

A large teal graphic element on the left side of the page, consisting of a triangle at the top and a trapezoid below it, forming a shape that resembles a stylized stadium or a modern architectural structure.

Oxford United New Stadium Development

Field of Play Lighting Report

October 2023

Confidential

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Oxford United Football Club

Oxford United New Stadium Development

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Executive summary

This report summarises the current proposals for the Field of Play (FOP) lighting within the new proposed Oxford United Football Club stadium.

The current proposals have been developed in conjunction with Signify, representing the current stage of design (RIBA Stage 2) and are subject to further design development.

In the next stages of design, the FOP lighting will be developed to confirm exact luminaire locations, types and aiming angles to optimise the lighting within the bowl and reduce unwanted spill light.

1 Introduction

1.1 Background

Mott MacDonald Ltd. have been engaged by Oxford United Football Club (OUFC) to provide initial Field of Play (FOP) lighting design advice to inform the planning application and design of other services. FOP/sports lighting is a specialist activity, and alongside initial calculations by Mott MacDonald, Signify (Philips) have also been consulted for specialist concept input.

1.2 Scope

The current FOP lighting proposals have been developed in conjunction with Signify, representing the current stage of design (RIBA Stage 2) and are subject to further design development. The design criteria, results of initial calculations and the proposed FOP lighting concepts are included within this report.

2 Basis of Design

2.1 Design Standards

The FOP lighting shall be designed with reference to good practice and guidance as provided by the appropriate professional institutions, British Standards, Building Regulations and allied advisory bodies.

The installation shall conform to all relevant standards, legislations and guidance including the following:

- Championship Football Regulations, EFL Handbook 2023/24
- SLL Lighting Handbook
- SLL GN01 Guidance Note 1 for reduction of Obtrusive Lighting
- CIBSE LG4 – Sports Lighting
- Building Regulations
- BS7671 Wiring Regulations

2.2 Design Criteria

The FOP lighting shall be designed to the following criteria:

	Championship	Class I	Class II	Class III	Setup
Criteria	<i>EFL Regulations</i>	<i>SLL LG4</i>	<i>SLL LG4</i>	<i>SLL LG5</i>	
Eh ave (average horizontal illuminance)	> 800 lux	500 lux	200 lux	75 lux	10 lux
Eh min (minimum horizontal illuminance)	500 lux				
Ehgoal min (minimum horizontal illuminance at centre point of each goal line)	750 lux				
Uniformity U1h		0.7	0.6	0.5	0.5
Colour temperature (Tk)	TBC	TBC	TBC	TBC	TBC
Colour rendering	TBC	TBC	TBC	TBC	TBC
Glare rating (GR)	< 50	< 50	< 50	< 50	< 50

3 Field of Play Lighting

3.1 Design

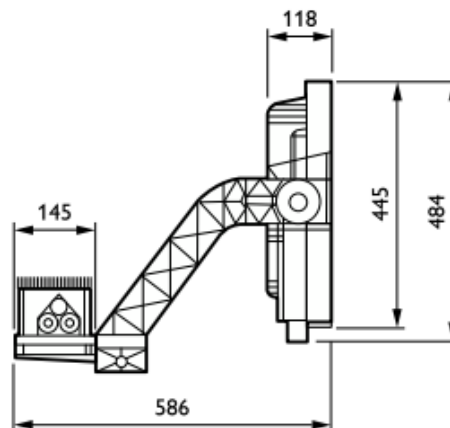
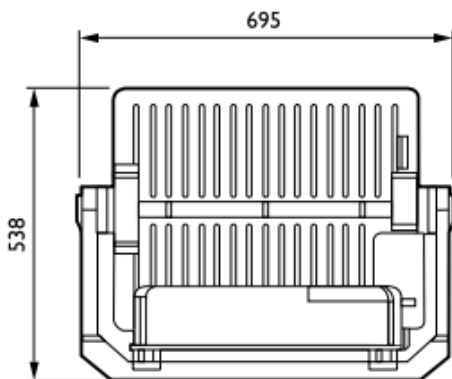
The roof of the stadium is asymmetric, with the west edge ranging from a height of 19m to 23m and the east edge ranging from approximately 17m to 21m.

The design of the FOP lighting has been chosen to follow the roof edges, with luminaires mounted on the underside of the roof edges on both the west and east stands.

The reference design (Refer Appendix A) consists of 36 no. luminaires along each side (72 no. total), mounted approx 2m apart. The total connected electrical load of these luminaires is approximately 72kW.

3.2 Luminaires

The exact luminaire specification to be used may vary, however the reference design produced to date is based on the Philips Arenavision LEG Gen 3.5 BVP418.



A. Reference Design (Signify)

LIAS Design Notes

This preliminary design is produced by the Lighting Application Specialist (LIAS) team of Signify UK based on information supplied by the Customer for the purpose of identifying suitable products and costing the proposal. This design cannot be used for Construction, as this design does not purport to eliminate health and safety risks as a CDM Regulation risk assessment has not been undertaken.

Depending on the level of information received, a number of assumptions may have been applied in order to create an indicative lighting proposal and costing model, according to lighting industry guidelines and incorporating industry best practice methods. These assumptions are documented below and will require confirmation by the Principal Designer (which is not Signify UK) during the detailed design phase.

Generic Assumptions (unless specifically informed differently)

- Preliminary Design proposals produced by the Signify LIAS Team are not to be used for installation purposes. It is the responsibility of the Principle Designer and/or Principle Contractor to ensure all Installation and Maintenance can be done in a safe manner, carried out by competent persons, based on their agreed Risk Assessments and Method Statements.
- The Luminaire Maintenance Factors have been based on the Environmental Zone the scheme is to be installed and the mounting height of the luminaire
- Energy consumptions have been based on the whole life of the luminaire
- The design calculations produced by Signify do not account for the effect obstructions, such as trees, will cause.
- Signify has not been provided with utility plans showing Buried, Above Ground or Overhead utilities. Therefore, all column/luminaire locations are indicative and are subject to review/verification by the Principle Designer.
- Unless stated otherwise, Signify has not visited site. Therefore, all column/luminaire locations are indicative and are subject to an onsite verification arranged/performed by the Principle Designer.
- Signify has not produced any Private Cable Network electrical calculations or reviewed the DNO network to confirm power supplies to the proposed lighting.
- Signify has not performed any asset condition testing and therefore assumes that any existing lighting columns/wall mounted brackets are structurally capable of supporting the weight & windage of the proposed luminaire/s. This must be verified by the Principle Designer before installation works commence.
- Unless stated otherwise, Signify is not supplying the new lighting columns (including brackets etc) and therefore it is the responsibility of the Principle Designers to confirm that all proposed equipment is suitable for the intended locations (e.g. raise & lower, ground condition, foundation type, saline environment, etc).
- Unless stated otherwise, luminaires will be supplied in their standard colour.
-

Project Specific Information

Design to achieve Eh 800 lux
Championship level.
MF 0.95 (Low Use LED)
Eh 800 lux, 500 lux Min, 750 lux
centre of goalline

Fittings mounted on edge of new
side stand roofs at various
heights
Heights range from 17m to 21 m
Bottom Line & 19m to 23m Top
Line on sloped roof
MF 0.9

Calc	Grid	Unit	Ave	Min	Max	Stc	Min/Max
1	Eh Football Pitch	lx	800	500	1100	0.85	0.8
2	Eh Football Pitch	lx	800	500	1100	0.85	0.8
3	Off Pitch	lx	800	500	1100	0.85	0.8



BVP418 with
Gear HGB



BVP418 without
Gear BV



Remote LED
Driver for BV
version

Signify Lighting Contacts

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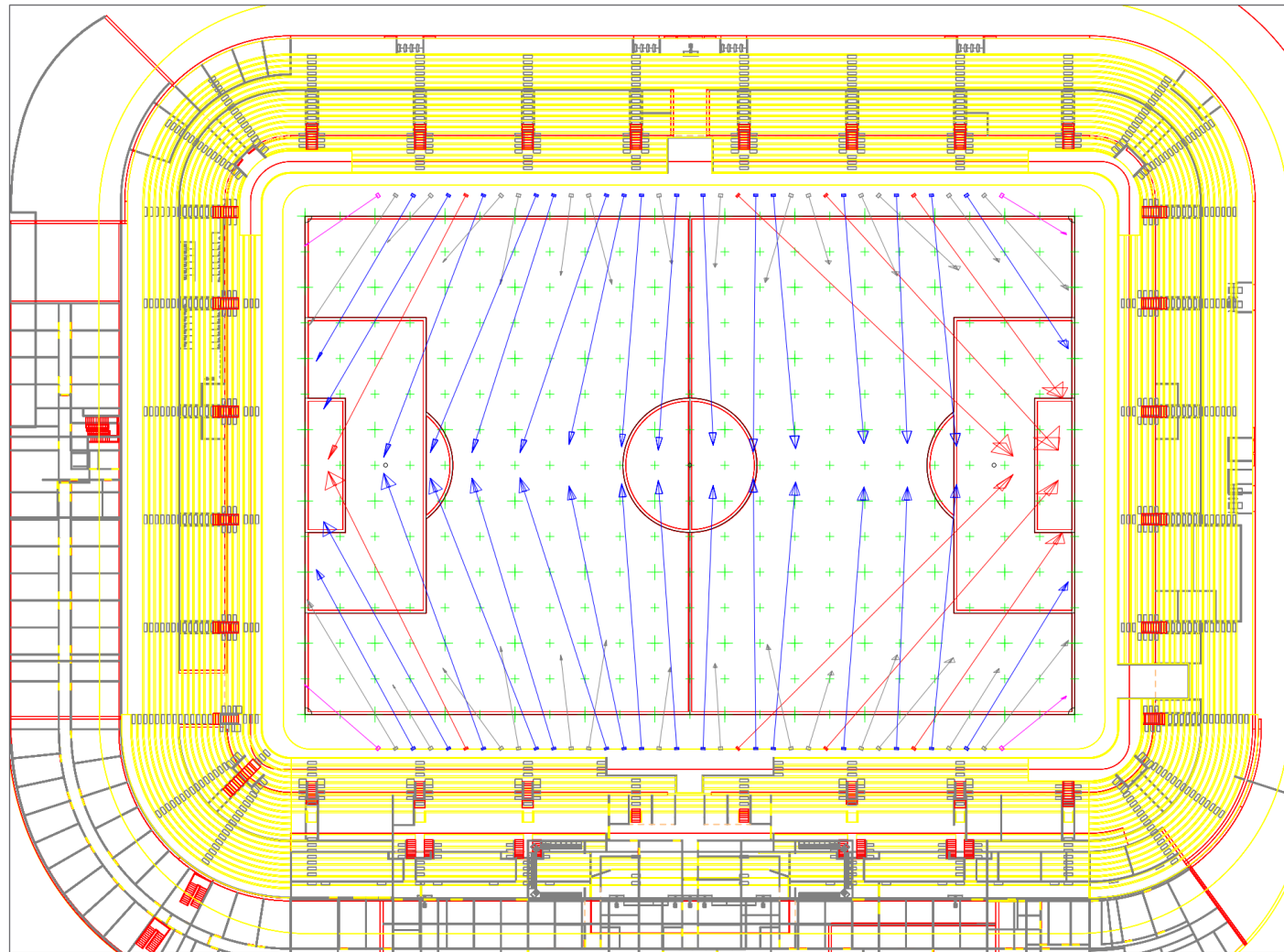


Lighting Proposal Terms and Conditions of Use
These terms apply to the use of this preliminary proposal produced by Signify UK. This "Proposal" is understood to mean this document, a CAD drawing, lighting calculations, written documents, verbal conversations or any medium used to demonstrate or communicate the proposed lighting scheme using products from Signify's brands. A "Customer" is the person or organisation for whom the Proposal is intended. The "CDM Regulations" means The Construction, Design and Management Regulations 2015, the Safety, Health & Welfare at Work Act 2005, The Construction (Design & Management) Regulations (Northern Ireland) 2015.
This Proposal is for guidance only and cannot be relied upon for purposes of installation or Health and Safety.
The supply and installation of this lighting scheme are subject to a contract being agreed between Customer and Signify.

PROPOSAL
(NOT FOR CONSTRUCTION)

Rev	DSR no.	Comment	Date	LIAS	KAM
0	D-527534	Championship Eh 800 lux ave, 500 lux Min, 750 lux Goalline	19/09/23	SJ	AR

Project Number:	0400907626	Project Name:	Oxford United FC, New Stadium
Scale & Sheet Size:	NTS @ A3	Drawing Name:	LIAS DESIGN NOTES & LUMINAIRE SCHEDULE
Sheet No:	DWG 00		



Design to achieve Eh 800 lux
 Championship level.
 MF 0.95 (Low Use LED)
 Eh 800 lux, 500 lux Min, 750 lux
 centre of goalline

Fittings mounted on edge of new
 side stand roofs at various
 heights
 Heights range from 17m to 21 m
 Bottom Line & 19m to 23m Top
 Line on sloped roof
 MF 0.9

Code	Symbol	Units	Min	Max	Use	Min/Max
1	□	Championship level	100	200	1000	1000
2	□	Championship level	100	200	1000	1000
3	□	Championship level	100	200	1000	1000

Legend



BVP418 with
 Gear HGB



BVP418 without
 Gear BV



Remote LED
 Driver for BV
 version

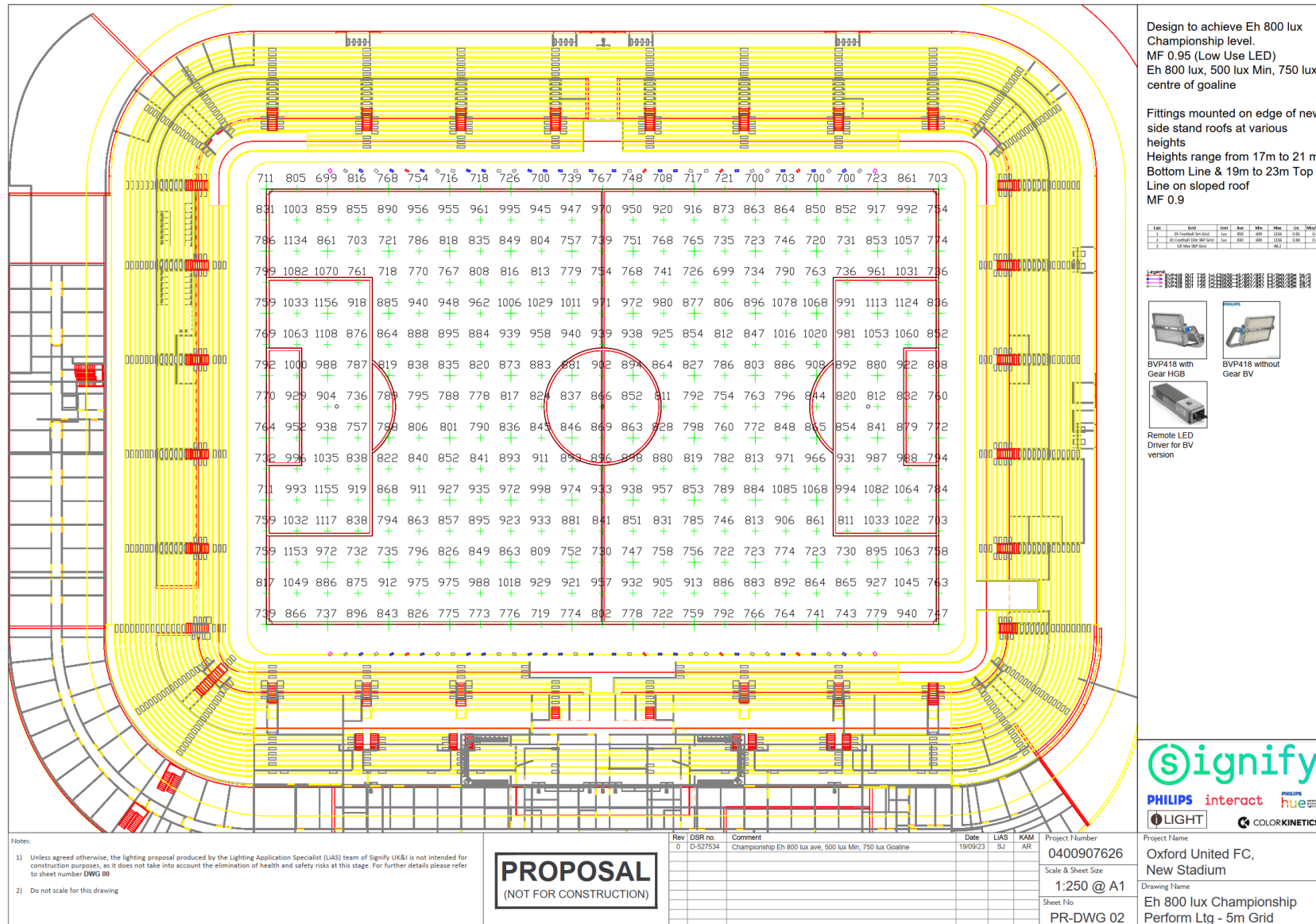


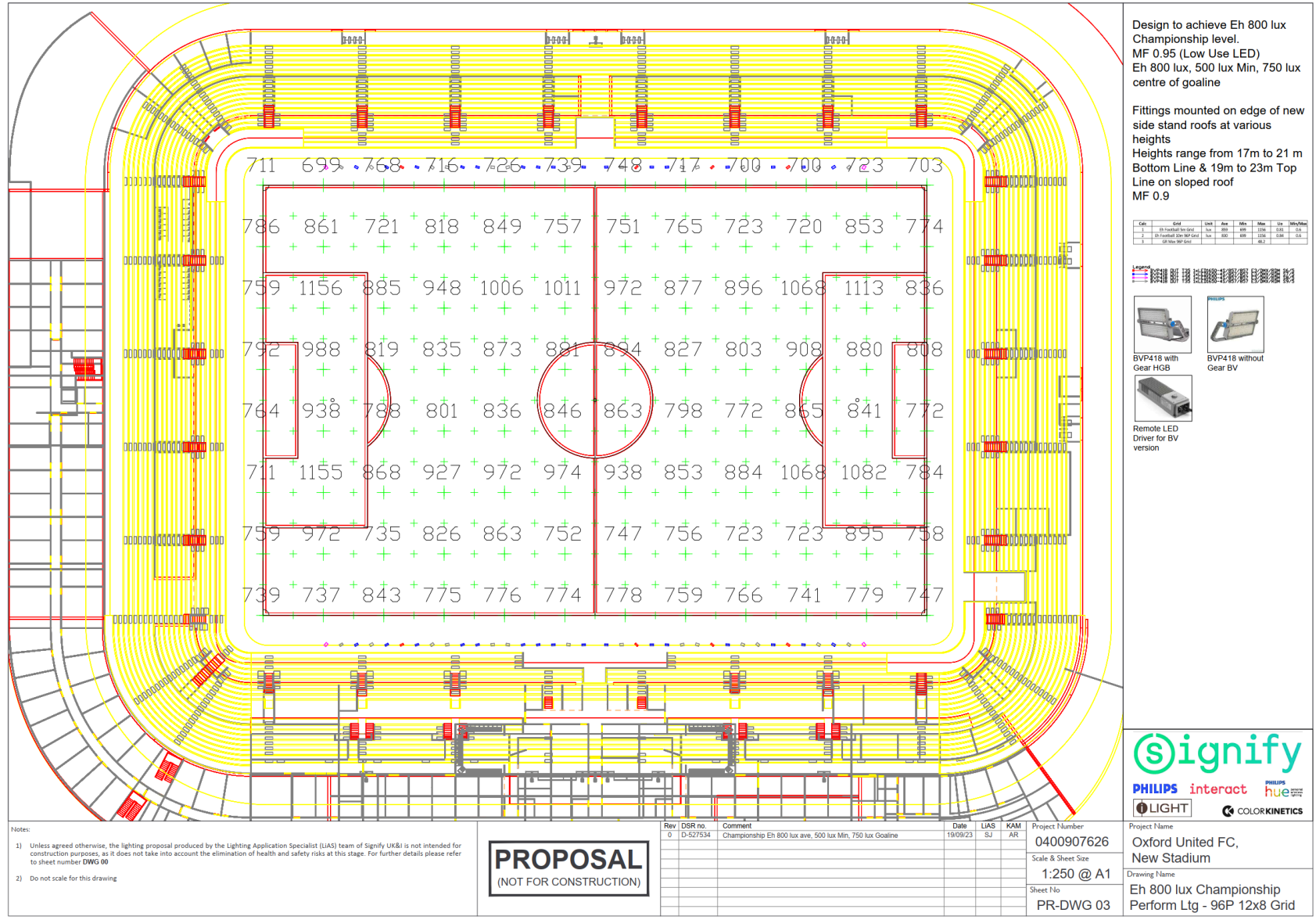
Notes:
 1) Unless agreed otherwise, the lighting proposal produced by the Lighting Application Specialist (LIAS) team of Signify UK&I is not intended for construction purposes, as it does not take into account the elimination of health and safety risks at this stage. For further details please refer to sheet number DWG 00
 2) Do not scale for this drawing

PROPOSAL
 (NOT FOR CONSTRUCTION)

Rev	DSR no.	Comment	Date	LIAS	KAM	Project Number
0	D-527534	Championship Eh 800 lux ave, 500 lux Min, 750 lux Goalline	19/09/23	SJ	AK	0400907626
						Scale & Sheet Size
						1:250 @ A1
						Sheet No
						PR-DWG 01

Project Name
 Oxford United FC,
 New Stadium
 Drawing Name
 Eh 800 lux Championship
 Aiming Arrows



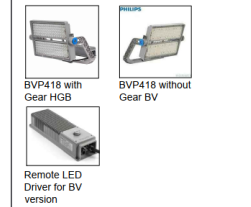


Design to achieve Eh 800 lux
 Championship level.
 MF 0.95 (Low Use LED)
 Eh 800 lux, 500 lux Min, 750 lux
 centre of goaline

Fittings mounted on edge of new
 side stand roofs at various
 heights
 Heights range from 17m to 21 m
 Bottom Line & 19m to 23m Top
 Line on sloped roof
 MF 0.9

Qty	Grid	Unit	Area	Min	Max	Use	Min/Max
1	10	1000	1000	1000	1000	1000	1000
2	20	2000	2000	2000	2000	2000	2000
3	30	3000	3000	3000	3000	3000	3000

Legend



Notes:
 1) Unless agreed otherwise, the lighting proposal produced by the Lighting Application Specialist (LIAS) team of Signify UK&I is not intended for construction purposes, as it does not take into account the elimination of health and safety risks at this stage. For further details please refer to sheet number DWG 00
 2) Do not scale for this drawing

PROPOSAL
 (NOT FOR CONSTRUCTION)

Rev	DSR no.	Comment	Date	LIAS	KAM	Project Number
0	D-527534	Championship Eh 800 lux ave, 500 lux Min, 750 lux Goaline	19/09/23	SJ	AR	0400907626

Scale & Sheet Size
 1:250 @ A1
 Sheet No
 PR-DWG 03

Project Name
 Oxford United FC,
 New Stadium
 Drawing Name
 Eh 800 lux Championship
 Perform Ltg - 96P 12x8 Grid

