

Lightning Rod Retention Planning Application – Planning Statement

Project: 18021 Hammerstone Road depot

Client: Morgan Sindall

Issue Date: 10th December 2024

Ref: 18021_04_1_3

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1.0 Introduction

This statement has been prepared to accompany our planning application for the retention of the installed lightning protection system at Manchester City Councils (MCC) Hammerstone Road Depot site in Gorton.

The former Loco Shed building has been recently refurbished as part of the ongoing depot redevelopment works and houses several MCC stakeholders and operational facilities.

The large expanse of available roof space on the former Loco Shed allowed MCC the opportunity to utilize this area for the provision of PV panels which would assist the Council with their ambition to be a zero carbon city by 2038.

A successful planning application for the PV panels was determined in November 2023 reference 138157/VO/2023 with installation taking place early 2024. However, the upgrade required to the existing lightning protection system wasn't included in this application but was installed to protect the PV & building from the risk of damage resulting from lightning strikes.

This application looks to retrospectively formalize the retention of the installation of the upgraded lightning protection system.

2.0 Requirement For Lightning Protection

A lightning strike risk assessment was undertaken based on a simulation of a lightning strike via a rolling sphere method which highlighted the possibility of a strike hitting the Loco Shed building. The assessment confirmed the PV on the higher roof of Shed A would receive a direct strike. Therefore, to protect the PV panels an upgrade to the existing lightning protection system was required consisting of roof mounted air rods to safely divert the strikes away from the PV.

The existing lightning protection system installed as part of the Loco Shed re-roofing works prior to the PV being added was designed to only protect the roof from strikes, with the introduction of the PV panels the extra layer of protection provided by the air rods was required.

3.0 Design Review and Mitigation

Amount

The original design intent for the installation of the additional lightning protection measures was reviewed and the extent / height of the rods was reduced by utilizing the roof access system handrails as a conductor and adapting a rolling sphere design concept. The minimum height of the air rods has been established at 2m and the minimum number of air rods have been installed.

Location

The positioning of the air rods has been dictated by compliance with the British Standards. The air rods need to be located at the highest point of the building to be effective and provide the required protection. The highest point on the Loco Shed is the ridge line to Shed A which runs parallel to the proposed depot hard standing areas used for the parking of staff & commercial vehicles. The air rods are spaced at equal intervals along the ridge in line with the standards. The drawings submitted in support of this application indicate the positions of the air rods in plan and elevation.

Finish

The air rods can't be insulated or painted due to the high voltage current they will receive from a lightning strike. They need to be exposed to reduce the risk of sparking / fire which could occur with any additional finishes.

Radio Interference

The air rods will not interact with radio transmitters as they are not actively omitting energy. They remain isolated from the surrounding metal work until which time a lightning strike is intercepted.

4.0 Product Details

The air rods installed are as noted on the data sheet below and are fixed to the pitched roof sheeting with a cruciform bracket just below the ridge line.

Product Data Sheet: Air-Termination Rods for Metal Roofs



 FS 16 10 2000 MD AL V2A (123 021)		
 		
Figure without obligation		
Type	FS 16 10 2000 MD AL V2A	
Part No.	123 021	
Total length (Ø16 / 10 mm)	2000 mm	
Max. gust wind speed	184 km/h	
Profile distance	230-520 mm	
Fixing	[4x] Ø11 mm	
Material of braces	StSt	
Material of air-termination rod	Al	
Material of nut / washer	StSt	
Thread	M16	
Standard	EN 62561-(1+2)	
Weight	2,2 kg	
Customs tariff number (Comb. Nomenclature EU)	85389099	
GTIN	4013364092822	
PU	1 pc(s)	

We reserve the right to introduce changes in performance, configuration and technology, dimensions, weights and materials in the course of technical progress. The figures are shown without obligation.

Image 1 – Air Rod Data Sheet

To allow the air rod to rise vertically the base of the rod is cranked to allow for the pitch of the roof as can be seen in the images below



Image 2 – Air Rod Cruciform Fixing Bracket & Cranked Air Rod

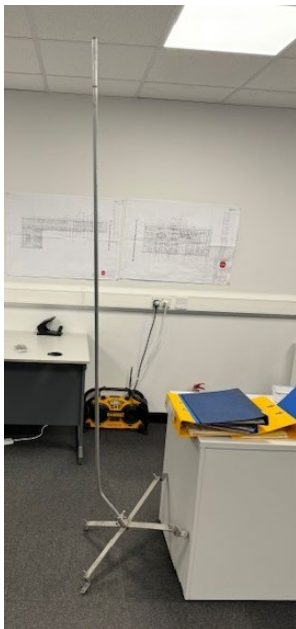
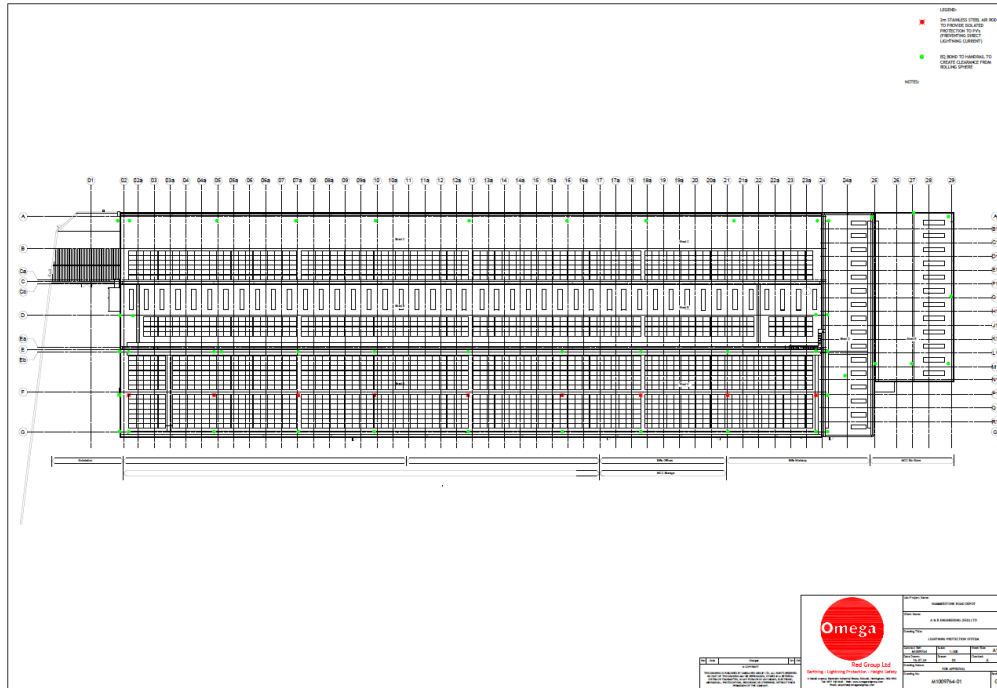


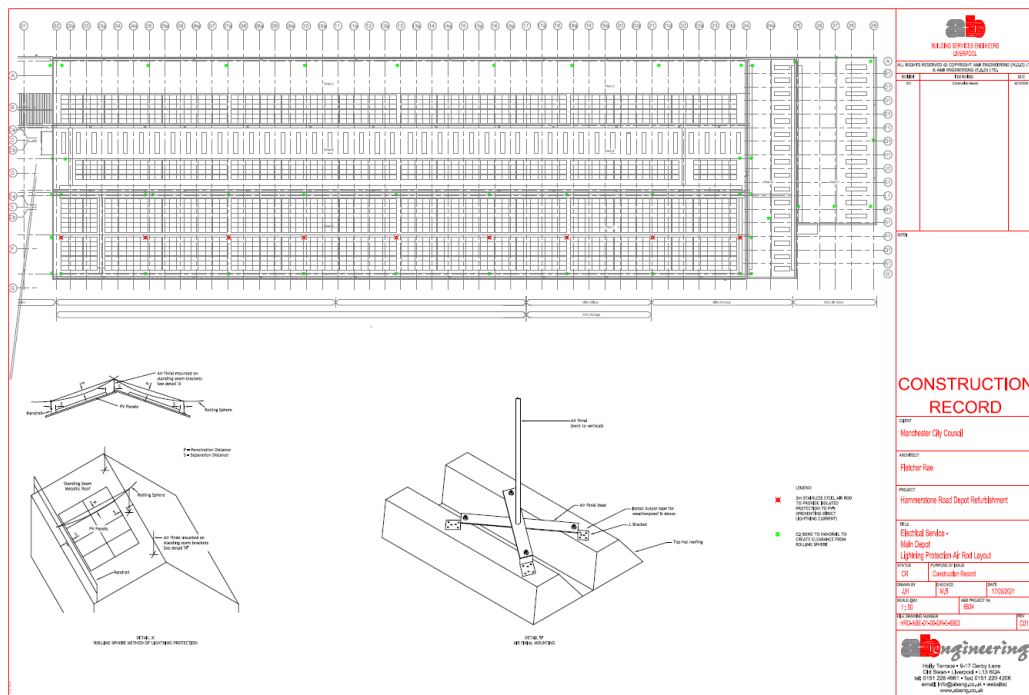
Image 3 – Air Rod Cruciform Fixing Bracket & Cranked Air Rod Positioned Vertically (pre installation)

5.0 Extent

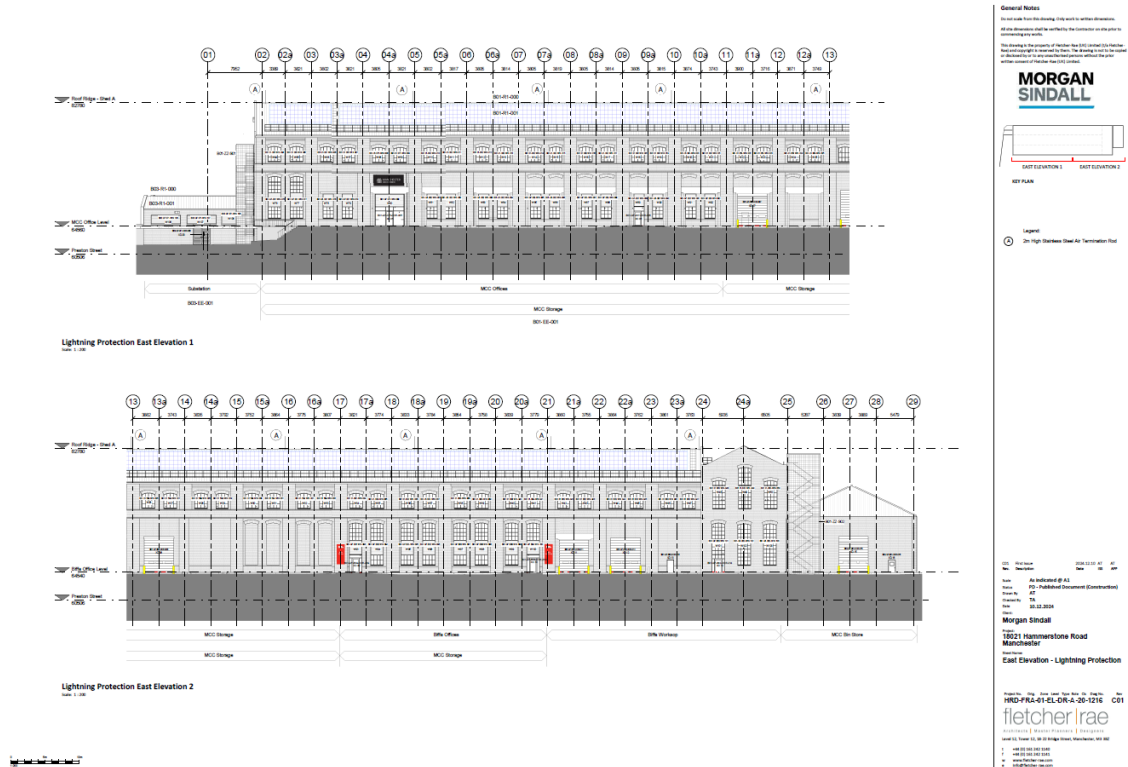
Omega Drawing M1009764-01 (along with the other drawings noted below which accompany this application) indicates the position of the air rods on the roof of Shed A with red dots.



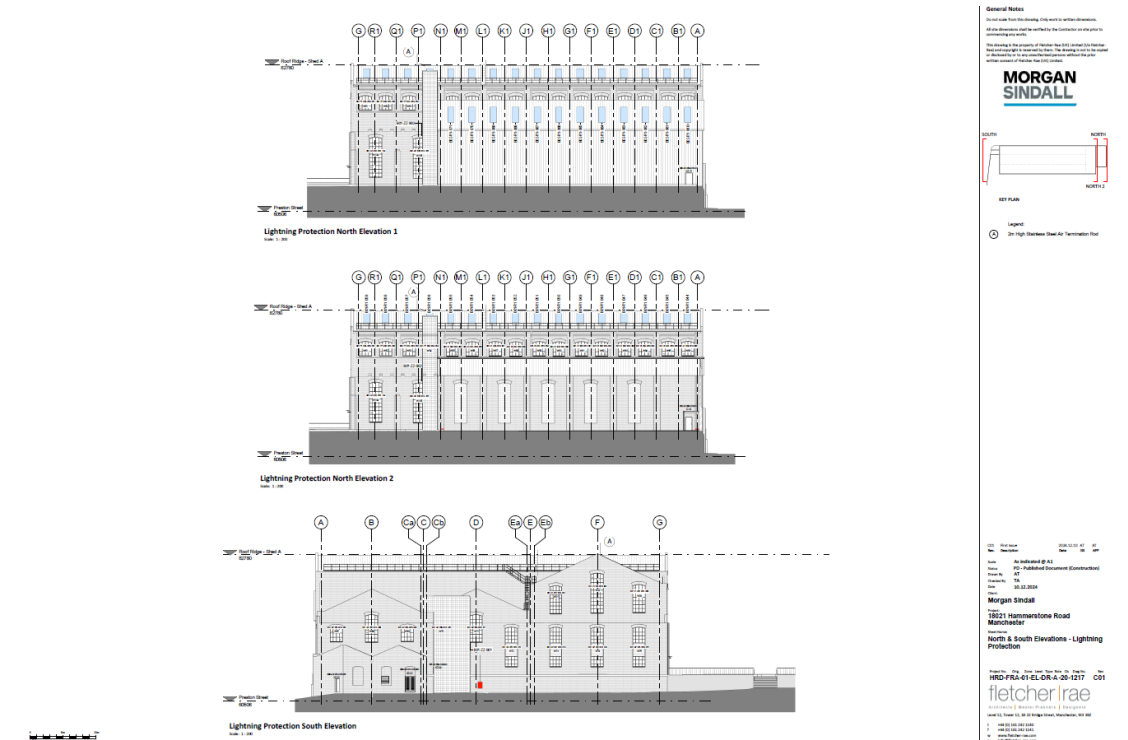
HRD-ABE-01-00-DR-E-6903-C01 Main Depot Lightning Protection Air Rod Layout drawing also utilizes this plan along with fixing details for the cruciform brackets.



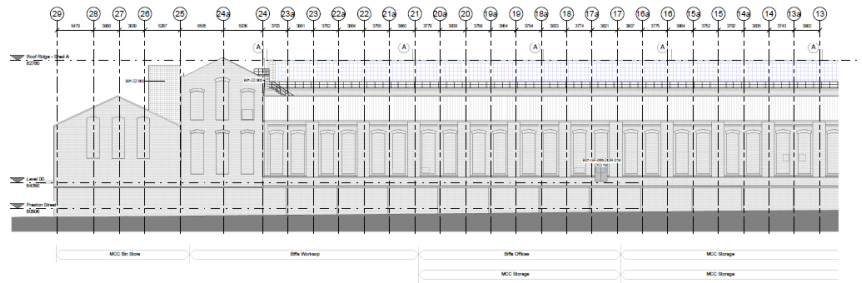
Fletcher Rae Drawing HRD-FRA-01-EL-DR-A-20-1216-C01 East Elevation – Lightning Protection



Fletcher Rae Drawing HRD-FRA-01-EL-DR-A-20-1217-C01 North & South Elevations – Lightning Protection

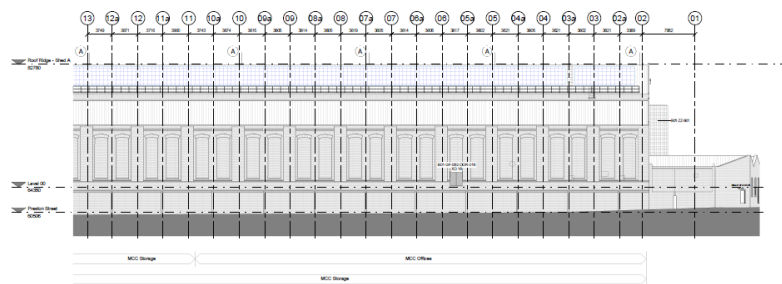


Fletcher Rae drawing HRD-FRA-01-EL-DR-A-20-1218-C01 West Elevation – Lightning Protection



Lightning Protection West Elevation 1

Issue 1 - 1/20



Lightning Protection West Elevation 2

Issue 1 - 1/20



General Notes

1. This drawing is a Lightning Protection (LP) system for the building shown. It is a technical drawing and should not be used for any other purpose.

2. All dimensions are given in millimeters unless otherwise stated.

3. The drawing is the property of Fletcher Rae (UK) Limited. It is not to be reproduced or used in any way without the prior written consent of Fletcher Rae (UK) Limited.

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WEST ELEVATION 1 WEST ELEVATION 2

KEY PLAN

Legend

○ 2m High Stainless Steel Air Termination Rod

ISS: 1/20 Date: 1/20
 BY: [Signature] Rev: 01
 FOR: [Signature] Rev: 01
 DRAWN BY: [Signature] Rev: 01
 CHECKED BY: [Signature] Rev: 01
 APPROVED BY: [Signature] Rev: 01

Morgan Sindall

10001 Hammerslane Road
 Manchester
 West Elevation - Lightning Protection

Project: [Signature] Date: 1/20
 Drawing: HRD-FRA-01-EL-DR-A-20-1218 C01
 Version: 01
 Date: 1/20

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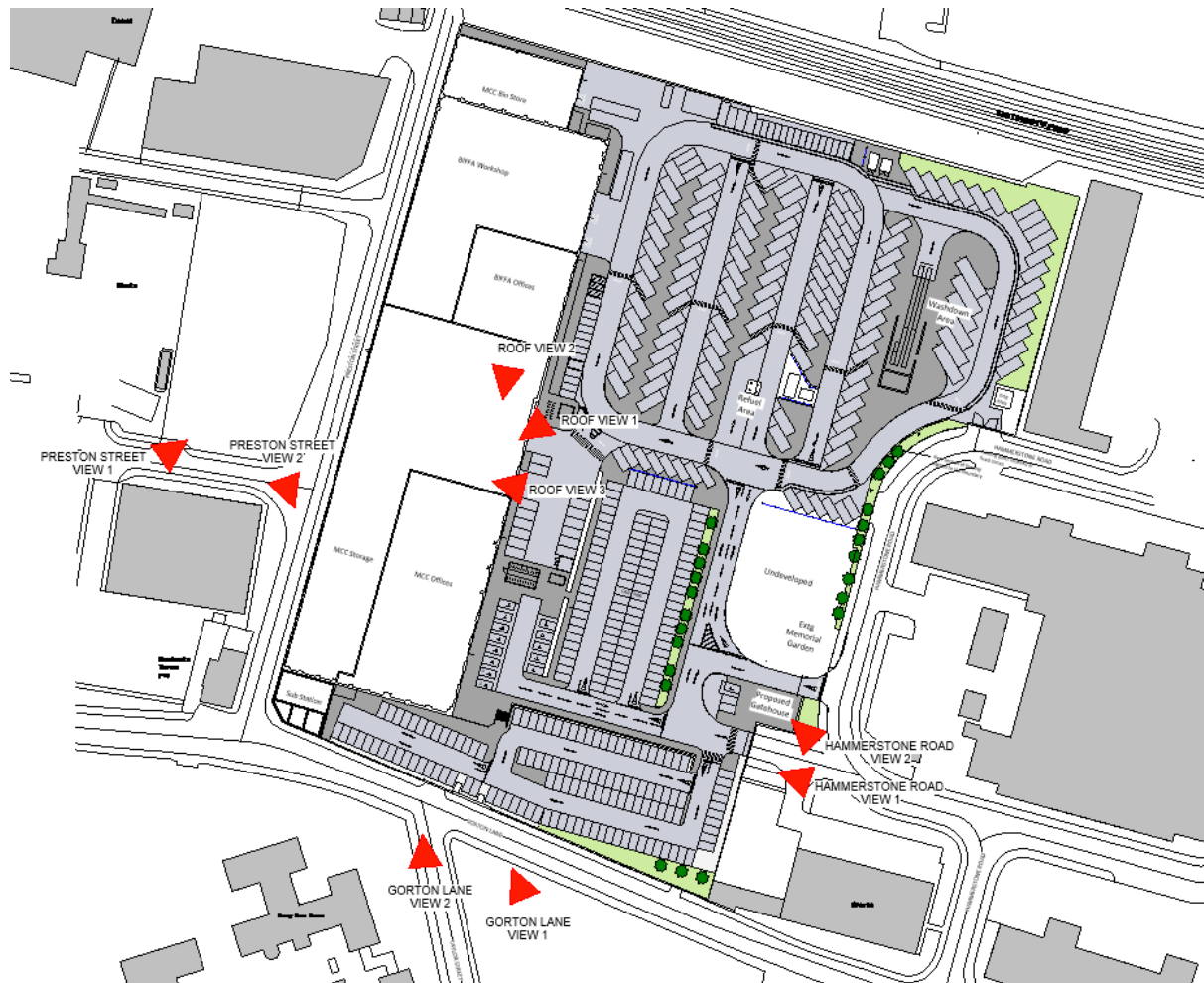
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6.0 Context Photographs

Photograph Reference Plan



Gorton Lane View 1



Gorton Lane View 2



Hammerstone Road View 1



Hammerstone Road View 2



HORIZON

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Preston Street View 1



Preston Street View 2



HORIZON

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Roof View 1



Roof View 2



Roof View 3



7.0 Conclusion

This statement has demonstrated the extent and requirement for the retention of the installed lightning protection system to the Loco Shed roof. We believe based on the massing of the existing building and the size of air rods in this context don't cause detrimental visual amenity and request this application is recommended for approval.

Signed: Andrew Thompson, Design Associate

Date: 10.12.2024