



Project:
Reading – Rivermead Leisure Centre

Document:
External Lighting Impact Statement

Client:
Pellikaan Construction Ltd / GLL (Greenwich Leisure Limited)

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TLP Project No:
C7403



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Client	Pellikaan Construction Ltd / GLL (Greenwich Leisure Limited)
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Revision	First issue

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Revision	Updated to suit comments and minor lighting type changes



Executive Summary

This external lighting impact assessment Statement produced by Thornley & Lumb Partnership to support and demonstrates how the proposed development will meet the requirements of the planning application made by Pellikaan Construction Ltd. This report confirms that the impact of the external lighting has been carefully assessed to ensure that the existing environment can coexist with the proposed new build.

With this in mind the external lighting installation for the development has been designed to ensure minimal impact on the immediate, neighbouring surroundings and beyond the boundary of the site.

The lighting scheme proposed for this site has been designed using Holophane Factor Street luminaire which has excellent light distribution and lighting control minimising nuisance glare, overspill lighting, haze reduction & zero upward light. All luminaires are supplied by Holophane Lighting Group, who are market leaders in street & urban lighting in the UK.

The proposed external lighting to the development will comprise of :-

- 38 x 6m columns with LED slim post top luminaires (Holophane - Factor Street Light). The lighting heads provided are designed to minimise glare, spill & skyglow, with
- 28 x 1m bollards Luminaire have been used to illuminate walkways. (Holophane – Denver Elite Bollards).
- 7 x LED wall mounted Luminaire have been used to illuminate walkways and escape exit routes around the building perimeter. (Holophane – Denver Elite Wall Light)
- LED Emergency Over Door Escape Bulkheads. (where required)

The external lighting, both column, bollard and building mounted, shall be controlled via a time clock & Photo Cell daylight sensor, to prevent operation during daylight hours. Daylight sensors override on a manually switched lighting circuit is acceptable, the existing external lighting currently operates from dusk till dawn.

The precautions that have been undertaken at all stages of the design to mitigate the effect of the lighting installation, and although it cannot be considered as having zero effect on the existing environment, due to the operational times and restrictions that have been imposed and the high degree of light control that is proposed, we feel that the installation will have minimal impact to the surrounding area.



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1.0 Introduction

The lighting installation for the development has been carefully designed to ensure minimal impact on its surroundings beyond the boundary of the site, so that the illuminated car park can be a good neighbour to all adjacent areas.

In relation to the design of the new external lighting installation, a number of criteria have been identified and addressed as follows:

- If external lighting is required and if so are there any alternatives
- How much light is required
- How the illuminated car park can fit into the surroundings and neighbourly considerations.
- How skyglow (the brightening of the night sky around the development), glare (brightness of the lights' source when viewed against the dark sky) and light trespass / spill (spilling of light beyond the site boundary) can all be minimized.
- safety of vehicular and pedestrian movement;
- security of property and goods.

Various documents have been consulted and provide guidance on external lighting design namely: -

The Institute of Lighting Professionals (ILP formally the ILE), GN01:2020 Guidance note on the reduction of obtrusive light:

The ILP Guidance note sets out the industry standard for numerically measuring, (both through lighting design calculations and on site), the light spill from lighting into windows, sky glow, source luminance and building façade brightness. The ILP guidance note provides illuminance, luminance and percentage figures which must be satisfied both pre and post curfew for various types of environmental zone classifications.

Institute of Lighting Professionals (ILP formally the ILE), BATS Conservation Trust Lighting Guidance (January 2008) The Bat Conservation Trust and the ILE produced a paper in 2009, "Bats and Lighting in the UK", discussing the appropriate lighting levels, types of lamps, colour temperatures etc. which are suitable for lighting areas adjacent to bat houses.

Furthermore publications in section 3 – Lighting standards



2.0 Site Location

2.1 Existing Site

Rivermead Leisure Centre is situated to the north of Richfield Avenue in Reading, Berkshire, RG1 8EQ. (OS grid reference SU 707745).



Image 1: Google Earth Extract - Existing site location.

The existing Leisure Centre is situated to the north of Reading town centre approximately 200m to the south of the River Thames. Open parkland is between the leisure centre and parking and the River. The land immediately to the south of the Richfield Avenue comprises commercial development; extensive open grassland and parkland habitats are situated to west.

2.2 Proposed Scheme

The proposed New development is to comprise of the construction of a new two storey leisure centre including 25m 8 lane swimming pool, multi use sports hall with changing facilities. The new build will be constructed on the adjacent land of the existing carpark and subsequent demolition of the existing leisure complex once the new facility is fully operational. The proposed development was to include areas of hard landscaping including access road, pavements and parking, walkways and areas of soft landscaping to include planters, recreation grounds, seating areas & cycle racks.

There is also a requirement to maintain safe public access to the use of the demountable swimming pool to the rear of the site.

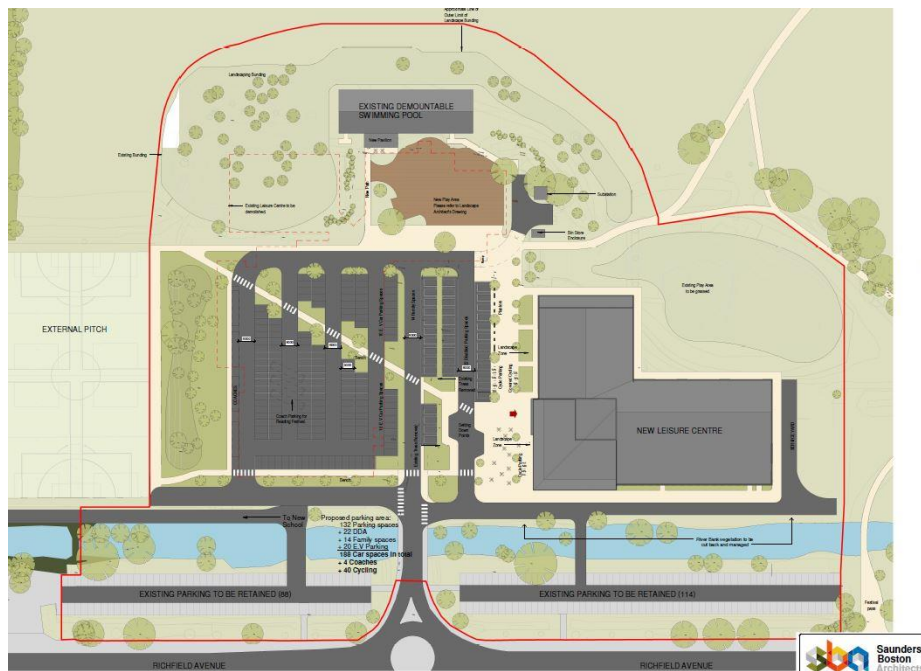


Image 2: Proposed site location (SBA Architect Layout) Red line indicates site boundary.

With regards to the external lighting design to the proposed site there are a number of specific areas which will need lighting for safety and to allow tasks to be completed such as entrance ways, emergency escapes & fire exits and the car park itself. Furthermore, there are areas where lighting may be illuminated to enhance the visitor experience (these will be kept to a minimum) such as the external play & seating areas. It was noted from client conversations that consideration should be afforded to the careful selection of luminaire in particular the column height to be kept to the minimum.



3.0 Lighting Standards

3.1 The following external lighting standards and guidance documents will form the basis for assessment of the minimum lighting design standard to be provided for the development:

British Standards:

BS 5489-1:2020 Code of Practice for the design of road lighting – Part 1: Lighting of roads and public amenity areas

BS EN 13201, 2:2015 Road lighting – Part 2: Performance requirements

CIBSE Lighting Guides:

CIBSE Lighting Guide LG1 - (2018) The Industrial Environment

CIBSE Lighting Guide LG6 - (2016) The Exterior Environment

CIE Publications:

CIE 136- (2000) – Guide to the Lighting of Urban Areas. (replaces CIE 92-1992)

CIE 126- (1997) – Guidelines for minimizing Skyglow

ILE/CIBSE:

Lighting the Environment - A guide to good urban lighting

Guidance Notes for the Reduction of Obtrusive Light GN01 (2020)



4.0 The Lighting Strategy

4.1 Methodology

This assessment has been undertaken in the context of existing environmental conditions and takes account of the fact that existing lighting is installed on the site at present.

The proposed areas on the site requiring lighting are as follows:

- Main Car Park - The times of use will be per the facilities opening hours, 7 days a week with the column mounted luminaires being illuminated from dusk till dawn. Outside these hours the natural daylight available will be exploited.
- Overspill Car Parks - The times of use will be per the facilities opening hours, 7 days a week with the column mounted luminaires being illuminated from dusk till dawn. Outside these hours the natural daylight available will be exploited.
- Building Perimeter Walkways - The times of use will be per the facilities opening hours, 7 days a week with the building mounted & final exit door bulkheads being illuminated from dusk till dawn. Outside these hours the natural daylight available will be exploited.
- New Play Areas - The times of use will be per the facilities opening hours, 7 days a week with the column mounted luminaires being illuminated from dusk till dawn. Outside these hours the natural daylight available will be exploited.

Within the car parking areas, the client (GLL) are focused on maintaining a safe and secure car park and all car parks will be floodlit generally to 10 lux (ave) to allow full operation of any onsite CCTV system and safe access and egress to cars and facilities for staff & customers.

TLP have carried out lux level calculations and skyglow plots using professional desktop software developed specifically for the application of external lighting.



4.2 Design Standards

The proposed external lighting installation will be designed in accordance with the environmental zone classification E3 that is set out within ILE guidance for reduction of light pollution. The table below is an extract from the ILE guidance note and sets out the environmental zone classifications for different environmental conditions. We have adopted the obtrusive light limitations for this external lighting installation as prescribed for an E3 classification. All lighting has been designed to be within these parameters.

TABLE 1 – OBTRUSIVE LIGHT LIMITATIONS FOR EXTERIOR LIGHTING INSTALLATIONS							
Environmental Zone	Sky Glow ULR [Max %]	Light into Windows E_v [Lux] (1)		Source Intensity I [kcd] (2)		Building Luminance Before curfew (3)	
		Before curfew	After curfew	Before curfew	After curfew	Average, L [cd/m²]	Maximum L [cd/m²]
E1	0	2	1*	0	0	0	0
E2	2.5	5	1	20	0.5	5	10
E3	5.0	10	2	30	1.0	10	60
E4	15.0	25	5	30	2.5	25	150

Notes:

Environmental Zone classification:

E1: Intrinsically dark areas - National Parks, Areas of Outstanding Natural Beauty, etc

E2: Low district brightness areas - Rural or small village locations

E3: **Medium district brightness areas - Small town centres or urban locations**

E4: High district brightness areas - Town/city centres with high levels of night-time activity

ULR = Upward Light Ratio of the Installation and is the maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky.

E_v = Vertical Illuminance in Lux normal to glazing Light Intensity in Candelas

L = Luminance in Candelas/m²

(1) Light into Windows – These values are suggested maximums and need to take account of existing light trespass at the point of measurement.

* Acceptable from public road lighting installations ONLY.

(2) Source Intensity – This applies to each source in the potentially obtrusive direction, outside of the area being lit. The figures given are for general guidance only and for some large sports lighting applications with limited mounting heights, may be difficult to achieve. If the aforementioned recommendations are followed, then it should be possible to further lower these figures.

(3) Building Luminance – This should be limited to avoid over lighting and relate to the general district brightness. In this reference building luminance is applicable to buildings directly illuminated as a night- time feature as against the illumination of a building caused by spill light from adjacent floodlights or floodlights fixed to the building but used to light an adjacent area.



4.3 Mitigation

It is envisaged that the Leisure Centre car park will be open all year to paying Customers / Staff / Visitors. Lighting will be switched by means of a timeclock (08.30 – 22:00) to ensure that the lights are not operating at all hours and controlled by suitably mounted photocell to ensure non-operation when there is adequate daylight available.

The proposed external lighting to the development comprises of the following :-

- 38 x 6m columns with LED slim post top luminaires (Holograph - Factor Street Light). The lighting heads provided are designed to minimise glare, spill & skyglow, with
- 28 x 1m bollards Luminaire have been used to illuminate walkways.
- 7 x LED wall mounted Luminaire have been used to illuminate walkways and escape exit routes around the building perimeter.
- LED Emergency Over Door Escape Bulkheads. (where required)

The light fitting heads for the car parking areas (see Section 6) utilise a fitting which emits 0% upward light and provides for a safe and secure car park to give light levels adequate for sufficient CCTV coverage, where applicable. The luminaire utilised, offers a varied selection of optics specifically selected for the intended use which provides minimal backlight, reducing overspill at the boundary. The luminaire tilt will be in line with the guidance note GN01:2020 & the main beam angle will be less than 70° to keep nuisance glare down to a minimum.

BS5489-1:2020 provides guidelines for lighting performance criteria and the following assumptions are made:

Street Lighting to Richfeild Avenue & walkway access to the school will not be required as there is existing public street lighting installed.

The existing 12m Lighting scheme to the existing external pitch is to be retained. The spill light from the leisure will not affect the current road network. It is not envisaged the proposed scheme will not have any major impact on lighting levels surrounding the south of the site due to screening by existing hedgerow vegetation.



4.4 Summary Impact Table for Lighting Issues

Potential impact	Nature of impact Permanent or temporary	Significance Major, moderate, minor or neutral (positive or negative)	Mitigation / Enhancement measures	Residual effects Major, moderate, minor or neutral (positive or negative)
Lighting levels too bright	Permanent	Moderate	Design lighting to recommended guidelines and no greater, all light levels are as detailed within BS and Secured By Design Existing Lighting	Neutral
Light pollution spill from the site	Permanent	Majorly Negative	Utilise Fittings with excellent light control giving minimal spillage outside the boundary within figures laid down in CIBSE guidelines for spill & skyglow and ILE guidelines. Columns located around the edge of the lit area directed inwards. Minimum number of columns and heads used to achieve the specified light levels. Switch off when not in use and restrict hours of use.	Moderate Negative
Light glare from the site (including upward glow)	Permanent	Majorly negative	Utilise Fittings with excellent glare control giving minimum skyglow. Columns located around the edge of the lit area directed inwards. Minimum number of columns and heads used to achieve the specified light levels. Switch off when not in use and restrict hours of use.	Minor Negative
Unightly columns and lighting heads	Permanent	Moderate negative	Within Car Parks the columns will be blended and finished to match in with the landscape scheme.	Minor Negative
Colour of light unacceptable	Permanent	Moderate	Use a lamp that generally is more acceptable to the public i.e. LED	Minor Negative



5.0 Control Measures

- 4.1 This section describes the particular control measures that this site will incorporate to minimise light spillage, trespass and pollution:
- 4.2 The external lighting shall be time controlled to ensure that the lighting installation only operates within the specified operating hours, and to provide a facility to switch part of the external lighting installation off during periods of low activity.
- 4.3 In addition, the external lighting installation shall incorporate a photo-electric cell control, to prevent the lighting installation operating during the hours of daylight, thus conserving energy and minimizing carbon emissions. The photo-electric cell set-point threshold shall be set at 50 lux.
- 4.4 A manual override control facility will be provided for testing and maintenance purposes only.
- 4.5 The whole of the external lighting installation will comply with the performance requirements set out within the ILE guidance note for reduction of light pollution.
- 4.6 The external lighting design will not incorporate any luminaires that have aiming angles beyond the horizontal working plane.
- 4.7 Measures shall be taken to eliminate light spillage onto adjacent land from luminaires positioned on the development site.
- 4.8 Illuminance levels will be reduced to the absolute legal minimum to conserve energy and to minimise light pollution.
- 4.9 The design shall incorporate measures to prevent light spillage onto adjacent land.
- 4.10 Where practically possible, all luminaires facing out of the development will be positioned to minimize direct visual contact with the lamp source.
- 4.11 The overall lighting scheme column height has been maintained at 6m and kept to this minimum to furthermore reduce upward lighting spill and sky glaze emanating from the site.



6.0 Luminaire Selection

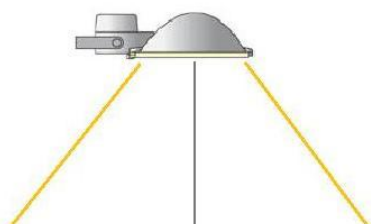
See Appendix B - Holophane Lighting Technical Submittal



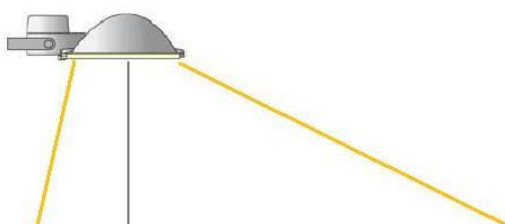
7.0 Glossary

7.1 Symmetric & Asymmetric Distribution

The Image below illustrates the difference between an Asymmetric and a Symmetric distribution floodlight, with the symmetrical version the light is distributed evenly about a plane, with the asymmetrical version the light is distributed primarily in one direction.

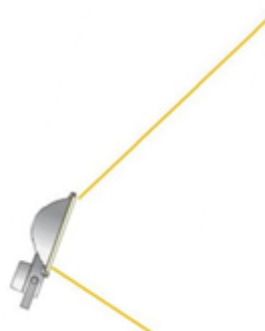
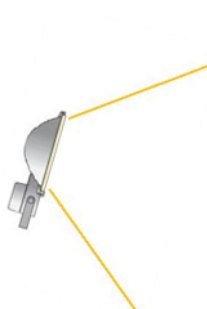


Symmetric



Asymmetric

If these fittings are mounted at too extreme an angle, then the result will be excessive amounts of light directed above the horizontal plane (i.e. upwards light) – this is an obvious case of “skyglow”



Effect of mounting at extreme angles

As can be seen in the illustrations above, the effect is considerably worse with the asymmetric version. Taking this into account we have decided on this project not to mount floods on the building to avoid this issue instead they shall be column mounted.

7.2 Glossary of Terms

Skyglow - Defined as the brightening of the night sky around the development.

Lux - A standard unit of light measurement.

Nuisance glare - The perceived brightness of an object viewed against a dark background – may cause annoyance.

Light trespass / Spill - Spill of light beyond the site boundary.

Uniformity (Emin/Eave) - Minimum to average lighting level.

Maintained Illuminance - The specified light level (lux) after 2/3000 hours of operation

Skyglow - The brightening of the night sky around the development

Upward Light Ratio (ULR) - Amount of light emitted upwards from the light fitting Defined as a percentage of amount of downward light ie 95% ULR (5 % lost upwards to sky)



8.0 Design Measures for Biodiversity

Refer to the preliminary ecology report prepared by John Wenman the Ecology Consultants and the relevant extracts relating to the operational mitigation of the spill of the external lighting and the potential impact to the surrounding habitat.



9.0 Conclusion.

Lighting in itself is not a problem; it only becomes a problem where it is excessive, poorly designed or badly installed (Lighting in the Countryside, Towards Good Practice: 2006).

Additional Design & control measures for providing artificial external lighting have been considered and have been incorporated into the external lighting design, where required to comply with Reading Borough Council Planning discharge conditions.

- 9.1 The designed lighting solution has been carefully generated to ensure the immediate environment has been protected including the surrounding areas that border the development and to reduce light spill to areas beyond this.
- 9.2 Careful consideration has been appropriated to ensure that the safe operation and movement of vehicular traffic and pedestrians emphasising, reduction of glare through choice of luminaires and efficient mounting heights.
- 9.3 It should also be noted that the illumination has been designed to meet operational and security requirements, whilst ensuring the design takes into consideration and limits light pollution and unobtrusive light impacting on the surrounding amenity and ecological zones (see 4.2 above).
- 9.4 The lighting has been kept to a practical standard using a mixture of efficient high-quality building and column mounted luminaires which have been chosen to minimise impact on the natural environment including further consideration on ecological constraints. Full descriptions and details of the proposed luminaires are as detailed in appendix B of this report.
- 9.5 Overall the proposed development requires appropriate levels of illumination throughout to satisfy the intended use of the site.
- 9.6 With prime focus and our careful consideration of the site and the proposed development, this has determined an outcome of providing an external lighting strategy that will create an acceptable lighting environment that accords with the needs of the occupier and the local policies, guidance and industry standard

It is concluded that the external lighting design, factoring in all the above considerations with careful luminaire selection and luminaire positioning will not individually or cumulatively have an adverse impact on the surrounding environment.



Appendix A – Proposed External Lighting Layout

See TLP Drawing Reference: C7403-TLP-00-00-DR-E-801

Appendix B – Proposed Light Fitting Technical Submittal

See Holophane Data Sheets Enclosed

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ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE AND MUST BE CHECKED ON SITE AND NOT SCALED FROM THIS DRAWING. THIS DRAWING IS TO BE READ IN ACCORDANCE WITH ALL RELEVANT SPECIFICATIONS AND ROOM DATA DOCUMENTS.

NOTES

LIGHTING DESIGN

WITHIN THE PROPOSED LEISURE CENTRE DEVELOPMENT, THERE IS A REQUIREMENT FOR LIGHTING TO THE CAR PARK AND WALKWAYS, THEREFORE THE FOLLOWING WORKS WILL BE REQUIRED:

- THE NEW PROPOSED CAR PARK, 7 x WALL LUMINAIRES, 28 x BOLLARDS & 38 x 6m NEW LIGHTING COLUMNS ARE REQUIRED TO ACHIEVE THE REQUIRED LIGHTING LEVELS. SEE ADJACENT LAYOUT FOR DETAILS.
- ALL EXTERNAL LIGHTING IS TO BE CONTROLLED VIA A 24/7 TIME CLOCK IN CONJUNCTION WITH A PHOTOCELL OVERRIDE.
- WITH RESPECT TO THE OVERALL ASSESSMENT AND CALCULATIONS CARRIED OUT, THE EXTERNAL LIGHTING INDICATED AND POLLUTION LEVELS ARE NOT INFLUENCED BY THE PROPOSED NUMBER AND LOCATIONS OF LIGHTING COLUMNS.
- IN SUMMARY ITS OUR CONSIDERED OPINION THAT THE NEW LIGHTING SCHEME PROPOSED WILL HAVE MINIMAL LIGHTING IMPACT TO THE SURROUNDING AREAS.
- CONTROL MEASURES HAVE BEEN INTRODUCED TO REDUCE OR ELIMINATE WHERE POSSIBLE MINIMISING THE IMPACT OF NUISANCE GLARE, OVERSPILL LIGHTING, HAZE REDUCTION & ZERO UPWARD LIGHT.

BS5489 PROVIDE GUIDELINES FOR LIGHTING PERFORMANCE CRITERIA. THE FOLLOWING ASSUMPTIONS ARE MADE:

- THE AREA TO BE ILLUMINATED IS CLASSIFIED AS A MIXED VEHICULAR AND PEDESTRIAN AREA ON THE SAME SURFACE

NOTE – THE EXTERNAL LIGHTING SCHEME IS TO COMPLY WITH THE FOLLOWING:
IUP: GUIDANCE FOR THE REDUCTION OF OBSTRUCTIVE LIGHT GN01:2020
CIBSE LIGHTING GUIDE LG6 – (2016) THE EXTERIOR ENVIRONMENT

ILLUMINANCE STATISTICS					
DESCRIPTION	SYMBOL	AVG	MAX	MIN	MIN / AVG
ACCESS ROAD	+	17 LUX	46 LUX	5 LUX	0.29
CAR PARK 1	+	12 LUX	30 LUX	5 LUX	0.42
CAR PARK 2	+	11 LUX	33 LUX	5 LUX	0.45
CAR PARK 3	+	11 LUX	19 LUX	5 LUX	0.45
CIRCULATION	+	10 LUX	41 LUX	5 LUX	0.50
PERIMETER	+	11 LUX	56 LUX	3 LUX	0.27
PLAY AREA	+	15 LUX	28 LUX	7 LUX	0.47
POOL ACCESS ROAD	+	11 LUX	31 LUX	5 LUX	0.45
WALKWAY	+	14 LUX	40 LUX	4 LUX	0.29
WALKWAY	+	13 LUX	22 LUX	5 LUX	0.38
WALKWAY	+	13 LUX	30 LUX	3 LUX	0.23

LUMINAIRE DATA	
LUMINAIRE EFFICACY:	115.10lm/W
LUMINAIRE POWER:	79W
LUMINAIRE FLOX:	8978lm
LUMINAIRE COLOUR:	3000K
LUMINAIRE LENS:	FORWARD

A1 – HOLOPHANE FACTOR STREETLIGHT

LUMINAIRE DATA	
LUMINAIRE EFFICACY:	115.10lm/W
LUMINAIRE POWER:	79W
LUMINAIRE FLOX:	8794lm
LUMINAIRE COLOUR:	3000K
LUMINAIRE LENS:	NARROW

A2 – HOLOPHANE FACTOR STREETLIGHT

LUMINAIRE DATA	
LUMINAIRE EFFICACY:	117.82lm/W
LUMINAIRE POWER:	79W
LUMINAIRE FLOX:	9100lm
LUMINAIRE COLOUR:	3000K
LUMINAIRE LENS:	SYMMETRIC

A3 – HOLOPHANE FACTOR STREETLIGHT

LUMINAIRE DATA	
LUMINAIRE EFFICACY:	115.81lm/W
LUMINAIRE POWER:	79W
LUMINAIRE FLOX:	9033lm
LUMINAIRE COLOUR:	3000K
LUMINAIRE LENS:	ASYMMETRIC

A4 – HOLOPHANE FACTOR STREETLIGHT

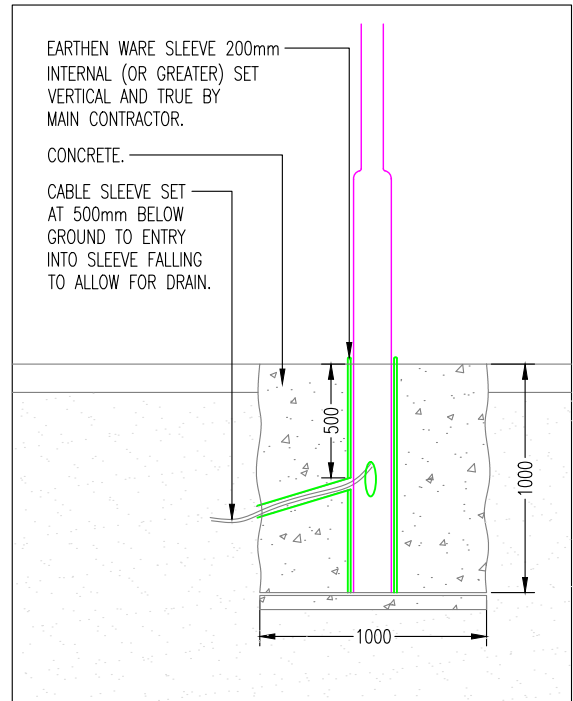
LUMINAIRE DATA	
LUMINAIRE EFFICACY:	67.92lm/W
LUMINAIRE POWER:	12W
LUMINAIRE FLOX:	815lm
LUMINAIRE COLOUR:	3000K
LUMINAIRE LENS:	ASYMMETRIC

B – HOLOPHANE DENVER ELITE BOLLARD

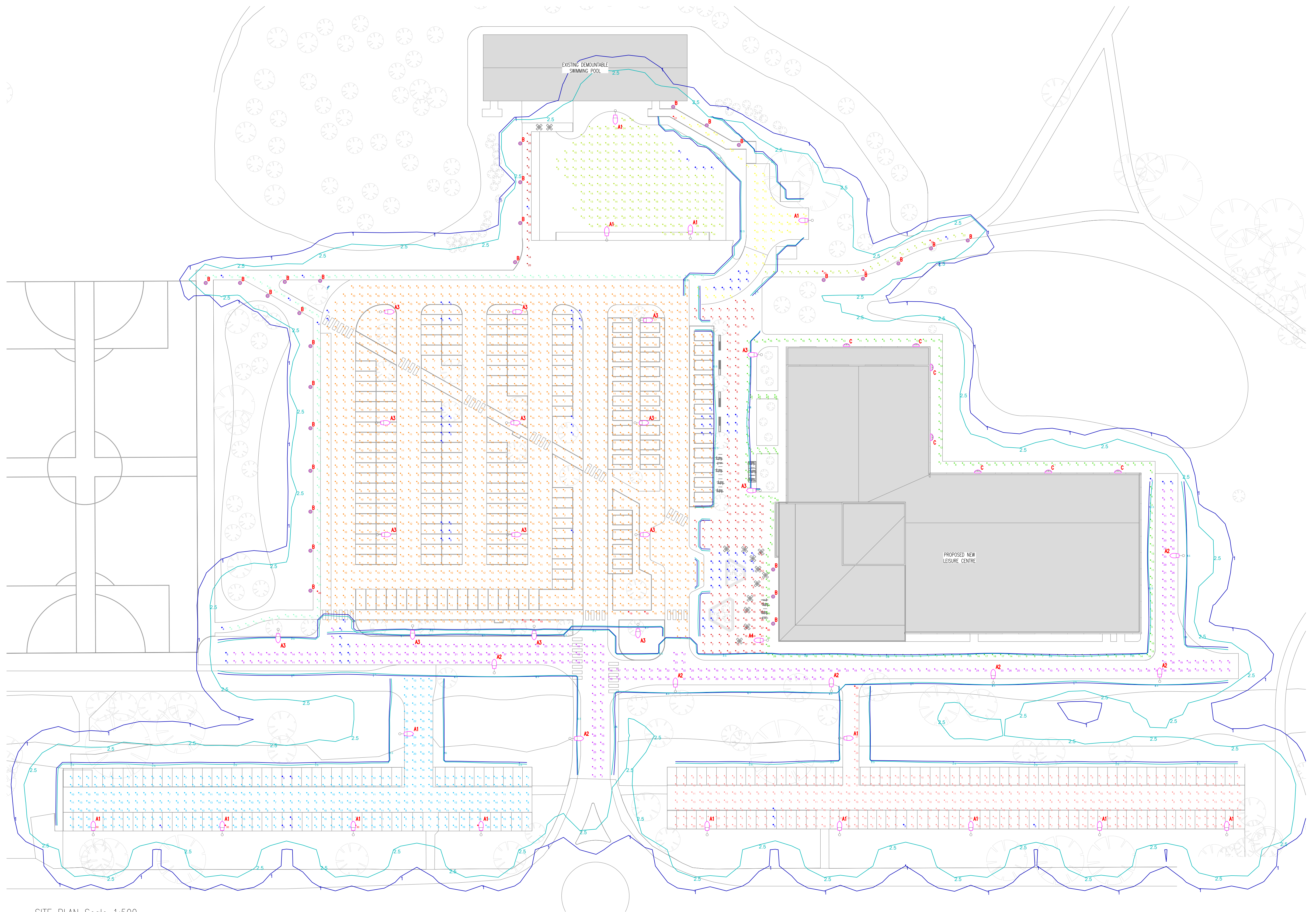
LUMINAIRE DATA	
LUMINAIRE EFFICACY:	95.17lm/W
LUMINAIRE POWER:	12W
LUMINAIRE FLOX:	1142lm
LUMINAIRE COLOUR:	3000K
LUMINAIRE LENS:	NARROW

C – HOLOPHANE DENVER ELITE WALL

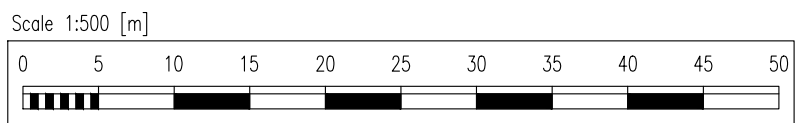
LIGHTING & EMERGENCY LIGHTING LEGEND		
SYMBOL	DESCRIPTION	MANUFACTURER REF
A1	EXTERNAL LED 6m COLUMN MOUNTED LUMINAIRE.	HOLOPHANE EUROPE REF: FTS.3.LA103.FM
A2	EXTERNAL LED 6m COLUMN MOUNTED LUMINAIRE WITH SPILL SHIELD.	HOLOPHANE EUROPE REF: FTS.3.LA103.NR
A3	EXTERNAL LED 6m COLUMN MOUNTED LUMINAIRE WITH SPILL SHIELD.	HOLOPHANE EUROPE REF: FTS.3.LA103.SY
A4	EXTERNAL LED 6m COLUMN MOUNTED LUMINAIRE WITH SPILL SHIELD.	HOLOPHANE EUROPE REF: FTS.3.LA103.AY
B	EXTERNAL ILLUMINATED BOLLARD.	HOLOPHANE EUROPE REF: DEB.L013.PAY.00
C	EXTERNAL WALL MOUNTED LUMINAIRE.	HOLOPHANE EUROPE REF: DEW.L013.NR.CGL



TYPICAL COLUMN INSTALLATION DETAIL N.T.S



SITE PLAN Scale 1:500
EXTERNAL LIGHTING LAYOUT



THIS DRAWING IS PRODUCED IN ACCORDANCE WITH ARCHITECTS/MIN CONTRACTORS DRAWING REFERENCE

1790-SBA-RM-XX-DR-A-5003_S

REV	DESCRIPTION	TVC	JF	26.11.20
A	UPDATED TO LATEST ARCHITECT PLANS			
B	DESCRIPTION	DRN	CHK	DATE

PLANNING

Client
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Telephone: 01274 687755
www.thornleylumb.co.uk cad@thornleylumb.co.uk

Project Name
C7403 Reading Rivermead Leisure Centre

Drawing Title
Site Plan
External Lighting Layout

Engineer NM Checked by JF Drawn by BA

Date 19.11.20 Scale 1:500 Size A1

Drawing Number
Project Originator Volume Level Type Role Number Revision
C7403 - TLP - RM - 00 - DR - E - 801 A

> DATASHEET

ROADWAY - FTS

FTS.3.LA103.FW.C9

SALES CONTACT: Dan Jakeman
PROJECT: P173-1314 - Rivermead Leisure Centre
ITEM REF: A1



Product image may not represent the final configuration stated above.



PRODUCT SPECIFICATION

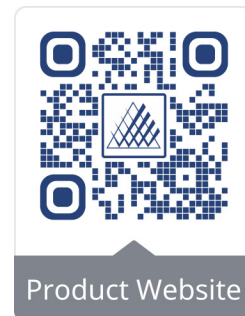


FTS HOLOPHANE WEBSITE

FTS.3.LA103.FW.C9

Holophane Factor Small luminaire with an IP66 LED light engine module comprising and die-cast aluminium finned body that conforms to EN1706 AC-46500. Tool-less access via trigger latch hinging door to the driver and electrical termination compartment. This specific SKU includes:

- Series 3
- LED light engine producing c.10,000 lm with a nominal 3000°K colour temperature
- Forward throw light distribution
- Metallic Silver (RAL9006)



FTSB.6.1S.SA42.LMZ.GV9

Holophane tubular base compartment column for use with Factor Small Luminaires. 6 metre, Single head short bracket (300mm outreach), Side arm bracket suitable for 42mm entry. For light & medium area wind zones (compliant to EN40).

- Bracket galvanised and painted metallic silver (RAL9006)
- Direct embedment

PERFORMANCE DATA

Drive Current: 1225mA

Lumens: 8,978

CCT: 3000K

CRI: 70

Inrush: 43A - 0.26ms

Power: 78W

Fitting Current: 0.35A



7 Kg

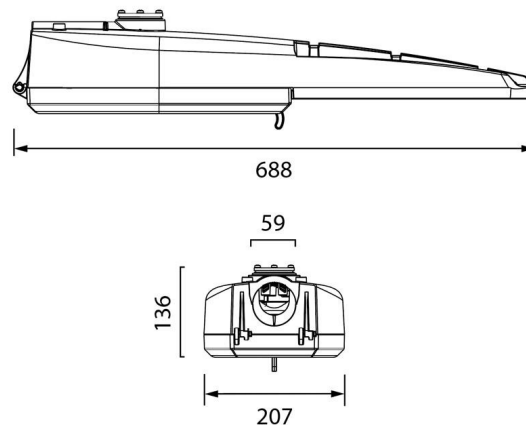


0.071 M₂



[Download Installation Guide](#)

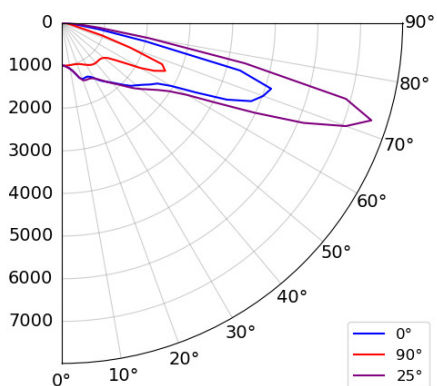
DIMENSIONS



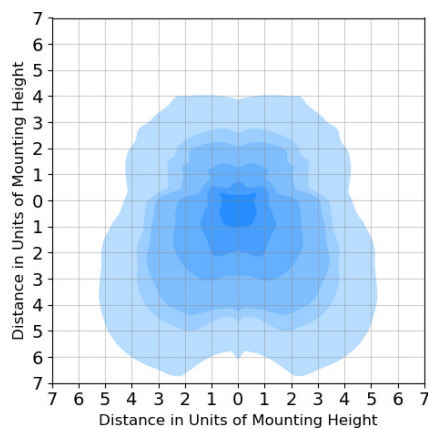
PHOTOMETRY



Polar Plot

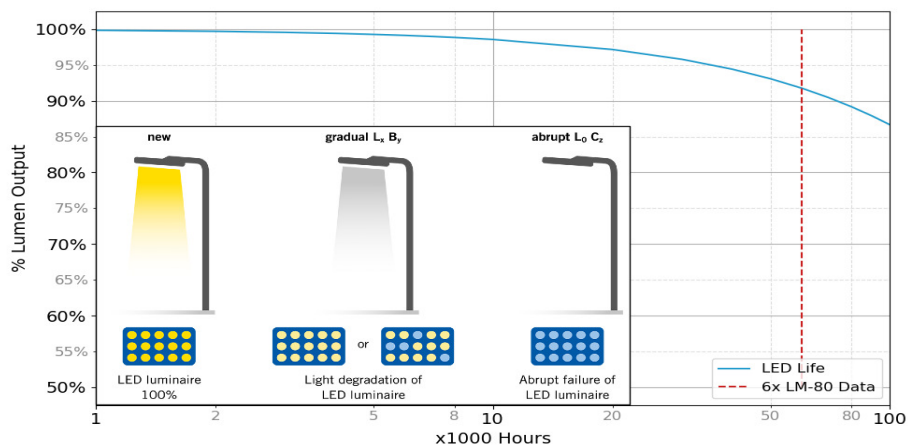


Isoilluminance Plot



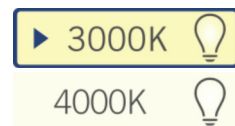
IES File: FTS.3.LA103.FW

LLMF GRAPH



For reference purposes, the graph extrapolates beyond the recommend 6x LM-80 data in TM-21, which our calculations are based on. Graph shows data for LxxB50.

COLOUR TEMPERATURES



COLOURS

Selected Colour

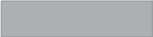
	C9	Metallic Silver (RAL9006)
--	-----------	---------------------------

Custom Colour

	RAL***	Customer specified colour
--	---------------	---------------------------

*Choosing a custom colour may increase the cost and lead time.

Available Colours

	C1	Smooth White (RAL9016)
	C4	Smooth Graphite (RAL7011)
	C6	Smooth Grey (RAL7035)
	C7	Textured Black (RAL9005)
	C9	Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

The specifications of the Holophane luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the Holophane catalogue, data sheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

> DATASHEET

ROADWAY - FTS

FTS.3.LA103.NR.C9

SALES CONTACT: Dan Jakeman
PROJECT: P173-1314 - Rivermead Leisure Centre
ITEM REF: A2



Product image may not represent the final configuration stated above.



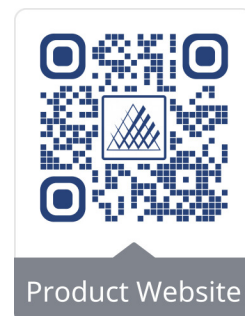
PRODUCT SPECIFICATION

 [FTS HOLOPHANE WEBSITE](#)

FTS.3.LA103.NR.C9

Holophane Factor Small luminaire with an IP66 LED light engine module comprising and die-cast aluminium finned body that conforms to EN1706 AC-46500. Tool-less access via trigger latch hinging door to the driver and electrical termination compartment. This specific SKU includes:

- Series 3
- LED light engine producing c.10,000 lm with a nominal 3000°K colour temperature
- Long and Narrow light distribution
- Metallic Silver (RAL9006)



FTSB.6.1S.SA42.LMZ.GV9

Holophane tubular base compartment column for use with Factor Small Luminaires. 6 metre, Single head short bracket (300mm outreach), Side arm bracket suitable for 42mm entry. For light & medium area wind zones (compliant to EN40).

- Bracket galvanised and painted metallic silver (RAL9006)
- Direct embedment

PERFORMANCE DATA

Drive Current: 1225mA

Lumens: 8,794

CCT: 3000K

CRI: 70

Inrush: 43A - 0.26ms

Power: 78W

Fitting Current: 0.35A



7 Kg

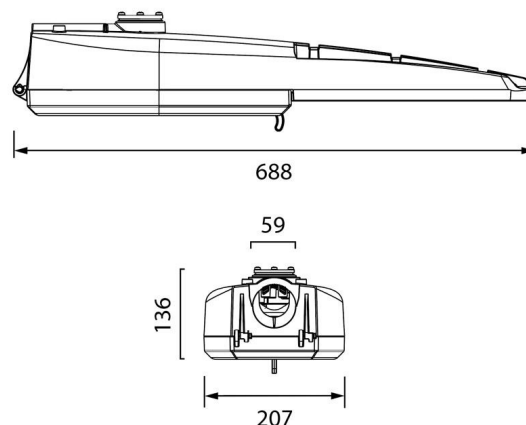


0.071 M₂



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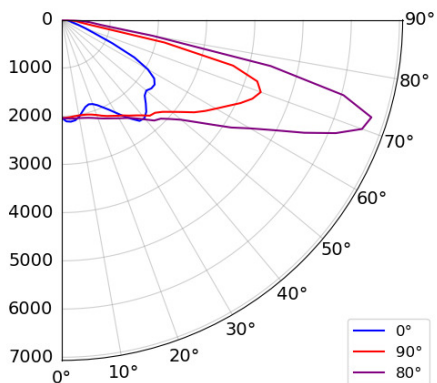
DIMENSIONS



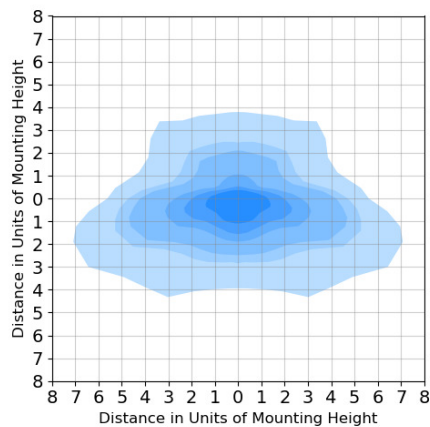
PHOTOMETRY



Polar Plot

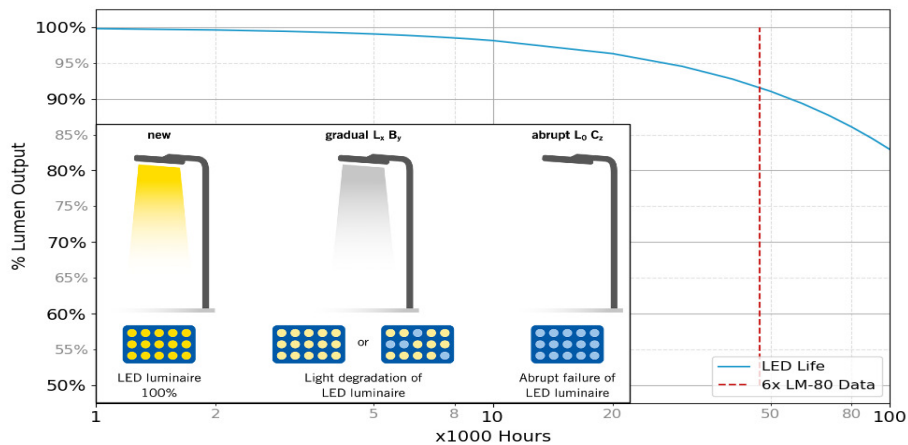


Isoilluminance Plot



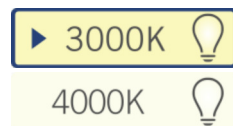
IES File: FTS.3.LA103.NR

LLMF GRAPH



For reference purposes, the graph extrapolates beyond the recommend 6x LM-80 data in TM-21, which our calculations are based on. Graph shows data for LxxB50.

COLOUR TEMPERATURES



COLOURS

Selected Colour

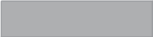
	C9	Metallic Silver (RAL9006)
--	-----------	---------------------------

Custom Colour

	RAL***	Customer specified colour
--	---------------	---------------------------

*Choosing a custom colour may increase the cost and lead time.

Available Colours

	C1	Smooth White (RAL9016)
	C4	Smooth Graphite (RAL7011)
	C6	Smooth Grey (RAL7035)
	C7	Textured Black (RAL9005)
	C9	Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

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Product image may not represent the final configuration stated above.



PRODUCT SPECIFICATION

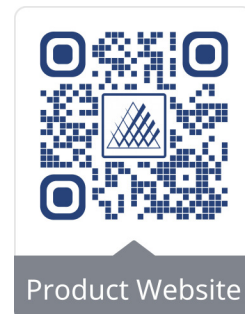


FTS HOLOPHANE WEBSITE

FTS.3.LA103.SY.C9

Holophane Factor Small luminaire with an IP66 LED light engine module comprising and die-cast aluminium finned body that conforms to EN1706 AC-46500. Tool-less access via trigger latch hinging door to the driver and electrical termination compartment. This specific SKU includes:

- Series 3
- LED light engine producing c.10,000 lm with a nominal 3000°K colour temperature
- Symmetrical light distribution
- Metallic Silver (RAL9006)



FTSB.6.1S.SA42.LMZ.GV9

Holophane tubular base compartment column for use with Factor Small Luminaires. 6 metre, Single head short bracket (300mm outreach), Side arm bracket suitable for 42mm entry. For light & medium area wind zones (compliant to EN40).

- Bracket galvanised and painted metallic silver (RAL9006)
- Direct embedment

PERFORMANCE DATA

Drive Current: 1225mA

Lumens: 9,190

CCT: 3000K

CRI: 70

Inrush: 43A - 0.26ms

Power: 78W

Fitting Current: 0.35A



7 Kg

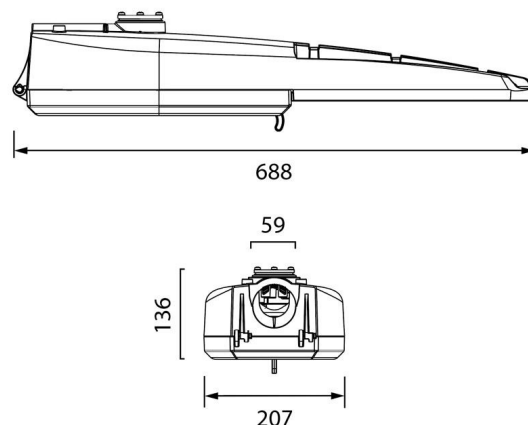


0.071 M₂



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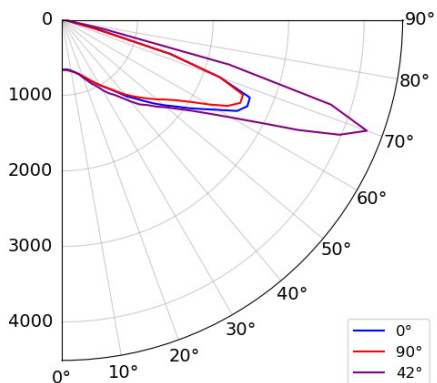
DIMENSIONS



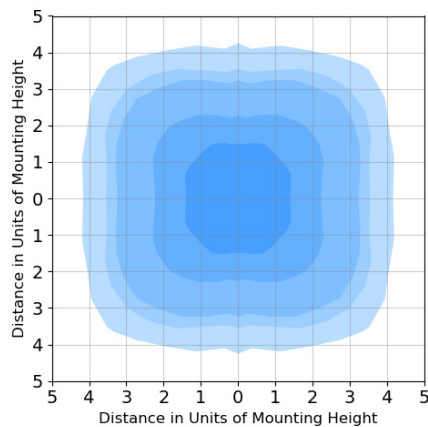
PHOTOMETRY



Polar Plot

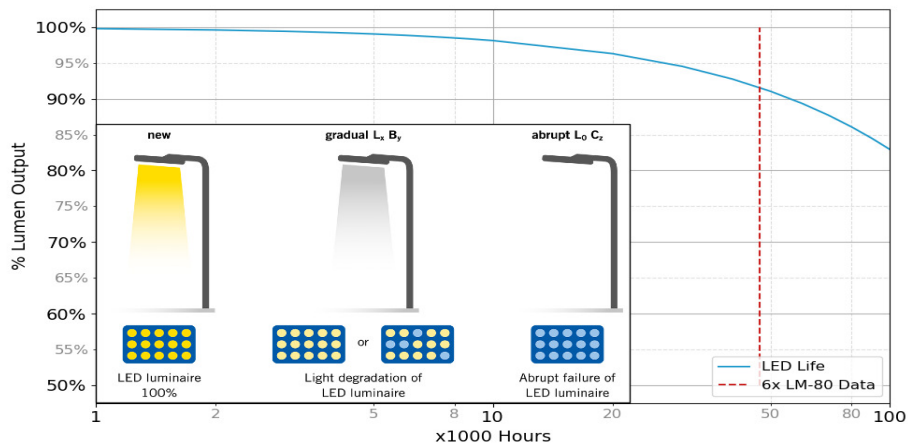


Isoilluminance Plot



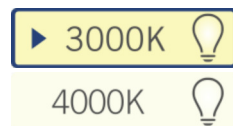
IES File: FTS.3.LA103.SY

LLMF GRAPH



For reference purposes, the graph extrapolates beyond the recommend 6x LM-80 data in TM-21, which our calculations are based on. Graph shows data for LxxB50.

COLOUR TEMPERATURES



COLOURS

Selected Colour

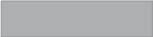
	C9	Metallic Silver (RAL9006)
--	-----------	---------------------------

Custom Colour

	RAL***	Customer specified colour
--	---------------	---------------------------

*Choosing a custom colour may increase the cost and lead time.

Available Colours

	C1	Smooth White (RAL9016)
	C4	Smooth Graphite (RAL7011)
	C6	Smooth Grey (RAL7035)
	C7	Textured Black (RAL9005)
	C9	Metallic Silver (RAL9006)

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Product image may not represent the final configuration stated above.



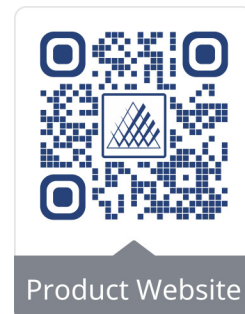
PRODUCT SPECIFICATION

 [FTS HOLOPHANE WEBSITE](#)

FTS.3.LA103.AY.C9

Holophane Factor Small luminaire with an IP66 LED light engine module comprising and die-cast aluminium finned body that conforms to EN1706 AC-46500. Tool-less access via trigger latch hinging door to the driver and electrical termination compartment. This specific SKU includes:

- Series 3
- LED light engine producing c.10,000 lm with a nominal 3000°K colour temperature
- Asymmetric light distribution
- Metallic Silver (RAL9006)



FTSB.6.1S.SA42.LMZ.GV9

Holophane tubular base compartment column for use with Factor Small Luminaires. 6 metre, Single head short bracket (300mm outreach), Side arm bracket suitable for 42mm entry. For light & medium area wind zones (compliant to EN40).

- Bracket galvanised and painted metallic silver (RAL9006)
- Direct embedment

PERFORMANCE DATA

Drive Current:	1225mA
Lumens:	9,033
CCT:	3000K
CRI:	70
Inrush:	43A - 0.26ms
Power:	78W
Fitting Current:	0.35A



7 Kg

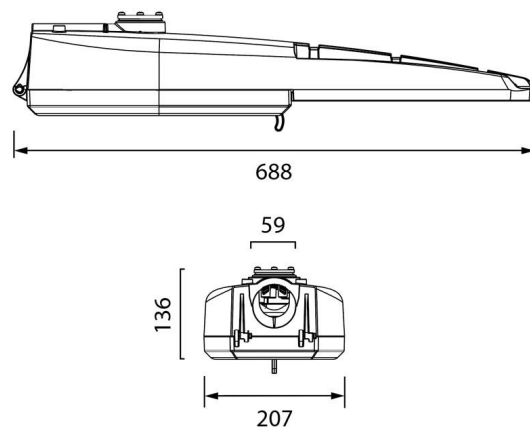


0.071 M₂



[Download Installation Guide](#)

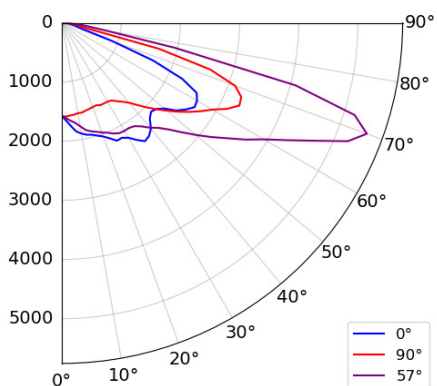
DIMENSIONS



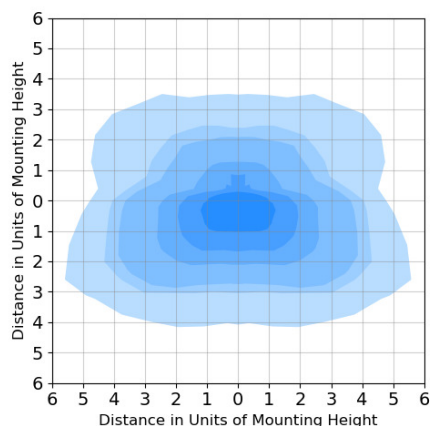
PHOTOMETRY



Polar Plot

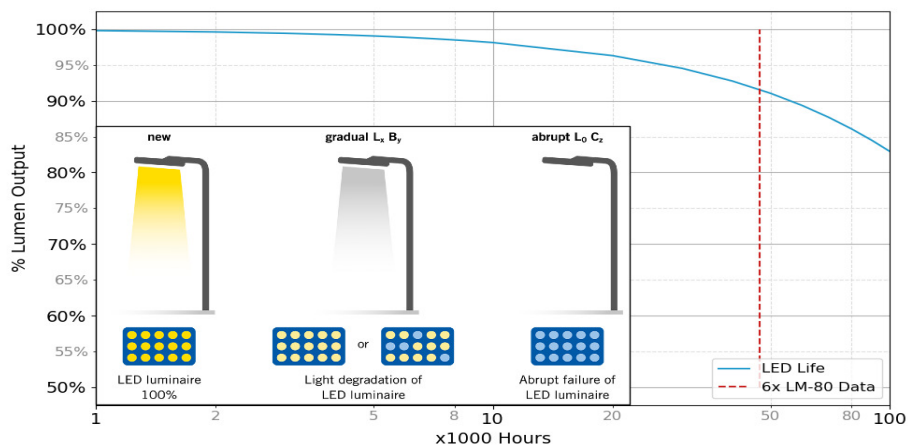


Isoilluminance Plot



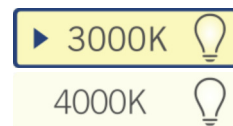
IES File: FTS.3.LA103.AY

LLMF GRAPH



For reference purposes, the graph extrapolates beyond the recommend 6x LM-80 data in TM-21, which our calculations are based on. Graph shows data for LxxB50.

COLOUR TEMPERATURES



COLOURS

Selected Colour

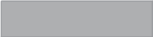
	C9	Metallic Silver (RAL9006)
--	-----------	---------------------------

Custom Colour

	RAL***	Customer specified colour
--	---------------	---------------------------

*Choosing a custom colour may increase the cost and lead time.

Available Colours

	C1	Smooth White (RAL9016)
	C4	Smooth Graphite (RAL7011)
	C6	Smooth Grey (RAL7035)
	C7	Textured Black (RAL9005)
	C9	Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

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> DATASHEET

EXTERNAL - DEW

DEW.LAO13.CGL.NR.C9

SALES CONTACT: Dan Jakeman
PROJECT: P173-1314 - Rivermead Leisure Centre
ITEM REF: C



Product image may not represent the final configuration stated above.



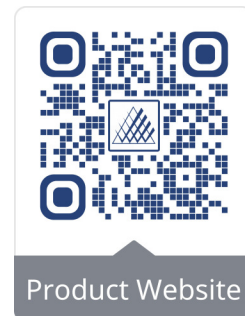
PRODUCT SPECIFICATION

www.dew-holophane.com **DEW HOLOPHANE WEBSITE**

Holophane Denver Elite Wall luminaire. Tri-lobular wall mounted luminaire manufactured from LM6 marine grade die-cast aluminium body, with integrated thermal management design. Optical arrangement with aluminium internal reflector and PrismaLED prismatic soda lime or clear glass lens dependent on optical distribution. Sealed to IP65 and suitable for wall mounting with rear, top, side and through wiring options via 20mm Ø knockout cable entry/exit points.

This specific SKU includes:

- LED light engine producing c.1,000 lm with a nominal 3000°K colour temperature
- Clear glass lens
- Long and Narrow light distribution
- Metallic Silver (RAL9006)



PERFORMANCE DATA

Drive Current: 350mA

Lumens: 1,142

CCT: 3000K

CRI: 70

Inrush: 15A - 0.36ms

Power: 12W

Fitting Current: 0.05A

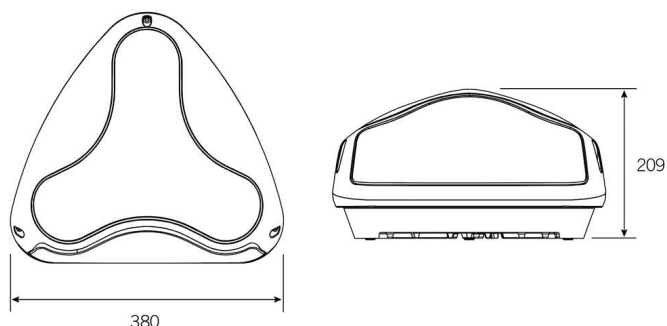


6.4 Kg



[Download Installation Guide](#)

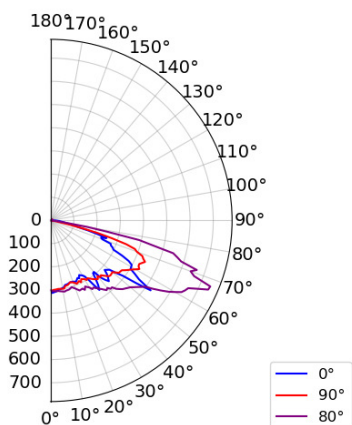
DIMENSIONS



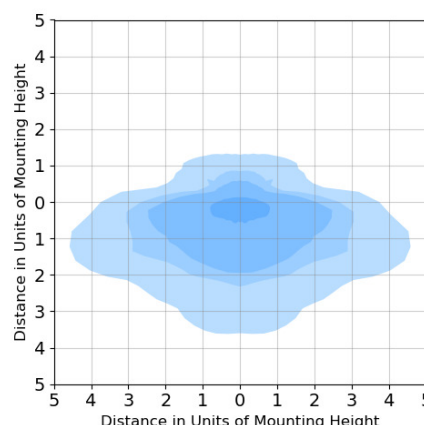
PHOTOMETRY

[IES FILE](#)

Polar Plot

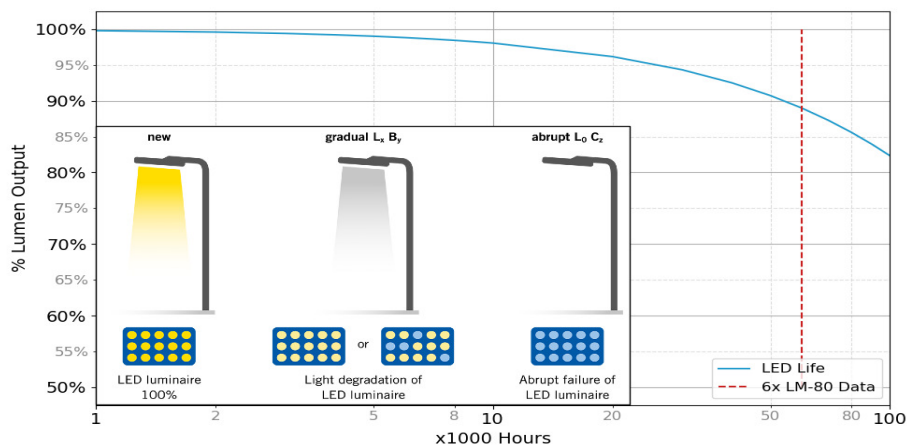


Isoillumiance Plot



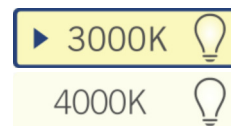
IES File: DEW.LA013.NR.CGL

LLMF GRAPH



For reference purposes, the graph extrapolates beyond the recommend 6x LM-80 data in TM-21, which our calculations are based on. Graph shows data for LxxB50.

COLOUR TEMPERATURES



COLOURS

Selected Colour

C9	Metallic Silver (RAL9006)
-----------	---------------------------

Custom Colour

RAL****	Customer specified colour
----------------	---------------------------

*Choosing a custom colour may increase the cost and lead time.

Available Colours

C1	Smooth White (RAL9016)
C4	Smooth Graphite (RAL7011)
C6	Smooth Grey (RAL7035)
C7	Textured Black (RAL9005)
C9	Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

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> DATASHEET

EXTERNAL - DEB

DEB.L014.PAY.DO.H100.C9.MCB

SALES CONTACT: Dan Jakeman
PROJECT: P173-1314 - Rivermead Leisure Centre
ITEM REF: B



Product image may not represent the final configuration stated above.



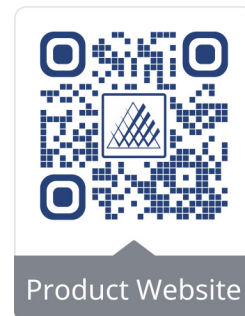
PRODUCT SPECIFICATION

[WWW.DEB.HOLOPHANE.WEBSITE](#)

Holophane Denver Elite bollard luminaire. Tri-lobular extruded marine grade aluminium body with die-cast aluminium top and base secured by stainless steel nuts and sealed to IP65. The optical arrangement with PrismaLED lenses and unique patented decorative gasket highlight feature. Suitable for flange base mounting (bolts available as an accessory).

This specific SKU includes:

- LED light engine producing c.1,000 lm with a nominal 4000K colour temperature
- Asymmetric distribution
- Double sided
- 1 metre high
- Metallic Silver (RAL9006)
- Mini circuit breaker



PERFORMANCE DATA

Drive Current: 350mA

Lumens: 815

CCT: 4000K

CRI: 70

Inrush: 20A - 0.05ms

Power: 12W

Fitting Current: 0.05A

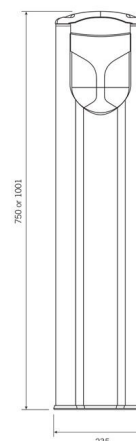


19.5 Kg



[Download Installation Guide](#)

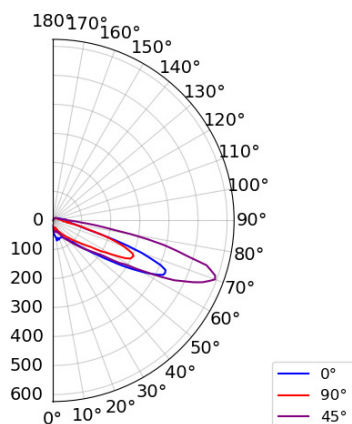
DIMENSIONS



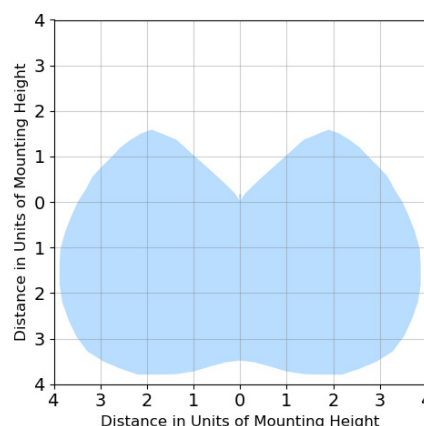
PHOTOMETRY

[↓ IES FILE](#)

Polar Plot

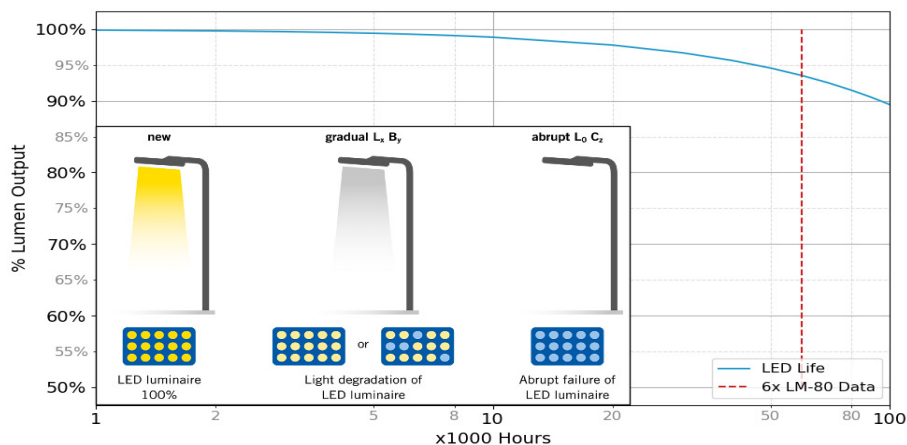


Isoilluminaance Plot



IES File: DEB.L014.PAY.DO

LLMF GRAPH



For reference purposes, the graph extrapolates beyond the recommend 6x LM-80 data in TM-21, which our calculations are based on. Graph shows data for LxxB50.

► 4000K

COLOURS

Selected Colour

C9 Metallic Silver (RAL9006)

Custom Colour

RAL**** Customer specified colour

*Choosing a custom colour may increase the cost and lead time.

Available Colours

C1 Smooth White (RAL9016)

C4 Smooth Graphite (RAL7011)

C6 Smooth Grey (RAL7035)

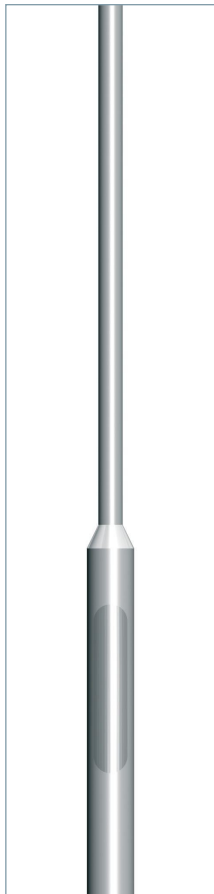
C7 Textured Black (RAL9005)

C9 Metallic Silver (RAL9006)

Lumen data is considered to be representative of the configuration shown, and may vary, with a tolerance on flux of +/- 7% (typical of LED manufacturer's data) and luminaire power of +/- 5%.

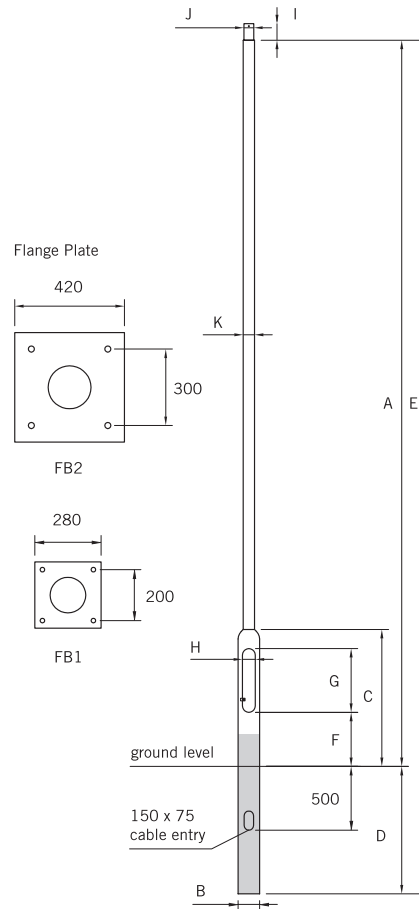
The specifications of the Holophane luminaires represents typical values. All descriptions, illustrations, drawings and specifications in the Holophane catalogue, data sheets and website represent only general particulars of the goods to which they apply and shall not form part of any contract. The company reserves the right to change specifications at its discretion without prior notification or public announcement.

standard columns stepped steel



Holophane products that are suitable

CityMax
Denver Elite pole
D-Series
Factor
Factor small
V-Max



	Nominal Height	Base Diameter*	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length*	Spigot Diameter*	Shaft Diameter*	Weight kg*	Bending Moment (ULS) Nm
description	A	B	C	D	E	F	G	H	I	J	K		
2.5m standard duty	2500	140	1075	800	3300	400	500	100	-	-	76	27	2100
3m standard duty	3000	140	1075	800	3800	400	500	100	-	-	76	30	4666
3.5m standard duty	3500	140	1075	800	4300	400	500	100	-	-	76	32	2100
4m standard duty	4000	140	1075	800	4800	400	500	100	-	-	76	34	6484
4.5m standard duty	4500	140	1075	800	5300	400	500	100	-	-	76	37	5108
5m standard duty	5000	140	1075	800	5800	400	500	100	-	-	76	39	6149
5.5m standard duty	5500	140	1075	1000	6500	400	500	100	-	-	76	44	6003
6m standard duty	6000	140	1075	1000	7000	400	500	100	-	-	76	46	5999
6m heavy duty	5700	168	1200	1000	6700	400	600	115	130	76	89	71	10404
8m standard duty	7700	168	1200	1200	8900	400	600	115	130	76	89	89	10072
8m heavy duty	7700	168	1300	1200	9000	500	600	115	250	101	114	107	15699
8m extra heavy duty	7700	194	1300	1200	9000	500	600	115	250	127	140	136	18973
10m standard duty	9700	168	1300	1500	11200	500	600	115	250	101	114	150	18067
10m heavy duty	9700	194	1300	1500	11200	500	600	115	250	127	140	168	23193
10m extra heavy duty	9700	194	1300	1500	11200	500	600	115	250	152	168	220	28317
12m standard duty	11700	194	1300	1700	13400	500	600	115	250	127	140	213	26251
12m heavy duty	11700	194	1300	1700	13400	500	600	115	250	127	168	260	40390

* Exclusion TBC

2.5m standard duty Flange Plate FB2 Bolt M18 x 120

Flange Plate and Anchor Bolt information will be confirmed at time of order due to the necessity in ensuring



standard columns stepped steel - CityMax Large only

post top

	Nominal Height	Base Diameter	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length	Spigot Diameter	Shaft Diameter	Weight kg	Bending Moment (ULS) Nm
description	A	B	C	D	E	F	G	H	I	J	K		
6m	6000	140	1075	1000	7000	400	500	115	-	-	-	46	5999
8m	7700	168	1300	1200	9000	500	600	115	100	76	114	107	15699
10m	9700	168	1300	1500	11200	500	600	115	100	76	114	150	18067
12m	11700	194	1300	1700	13400	500	600	115	100	76	140	168	26251
15m	14700	194	1200	2000	17000	400	600	115	100	76	168	306	40300

twin head

	Nominal Height	Base Diameter	Base Height	Planting Depth	Overall Length	Door to Ground	Door Opening Length	Door Opening Width	Spigot Length	Spigot Diameter	Shaft Diameter	Weight kg	Bending Moment (ULS) Nm
description	A	B	C	D	E	F	G	H	I	J	K		
8m	7400	194	1200	1200	8800	400	600	115	200	127	139.7	125	22610
10m	9400	194	1200	1500	11100	400	600	115	200	152.4	168.3	208	39131
12m	11400	194	2500	1700	13300	1000	600	115	200	152.4	168.3	295	41585

Note: For Terrain Category 2 locations LMZ, HVZ & HEZ

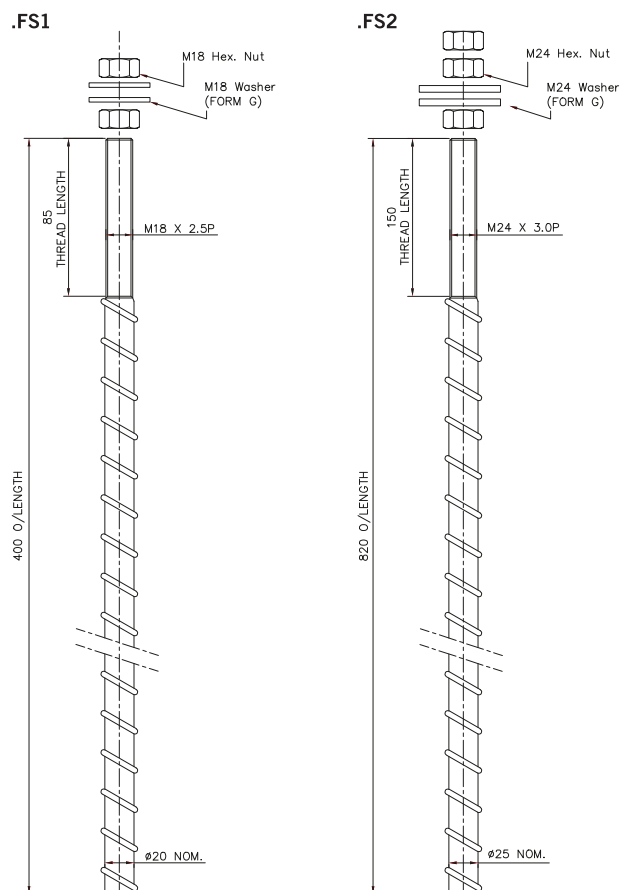
Anchor bolts

For columns supplied with optional flange base Holophane offer three types of foundation bolts.

Note: The material used for the bolts is Fe E500 grade steel, with yield strength 500 N/mm² and minimum UTS 550 N/mm².

HEL.FS1 M18 Bolts (FS1) x 400 mm long

HEL.FS2 M24 Bolts (FS2) x 820 mm long



SUMMARY

P173-1314 - RIVERMEAD LEISURE CENTRE

Line No.	Item Ref	Quantity	Catalogue
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LUMINAIRE, COLUMN AND BRACKET PACKAGE

10	A1	15	FTS.3.LA103.FW.C9
11	A1	15	FTSB.6.1S.SA42.LMZ.GV9

LUMINAIRE, COLUMN AND BRACKET PACKAGE

20	A2	7	FTS.3.LA103.NR.C9
21	A2	7	FTSB.6.1S.SA42.LMZ.GV9

LUMINAIRE, COLUMN AND BRACKET PACKAGE

30	A3	15	FTS.3.LA103.SY.C9
31	A3	15	FTSB.6.1S.SA42.LMZ.GV9

LUMINAIRE, COLUMN AND BRACKET PACKAGE

40	A4	1	FTS.3.LA103.AY.C9
41	A4	1	FTSB.6.1S.SA42.LMZ.GV9

LUMINAIRE

50	C	7	DEW.LA013.CGL.NR.C9
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LUMINAIRE

60	B	28	DEB.L014.PAY.DO.H100.C9.MCB
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ACCESSORY

70		28	DEB.ROOT
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