


## KESKIDEE SQUARE, PLOT S4 PUBLIC REALM - LIGHTING TYPE X-A DETAILS

Refer to ALD931\_MP015 for Light Location

Lighting Code	Light Type	Location	No.	Details	Photo / Visualisation
X-A	Façade Mounted Light	To S4 building	12no. Total	Refer to the following information package for all details	 <p data-bbox="2015 1402 2709 1459">Above image shows the light fitting alongside the specified RAL colour RAL 6011-HR</p>

Last information update: March 2023

**Product configuration: ALW3**

ALW3: Wall-mounted, Transversal Asymmetric Comfort Optic, Warm LED, DALI 220-240V ac

**Product code**

ALW3: Wall-mounted, Transversal Asymmetric Comfort Optic, Warm LED, DALI 220-240V ac

**Technical description**

Direct light luminaire, designed to use monochrome LED lamps. It consists of a body, an optical assembly and a base for fixing it to the wall. Optical assembly and die-cast aluminium glass-holder frame. 5mm thick tempered sodium-calcium closing glass with black serigraphy. Comfort prismatic glass with black serigraphy. Body and optical assembly subjected to a multi-step, pre-treatment process, in which the main phases are degreasing, fluorozirconation (a protective surface film) and sealing (with a nano-structured silane layer). The following painting stage consists of a primer and a liquid acrylic paint, cured at 150°C, with a high level of weather and UV ray resistance. Transversal Asymmetric Comfort Optic (AT) with high performance Opti-smart reflectors in superpure aluminium coated with silver deposits offering uniform light distribution. Both the LED unit and the ballast may be substituted. Optical assembly complete with electronic control gear and output power cable. IP68 connectors to be ordered separately are required for the electrical connection. All the screws used are made of A2 stainless steel.

**Installation**

Wall-mounted with screw anchors not supplied with the product.

**Colour**

White (01) | Black (04) | Grey (15) | Rust Brown (F5)

**Weight (Kg)**

2.5

**Mounting**

wall surface

**Wiring**

Product complete with DALI 220÷240V ac electronic control gear.

**Notes**

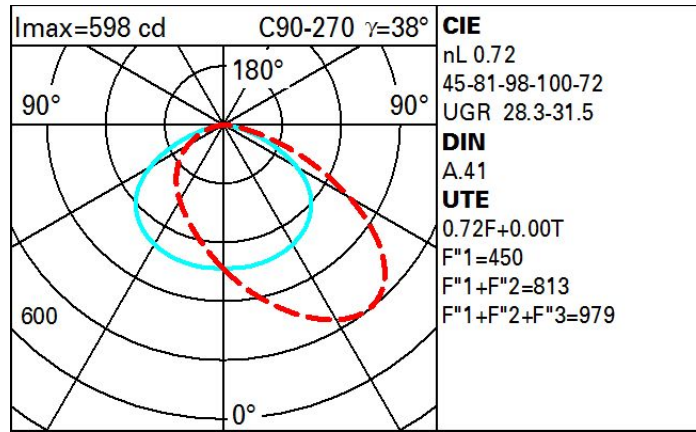
Overvoltage protection: 4kV in Common Mode (CM), 2kV in Differential Mode (DM). • The SPD accessory (JAL6) increases overvoltage protection to 6kV/10kV (CM/DM).

Complies with EN60598-1 and pertinent regulations

**Technical data**

lm system:	1296	Ballast losses [W]:	2.8
W system:	13.8	Voltage [Vin]:	230
lm source:	1800	Lamp code:	LED
W source:	11	Number of lamps for optical assembly:	1
Luminous efficiency (lm/W, real value):	93.9	ZVEI Code:	LED
lm in emergency mode:	-	Number of optical assemblies:	1
Total light flux at or above an angle of 90° [Lm]:	0	Intervallo temperatura ambiente:	from -30°C to 50°C.
Light Output Ratio (L.O.R.) [%]:	72	Power factor:	See installation instructions
CRI (minimum):	80	Inrush current:	5 A / 50 µs
CRI (typical):	82	Maximum number of luminaires of this type per miniature circuit breaker:	B10A: 31 luminaires B16A: 50 luminaires C10A: 52 luminaires C16A: 85 luminaires
Colour temperature [K]:	3000	Overvoltage protection:	4kV Common mode & 2kV Differential mode
MacAdam Step:	3	Dimming mode:	CCR
Life Time LED 1:	100,000h - L90 - B10 (Ta 25°C)	Control:	DALI
Life Time LED 2:	100,000h - L90 - B10 (Ta 40°C)		

Polar



# 11266

## KINGS CROSS S4 (PROJECTING SIGNS)

REVISION	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
P01	30.05.2023	PRELIMINARY ISSUE	AK	JBP
P02	05.07.2023	UPDATE AS PER MARK UP RECEIVED 08.06.2023	AK	JBP
P03	07.08.2023	UPDATE AS PER MARK UP RECIEVED 06.07.2023	AK	JBP

Document Includes details for light fitting XA  
Relevant is highlighted in blue  
Issued for Planning Approval



SIGN TYPE 05 - (AMT-046) - PROJECTING SIGNS



INDICATIVE 3D VISUAL

TYPE 05

Projecting retail signage with illuminated sides from backlit LED Opal light diffusing acrylic. Aluminium frame from 2" x 2" SHS with welded 8mm mounting plates. Digitally printed graphics on black out vinyl to be applied to acrylic face with cut outs illuminated. 3mm thick aluminium casing with 30mm retaining rim to hold acrylic. CSK fixed into main frame with colour matching fixings. 8mm thick folded stainless steel fin bracket to be bolted in through curtain wall, protruding out through aluminium panel by others.

**Type 'AMT-046'** - To have additional public realm lighting fixture installed on front face.

**Type 'L1'** - No public realm lighting fixture.

**Public realm lighting:** iQuizzini Lander ALW3.

**Fixing:** Mechanical

**Quantity:** 5NR. Type 'AMT-046' & 2NR. Type 'L1'

**Font:** Artwork TBC

**Colours:** PPC in RAL 6011-HR (Reseda Green)

Notes:

Colour References:

■ RAL 6011-HR

**FOR REVIEW**  
DO NOT MANUFACTURE  
FROM THIS DOCUMENT

Drawing No:

N/A

Revision:

P03

Start Date: 30/05/2023

Rev. Date: 07/08/2023

Drawn By: AK

Checked By: JBP

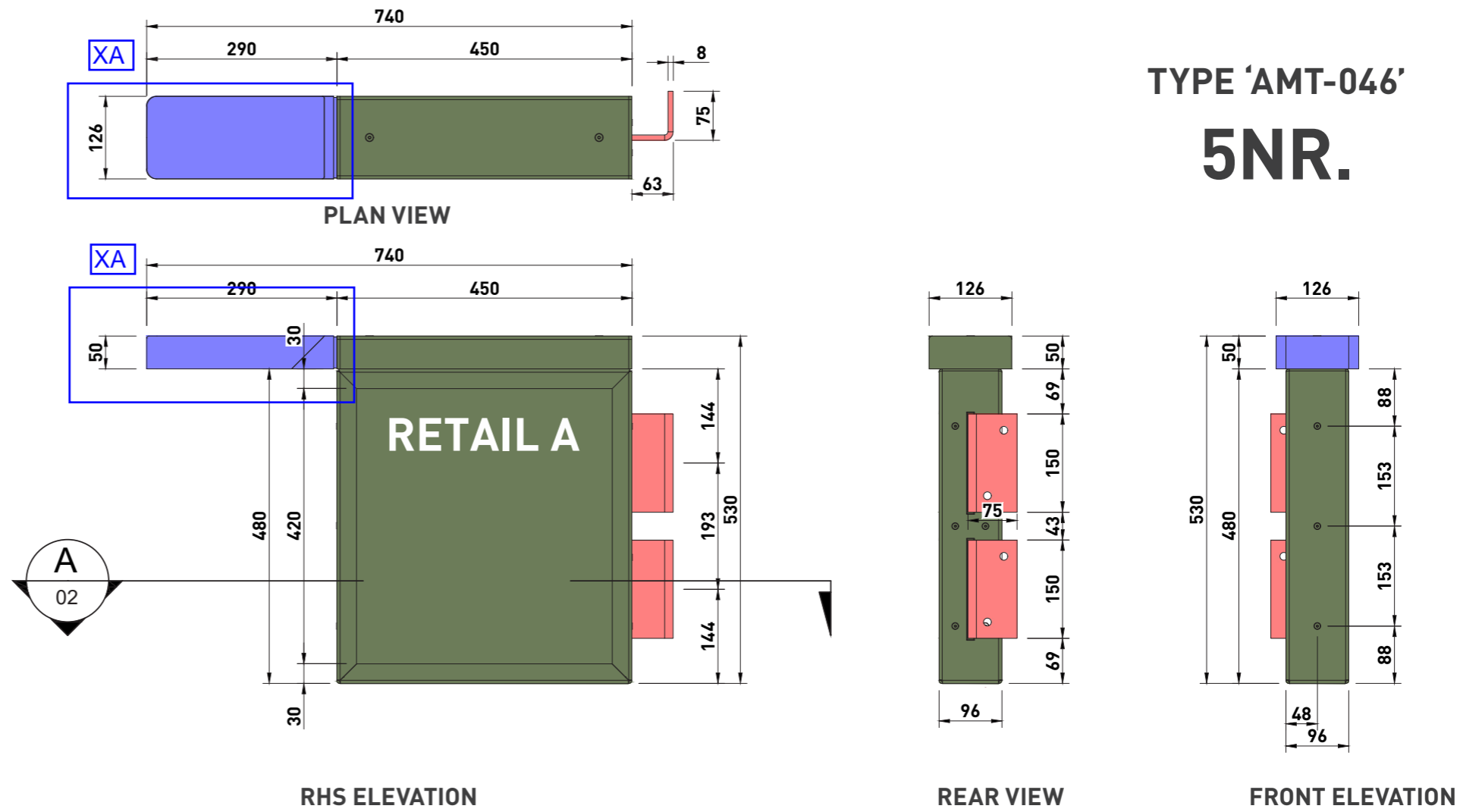
Client:

LAING OROURKE

Project:

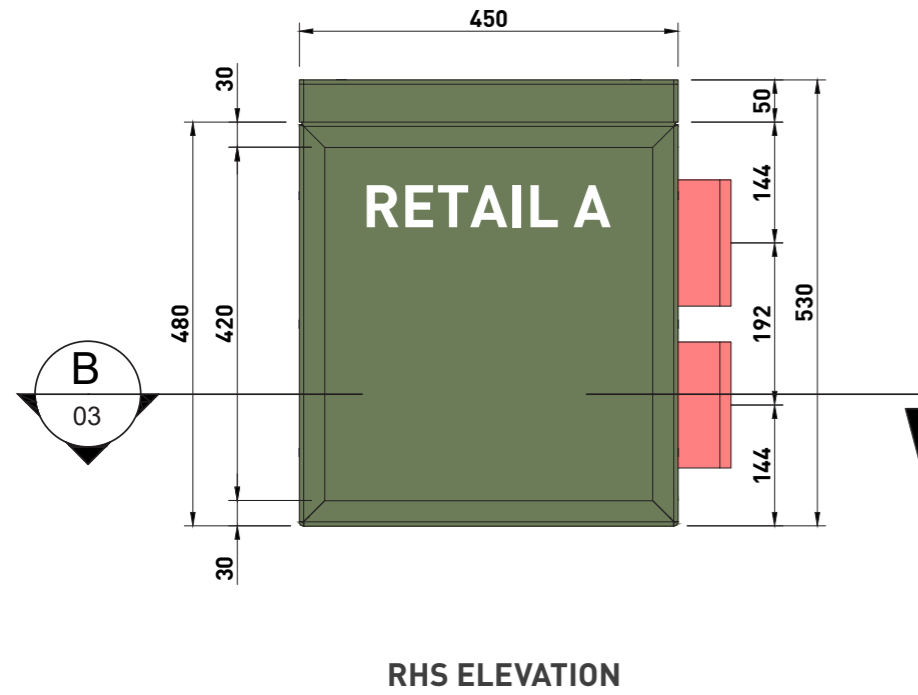
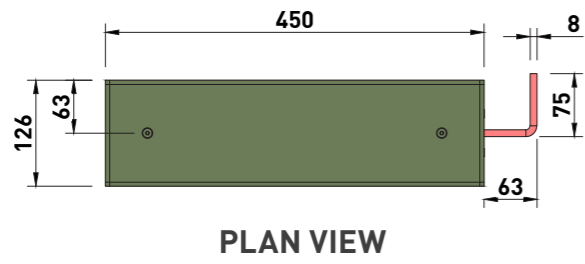
KING CROSS

TYPE 'AMT-046'  
5NR.

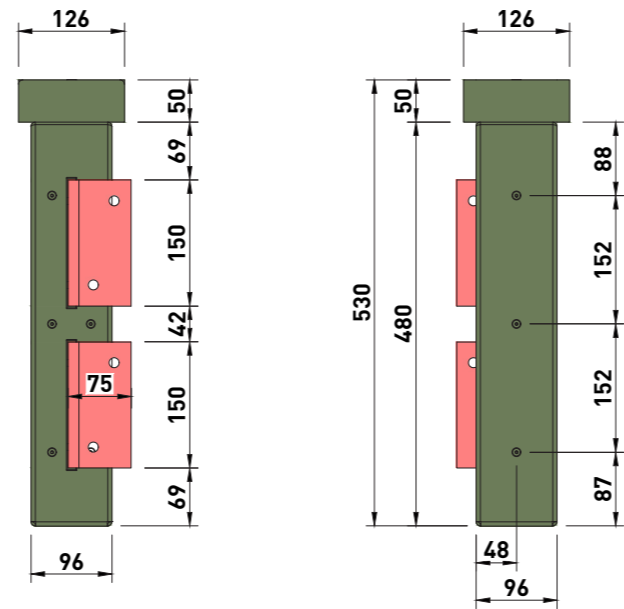


SECTION A-A

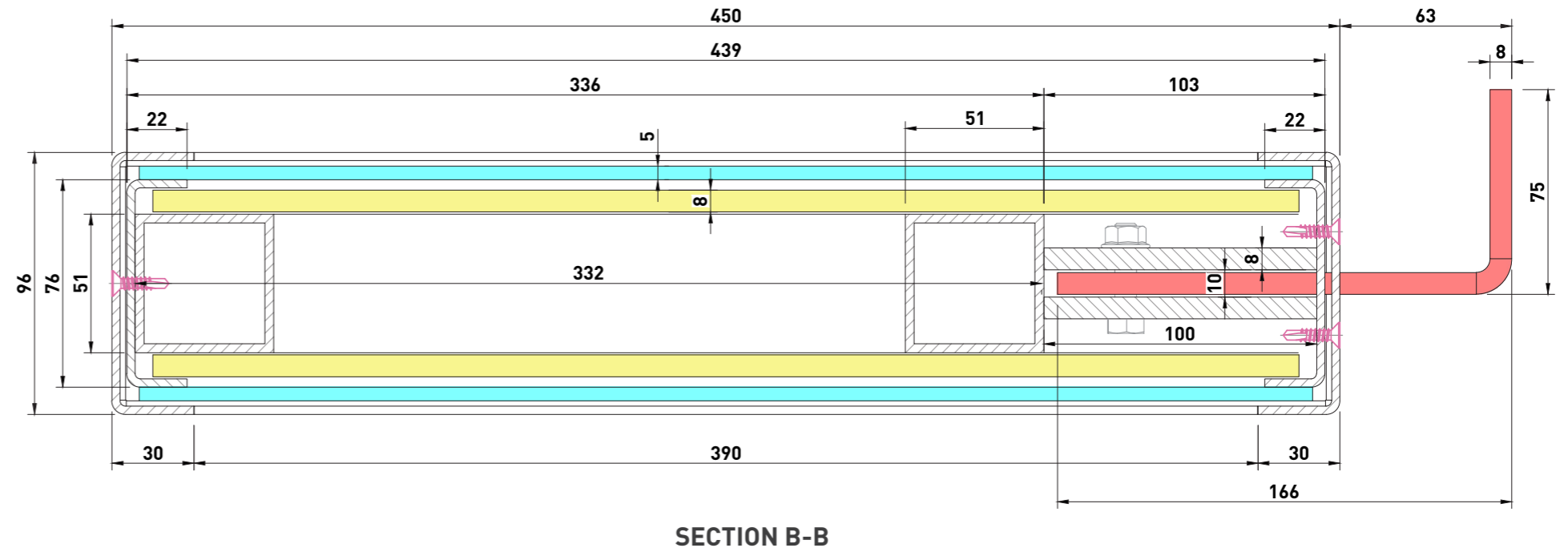
SIGN TYPE 05 - (L1) - PROJECTING SIGNS



TYPE 'L1'  
2NR.



REAR VIEW FRONT ELEVATION



Notes:

Colour References:

RAL 6011-HR

**FOR REVIEW**  
DO NOT MANUFACTURE  
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Drawing No:

N/A

Revision:

P03

Start Date: 30/05/2023

Rev. Date: 07/08/2023

Drawn By: AK

Checked By: JBP

Client:

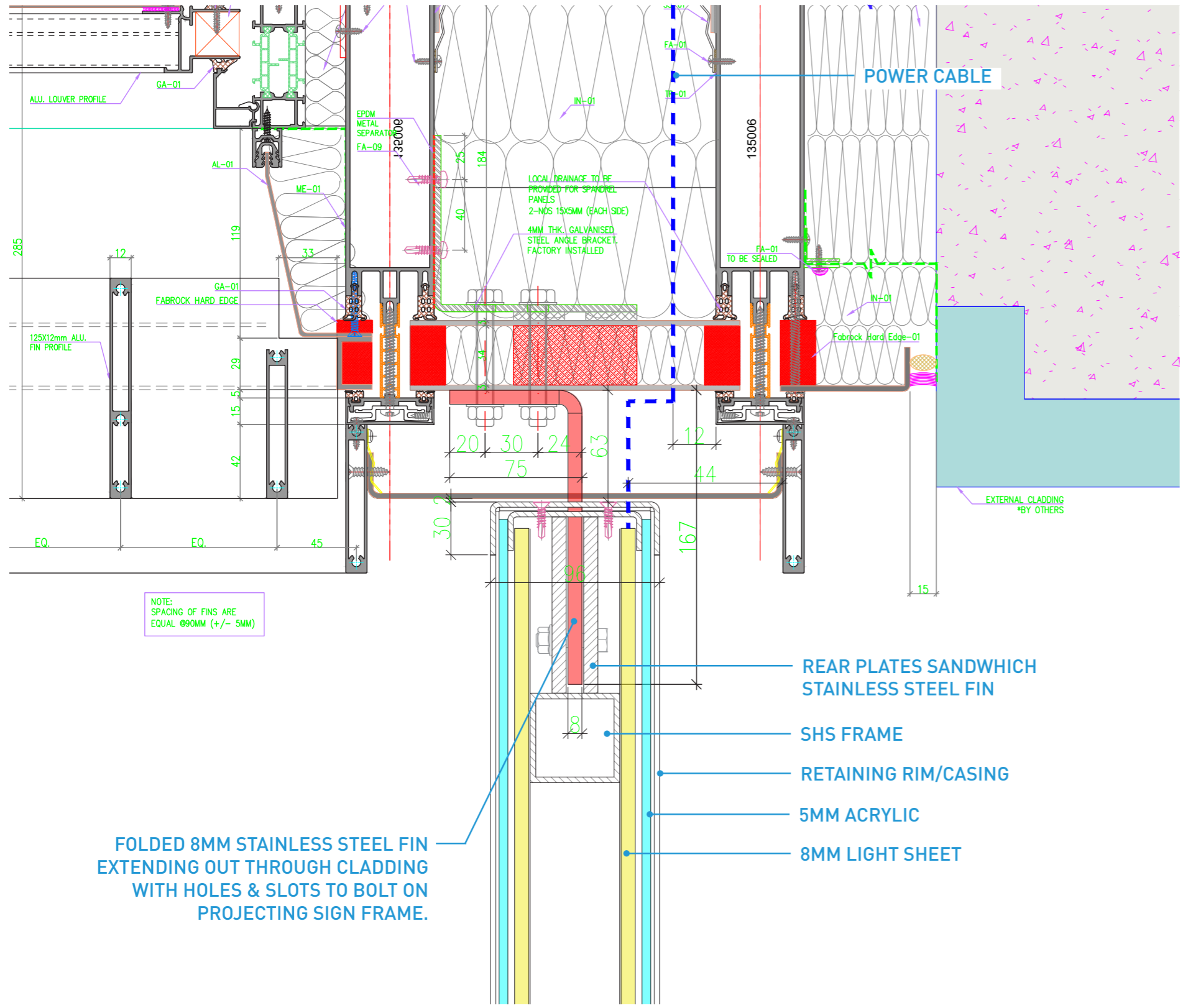
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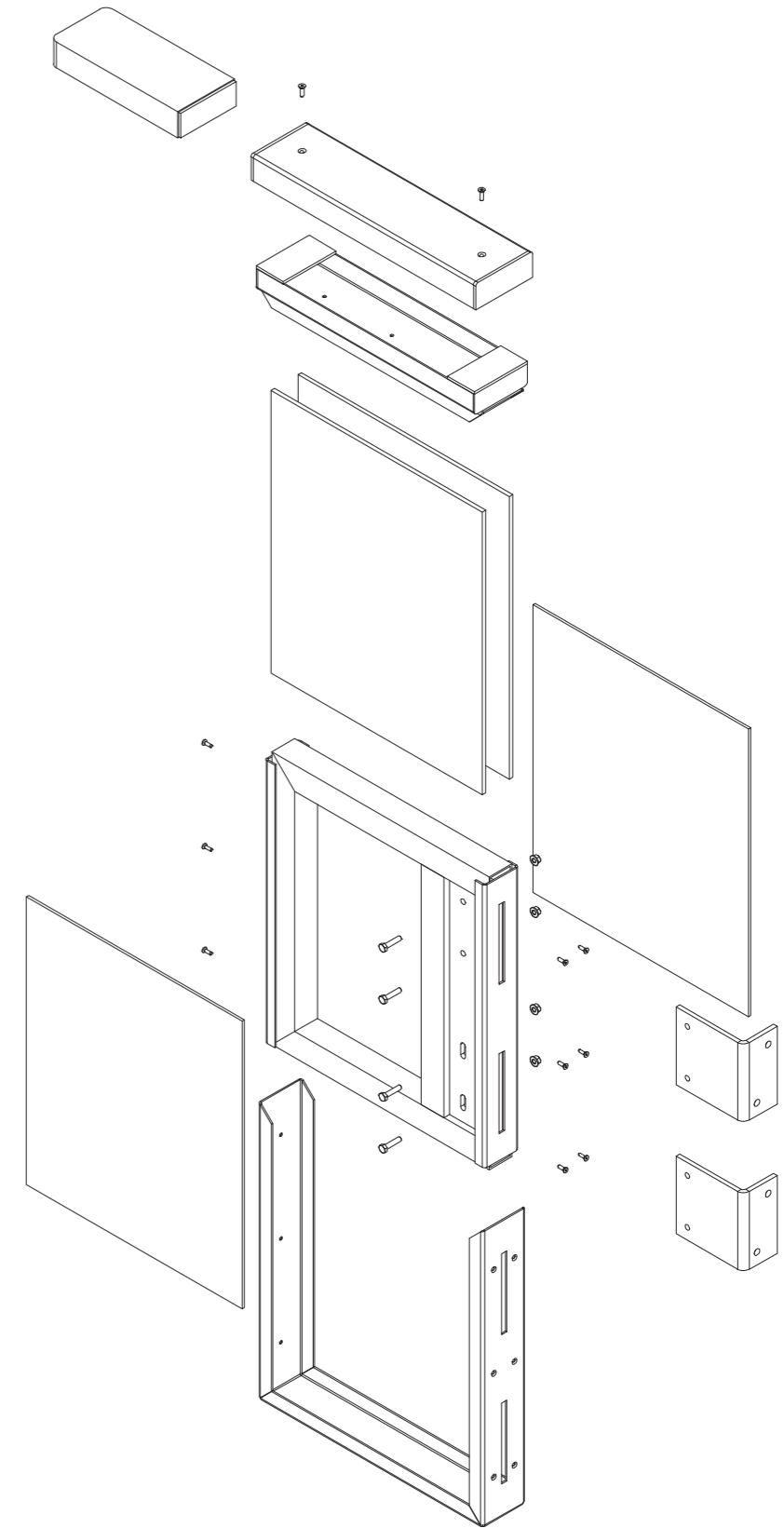
KING CROSS



SIGN TYPE 05 - PROJECTING SIGNS



TYP. CONNECTION DETAIL 01



TYP. EXPLODED VIEW (TYPE '1A')

Notes:

Colour References:

■ RAL 6011-HR

**FOR REVIEW**  
DO NOT MANUFACTURE  
FROM THIS DOCUMENT

Drawing No:

N/A

Revision:

P03

Start Date: 30/05/2023

Rev. Date: 07/08/2023

Drawn By: AK

Checked By: JBP

Client:

LAING OROURKE

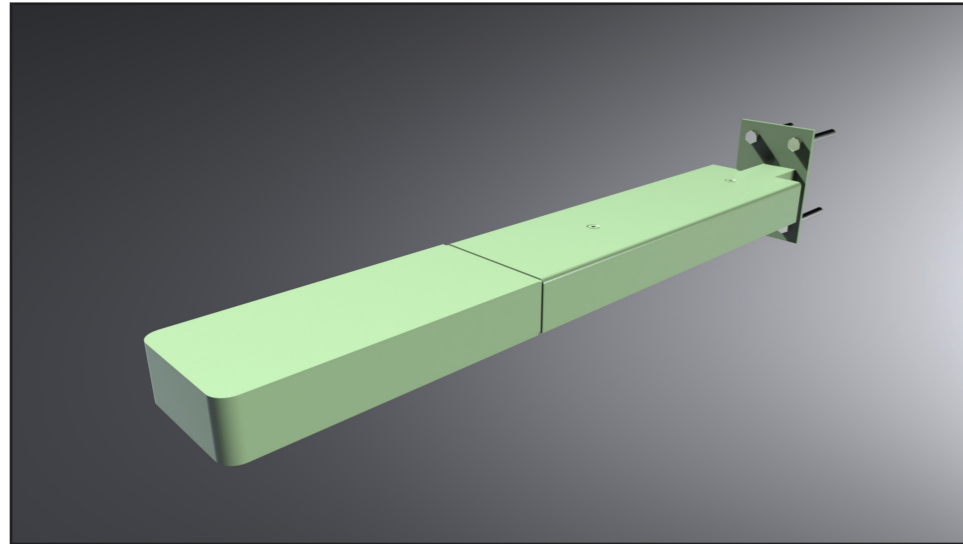
Project:

KING CROSS

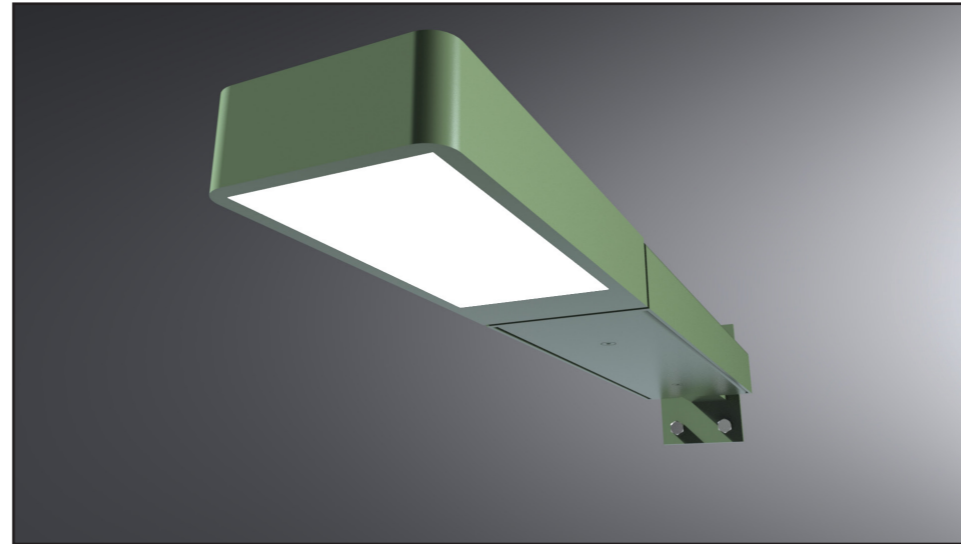


ARM SUB ASSEMBLY

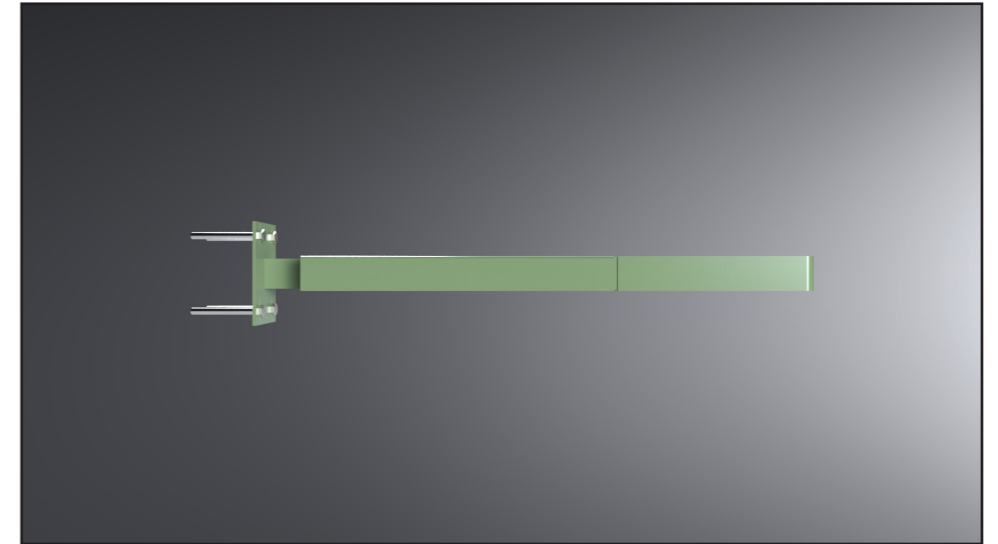
XA



3D VISUAL 1



3D VISUAL 2



3D VISUAL 3

ARM

Projecting arm, fabricated from aluminium SHS & folded 3mm thick channels. All fixing plates 5mm thick. First fix Arm 1 bolted through curtain wall. Arm 2 slots inside arm 1 & bolted through sides to secure. Bottom & top channels are fitted using colour coded CSK fixings into SHS. iQuizzini Lander ALW3 light fixed onto front 5mm thick plate.

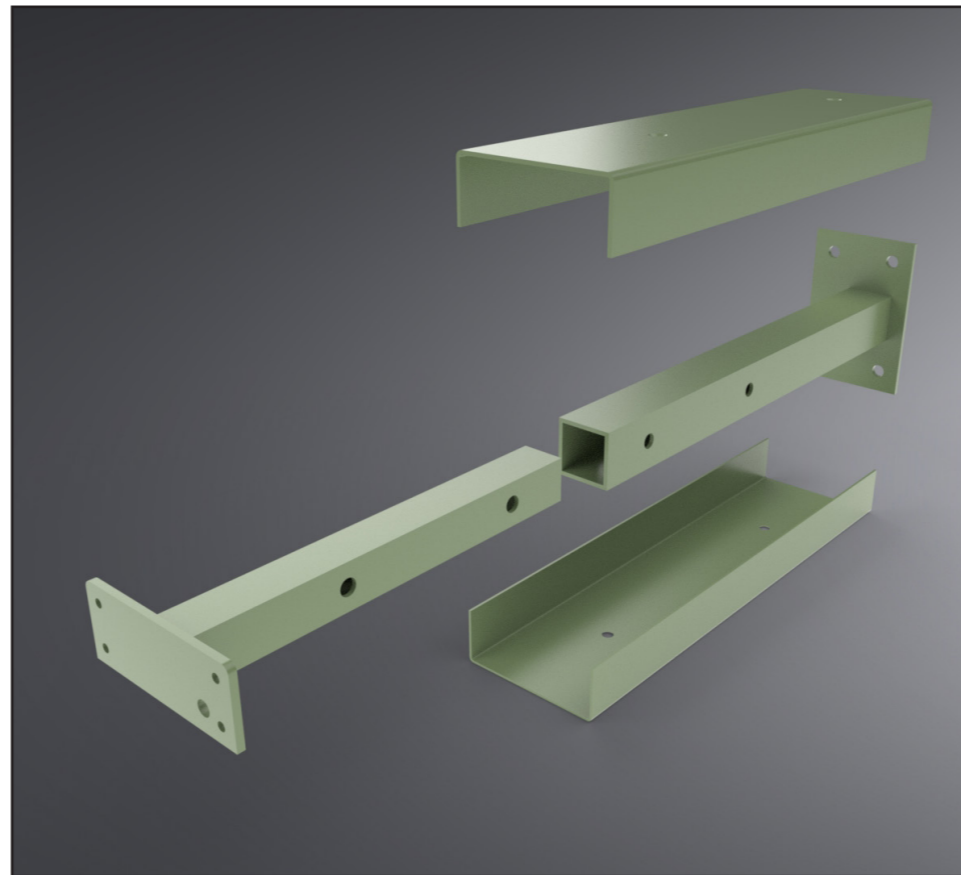
**Public realm lighting:** iQuizzini Lander ALW3. (2kg weight)

**Fixing:** Mechanical

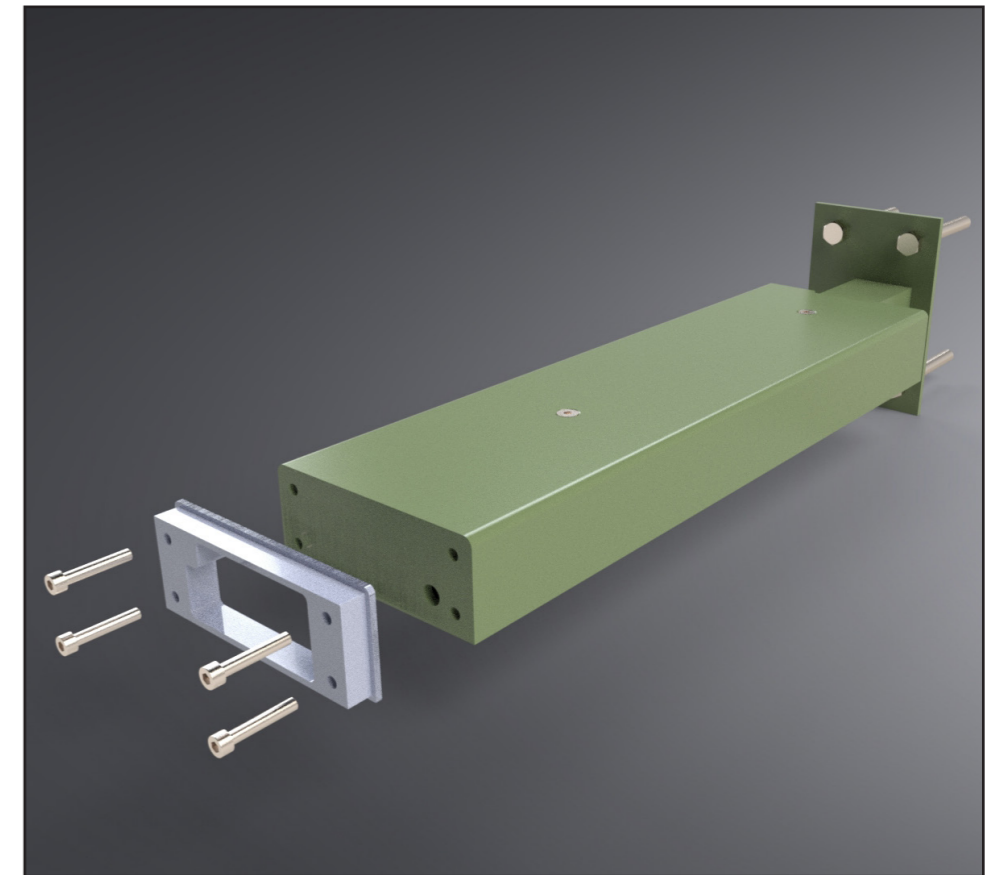
**Quantity:** 5NR. Type 'AMT-046' - 2NR. Type 'L1' - 10NR. arms

**Font:** Artwork TBC

**Colours:** PPC in RAL 6011-HR (Reseda Green)



3D VISUAL 4



3D VISUAL 5

Notes:

Colour References:

 RAL 6011-HR

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Drawing No:

N/A

Revision:

P03

Start Date: 30/05/2023

Rev. Date: 07/08/2023

Drawn By: AK

Checked By: JBP

Client:

LAING OROURKE

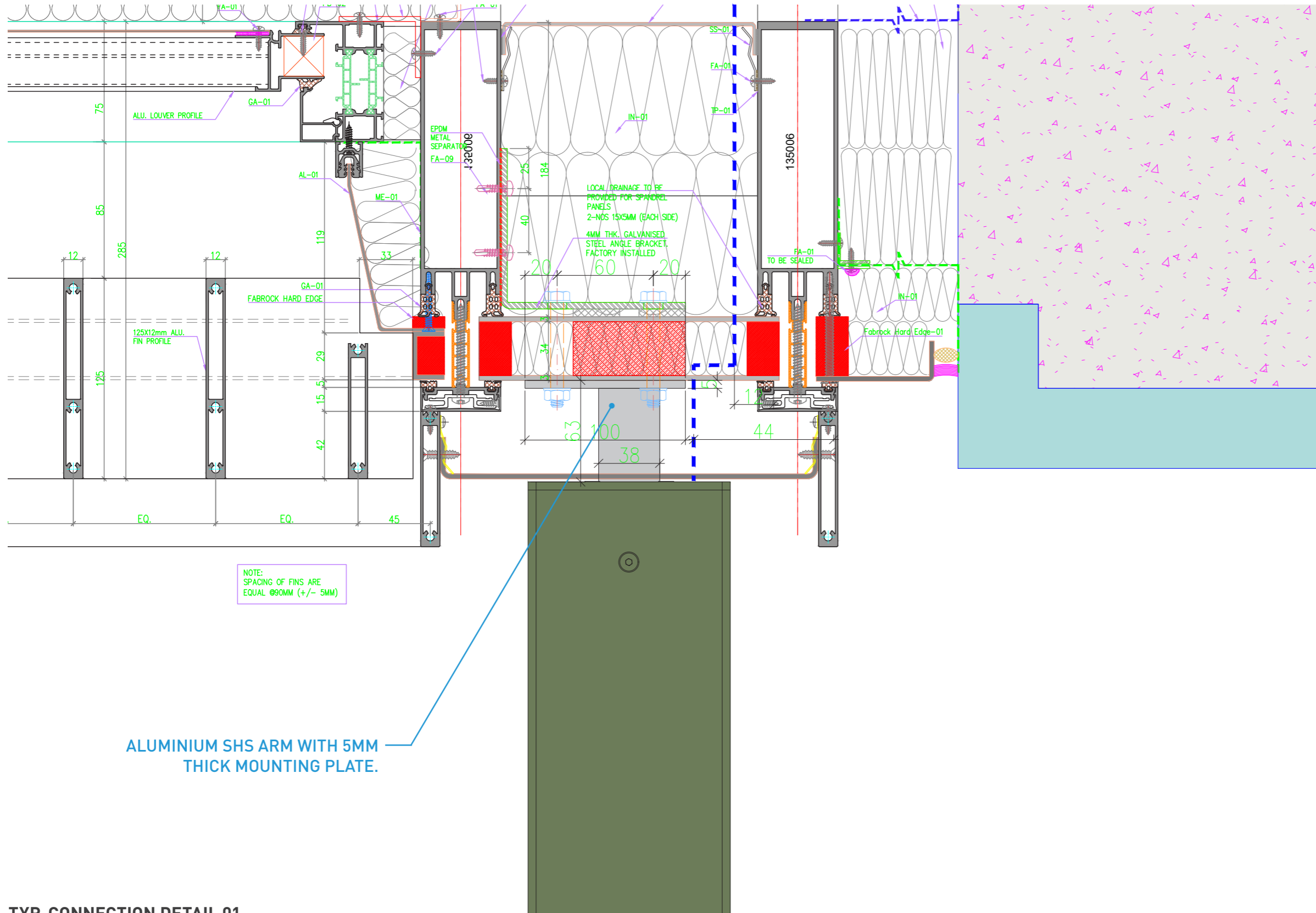
Project:

KING CROSS





ARM SUB ASSEMBLY



TYP. CONNECTION DETAIL 01

Notes:

Colour References:

RAL 6011-HR

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FROM THIS DOCUMENT

Drawing No:

N/A

Revision:

P03

Start Date: 30/05/2023

Rev. Date: 07/08/2023

Drawn By: AK

Checked By: JBP

Client:

LAING OROURKE

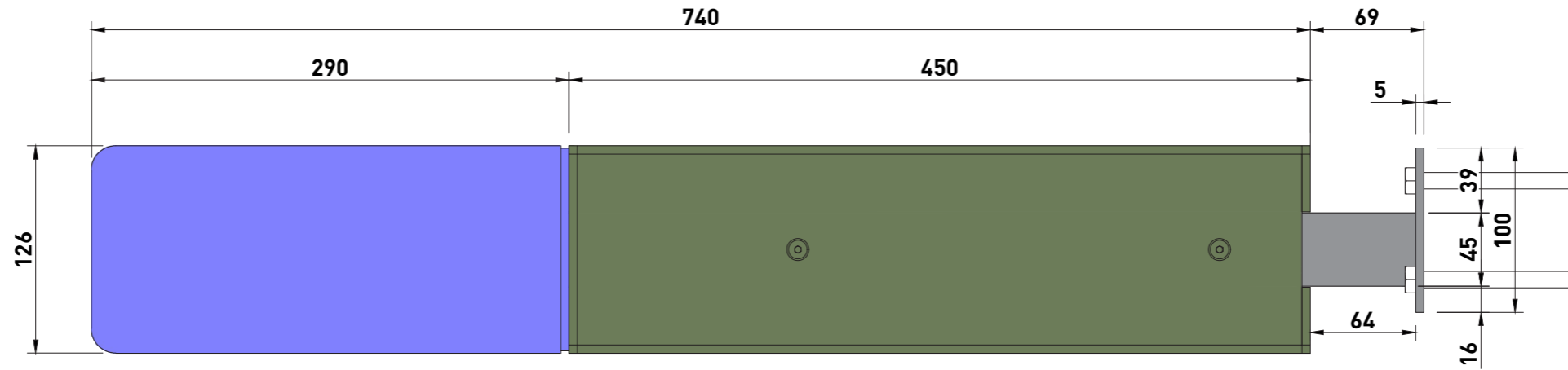
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KING CROSS

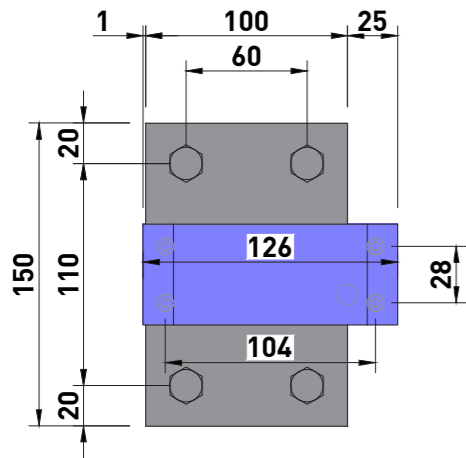


ARM SUB ASSEMBLY

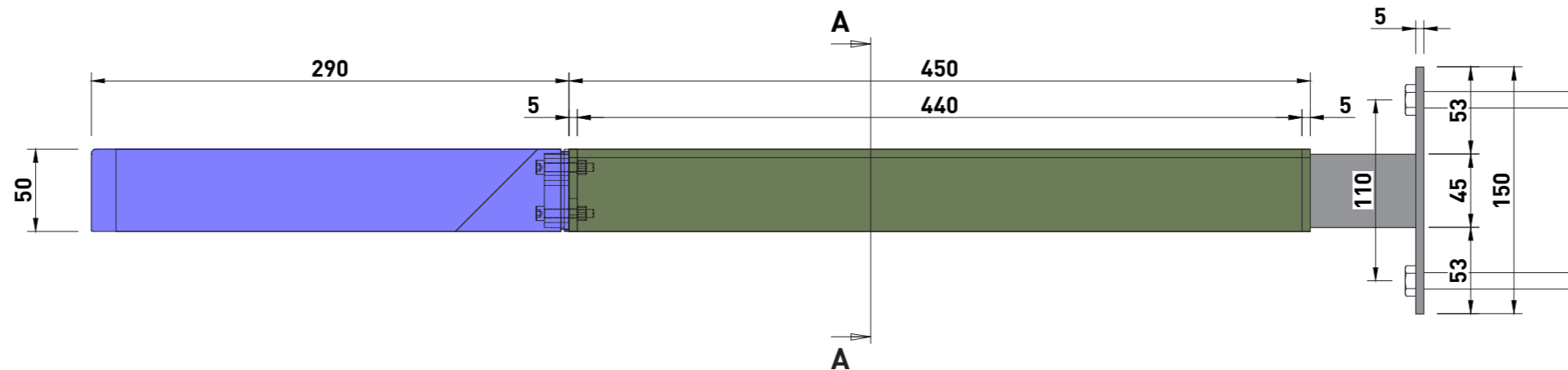
XA



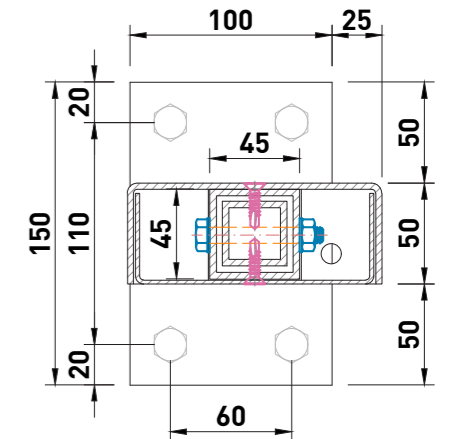
PLAN



FRONT ELEVATION



SIDE ELEVATION



SECTION A-A

Notes:

Colour References:

■ RAL 6011-HR

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FROM THIS DOCUMENT

Drawing No:

N/A

Revision:

P03

Start Date: 30/05/2023

Rev. Date: 07/08/2023

Drawn By: AK

Checked By: JBP

Client:

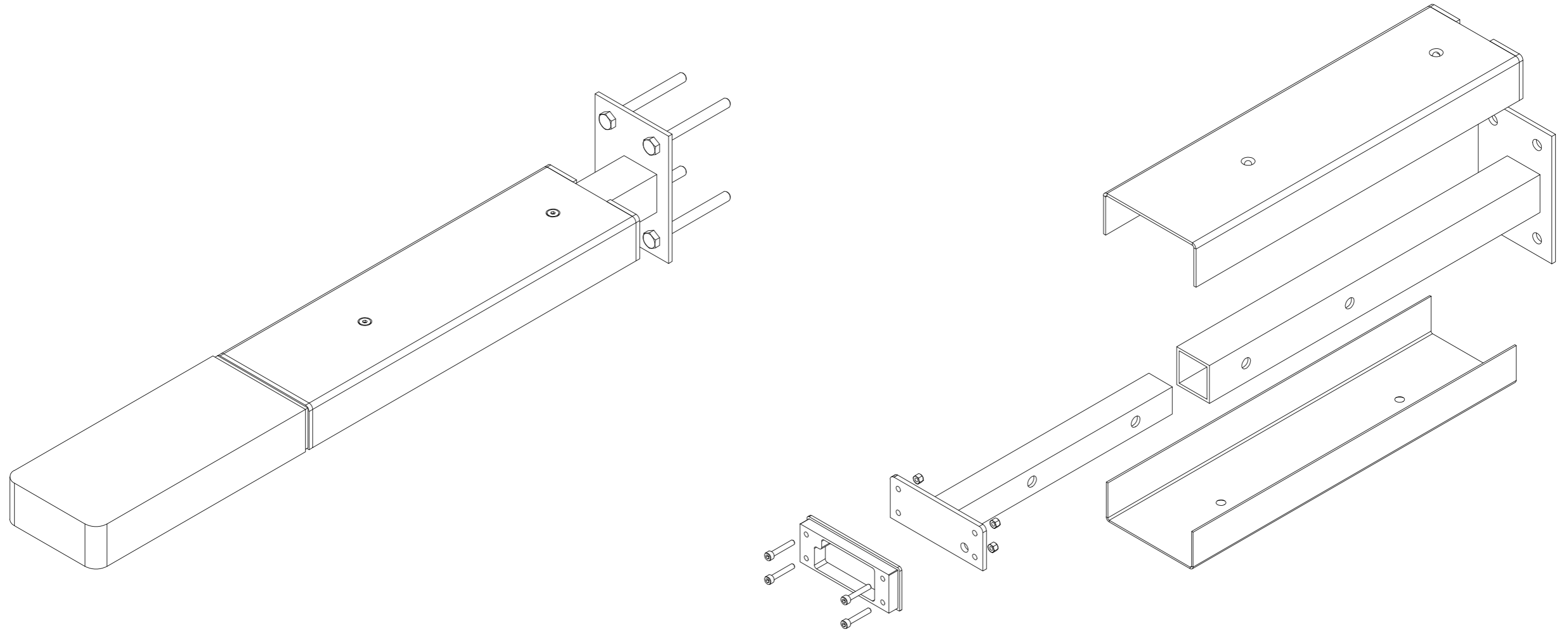
LAING OROURKE

Project:

KING CROSS



ARM SUB ASSEMBLY



Notes:

Colour References:

■ RAL 6011-HR

**FOR REVIEW**  
DO NOT MANUFACTURE  
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Drawing No:

N/A

Revision:

P03

Start Date: 30/05/2023

Rev. Date: 07/08/2023

Drawn By: AK

Checked By: JBP

Client:

LAING OROURKE

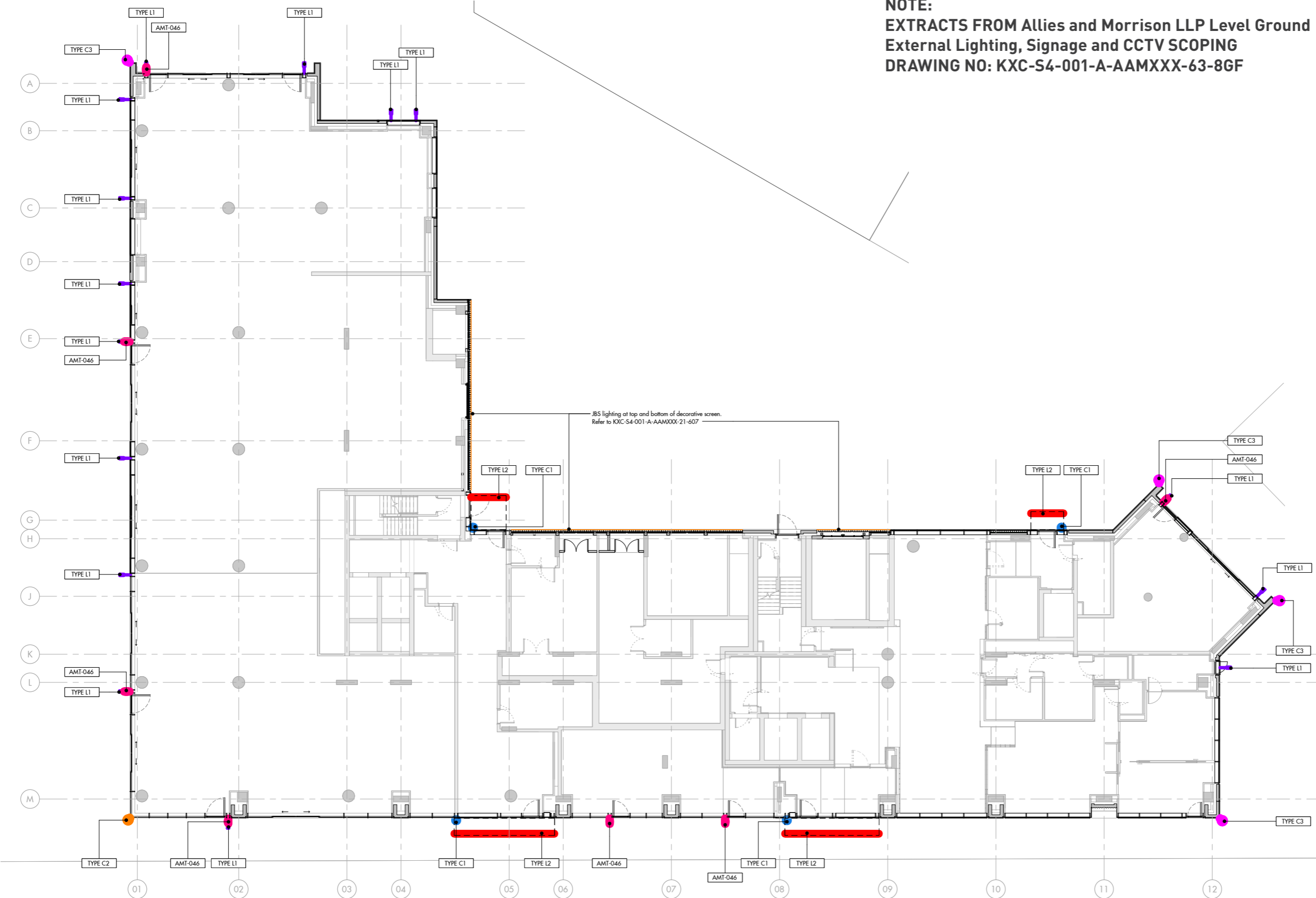
Project:

KING CROSS



SIGN TYPE 01 - PROJECTING SIGNS (LOCATION PLAN)

**NOTE:**  
**EXTRACTS FROM Allies and Morrison LLP Level Ground**  
**External Lighting, Signage and CCTV SCOPING**  
**DRAWING NO: KXC-S4-001-A-AAMXXX-63-8GF**



**External lighting**

XA	Hoare Lea spec code
Type L1	Missing from spec
Type L2	EX4
Type L3	EX1/EX12/EX13
Type L4	EX5
Type L5	EX3/EX6
Type L6	EX2
Type L7	Currently EX9 but spec to be updated. Lights similar to EX10
Type L8	EX10
Type L9	EX7
Type L10	EX8

**Signage**

XA	Ascot spec code
AMT-046	Sign type 05

**CCTV**

	Hoare Lea spec code
Type C1	Type B
Type C2	Type D - RAL 6011 HR
Type C3	Type D - RAL 7035 HR

**Notes:**

- Types C2 and C3 to have a bespoke bracket to interface with facade corners
- Type L4 has a cover plate AMT-026. Refer to drawing KXC-S4-001-A-AAMXXX-21-618
- Type L1 needs a bespoke tube extension bracket painted to RAL 6011 HR

**Notes:**

**Colour References:**

■ RAL 6011-HR

**FOR REVIEW**  
 DO NOT MANUFACTURE  
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**Drawing No:**

N/A

**Revision:**

P03

**Start Date:** 30/05/2023

**Rev. Date:** 07/08/2023

**Drawn By:** AK

**Checked By:** JBP

**Client:**

LAING OROURKE

**Project:**

KING CROSS




ASCOT<sub>EST. 1938</sub>  
IMAGINED

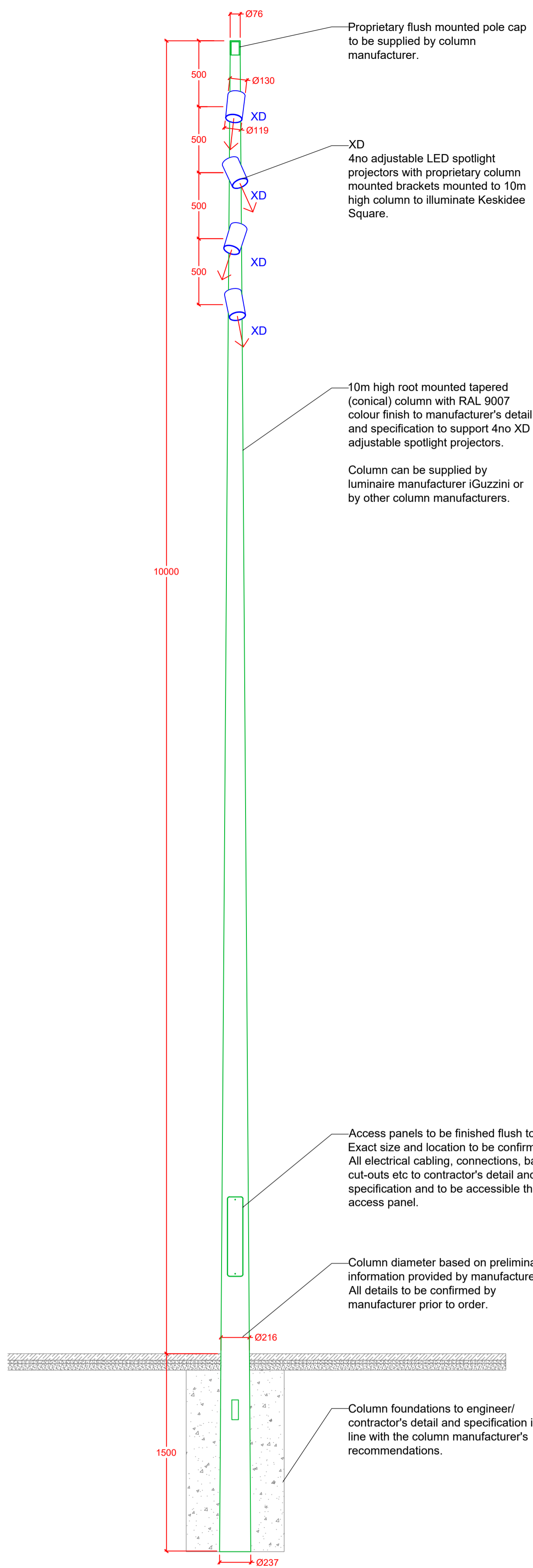
ARCHITECTURAL SIGNAGE & METALWORK

LONDON / BELFAST / LIVERPOOL / DUBLIN / DUSSELDORF

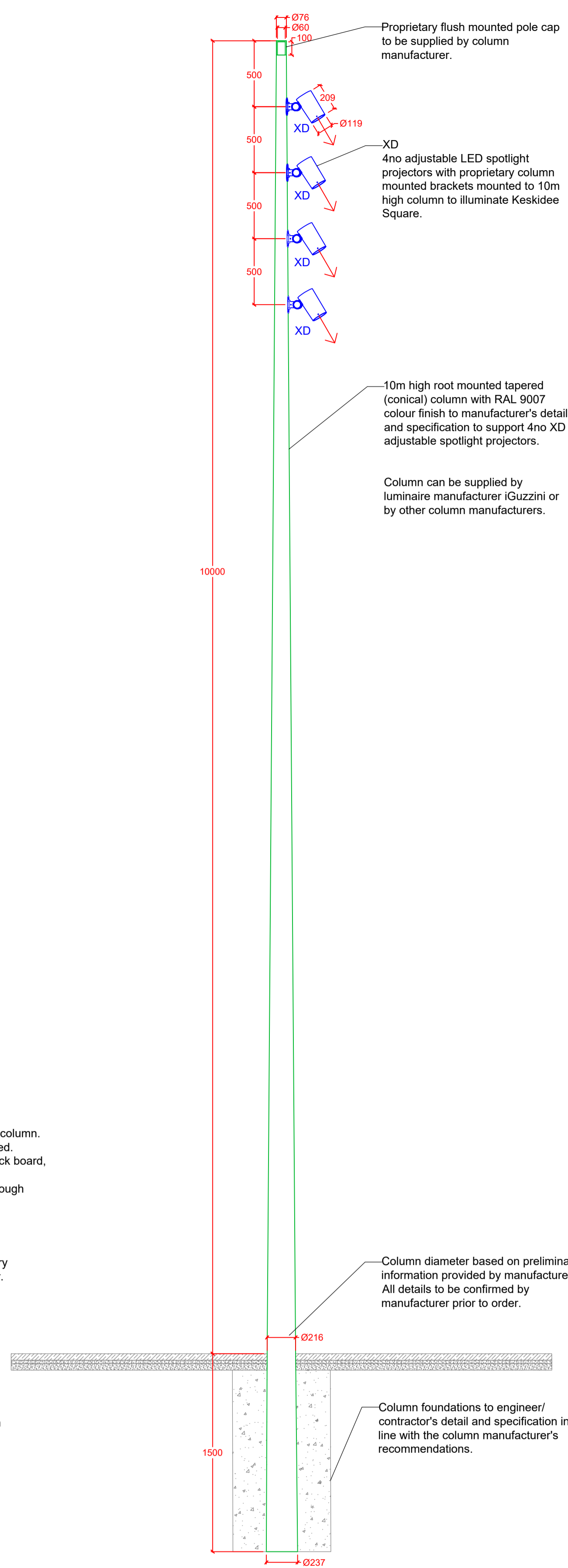
## KESKIDEE SQUARE, PLOT S4 PUBLIC REALM - LIGHTING TYPE X-B DETAILS

Refer to ALD931\_MP015 for Light Location

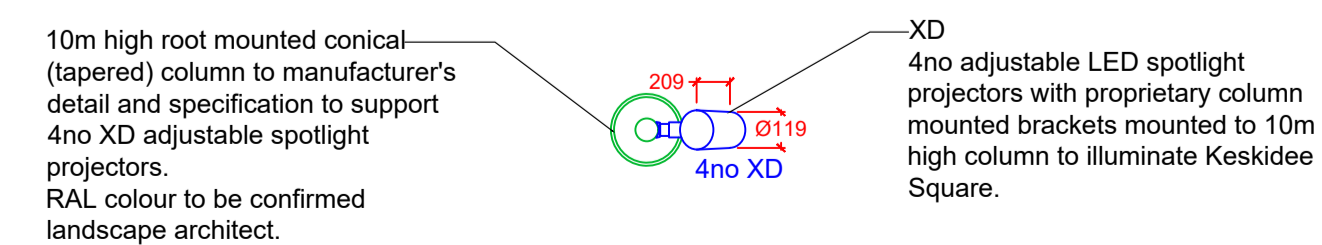
Lighting Code	Light Type	Location	No.	Details	Photo / Visualisation
X- B	Column Mounted Lantern	Adjacent to Chilton Yard	3no.	Refer to the following information package for all details	 <div data-bbox="2080 1104 2605 1272" style="background-color: #cccccc; padding: 10px; text-align: center;"> <p>RAL 9007 Grey aluminium</p> </div> <p data-bbox="2006 1293 2709 1379">Above image shows the same lantern as installed at Cubitt Park, Kings Cross, alongside the specified RAL colour RAL 9007</p>



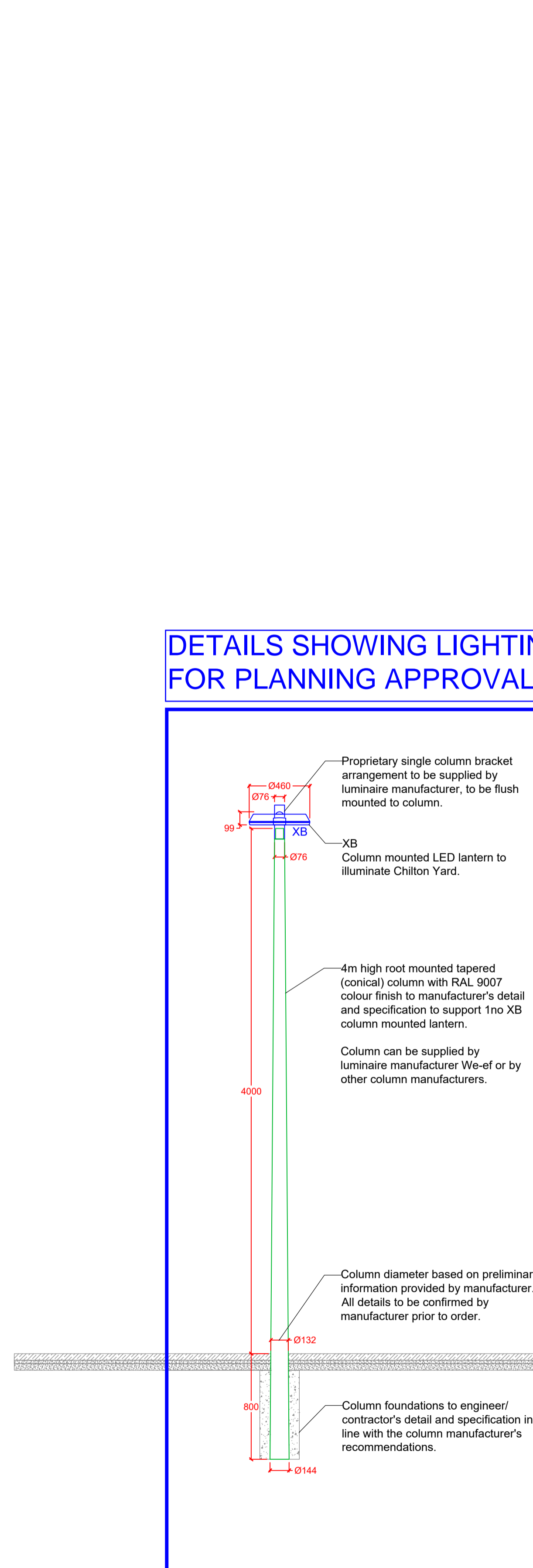
**1 Keskidee Square Column - Front Elevation**  
1:25



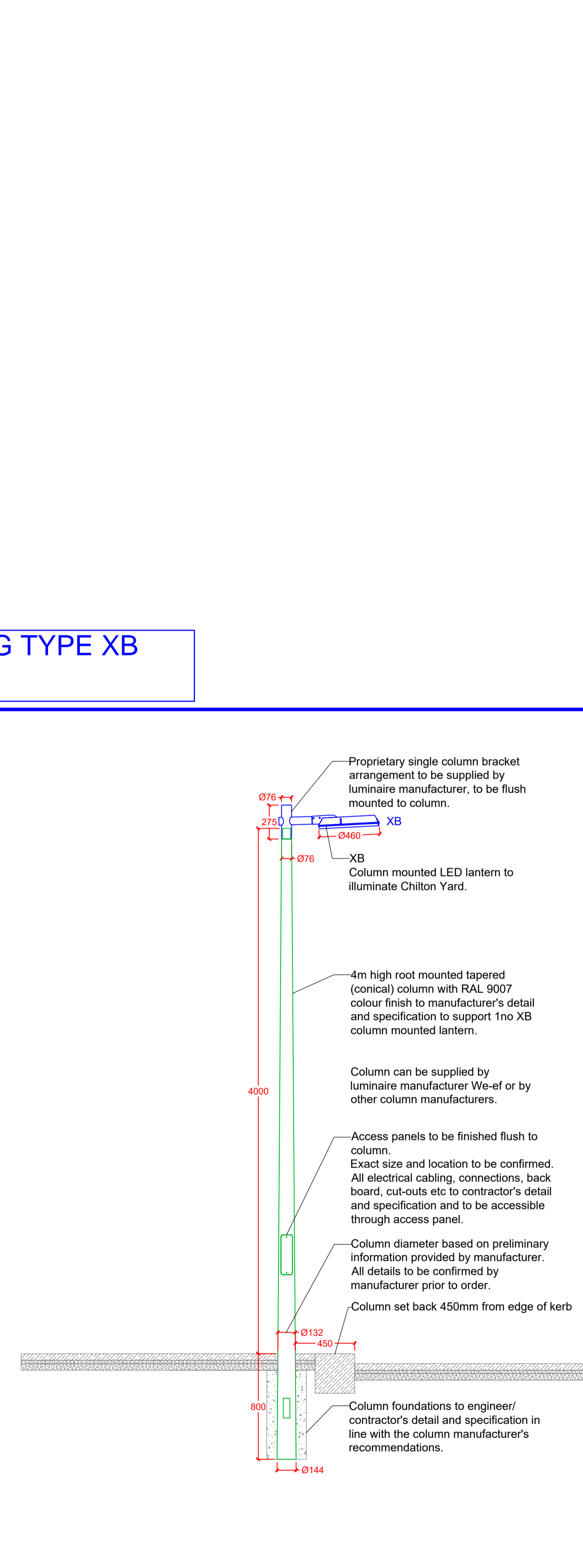
**2 Keskidee Square Column - Side Elevation**  
1:25



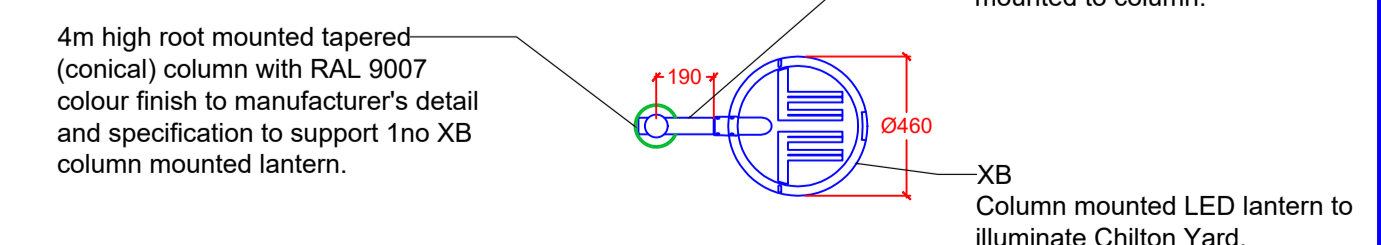
**3 Keskidee Square Column - Plan**  
1:25



**4 Chilton Yard Columns - Front Elevation**  
1:25



**5 Chilton Yard Columns - Side Elevation**  
1:25



**6 Chilton Yard Columns - Plan**  
1:25

**DETAILS SHOWING LIGHTING TYPE XB FOR PLANNING APPROVAL**

**GENERAL DRAWING NOTES**

Do not scale off this drawing.

Lighting detail drawings to be read in conjunction with all other relevant documents, including lighting layout drawings, lighting equipment specifications and logical control channel schedules.

See architects' drawings for co-ordinated design information.

For details of electrical supply wiring, control data wiring, containment, etc. see relevant engineers' drawings.

All works to be carried out in accordance with such Standards, Building and IEE regulations, mandatory and statutory regulations and codes of practice as are deemed to apply in the relevant location.

Refer to Speirs Major Lighting Designer's Risk Assessment for associated risks under the construction (Design and Management) Regulations (where applicable).

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**IMPORTANT**

IF THIS DRAWING IS ISSUED TO CONTRACTORS, IT IS FOR INFORMATION ONLY - ARCHITECTS' AND ENGINEERS' DRAWINGS MUST BE USED AS THE BASIS FOR TENDER AND CONSTRUCTION.

**GENERAL LIGHTING DETAIL NOTES**

This detail drawing is based on available drawings by Architect/other consultants. Lighting equipment specified by Speirs Major is shown in **BLUE**. Any additional elements required to support lighting equipment and to achieve the required lighting effect are shown in **GREEN** and are to be detailed by other consultants/Contractor.

**CABLING AND CONTAINMENT**

All cabling and containment to Electrical Engineer's/Contractor's detail and specification.

**FIXINGS**

All fixings and bracketry to Architect's/Contractor's detail and specification.

**INSTALLATION**

Luminaire manufacturer/supplier's installation instructions should be followed.

REV.	DATE	BY	CHKD	REVISION NOTES
02	12/03/21	PR	PR	ER Issue
01	18/02/21	PR	PR	Draft ER Issue
00	04/12/20	PR	PR	Initial Release of Information

**PROJECT:**  
Keskidee Square, Zone S, King's Cross  
London, UK

**DRAWING:**  
Keskidee Square and Chilton Yard  
Lighting Columns  
Luminaires XB and XD

**DRAWING NUMBER:** 11850-LD-001 **REV.** 02

**Scale:** 1:25 **ISO:** A1

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# SPEIRS MAJOR

## Lighting Equipment Specification Keskidee Square and Chilton Yard

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PROJECT: Keskidee Square, Zone S  
King's Cross, London, UK  
PROJECT NUMBER: 11850  
DOCUMENT NUMBER: 11850-LP-001 **XB**  
REVISION: 01

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DOCUMENT SHOWS XB LIGHT SPECIFICATION  
FOR PLANNING APPROVAL



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REV.	DATE	BY	CHECKED	REVISION NOTES
00	18/02/21	PR	PR	Initial release of information
01	26/02/21	PR	PR	ERs Issue

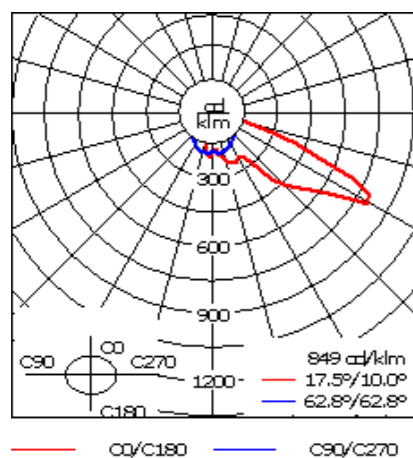
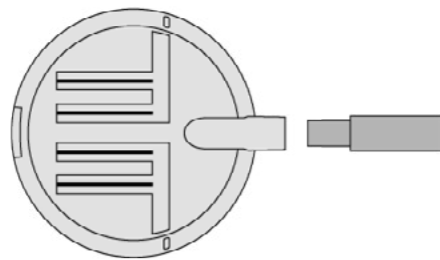
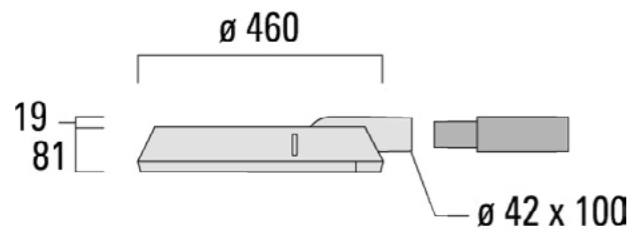
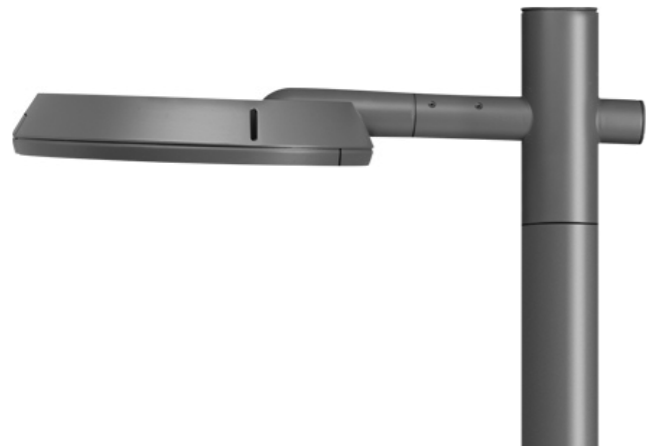
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Introduction	Page 4
Specification of Lighting Equipment	Page 5
Notes	Page 8

This Lighting Equipment Specification has been produced by Speirs Major as part of the package of documentation describing the lighting design for the project at Stage 3 in the design process.

The Specification (alongside associated documents) is intended to allow the design to be handed over to the appointed Design & Build contractor for development to Stage 4 or contractor's proposals, and construction.

**Column Mounted Public Realm Lighting - Chilton Yard**



**DESCRIPTION:**  
Exterior quality IP66 and IK07 rated column mounted luminaire with CAD optimised optics to provide asymmetric 'forward throw' [A60] light distribution. Utilising a 230V/350mA 24W warm white 3000K CCT LED array of 24 LEDs to provide a delivered lumen output of 2823.5 lumens with CRI 80 and colour consistency of 2 MacAdam ellipse. Marine Grade die cast aluminium housing with silicone gasket, non-reflecting safety glass lens with hinged safety switch and standard RAL 9007 finish. Luminaire supplied with an integral DALI dimmable LED driver.

**LUMINAIRE:**  
Protection Rating: IP66 & IK07  
Optical distribution: Asymmetric forward throw  
Mounting: Column mounted  
Finish: Standard RAL 9007 finish  
Circuit/System Wattage:(W) 27 W  
Lumen Output:(lm) 2823.5 lm  
(delivered lumens)  
Luminaire Efficacy: (lm/W) 117.6 lm/W  
(luminaire lumens/circuit Watt)

**Luminaire Ref. XB**

**LUMINAIRE ORDERING INFORMATION:**  
Manufacturer: We-ef  
Product: RFL530-SE LED  
Catalogue Number: 111-0457-WE-EF/DALI/I  
Ordering Notes: To be supplied with accessories listed below.

**ACCESSORIES:**  
Single Pole Bracket  
4m tapered root mounted column

**ACCESSORY ORDERING INFORMATION:**  
Catalogue Number 111-0044-RAL9007  
SD020790-1-RAL9007

**LIGHT SOURCE:**  
Type: LED  
Wattage: 24 W  
Colour Temperature: 3000K  
Colour Rendering: CRI 80  
Base: Integral LED  
Lamp Lumens: (lm) 3228 lm  
Efficacy: (lm/W) 134.5 lm/W  
Rated Life: 90,000 hrs (L90B10)  
Colour Consistency: 3 MacAdam ellipse

**LIGHT SOURCE ORDERING INFORMATION:**  
Manufacturer: 1  
Reference: Integral LED

Qty. per luminaire: 24

Notes: -

**SPECIAL REQUIREMENTS:**  
To be mounted on 4m tapered (conical) root mounted column.

**DRIVER/ BALLAST:**  
Driver/Ballast type: Integral  
IP Rating: n/a  
Elec. Input: 230VAC  
Output: Constant current 350mA

**DRIVER ORDERING INFORMATION:**  
Manufacturer: -  
Catalogue Number: WE-EF/DALI/I

Max. quantity of luminaires per driver: 1

Notes: Supplied integral to luminaire

Maximum Current/Load n/a  
Dimming Range: 100% - 5%  
Control Protocol: DALI  
Size: (if remote) n/a  
Weight: (if remote) n/a

**IMPORTANT NOTES:**  
All wiring, containment, etc. to electrical contractor's drawings, details and specification.  
All associated fixings, mounting and bracketry to contractor's drawings, details and specification.

**DC POWER SUPPLY: (IF REQUIRED)**  
IP Rating: -  
Elec. Input: -  
Output Voltage: -  
Maximum Current/Load: -  
Size: -  
Weight: -

**DC POWER SUPPLY ORDERING INFORMATION:**  
Manufacturer: -  
Catalogue Number: -  
Max. quantity of luminaires/drivers per DC power supply: -  
Notes: -

**PHYSICAL CHARACTERISTICS:**  
Dimensions: Ø460 x 100 x Ø42 x 100mm  
Cut Out: n/a  
Recess: n/a  
Bezel: n/a  
Weight: 9.3kg  
Windage: 0.04m<sup>2</sup>

**REFER TO DRAWINGS + DOCUMENTS:**  
11850-LA-001  
11850-LD-001

**DRIVER + DC POWER SUPPLY NOTES:**  
n/a

**MANUFACTURER/SUPPLIER INFORMATION:**  
Manufacturer/Supplier: We-ef Lighting Ltd  
Telephone: 020 7403 4123 / 0161 518 2900  
Email: info.uk@we-ef.com  
Contact: Rob Marsh  
Contact Telephone: 07904 255457  
Contact Email: r.marsh@we-ef.com

## Contents

### 1.0 General Requirements

- 1.1 Electrical
- 1.2 Physical
- 1.3 Environmental Conditions
- 1.4 Maintenance

### 2.0 Light Sources

- 2.1 LEDs/LED Modules

### 3.0 Control Gear

- 3.1 Constant Current LED Drivers

### 4.0 Optical Assemblies

### 5.0 Samples, Prototypes and Mock-ups

### 6.0 Packaging and Protection

### 7.0 Manufacturer's Warranties

### 8.0 Standards

## 1.0 General Requirements

### 1.1 Electrical

Electrical supply on site is presumed to be 230VAC (+10%/−6%), 50Hz, single phase and/or 415VAC (+ 6% and - 10%) three phase in accordance with EN50160. All equipment should be compatible with this supply.

Luminaires should exhibit no perceivable change in light output with a variation of plus/minus 10 percent supply voltage.

Total Harmonic Distortion due to any lighting equipment shall be less than 20% and meet ANSI C82.11 maximum allowable THD requirements at full output.

### 1.2 Physical

#### 1.2.1 Materials and Finishes

Where galvanically incompatible metals are used in the construction of a luminaire, design must eliminate galvanic corrosion, through separation and/or insulation.

Paints and powder coat finishes should be appropriate for the luminaire's proposed location. Exterior equipment should employ finishes which are stable to UV light, windborne particles and other environmental factors. Where specified as "Marine Grade", finishes must also be resilient to prolonged exposure to salt water spray.

"Marine Grade", in the context of stainless steel, refers to SAE316 specification.

Any gaskets should be made of materials which do not out-gas chemicals which can degrade the LED dies or phosphors.

#### 1.2.2 Ingress Protection

IP Ratings stated in this specification refer to IEC standard 60529. Where IP68 is specified (continuous immersion), test conditions are assumed to be 3m depth in fresh water, unless otherwise specified.

#### 1.2.3 Fixing

Clamp or spring assemblies for recessing downlights must be designed so as to be installable and removable without damaging plasterboard soffits.

Removable front-plates, reflectors, trim rings, etc should be physically retained to the luminaire body by means of a wire or chain safety bond.

Fixings used to retain ground-recessed lights and

to retain their top-plates shall utilise a vandal-proof fastener.

#### 1.2.4 Adjustment and Lockability

Where luminaires feature pan and/or tilt adjustability, adjustment in both axes should be lockable by means of a knurled knob, allen screw or similar. Such locking mechanisms must not allow for any sag through gravity over time.

### 1.3 Environmental Conditions

All exterior equipment should be capable of operation at temperatures between -20°C and +50°C without de-rating, and at atmospheric humidity of up to 90% (non-condensing).

### 1.4 Maintenance

#### 1.4.1 Cleaning

It must be possible for all external surfaces of luminaires to be cleaned safely and easily without the use of chemicals or abrasives, and without disconnecting power.

#### 1.4.2 Replacement Parts and Repair Services

Manufacturers should be capable of providing spare parts and/or repair services for specified equipment for a period of not less than ten years from purchase. Replacement LED modules and circuit boards should produce the same output in lumens, colour temperature and CRI, as the original units, regardless of improved conversion efficiency due to technological development - electrical load may be lower than the original units.

Any replacement of LED module/circuit board or driver electronics should maintain the same dimming curve as the original luminaire.

It should be made clear at time of order whether equipment is serviceable by end-user or requires return-to-base for repair at manufacturer's facility, so that this information can be incorporated into contractor's operation and maintenance manuals at project handover.

## 2.0 Light Sources

### 2.1 LEDs/LED Modules

#### 2.1.1 Colour Consistency

The importance of colour consistency between luminaires and over time is critical to the success of the lighting scheme. The light produced by LEDs described as the same correlated colour

temperature should produce light that is indiscernible in appearance from other LEDs of the same CCT. It is the responsibility of the party producing the final specification to compare samples of the specified luminaires to ensure this consistency across the project.

The benchmark for acceptable colour consistency between luminaires of the same type shall be 4 MacAdam ellipse (Standard Deviation Colour Matching) for road lighting and 2 MacAdam ellipses for all other lighting including, but not limited to, downlights, wall washers, spotlights, linear luminaires and decorative fittings. The consistency requirements for each specified type is indicated in this specification.

Colour of LED light sources should not exhibit greater change than three SDCM steps after five years.

#### 2.1.2 Colour Rendering

Colour rendering ability of luminaires and lamps is expressed in this specification using CIE Ra (Colour Rendering Index), assumed to be based on samples R1 to R8. Where relevant, minimum values for samples R9 and above may be given.

Unless specifically stated, a Colour Rendering Index of less than 80 will not be acceptable for any light source.

#### Note

Luminous flux, colour (chromaticity, CCT, CRI) and intensity distribution shall be measured and stated in compliance with IESNA LM79-08.

#### 2.1.3 Lifetime

The lifetime of LEDs shall be stated in terms of L70F10, unless explicitly stated otherwise within this specification. Measurement shall be in accordance with IESNA LM80-08, with extrapolated data in accordance with IESNA TM21-11. Unless otherwise stated, data should relate to an ambient temperature of 25°C for interior luminaires and 15°C for exterior luminaires.

#### 2.1.4 Thermal Management

Luminaire manufacturers shall ensure that sufficient thermal management is provided within the luminaire to maintain the junction temperature of LEDs at or below the LED manufacturer's recommendations. Heat rejection should be by means of heatsink, convective heatpipes and similar passive means. Active cooling by means of fan or oscillating diaphragm will not be acceptable unless explicitly identified in the specification.

### 3.0 Control Gear

#### 3.1 Constant Current LED Drivers

Constant current LED drivers shall deliver the designated current (at full output) +/-5%.

Drivers shall have an efficiency of at least 80% and power factor of at least 0.9.

Drivers which are dimmable via a control signal should have a parasitic load whilst in "off" state not exceeding 0.5W.

Drivers which are dimmable by "mains dimming" shall be compatible with phase-cut leading-edge triac dimmers, trailing edge IGBT (transistor) dimmers, and sinewave dimmers. Luminaire manufacturers should provide sample luminaires containing final specification components to the control system supplier so as to verify dimming compatibility.

#### 3.1.1 Control Protocols

LED drivers must be controllable by means of DALI, DMX or 0-10V/1-10V analogue, as specified item-by-item in this document. Relevant standards describing each protocol should be followed.

DALI devices must carry the DALI logo, indicating compliance testing with IEC 62386.

DMX devices must comply with USITT DMX512-A

DMX devices which are capable of direct connection to Ethernet in order to receive DMX data are specified item-by-item in this document as using Art-Net or Streaming ACN. Devices identified as being compatible with Art-Net must comply with *Art-NET 3, 2011*. Devices identified as being compatible with Streaming ACN must comply with *ANSI E1.31 – 2009 Entertainment Technology – Lightweight streaming protocol for transport of DMX512 using ACN*.

Devices specified as being compatible with 0-10V analogue control (where the device sinks current) must comply with *ESTA E1.3 - Entertainment Technology - Lighting Control System - 0 to 10V Analog Control Protocol*. Devices specified as compatible with 1-10V analogue control (where the device sources current) must comply with *IEC 60292 Annex E.2*.

#### 3.1.2 Dimming

The required dimming range of each luminaire type is specified item-by-item in this document. A minimum output figure is given, and should be read as the percentage of perceived output which the unit should be dimmable to before turning off.

LED(s) and driver in combination must provide continuous step-free, flicker free dimming similar in perception to an incandescent source.

#### 3.1.3 Flicker

Drivers and LEDs shall deliver illumination that is free from objectionable flicker as measured by flicker index (*ANSI/IES RP-16-10*). At all points within the dimming range from 100 percent to specified minimum, luminaires shall have flicker index less than 5% at all frequencies below 1000 Hz.

#### 3.1.4 Electrical Protection

All drivers should be able to withstand up to a 1,000 volt surge without impairment of performance as defined by *ANSI C62.41 Category A*.

Drivers should have in-built protection against damage due to a short circuit or open circuit on the output, and should recover automatically after fault condition is removed.

Drivers must incorporate protection against overload on outputs, such that no damage is sustained to the driver itself, and should recover automatically after fault condition is removed.

#### 3.1.5 Thermal Protection

All drivers should incorporate over-temperature protection, shutting down when required and recovering automatically once temperature falls back within operational range.

### 4.0 Optical Assemblies

Metal reflectors shall be of high-purity aluminium, bright anodised, or other finish if specified on item-by-item basis in this document.

Plastic reflectors shall be of polycarbonate with high-reflectance aluminium-look coating.

Lenses shall be of glass, PMMA, or polycarbonate and shall be optically colour-neutral, imparting no tint to the light.

### 5.0 Samples, Prototypes and Mock-ups

Should a sample of a standard product, or prototype of a special luminaire or variant of a standard luminaire be ordered, its cost shall either be incorporated into a tender price, or shall be invoiced to the client or his nominated representative separately, as agreed.

Any such sample prototype or variant shall be a sample of the luminaire type specified, and shall be submitted to the lighting consultant, together with full photometric and dimensional data if specifically requested, to enable both its accurate assessment and the detailing of any adjustments deemed necessary prior to the commencement of full production.

Prototypes are required of a series of luminaires where noted in the lighting equipment specification.

Where in-situ mock-ups are required to demonstrate the desired lit effect, this will be noted lighting equipment specification and in line with the architectural specification.

### 6.0 Packaging and Protection

All equipment shall be supplied with adequate means of protection to ensure its preservation during transport to site and any subsequent storage prior to installation. All vulnerable finished parts liable to scratching or other abrasion during handling and installation shall be further protected by a removable film applied prior to dispatch.

### 7.0 Manufacturers' Warranties

All equipment and components supplied shall be guaranteed against failure due to poor workmanship, materials, or luminaire design, for a period of not less than 5 years from the date of delivery to site, with the exception of lamps which shall be covered only by their manufacturer's normal assurances as to life expectancy and performance.

### 8.0 Standards

Lighting equipment should comply, where relevant, with the following standards and/or local versions to be agreed.

BS EN 62717 *LED modules for general lighting. Performance requirements*

BS EN 62031 *LED modules for general lighting. Safety specifications*

BS EN 62504 *General lighting. Light emitting diode (LED) products and related equipment*

BS EN 13032-1 *Light and lighting. Measurement and presentation of photometric data of lamps and luminaires*

BS EN 61347-1 *Lamp Control Gear, General and Safety Requirements*

BS EN 61347-2-7 *Lamp Control Gear, Requirements for Battery-Supplied Electronic Control Gear for Emergency Lighting*

BS EN 62384 *Electronic Control Gear for LED Modules, Performance Requirements*

BS EN 55015:2006 + A2:2009 *Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment*

BS EN 61000-3-2:2006+A2:2009 *Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

BS EN 61547:2009 *Equipment for general lighting purposes. EMC immunity requirements*

BS EN 60598-1:2015 *Luminaires. General requirements and tests*

BS EN 60598-2-22:2014. *Luminaires. Particular requirements. Luminaires for emergency lighting*

BS EN 60598-2-2:2012. *Luminaires. Particular requirements. Recessed luminaires*

BS EN 60598-2-13:2006+A1:2012. *Luminaires. Particular requirements. Ground recessed luminaires*

BS EN 60598-2-3:2003+A1:2011. *Luminaires. Particular requirements. Luminaires for road and street lighting*

BS EN 62612:2013. *Self-ballasted LED lamps for general lighting services with supply voltages ≤ 50 V. Performance requirements.*

IEC 62560 *Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications*

IEC 62612:2013 *Self-ballasted LED lamps for general lighting services with supply voltages > 50 V - Performance requirements*


IEC 62722-2-1:2014 *Luminaire performance - Part 2-1: Particular requirements for LED luminaires*

# **SPEIRS MAJOR**

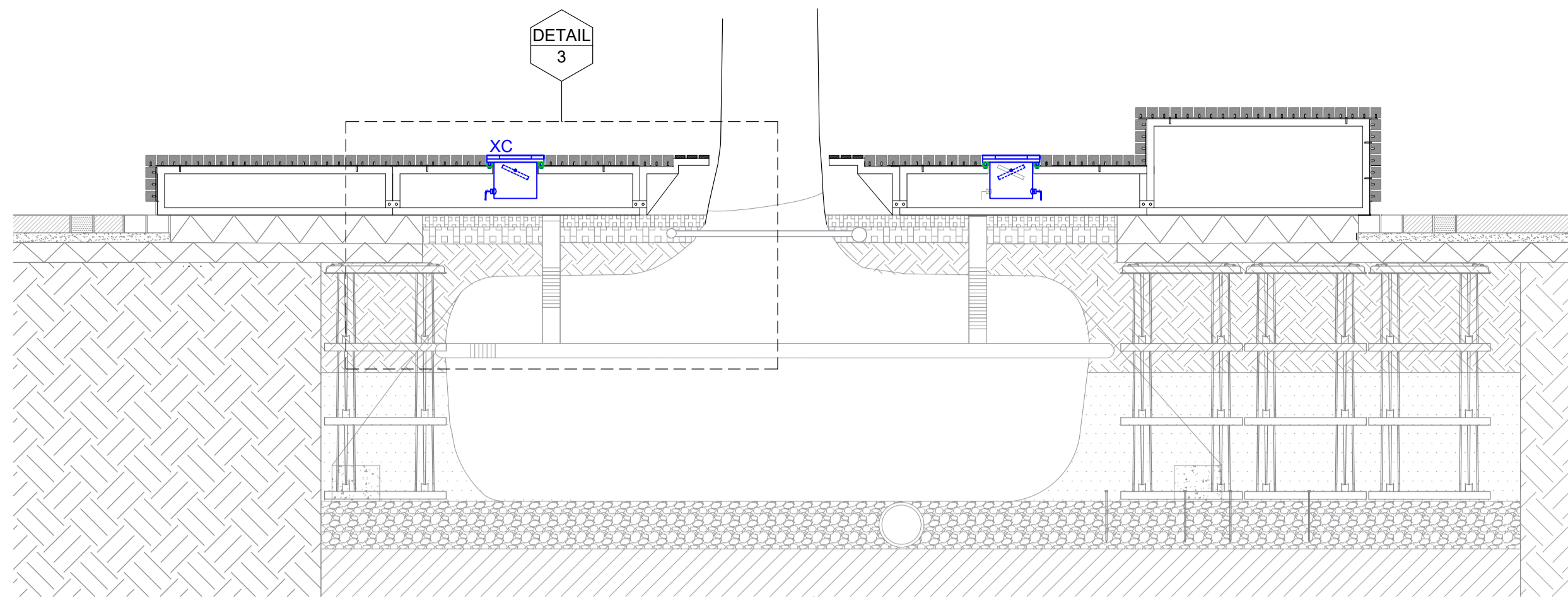
London +44 (0)20 7067 4700 [info@smlightarchitecture.com](mailto:info@smlightarchitecture.com)  
Tokyo +81 (0)3 3400 8855 [www.smlightarchitecture.com](http://www.smlightarchitecture.com)

## KESKIDEE SQUARE, PLOT S4 PUBLIC REALM - LIGHTING TYPE X-C DETAILS

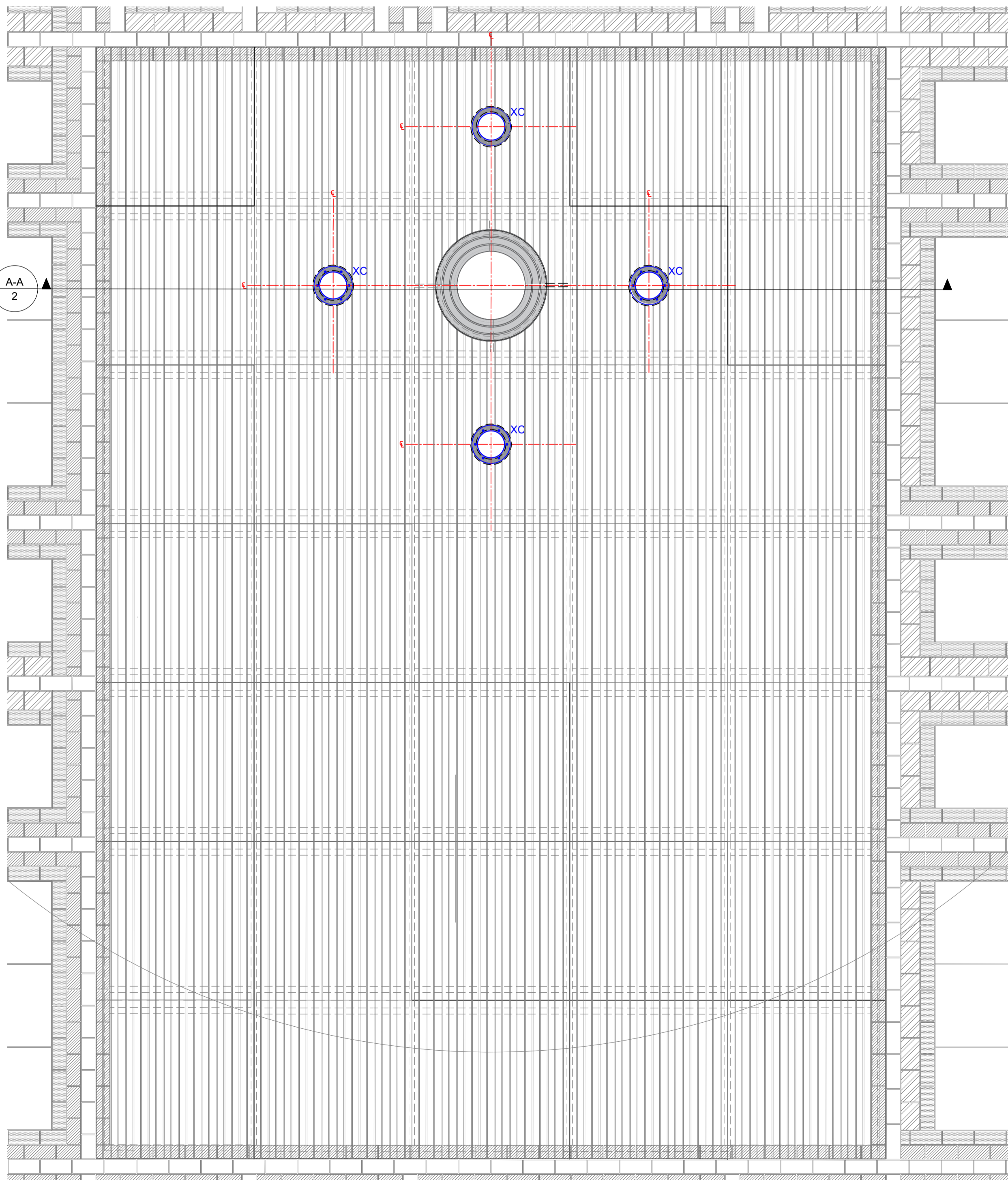
Refer to ALD931\_MP015 for Light Location

Lighting Code	Light Type	Location	No.	Details	Photo / Visualisation
X- C	Tree Uplighters	Within Keskidее Square Timber Platform	4no.	Refer to the following information package for all details	 <p data-bbox="2006 1171 2709 1228">Above image shows the light fitting within the Keskidее Square Timber Platform Mockup</p>

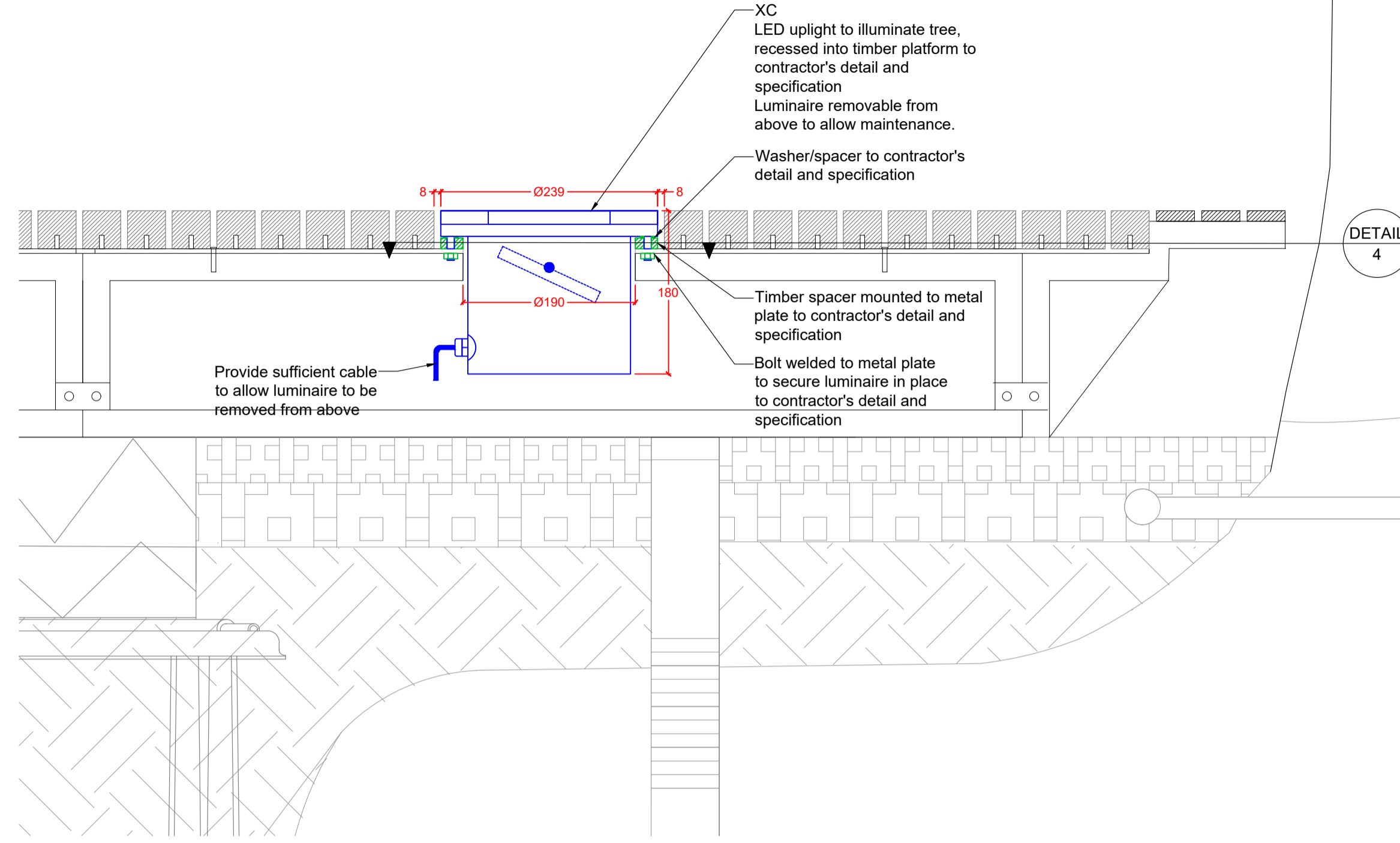




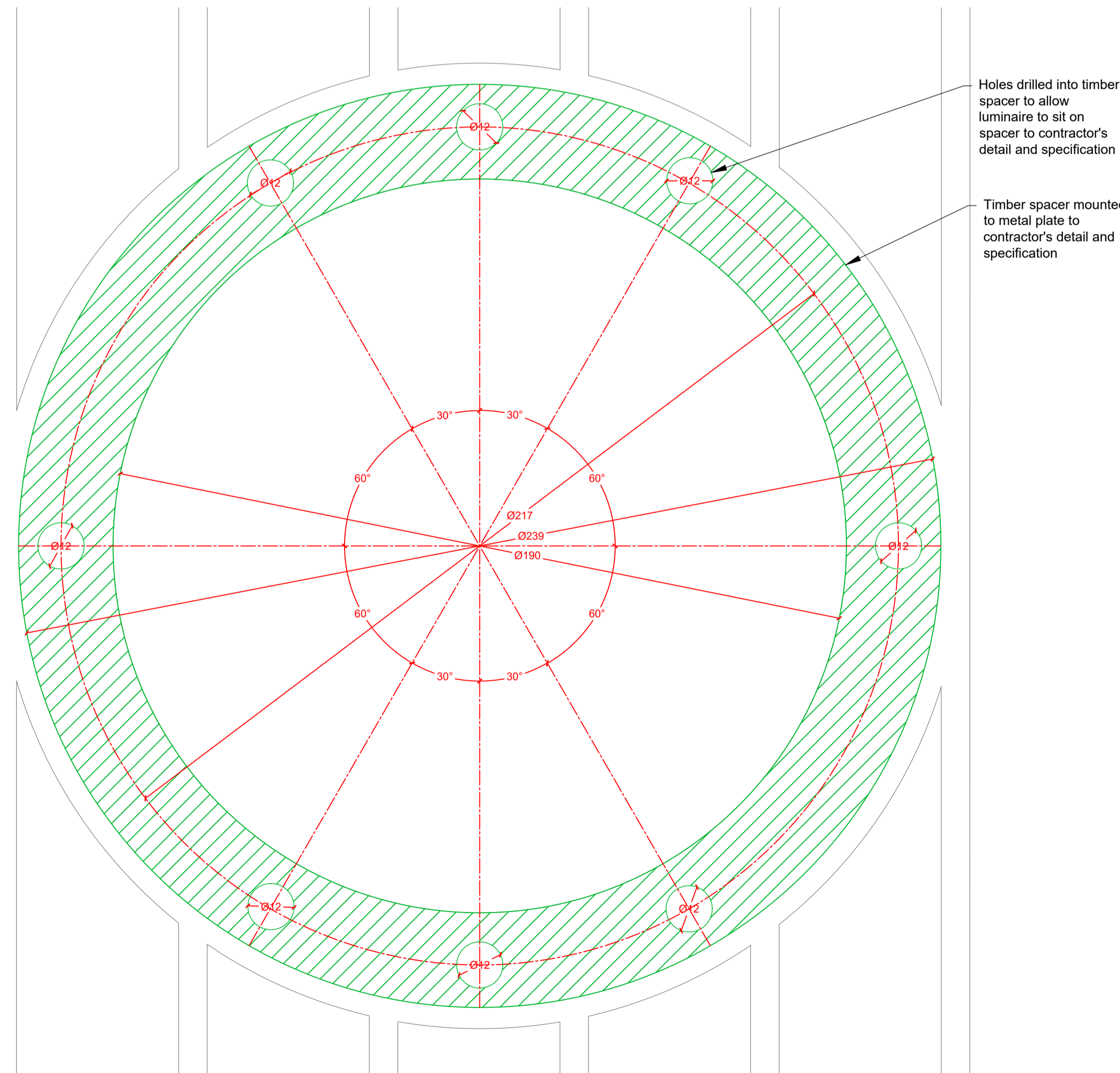
2 Section A-A  
1:20



1 Plan  
1:20



3 Detail - Section  
1:5



4 Detail - Plan  
1:1

GENERAL DRAWING NOTES

Do not scale off this drawing.

Lighting detail drawings to be read in conjunction with all other relevant documents, including lighting layout drawings, lighting equipment specifications and logical control channel schedules.

See architects' drawings for co-ordinated design information.

For details of electrical supply wiring, control data wiring, containment, etc, see relevant engineers' drawings.

All works to be carried out in accordance with such Standards, Building and IEE regulations, mandatory and statutory regulations and codes of practice as are deemed to apply in the relevant location.

Refer to Speirs Major Lighting Designer's Risk Assessment for associated risks under the construction (Design and Management) Regulations (where applicable).

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IMPORTANT

IF THIS DRAWING IS ISSUED TO CONTRACTORS, IT IS FOR INFORMATION ONLY - ARCHITECTS' AND ENGINEERS' DRAWINGS MUST BE USED AS THE BASIS FOR TENDER AND CONSTRUCTION.

GENERAL LIGHTING DETAIL NOTES

This detail drawing is based on available drawings by Architect/other consultants. Lighting equipment specified by Speirs Major is shown in **BLUE**. Any additional elements required to support lighting equipment and to achieve the required lighting effect are shown in **GREEN** and are to be detailed by other consultants/Contractor.

CABLING AND CONTAINMENT  
All cabling and containment to Electrical Engineer's/Contractor's detail and specification.

FIXINGS  
All fixings and bracketry to Architect's/Contractor's detail and specification.

INSTALLATION  
Luminaire manufacturer/supplier's installation instructions should be followed.

01	12/03/21	PR PR	ER Issue
00	18/02/21	PR PR	Draft ER Issue

REV. DATE	BY	CHKD	REVISION NOTES
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PROJECT:  
Keskidee Square, ZoneS, King's Cross  
London, UK

DRAWING:  
Keskidee Square  
Lighting Detail - Uplighting to Tree  
Luminaire XC

DRAWING NUMBER:	REV.
11850-LD-002	01

Scale: 1:20, 1:5, 1:1 ISO: A1

**SPEIRS MAJOR**

London +44 (0)20 7067 4700 info@smlightarchitecture.com  
Tokyo +81 (0)3 3400 8855 www.smlightarchitecture.com

# ETC330-GB LED

185-2688

1/5

**we-ef**



## Description

IP67\*, Class I. Class II on request. IK10+. Stainless steel construction including PCS hardware. Silicone rubber gasket. Safety glass lens; max. load 5 tonnes. Luminaire can be driven over at low speed. Factory-sealed termination chamber complete with cable gland and 1.5 m of flexible PVC free cable. Integral EC electronic converter in thermally separated compartment. 'No tool' removable gear/lens tray. CAD-optimised optics for superior illumination and glare control. OLC® One LED Concept. Factory installed LED circuit board. Gimbal mounted, 360° rotatable and 30° tiltable. Optional 2200 K version available. To be specified at time of ordering. The optional installation blackout is recommended for mounting. To be ordered separately. The luminaire is not suitable for permanent underwater operation and must be switched off in the event of flooding. Optional with Anti-Slip ceramic Coating ASC to DIN 51130 (Trip Classification 10) available on request.

**Beam Type** symmetric, wide beam [B]

**Light Source** LED-12/12W / 350 mA - 3000 K

**CRI** 80

**Gear Type** EC

## Nominal Luminous Flux (lm)

LED Lumens 155 lm

LEDs 12

Total Lumens 1860 lm

T<sub>j</sub> 85 °C

## Rated Luminous Flux (lm)

LED Lumens 117.2 lm

Total Lumens 1406.2 lm

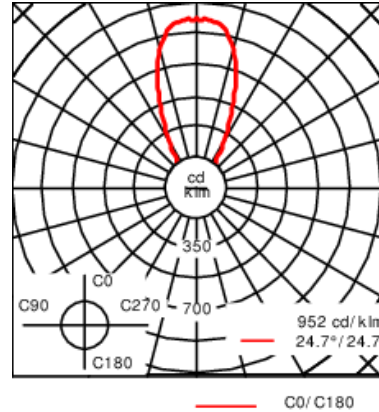
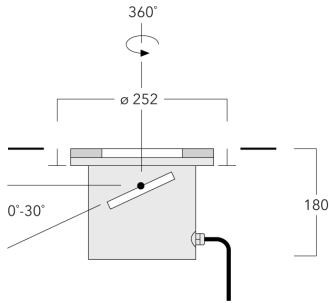
T<sub>a</sub> 25 °C

**Rated Input Power** 13.9 W

# ETC330-GB LED

185-2688

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## Material Specification

Body:	Stainless steel construction
Weight (kg):	5.50
Lens:	Safety glass lens; max. load 5 tonnes
Colours:	Stainless Steel
Gasket:	Silicone rubber gasket
Fasteners:	PCS Polymer Coated Stainless Steel Hardware
Ingress protection:	IP67
Impact protection:	IK10+
Surge protection:	1/2 kV

## Electrical Specification

Power supply:	220-240V / 50-60 Hz
Power factor:	> 0.9
Driver / Ballast:	Integral EC electronic converter
Cable:	1.5 m of flexible PVC free cable

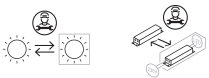
## Lifetime

Ta=25° L90B10 > 90000h

## Energy efficiency class

C-D (Light source)

LED and LED driver can be exchanged by qualified personnel.



## Mounting Accessories

### WE-EF LIGHTING Ltd

# ETC330-GB LED

185-2688

**we-ef**

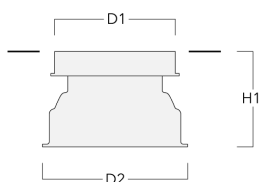
3/5

## Installation blackout

BET installation blackout made from rugged MDPE (Polyethylene), glass fibre reinforced PA (Polyamid). To be installed during earth or masonry works, prior to eventual electrical connection of uplights. Refer to table for maximum permissible wattage. The usage of an installation blackout will influence the glass surface temperatures. Contact your local WE-EF representative for further information.

■ Blockout, Plastic

	<b>D1</b>	<b>D2</b>	<b>H1</b>	<b>Weight (kg)</b>
<b>185-0924</b>	250	305	230	1.50



## Installation cover

Installation cover. Temporarily encloses and protects blackout.

■ Installation cover BE

	<b>C1</b>
<b>185-0325</b>	250



## Optical Accessories

### Flood lens

Broadens light distribution in all planes. Does not fit in combination with [B] lens.

#### WE-EF LIGHTING Ltd

Suite 2C | East Bridgford Business Park | Kneeton Road | East Bridgford | Nottingham NG13 8PJ | U.K. | Tel +44 844 880 5346 | Fax +44 844 880 5347 | info.uk@we-ef.com | www.we-ef.com | 28-07-2023 11:37  
Technical modifications and errors excepted

# ETC330-GB LED

185-2688

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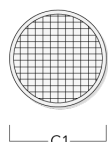
**we-ef**

■ IO-360-ETC130-GB-LED

**C1**

**185-2866**

98



## Honeycomb louvre

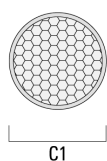
Honeycomb louvre, matt black Teflon® coated. For luminaires equipped with [M] [EE] [EES] light distribution.

■ IW-ETC130/330-GB-LED - [M] [EE] [EES]

**C1**

**185-2870**

98



## Linear spread lens

Broadens light distribution in one plane only. Does not fit in combination with [B] lens.

# ETC330-GB LED

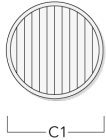
185-2688



5/5

■ IO-180 ETC130/330-GB LED

	C1
<b>185-2632</b>	98



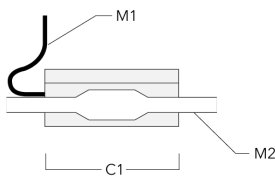
## Electrical Accessories

### Sealable junction box

SJB sealable junction box, for inground mains connection. Terminal block 3 x 1.5 mm<sup>2</sup>.

■ Sealable junction box SJB130

	C1	M1	M2
<b>185-1624</b>	146	Ø 10	Ø 12 - 19



# SPEIRS MAJOR

## Lighting Equipment Specification Keskidee Square and Chilton Yard

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PROJECT: Keskidee Square, Zone S  
King's Cross, London, UK  
PROJECT NUMBER: 11850  
DOCUMENT NUMBER: 11850-LP-001 XC  
REVISION: 01

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DOCUMENT SHOWS XC LIGHT SPECIFICATION  
FOR PLANNING APPROVAL

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REV.	DATE	BY	CHECKED	REVISION NOTES
00	18/02/21	PR	PR	Initial release of information
01	26/02/21	PR	PR	ERs Issue

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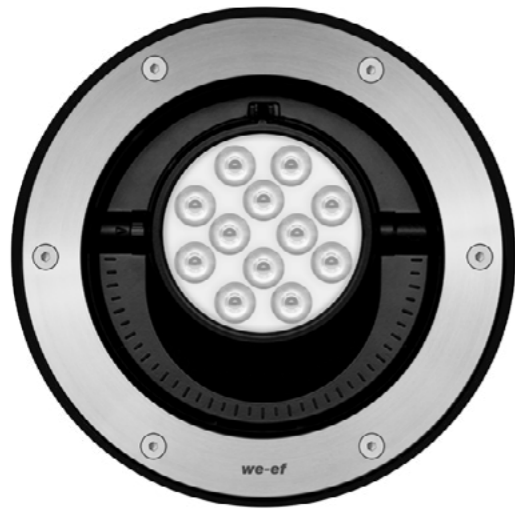
Introduction	Page 4
Specification of Lighting Equipment	Page 5
Notes	Page 8

This Lighting Equipment Specification has been produced by Speirs Major as part of the package of documentation describing the lighting design for the project at Stage 3 in the design process.

The Specification (alongside associated documents) is intended to allow the design to be handed over to the appointed Design & Build contractor for development to Stage 4 or contractor's proposals, and construction.

Tree Uplight - Keskidee Square

Luminaire Ref. **XC**



**DESCRIPTION:**  
Exterior quality IP67 and IK10+ rated ground recessed adjustable uplight with CAD optimised optics to provide 24.7° + 24.7° rotational symmetric light distribution. Utilising a 230V/350mA 12W warm white 3000K CCT LED array of 12 LEDs to provide a delivered lumen output of 12202.2 lumens with CRI 80 and colour consistency of 2 MacAdam ellipse. Stainless steel construction with silicone rubber gasket, safety glass lens with maximum loading of 5 tonnes and anti-slip ceramic coating. Factory sealed termination and cable gland with 1.5m of flexible PVC free cable. LED unit gimbal mounted providing 360° rotation and 30° tiltable adjustment. Luminaire supplied with an integral DALI dimmable LED driver.

**LUMINAIRE:**  
Protection Rating: IP67 & IK10+  
Optical distribution: 24.7° + 24.7°  
Mounting: Recessed  
Finish: Stainless steel  
Circuit/System Wattage:(W) 14 W  
Lumen Output:(lm) 12202.2 lm  
(delivered lumens)  
Luminaire Efficacy: (lm/W) 101.7 lm/W  
(luminaire lumens/circuit Watt)

**LUMINAIRE ORDERING INFORMATION:**  
Manufacturer: We-ef  
Product: ETC330-GB LED  
Catalogue Number: 1850-2688- WE-EF/DALI/I - 500-0392  
Ordering Notes: To be supplied with accessories listed below.

**ACCESSORIES:**  
Honeycomb Louvre  
Sealable Junction box  
Anti-slip glass

**ACCESSORY ORDERING INFORMATION:**  
Catalogue Number 185-2870  
185-1624  
500-0392

**LIGHT SOURCE:**  
Type: LED  
Wattage: 12 W  
Colour Temperature: 3000K  
Colour Rendering: CRI 80  
Base: Integral LED  
Lamp Lumens: (lm) 1614 lm  
Efficacy: (lm/W) 134.5 lm/W  
Rated Life: 90,000 hrs (L90B10)  
Colour Consistency: 3 MacAdam ellipse

**LIGHT SOURCE ORDERING INFORMATION:**  
Manufacturer: -  
Reference: Integral LED

**DRIVER/ BALLAST:**  
Driver/Ballast type: Integral  
IP Rating: n/a  
Elec. Input: 230VAC  
Output: Constant current 350mA

Qty. per luminaire: 12no  
Notes: -

Maximum Current/Load n/a  
Dimming Range: 100% - 5%  
Control Protocol: DALI  
Size: (if remote) n/a  
Weight: (if remote) n/a

**DRIVER ORDERING INFORMATION:**  
Manufacturer: -  
Catalogue Number: WE-EF/DALI/I  
Max. quantity of luminaires per driver: 12  
Notes: Supplied integral to luminaire

**DC POWER SUPPLY: (IF REQUIRED)**  
IP Rating: -  
Elec. Input: -  
Output Voltage: -  
Maximum Current/Load: -  
Size: -  
Weight: -

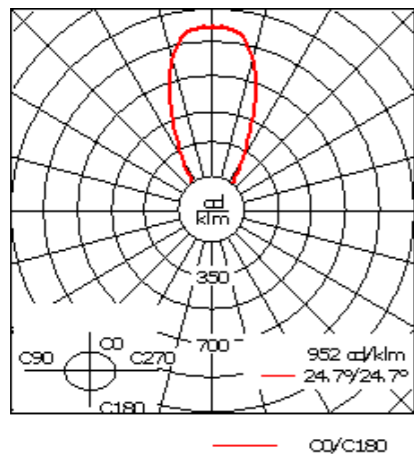
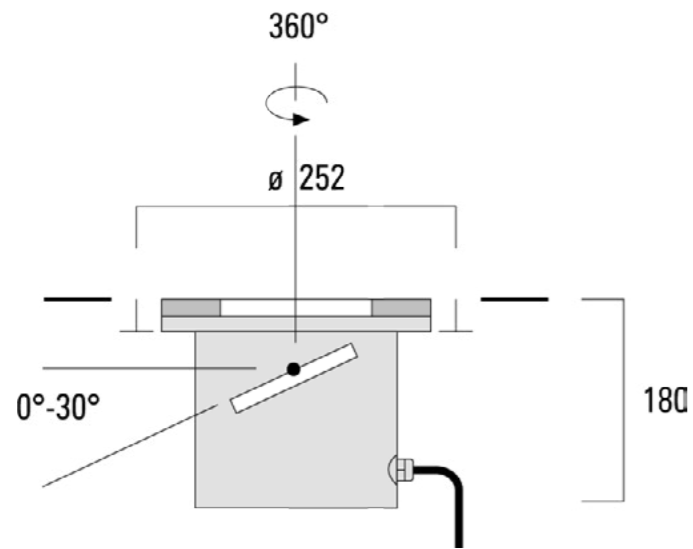
**DC POWER SUPPLY ORDERING INFORMATION:**  
Manufacturer: -  
Catalogue Number: -  
Max. quantity of luminaires/drivers per DC power supply: -  
Notes: -

**SPECIAL REQUIREMENTS:**  
-

**IMPORTANT NOTES:**  
All wiring, containment, etc. to electrical contractor's drawings, details and specification.  
All associated fixings, mounting and bracketry to landscape contractor's drawings, details and specification.

**DRIVER + DC POWER SUPPLY NOTES:**  
n/a

**MANUFACTURER/SUPPLIER INFORMATION:**  
Manufacturer/Supplier: We-ef Lighting Ltd  
Telephone: 020 7403 4123 / 0161 518 2900  
Email: info.uk@we-ef.com  
Contact: Rob Marsh  
Contact Telephone: 07904 255457  
Contact Email: r.marsh@we-ef.com



**PHYSICAL CHARACTERISTICS:**  
Dimensions: Ø252mm x 180mm  
Cut Out: Ø252mm  
Recess: 180mm  
Bezel: Ø252mm  
Weight: 5.5kg

**REFER TO DRAWINGS + DOCUMENTS:**  
11850-LA-001  
11850-LD-002

## Contents

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## 1.0 General Requirements

### 1.1 Electrical

Electrical supply on site is presumed to be 230VAC (+10%/−6%), 50Hz, single phase and/or 415VAC (+ 6% and - 10%) three phase in accordance with EN50160. All equipment should be compatible with this supply.

Luminaires should exhibit no perceivable change in light output with a variation of plus/minus 10 percent supply voltage.

Total Harmonic Distortion due to any lighting equipment shall be less than 20% and meet ANSI C82.11 maximum allowable THD requirements at full output.

### 1.2 Physical

#### 1.2.1 Materials and Finishes

Where galvanically incompatible metals are used in the construction of a luminaire, design must eliminate galvanic corrosion, through separation and/or insulation.

Paints and powder coat finishes should be appropriate for the luminaire's proposed location. Exterior equipment should employ finishes which are stable to UV light, windborne particles and other environmental factors. Where specified as "Marine Grade", finishes must also be resilient to prolonged exposure to salt water spray.

"Marine Grade", in the context of stainless steel, refers to SAE316 specification.

Any gaskets should be made of materials which do not out-gas chemicals which can degrade the LED dies or phosphors.

#### 1.2.2 Ingress Protection

IP Ratings stated in this specification refer to IEC standard 60529. Where IP68 is specified (continuous immersion), test conditions are assumed to be 3m depth in fresh water, unless otherwise specified.

#### 1.2.3 Fixing

Clamp or spring assemblies for recessing downlights must be designed so as to be installable and removable without damaging plasterboard soffits.

Removable front-plates, reflectors, trim rings, etc should be physically retained to the luminaire body by means of a wire or chain safety bond.

Fixings used to retain ground-recessed lights and

to retain their top-plates shall utilise a vandal-proof fastener.

#### 1.2.4 Adjustment and Lockability

Where luminaires feature pan and/or tilt adjustability, adjustment in both axes should be lockable by means of a knurled knob, allen screw or similar. Such locking mechanisms must not allow for any sag through gravity over time.

### 1.3 Environmental Conditions

All exterior equipment should be capable of operation at temperatures between -20°C and +50°C without de-rating, and at atmospheric humidity of up to 90% (non-condensing).

### 1.4 Maintenance

#### 1.4.1 Cleaning

It must be possible for all external surfaces of luminaires to be cleaned safely and easily without the use of chemicals or abrasives, and without disconnecting power.

#### 1.4.2 Replacement Parts and Repair Services

Manufacturers should be capable of providing spare parts and/or repair services for specified equipment for a period of not less than ten years from purchase. Replacement LED modules and circuit boards should produce the same output in lumens, colour temperature and CRI, as the original units, regardless of improved conversion efficiency due to technological development - electrical load may be lower than the original units.

Any replacement of LED module/circuit board or driver electronics should maintain the same dimming curve as the original luminaire.

It should be made clear at time of order whether equipment is serviceable by end-user or requires return-to-base for repair at manufacturer's facility, so that this information can be incorporated into contractor's operation and maintenance manuals at project handover.

## 2.0 Light Sources

### 2.1 LEDs/LED Modules

#### 2.1.1 Colour Consistency

The importance of colour consistency between luminaires and over time is critical to the success of the lighting scheme. The light produced by LEDs described as the same correlated colour

temperature should produce light that is indiscernible in appearance from other LEDs of the same CCT. It is the responsibility of the party producing the final specification to compare samples of the specified luminaires to ensure this consistency across the project.

The benchmark for acceptable colour consistency between luminaires of the same type shall be 4 MacAdam ellipse (Standard Deviation Colour Matching) for road lighting and 2 MacAdam ellipses for all other lighting including, but not limited to, downlights, wall washers, spotlights, linear luminaires and decorative fittings. The consistency requirements for each specified type is indicated in this specification.

Colour of LED light sources should not exhibit greater change than three SDCM steps after five years.

#### 2.1.2 Colour Rendering

Colour rendering ability of luminaires and lamps is expressed in this specification using CIE Ra (Colour Rendering Index), assumed to be based on samples R1 to R8. Where relevant, minimum values for samples R9 and above may be given.

Unless specifically stated, a Colour Rendering Index of less than 80 will not be acceptable for any light source.

#### Note

Luminous flux, colour (chromaticity, CCT, CRI) and intensity distribution shall be measured and stated in compliance with IESNA LM79-08.

#### 2.1.3 Lifetime

The lifetime of LEDs shall be stated in terms of L70F10, unless explicitly stated otherwise within this specification. Measurement shall be in accordance with IESNA LM80-08, with extrapolated data in accordance with IESNA TM21-11. Unless otherwise stated, data should relate to an ambient temperature of 25°C for interior luminaires and 15°C for exterior luminaires.

#### 2.1.4 Thermal Management

Luminaire manufacturers shall ensure that sufficient thermal management is provided within the luminaire to maintain the junction temperature of LEDs at or below the LED manufacturer's recommendations. Heat rejection should be by means of heatsink, convective heatpipes and similar passive means. Active cooling by means of fan or oscillating diaphragm will not be acceptable unless explicitly identified in the specification.

### 3.0 Control Gear

#### 3.1 Constant Current LED Drivers

Constant current LED drivers shall deliver the designated current (at full output) +/-5%.

Drivers shall have an efficiency of at least 80% and power factor of at least 0.9.

Drivers which are dimmable via a control signal should have a parasitic load whilst in "off" state not exceeding 0.5W.

Drivers which are dimmable by "mains dimming" shall be compatible with phase-cut leading-edge triac dimmers, trailing edge IGBT (transistor) dimmers, and sinewave dimmers. Luminaire manufacturers should provide sample luminaires containing final specification components to the control system supplier so as to verify dimming compatibility.

#### 3.1.1 Control Protocols

LED drivers must be controllable by means of DALI, DMX or 0-10V/1-10V analogue, as specified item-by-item in this document. Relevant standards describing each protocol should be followed.

DALI devices must carry the DALI logo, indicating compliance testing with IEC 62386.

DMX devices must comply with USITT DMX512-A

DMX devices which are capable of direct connection to Ethernet in order to receive DMX data are specified item-by-item in this document as using Art-Net or Streaming ACN. Devices identified as being compatible with Art-Net must comply with *Art-NET 3, 2011*. Devices identified as being compatible with Streaming ACN must comply with *ANSI E1.31 – 2009 Entertainment Technology – Lightweight streaming protocol for transport of DMX512 using ACN*.

Devices specified as being compatible with 0-10V analogue control (where the device sinks current) must comply with *ESTA E1.3 - Entertainment Technology - Lighting Control System - 0 to 10V Analog Control Protocol*. Devices specified as compatible with 1-10V analogue control (where the device sources current) must comply with *IEC 60292 Annex E.2*.

#### 3.1.2 Dimming

The required dimming range of each luminaire type is specified item-by-item in this document. A minimum output figure is given, and should be read as the percentage of perceived output which the unit should be dimmable to before turning off.

LED(s) and driver in combination must provide continuous step-free, flicker free dimming similar in perception to an incandescent source.

#### 3.1.3 Flicker

Drivers and LEDs shall deliver illumination that is free from objectionable flicker as measured by flicker index (*ANSI/IES RP-16-10*). At all points within the dimming range from 100 percent to specified minimum, luminaires shall have flicker index less than 5% at all frequencies below 1000 Hz.

#### 3.1.4 Electrical Protection

All drivers should be able to withstand up to a 1,000 volt surge without impairment of performance as defined by *ANSI C62.41 Category A*.

Drivers should have in-built protection against damage due to a short circuit or open circuit on the output, and should recover automatically after fault condition is removed.

Drivers must incorporate protection against overload on outputs, such that no damage is sustained to the driver itself, and should recover automatically after fault condition is removed.

#### 3.1.5 Thermal Protection

All drivers should incorporate over-temperature protection, shutting down when required and recovering automatically once temperature falls back within operational range.

### 4.0 Optical Assemblies

Metal reflectors shall be of high-purity aluminium, bright anodised, or other finish if specified on item-by-item basis in this document.

Plastic reflectors shall be of polycarbonate with high-reflectance aluminium-look coating.

Lenses shall be of glass, PMMA, or polycarbonate and shall be optically colour-neutral, imparting no tint to the light.

### 5.0 Samples, Prototypes and Mock-ups

Should a sample of a standard product, or prototype of a special luminaire or variant of a standard luminaire be ordered, its cost shall either be incorporated into a tender price, or shall be invoiced to the client or his nominated representative separately, as agreed.

Any such sample prototype or variant shall be a sample of the luminaire type specified, and shall be submitted to the lighting consultant, together with full photometric and dimensional data if specifically requested, to enable both its accurate assessment and the detailing of any adjustments deemed necessary prior to the commencement of full production.

Prototypes are required of a series of luminaires where noted in the lighting equipment specification.

Where in-situ mock-ups are required to demonstrate the desired lit effect, this will be noted lighting equipment specification and in line with the architectural specification.

### 6.0 Packaging and Protection

All equipment shall be supplied with adequate means of protection to ensure its preservation during transport to site and any subsequent storage prior to installation. All vulnerable finished parts liable to scratching or other abrasion during handling and installation shall be further protected by a removable film applied prior to dispatch.

### 7.0 Manufacturers' Warranties

All equipment and components supplied shall be guaranteed against failure due to poor workmanship, materials, or luminaire design, for a period of not less than 5 years from the date of delivery to site, with the exception of lamps which shall be covered only by their manufacturer's normal assurances as to life expectancy and performance.

### 8.0 Standards

Lighting equipment should comply, where relevant, with the following standards and/or local versions to be agreed.

BS EN 62717 *LED modules for general lighting. Performance requirements*

BS EN 62031 *LED modules for general lighting. Safety specifications*

BS EN 62504 *General lighting. Light emitting diode (LED) products and related equipment*

BS EN 13032-1 *Light and lighting. Measurement and presentation of photometric data of lamps and luminaires*

BS EN 61347-1 *Lamp Control Gear, General and Safety Requirements*

BS EN 61347-2-7 *Lamp Control Gear, Requirements for Battery-Supplied Electronic Control Gear for Emergency Lighting*

BS EN 62384 *Electronic Control Gear for LED Modules, Performance Requirements*

BS EN 55015:2006 + A2:2009 *Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment*

BS EN 61000-3-2:2006+A2:2009 *Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

BS EN 61547:2009 *Equipment for general lighting purposes. EMC immunity requirements*

BS EN 60598-1:2015 *Luminaires. General requirements and tests*

BS EN 60598-2-22:2014. *Luminaires. Particular requirements. Luminaires for emergency lighting*

BS EN 60598-2-2:2012. *Luminaires. Particular requirements. Recessed luminaires*

BS EN 60598-2-13:2006+A1:2012. *Luminaires. Particular requirements. Ground recessed luminaires*

BS EN 60598-2-3:2003+A1:2011. *Luminaires. Particular requirements. Luminaires for road and street lighting*

BS EN 62612:2013. *Self-ballasted LED lamps for general lighting services with supply voltages ≤ 50 V. Performance requirements.*

IEC 62560 *Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications*

IEC 62612:2013 *Self-ballasted LED lamps for general lighting services with supply voltages > 50 V - Performance requirements*


IEC 62722-2-1:2014 *Luminaire performance - Part 2-1: Particular requirements for LED luminaires*

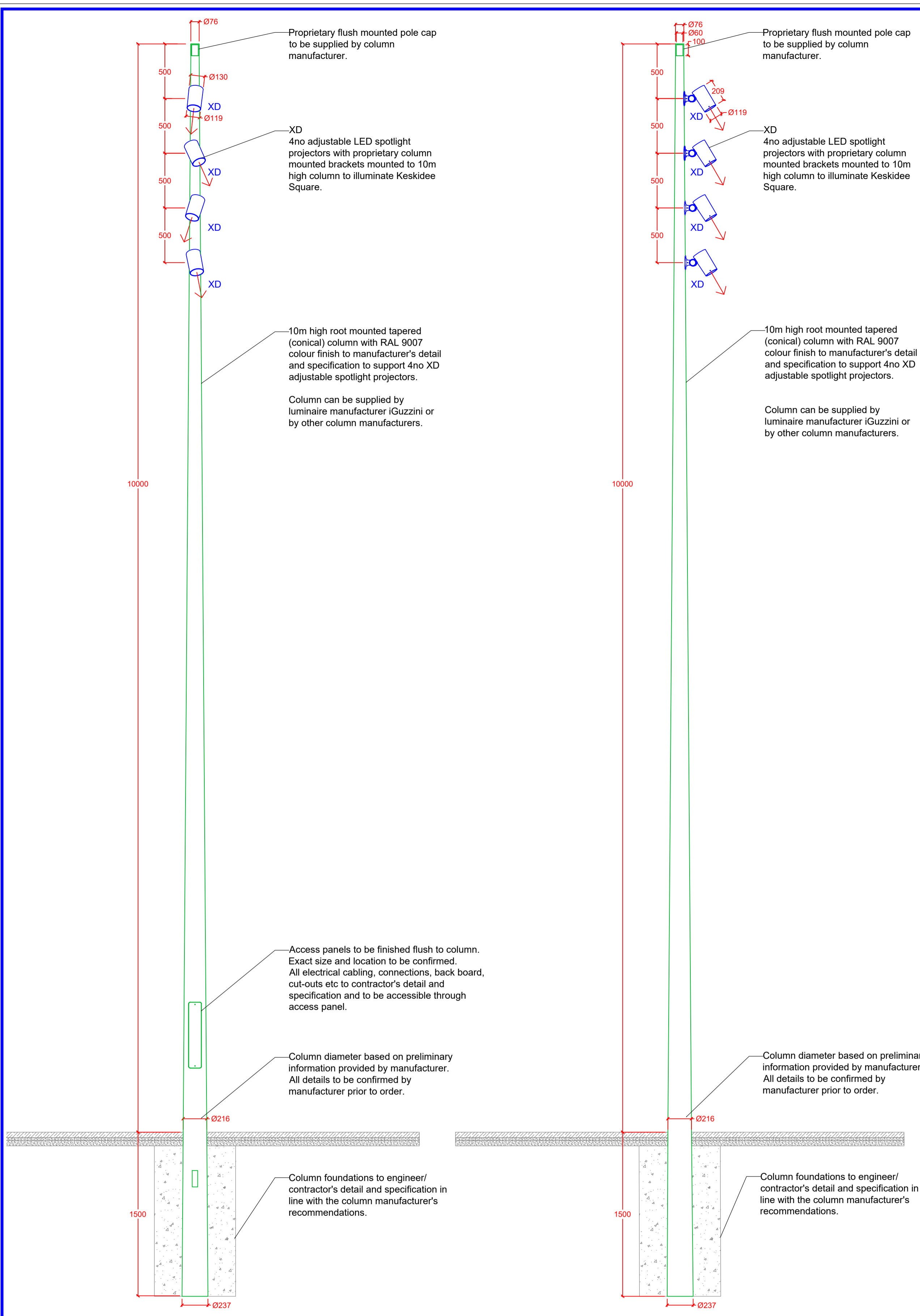
# **SPEIRS MAJOR**

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## KESKIDEE SQUARE, PLOT S4 PUBLIC REALM - LIGHTING TYPE X-D DETAILS

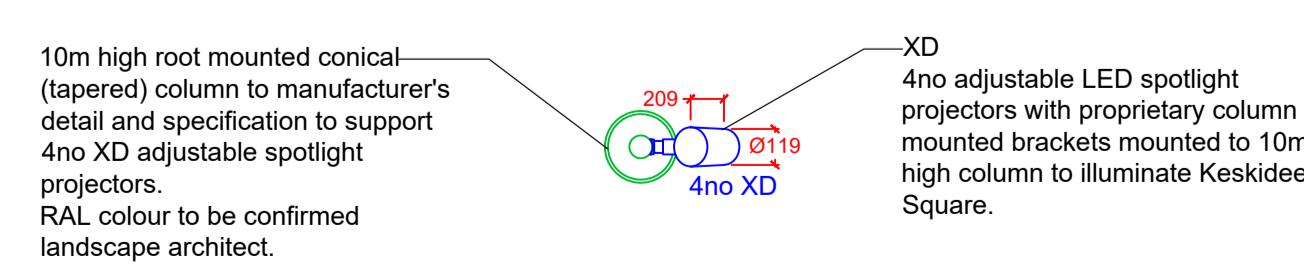
Refer to ALD931\_MP015 for Light Location

Lighting Code	Light Type	Location	No.	Details	Photo / Visualisation
X- D	Column Mounted spotlights 10m tall column with 4no. Adjustable spotlights	To south of Keswidee Square	1	Refer to the following information package for all details	 <p data-bbox="2006 1234 2709 1291">Above image shows the light fitting alongside the specified RAL colour</p>



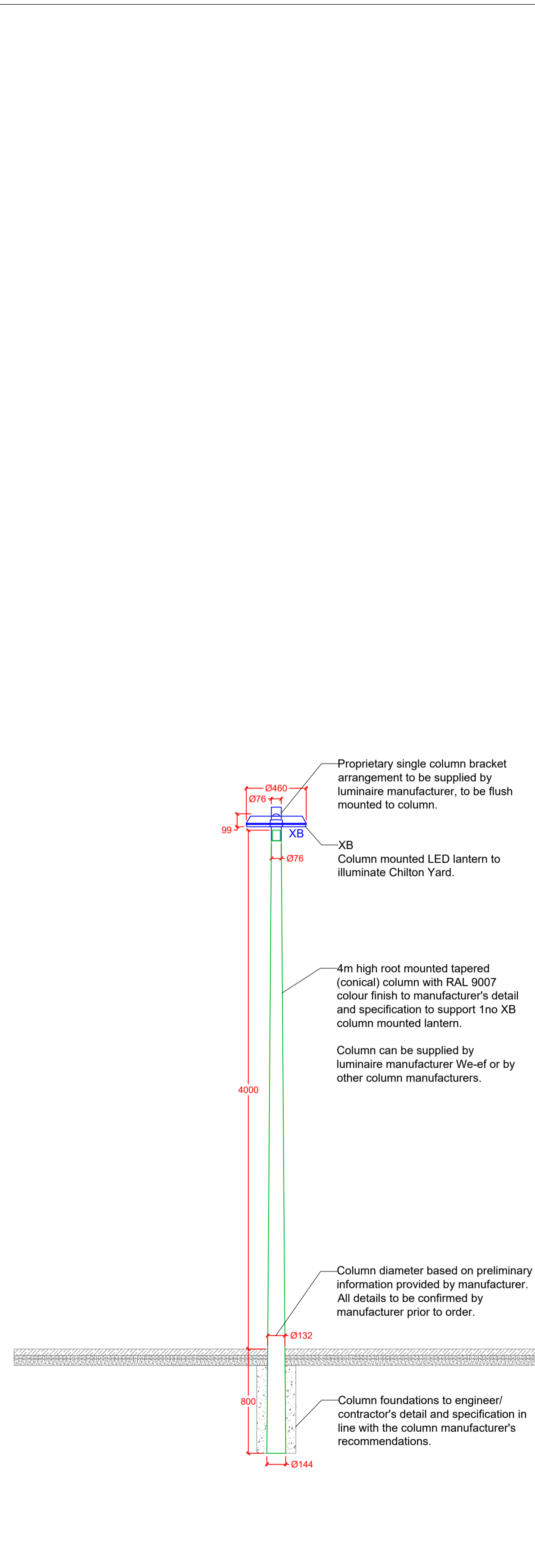
**1 Keskidee Square Column - Front Elevation**  
1:25

**2 Keskidee Square Column - Side Elevation**  
1:25

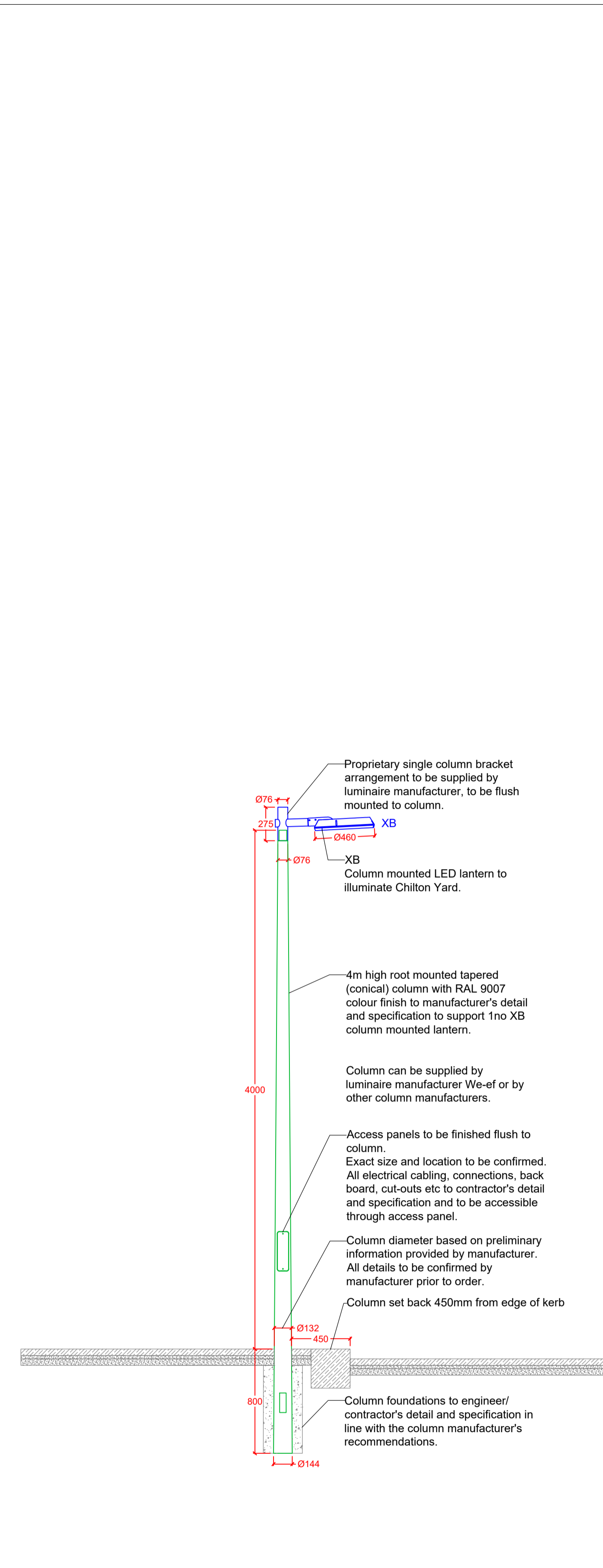


**3 Keskidee Square Column - Plan**  
1:25

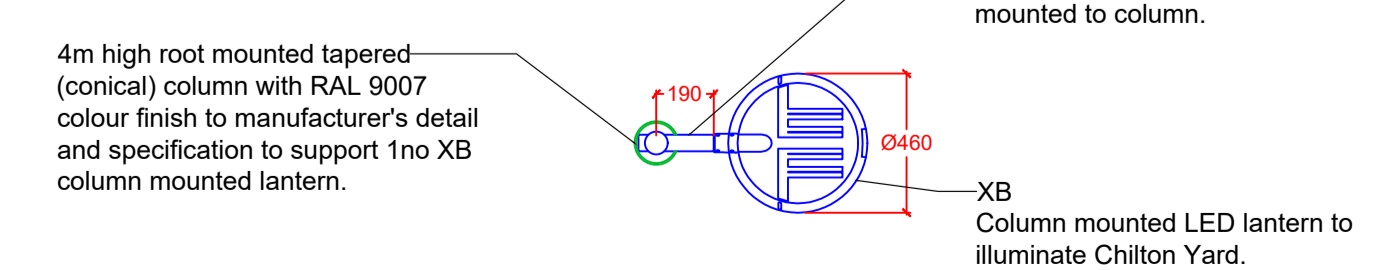
**DETAILS SHOWING LIGHTING TYPE XD FOR PLANNING APPROVAL**



**4 Chilton Yard Columns - Front Elevation**  
1:25



**5 Chilton Yard Columns - Side Elevation**  
1:25



**6 Chilton Yard Columns - Plan**  
1:25

**GENERAL DRAWING NOTES**

Do not scale off this drawing.

Lighting detail drawings to be read in conjunction with all other relevant documents, including lighting layout drawings, lighting equipment specifications and logical control channel schedules.

See architects' drawings for co-ordinated design information.

For details of electrical supply wiring, control data wiring, containment, etc. see relevant engineers' drawings.

All works to be carried out in accordance with such Standards, Building and IEE regulations, mandatory and statutory regulations and codes of practice as are deemed to apply in the relevant location.

Refer to Speirs Major Lighting Designer's Risk Assessment for associated risks under the construction (Design and Management) Regulations (where applicable).

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**IMPORTANT**

IF THIS DRAWING IS ISSUED TO CONTRACTORS, IT IS FOR INFORMATION ONLY - ARCHITECTS' AND ENGINEERS' DRAWINGS MUST BE USED AS THE BASIS FOR TENDER AND CONSTRUCTION.

**GENERAL LIGHTING DETAIL NOTES**

This detail drawing is based on available drawings by Architect/other consultants. Lighting equipment specified by Speirs Major is shown in **BLUE**. Any additional elements required to support lighting equipment and to achieve the required lighting effect are shown in **GREEN** and are to be detailed by other consultants/Contractor.

**CABLING AND CONTAINMENT**  
All cabling and containment to Electrical Engineer's/Contractor's detail and specification.

**FIXINGS**  
All fixings and bracketry to Architect's/Contractor's detail and specification.

**INSTALLATION**  
Luminaire manufacturer/supplier's installation instructions should be followed.

REV.	DATE	BY	CHKD	REVISION NOTES
02	12/03/21	PR	PR	ER Issue
01	18/02/21	PR	PR	Draft ER Issue
00	04/12/20	PR	PR	Initial Release of Information

**PROJECT:**  
Keskidee Square, Zone S, King's Cross  
London, UK

**DRAWING:**  
Keskidee Square and Chilton Yard  
Lighting Columns  
Luminaires XB and XD

**DRAWING NUMBER:** 11850-LD-001 **REV.** 02

**Scale:** 1:25 **ISO:** A1

**SPEIRS MAJOR**

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Last information update: December 2023

**Product configuration: Q728**

Q728: Spotlight with base - Warm White Led - integrated electronic control gear - Medium optic



**Product code**

Q728: Spotlight with base - Warm White Led - integrated electronic control gear - Medium optic

**Technical description**

Spotlight designed to use LED lamps and a Medium optic. The optical assembly and base is made of EN1706AC 46100LF aluminium alloy and subjected to a multi-step, pre-treatment process, in which the main phases are degreasing, fluorozirconation (a protective surface film) and sealing (with a nano-structured silane layer). The following painting stage consists of a primer and a liquid acrylic paint, cured at 150°C, with a high level of weather and UV ray resistance. 5 mm thick tempered sodium-calcium closing glass. Double adjustability allows a 360° rotation about the vertical axis and 90° tilting relative to the horizontal plane. Mechanical aiming locks for rotation on both the vertical axis and horizontal plane. Complete with a monochrome LED circuit and an Opti Beam Lens optic system. The product includes a PG13.5 cable gland. Electronic DALI ballast integrated in product. Option of using optic accessories assembled via an accessory holder frame. All external screws used are made of A2 stainless steel.

**Installation**

Floor, wall, ceiling or ground-installed via pole or stake.

**Colour**

White (01) | Black (04) | Grey (15) | Rust Brown (F5)

**Weight (Kg)**

3.85

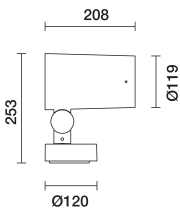
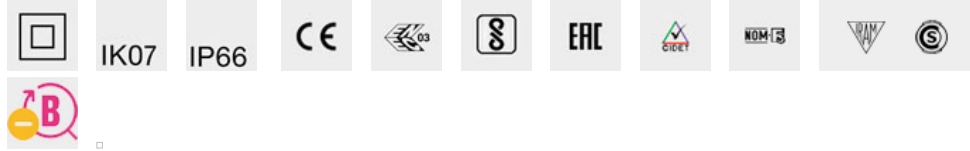
**Mounting**

wall surface|ground spike

**Wiring**

Double PG.

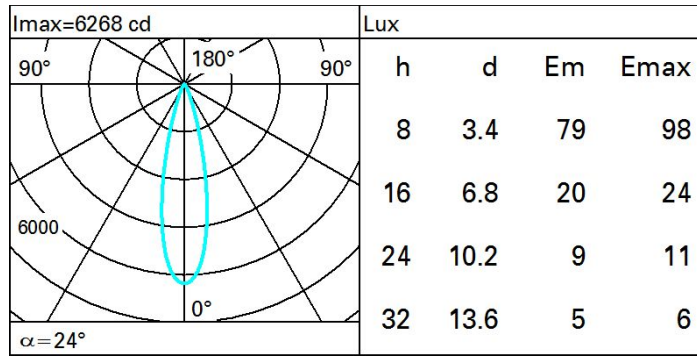
Complies with EN60598-1 and pertinent regulations



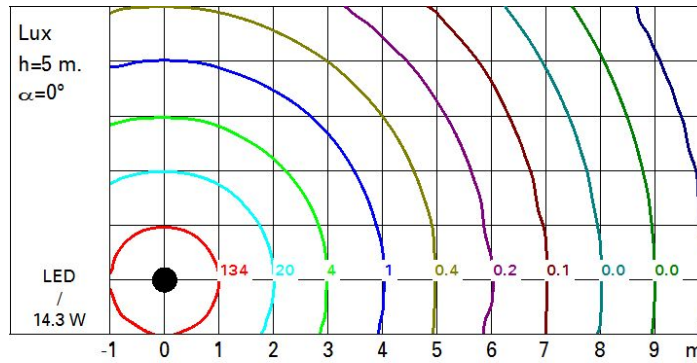
**Technical data**

lm system:	1386	Life Time LED 2:	100,000h - L90 - B10 (Ta 40°C)
W system:	14.3	Ballast losses [W]:	2.3
lm source:	1800	Lamp code:	LED
W source:	12	Number of lamps for optical assembly:	1
Luminous efficiency (lm/W, real value):	96.9	ZVEI Code:	LED
lm in emergency mode:	-	Number of optical assemblies:	1
Total light flux at or above an angle of 90° [Lm]:	0	Intervallo temperatura ambiente:	from -20°C to 50°C.
Light Output Ratio (L.O.R.) [%]:	77	Lifetime of product at ambient operating temperature:	≥ 50.000h Ta=40°C
Beam angle [°]:	24°	Power factor:	See installation instructions
CRI (minimum):	80	Inrush current:	5 A / 220 µs
Colour temperature [K]:	3000	Maximum number of luminaires of this type per miniature circuit breaker:	B10A: 81 luminaires B16A: 130 luminaires C10A: 135 luminaires C16A: 221 luminaires
MacAdam Step:	2	Minimum dimming %:	1
Life Time LED 1:	100,000h - L90 - B10 (Ta 25°C)	Control:	DALI-2

**Polar**



**Isolux**



**UGR diagram**

Corrected UGR values (at 1800 lm bare lamp luminous flux)											
Reflect.:		viewed crosswise					viewed endwise				
ceiling	cav	0.70	0.70	0.50	0.50	0.30	0.70	0.70	0.50	0.50	0.30
walls		0.50	0.30	0.50	0.30	0.30	0.50	0.30	0.50	0.30	0.30
work pl.		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Room dim		viewed crosswise					viewed endwise				
x	y										
2H	2H	8.9	10.9	9.3	11.2	11.5	8.9	10.9	9.3	11.2	11.5
	3H	8.8	10.3	9.1	10.6	10.9	8.8	10.3	9.2	10.6	11.0
	4H	8.7	10.0	9.1	10.3	10.6	8.7	10.0	9.1	10.3	10.7
	6H	8.7	9.7	9.0	10.0	10.3	8.7	9.7	9.1	10.0	10.4
	8H	8.6	9.6	9.0	9.9	10.3	8.6	9.6	9.0	10.0	10.3
	12H	8.6	9.5	9.0	9.9	10.3	8.6	9.6	9.0	9.9	10.3
4H	2H	8.7	10.0	9.1	10.3	10.7	8.7	10.0	9.1	10.3	10.6
	3H	8.6	9.6	9.0	9.9	10.3	8.6	9.6	9.0	9.9	10.3
	4H	8.5	9.4	8.9	9.8	10.2	8.5	9.4	8.9	9.8	10.2
	6H	8.1	9.7	8.6	10.2	10.6	8.1	9.7	8.6	10.2	10.6
	8H	8.0	9.8	8.5	10.3	10.7	8.0	9.8	8.5	10.3	10.7
	12H	7.9	9.8	8.4	10.2	10.8	7.9	9.8	8.4	10.2	10.8
8H	4H	8.0	9.8	8.5	10.3	10.7	8.0	9.8	8.5	10.3	10.7
	6H	7.9	9.6	8.4	10.1	10.6	7.9	9.6	8.4	10.1	10.6
	8H	7.9	9.4	8.4	9.9	10.4	7.9	9.4	8.4	9.9	10.4
	12H	8.0	9.0	8.5	9.5	10.1	8.0	9.0	8.5	9.5	10.1
12H	4H	7.9	9.8	8.4	10.2	10.8	7.9	9.8	8.4	10.2	10.8
	6H	7.9	9.4	8.4	9.9	10.4	7.9	9.4	8.4	9.9	10.4
	8H	8.0	9.0	8.5	9.5	10.1	8.0	9.0	8.5	9.5	10.1
Variations with the observer position at spacing:											
S =	1.0H	3.9 / -6.8					3.9 / -6.8				
	1.5H	6.5 / -12.5					6.5 / -12.5				
	2.0H	8.5 / -17.7					8.5 / -17.7				

# SPEIRS MAJOR

## Lighting Equipment Specification Keskidee Square and Chilton Yard

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PROJECT:	Keskidee Square, Zone S King's Cross, London, UK
PROJECT NUMBER:	11850
DOCUMENT NUMBER:	11850-LP-001 <span style="border: 1px solid blue; padding: 0 2px;">XD</span>
REVISION:	01

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DOCUMENT SHOWS XD LIGHT SPECIFICATION  
FOR PLANNING APPROVAL

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REV.	DATE	BY	CHECKED	REVISION NOTES
00	18/02/21	PR	PR	Initial release of information
01	26/02/21	PR	PR	ERs Issue

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Introduction	Page 4
Specification of Lighting Equipment	Page 5
Notes	Page 8

This Lighting Equipment Specification has been produced by Speirs Major as part of the package of documentation describing the lighting design for the project at Stage 3 in the design process.

The Specification (alongside associated documents) is intended to allow the design to be handed over to the appointed Design & Build contractor for development to Stage 4 or contractor's proposals, and construction.

**Column Mounted Spotlights - Keskidee Square**

**Luminaire Ref. XD**



**DESCRIPTION:**  
Exterior quality IP66 and IK07 rated column mounted adjustable spotlight with a high performance opti-beam lens optic to provide a 24° rotational symmetric light distribution. Utilising a 230V 12W warm white 3000K CCT LED module to provide a delivered lumen output of 1309 lumens with CRI 80 and colour consistency of 2 MacAdam ellipse. Aluminium alloy housing with a clear glass safety lens and RAL 9007 paint finish. Luminaire bracket provides 360° rotation and 90° tiltable adjustment with mechanical aiming locks. Luminaire supplied with an integral DALI dimmable LED driver.

**LUMINAIRE:**  
Protection Rating: IP66 & IK07  
Optical distribution: 24°  
Mounting: Column mounted  
Finish: RAL 9007  
Circuit/System Wattage:(W) 14.3 W  
Lumen Output:(lm) 1309 lm  
(delivered lumens)  
Luminaire Efficacy: (lm/W) 91 lm/W  
(luminaire lumens/circuit Watt)

**LUMINAIRE ORDERING INFORMATION:**  
Manufacturer: iGuzzini  
Product: Palco  
Catalogue Number: TG Q728.S0022 - RAL9007  
Ordering Notes: To be supplied with accessories listed below.

**ACCESSORIES:**  
Honeycomb Louvre  
Cowl  
10m tapered (conical) root mounted column

**ACCESSORY ORDERING INFORMATION:**  
Catalogue Number TG.X258  
TG.X536 - RAL9007  
TGS.2856 - RAL9007

**LIGHT SOURCE:**  
Type: LED  
Wattage: 12 W  
Colour Temperature: 3000K  
Colour Rendering: CRI 80  
Base: Integral LED  
Lamp Lumens: (lm) 1700 lm  
Efficacy: (lm/W) 141.6 lm/W  
Rated Life: 100,000 hrs (L80B10)  
Colour Consistency: 2 MacAdam ellipse

**LIGHT SOURCE ORDERING INFORMATION:**  
Manufacturer: -  
Reference: Integral LED

**DRIVER/ BALLAST:**  
Driver/Ballast type: Integral  
IP Rating: n/a  
Elec. Input: 230VAC  
Output: 230VAC

**DRIVER ORDERING INFORMATION:**  
Manufacturer: -  
Catalogue Number: n/a  
Max. quantity of luminaires per driver: 1  
Notes: -

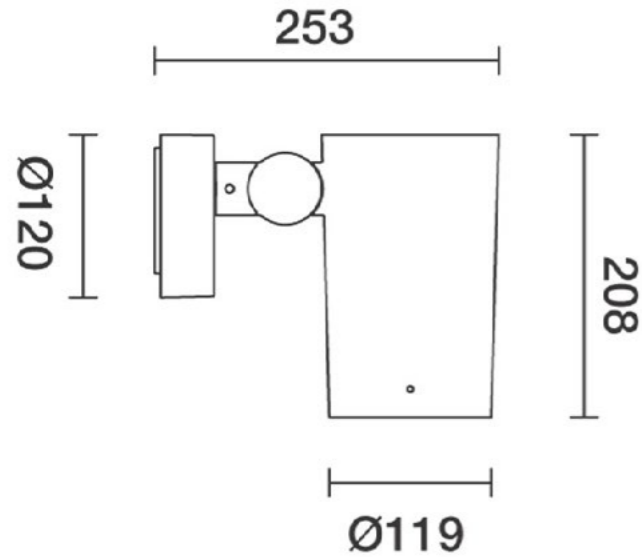
Maximum Current/Load n/a  
Dimming Range: 100% - 1%  
Control Protocol: DALI  
Size: (if remote) n/a  
Weight: (if remote) n/a

**DC POWER SUPPLY: (IF REQUIRED)**  
IP Rating: -  
Elec. Input: -  
Output Voltage: -  
Maximum Current/Load: -  
Size: -  
Weight: -

**DC POWER SUPPLY ORDERING INFORMATION:**  
Manufacturer: -  
Catalogue Number: n/a  
Max. quantity of luminaires/drivers per DC power supply: -  
Notes: -

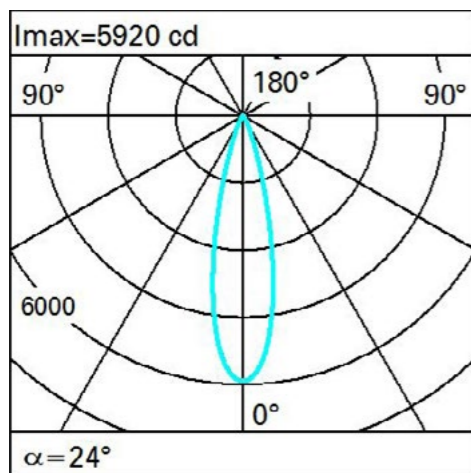
**DRIVER + DC POWER SUPPLY NOTES:**  
n/a

**MANUFACTURER/SUPPLIER INFORMATION:**  
Manufacturer/Supplier: iGuzzini Illuminazione UK LTD  
Telephone: 01483 468 000  
Email: info.uk@iguzzini.com  
Contact: Terence Goode  
Contact Telephone: 07710 824429  
Contact Email: terence.goode@iguzzini.co.uk



**SPECIAL REQUIREMENTS:**  
To be mounted on 10m tapered (conical) root mounted column.

**IMPORTANT NOTES:**  
All wiring, containment, etc. to electrical contractor's drawings, details and specification.  
All associated fixings, mounting and bracketry to contractor's drawings, details and specification.



**PHYSICAL CHARACTERISTICS:**  
Dimensions 253 x 208 x Ø120 x Ø119mm  
Cut Out: n/a  
Recess: n/a  
Bezel: n/a  
Weight: 3.85kg

**REFER TO DRAWINGS + DOCUMENTS:**  
11850-LA-001  
11850-LD-001

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## 1.0 General Requirements

### 1.1 Electrical

Electrical supply on site is presumed to be 230VAC (+10%/−6%), 50Hz, single phase and/or 415VAC (+ 6% and - 10%) three phase in accordance with EN50160. All equipment should be compatible with this supply.

Luminaires should exhibit no perceivable change in light output with a variation of plus/minus 10 percent supply voltage.

Total Harmonic Distortion due to any lighting equipment shall be less than 20% and meet ANSI C82.11 maximum allowable THD requirements at full output.

### 1.2 Physical

#### 1.2.1 Materials and Finishes

Where galvanically incompatible metals are used in the construction of a luminaire, design must eliminate galvanic corrosion, through separation and/or insulation.

Paints and powder coat finishes should be appropriate for the luminaire's proposed location. Exterior equipment should employ finishes which are stable to UV light, windborne particles and other environmental factors. Where specified as "Marine Grade", finishes must also be resilient to prolonged exposure to salt water spray.

"Marine Grade", in the context of stainless steel, refers to SAE316 specification.

Any gaskets should be made of materials which do not out-gas chemicals which can degrade the LED dies or phosphors.

#### 1.2.2 Ingress Protection

IP Ratings stated in this specification refer to IEC standard 60529. Where IP68 is specified (continuous immersion), test conditions are assumed to be 3m depth in fresh water, unless otherwise specified.

#### 1.2.3 Fixing

Clamp or spring assemblies for recessing downlights must be designed so as to be installable and removable without damaging plasterboard soffits.

Removable front-plates, reflectors, trim rings, etc should be physically retained to the luminaire body by means of a wire or chain safety bond.

Fixings used to retain ground-recessed lights and

to retain their top-plates shall utilise a vandal-proof fastener.

#### 1.2.4 Adjustment and Lockability

Where luminaires feature pan and/or tilt adjustability, adjustment in both axes should be lockable by means of a knurled knob, allen screw or similar. Such locking mechanisms must not allow for any sag through gravity over time.

### 1.3 Environmental Conditions

All exterior equipment should be capable of operation at temperatures between -20°C and +50°C without de-rating, and at atmospheric humidity of up to 90% (non-condensing).

### 1.4 Maintenance

#### 1.4.1 Cleaning

It must be possible for all external surfaces of luminaires to be cleaned safely and easily without the use of chemicals or abrasives, and without disconnecting power.

#### 1.4.2 Replacement Parts and Repair Services

Manufacturers should be capable of providing spare parts and/or repair services for specified equipment for a period of not less than ten years from purchase. Replacement LED modules and circuit boards should produce the same output in lumens, colour temperature and CRI, as the original units, regardless of improved conversion efficiency due to technological development - electrical load may be lower than the original units.

Any replacement of LED module/circuit board or driver electronics should maintain the same dimming curve as the original luminaire.

It should be made clear at time of order whether equipment is serviceable by end-user or requires return-to-base for repair at manufacturer's facility, so that this information can be incorporated into contractor's operation and maintenance manuals at project handover.

## 2.0 Light Sources

### 2.1 LEDs/LED Modules

#### 2.1.1 Colour Consistency

The importance of colour consistency between luminaires and over time is critical to the success of the lighting scheme. The light produced by LEDs described as the same correlated colour

temperature should produce light that is indiscernible in appearance from other LEDs of the same CCT. It is the responsibility of the party producing the final specification to compare samples of the specified luminaires to ensure this consistency across the project.

The benchmark for acceptable colour consistency between luminaires of the same type shall be 4 MacAdam ellipse (Standard Deviation Colour Matching) for road lighting and 2 MacAdam ellipses for all other lighting including, but not limited to, downlights, wall washers, spotlights, linear luminaires and decorative fittings. The consistency requirements for each specified type is indicated in this specification.

Colour of LED light sources should not exhibit greater change than three SDCM steps after five years.

#### 2.1.2 Colour Rendering

Colour rendering ability of luminaires and lamps is expressed in this specification using CIE Ra (Colour Rendering Index), assumed to be based on samples R1 to R8. Where relevant, minimum values for samples R9 and above may be given.

Unless specifically stated, a Colour Rendering Index of less than 80 will not be acceptable for any light source.

#### Note

Luminous flux, colour (chromaticity, CCT, CRI) and intensity distribution shall be measured and stated in compliance with IESNA LM79-08.

#### 2.1.3 Lifetime

The lifetime of LEDs shall be stated in terms of L70F10, unless explicitly stated otherwise within this specification. Measurement shall be in accordance with IESNA LM80-08, with extrapolated data in accordance with IESNA TM21-11. Unless otherwise stated, data should relate to an ambient temperature of 25°C for interior luminaires and 15°C for exterior luminaires.

#### 2.1.4 Thermal Management

Luminaire manufacturers shall ensure that sufficient thermal management is provided within the luminaire to maintain the junction temperature of LEDs at or below the LED manufacturer's recommendations. Heat rejection should be by means of heatsink, convective heatpipes and similar passive means. Active cooling by means of fan or oscillating diaphragm will not be acceptable unless explicitly identified in the specification.



### 3.0 Control Gear

#### 3.1 Constant Current LED Drivers

Constant current LED drivers shall deliver the designated current (at full output) +/-5%.

Drivers shall have an efficiency of at least 80% and power factor of at least 0.9.

Drivers which are dimmable via a control signal should have a parasitic load whilst in "off" state not exceeding 0.5W.

Drivers which are dimmable by "mains dimming" shall be compatible with phase-cut leading-edge triac dimmers, trailing edge IGBT (transistor) dimmers, and sinewave dimmers. Luminaire manufacturers should provide sample luminaires containing final specification components to the control system supplier so as to verify dimming compatibility.

#### 3.1.1 Control Protocols

LED drivers must be controllable by means of DALI, DMX or 0-10V/1-10V analogue, as specified item-by-item in this document. Relevant standards describing each protocol should be followed.

DALI devices must carry the DALI logo, indicating compliance testing with IEC 62386.

DMX devices must comply with USITT DMX512-A

DMX devices which are capable of direct connection to Ethernet in order to receive DMX data are specified item-by-item in this document as using Art-Net or Streaming ACN. Devices identified as being compatible with Art-Net must comply with *Art-NET 3, 2011*. Devices identified as being compatible with Streaming ACN must comply with *ANSI E1.31 – 2009 Entertainment Technology—Lightweight streaming protocol for transport of DMX512 using ACN*.

Devices specified as being compatible with 0-10V analogue control (where the device sinks current) must comply with *ESTA E1.3 - Entertainment Technology - Lighting Control System - 0 to 10V Analog Control Protocol*. Devices specified as compatible with 1-10V analogue control (where the device sources current) must comply with *IEC 60292 Annex E.2*.

#### 3.1.2 Dimming

The required dimming range of each luminaire type is specified item-by-item in this document. A minimum output figure is given, and should be read as the percentage of perceived output which the unit should be dimmable to before turning off.

LED(s) and driver in combination must provide continuous step-free, flicker free dimming similar in perception to an incandescent source.

#### 3.1.3 Flicker

Drivers and LEDs shall deliver illumination that is free from objectionable flicker as measured by flicker index (*ANSI/IES RP-16-10*). At all points within the dimming range from 100 percent to specified minimum, luminaires shall have flicker index less than 5% at all frequencies below 1000 Hz.

#### 3.1.4 Electrical Protection

All drivers should be able to withstand up to a 1,000 volt surge without impairment of performance as defined by *ANSI C62.41 Category A*.

Drivers should have in-built protection against damage due to a short circuit or open circuit on the output, and should recover automatically after fault condition is removed.

Drivers must incorporate protection against overload on outputs, such that no damage is sustained to the driver itself, and should recover automatically after fault condition is removed.

#### 3.1.5 Thermal Protection

All drivers should incorporate over-temperature protection, shutting down when required and recovering automatically once temperature falls back within operational range.

### 4.0 Optical Assemblies

Metal reflectors shall be of high-purity aluminium, bright anodised, or other finish if specified on item-by-item basis in this document.

Plastic reflectors shall be of polycarbonate with high-reflectance aluminium-look coating.

Lenses shall be of glass, PMMA, or polycarbonate and shall be optically colour-neutral, imparting no tint to the light.

### 5.0 Samples, Prototypes and Mock-ups

Should a sample of a standard product, or prototype of a special luminaire or variant of a standard luminaire be ordered, its cost shall either be incorporated into a tender price, or shall be invoiced to the client or his nominated representative separately, as agreed.

Any such sample prototype or variant shall be a sample of the luminaire type specified, and shall be submitted to the lighting consultant, together with full photometric and dimensional data if specifically requested, to enable both its accurate assessment and the detailing of any adjustments deemed necessary prior to the commencement of full production.

Prototypes are required of a series of luminaires where noted in the lighting equipment specification.

Where in-situ mock-ups are required to demonstrate the desired lit effect, this will be noted lighting equipment specification and in line with the architectural specification.

### 6.0 Packaging and Protection

All equipment shall be supplied with adequate means of protection to ensure its preservation during transport to site and any subsequent storage prior to installation. All vulnerable finished parts liable to scratching or other abrasion during handling and installation shall be further protected by a removable film applied prior to dispatch.

### 7.0 Manufacturers' Warranties

All equipment and components supplied shall be guaranteed against failure due to poor workmanship, materials, or luminaire design, for a period of not less than 5 years from the date of delivery to site, with the exception of lamps which shall be covered only by their manufacturer's normal assurances as to life expectancy and performance.

### 8.0 Standards

Lighting equipment should comply, where relevant, with the following standards and/or local versions to be agreed.

BS EN 62717 *LED modules for general lighting. Performance requirements*

BS EN 62031 *LED modules for general lighting. Safety specifications*

BS EN 62504 *General lighting. Light emitting diode (LED) products and related equipment*

BS EN 13032-1 *Light and lighting. Measurement and presentation of photometric data of lamps and luminaires*

BS EN 61347-1 *Lamp Control Gear, General and Safety Requirements*

BS EN 61347-2-7 *Lamp Control Gear, Requirements for Battery-Supplied Electronic Control Gear for Emergency Lighting*

BS EN 62384 *Electronic Control Gear for LED Modules, Performance Requirements*

BS EN 55015:2006 + A2:2009 *Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment*

BS EN 61000-3-2:2006+A2:2009 *Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

BS EN 61547:2009 *Equipment for general lighting purposes. EMC immunity requirements*

BS EN 60598-1:2015 *Luminaires. General requirements and tests*

BS EN 60598-2-22:2014. *Luminaires. Particular requirements. Luminaires for emergency lighting*

BS EN 60598-2-2:2012. *Luminaires. Particular requirements. Recessed luminaires*

BS EN 60598-2-13:2006+A1:2012. *Luminaires. Particular requirements. Ground recessed luminaires*

BS EN 60598-2-3:2003+A1:2011. *Luminaires. Particular requirements. Luminaires for road and street lighting*

BS EN 62612:2013. *Self-ballasted LED lamps for general lighting services with supply voltages ≤ 50 V. Performance requirements.*

IEC 62560 *Self-ballasted LED-lamps for general lighting services by voltage > 50 V – Safety specifications*

IEC 62612:2013 *Self-ballasted LED lamps for general lighting services with supply voltages > 50 V - Performance requirements*

IEC 62722-2-1:2014 *Luminaire performance - Part 2-1: Particular requirements for LED luminaires*

# **SPEIRS MAJOR**

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