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MEP
DESIGN

Document Reference

22_023-LC-MEP-G525-RP-XX-001

Revision

P02

Title

LOWER CAMPFIELD MARKET HALL
VENTILATION STRATEGY REPORT

DOCUMENT HISTORY

Revision	Date	Purpose	Author	Approved
P01	18/08/2023	Preliminary Issue	J.K. / R.D.	B.W.J.
P02	28/09/2023	Appendix 8.5 – Kitchen Ventilation Drawing added. P3 comments incorporated	J.K. / R.D.	B.W.J.

CONTENTS

1	INTRODUCTION.....	4
2	OFFICE VENTILATION	5
3	KITCHEN VENTILATION.....	6
4	GENERAL EXTRACT	6
5	REFUSE STORE.....	6
6	RETAIL UNIT	6
7	PLANT ROOM	6
8	APPENDICES	7

1 INTRODUCTION

1.1 OVERVIEW

This Ventilation Statement has been prepared by MEP Design to support the planning application for the project which is known as “Lower Campfield Market Hall”.

This forms part of a wider redevelopment scheme transforming two historic market halls into high-end flexible working space.

The site is located to the south of Manchester City Centre. It is bordered by:

- Liverpool Road to the south
- Residential Housing to the North
- Lower Byrom Street to the West
- Byrom Street to the East.

All ventilation will be designed to comply with the requirements of approved document F.

1.2 STRATEGY

The strategy is to provide a natural fresh air to the building.

The ventilation strategy for the ground floor offices and the Mezzanine offices differs. Described in detail in section 2.

The building has numerous existing slatted timber louvres at high level. These will be retained and reused. These louvres can be seen on the planning elevations, see appendix A.

The ventilation strategy utilizes the natural buoyancy effect of exhaust air and the high level louvres within the building to create stack driven ventilation via chimney effect.

The roof offers very poor thermal performance, however it is listed so there are no improvements proposed to it. Therefore, in the summer months, there will be scenarios where the air at high level within the space will be warmer than the exhausted air. In this scenario, the destratification fans (provided predominately to assist the heating and cooling system) can be run in reverse, pulling air from the space and throwing it vertically towards the louvres. This will both create a cooling draft effect and assist the ventilation system.

Make up air is provided via existing permanent open louvres in the facade and natural infiltration. Mechanical extract systems have been added in some areas to encourage air flow where natural means alone were shown to be insufficient, this is discussed in detail in section 2.

2 OFFICE VENTILATION

2.1 STRATEGY

The offices are predominately naturally ventilated, with some mechanical assistance to assist in ensuring even fresh air distribution across the floor plates in certain areas where there is

Expected occupation levels have been provided by the client and these have been used to form the basis of the fresh air ventilation calculations.

GROUND FLOOR

Each ground floor office has one external wall. This wall has non-openable glazing with a high level horizontal louvre. The other wall are internal partition walls.

The louvre is a fixed louvre so it permanently open to atmosphere. The louvres have been sized in accordance with CIBSE AM10. However, the room was too deep to be purely naturally ventilated (based on CIBSE AM10 calculations). An extract fan was added in to the opposite wall to provide cross-flow ventilation across the entire office floor plate.

The extract fan exhausts the air into a common corridor. The corridor is open to the main portion of the build. As detailed above, the roof has a large quantity of high level level louvres. The exhaust air exhausts into the corridor and is allowed to naturally rise to above, exhausting through these timber louvres.

The extract fan will be demand controlled via a Carbon Dioxide sensor, so it is only used when required.

Please see appendix 3 & 4 for sketch detail of proposed ventilation system and louvre details respectively.

MEZZANINE FLOOR

The Mezzanine floor is open to the existing roof structure and therefore open to the timber slatted louvres shown in detail A.

(I.E there is no false ceiling being installed). Therefore this area will be naturally ventilated via the high level louvres.

DESTRATIFICATION FANS

The proposed destratification fans are large bladed ceiling fans, with a fan span 4.3m. The current proposal is that there will be 8 of these distributed throughout the space at high level.

The main purpose of these fans are to assist with the heating and cooling load of the build, by recirculating air, assisting to mix air and providing a draft effect when required. The fans will be provided with a summer purge mode. The fans will run in reverse, pulling air from the space and exhausting it to atmosphere via the reversible louvres.

Please see appendix 2 for details of destratification proposals including manufacturers CFD model.

CONTROL

The roof level louvres will be actuated based on CO₂. CO₂ sensors will be distributed throughout the space to provide accurate readings for the space. The feedback from these sensors is used to modulate the opening of the louvres.

3 KITCHEN VENTILATION

The kitchen will be sized in accordance with DW172.

An EMQA+ risk assessment will be carried out and filtration will be selected accordingly.

The kitchen is proposed to exhaust through the external wall at high level. This is because the roof is listed so cannot be penetrated.

4 GENERAL EXTRACT

The toilets will be provided with extract ventilation directly to atmosphere, via permanently open louvres in the external wall.

The design will be in accordance with the requirements of approved document F and CIBSE Guidance.

Make up air will be pulled from the office spaces via undercut doors.

5 REFUSE STORE

Refuse store and the associated access lobby will be ventilated in accordance with the requirements of approved document B.

Where an appropriately sized permanently open ventilator cannot be accommodated, the areas will be protected with a mechanical system capable of providing 10ACH and in accordance with BS 9991.

6 RETAIL UNIT

There is one retail unit proposed on the scheme. It sits on the corner of Lower Byrom Street and the Tonman Street alleyway.

The retail units are being designed as a shell and core for fit out by tenant.

As part of the shell and core provision, louvres will be provided for incoming tenant designed and installed ventilation units to discharge exhaust air and bring in fresh air.

Final ventilation shall be designed and provided by the Fit-out contractor to suit the use of the space.

7 PLANT ROOM

There is no natural gas or other combustion fuel in this scheme.

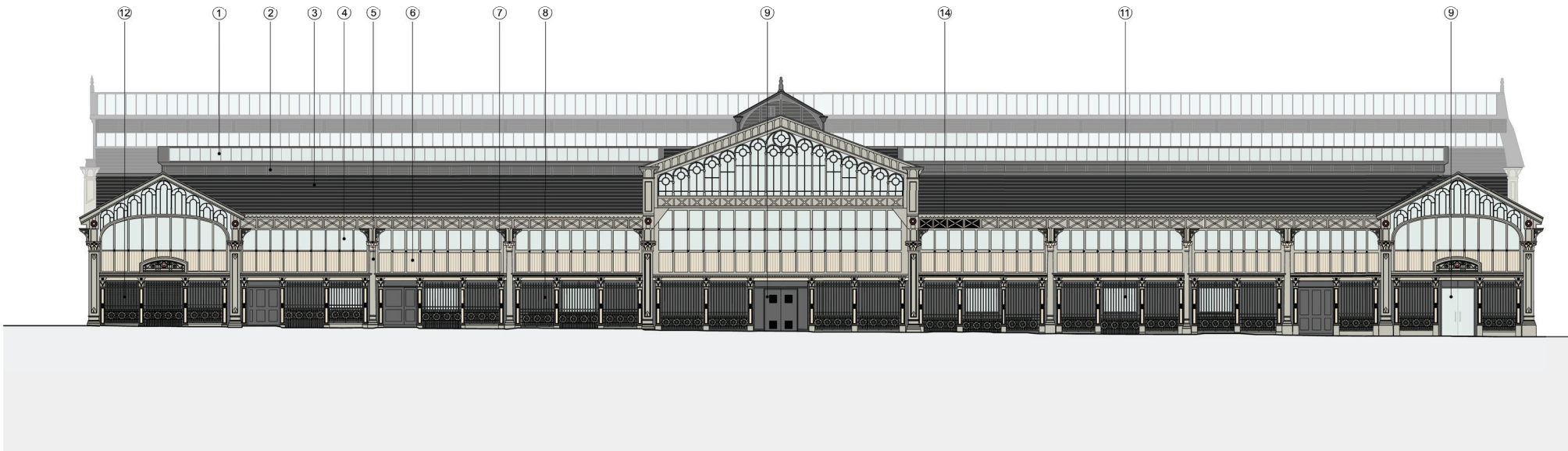
Condenser plant / ASHPs are being installed internally as there is no external plant space available. All condenser plantrooms have two external walls, and both walls will be fully louvered to provide natural fresh air to the plantroom.

The electrical plantroom and substation will be ventilation.

8 APPENDICES

- 8.1 BUILDING ELEVATIONS**
- 8.2 DESTRATIFICAION FANS BROCHURE AND CFD MODEL**
- 8.3 GROUND FLOOR VENTILATION STRATEGY DRAWING**
- 8.4 LOUVRE DETAIL**
- 8.5 KITCHEN VENTILATION DRAWING**

Appendix 8.1 - BUILDING ELEVATION



Key:

- 1

Rooflights
- 2

Existing timber louvers bccally repaired and repainted dark grey
- 3

Proposed new roof slate, 600 x 300mm Cedral Slates
- 4

Existing glazing replaced where damaged with like for like; all glazing to be cleaned
- 5

Linseed paint Brouns & Co, Colour No. 03 Restoration White
- 6

Linseed paint Brouns & Co, Colour No. 23 Arran
- 7

Red painted features Linseed paint Brouns & Co, Colour No. 32 Barn Red
- 8

Existing masonry cleaned and painted with Ronseal external masonry paint colour to be BLACK; Mortar repointed, Spec TBC
- 9

Proposed entrance door
- 10

Proposed entrance glazing
- 11

Proposed window; existing railing to be retained
- 12

Proposed louvers; existing railing to be retained
- 13

Proposed illuminated signage; location TBC
- 14

Proposed louvers behind existing steel

Proposed Elevation - North Facing

Notes: Do not scale from this drawing. All dimensions are in millimetres unless otherwise noted. All dimensions to be checked on site before proceeding with work. All omissions and discrepancies to be reported in writing to Project 3 Architects Ltd. Areas indicated on this drawing are approximate and indicative only. © Project 3 Architects Limited Registered in England & Wales Number 08021795.	Rev:	Date:	Description:	By:
	P01	19/07/23	First Issue	ko
	P02	07/08/23	Design amendments	ko



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Project:
Lower Campfield
Liverpool Road, Manchester

Title:
Proposed Elevations
North Facing

Status:
PLANNING

Drawing Number:
0774-P3A-XX-XX-DR-A-05025

Scale @ ISO A1:
1:125

Revision:
P01



Key:

- 1

Rooflights
- 2

Existing timber louvers locally repaired and repainted dark grey
- 3

Proposed new roof slate, 600 x 300mm Cedar Slates
- 4

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Proposed illuminated signage; location TBC
- 14

Proposed louvers behind existing steel

Proposed Elevation - West Facing (Lower Byrom Road)

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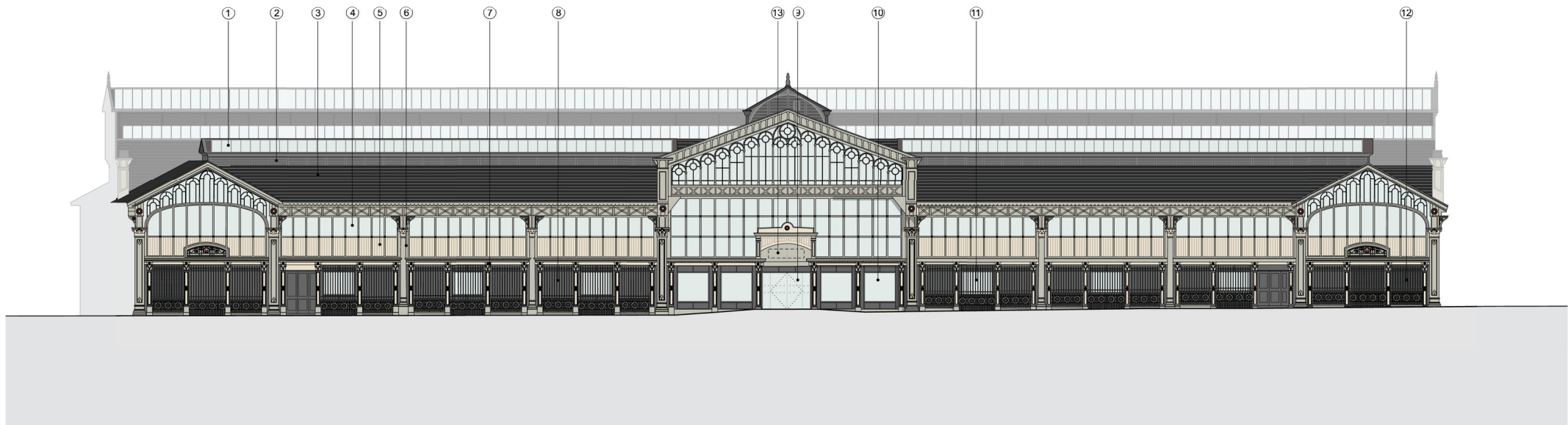
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West Facing (Lower Byrom Road)

Status:
PLANNING

Drawing Number:
0774-P3A-XX-XX-DR-A-05026

Scale @ ISO A1:
1:125

Revision:
P01



Key:

- 1

Rooflights
- 2

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- 4

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Proposed entrance glazing
- 11

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- 12

Proposed louvers; existing railing to be retained
- 13

Proposed illuminated signage; location TBC
- 14

Proposed louvers behind existing steel

Proposed Elevation - South Facing, Liverpool Road

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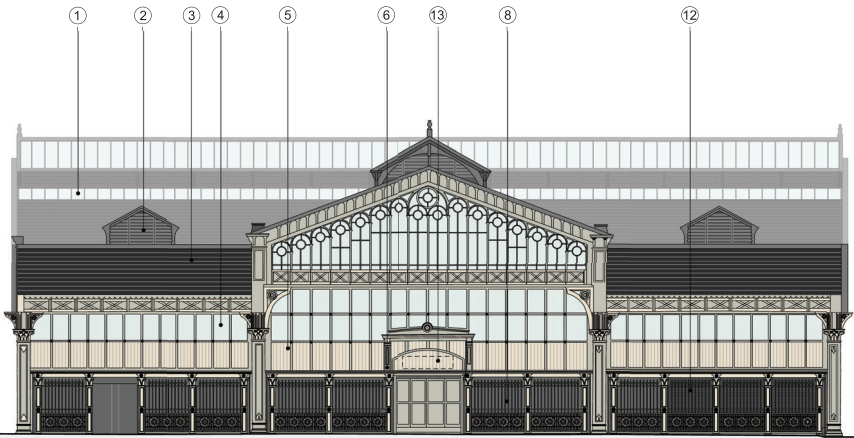
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Proposed Elevations
South Facing

Status:
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Drawing Number:
0774-P3A-XX-XX-DR-A-05023

Scale @ ISO A1:
1:125

Revision:
P01



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- 1

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- 11

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- 12

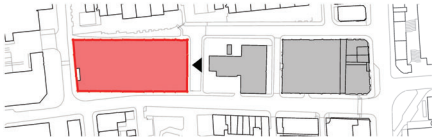
Proposed louvers; existing railing to be retained
- 13

Proposed illuminated signage; location TBC
- 14

Proposed louvers behind existing steel

Proposed Elevation - East Facing, Byrom Street

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Liverpool Road, Manchester

Title:
Proposed Elevations
East Facing

Status:
PLANNING

Drawing Number:
0774-P3A-XX-XX-DR-A-05025

Scale @ ISO A1:
1:125

Revision:
P01

Appendix 8.2 DESTRATIFICAION FANS BROCHURE AND CFD MODEL

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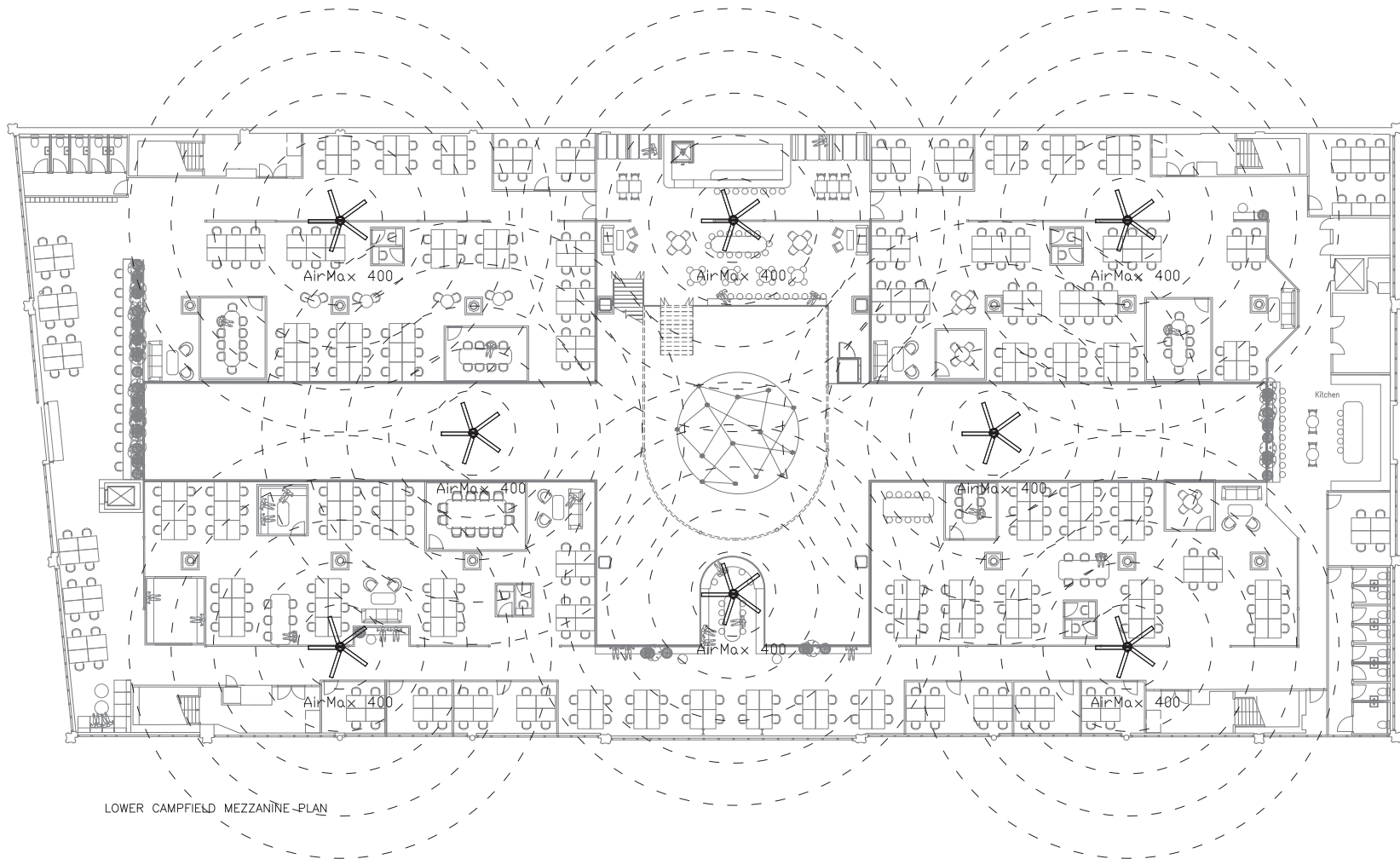


GENERAL NOTES

- 1.0 THE DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION & ALL OTHER RELEVANT DOCUMENTS & DRAWINGS PROVIDED BY MEP DESIGN.
- 2.0 THE DRAWING INDICATES THE DESIGN INTENT FOR THE WORKS.
- 3.0 COORDINATION WORKING DRAWINGS, INSTALLATION DRAWINGS & BUILDERS WORK DRAWINGS SHALL BE PREPARED BY THE CONTRACTOR.
- 4.0 DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWING & THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL DIMENSIONS & LEVELS ON SITE FOR THE ACTUAL SETTING OUT OF THE WORKS.

NOTES

- 1.0 EXACT LOCATION OF PLANT MAY CHANGE, DEPENDANT ON STRUCTURE MANUFACTURER SITE SURVEY REQUIRED.
- 2.0 FAN POSITIONS TO BE COORDINATED & AGREED WITH SHEILA BIRD.



LOWER CAMPFIELD MEZZANINE -PLAN

REVISED TO SUIT MANUFACTURERS
REV. COMMENTS
REV. ISSUED FOR COMMENT
REV. DATE

22.03.23
23.03.23
24.03.23

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ALLIED LONDON

UPPER & LOWER CAMPFIELD - DESIGN

MECHANICAL SERVICES

LOWER CAMPFIELD

MEZZANINE LEVEL

HEATING & COOLING LAYOUT

DISTRIBUTION FAN OPTION 2 - MEGAFANS

DATE: 22.03.23
BY: MEP
CHECKED: W.J.H.
PROJECT: 22.03.23 - LC - MEP - G233 - PL - M4 - 102 - P02



Results

Name: MEP Design (Lower Campfield)

Building Information:

Building Area:	33,099 sq ft [3,075 sq m]
Building Height:	38 ft [12 m]
Building Volume:	1,248,815 cu ft [35,363 cu m]

Fan Model Information:

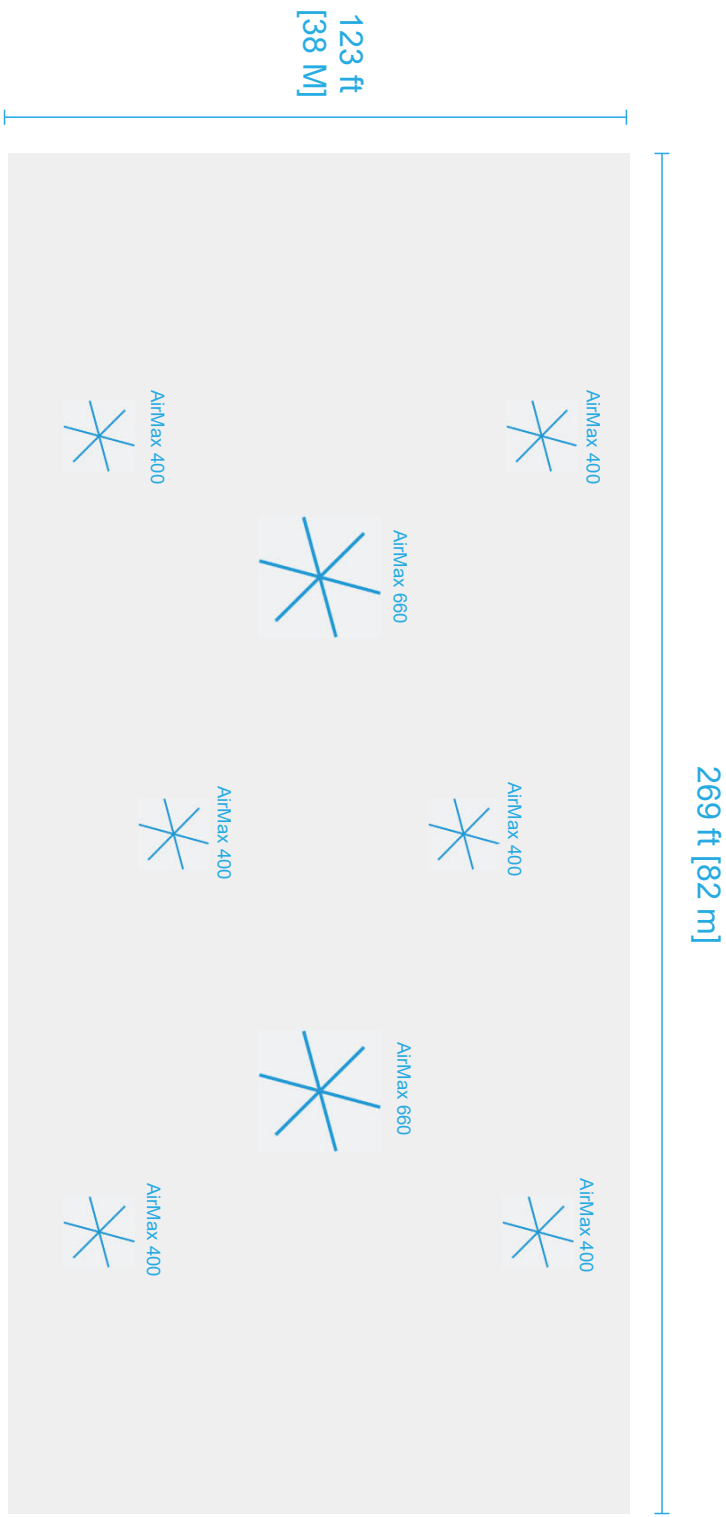
Total Fans:	8
MegaFan AirMax 660:	2
MegaFan AirMax 400:	6

Results:

Average Air Speed:	3.66 ft/s [1.12 m/s]
Set Point Change*:	5.7 deg F [3.2 deg C]

*The set point change is the perceived temperature difference in the occupied space (0 ft - 6 ft [0 m - 2 m] above the floor) based upon the airflow generated by the installed fans.

Facility Layout:



Top View of the Facility:

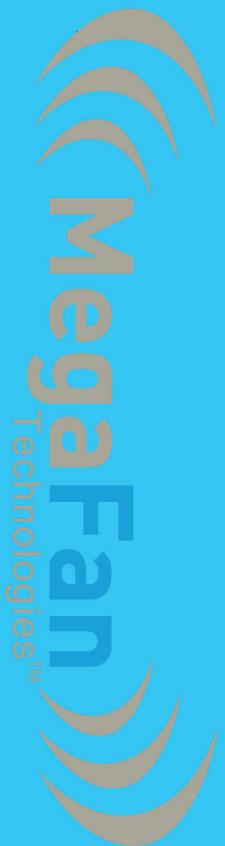


The visualization above depicts the airflow at 3 feet [1 meter] above floor level. The legend to the left of the visualization denotes the speed of the air in the facility.

3D View of the Facility:

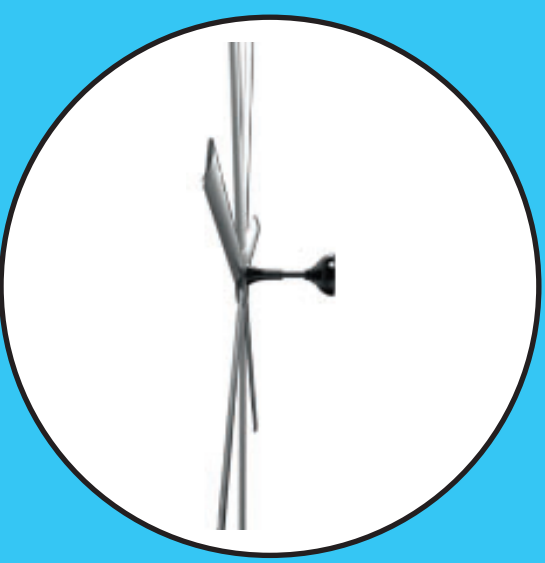


The visualization above depicts the airflow in 3 dimensions. The legend to the left of the visualization denotes the speed of the air in the facility.



AIRSLIM

- > EC brushless motor without gearbox
- > 52mm ultra thin motor in 100W fans
- > Extremely silent fans
- > 7 or 5 blades depending on the motor power
- > Optional customized paint
- > Touch screen control



Model	Fan Diameter	Max Speed	Power	Airflow	Recommended coverage**	Maximum coverage**	Operation Voltage	Protection	Sound Level	Weight
AIRSLIM 250M	2.44 m	122 rpm	0.24 kW	46,795 m3/h	156 m²	218 m²	230VAC	IP20*	< 40 dBA	26 kg
AIRSLIM 300M	3 m	112 rpm	0.24 kW	109,320 m3/h	364 m²	510 m²	230VAC	IP20*	< 40 dBA	29 kg
AIRSLIM 350M	3.6 m	98 rpm	0.24 kW	163,145 m3/h	544 m²	762 m²	230VAC	IP20*	< 40 dBA	32 kg
AIRSLIM 400M	4.3 m	74 rpm	0.24 kW	192,288 m3/h	641 m²	897 m²	230VAC	IP20*	< 40 dBA	35 kg



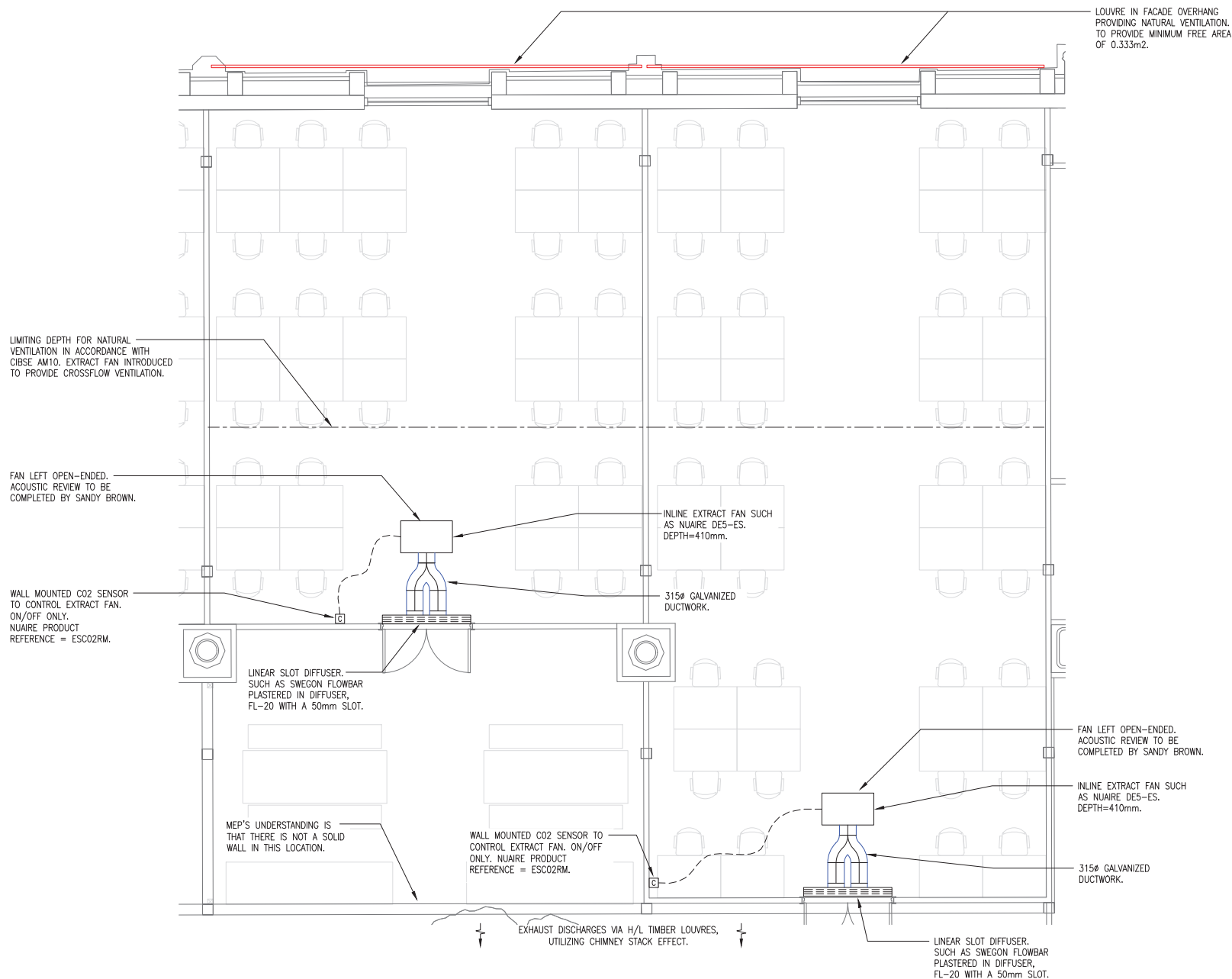
Model	Fan Diameter	Max Speed	Power	Airflow	Recommended coverage**	Maximum coverage**	Operation Voltage	Protection	Sound Level	Weight
AIRSLIM 400L	4.3 m	84 rpm	1 kW	281,198 m3/h	937 m²	1,312 m²	230VAC	IP20*	< 50 dBA	66 kg
AIRSLIM 500L	4.9 m	78 rpm	1 kW	340,453 m3/h	1,135 m²	1,589 m²	230VAC	IP20*	< 50 dBA	70 kg
AIRSLIM 550L	5.5 m	69 rpm	1 kW	382,082 m3/h	1,274 m²	1,783 m²	230VAC	IP20*	< 50 dBA	75 kg
AIRSLIM 600L	6.1 m	57 rpm	1 kW	527,406 m3/h	1,758 m²	2461 m²	230VAC	IP20*	< 50 dBA	84 kg
AIRSLIM 700L	7.3 m	49 rpm	1 kW	719,478 m3/h	2,398 m²	3,358 m²	230VAC	IP20*	< 50 dBA	93 kg

* IP55 under request

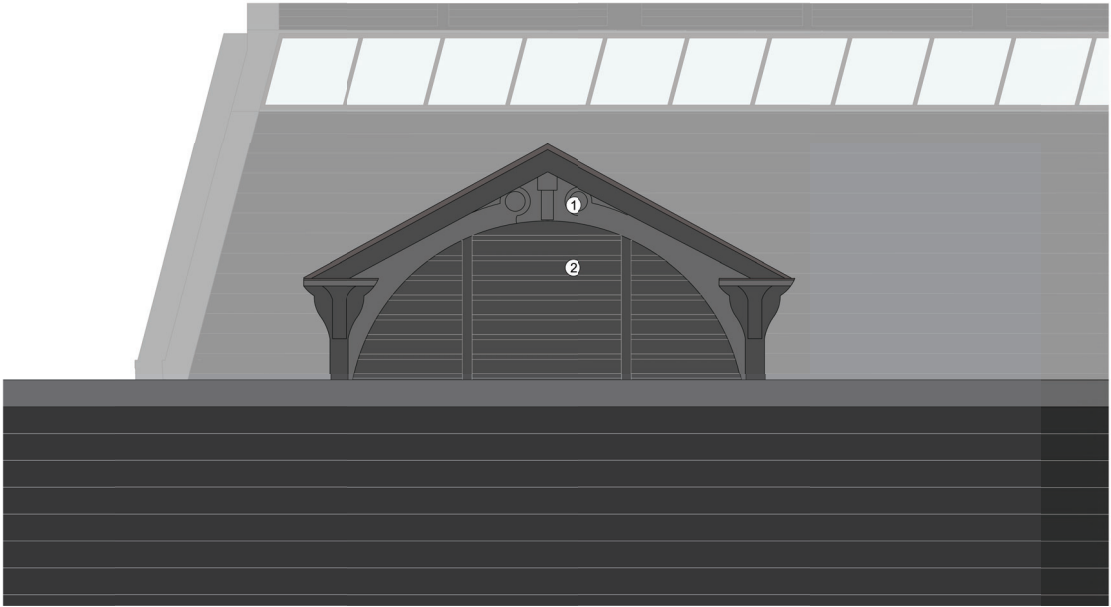
** Air speed > 0.5 m/s

*** Air speed > 0.2 m/s

Appendix 8.3 GROUND FLOOR VENTILATION STRATEGY DRAWING



Appendix 8.4 LOUVRE DETAIL



Type C - East and West Elevations

Key:

- ① Linseed paint Brouns & Co, Colour No. 40, Graphite
- ② Linseed paint Brouns & Co, Colour No. 35, Manderley

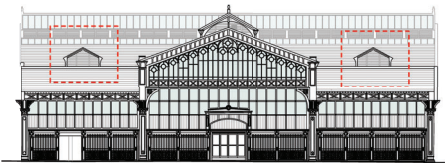
Notes:

Area to timber work to be inspected for rot and damage and made good as necessary. All repairs to match exactly.

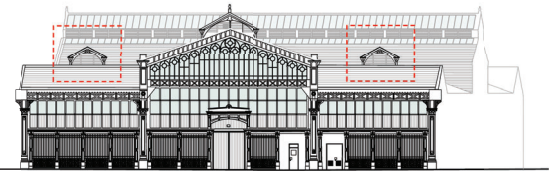
All timber to be sanded and primed in line with paint manufacturers recommendation and specifications.

Paint to be supplied by Brouns & Co and to be linseed oil paint applied in accordance with their specification and recommendations.

Colours as annotations.



East Elevation
Scale 1:250

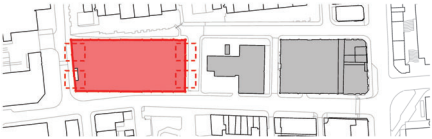


West Elevation
Scale 1:250



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Project:
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Liverpool Road, Manchester

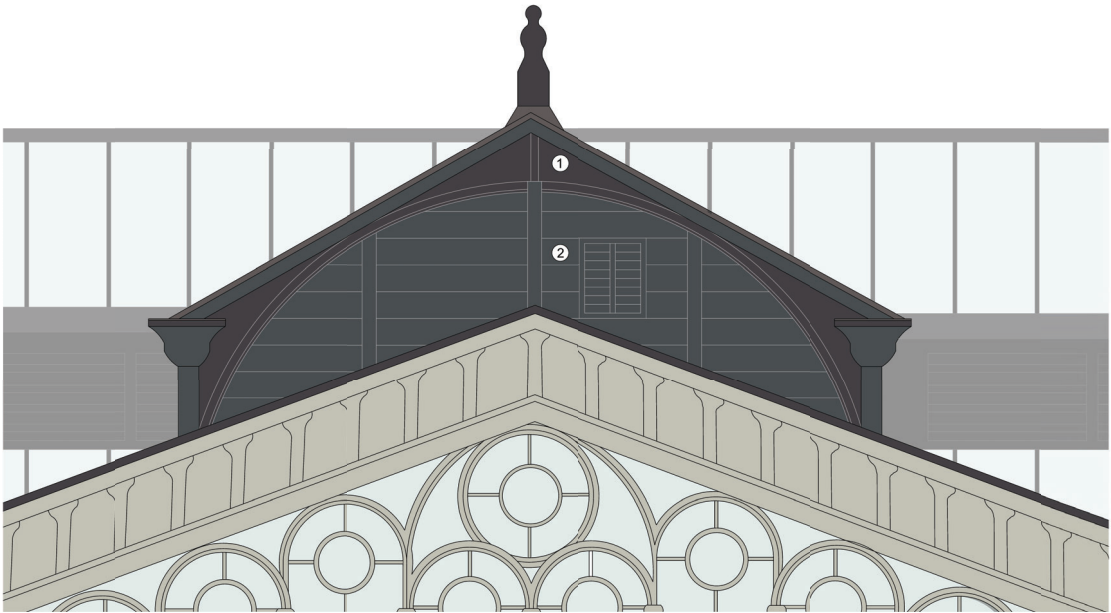
Title:
Roof Repair Details
Type C

Status:
PLANNING

Drawing Number:
0774-P3A-XX-XX-DR-A-05062

Scale @ ISO A1:
1:20

Revision:
P01



Type A - South and East Elevations

Key:

- ① Linseed paint Brouns & Co, Colour No. 40, Graphite
- ② Linseed paint Brouns & Co, Colour No. 35, Manderley

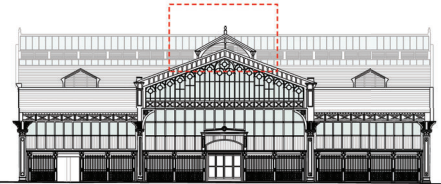
Notes:

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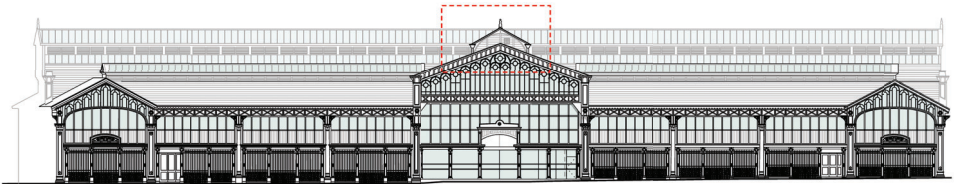
All timber to be sanded and primed in line with paint manufacturers recommendation and specifications.

Paint to be supplied by Brouns & Co and to be linseed oil paint applied in accordance with their specification and recommendations.

Colours as annotations.



East Elevation
Scale 1:250

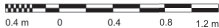
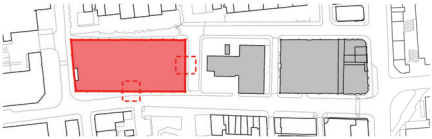


South Elevation
Scale 1:250



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Project:
Lower Campfield
Liverpool Road, Manchester
Title:
Roof Repair Details
Type A
Status:
PLANNING
Drawing Number:
0774-P3A-XX-XX-DR-A-05060

Scale @ ISO A1:
1:20
Revision:
P01