level @ 1m	67	67
Distance attenuation (20 log)	18	20
Resultant noise level	49	47
Daytime lowest measured L_{90}	54	54
Difference to background	**-5**	**-7**

It can be seen from the above that the daytime BS 4142 rating at Receptor A and Receptor B is -5dB and -7dB respectively; this is a positive indication that the plant will have a 'low noise impact' during daytime operation.

Night-time BS 4142 Assessment

The night-time BS 4142 assessment is presented below and is based on the lowest measured night-time background noise level as set out in the original AB Acoustics report for the site.

	Receptor A	Receptor B
Noise level @ 1m	67	67
Distance attenuation (20 log)	18	20
Resultant noise level	49	47
Night-time lowest measured L_{90}	44	44
Difference to background	**+5**	**+3**

It can be seen from the above that the daytime BS 4142 rating at Receptor A and Receptor B is +5dB and +3dB respectively; this is a positive indication that the plant will have an 'adverse noise impact' during night-time operation. Whilst a BS 4142 Rating of +5dB is not too significant; with the additional plant noise contribution from any future plant to be installed, it is likely that this would result in a 'high likelihood of adverse noise impact' arising.

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MITIGATION

Option A

Such as to achieve a low noise impact for the night-time operation of the plant, it will be necessary to either select quieter plant and/or introduce noise mitigation measures. In order to achieve a 'low noise impact', it will be necessary to achieve a noise reduction of no less than 5 dB(A) for the plant i.e. taking the night-time BS 4142 rating down to 0 dB. However, it would be prudent to allow for a noise reduction of no less than 10 dB(A), such that the night-time BS 4142 rating is no greater than -5 dB. This would then allow a 5 dB 'headroom' for the installation of additional plant associated with the other retail units.

A specialist noise control company will be able to produce a suitable acoustic enclosure for the plant, such as to achieve a 10 dB(A) noise reduction.

Option B

Alternatively, if line of sight screening is achieved between Receptor A windows and the Plant Deck then include a gated screen to access the exterior stairs, such that the Plant Deck achieved grazing incidence screening i.e. 5dB attenuation. Attenuate the refrigeration pack only by 10 dB, from 65 dB(A) down to 55 dB(A). This would result in a night-time BS 4142 rating of -4 dB at Receptor A and -1 dB at Receptor B.

With this option, as the night-time BS 4142 rating is -1 dB at Receptor B, there would be little headroom for the installation of additional plant. However, if suitable noise level limits are set for any future plant, it is possible that this option may be viable. The implications of imposing such noise level limits on prospective tenants however should be realised.

Application No: 105734/FO/2014/S1 Discharge of pre com conditions 435 Barlow Moor Road

Condition 9: Acoustic screen to plant area

Achieve circa 10dBA reduction achieved with a 300mm deep single banked acoustic louvre.

Stroma Technology acoustic memo #03 suggests 4-sided screen with nominal plan dimensions 3.9mx1.2mx1.8m high.

The screen will be supplied with 1 x single access door, c/w standard lockable furniture.

Louvre type: AL3015 GP, 300mm deep single banked and manufactured from pre-galvanised sheet steel c/w a polyester powder paint finish to a stocked RAL (matt) colour reference. The panels are to be supported with an independent mild steel framework, finished hot dipped galvanised after manufacture.

Refer to the attached drawing numbers L070D & L370C for further details.

DATA SHEET L70D
ACOUSTIC LOUVRE
MODEL AL3015

THIS IS NOT A STAND ALONE DOCUMENT AND UNLESS REFERRED TO IN A DATED EQUIPMENT SCHEDULE IS SUBJECT TO REVISION WITHOUT NOTICE.

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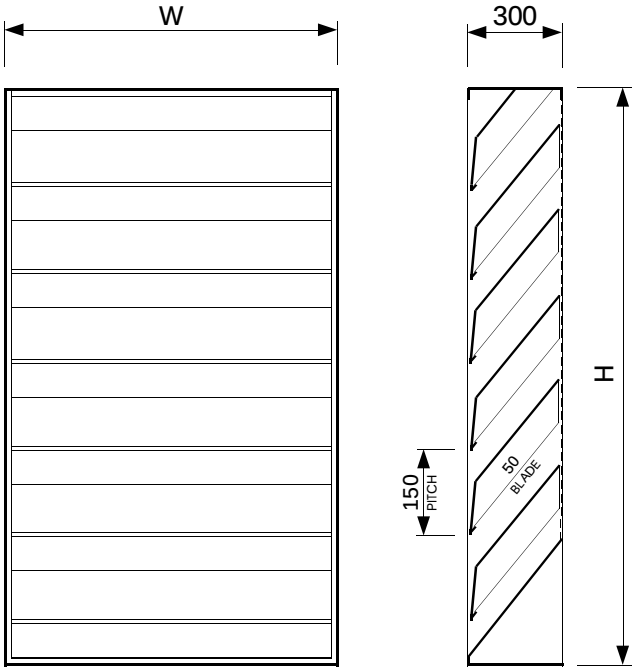
DIMENSIONS



SPECIFICATION

LOUVRES ARE CONSTRUCTED FROM FOLDED SHEET METAL AND HAVE A SERIES OF HORIZONTAL BLADES CONTAINED WITHIN A FOUR SIDED EXTERNAL FRAME.

THE MATERIAL OF CONSTRUCTION MAY BE PRE-GALVANISED STEEL (SUFFIX G) OR ALUMINIUM (SUFFIX A).

LOUVRE BLADES HAVE LOWER FACES OF PERFORATED SHEET METAL, CONTAINING A FIBROUS SOUND ABSORBENT INFILL THAT IS NON-SHEDDING, NON-COMBUSTIBLE, NON-HYGROSCOPIC AND CHEMICALLY INERT. THE INFILL IS FACED WITH GLASS CLOTH TO MINIMISE FIBRE MIGRATION.

GALVANISED BIRD SCREENS ARE FITTED AS STANDARD.

CASING SIDES ARE PROVIDED WITH 10mm DIA HOLES FOR FIXING ADJACENT SECTIONS TOGETHER, OR FIXING THE LOUVRE INTO THE BUILDERSWORK OPENING.

LOUVRES ARE SUPPLIED SELF FINISH AS STANDARD OR WITH AN OPTIONAL POLYESTER POWDER FINISH (SUFFIX P).

NOTES

THIS DATA SHEET IS TO BE READ IN CONJUNCTION WITH THE EQUIPMENT SCHEDULE.

WIDTH (W) AND HEIGHT (H) DIMENSIONS GIVEN ON THE EQUIPMENT SCHEDULE ARE AS MANUFACTURED. ADEQUATE CLEARANCE MUST BE ALLOWED WHEN CONSTRUCTING THE BUILDERSWORK OPENING, A MINIMUM OF 10 mm IS RECOMMENDED.

LOUVRES WILL BE SUPPLIED WITHOUT SUPPORT STEELWORK, CLEATS, BRACKETS, FIXINGS, FLASHING, MASTIC, OR OTHER SUCH ITEMS, UNLESS OTHERWISE STATED.

EXCESSIVELY LARGE OR HEAVY LOUVRES MAY BE MANUFACTURED IN MATING SECTIONS FOR EASE OF HANDLING.

LOUVRES ARE MANUFACTURED TO STANDARD SHEET METAL TOLERANCES OF +/- 3 mm.

STANDARD SIZES

THERE ARE NO STANDARD SIZES. ALL LOUVRES ARE MADE TO ORDER.

SUFFIX

THE SUFFIX DEFINES ADDITIONAL FEATURES OR SPECIAL CONSTRUCTIONAL DETAILS

A ALUMINIUM CONSTRUCTION.

G GALVANISED STEEL CONSTRUCTION.

P POLYESTER POWDER COAT.

X SPECIAL CONSTRUCTION - REFER TO EQUIPMENT SCHEDULE FOR DETAILS.

WEIGHT

LOUVRE WEIGHTS ARE GIVEN ON THE EQUIPMENT SCHEDULE. APPROXIMATELY:

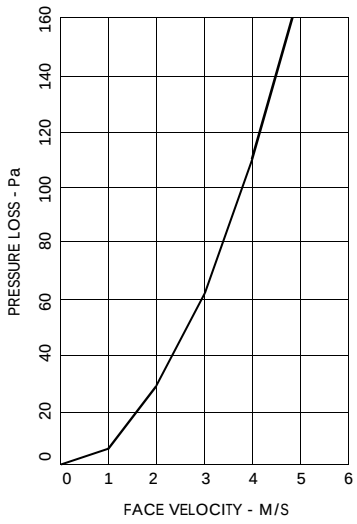
52kg/M² GALVANISED CONSTRUCTION
37kg/M² ALUMINIUM CONSTRUCTION

ACOUSTIC PERFORMANCE

SOUND REDUCTION INDEX B.S. 2750/3-1980 (ISO 140/3 -1978)

63	125	250	500	1000	2000	4000	8000	HZ
5	6	8	11	18	25	20	16	dB

PRESSURE LOSS



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DATA SHEET L370C
SINGLE ACOUSTIC LOUVRED DOOR
MODEL SAL3015
RAISED THRESHOLD

THIS IS NOT A STAND ALONE DOCUMENT AND UNLESS REFERRED TO IN A CERTIFIED EQUIPMENT SCHEDULE IS SUBJECT TO REVISION WITHOUT NOTICE.

SPECIFICATION

DOORSET WILL COMPRISE OF FLUSH LEAF, LOUVRE, FRAME AND THRESHOLD .

FACE OF THE FRAME AND DOOR LEAF TO HAVE NO RIVETS, WELDS OR OTHER VISIBLE FIXING.

DOOR LEAF TO BE FORMED FROM GALVANISED STEEL (SUFFIX G) OR ALUMINIUM (SUFFIX A) TO PROVIDE A DOUBLE SKIN CONSTRUCTION SO AS TO ACHIEVE THE STATED ACOUSTIC RATING.

DOOR TO HAVE A MINIMUM OF 3 STAINLESS STEEL BEARING WASHERED HINGES PER LEAF.

FRAME TO BE FORMED FROM ZINC PLATED STEEL, REBATED AND INTERNALLY RE-INFORCED TO ACCEPT FLUSH MOUNTED HINGES AND STRIKES.

WELDED FIXING PLATES TO BE CONCEALED WITHIN THE DOOR FRAME FOR MASONRY ANCHORS. ACCESS HOLES TO BE COVERED BY DECORATIVE CAPS AND LOCATED IN THE FRAME REBATE SO AS TO BE HIDDEN FROM VIEW WHEN DOORS ARE CLOSED.

LOUVRED OPENINGS TO HAVE A NOMINAL 50% FREE AREA AND HAVE BIRD SCREENS FITTED AS STANDARD. OPTIONAL INSECT SCREEN AVAILABLE.

DOORSETS TO HAVE STOVED POLYESTER COAT AS STANDARD.

DOORSETS TO BE FITTED WITH IRONMONGERY AS DESCRIBED ON THE EQUIPMENT SCHEDULES.

FIRE PERFORMANCE

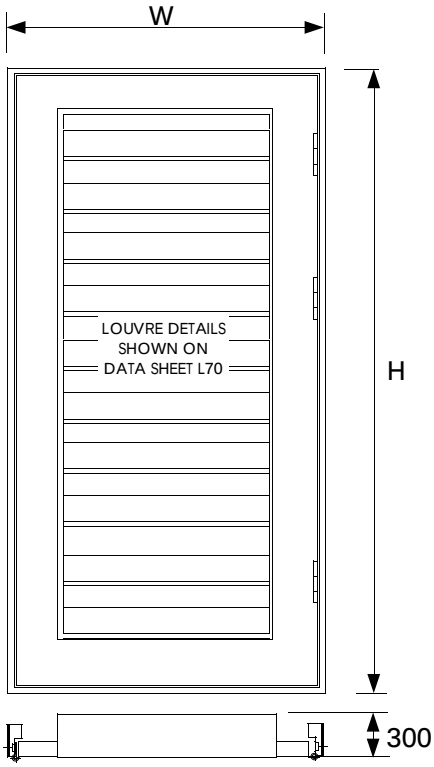
FIRE RESISITANCE HAS NOT BEEN TESTED AS THE DOOR IS NOT INTENDED FOR USE AS A FIRE DOOR.

ACOUSTIC PERFORMANCE

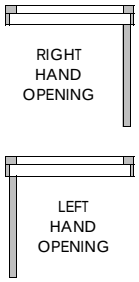
SOUND REDUCTION INDEX B.S.2750/3-1980 (ISO 140/3 -1978)

63	125	250	500	1000	2000	4000	8000	HZ
5	6	8	11	18	25	20	16	dB

DIMENSIONS



HANDING



WXH
W=MANUFACTURED FRAME WIDTH
H=MANUFACTURED FRAME HEIGHT

BUILDERSWORK OPENINGS MUST ALLOW CLEARANCE - RECOMMENDED MINIMUM IS 10mm

FEATURES

: ARCHITECTURAL APPLICATION

: ALL METAL CONSTRUCTION

: RAISED THRESHOLD

: HIGH ACOUSTIC RATING

: HIGH SECURITY

: HIGH FREE AREA

: INTEGRAL BIRD SCREEN

: POLYESTER FINISH



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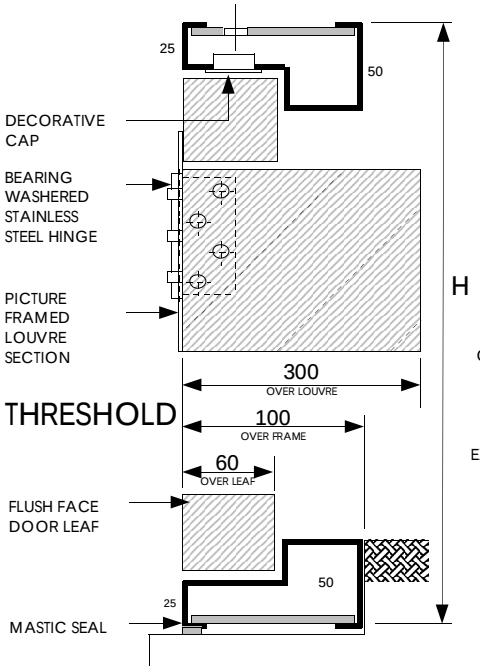
HEAD



THRESHOLD

STANDARD SIZES

THERE ARE NO STANDARD SIZES AND ALL DOORSETS ARE MANUFACTURED TO ORDER.
MAXIMUM AVAILABLE SIZE AS FOLLOWS :

FRAME WIDTH	FRAME HEIGHT
1350	2700

WEIGHT

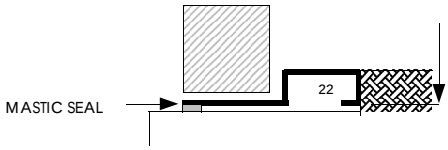
OVERALL DOORSET WEIGHT MAY BE ESTIMATED AT 52Kg/M² GALVANISED OR 37Kg/M² ALUMINIUM EXCLUDING IRONMONGERY

T1-FULL PROFILE

50 mm DEEP. SUITABLE FOR RECESSING INTO FLOOR. FABRICATED FROM SHEET.

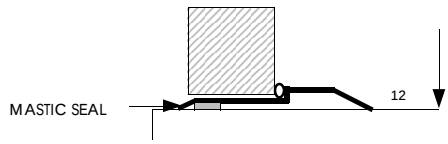
T2-MED PROFILE

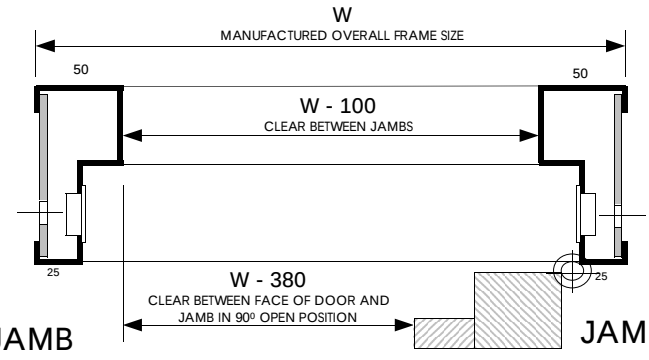
22 mm DEEP. SUITABLE FOR USE WITH FLOOR FINISHES OF SIMILAR THICKNESS. FABRICATED FROM SHEET.



T3-LOW PROFILE

12 mm DEEP. FOR DIRECT APPLICATION ON FINISHED FLOOR.
EXTRUDED ALUMINIUM





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