
Appendix 4.2 I
Sabre Electrical Lighting Design for R409

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DATE: 12 April 2023
DESIGNER: Graham Sheehan
PROJECT No: SES 04723
PROJECT NAME: R409 Realignment DOBA Consulting Eng.



Designed in accordance with ISEN13201-2:2015 Class M4 and C2
for the junction

Outdoor Lighting Report

PREPARED BY: Sabre Electrical Services Ltd.
Unit 11 Bellevue Ind. Est.
Finglas
Dublin 11.
Email: graham@sabrelighting.ie
Ph: 01 8110875

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Grid 1	686064.00	719993.00	374.00	69.00	1.50	1.50
2	Grid 2	686422.00	719887.00	376.00	69.00	1.50	1.50
3	Grid 3	686782.00	719780.00	300.00	84.00	1.50	1.50
4	Grid 4	686223.00	719947.00	51.00	45.00	1.50	1.50
5	Grid 5	686354.00	719934.00	93.00	24.00	1.50	1.50

Luminares

Luminaire A Data



Supplier	C U Phosco
Type	P863-128-R4-730-W3-775-97W
Lamp(s)	730SS
Lamp Flux (klm)	13.49
File Name	P863-128-R4-730-W3-775-97W.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	386.2, 27.2, 0.4
No. in Project	23

Luminaire B Data



Supplier	C U Phosco
Type	P852-24-S1-WW-W6-0350-26W
Lamp(s)	730SS WW
Lamp Flux (klm)	3.24
File Name	P852-24-S1-WW-W6-0350-26W.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	502.8, 86.6, 0.0
No. in Project	4

Luminaire C Data



Supplier	C U Phosco
Type	P863-128-F7-730-W3-525-68W
Lamp(s)	730SS
Lamp Flux (klm)	9.44
File Name	P863-128-F7-730-W3-525-68W.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	420.3, 34.5, 0.0
No. in Project	2

Layout

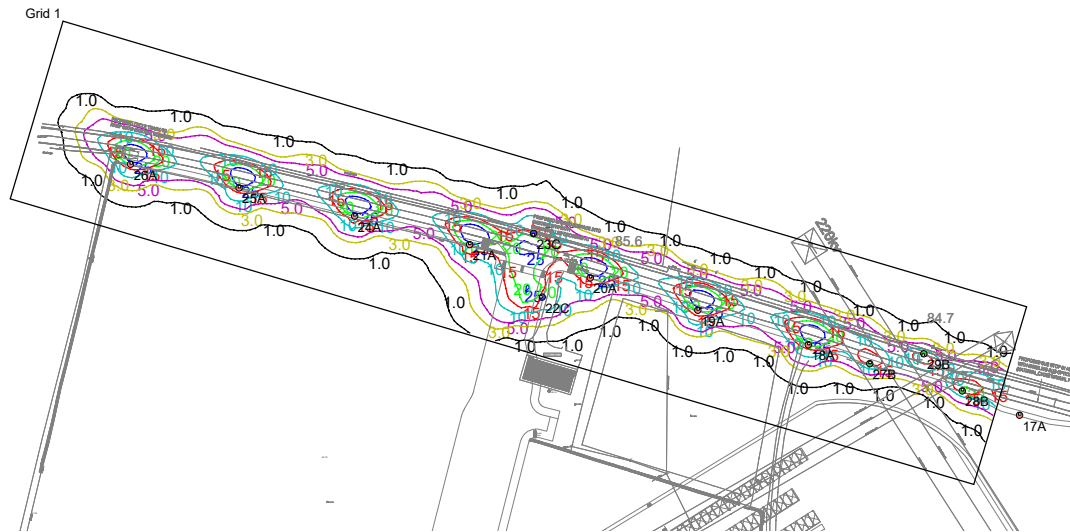
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	686853.62	719795.49	10.00	77.00	5.00	0.00	0.50			
2	A	686809.81	719805.09	10.00	77.00	5.00	0.00	0.50			
3	A	686895.01	719785.98	10.00	77.00	5.00	0.00	0.50			
4	A	686936.25	719776.44	10.00	77.00	5.00	0.00	0.50			
5	A	686977.79	719765.61	10.00	75.00	5.00	0.00	0.50			
6	A	687018.51	719754.11	10.00	77.00	5.00	0.00	0.50			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
7	A	687057.68	719746.93	10.00	77.00	5.00	0.00	0.50			
8	B	687036.28	719770.64	8.00	187.00	5.00	0.00	0.50			
9	A	686768.58	719814.05	10.00	77.00	5.00	0.00	0.50			
10	A	686726.34	719822.33	10.00	77.00	5.00	0.00	0.50			
11	A	686684.96	719834.61	10.00	71.00	5.00	0.00	0.50			
12	A	686645.29	719851.34	10.00	66.00	5.00	0.00	0.50			
13	A	686605.46	719868.09	10.00	68.00	5.00	0.00	0.50			
14	A	686564.73	719882.02	10.00	70.00	5.00	0.00	0.50			
15	A	686523.31	719893.68	10.00	72.00	5.00	0.00	0.50			
16	A	686481.52	719904.10	10.00	74.00	5.00	0.00	0.50			
17	A	686439.60	719912.49	10.00	72.00	5.00	0.00	0.50			
18	A	686361.01	719938.72	10.00	72.00	5.00	0.00	0.50			
19	A	686319.86	719951.60	10.00	72.00	5.00	0.00	0.50			
20	A	686279.81	719963.62	10.00	72.00	5.00	0.00	0.50			
21	A	686234.88	719976.04	10.00	72.00	5.00	0.00	0.50			
22	C	686262.02	719956.49	10.00	166.00	5.00	0.00	0.50			
23	C	686258.80	719980.24	10.00	256.00	5.00	0.00	0.50			
24	A	686192.12	719986.65	10.00	74.00	5.00	0.00	0.50			
25	A	686149.12	719997.16	10.00	72.00	5.00	0.00	0.50			
26	A	686108.81	720005.88	10.00	72.00	5.00	0.00	0.50			
27	B	686383.84	719931.76	5.00	72.00	5.00	0.00	0.50			
28	B	686418.27	719921.59	5.00	73.00	5.00	0.00	0.50			
29	B	686403.94	719935.38	5.00	251.00	5.00	0.00	0.50			

Horizontal Illuminance (lux)

Grid 1

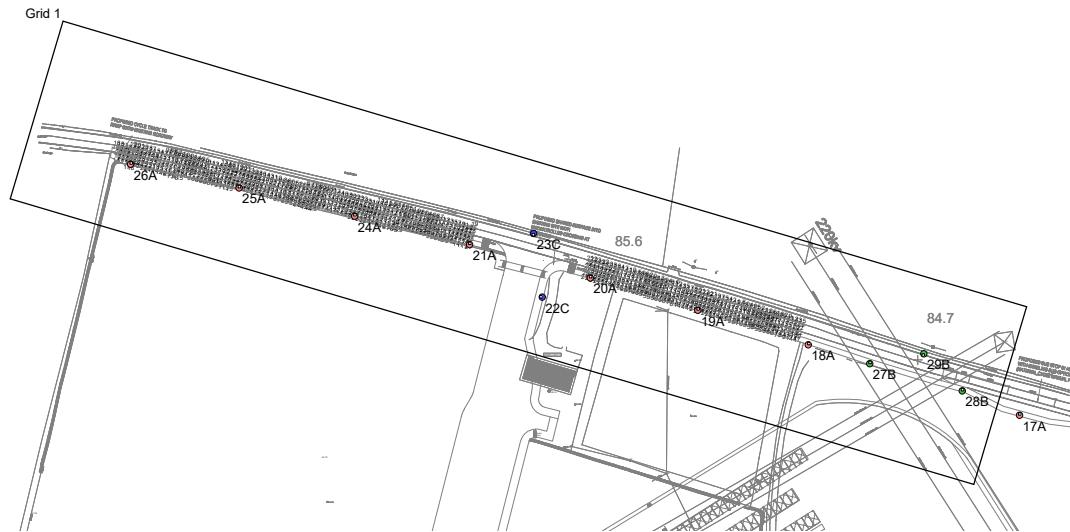


Results

Eav	14.87
Emin	4.55
Emax	29.60
Emin/Emax	0.15
Emin/Eav	0.31

Horizontal Illuminance (lux)

Grid 1



Results

Eav	14.87
Emin	4.55
Emax	29.60
Emin/Emax	0.15
Emin/Eav	0.31

Horizontal Illuminance (lux)

Grid 2

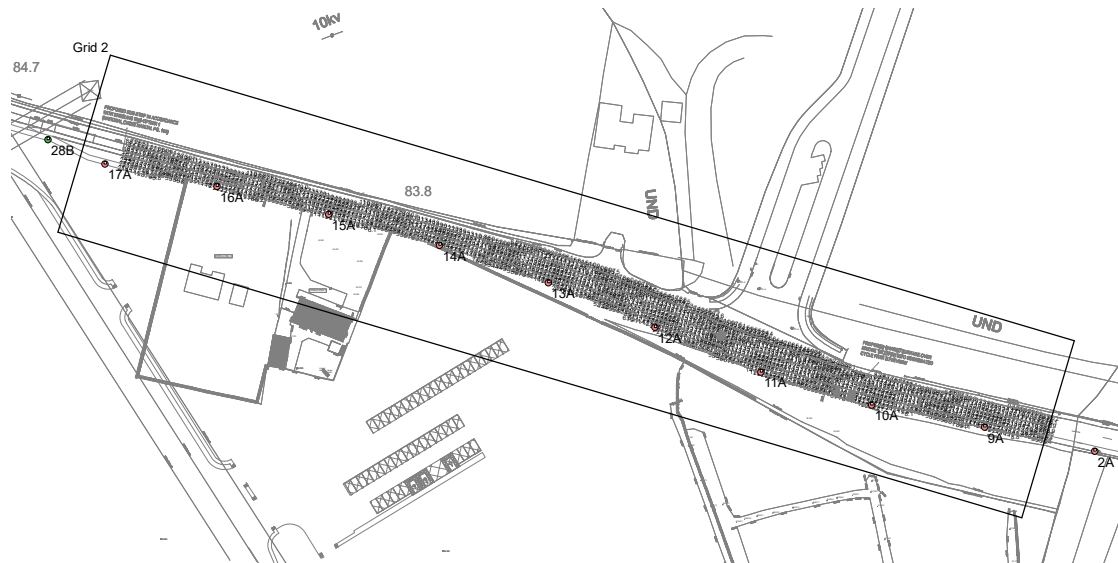


Results

Eav	13.16
Emin	3.38
Emax	29.48
Emin/Emax	0.11
Emin/Eav	0.26

Horizontal Illuminance (lux)

Grid 2



Results

Eav	13.16
Emin	3.38
Emax	29.48
Emin/Emax	0.11
Emin/Eav	0.26

Horizontal Illuminance (lux)

Grid 3



Results

Eav	13.59
Emin	3.18
Emax	30.30
Emin/Emax	0.11
Emin/Eav	0.23

Horizontal Illuminance (lux)

Grid 3

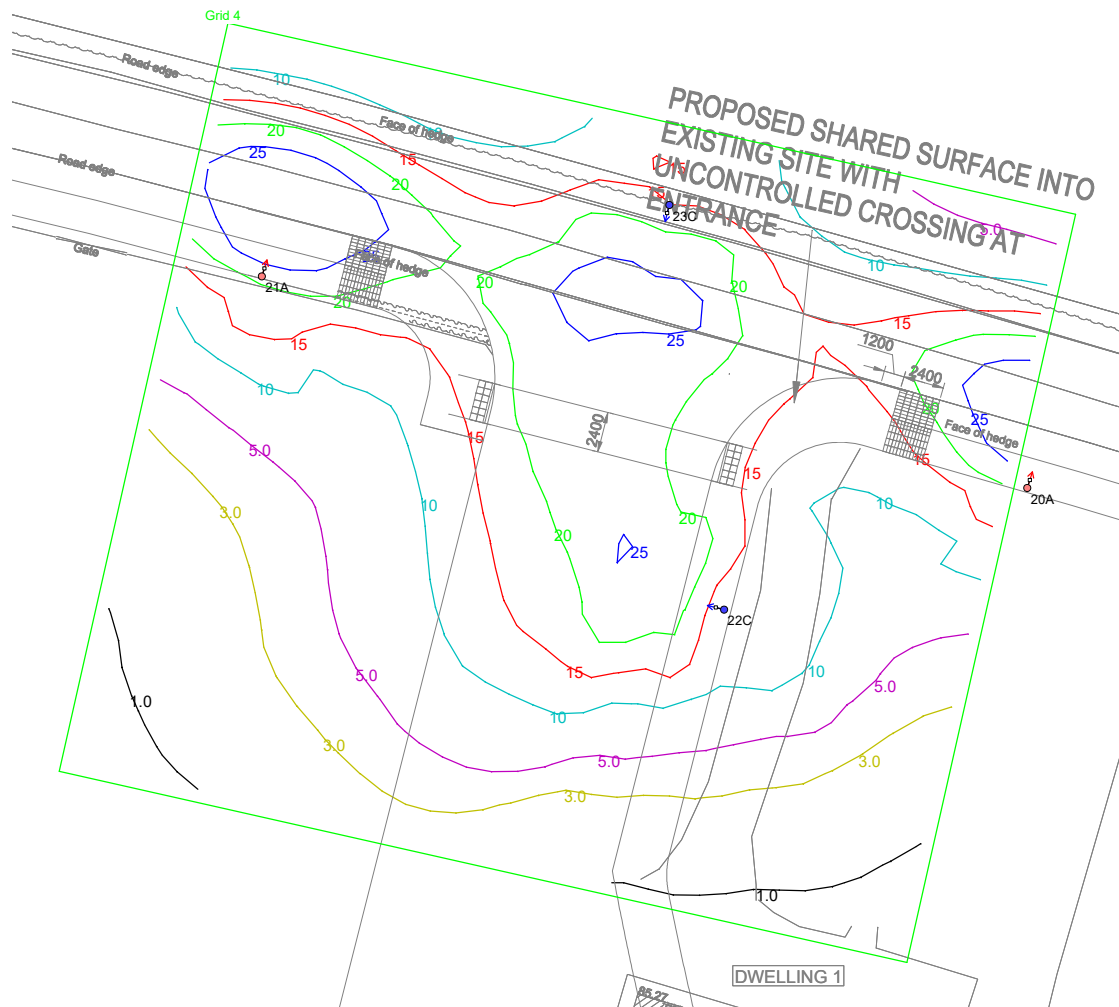


Results

Eav	13.59
Emin	3.18
Emax	30.30
Emin/Emax	0.11
Emin/Eav	0.23

Horizontal Illuminance (lux)

Grid 4

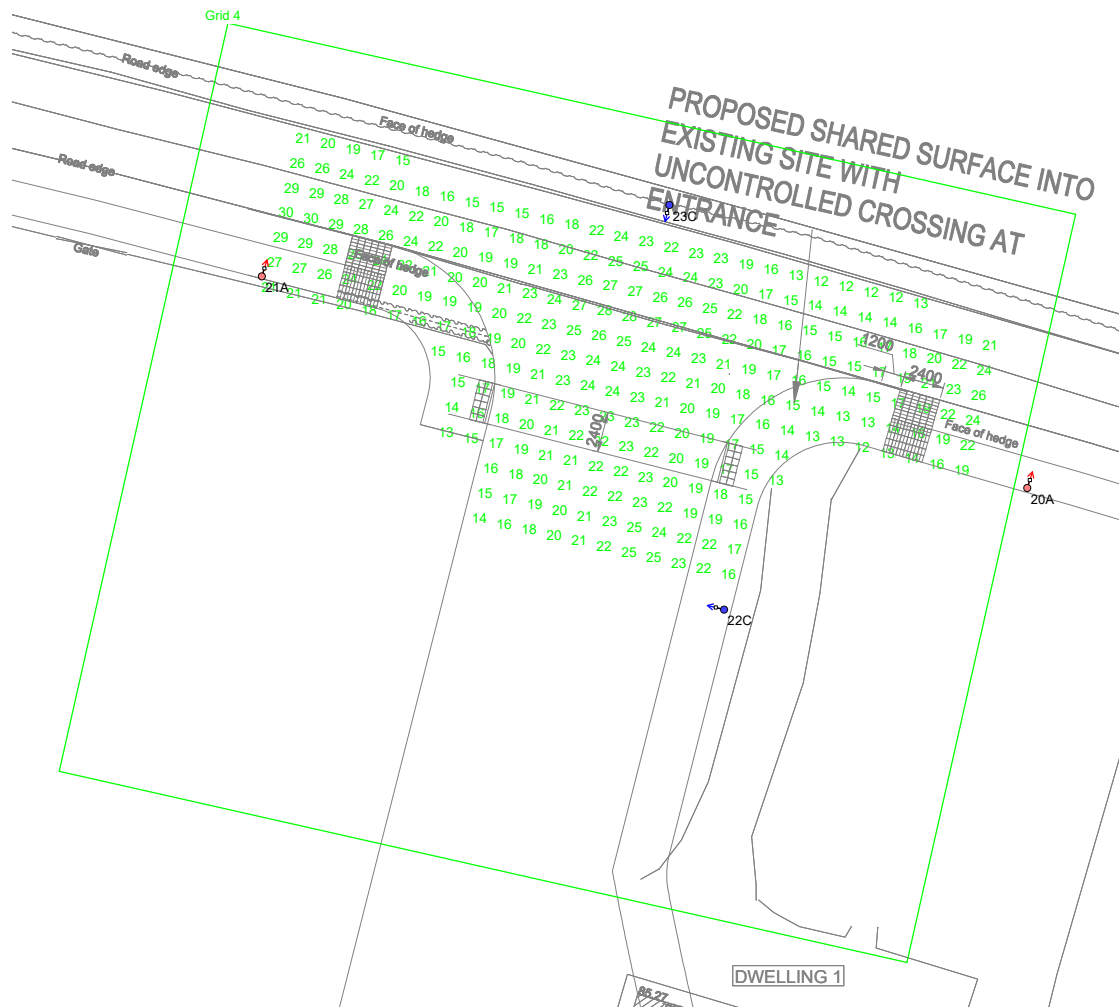


Results

Eav	20.13
Emin	11.65
E _{max}	30.23
E _{min} /E _{max}	0.39
E _{min} /E _{av}	0.58

Horizontal Illuminance (lux)

Grid 4

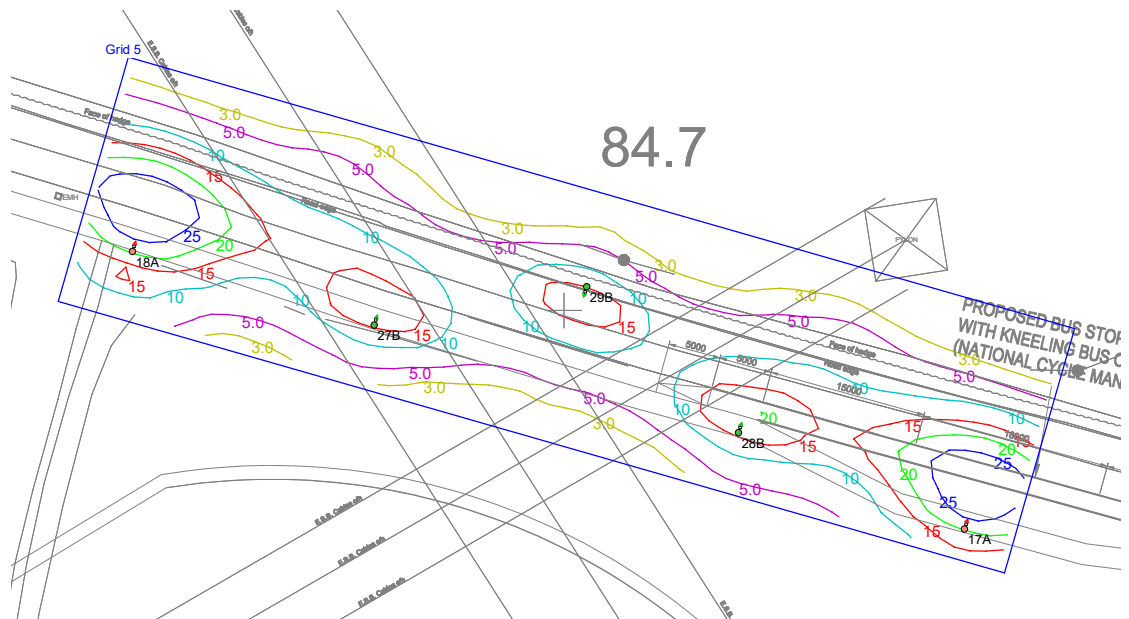


Results

Eav	20.13
Emin	11.65
Emax	30.23
Emin/Emax	0.39
Emin/Eav	0.58

Horizontal Illuminance (lux)

Grid 5

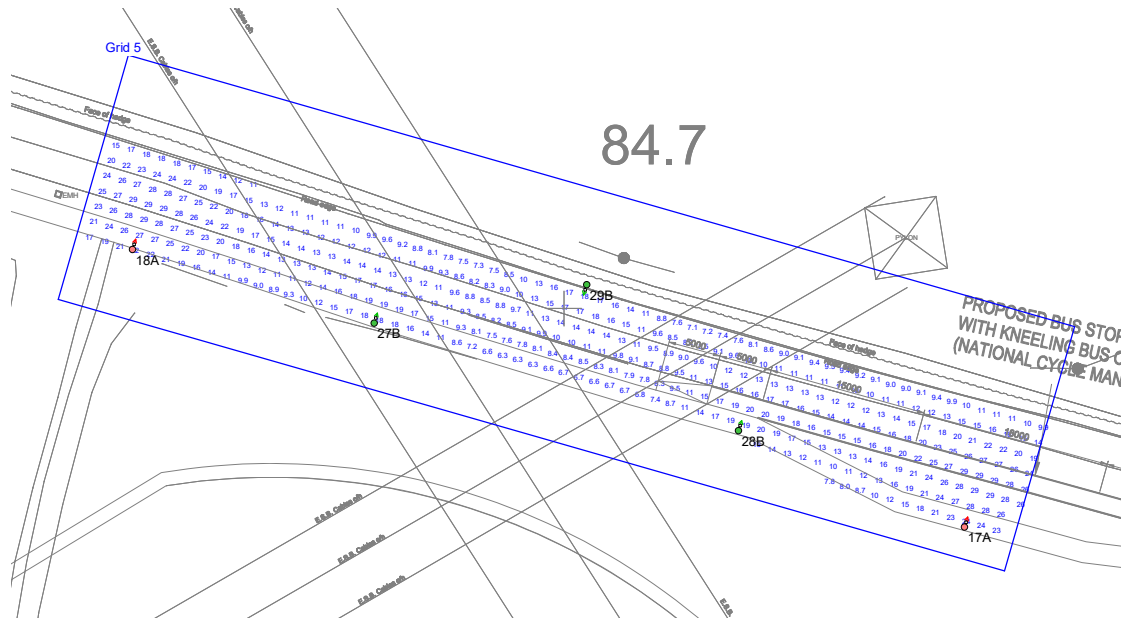


Results

Eav	15.03
Emin	6.29
E _{max}	29.39
E _{min} /E _{max}	0.21
E _{min} /E _{av}	0.42

Horizontal Illuminance (lux)

Grid 5



Results

Eav	15.03
Emin	6.29
Emax	29.39
Emin/Emax	0.21
Emin/Eav	0.42

Volt drop calculation for the most onerous circuit							
ESB SUPPLY	SOURCE PILLAR	CIRCUIT	DESIGN CURRENT (Amps per Phase)	CABLE SIZE (sq.mm.)	CABLE LENGTH (m)	FUSE (Amps)	VOLT DROP (Volts)
S1	MP1	MAIN	1.1	1.69	2x40q	200	16
S1	MP1					10	1.81

Notes:
All LED lanterns must have Constant Light Output (CLO).
Automatically dimmed to 75% each night from 12 midnight to 6am. (U14 Profile)
All lanterns to have 7pin NEMA sockets fitted.
Electronic Photocontrols switched at 35/18lux
All columns, luminaires, cable and pillars, shall comply with Local Authority General Specification for Public Lighting.
No trees to be located within falling distance of PL columns.
Minimum set-back of columns is 800mm from face of kerb.
Public lighting cable chamber as per Local Authority PL Dept. specification.



Special notes:
P4 is an 8m column
P18,19 & 20 are 5m R&L type columns.

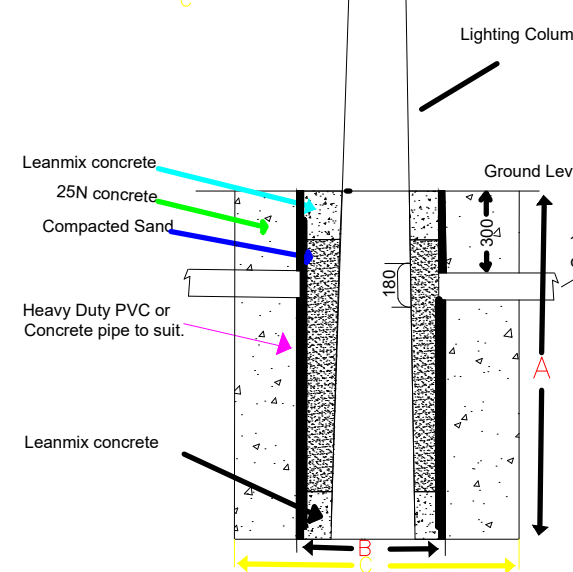
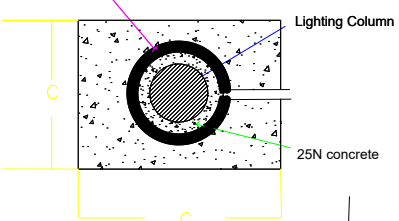
TYPE A COLUMN DETAILS	
HEIGHT	: 10m
BRACKET LENGTH	: Post-top
INCLINATION	: 5 Degrees
COLUMN QUANTITY	: 23
LANTERN DETAILS	
WATTAGE (CLO)	: 97w LED
MAKE & MODEL	: C.U.Phosco P863-128-R4-730-W3-775
TYPE B COLUMN DETAILS	
HEIGHT	: 1no 8m & 3no 5m ABACUS Raise & lower type
BRACKET LENGTH	: Post-top
INCLINATION	: 5 Degrees
COLUMN QUANTITY	: 4
LANTERN DETAILS	
WATTAGE (CLO)	: 26w LED
MAKE & MODEL	: C.U.Phosco P852-24-S1-WW-W6-0350
TYPE C COLUMN DETAILS	
HEIGHT	: 10m
BRACKET LENGTH	: Post-top
INCLINATION	: 5 Degrees
COLUMN QUANTITY	: 2
LANTERN DETAILS	
WATTAGE (CLO)	: 68w LED
MAKE & MODEL	: C.U.Phosco P863-128-F7-730-W3-625

2X6sq NYCY cable laid in ducting to I.S.10101:2020.
Single wall ducting, colour red to be used
manufactured from high density polyethylene (H.D.P.E.),
107mm external diameter, having a wall thickness of 5mm.
This ducting to have the words "Street Lighting" stamped on
letter size firm at 1m intervals. The lettering to face uppermost
in the trench. All works to Local Authority specification.
This is a circuit layout and not indicative of where ducts are to be laid.
Public Lighting Pillar (located at least 2m from ESB pillar)

Typical Base detail, to be checked
by site engineers.

COLUMN MOUNTING HEIGHT	12m	10m	8m	6m
COLUMN ROOT DEPTH	1.9m	1.7m	1.5m	1.0m
CABLE ENTRY DEPTH	0.3m	0.3m	0.3m	0.3m
ROOTING CONCRETE DEPTH				
COLUMN DOOR HEIGHT	1.5m	1.5m	1.5m	1.5m
COLUMN SLEEVE SIZE(mm) internal	450	400	400	300
EXCAVATION (width x length)	1000	800	600	400

Heavy Duty PVC or Concrete pipe
to size D



NOTES
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AND IS COPYRIGHT (C) AND CAN NOT BE USED WITHOUT PRIOR CONSENT.
NO ACCOUNT IS TAKEN FOR THE BLOCKING EFFECT CAUSED BY BUILDINGS, TREES ETC.
THE CALCULATION SHOWN BY THIS DRAWING ASSUMES THAT THE WHOLE AREA BEING
CONSIDERED IS IN THE SAME PLANE, I.E. THERE ARE NO CHANGES IN GRADIENT OR
ELEVATION.
This drawing layout is based on calculated lighting levels, produced by Sabre Electrical Services Ltd., using Lighting
Reality software. Any alterations to the layout or luminaire type used for the lighting design calculations, will require
a revised lighting design to be carried-out. A redesign may require approval from the Local Authority Public Lighting
Dept. prior to any alterations/modifications being implemented on site.

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ELECTRICAL SERVICES LTD.
Specialist Contractors
PUBLIC LIGHTING - FLOOD LIGHTING - SPORTS LIGHTING

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BELLVUE INDUSTRIAL ESTATE,
FINGLAS,
DUBLIN 11.
E - MAIL: graham@sabrelighting.ie PH: 01-811 0875

- ?	GS	CHK	-----
- ?	GS	CHK	-----
- ?	GS	CHK	-----
- ?	GS	CHK	-----
- ?	GS	CHK	-----
- ?	GS	CHK	-----
- ?	GS	CHK	-----

REV	DESCRIPTION	INITS	CHK'D	DATE
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CLIENT/CUSTOMER

Donnaghachadh O'Brian Eng.

PROJECT

R409 Millenium Park

TITLE

Public Lighting Layout

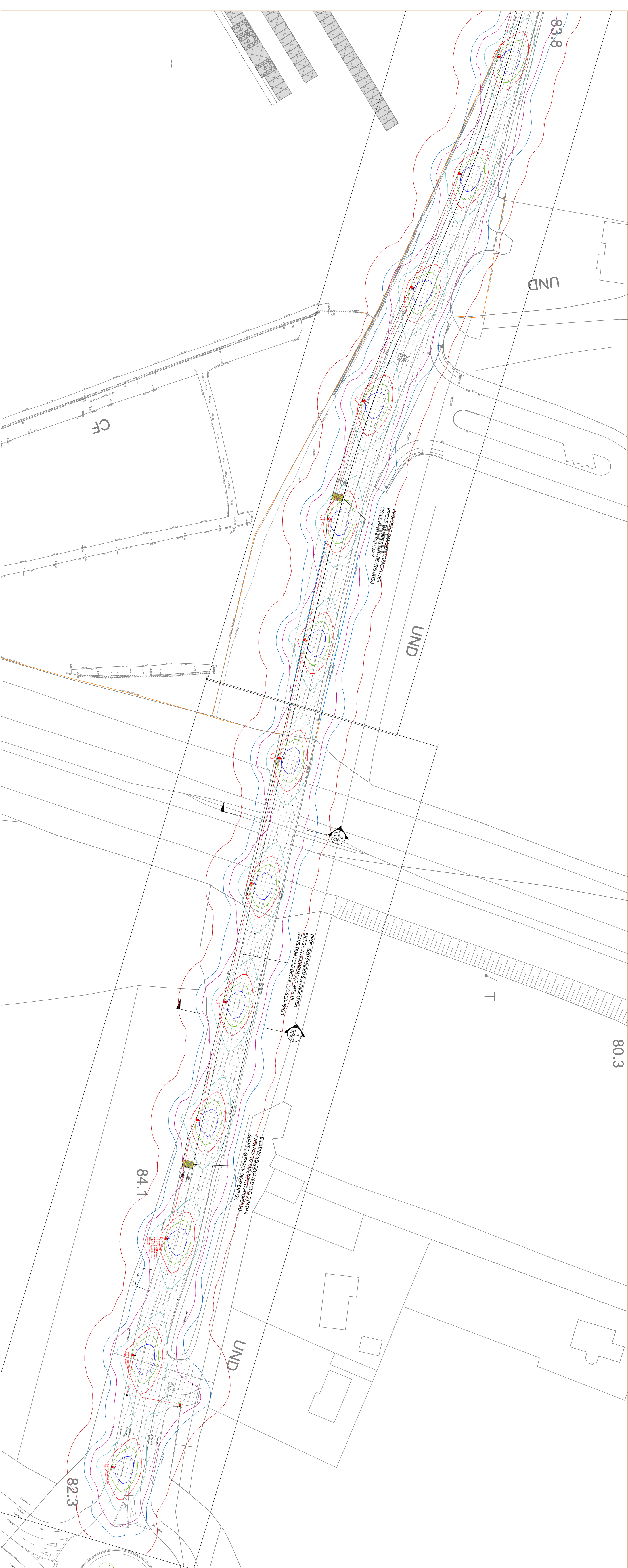
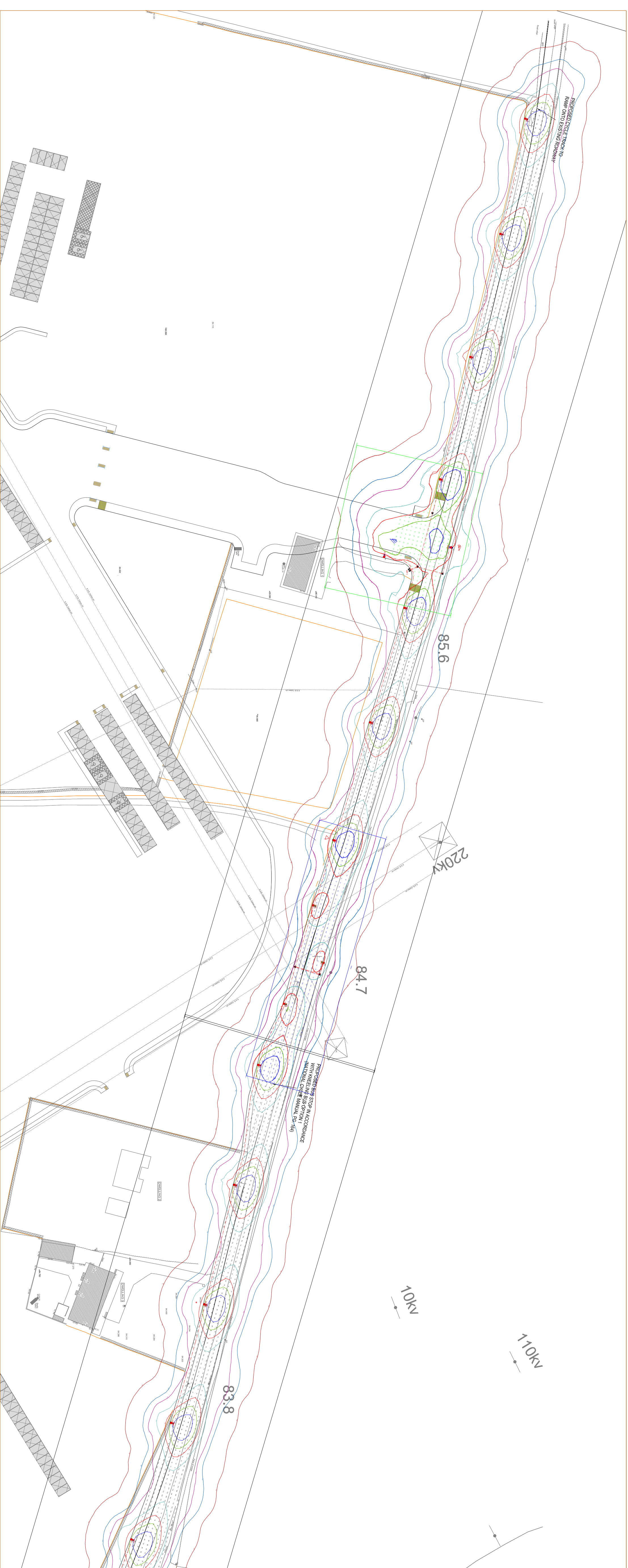
DRAWN G.S	SCALE 1:750@A1	DATE 13-04-23
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DRAWING NUMBER SES 04723	ISSUE 1
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BASE DRAWING NUMBER edit

DRAWING ORIGIN edit

DO NOT SCALE FROM THIS DRAWING



TYPE A COLUMN DETAILS	HEIGHT	10m
	BRACKET LENGTH	Post-top
	BRACKET TYPE	Single
	COLUMN QUANTITY	25
LANTERN DETAILS	TYPE A MODEL	C.U.Promo P863-128x74-20x40-375
	AVERAGE WEIGHT (KG.)	99W LED
TYPE C COLUMN DETAILS	HEIGHT	10m
	BRACKET LENGTH	Post-top
	BRACKET TYPE	Single
	COLUMN QUANTITY	25
LANTERN DETAILS	TYPE C MODEL	C.U.Promo P863-128x74-20x40-375
	AVERAGE WEIGHT (KG.)	99W LED
TYPE D COLUMN DETAILS	HEIGHT	10m
	BRACKET LENGTH	Post-top
	BRACKET TYPE	Single
	COLUMN QUANTITY	25
LANTERN DETAILS	TYPE D MODEL	C.U.Promo P863-128x74-20x40-375
	AVERAGE WEIGHT (KG.)	99W LED
TYPE E COLUMN DETAILS	HEIGHT	10m
	BRACKET LENGTH	Post-top
	BRACKET TYPE	Single
	COLUMN QUANTITY	25
LANTERN DETAILS	TYPE E MODEL	C.U.Promo P863-128x74-20x40-375
	AVERAGE WEIGHT (KG.)	99W LED

Notes:
All LED luminaires must have Constant Light Output (CLO), automatically dimmed to 75% each night from 12 midnight to dawn. All luminaires to have T10 LED sockets fixed.
Electronic Photocell switched at 557/60x.
All colour luminaires, standard or prime, shall comply with Local Authority General Specification for Public Lighting.
No trees to be located within falling distance of PLE columns.
Minimum set-back of columns is 100mm from base of kerb.



1.0 lux
3.0 lux
5.0 lux
10.0 lux
15.0 lux

NOTES

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 **Salubre**

LEARNING RESOURCES

NO ACCOUNT IS TAKEN FOR THE INCOME EFFECT CAUSED BY RENTALS, INTEREST,
AND DEPRECIATION. THE TOTAL INCOME OF THE PROJECT IS TO BE
COMBINED IN THE SAME PLANET. THERE ARE NO CHANGES MODIFIED ON
ELEVATION.

The student must provide a detailed drawing, including a floor plan, elevation, and section.
Rough sketches may be used to illustrate the design process. The drawing should be
a detailed drawing, and the student should be able to explain the design process and the
design thinking that led to the outcome. A student may be asked to provide a brief
description of any attachments and/or images included on the plan.

Sabre
ELECTRICAL SERVICES LTD.
Specialist Contractors
PUBLIC LIGHTING • FLOOD LIGHTING • SPORTS LIGHTING

[illegible]

Donnaghachadh O'Brian Eng.

R409 Millenium Park

TITLE	
Public Lighting ISOLUX	
DRAWN G.S	SCALE
DRAWING NUMBER	DATE
SES 04723	13-04-23
	ISSUE
	1

BASE DRAWING NUMBER	edit
DRAWING ORIGIN	edit

DO NOT SCALE FROM THIS DRAWING