

DESIGN AND ACCESS

STATEMENT

# Design and Access Statement

St Edmund Hall Library

December 2023

rev	date	note
P1	12.12.2023	Draft issue to client
P2	13.12.2023	Planning and Listed Building Consent application

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## Introduction



St Edmund Hall Library

### Project Overview

Original Field of Architecture (OFA) has been commissioned by St Edmund Hall to prepare a Planning Application and Listed Building Application for the installation of the new window guard to the window on the public facing facade and lightning protection to the existing lead roof.

The college has reported instances of objects being thrown from the public road (Queen's Lane), striking the west window. This poses not only a health and safety concern for the college but also the potential risk of damaging the Grade I listed building's window. With this application, the college is seeking to address and mitigate these risks.

The second purpose of this project is introducing lightning protection to the building. The absence of lightning protection creates a hazardous environment for both historic assets and occupants. This application seeks to rectify this situation by implementing measures to ensure the safety of the building and occupants.

### Submission Documents

The following documents are included in the submission and are to be read in conjunction with each other.

- PA 001 - Site Location and Block Plan
- PA 300 - Existing and Proposed Floor Plans
- PA 310 - Existing and Proposed Roof Plans
- PA 400 - Existing Elevations
- PA 410 - Proposed Elevations



### Site and Historical Context

A review of the Library’s location was undertaken to highlight the existing facilities, entries to the building and the identification of the public facing facade.

The works are proposed to be in St Peter’s Church in the East, which has been used as a library by the college since 1970. The Grade 1 listed building has existed on this site since the late 10th century with various additions made to the building over the years. A detailed assessment of the library building is included in Heritage Assessment, which identifies and covers the heritage significance of the building in detail.

Located to the north of the main campus, the library is accessed through the Gardens of St. Peter-in-the-East, also serving as a graveyard (see Figure 3). There is no access to the building from Queen’s Lane, where the public facing facade is; the gate on this road is only used for emergency exit. To the north of the building,

Broadbent Garden is situated, with additional access points from the Lady Chapel and the Vestry.

The tower and an extension of the nave to the west (public-facing facade) were added in the 14th century. The large window located on this wall is subject to damage by public, as there is no protective boundary around the building.

Understanding the historical context’s significance is a pivotal aspect of the design process when proposing the window intervention and lightning installations in a sensitive setting.

The west-facing facade of the building and the three faces of the tower (excluding the east-facing one) are acknowledged as the visible facades from Queen’s Lane. Consequently, the objective is to minimise interventions on these fronts.



FIGURE 2 PUBLIC FACING FACADE - QUEEN'S LANE



FIGURE 3 MAIN ENTRANCE THROUGH THE GRAVEYARD

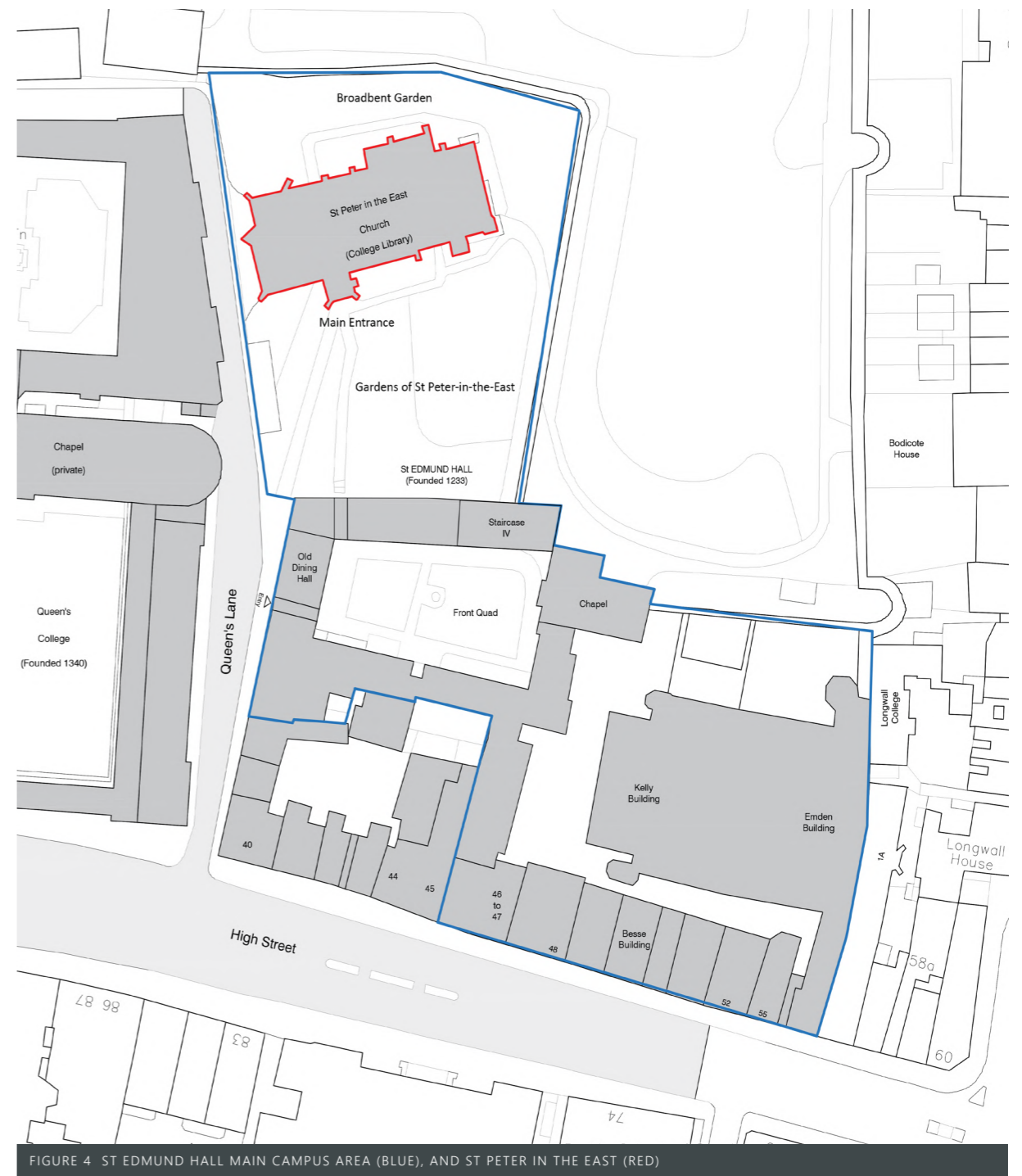


FIGURE 4 ST EDMUND HALL MAIN CAMPUS AREA (BLUE), AND ST PETER IN THE EAST (RED)

## Design

### Design Proposal

The design proposal involves installing a window guard to the west facing window and installing lightning protection to the metal roof and to the tower.

**Window Guard:** The west-facing window is positioned in such a place where it could be reached, touched and potentially broken from the public road (Queen's Lane). Given the college's reports of incidents of vandalism, there is a necessity to enhance its protection.

The window features clear glass panes within a grid lead frame, fixed to stone traceries formed in traditional geometric shapes. The proposed guard, installed on the traceries, aims to provide protection to the window's glazing. The proposed design

is intended to be as minimalist as possible while ensuring the sufficient protection.

Utilising a welded mesh, made from stainless-steel in a grid pattern similar to the panes is considered ideal. Frames of the guards will be fixed to the stone mullions within traceries as shown in figure 6, preferably fixed at joints to minimise the impact. This window guard is also hinged so that it can be easily swung away for window cleaning or repairs.



FIGURE 5 PUBLIC FACING FACADE - QUEEN'S LANE

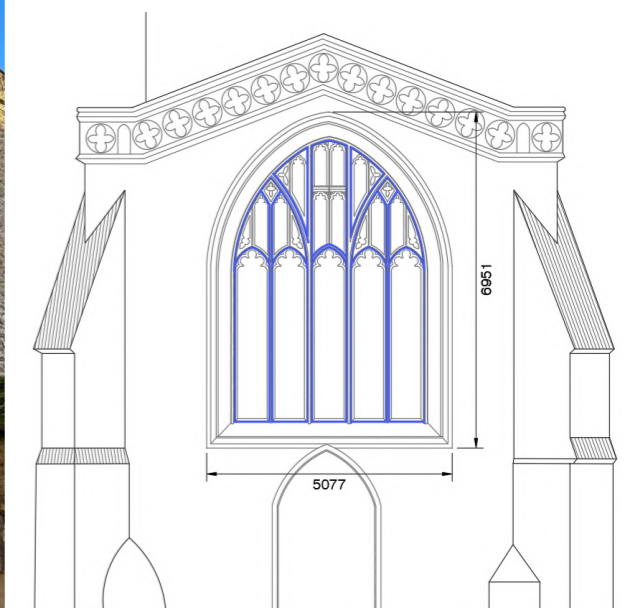


FIGURE 6 WEST WINDOW GUARD FRAMES IN TRACERIES



**Lightning Protection:** The current condition of the building lacks any protection towards lightning and the fire risk. Introducing the lightning protection is considered necessary for the protection of the historical asset and ensuring the safety of the occupants.

Proposed design is intended to create as minimum visual impact as possible while introducing the required protection. West facing facade is being kept clear from installation of any down conductors and the tower only houses down conductors on the east facing facade where is not visible from public view. The level of protection required is determined as Level

4 Lightning Protection System in accordance with BS EN 62305-2. The proposed design includes the use of 25 x 3mm PVC sheathed aluminium conductors and down conductors, air termination networks installed at towers, stainless-steel test points at low levels, bonds to roof plants and fittings, earth mats and conductive aggregates placed by hand dug excavations to eliminate potential of driven rods hitting services.

Refer to drawings and appendices for the contractor's documents for more information of the products, fixing details and the installations.

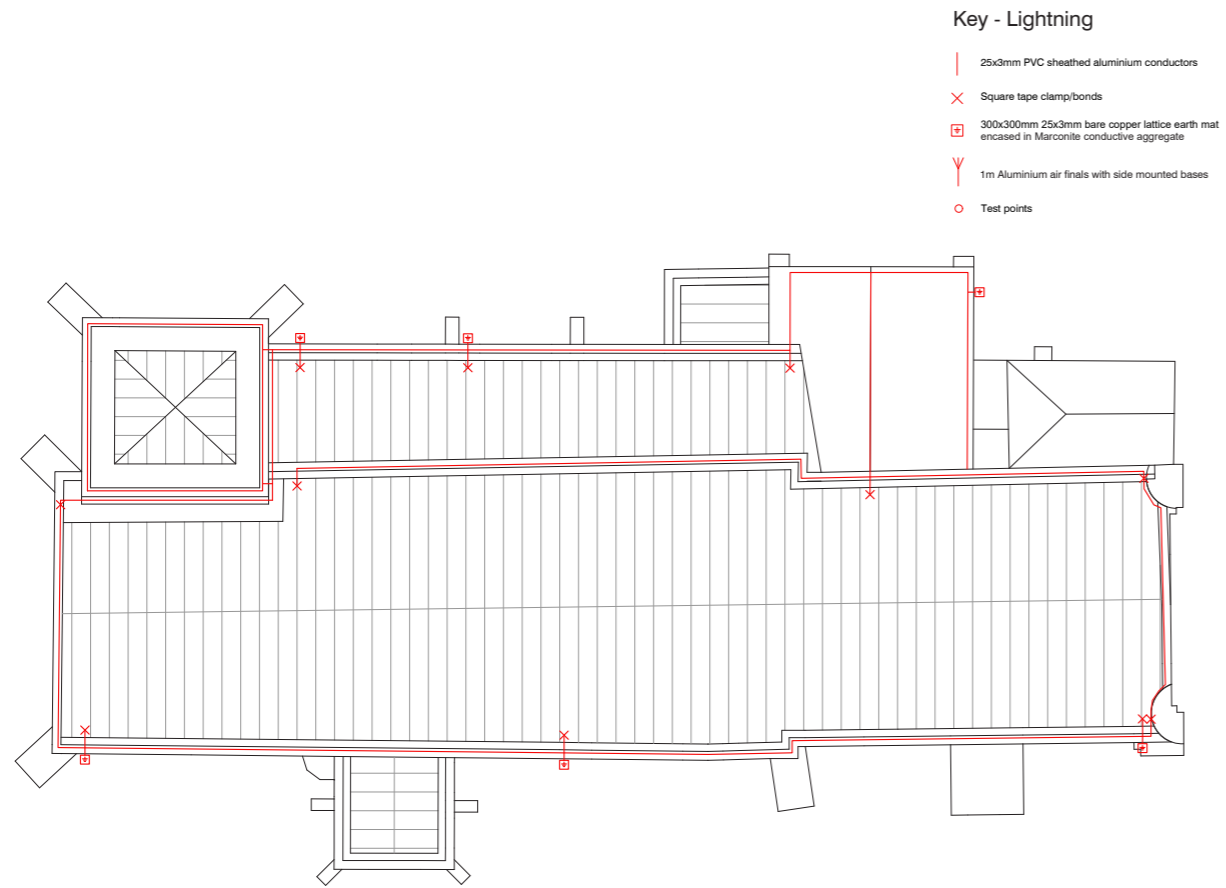


FIGURE 7 PROPOSED ROOF PLAN SHOWING LIGHTNING INSTALLATION

### Visual impact

#### Window Guard

The proposed window guard features a welded mesh crafted sized 3" x 1/2" on a stainless steel framework. This design is particularly discreet, making it ideal for churches and historic buildings. In order to leave the stonework as visible as possible, the aim is to fit these weld meshes within the traceries (the stonework surrounding the window.) Joints are proposed to be stainless steel clips and screws into plastic plugs for minimal disturbance or damage. To enhance its aesthetics, the guard is finished in satin black powder coating. Refer to the figures 8 and 9 for a visual impact assessment of the window with the installation of the guard.

#### Lightning Protection

Due to the level of protection and the dimensions of the building, it was proposed to drop the down conductor from six points to reach the ground. To connect the conductor on the tower effectively, a decision was made to link it to the roof from two points. This system involves a total of eight down conductors, and a layout was carefully devised to minimise visual impact without compromising effectiveness, particularly from the side facing the public road. The conductor affixed to both the roof and the tower was secured to the surface of the sloping parapet facing the roof, ensuring it remains out of sight.



FIGURE 8 EXISTING WEST WINDOW



FIGURE 9 PROPOSED WEST WINDOW WITH WOVEN MESH GUARD



Lightning down conductor



FIGURE 10 EXISTING AND PROPOSED VIEW OF ST PETER IN THE EAST FROM QUEEN'S LANE (SOUTH)

Lightning down conductor



FIGURE 11 EXISTING AND PROPOSED VIEW OF ST PETER IN THE EAST FROM QUEEN'S LANE (NORTH)

### Building and Environment

#### Materials

Lightning protection materials are specified as standard, featuring 25 x 3mm PVC-sheathed aluminium conductors. For the window guard, powder-coated stainless steel finished in satin black was chosen as the material, combining durability and aesthetics for optimal performance and visual appeal.

#### Construction

The design follows a simple concept based on structure of the building. Window guards are placed within the window traceries. The lightning protection conductors are installed along the roof boundaries and are linked to ground earth mats by down conductors fixed to the wall surface at six points. Six test points are connected to the down conductors at low levels.

#### Archaeology

There is no impact of the proposed works on the archaeological aspect of the site.

#### Services

There will be no impact on the existing services of the site. Lightning protection earth mats are proposed to be installed by hand digging so the potential of driven rods hitting services can be eliminated.

#### Acoustics

There is no change to the current conditions.

#### Land & Resource Use

The project utilises existing structure, presenting significant benefits in terms of protection and conservation purposes, advancing health and safety measures.

#### Daylight & Sunlight Assessment

There will be no impact on daylight and sunlight to adjacent properties.

#### Access

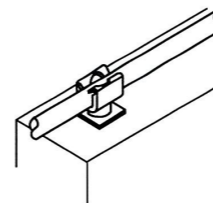
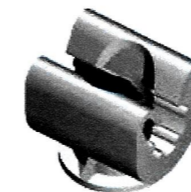
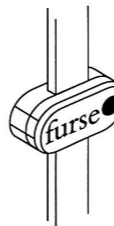
The access to the main campus is through the porters lodge on the Queen's Lane. Library building is accessed from the front quad towards the gardens of St Peter-in-the-East. The gate located on Queen's Lane provides an alternative access.

## Conductor network Non-metallic conductor clips



### Standards

IEC/BS EN 62561-4



### Non-metallic DC tape clip

Part no.	Conductor size (mm)	Colour	Weight each (kg)
<b>For use with bare tape</b>			
CP005	20 x 3	Brown	0.01
CP010	20 x 3	Grey	0.01
CP015	25 x 3	Brown	0.01
CP020	25 x 3	Grey	0.01
CP060*	38 x 5	Brown	0.01
CP065*	50 x 6	Brown	0.02
<b>For use with PVC covered tape</b>			
CP025	25 x 3	Brown	0.01
CP030	25 x 3	Black	0.01
CP035	25 x 3	Green	0.01
CP040	25 x 3	Grey	0.01
CP045	25 x 3	Stone	0.01
CP050	25 x 3	White	0.01

- High grade Polypropylene, UV stabilized against degradation by sunlight and non-brittle to prevent cold weather damage
- Available in six colours to match bare and PVC covered copper and aluminium tapes
- Fix using countersunk wood screws 1½" No. 10 or M6 (Part no. SW005 or SW105) and wall plugs (Part no. PS305)
- \*Not as illustrated (drawing available on request)

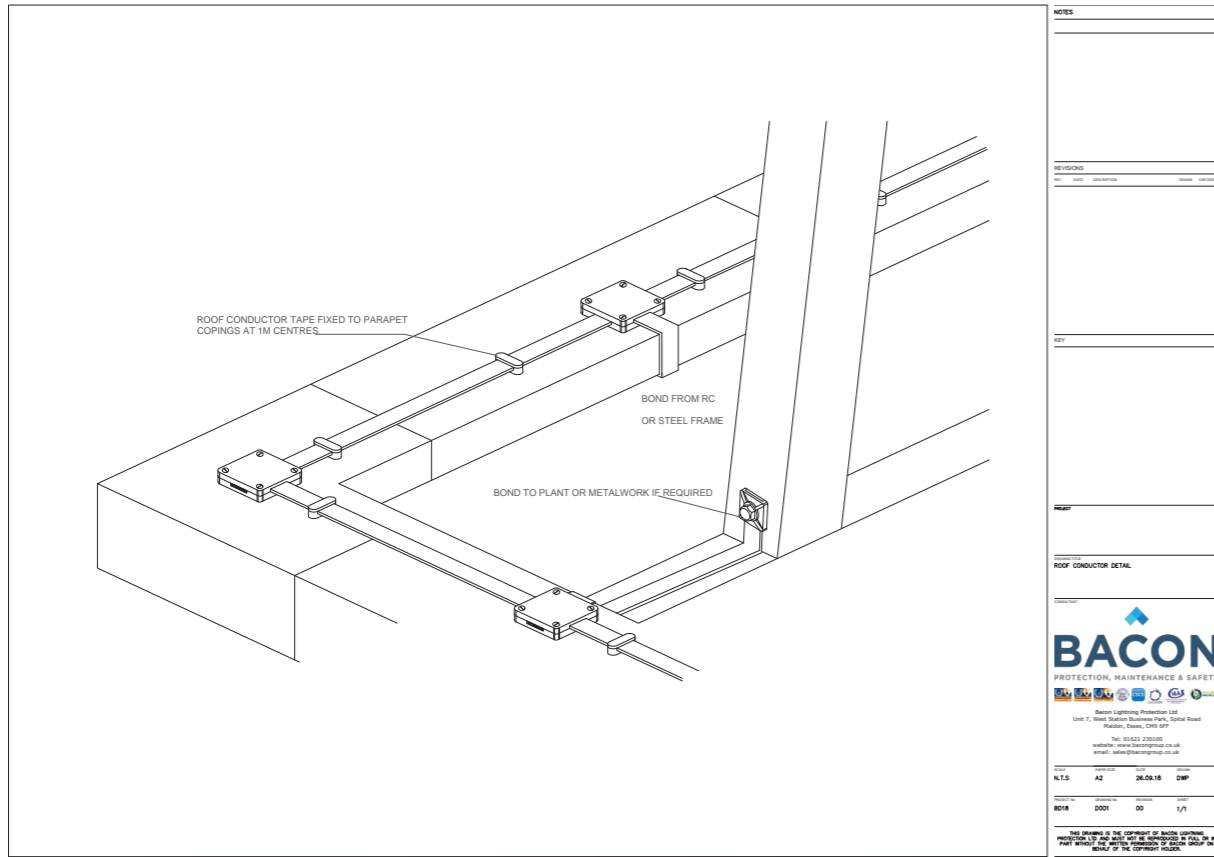
### Non-metallic push-in clip

Part no.	Conductor size (mm)	Colour	Weight each (kg)
<b>For use with bare solid circular conductor</b>			
CP887	Ø 8	Brown	0.01
CP872	Ø 8	Grey	0.01
<b>For use with PVC covered solid circular conductor</b>			
CP886	Ø 10*	Brown	0.01
CP861	Ø 10*	Black	0.01
CP871	Ø 10*	Grey	0.01
CP876	Ø 10*	Stone	0.01
CP881	Ø 10*	White	0.01

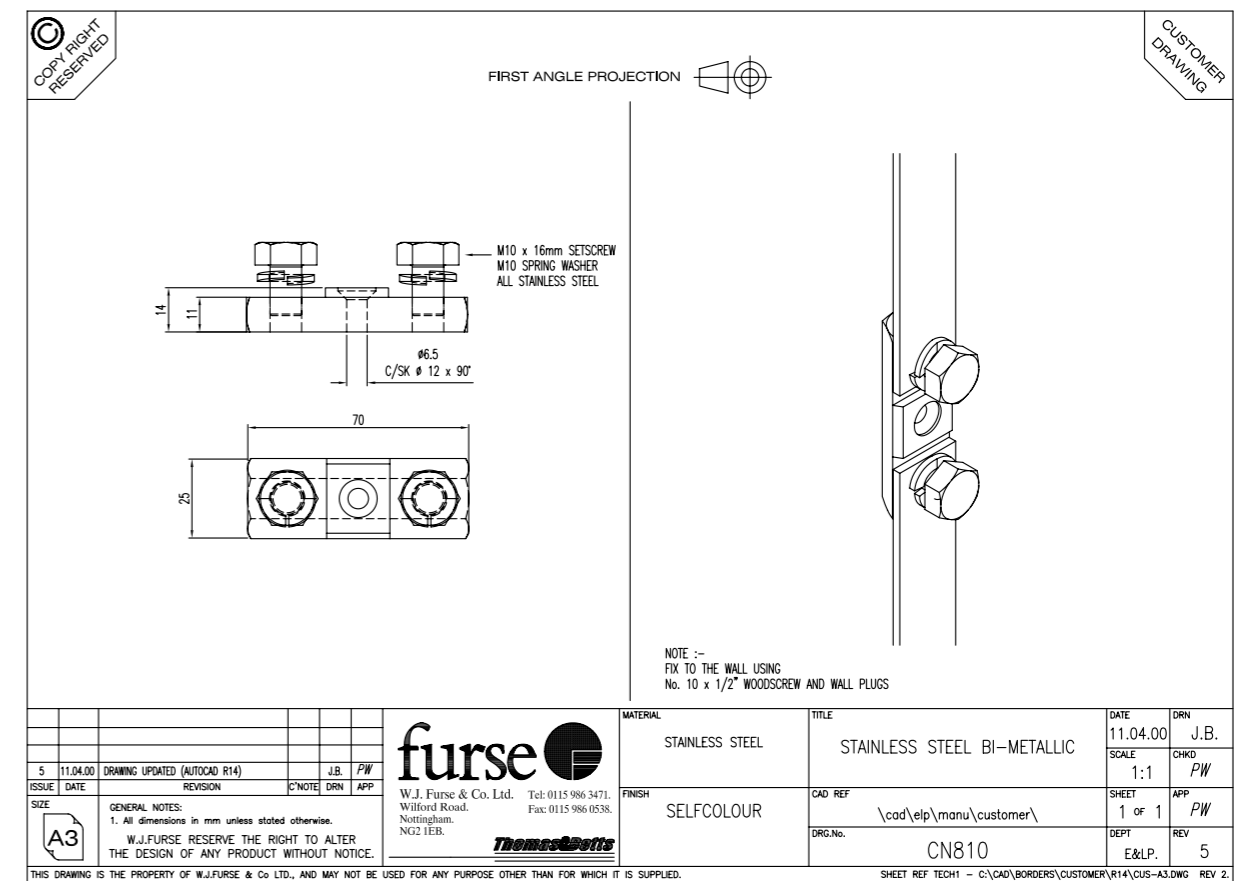
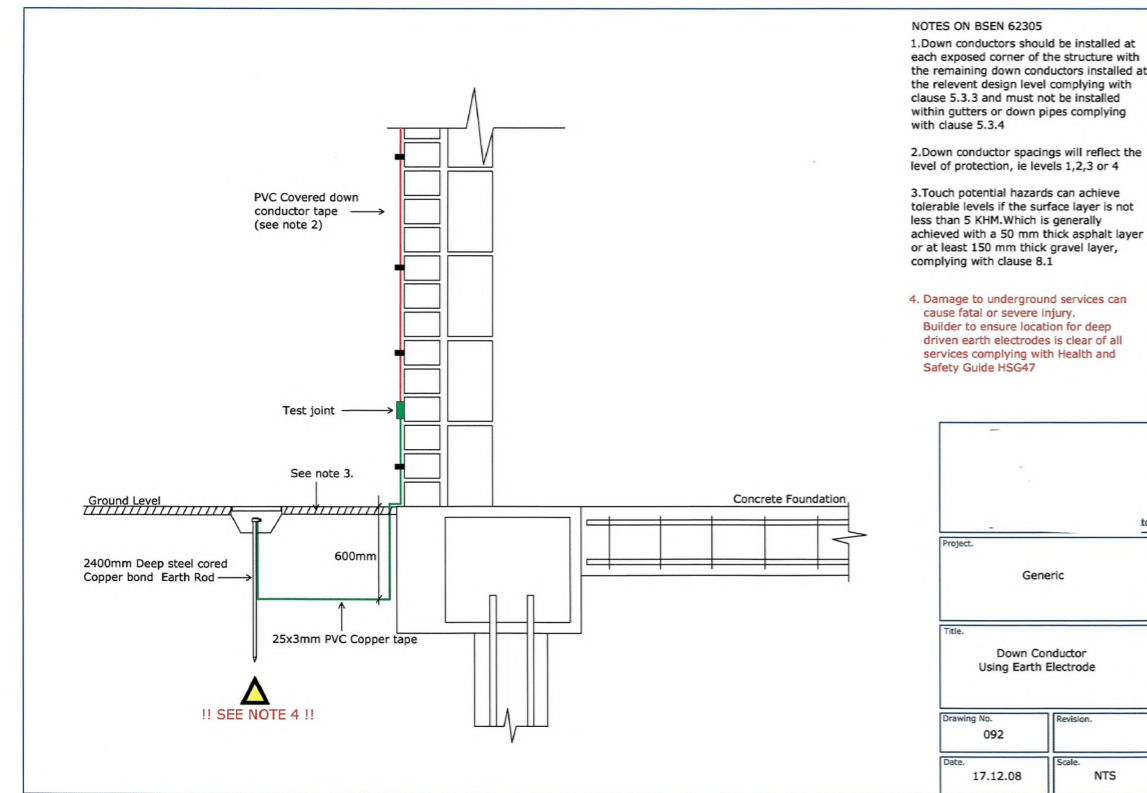
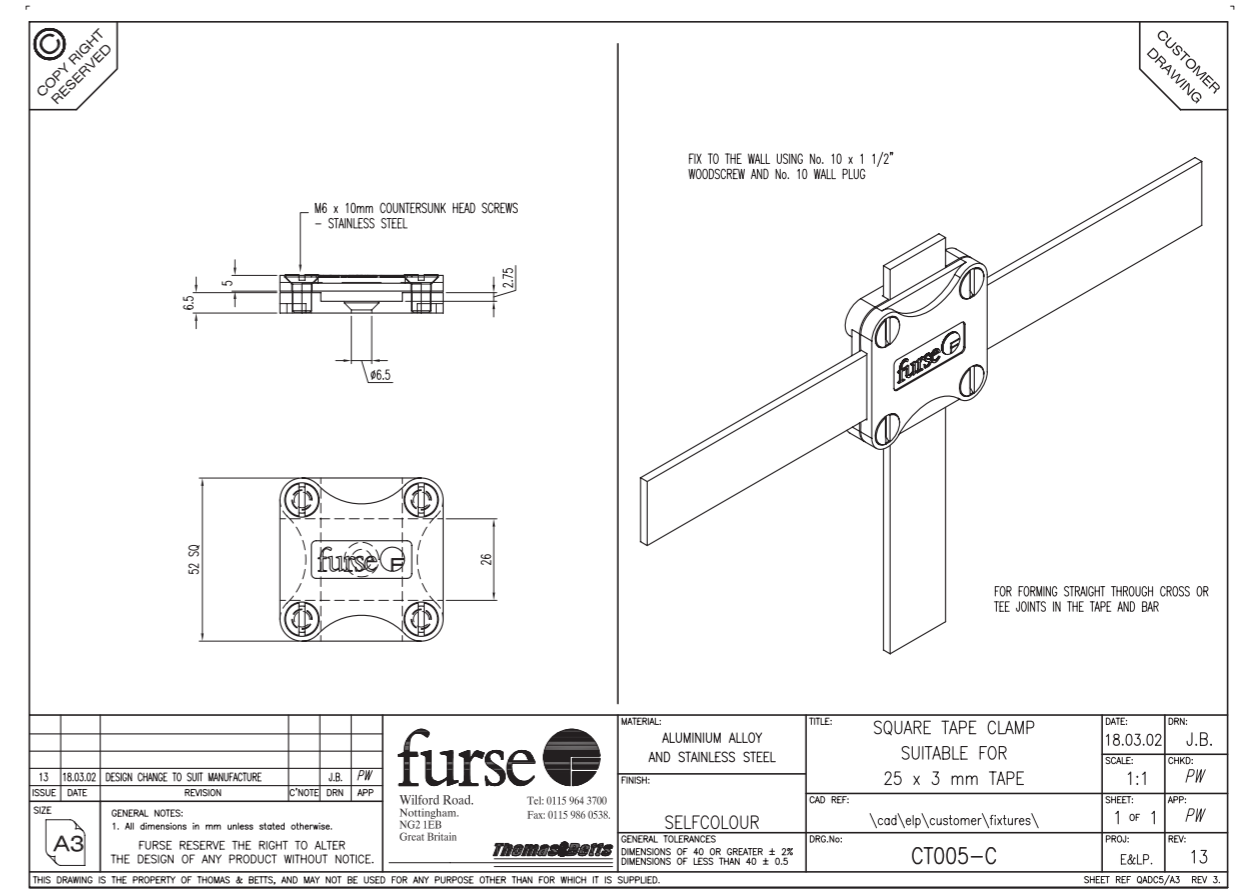
- High grade Polypropylene, UV stabilized against degradation by sunlight and non-brittle to prevent cold weather damage
- Available in five colours to match bare and PVC covered copper and aluminium solid circular conductors
- Fix using countersunk wood screws 1½" No. 10 or M6 (Part no. SW005 or SW105) and wall plugs (Part no. PS305)
- \*PVC covered Ø8 mm conductor

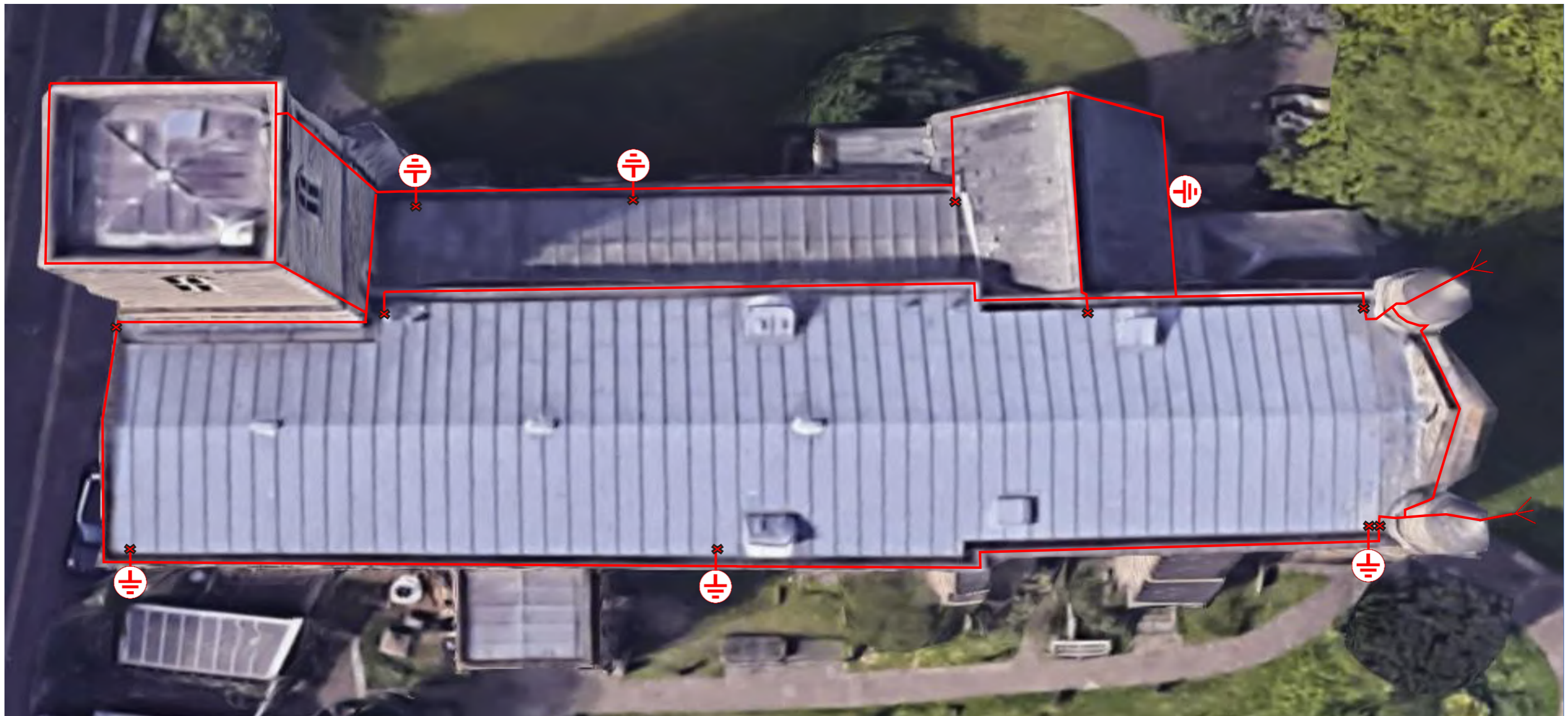


Appendix 02- Conductor/Down Conductor Details



Appendix 03- Conductor Fixing Details





<p><b>NOTES</b></p>	<p><b>LEGEND</b></p> <ul style="list-style-type: none"> <li><span style="color: red; font-weight: bold;">—</span> 25 x 3mm PVC sheathed aluminium conductor</li> <li> 300x300mm 25x3mm bare copper lattice earth mat</li> <li> 1m Aluminium air finials with side mounted bases</li> <li> Bond to the metallic roof surface, utilised as its own conductor</li> </ul>	 <p style="font-size: 8px; margin-top: 5px;">THIS DRAWING IS THE COPYRIGHT OF BACON LIGHTNING PROTECTION &amp; MAINTENANCE LTD AND MUST NOT BE REPRODUCED IN FULL OR IN PART WITHOUT THE WRITTEN PERMISSION OF BACON GROUP ON BEHALF OF THE COPYRIGHT HOLDER.</p>	<p>Bacon Lightning Protection and Maintenance Ltd Unit 7a, West Station Business Park, Spital Road Maldon, Essex, CM9 6FF</p> <p>Tel: 01621 230100 website: <a href="http://www.bacongroup.co.uk">www.bacongroup.co.uk</a> Email: <a href="mailto:sales@bacongroup.co.uk">sales@bacongroup.co.uk</a></p>		<p>PROJECT No <b>J9271</b></p>	<p><b>SCOPE OF WORKS</b></p> <p>To carry out the design, supply and installation of a structural lightning protection system, in accordance with the tender information provided and the recommendations of BS EN 62305-3. System to protect against the primary risk of loss of human life.</p>
			<p>PROJECT NAME St Edmund Hall, Library</p>	<p>DRAWING TITLE Library, St Edmund Hall, University of Oxford, Queen's Lane (Oxford)</p>	<p>DATE 06-05-2023</p>	



## Conductors

By far the largest and most important component of any earthing or structural lightning protection system is the actual conductor.

Furse offer a comprehensive range of copper and aluminium conductors in each of the main world standard formats, ie flat tape, solid circular and stranded.

### Conductor colour chart

The choice of a lightning protection conductor is usually governed by its aesthetic impact on the structure to be protected. For many people the term lightning conductor conjures up an image of a bright green strip running down the spire of a church. This would clearly be unacceptable to the owner / architect of a modern structure.

In order to reduce the impact of an external system Furse offer a range of UV stabilised PVC covered tapes and solid circular conductors in colours chosen to match common building materials.

<b>Black</b>	<b>18B29*</b>	
<b>Green</b>	<b>BS 6746C</b>	
<b>Grey</b>	<b>00A07*</b>	
<b>Stone</b>	<b>08B23*</b>	
<b>White</b>	<b>10B15*</b>	
<b>Brown</b>	<b>06C39*</b>	

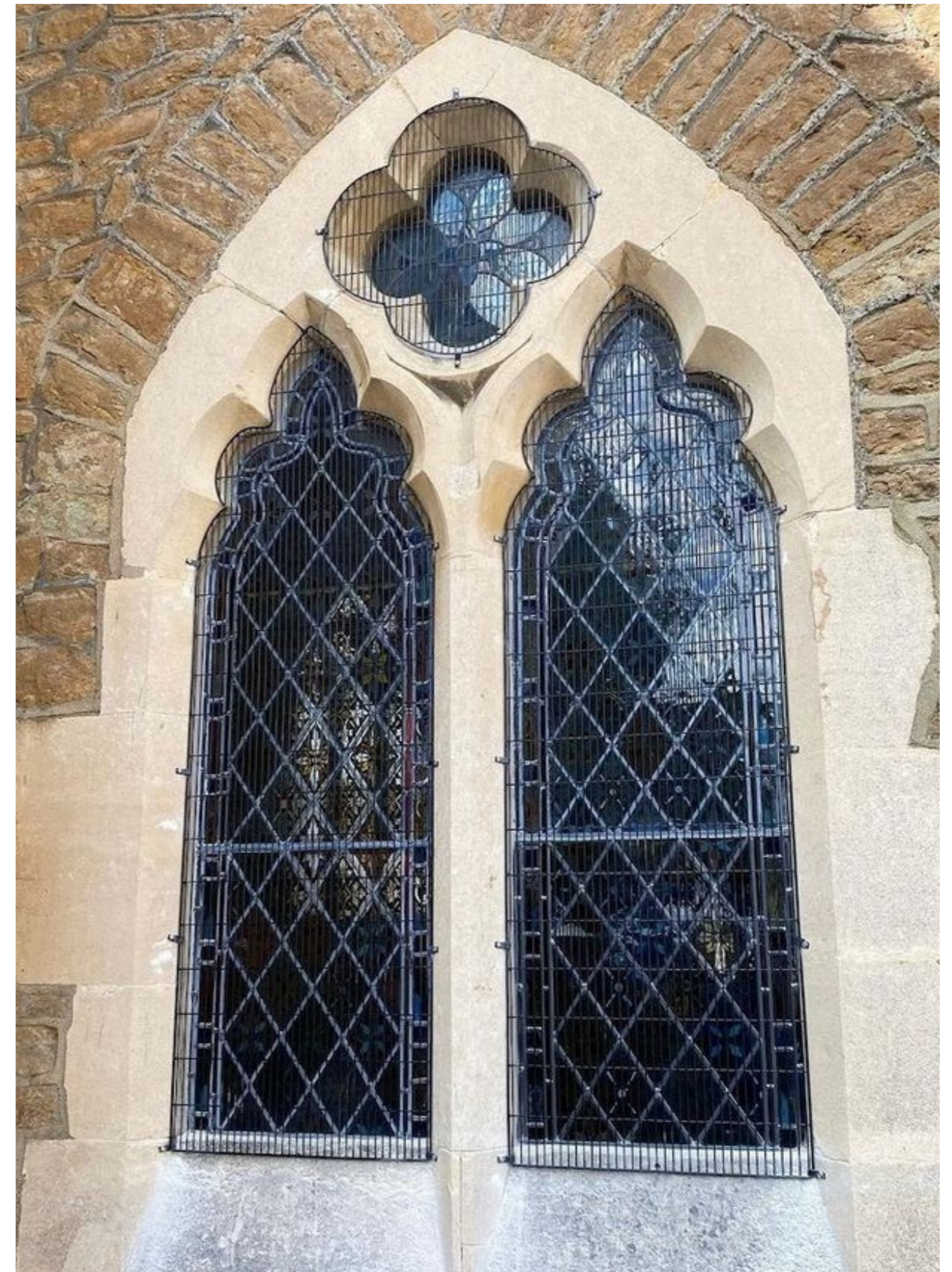
\* PVC colours to BS 5252

### Copper conductor ratings

For below ground earthing applications Furse produce a large range of bare copper, tape and stranded conductors thus offering the designer of the system the correctly rated conductor without the need to oversize.

The following conductor ratings are based upon the recommendations of BS 7430 with an initial conductor temperature of 30°C and a maximum temperature of 250°C.

Conductor size	C.S.A. (mm <sup>2</sup> )	kA for 1 sec	kA for 3 sec	Conductor size	C.S.A. (mm <sup>2</sup> )	kA for 1 sec	kA for 3 sec
12.5 x 1.5mm	18.75	3.3	1.9	31 x 6mm	186	32.7	18.9
12.5 x 3mm	37.5	6.6	3.8	38 x 3mm	114	20.1	11.6
20 x 1.5mm	30	5.3	3.0	38 x 5mm	190	33.4	19.3
20 x 3mm	60	10.6	6.1	38 x 6mm	228	40.1	23.2
25 x 1.5mm	37.5	6.6	3.8	40 x 3mm	120	21.1	12.2
25 x 3mm	75	13.2	7.6	40 x 4mm	160	28.2	16.3
25 x 4mm	100	17.6	10.2	40 x 5mm	200	35.2	20.3
25 x 6mm	150	26.4	15.2	40 x 6mm	240	42.2	24.4
30 x 2mm	60	10.6	6.1	40 x 6.3mm	252	44.4	25.6
30 x 3mm	90	15.8	9.1	50 x 3mm	150	26.4	15.2
30 x 4mm	120	21.1	12.2	50 x 4mm	200	35.2	20.3
30 x 5mm	150	26.4	15.2	50 x 5mm	250	44.0	25.4
31 x 3mm	93	16.4	9.5	50 x 6mm	300	52.8	30.5
31.5 x 4mm	126	22.2	12.8	50 x 6.3mm	315	55.4	32.0



All information on window guards can be found on the manufacturer's website:

<https://www.lead-windows.co.uk/services/window-guards>