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**Appendix 11G**

**MPSC Preliminary Lighting Layout and  
Lighting Fittings Characters**

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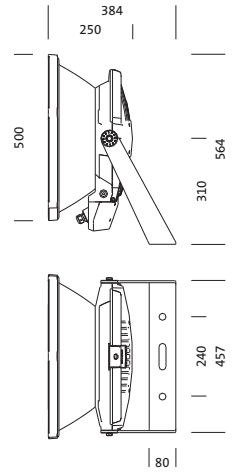
Overview of product data:  
**5NA75601WP11**

**R3MAXI-P,1x2000W,HITDE,L187,w/o.CG,TSG**



**Product description**

SiCOMPACT® R3 MAXI P, projector, primary light control with reflector, of aluminium, plated and anodised, highly specular, primary optical cover: cover panel, of toughened safety glass, transparent, light emission: direct distribution, primary light characteristic: rotationally symmetric, installation type: surface-mounted, for 1 x HIT-DE l=187 2000W, superimposed pulse ignitor without auto. power-off, control gear: without control gear, with terminal, 3-pole, max. 2.5mm<sup>2</sup>, mains connection: 400V, AC, 50Hz, luminaire housing, of diecast aluminium, coated, Siteco® metallic grey (DB 702S), length: 248 mm, width: 500 mm, height: 558mm, mounting bracket, trapezoid, of steel, galvanised, coated, Siteco® metallic grey (DB 702S), protection rating (complete): IP65, insulation class (complete): insulation class I (protective earthing), certification: CE, impact resistance: IK09, standard: EN 50419, packaging unit: 1 piece,

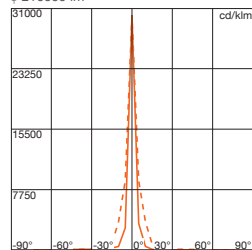


IP 65 IK 09

- Lamps: 1x HIT-DE l=187 2000W
- Socket: K12s-36
- Wt. (kg): 13.5
- Order No.: 5NA75601WP11
- EAN: 4039806592460

**5NA75601WP11: 1x HIT-DE-h15 2000W/959 Leitung l=187**

5NA75601WP11  
1 x HIT-DE-h15 2000W/959 Leitung l=187  
φ 210000 lm



l<sub>max</sub> 30089 cd/klm at γ 0°

H(m)	φ(m)	E <sub>max</sub> (lx)	E <sub>m</sub> (lx)
4	0.31	394920	306784
8	0.61	98730	76696
12	0.92	43880	34087
16	1.23	24682	19174
20	1.54	15797	12271

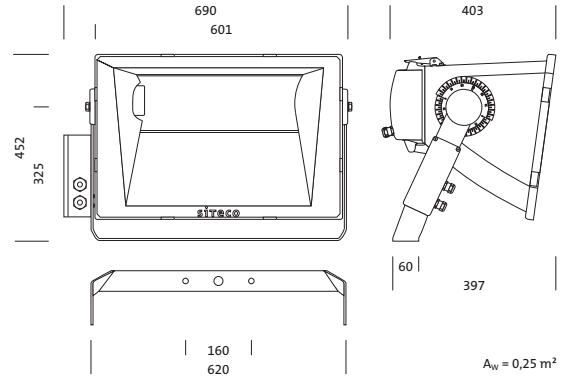
Overview of product data:  
**5NA75301WB02**

**S2MAXI,1x2000W,HITDE,L187,w/o.CG,TSG,dir**



**Product description**

SiCOMPACT® S2 MAXI, floodlight, primary light control with reflector, of aluminium, highly specular, primary anti-glare with V-shield, of aluminium, highly specular, primary optical cover: cover panel, of toughened safety glass, light emission: direct distribution, primary light characteristic: symmetric, bifocal, installation type: surface-mounted, for 1 x HIT-DE l=187 2000W, superimposed pulse ignitor, internal, control gear: without control gear, with terminal, 3-pole, max. 2.5mm<sup>2</sup>, mains connection: 400V, AC, 50Hz, luminaire housing, of diecast aluminium, sandblasted, natural, length: 690 mm, width: 403 mm, height: 452mm, mounting bracket, of steel, galvanised, protection rating (complete): IP65, insulation class (complete): insulation class I (protective earthing), certification: CE, standard: EN 50419, packaging unit: 1 piece,

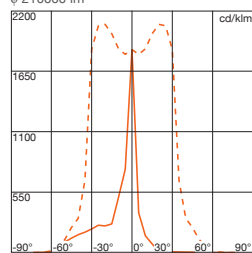


IP 65

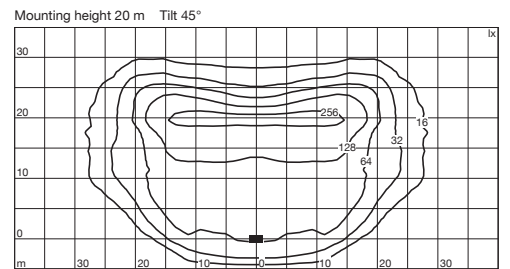
Lamps: 1x HIT-DE l=187 2000W  
 Socket: K12s-36  
 Wt. (kg): 21.5  
 Order No.: 5NA75301WB02  
 EAN: 4039806210104

5NA75301WB02: 1x HIT-DE-h15 2000W/959 Leitung l=187

5NA75301WB02  
 1 x HIT-DE-h15 2000W/959 Leitung l=187  
 φ 210000 lm



$I_{max}$  2075 cd/klm at  $\gamma$  20°



Overview of product data:  
**5NA76901WB02**

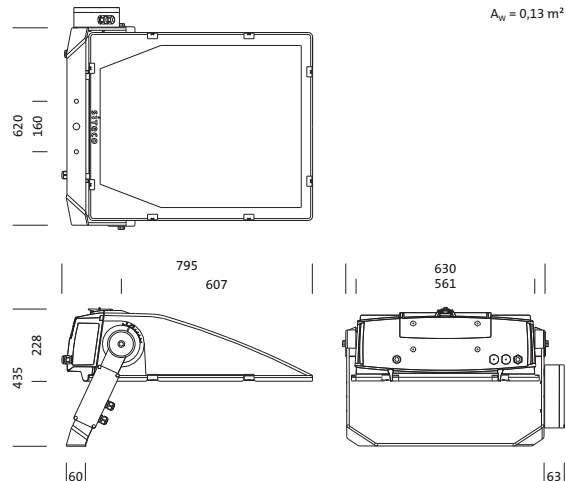
1/3

**A3MAXI,1x2000W,HITDE,L187,w/o.CG,TSG,dir**



**Product description**

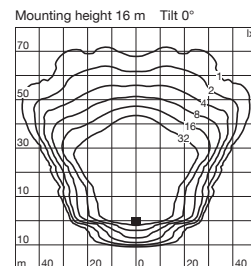
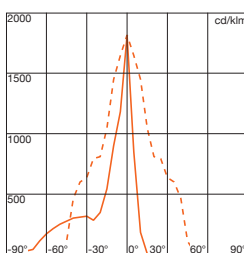
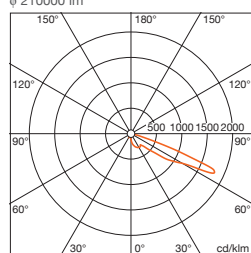
SiCOMPACT® A3 MAXI, floodlight, primary light control with reflector, of aluminium, highly specular, primary optical cover: cover panel, of toughened safety glass, light emission: direct distribution, primary light characteristic: asymmetric, installation type: surface-mounted, for 1 x HIT-DE l=187 2000W, superimposed pulse ignitor, internal, control gear: without control gear, with terminal, 3-pole, max. 2.5mm<sup>2</sup>, mains connection: 400V, AC, 50Hz, luminaire housing, of diecast aluminium, sandblasted, natural, length: 795 mm, width: 620 mm, height: 228mm, mounting bracket, of steel, galvanised, protection rating (complete): IP65, insulation class (complete): insulation class I (protective earthing), certification: CE, ENEC, VDE, impact resistance: IK08, standard: EN 50419, packaging unit: 1 piece,



Lamps: 1x HIT-DE l=187 2000W  
 Socket: K12s-36  
 Wt. (kg): 22.1  
 Order No.: 5NA76901WB02  
 EAN: 4050737068008

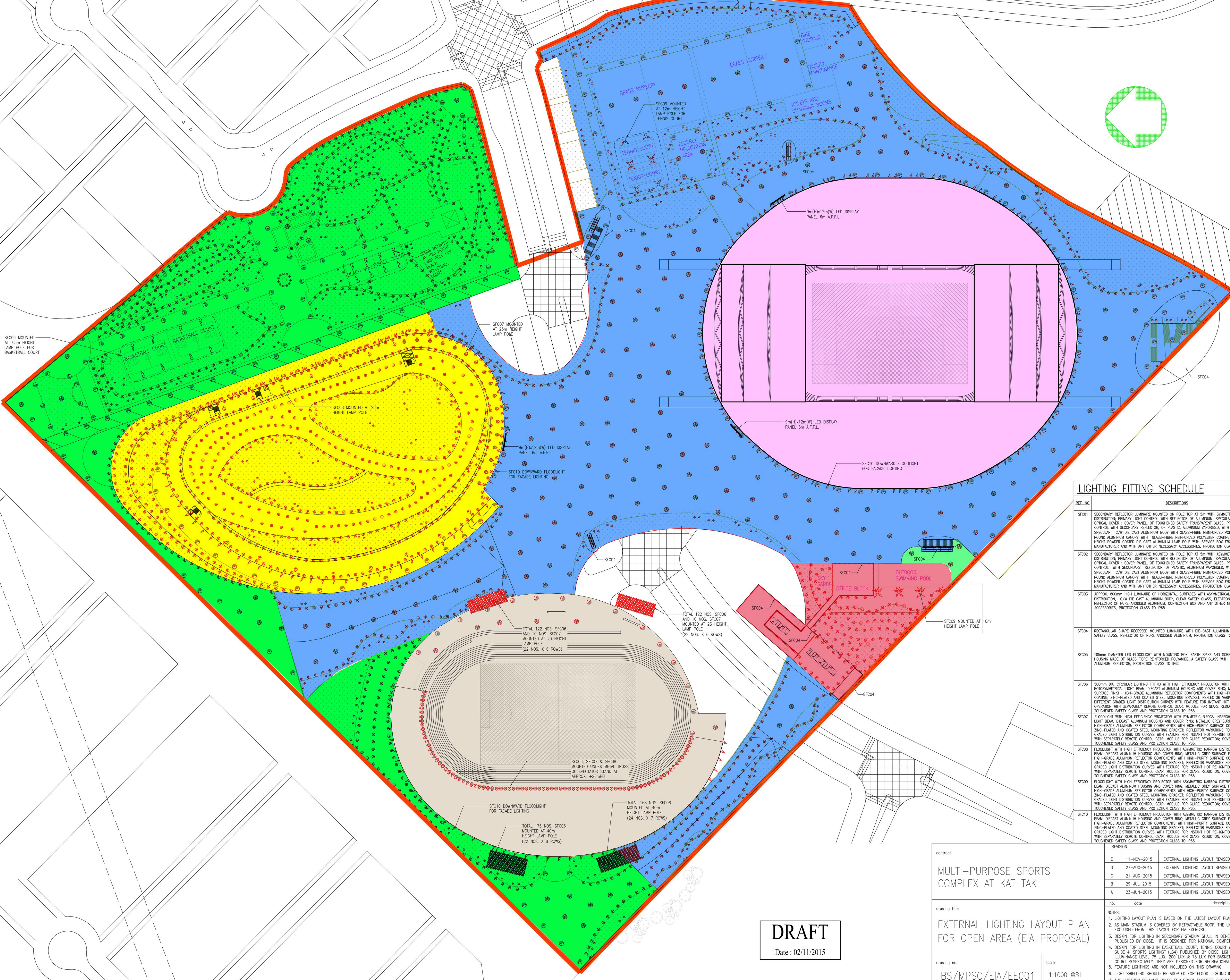
5NA76901WB02: 1x HIT-DE-h15 2000W/959 Leitung l=187

5NA76901WB02  
 1 x HIT-DE-h15 2000W/959 Leitung l=187  
 φ 210000 lm





- LEGEND**
- LAWN / Ground covers
  - Shrubs
  - Tree
  - Podium Deck
  - Main Stadium
  - Office and Hotel Block
  - Public Sports Ground
  - Indoor Sports Center
  - Open Space



**DESIGN ILLUMINANCE**

AREA	DESIGN AVERAGE ILLUMINANCE ON GROUND (LUX)
MAIN PATHWAYS IN THE PARK AREA / LAWN	10
CHILDREN PLAY AREA	50
ELDERLY FITNESS AREA	50
TREES (FOR HIGHLIGHTING PURPOSE ONLY)	20
SPORT AREA INSIDE MAIN STADIUM	3500
SPORT AREA INSIDE SECONDARY STADIUM	1400
STEP	50
BASKETBALL COURT	75
TENNIS COURT	200
BEACH VOLLEYBALL COURT	75
OUTDOOR SWIMMING POOL	200
GOLF DRIVING RANGE	100
LED DISPLAY PANEL	7000cd/sq.m.

**LIGHTING FITTING SCHEDULE**

REF. NO.	DESCRIPTIONS	SYMBOL	LAMP ELEMENT	COLOR TEMP.	MAX. LIGHT SOURCE INTENSITY	MAX. AVERAGE ILLUMINANCE	SKETCH OF FITTING
SFC01	SECONDARY REFLECTOR LUMINAIRE MOUNTED ON POLE TOP AT 5m WITH SYMMETRIC LIGHT DISTRIBUTION. PRIMARY REFLECTOR OF ALUMINUM, SPECULAR. PRIMARY OPTICAL COVER : COVER PANEL, OF TOUCHED SAFETY TRANSPARENT GLASS. PRIMARY LIGHT CONTROL WITH SECONDARY REFLECTOR, OF PLASTIC, ALUMINUM VAPORISED, WITH HIGHLY SPECULAR. C/W DIE CAST ALUMINUM BODY WITH GLASS-FIBRE REINFORCED POLYESTER COATING. ROUND ALUMINUM CANOPY WITH GLASS-FIBRE REINFORCED POLYESTER COATING. C/W 6.2m HEIGHT POWER COATED DIE CAST ALUMINUM LAMP POLE WITH SERVICE BOX FROM LUMINAIRE MANUFACTURER AND WITH ANY OTHER NECESSARY ACCESSORIES. PROTECTION CLASS TO IP65.		2 X 70W CERAMIC DISCHARGE METAL HALIDE TUBULAR LAMP	3000K	6.89 kd	10 cd/m <sup>2</sup>	
SFC02	SECONDARY REFLECTOR LUMINAIRE MOUNTED ON POLE TOP AT 5m WITH ASYMMETRIC LIGHT DISTRIBUTION. PRIMARY LIGHT CONTROL, WITH REFLECTOR OF ALUMINUM, SPECULAR. PRIMARY OPTICAL COVER : COVER PANEL, OF TOUCHED SAFETY TRANSPARENT GLASS. PRIMARY LIGHT CONTROL WITH SECONDARY REFLECTOR, OF PLASTIC, ALUMINUM VAPORISED, WITH HIGHLY SPECULAR. C/W DIE CAST ALUMINUM BODY WITH GLASS-FIBRE REINFORCED POLYESTER COATING. ROUND ALUMINUM CANOPY WITH GLASS-FIBRE REINFORCED POLYESTER COATING. C/W 6.2m HEIGHT POWER COATED DIE CAST ALUMINUM LAMP POLE WITH SERVICE BOX FROM LUMINAIRE MANUFACTURER AND WITH ANY OTHER NECESSARY ACCESSORIES. PROTECTION CLASS TO IP65.		1 X 70W CERAMIC DISCHARGE METAL HALIDE TUBULAR LAMP	3000K	6.89 kd	10 cd/m <sup>2</sup>	
SFC03	APPROX 800mm HIGH LUMINAIRE OF HORIZONTAL SURFACES WITH ASYMMETRIC LIGHT DISTRIBUTION. C/W DIE CAST ALUMINUM BODY, CLEAR SAFETY GLASS, ELECTRONIC BALLAST, REFLECTOR OF PURE ANODISED ALUMINUM, CONNECTION BOX AND ANY OTHER NECESSARY ACCESSORIES. PROTECTION CLASS TO IP65.		1 X 20W CERAMIC DISCHARGE METAL HALIDE TUBULAR LAMP	3000K	3.6 kd	10 cd/m <sup>2</sup>	
SFC04	RECTANGULAR SHAPE RECESSED MOUNTED LUMINAIRE WITH DIE-CAST ALUMINUM HOUSING, CLEAR SAFETY GLASS, REFLECTOR OF PURE ANODISED ALUMINUM, PROTECTION CLASS TO IP65.		1 X 36W COMPACT FLUORESCENT LAMP	3000K	1.1 kd	10 cd/m <sup>2</sup>	
SFC05	105mm DIAMETER LED FLOODLIGHT WITH MOUNTING BOX, EARTH SPIKE AND SCREW CLAMP. HOUSING MADE OF GLASS FIBRE REINFORCED POLYAMIDE. A SAFETY GLASS WITH PURE ANODISED ALUMINUM REFLECTOR, PROTECTION CLASS TO IP65.		LED FLOODLIGHT - 4.5W	3000K	0.11 kd	10 cd/m <sup>2</sup>	
SFC06	500mm DIA. CIRCULAR LIGHTING FITTING WITH HIGH EFFICIENCY PROJECTOR WITH ROTOSYMMETRICAL LIGHT BEAM, DIECAST ALUMINUM HOUSING AND COVER RING, METALLIC GREY SURFACE FINISH; HIGH-GRADE ALUMINUM REFLECTOR COMPONENTS WITH HIGH-PURITY SURFACE COATING; ZINC-PLATED AND COATED STEEL MOUNTING BRACKET; REFLECTOR VARIATIONS FOR DIFFERENT GRADED LIGHT DISTRIBUTION CURVES WITH FEATURE FOR INSTANT HOT RE-IGNITION, OPERATION WITH SEPARATELY REMOTE CONTROL GEAR, MODULE FOR GLARE REDUCTION; COVER OF TOUCHED SAFETY GLASS AND PROTECTION CLASS TO IP65.		1 X 2000W METAL HALIDE TUBULAR LAMP (DOUBLE ENDED TYPE)	5500K	2252 kd	2400cd/m <sup>2</sup> (VERTICAL) AT PITCH LEVEL	
SFC07	FLOODLIGHT WITH HIGH EFFICIENCY PROJECTOR WITH SYMMETRIC BIFOCAL NARROW DISTRIBUTION LIGHT BEAM, DIECAST ALUMINUM HOUSING AND COVER RING, METALLIC GREY SURFACE FINISH; HIGH-GRADE ALUMINUM REFLECTOR COMPONENTS WITH HIGH-PURITY SURFACE COATING; ZINC-PLATED AND COATED STEEL MOUNTING BRACKET; REFLECTOR VARIATIONS FOR DIFFERENT GRADED LIGHT DISTRIBUTION CURVES WITH FEATURE FOR INSTANT HOT RE-IGNITION, OPERATION WITH SEPARATELY REMOTE CONTROL GEAR, MODULE FOR GLARE REDUCTION; COVER OF TOUCHED SAFETY GLASS AND PROTECTION CLASS TO IP65.		1 X 2000W METAL HALIDE TUBULAR LAMP (DOUBLE ENDED TYPE)	5500K	2252 kd	2400cd/m <sup>2</sup> (VERTICAL) AT PITCH LEVEL	
SFC08	FLOODLIGHT WITH HIGH EFFICIENCY PROJECTOR WITH ASYMMETRIC NARROW DISTRIBUTION LIGHT BEAM, DIECAST ALUMINUM HOUSING AND COVER RING, METALLIC GREY SURFACE FINISH; HIGH-GRADE ALUMINUM REFLECTOR COMPONENTS WITH HIGH-PURITY SURFACE COATING; ZINC-PLATED AND COATED STEEL MOUNTING BRACKET; REFLECTOR VARIATIONS FOR DIFFERENT GRADED LIGHT DISTRIBUTION CURVES WITH FEATURE FOR INSTANT HOT RE-IGNITION, OPERATION WITH SEPARATELY REMOTE CONTROL GEAR, MODULE FOR GLARE REDUCTION; COVER OF TOUCHED SAFETY GLASS AND PROTECTION CLASS TO IP65.		1 X 2000W METAL HALIDE TUBULAR LAMP (DOUBLE ENDED TYPE)	5500K	2252 kd	2400cd/m <sup>2</sup> (VERTICAL) AT PITCH LEVEL	
SFC09	FLOODLIGHT WITH HIGH EFFICIENCY PROJECTOR WITH ASYMMETRIC NARROW DISTRIBUTION LIGHT BEAM, DIECAST ALUMINUM HOUSING AND COVER RING, METALLIC GREY SURFACE FINISH; HIGH-GRADE ALUMINUM REFLECTOR COMPONENTS WITH HIGH-PURITY SURFACE COATING; ZINC-PLATED AND COATED STEEL MOUNTING BRACKET; REFLECTOR VARIATIONS FOR DIFFERENT GRADED LIGHT DISTRIBUTION CURVES WITH FEATURE FOR INSTANT HOT RE-IGNITION, OPERATION WITH SEPARATELY REMOTE CONTROL GEAR, MODULE FOR GLARE REDUCTION; COVER OF TOUCHED SAFETY GLASS AND PROTECTION CLASS TO IP65.		1 X 400W METAL HALIDE TUBULAR LAMP	3000K	71 kd	200 cd/m <sup>2</sup>	
SFC10	FLOODLIGHT WITH HIGH EFFICIENCY PROJECTOR WITH ASYMMETRIC NARROW DISTRIBUTION LIGHT BEAM, DIECAST ALUMINUM HOUSING AND COVER RING, METALLIC GREY SURFACE FINISH; HIGH-GRADE ALUMINUM REFLECTOR COMPONENTS WITH HIGH-PURITY SURFACE COATING; ZINC-PLATED AND COATED STEEL MOUNTING BRACKET; REFLECTOR VARIATIONS FOR DIFFERENT GRADED LIGHT DISTRIBUTION CURVES WITH FEATURE FOR INSTANT HOT RE-IGNITION, OPERATION WITH SEPARATELY REMOTE CONTROL GEAR, MODULE FOR GLARE REDUCTION; COVER OF TOUCHED SAFETY GLASS AND PROTECTION CLASS TO IP65.		1 X 2000W METAL HALIDE TUBULAR LAMP	3000K	272 kd	20 cd/m <sup>2</sup>	

contract

**MULTI-PURPOSE SPORTS COMPLEX AT KAT TAK**

drawing title

**EXTERNAL LIGHTING LAYOUT PLAN FOR OPEN AREA (EIA PROPOSAL)**

drawing no.

BS/MPSC/EIA/EE001

scale

1:1000 @B1

revision

no.	date	description	initial
E	11-NOV-2015	EXTERNAL LIGHTING LAYOUT REVISED TO SUIT LATEST LAYOUT	
D	27-AUG-2015	EXTERNAL LIGHTING LAYOUT REVISED TO SUIT LATEST LAYOUT	
C	21-AUG-2015	EXTERNAL LIGHTING LAYOUT REVISED TO SUIT LATEST LAYOUT	
B	29-JUL-2015	EXTERNAL LIGHTING LAYOUT REVISED TO SUIT LATEST LAYOUT	
A	23-JUN-2015	EXTERNAL LIGHTING LAYOUT REVISED TO SUIT WITH GOLF DRIVING RANGE FOR ROOF AREA OF ISC	

NOTES:

- LIGHTING LAYOUT PLAN IS BASED ON THE LATEST LAYOUT PLAN RECEIVED ON 02-NOV-2015
- AS MAIN STADIUM IS COVERED BY RETRACTABLE ROOF, THE LIGHTING INSIDE THE STADIUM WOULD NOT BE CONSIDERED AS EXTERNAL LIGHTING AND EXCLUDED FROM THIS LAYOUT FOR EIA EXERCISE.
- DESIGN FOR LIGHTING IN SECONDARY STADIUM SHALL IN GENERAL FOLLOW RECOMMENDATIONS GIVEN IN 'LIGHTING GUIDE 4: SPORTS LIGHTING' (L04) PUBLISHED BY CBSE. IT IS DESIGNED FOR NATIONAL COMPETITIONS. IT IS SUITABLE FOR BROADCAST REQUIREMENT.
- DESIGN FOR LIGHTING IN BASKETBALL COURT, TENNIS COURT & VOLLEYBALL COURT SHALL IN GENERAL FOLLOW RECOMMENDATIONS GIVEN IN 'LIGHTING GUIDE 4: SPORTS LIGHTING' (L04) PUBLISHED BY CBSE. LIGHTING CLASS II IN CBSE L04 SHALL BE ACHIEVED WITH RECOMMENDED AVERAGE HORIZONTAL ILLUMINANCE LEVEL 75 LUX, 200 LUX & 75 LUX FOR BASKETBALL COURT, TENNIS COURT & VOLLEYBALL COURT RESPECTIVELY. THEY ARE DESIGNED FOR COURT RESPECTIVELY. THEY ARE DESIGNED FOR RECREATIONAL ACTIVITIES. THEY ARE NOT SUITABLE FOR HOTV BROADCAST REQUIREMENT.
- FEATURE LIGHTINGS ARE NOT INCLUDED ON THIS DRAWING.
- LIGHT SHIELDING SHOULD BE ADOPTED FOR FLOOD LIGHTING IN SECONDARY STADIUM, BASKETBALL COURT, TENNIS COURT & BEACH VOLLEYBALL COURT.
- THE LOCATION OF LAMP POLES FOR SPORT FACILITIES SHOULD BE ADJUSTED SUBJECT TO THE REQUIREMENT OF SAFETY ZONE FOR THE SPORT FACILITIES.
- THE TREE LIGHTING WOULD BE FURTHER INCORPORATED UPON CONFIRMATION OF LOCATION OF TREES IN LAYOUT BY LANDSCAPE CONSULTANT.

**DRAFT**

Date : 02/11/2015



**Glare impact calculation to Light Sensitivity Receiver L-13R**

**Future Mixed Development at Northwest of MPSC**

Sensitivity Receiver L13R Coordinate		
X (m)	Y (m)	Z (mPD)
838080	820759	21.0

The inverse square law and cosine law can be used to calculate illuminance at a point from intensity data.

$$\text{horizontal illuminance (lx)} E_h = (r \times f \times \beta \times I \times \cos\theta) / d^2$$

where I is intensity of lighting source (cd),

$\beta$  is beam factor (proportion of lamp lumens contained within the beam)=0.9,

d is the distance from the light source to sensitive receiver (m),

$\theta$  is the angle of incidence of the intensity of a light source,

f is maintenance factor= 0.7

r is Approximate reflectance for concrete ground= 0.4

for wall surface= 0.6

for grass= 0.2

Direct Light										Reflected light					Illuminance at the observer's eye in a plane perpendicular to the line of sight caused by the lighting installation E eye							
Light source LSI: Main Stadium																						
Light Sources drawing are referred to Page 4 in Appendix 11G		LS1a	Light Sources Type		SFC02	Approximate reflectance factor for concrete ground													0.4			
Light Source ID.	Light source intensity I (cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaires $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaires $\Phi = \arctan(d/2h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (r \times f \times \beta \times I \times \cos\Phi) / d^2$	$\tan\Phi$	$E_{eye} = E_h \times \tan\Phi$	Total Veiling Luminance from all luminaires $L_{vl} = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2h	$\Phi$ Degree							
LS1a (1)	6890	838277	820404	18	406	3	1.56	88	5.00E-03	406	1.08E-06	406	13	1.51	84	1.00E-02	407	7.45E-06	23.63	2.55E-05	4.34E-05	2
LS1a (2)		838283	820418		397		1.56	88	5.00E-03	397	1.15E-06	397		1.51	84	1.00E-02	397	7.98E-06	23.54	2.72E-05	4.59E-05	2
LS1a (3)		838290	820431		390		1.56	88	5.00E-03	390	1.22E-06	390		1.50	84	1.00E-02	390	8.43E-06	23.46	2.86E-05	4.80E-05	2
LS1a (4)		838300	820443		385		1.56	88	5.00E-03	385	1.27E-06	385		1.50	84	1.00E-02	385	8.75E-06	23.41	2.96E-05	4.95E-05	2
LS1a (5)		838310	820455		382		1.56	88	5.00E-03	382	1.30E-06	382		1.50	84	1.00E-02	382	8.98E-06	23.37	3.04E-05	5.06E-05	2
LS1a (6)		838322	820465		381		1.56	88	5.00E-03	381	1.31E-06	381		1.50	84	1.00E-02	381	9.02E-06	23.36	3.05E-05	5.08E-05	2
LS1a (7)		838335	820472		384		1.56	88	5.00E-03	384	1.28E-06	384		1.50	84	1.00E-02	384	8.84E-06	23.39	2.99E-05	4.99E-05	2
LS1a (8)		838349	820478		389		1.56	88	5.00E-03	389	1.23E-06	389		1.50	84	1.00E-02	390	8.47E-06	23.45	2.88E-05	4.82E-05	2
LS1a (9)		838364	820482		397		1.56	88	5.00E-03	397	1.16E-06	397		1.51	84	1.00E-02	397	8.00E-06	23.53	2.72E-05	4.60E-05	2
LS1a (10)		838379	820483		407		1.56	88	5.00E-03	407	1.07E-06	407		1.51	84	1.00E-02	407	7.43E-06	23.64	2.54E-05	4.33E-05	2
LS1a (11)		838394	820482		419		1.56	88	5.00E-03	419	9.86E-07	419		1.51	84	1.00E-02	419	6.82E-06	23.75	2.34E-05	4.03E-05	2
LS1a (12)		838408	820479		432		1.56	88	5.00E-03	432	8.98E-07	432		1.51	85	1.00E-02	432	6.21E-06	23.88	2.14E-05	3.73E-05	2
LS1a (13)		838422	820474		446		1.56	88	5.00E-03	446	8.17E-07	446		1.51	85	1.00E-02	446	5.65E-06	24.00	1.96E-05	3.44E-05	2
LS1a (14)		838435	820466		460		1.56	88	5.00E-03	460	7.42E-07	460		1.51	85	1.00E-02	461	5.13E-06	24.13	1.79E-05	3.18E-05	2
LS1a (15)		838446	820457		475		1.56	88	5.00E-03	475	6.74E-07	475		1.52	85	1.00E-02	475	4.66E-06	24.25	1.63E-05	2.93E-05	2
LS1a (16)		838457	820446		490		1.56	88	5.00E-03	490	6.14E-07	490		1.52	85	1.00E-02	490	4.25E-06	24.36	1.50E-05	2.71E-05	2
LS1a (17)		838466	820434		505		1.56	88	5.00E-03	505	5.62E-07	505		1.52	85	1.00E-02	505	3.89E-06	24.47	1.38E-05	2.51E-05	2
LS1a (41)		838314	820251		560		1.57	88	5.00E-03	560	4.12E-07	560		1.52	85	1.00E-02	560	2.85E-06	24.82	1.02E-05	1.92E-05	2
LS1a (42)		838303	820261		546		1.57	88	5.00E-03	546	4.45E-07	546		1.52	85	1.00E-02	546	3.08E-06	24.74	1.10E-05	2.06E-05	2
LS1a (43)		838294	820273		531		1.57	88	5.00E-03	531	4.83E-07	531		1.52	85	1.00E-02	531	3.34E-06	24.64	1.19E-05	2.21E-05	2
LS1a (44)		838286	820286		516		1.56	88	5.00E-03	516	5.26E-07	516		1.52	85	1.00E-02	516	3.64E-06	24.55	1.29E-05	2.37E-05	2
LS1a (45)		838279	820299		501		1.56	88	5.00E-03	501	5.74E-07	501		1.52	85	1.00E-02	502	3.97E-06	24.44	1.40E-05	2.56E-05	2
LS1a (46)		838275	820314		486		1.56	88	5.00E-03	486	6.29E-07	486		1.52	85	1.00E-02	487	4.35E-06	24.33	1.53E-05	2.76E-05	2

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaires from the individual luminaires $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaires $\Phi = \arctan(d/2/h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{h\text{av}} = (r \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eeye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaires $L_v = \sum 10 (E_{\text{eye}} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$	
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree								
LS1a (47)		838275	820314		486		1.56	88	5.00E-03	486	6.29E-07	486		1.52	85	1.00E-02	487	4.35E-06	24.33	1.53E-05	2.76E-05	2	
LS1a (48)		838272	820329		472		1.56	88	5.00E-03	472	6.89E-07	472		1.52	85	1.00E-02	472	4.76E-06	24.22	1.67E-05	2.98E-05	2	
LS1a (49)		838272	820359		444		1.56	88	5.00E-03	444	8.26E-07	444		1.51	85	1.00E-02	444	5.72E-06	23.99	1.98E-05	3.48E-05	2	
LS1a (50)		838272	820374		430		1.56	88	5.00E-03	430	9.08E-07	430		1.51	85	1.00E-02	430	6.28E-06	23.86	2.17E-05	3.76E-05	2	
sum										2.35E-05	sum										1.62E-04		
Light Sources drawing are referred to Page 4 in Appendix 11G		LS1b	Light Sources Type	SFC10	Approximate reflectance factor for wall surface						0.6												
LS1b(1)	272000	838277	820404	40	19	No direct light	1.52	85	5.00E-03	407	409	19	1.48	83	1.00E-02	410	6.29E-04	12.22	0.00E+00	0.00E+00	5		
LS1b(2)		838283	820418				397	1.52	85	5.00E-03			398	400	1.48	83	1.00E-02	401	6.73E-04	12.06	0.00E+00	0.00E+00	5
LS1b(3)		838290	820431				390	1.52	85	5.00E-03			390	393	1.47	82	1.00E-02	393	7.11E-04	11.93	0.00E+00	0.00E+00	5
LS1b(4)		838300	820443				385	1.52	85	5.00E-03			386	388	1.47	82	1.00E-02	389	7.37E-04	11.85	0.00E+00	0.00E+00	5
LS1b(5)		838310	820455				382	1.52	85	5.00E-03			382	385	1.47	82	1.00E-02	385	7.56E-04	11.79	0.00E+00	0.00E+00	5
LS1b(6)		838322	820465				381	1.52	85	5.00E-03			382	384	1.47	82	1.00E-02	385	7.60E-04	11.78	0.00E+00	0.00E+00	5
LS1b(7)		838335	820472				384	1.52	85	5.00E-03			384	387	1.47	82	1.00E-02	387	7.45E-04	11.82	0.00E+00	0.00E+00	5
LS1b(8)		838349	820478				389	1.52	85	5.00E-03			390	392	1.47	82	1.00E-02	393	7.14E-04	11.92	0.00E+00	0.00E+00	5
LS1b(9)		838364	820482				397	1.52	85	5.00E-03			397	400	1.48	83	1.00E-02	400	6.74E-04	12.06	0.00E+00	0.00E+00	5
LS1b(10)		838379	820483				407	1.52	85	5.00E-03			407	410	1.48	83	1.00E-02	410	6.27E-04	12.23	0.00E+00	0.00E+00	5
LS1b(11)		838387	820483				413	1.52	85	5.00E-03			413	416	1.48	83	1.00E-02	416	5.99E-04	12.34	0.00E+00	0.00E+00	5
LS1b(12)		838401	820481				426	1.53	85	5.00E-03			426	429	1.48	83	1.00E-02	429	5.48E-04	12.55	0.00E+00	0.00E+00	5
LS1b(13)		838416	820476				439	1.53	86	5.00E-03			440	442	1.49	83	1.00E-02	443	4.98E-04	12.78	0.00E+00	0.00E+00	4
LS1b(14)		838429	820470				454	1.53	86	5.00E-03			454	457	1.49	83	1.00E-02	457	4.53E-04	13.00	0.00E+00	0.00E+00	4
LS1b(15)		838442	820461				469	1.53	86	5.00E-03			469	472	1.49	83	1.00E-02	472	4.11E-04	13.24	0.00E+00	0.00E+00	4
LS1b(16)		838452	820451				484	1.53	86	5.00E-03			484	487	1.49	84	1.00E-02	487	3.75E-04	13.46	0.00E+00	0.00E+00	4
LS1b(17)		838466	820434				505	1.53	86	5.00E-03			505	508	1.50	84	1.00E-02	508	3.30E-04	13.76	0.00E+00	0.00E+00	4
LS1b(41)		838314	820251				560	1.54	86	5.00E-03			560	563	1.50	84	1.00E-02	563	2.42E-04	14.51	0.00E+00	0.00E+00	4
LS1b(42)		838303	820261				546	1.54	86	5.00E-03			546	549	1.50	84	1.00E-02	549	2.62E-04	14.32	0.00E+00	0.00E+00	4
LS1b(43)		838294	820273				531	1.54	86	5.00E-03			531	534	1.50	84	1.00E-02	534	2.84E-04	14.13	0.00E+00	0.00E+00	4
LS1b(44)	838286	820286	516	1.53	86	5.00E-03	517	519	1.50	84	1.00E-02	520	3.09E-04	13.92	0.00E+00	0.00E+00	4						
LS1b(45)	838279	820299	501	1.53	86	5.00E-03	502	504	1.50	84	1.00E-02	505	3.37E-04	13.72	0.00E+00	0.00E+00	4						
LS1b(46)	838275	820314	486	1.53	86	5.00E-03	487	489	1.49	84	1.00E-02	490	3.69E-04	13.50	0.00E+00	0.00E+00	4						
LS1b(47)	838275	820314	486	1.53	86	5.00E-03	487	489	1.49	84	1.00E-02	490	3.69E-04	13.50	0.00E+00	0.00E+00	4						
LS1b(48)	838272	820329	472	1.53	86	5.00E-03	472	475	1.49	83	1.00E-02	475	4.04E-04	13.28	0.00E+00	0.00E+00	4						
LS1b(49)	838272	820359	444	1.53	86	5.00E-03	444	447	1.49	83	1.00E-02	447	4.83E-04	12.85	0.00E+00	0.00E+00	4						
LS1b(50)	838272	820374	430	1.53	85	5.00E-03	431	433	1.48	83	1.00E-02	434	5.31E-04	12.63	0.00E+00	0.00E+00	5						
sum										0.00E+00	0.00	sum										1.38E-02	
Light Sources drawing are referred to Page 4 in Appendix 11G		LS1c	Light Sources Type	LED																			
LS1c (2)	756000	838322	820465	17.5	381	3.5	1.56	87	5.00E-03	381	1.67E-04	381	3.5	1.56	87	1.00E-02	381	1.91E-04	22.67	3.79E-03	5.94E-03	3	
sum										1.91E-04	0.00	sum										1.42E-02	
<b>Light Source LS2: Public Sports Ground</b>																							
Light Sources drawing are referred to Page 4 in Appendix 11G		LS2b	Light Sources Type	SFC6	Approximate reflectance factor for grass						0.2												
LS2b (1)	81072000	838123	820578.82	30	186	9	1.52	85	0.00E+00	186	No direct light	186	16	1.40	78	1.00E-02	186	4.46E-01	11.97	0.00E+00	0.00E+00	5	
LS2b (3)	378336000	838123	820578.82	36	186	15	1.49	83	0.00E+00	186		186	16	1.40	78	1.00E-02	186		8.62	0.00E+00	0.00E+00	7	
sum										0.00E+00	sum										4.46E-01		

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaires from the individual luminaires $\Phi = \arctan(d/h)-2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaires $\Phi = \arctan(d/2/h)-2$		Beam factor $\beta=0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (r \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eeye = $E_h \times \tan \Phi$	Total Veiling Luminance from all luminaires $L_v = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90-\Phi$							
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree														
Light Sources drawing are referred to Page 4 in Appendix 11G		LS2a			Light Sources Type		SFC10		Approximate reflectance factor for wall surface		0.8																		
LS2a (6)	272000	838134	820693	36	86	15	1.40	78	0.00E+00	87	No direct light	89	15	1.24	69	1.00E-02	90	6.01E-02	4.74	0.00E+00	0.00E+00	12							
LS2a (7)		838119	820694				76	1.38	77	0.00E+00				78	79	1.21	67	1.00E-02	81	8.23E-02	4.30	0.00E+00	0.00E+00	13					
LS2a (8)		838104	820692				71	1.36	76	0.00E+00				73	74	1.19	66	1.00E-02	76	9.86E-02	4.05	0.00E+00	0.00E+00	14					
LS2a (9)		838090	820688				72	1.37	76	0.00E+00				74	75	1.19	66	1.00E-02	77	9.63E-02	4.09	0.00E+00	0.00E+00	14					
LS2a (10)		838076	820681				78	1.38	77	0.00E+00				80	81	1.22	68	1.00E-02	82	7.77E-02	4.38	0.00E+00	0.00E+00	13					
LS2a (11)		838064	820673				88	1.40	78	0.00E+00				89	91	1.25	70	1.00E-02	92	5.60E-02	4.84	0.00E+00	0.00E+00	12					
LS2a (12)		838053	820662				101	1.42	80	0.00E+00				102	104	1.29	72	1.00E-02	105	3.82E-02	5.42	0.00E+00	0.00E+00	10					
LS2a (13)		838053	820662				101	1.42	80	0.00E+00				102	104	1.29	72	1.00E-02	105	3.82E-02	5.42	0.00E+00	0.00E+00	10					
LS2a (14)		838037	820637				130	1.46	81	0.00E+00				131	133	1.35	75	1.00E-02	134	1.87E-02	6.62	0.00E+00	0.00E+00	9					
LS2a (15)		838031	820623				145	1.47	82	0.00E+00				146	148	1.37	77	1.00E-02	149	1.37E-02	7.20	0.00E+00	0.00E+00	8					
LS2a (16)		838027	820608				160	1.48	83	0.00E+00				161	163	1.39	78	1.00E-02	164	1.03E-02	7.74	0.00E+00	0.00E+00	7					
LS2a (17)		838024	820593				175	1.49	83	0.00E+00				175	178	1.40	78	1.00E-02	178	7.96E-03	8.26	0.00E+00	0.00E+00	7					
LS2a (18)		838024	820578				190	1.49	83	0.00E+00				190	193	1.42	79	1.00E-02	193	6.27E-03	8.75	0.00E+00	0.00E+00	7					
LS2a (19)		838025	820563				203	1.50	84	0.00E+00				204	206	1.43	80	1.00E-02	207	5.11E-03	9.18	0.00E+00	0.00E+00	6					
LS2a (20)		838027	820549				217	1.50	84	0.00E+00				218	220	1.44	80	1.00E-02	221	4.23E-03	9.59	0.00E+00	0.00E+00	6					
LS2a (21)	838031	820534	230	1.51	84	0.00E+00	231	233	1.44	81	1.00E-02	234	3.56E-03	9.97	0.00E+00	0.00E+00	6												
LS2a (22)	838038	820521	242	1.51	84	0.00E+00	243	245	1.45	81	1.00E-02	246	3.06E-03	10.31	0.00E+00	0.00E+00	6												
LS2a (23)	838045	820507	254	1.51	85	0.00E+00	255	257	1.45	81	1.00E-02	258	2.65E-03	10.63	0.00E+00	0.00E+00	5												
LS2a (24)	838054	820495	265	1.51	85	0.00E+00	266	268	1.46	82	1.00E-02	269	2.34E-03	10.91	0.00E+00	0.00E+00	5												
LS2a (25)	838065	820485	275	1.52	85	0.00E+00	276	278	1.46	82	1.00E-02	279	2.10E-03	11.16	0.00E+00	0.00E+00	5												
										sum	0.00E+00																		
										sum	0.00E+00																		
<b>Light source LS3: Indoor Sports Centre</b>																													
Light Sources drawing are referred to Page 4 in Appendix 11G		LS3a			Light Sources Type		SFC10		Approximate reflectance factor for wall surface		0.8																		
LS3a (1)	272000	838251	820825	43	183	22	1.45	81	5.00E-03	185	No direct light	186	22	1.34	75	1.00E-02	188	9.94E-03	6.43	0.00E+00	0.00E+00	9							
LS3a (2)		838262	820835				198	1.46	82	5.00E-03				199	201	1.36	76	1.00E-02	202	7.97E-03	6.82	0.00E+00	0.00E+00	8					
LS3a (3)		838275	820843				213	1.47	82	5.00E-03				214	216	1.37	76	1.00E-02	217	6.45E-03	7.21	0.00E+00	0.00E+00	8					
LS3a (4)		838291	820846				229	1.47	83	5.00E-03				230	232	1.38	77	1.00E-02	233	5.24E-03	7.60	0.00E+00	0.00E+00	7					
LS3a (5)		838307	820843				242	1.48	83	5.00E-03				243	245	1.39	78	1.00E-02	246	4.46E-03	7.92	0.00E+00	0.00E+00	7					
LS3a (28)		838256	820632				218	1.47	82	5.00E-03				219	221	1.37	77	1.00E-02	222	6.06E-03	7.33	0.00E+00	0.00E+00	8					
LS3a (29)		838246	820644				202	1.46	82	5.00E-03				203	205	1.36	76	1.00E-02	206	7.53E-03	6.92	0.00E+00	0.00E+00	8					
LS3a (30)		838236	820657				187	1.45	81	5.00E-03				188	190	1.34	75	1.00E-02	191	9.41E-03	6.53	0.00E+00	0.00E+00	9					
LS3a (31)		838228	820671				173	1.44	81	5.00E-03				174	176	1.33	74	1.00E-02	177	1.18E-02	6.13	0.00E+00	0.00E+00	9					
LS3a (32)		838221	820685				160	1.43	80	5.00E-03				161	163	1.31	73	1.00E-02	164	1.48E-02	5.76	0.00E+00	0.00E+00	10					
LS3a (33)		838216	820700				148	1.42	80	5.00E-03				150	151	1.29	72	1.00E-02	153	1.82E-02	5.43	0.00E+00	0.00E+00	10					
LS3a (34)		838212	820715				140	1.41	79	5.00E-03				141	143	1.27	71	1.00E-02	144	2.15E-02	5.17	0.00E+00	0.00E+00	11					
LS3a (35)		838210	820731				134	1.41	79	5.00E-03				135	137	1.26	70	1.00E-02	138	2.44E-02	4.98	0.00E+00	0.00E+00	11					
LS3a (36)		838212	820746				133	1.41	79	5.00E-03				134	136	1.26	70	1.00E-02	137	2.49E-02	4.95	0.00E+00	0.00E+00	11					
LS3a (37)		838214	820760				134	1.41	79	5.00E-03				136	137	1.26	70	1.00E-02	139	2.41E-02	5.00	0.00E+00	0.00E+00	11					
LS3a (38)		838218	820774				139	1.41	79	5.00E-03				141	142	1.27	71	1.00E-02	144	2.17E-02	5.15	0.00E+00	0.00E+00	11					
LS3a (39)		838224	820788				147	1.42	80	5.00E-03				149	150	1.29	72	1.00E-02	152	1.86E-02	5.40	0.00E+00	0.00E+00	10					
LS3a (40)		838231	820802				158	1.43	80	5.00E-03				159	161	1.30	73	1.00E-02	162	1.53E-02	5.70	0.00E+00	0.00E+00	10					
LS3a (41)		838240	820814				170	1.44	81	5.00E-03				171	173	1.32	74	1.00E-02	174	1.24E-02	6.05	0.00E+00	0.00E+00	9					
										sum				0.00E+00															
										sum				0.00E+00															
Light Sources drawing are referred to Page 4 in Appendix 11G		LS3b					Light Sources Type		SFC02					Approximate reflectance factor for concrete ground		0.4													



Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaires from the individual luminaires $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaires $\Phi = \arctan(d/2h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{h\text{av}} = (r \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eeye = $E_h \times \tan \Phi$	Total Veiling Luminance from all luminaires $L_v = \sum 10 (E_{\text{eye}} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$	
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2h	$\Phi$ Degree								
LS3d(7)	2252000	838358	820726	68	280	47	1.40	78	5.00E-03	284	1.62E-02	280	48	1.24	69	1.00E-02	284	1.27E-02	4.90	7.95E-02	5.97E-03	12	
LS3d(8)	2252000	838365	820706	68	290	47	1.41	79	5.00E-03	294	1.46E-02	290	48	1.25	70	1.00E-02	294	1.14E-02	5.05	7.37E-02	5.87E-03	11	
LS3d(9)	2252000	838372	820690	68	300	47	1.42	79	5.00E-03	304	1.32E-02	300	48	1.26	70	1.00E-02	304	1.04E-02	5.19	6.86E-02	5.77E-03	11	
LS3d(10)	2252000	838373	820683	68	303	47	1.42	79	5.00E-03	307	1.28E-02	303	48	1.27	71	1.00E-02	307	1.00E-02	5.24	6.70E-02	5.74E-03	11	
LS3d(11)	2252000	838375	820674	68	307	47	1.42	79	5.00E-03	311	1.24E-02	307	48	1.27	71	1.00E-02	311	9.72E-03	5.29	6.55E-02	5.71E-03	11	
LS3d(12)	2252000	838374	820666	68	309	47	1.42	79	5.00E-03	312	1.21E-02	309	48	1.27	71	1.00E-02	313	9.54E-03	5.32	6.46E-02	5.69E-03	11	
LS3d(13)	2252000	838373	820657	68	310	47	1.42	79	5.00E-03	314	1.20E-02	310	48	1.27	71	1.00E-02	314	9.43E-03	5.34	6.40E-02	5.68E-03	11	
LS3d(14)	2252000	838370	820649	68	310	47	1.42	79	5.00E-03	314	1.20E-02	310	48	1.27	71	1.00E-02	314	9.43E-03	5.33	6.40E-02	5.68E-03	11	
LS3d(15)	2252000	838365	820641	68	309	47	1.42	79	5.00E-03	312	1.22E-02	309	48	1.27	71	1.00E-02	313	9.55E-03	5.32	6.46E-02	5.69E-03	11	
LS3d(16)	2252000	838360	820635	68	306	47	1.42	79	5.00E-03	310	1.24E-02	306	48	1.27	71	1.00E-02	310	9.77E-03	5.28	6.57E-02	5.72E-03	11	
LS3d(17)	2252000	838353	820629	68	303	47	1.42	79	5.00E-03	306	1.29E-02	303	48	1.26	70	1.00E-02	306	1.01E-02	5.23	6.74E-02	5.75E-03	11	
LS3d(18)	2252000	838345	820625	68	298	47	1.41	79	5.00E-03	301	1.35E-02	298	48	1.26	70	1.00E-02	301	1.06E-02	5.16	6.98E-02	5.80E-03	11	
LS3d(19)	2252000	838337	820622	68	292	47	1.41	79	5.00E-03	296	1.43E-02	292	48	1.25	70	1.00E-02	296	1.12E-02	5.08	7.27E-02	5.85E-03	11	
LS3d(20)	2252000	838328	820620	68	285	47	1.41	79	5.00E-03	289	1.54E-02	285	48	1.25	69	1.00E-02	289	1.20E-02	4.97	7.66E-02	5.92E-03	11	
LS3d(21)	2252000	838320	820620	68	277	47	1.40	78	5.00E-03	281	1.66E-02	277	48	1.24	69	1.00E-02	281	1.30E-02	4.86	8.09E-02	6.00E-03	12	
LS3d(22)	2252000	838311	820620	68	270	47	1.40	78	5.00E-03	274	1.81E-02	270	48	1.23	68	1.00E-02	274	1.41E-02	4.75	8.59E-02	6.07E-03	12	
LS3d(23)	2252000	838302	820622	68	261	47	1.39	78	5.00E-03	266	1.98E-02	261	48	1.22	68	1.00E-02	266	1.53E-02	4.63	9.15E-02	6.16E-03	12	
LS3d(24)	2252000	838294	820624	68	253	47	1.39	77	5.00E-03	257	2.18E-02	253	48	1.21	67	1.00E-02	257	1.68E-02	4.50	9.80E-02	6.24E-03	13	
LS3d(25)	2252000	838286	820627	68	244	47	1.38	77	5.00E-03	249	2.40E-02	244	48	1.20	67	1.00E-02	249	1.85E-02	4.37	1.05E-01	6.33E-03	13	
LS3d(26)	2252000	838278	820632	68	235	47	1.37	77	5.00E-03	240	2.68E-02	235	48	1.18	66	1.00E-02	240	2.06E-02	4.23	1.13E-01	6.42E-03	13	
LS3d(27)	2252000	838268	820630	68	229	47	1.37	76	5.00E-03	233	2.91E-02	229	48	1.17	65	1.00E-02	234	2.23E-02	4.13	1.20E-01	6.49E-03	14	
LS3d(28)	2252000	838259	820639	68	215	47	1.36	76	5.00E-03	221	3.45E-02	215	48	1.15	64	1.00E-02	221	2.62E-02	3.92	1.35E-01	6.62E-03	14	
LS3d(29)	2252000	838242	820659	68	191	47	1.33	74	5.00E-03	197	4.86E-02	191	48	1.11	61	1.00E-02	197	3.64E-02	3.53	1.72E-01	6.86E-03	16	
LS3d(30)	2252000	838230	820682	68	169	47	1.30	72	5.00E-03	175	6.86E-02	169	48	1.06	59	1.00E-02	176	5.03E-02	3.16	2.17E-01	7.06E-03	18	
LS3d(31)	2252000	838221	820706	68	151	47	1.27	71	5.00E-03	158	9.38E-02	151	48	1.01	56	1.00E-02	158	6.73E-02	2.86	2.68E-01	7.19E-03	19	
LS3d(32)	2252000	838216	820731	68	140	47	1.25	69	5.00E-03	147	1.16E-01	140	48	0.97	54	1.00E-02	148	8.18E-02	2.66	3.08E-01	7.26E-03	21	
LS3d(33)	2252000	838220	820756	68	140	47	1.25	69	0.00E+00	148	0.00E+00	140	48	0.97	54	1.00E-02	148	8.13E-02	2.67	0.00E+00	0.00E+00	21	
LS3d(34)	2252000	838227	820781	68	149	47	1.27	71	0.00E+00	157	0.00E+00	149	48	1.00	55	1.00E-02	157	6.91E-02	2.83	0.00E+00	0.00E+00	19	
LS3d(35)	2252000	838238	820803	68	164	47	1.29	72	0.00E+00	171	0.00E+00	164	48	1.04	58	1.00E-02	171	5.45E-02	3.08	0.00E+00	0.00E+00	18	
										sum	7.22E-01											sum	8.32E-01
										sum	7.27E-01											sum	1.10E+00
<b>Light source LS4: Office Block</b>																							
Light Sources drawing are referred to Page 4 in Appendix 11G		LS4a			Light Sources Type				SFC04				Approximate reflectance factor for wall surface				0.6						
LS4a (1)	201600	838176	820441	50	333	29	1.48	83	5.00E-03	334	5.48E-04	333	29	1.40	78	9.00E-01	334	7.12E-02	8.17	4.48E-03	9.20E-04	7	
										sum	5.48E-04											sum	7.12E-02
Light Sources drawing are referred to Page 4 in Appendix 11G		LS4c			Light Sources Type				Approximate reflectance factor for dark stone				0.3										
LS4c (1)	426000	838204	820363	49.5	415	28.5	1.50	84	5.00E-03	416	5.89E-04	415	29	1.43	80	0.00E+00	416	No reflection	9.63	5.67E-03	1.62E-03	6	
LS4c (2)	426000	838204	820348	49.5	429	28.5	1.50	84	5.00E-03	430	5.34E-04	429	29	1.44	80	0.00E+00	430		9.85	5.26E-03	1.56E-03	6	
LS4c (3)	426000	838204	820334	49.5	443	28.5	1.51	84	5.00E-03	444	4.85E-04	443	29	1.44	80	0.00E+00	444		10.05	4.88E-03	1.51E-03	6	
LS4c (4)	284000	838204	820319	49.5	457	28.5	1.51	84	5.00E-03	458	2.95E-04	457	29	1.44	81	0.00E+00	458		10.26	3.03E-03	9.76E-04	6	
										sum	1.90E-03											sum	0.00E+00
										sum	3.00E-03											sum	7.12E-02









Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries $\Phi = \arctan(d/2h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (r \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eeye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_{vl} = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$					
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2h	$\Phi$ Degree												
LS6a (270)		838182	820734		105		1.54	86	5.00E-03	105	6.24E-05	105	8	1.42	79	9.00E-01	105	2.36E-02	15.74	9.81E-04	7.42E-04	4					
LS6a (271)		838164	820729		90		1.54	86	5.00E-03	90	1.00E-04	90	8	1.39	78	9.00E-01	90	3.77E-02	14.60	1.46E-03	9.55E-04	4					
LS6a (272)		838181	820750		102		1.54	86	5.00E-03	102	6.85E-05	102	8	1.41	79	9.00E-01	102	2.59E-02	15.51	1.06E-03	7.81E-04	4					
LS6a (273)		838157	820743		79		1.53	86	5.00E-03	79	1.46E-04	79	8	1.37	77	9.00E-01	79	5.45E-02	13.71	2.00E-03	1.15E-03	4					
LS6a (274)		838180	820766		100		1.54	86	5.00E-03	100	7.15E-05	100	8	1.41	79	9.00E-01	101	2.70E-02	15.41	1.10E-03	8.00E-04	4					
LS6a (275)		838184	820781		106		1.54	86	5.00E-03	106	6.01E-05	106	8	1.42	79	9.00E-01	107	2.27E-02	15.82	9.52E-04	7.28E-04	4					
LS6a (276)		838200	820784		123		1.55	87	5.00E-03	123	3.87E-05	123	8	1.44	81	1.00E-02	123	1.63E-04	16.86	6.52E-04	5.66E-04	3					
LS6a (277)		838191	820795		117		1.55	87	5.00E-03	117	4.55E-05	117	8	1.43	80	1.00E-02	117	1.92E-04	16.48	7.50E-04	6.22E-04	3					
LS6a (279)		838139	820413		352		1.56	88	5.00E-03	352	1.66E-06	352	8	1.53	85	1.00E-02	352	7.09E-06	23.01	3.83E-05	6.18E-05	2					
LS6a (280)		838127	820421		341		1.56	87	5.00E-03	341	1.82E-06	341	8	1.52	85	1.00E-02	341	7.75E-06	22.87	4.16E-05	6.64E-05	3					
LS6a (281)		838114	820429		332		1.56	87	5.00E-03	332	1.98E-06	332	8	1.52	85	1.00E-02	332	8.44E-06	22.74	4.50E-05	7.10E-05	3					
LS6a (282)		838007	820531		240		1.56	87	5.00E-03	240	5.24E-06	240	8	1.50	84	1.00E-02	240	2.23E-05	21.08	1.10E-04	1.50E-04	3					
LS6a (283)		837999	820544		230		1.56	87	5.00E-03	230	5.94E-06	230	8	1.50	84	1.00E-02	230	2.53E-05	20.84	1.24E-04	1.64E-04	3					
LS6a (285)		837999	820571		205		1.56	87	5.00E-03	205	8.42E-06	205	8	1.49	84	1.00E-02	205	3.58E-05	20.16	1.70E-04	2.11E-04	3					
LS6a (286)		837992	820557		220		1.56	87	5.00E-03	220	6.76E-06	220	8	1.50	84	1.00E-02	220	2.88E-05	20.59	1.39E-04	1.80E-04	3					
LS6a (287)		837979	820562		222		1.56	87	5.00E-03	222	6.64E-06	222	8	1.50	84	1.00E-02	222	2.82E-05	20.63	1.37E-04	1.78E-04	3					
LS6a (289)		837985	820575		208		1.56	87	5.00E-03	208	8.07E-06	208	8	1.49	84	1.00E-02	208	3.43E-05	20.25	1.63E-04	2.04E-04	3					
LS6a (290)		837997	820586		192		1.56	87	5.00E-03	192	1.02E-05	192	8	1.49	83	1.00E-02	192	4.35E-05	19.77	2.03E-04	2.42E-04	3					
									sum		1.76E-03					sum		3.79E-01									
									sum		1.76E-03					sum		3.79E-01									
<b>Light source LS7: Road Lighting</b>																											
Approximate reflectance factor for concrete ground 0.4																											
L05T	149448.0254	-	-		6		1100	156	87	0.00E+00	1100	0.00E+00	1100	15	156	87	1.00E+00	1100	1.68E-03	20.58	0.00E+00	0.00E+00	3				
L07T	96474.6094	-	-		6		1100	156	87	0.00E+00	1100	0.00E+00	1100	15	156	87	1.00E+00	1100	1.09E-03	20.58	0.00E+00	0.00E+00	3				
L06T	94163.3438	-	-		6		500	154	86	0.00E+00	500	0.00E+00	500	15	154	86	1.00E+00	500	1.13E-02	15.39	0.00E+00	0.00E+00	4				
									sum		0.00E+00				sum		1.41E-02										
<b>Light source LS8: Ancillary Building</b>																											
Approximate reflectance factor for concrete ground 0.4																											
LR25	375000	838497	820813	50	420	29	1.50	84	0.00E+00	420	0.00E+00	420	29	1.50	84	1.00E+00	421	1.45E-01	9.60	0.00E+00	0.00E+00	6					
LR22	320000	837884	820306	50	494	29	1.51	85	0.00E+00	494	0.00E+00	494	29	1.51	85	1.00E+00	494	7.68E-02	10.65	0.00E+00	0.00E+00	5					
									sum		0.00E+00				sum		1.45E-01										
									sum		0.00E+00				sum		1.45E-01										
									<b>Total sum</b>		<b>7.32E-01</b>				<b>sum</b>		<b>2.80E+00</b>		<b>2.95E+00</b>		<b>2.25E-01</b>						

<b>Ehav</b>	<b>Lvl</b>	<b>Lve = 0.035p Ehav / π</b>	<b>Glare rating=27 + 24 log10 (Lvl/Lve)^0.9</b>
<b>2.80E+00</b>	<b>2.25E-01</b>	<b>0.0249</b>	<b>46</b>

**Glare impact calculation to Light Sensitivity Receiver L14R**

Future Grid Development at Northeast of MPSC

Sensitivity Receiver L14R Coordinate		
X (m)	Y (m)	Z (mPD)
838513	820797	21

The inverse square law and cosine law can be used to calculate illuminance at a point from intensity data.

$$\text{horizontal illuminance (lx)} E_h = (r \times f \times \beta \times I \times \cos\theta) / d^2$$

where I is intensity of lighting source (cd),

$\beta$  is beam

$d$  is the distance from the light source to sensitive receiver (m),

$\theta$  is the angle of incidence of the intensity of a light source,

f is maintenance factor= 0.7

r is Approximate reflectance for concrete ground= 0.4

for wall surface= 0.6

for grass= 0.2

Direct Light										Reflected light					Illuminance at the observer's eye in a plane perpendicular to the line of sight caused by the lighting installation E eye							
Light source LS1: Main Stadium																						
Light Sources drawing are referred to Page 4 in Appendix 11G		LS1a	Light Sources Type	SFC02	Approximate reflectance factor for concrete ground										0.4							
Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/2/h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (r \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eeye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_{vl} = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree							
LS1a (1)	6890	838277	820404	18	459	3	1.56	88	5.00E-03	459	7.50E-07	459	1.56	87	1.00E-02	459	1.20E-06	24.11	1.81E-05	3.21E-05	2	
LS1a (2)		838283	820418		444		1.56	88	5.00E-03	444	8.29E-07	444	1.56	87	1.00E-02	444	1.33E-06	23.98	1.99E-05	3.49E-05	2	
LS1a (3)		838290	820431		428		1.56	88	5.00E-03	428	9.21E-07	428	1.56	87	1.00E-02	428	1.47E-06	23.85	2.20E-05	3.81E-05	2	
LS1a (4)		838300	820443		413		1.56	88	5.00E-03	413	1.03E-06	413	1.56	87	1.00E-02	413	1.64E-06	23.70	2.43E-05	4.17E-05	2	
LS1a (5)		838310	820455		398		1.56	88	5.00E-03	398	1.15E-06	398	1.56	87	1.00E-02	398	1.84E-06	23.55	2.70E-05	4.57E-05	2	
LS1a (6)		838322	820465		384		1.56	88	5.00E-03	384	1.28E-06	384	1.56	87	1.00E-02	384	2.05E-06	23.39	3.00E-05	5.00E-05	2	
LS1a (7)		838335	820472		370		1.56	88	5.00E-03	370	1.42E-06	370	1.55	87	1.00E-02	370	2.28E-06	23.24	3.31E-05	5.45E-05	2	
LS1a (8)		838349	820478		359		1.56	88	5.00E-03	359	1.57E-06	359	1.55	87	1.00E-02	359	2.51E-06	23.10	3.62E-05	5.89E-05	2	
LS1a (9)		838364	820482		349		1.56	88	5.00E-03	349	1.70E-06	349	1.55	87	1.00E-02	349	2.73E-06	22.97	3.91E-05	6.30E-05	2	
LS1a (10)		838379	820483		341		1.56	87	5.00E-03	341	1.82E-06	341	1.55	87	1.00E-02	341	2.91E-06	22.87	4.16E-05	6.64E-05	3	
LS1a (11)		838394	820482		337		1.56	87	5.00E-03	337	1.89E-06	337	1.55	87	1.00E-02	337	3.03E-06	22.81	4.32E-05	6.86E-05	3	
LS1a (12)		838408	820479		335		1.56	87	5.00E-03	335	1.92E-06	335	1.55	87	1.00E-02	335	3.08E-06	22.79	4.38E-05	6.94E-05	3	
LS1a (13)		838422	820474		336		1.56	87	5.00E-03	336	1.91E-06	336	1.55	87	1.00E-02	336	3.06E-06	22.80	4.35E-05	6.90E-05	3	
LS1a (14)		838435	820466		340		1.56	87	5.00E-03	340	1.84E-06	340	1.55	87	1.00E-02	340	2.95E-06	22.85	4.21E-05	6.71E-05	3	
LS1a (15)		838446	820457		347		1.56	88	5.00E-03	347	1.74E-06	347	1.55	87	1.00E-02	347	2.78E-06	22.94	3.99E-05	6.40E-05	2	
LS1a (16)		838457	820446		355		1.56	88	5.00E-03	355	1.61E-06	355	1.55	87	1.00E-02	355	2.58E-06	23.06	3.71E-05	6.02E-05	2	
LS1a (17)		838466	820434		366		1.56	88	5.00E-03	366	1.48E-06	366	1.55	87	1.00E-02	366	2.37E-06	23.18	3.43E-05	5.62E-05	2	
LS1a (18)		838474	820422		377		1.56	88	5.00E-03	377	1.35E-06	377	1.55	87	1.00E-02	377	2.15E-06	23.32	3.14E-05	5.21E-05	2	
LS1a (19)		838481	820408		390		1.56	88	5.00E-03	390	1.22E-06	390	1.56	87	1.00E-02	390	1.95E-06	23.46	2.85E-05	4.79E-05	2	
LS1a (20)		838485	820394		404		1.56	88	5.00E-03	404	1.09E-06	404	1.56	87	1.00E-02	404	1.75E-06	23.61	2.58E-05	4.39E-05	2	
LS1a (21)		838486	820378		420		1.56	88	5.00E-03	420	9.80E-07	420	1.56	87	1.00E-02	420	1.57E-06	23.76	2.33E-05	4.01E-05	2	
LS1a (22)		838486	820363		435		1.56	88	5.00E-03	435	8.81E-07	435	1.56	87	1.00E-02	435	1.41E-06	23.90	2.11E-05	3.67E-05	2	

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h)-2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h)-2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (f \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_v = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$	
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2h	$\Phi$ Degree								
LS1a (23)		838486	820348		450		1.56	88	5.00E-03	450	7.95E-07	450		1.56	87	1.00E-02	450	1.27E-06	24.04	1.91E-05	3.37E-05	2	
LS1a (24)		838486	820333		465		1.56	88	5.00E-03	465	7.20E-07	465		1.56	87	1.00E-02	465	1.15E-06	24.16	1.74E-05	3.10E-05	2	
LS1a (25)		838485	820318		480		1.56	88	5.00E-03	480	6.55E-07	480		1.56	87	1.00E-02	480	1.05E-06	24.28	0.00E+00	0.00E+00	2	
LS1a (26)		838481	820303		495		1.56	88	5.00E-03	495	5.97E-07	495		1.56	87	1.00E-02	495	9.56E-07	24.39	1.46E-05	2.64E-05	2	
LS1a (27)		838475	820290		509		1.56	88	5.00E-03	509	5.49E-07	509		1.56	87	1.00E-02	509	8.79E-07	24.49	1.35E-05	2.46E-05	2	
LS1a (28)		838467	820276		523		1.57	88	5.00E-03	523	5.07E-07	523		1.56	87	1.00E-02	523	8.11E-07	24.59	1.25E-05	2.30E-05	2	
LS1a (29)		838458	820264		535		1.57	88	5.00E-03	535	4.71E-07	535		1.56	87	1.00E-02	535	7.54E-07	24.67	1.16E-05	2.16E-05	2	
sum											3.47E-05	sum											5.55E-05
Light Sources drawing are referred to Page 4 in Appendix 11G		LS1b	Light Sources Type		SFC10	Approximate reflectance factor for wall surface			0.6														
LS1b (1)	272000	838277	820404	40	459	19	1.53	86	No direct light	459	No direct light	462	19	1.49	83	1.00E-02	462	4.39E-04	13.08	0.00E+00	0.00E+00	4	
LS1b (2)		838283	820418		444		1.53	86		444		447		1.49	83	1.00E-02	447	4.85E-04	12.84	0.00E+00	0.00E+00	4	
LS1b (3)		838290	820431		428		1.53	85		429		431		1.48	83	1.00E-02	432	5.38E-04	12.59	0.00E+00	0.00E+00	5	
LS1b (4)		838300	820443		413		1.52	85		414		416		1.48	83	1.00E-02	417	5.99E-04	12.34	0.00E+00	0.00E+00	5	
LS1b (5)		838310	820455		398		1.52	85		398		401		1.48	83	1.00E-02	401	6.69E-04	12.08	0.00E+00	0.00E+00	5	
LS1b (6)		838322	820465		384		1.52	85		384		387		1.47	82	1.00E-02	387	7.45E-04	11.82	0.00E+00	0.00E+00	5	
LS1b (7)		838335	820472		370		1.52	85		371		373		1.47	82	1.00E-02	374	8.27E-04	11.58	0.00E+00	0.00E+00	5	
LS1b (8)		838349	820478		359		1.52	85		359		362		1.47	82	1.00E-02	362	9.10E-04	11.36	0.00E+00	0.00E+00	5	
LS1b (9)		838364	820482		349		1.52	85		349		352		1.46	82	1.00E-02	352	9.88E-04	11.17	0.00E+00	0.00E+00	5	
LS1b (10)		838379	820483		341		1.52	85		342		344		1.46	82	1.00E-02	345	1.05E-03	11.02	0.00E+00	0.00E+00	5	
LS1b (11)		838394	820482		337		1.51	85		337		340		1.46	82	1.00E-02	340	1.10E-03	10.93	0.00E+00	0.00E+00	5	
LS1b (12)		838408	820479		335		1.51	85		336		338		1.46	82	1.00E-02	339	1.11E-03	10.89	0.00E+00	0.00E+00	5	
LS1b (13)		838422	820474		336		1.51	85		336		339		1.46	82	1.00E-02	339	1.11E-03	10.91	0.00E+00	0.00E+00	5	
LS1b (14)		838435	820466		340		1.51	85		340		343		1.46	82	1.00E-02	343	1.07E-03	10.99	0.00E+00	0.00E+00	5	
LS1b (15)		838446	820457		347		1.52	85		347		350		1.46	82	1.00E-02	350	1.01E-03	11.12	0.00E+00	0.00E+00	5	
LS1b (16)		838457	820446		355		1.52	85		356		358		1.47	82	1.00E-02	359	9.35E-04	11.29	0.00E+00	0.00E+00	5	
LS1b (17)		838466	820434		366		1.52	85		366		369		1.47	82	1.00E-02	369	8.59E-04	11.49	0.00E+00	0.00E+00	5	
LS1b (18)		838474	820422		377		1.52	85		378		380		1.47	82	1.00E-02	381	7.83E-04	11.71	0.00E+00	0.00E+00	5	
LS1b (19)		838481	820408		390		1.52	85		391		393		1.47	82	1.00E-02	394	7.08E-04	11.94	0.00E+00	0.00E+00	5	
LS1b (20)		838485	820394		404		1.52	85		405		407		1.48	83	1.00E-02	408	6.38E-04	12.19	0.00E+00	0.00E+00	5	
LS1b (21)		838486	820378		420		1.53	85		420		423		1.48	83	1.00E-02	423	5.72E-04	12.45	0.00E+00	0.00E+00	5	
LS1b (22)		838486	820363		435		1.53	85		435		438		1.48	83	1.00E-02	438	5.15E-04	12.70	0.00E+00	0.00E+00	5	
LS1b (23)		838486	820348		450		1.53	86		450		453		1.49	83	1.00E-02	453	4.65E-04	12.94	0.00E+00	0.00E+00	4	
LS1b (24)		838486	820333		465		1.53	86		465		468		1.49	83	1.00E-02	468	4.22E-04	13.17	0.00E+00	0.00E+00	4	
LS1b (25)		838485	820318		480		1.53	86		480		483		1.49	83	1.00E-02	483	3.84E-04	13.40	0.00E+00	0.00E+00	4	
LS1b (26)		838481	820303		495		1.53	86		495		498		1.49	84	1.00E-02	498	3.50E-04	13.62	0.00E+00	0.00E+00	4	
LS1b (27)		838475	820290		509		1.53	86		509		512		1.50	84	1.00E-02	512	3.23E-04	13.82	0.00E+00	0.00E+00	4	
LS1b (28)		838467	820276		523		1.53	86		523		526		1.50	84	1.00E-02	526	2.98E-04	14.01	0.00E+00	0.00E+00	4	
LS1b (29)		838458	820264		535		1.54	86		536		538		1.50	84	1.00E-02	539	2.77E-04	14.19	0.00E+00	0.00E+00	4	
sum											0.00E+00	sum											2.02E-02
Light Sources drawing are referred to Page 4 in Appendix 11G		LS1c	Light Sources Type		LED																		
LS1c (1)	756000	838470	820427	17.5	372	3.5	1.56	87	5.00E-03	372	2.56E-04	372	4	1.55	87	1.00E-02	372	4.30E-04	22.56	5.78E-03	8.97E-03	3	
LS1c (2)	756000	838322	820465	17.5	384	3.5	1.56	87	5.00E-03	384	2.34E-04	384	4	1.55	87	1.00E-02	384	3.93E-04	22.70	5.32E-03	8.35E-03	3	

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h)-2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/2h)-2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (f \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_v = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$				
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2h	$\Phi$ Degree											
sum										4.90E-04											8.24E-04					
sum										5.25E-04											0.00			sum	2.11E-02	
<b>Light Source LS2: Public Sports Ground</b>																										
Light Sources drawing are referred to Page 4 in Appendix 11G		LS2b	Light Sources Type	SFC6	Approximate reflectance factor for grass												0.2									
sum										0.00E+00											sum	0.00E+00				
<b>Light Source LS3: Indoor Sports Centre</b>																										
Light Sources drawing are referred to Page 4 in Appendix 11G		LS3a	Light Sources Type	SFC10	Approximate reflectance factor for wall surface												0.6									
LS3a (1)	272000	838251	820826	43	22	No direct light	No direct light	22	263	1.49	83	264	266	1.41	79	1.00E-02	267	2.60E-03	8.42	0.00E+00	0.00E+00	7				
LS3a (2)		838263	820836						253	1.48	83	254	256	1.40	78	1.00E-02	257	2.92E-03	8.19	0.00E+00	0.00E+00	7				
LS3a (3)		838276	820844						242	1.48	83	243	245	1.39	78	1.00E-02	246	3.35E-03	7.91	0.00E+00	0.00E+00	7				
LS3a (4)		838291	820846						228	1.47	82	229	231	1.38	77	1.00E-02	232	3.98E-03	7.58	0.00E+00	0.00E+00	8				
LS3a (5)		838306	820843						212	1.47	82	213	215	1.37	76	1.00E-02	216	4.88E-03	7.19	0.00E+00	0.00E+00	8				
LS3a (6)		838320	820834						197	1.46	82	198	200	1.35	76	1.00E-02	201	6.06E-03	6.80	0.00E+00	0.00E+00	8				
LS3a (7)		838328	820821						187	1.45	81	188	190	1.34	75	1.00E-02	191	7.07E-03	6.52	0.00E+00	0.00E+00	9				
LS3a (8)		838334	820808						179	1.45	81	180	182	1.33	74	1.00E-02	183	7.99E-03	6.31	0.00E+00	0.00E+00	9				
LS3a (9)		838340	820794						173	1.44	81	174	176	1.33	74	1.00E-02	177	8.82E-03	6.14	0.00E+00	0.00E+00	9				
LS3a (10)		838345	820780						169	1.44	81	171	172	1.32	74	1.00E-02	174	9.40E-03	6.03	0.00E+00	0.00E+00	9				
LS3a (11)		838350	820766						166	1.44	80	168	169	1.32	73	1.00E-02	171	9.88E-03	5.95	0.00E+00	0.00E+00	10				
LS3a (12)		838354	820751						165	1.44	80	167	168	1.32	73	1.00E-02	170	1.00E-02	5.92	0.00E+00	0.00E+00	10				
LS3a (13)		838359	820737						165	1.44	80	166	168	1.31	73	1.00E-02	169	1.01E-02	5.91	0.00E+00	0.00E+00	10				
LS3a (14)		838365	820724						165	1.44	80	166	168	1.31	73	1.00E-02	169	1.01E-02	5.91	0.00E+00	0.00E+00	10				
LS3a (15)		838370	820710						167	1.44	81	169	170	1.32	74	1.00E-02	172	9.67E-03	5.98	0.00E+00	0.00E+00	9				
LS3a (16)		838376	820696						171	1.44	81	172	174	1.32	74	1.00E-02	175	9.15E-03	6.08	0.00E+00	0.00E+00	9				
LS3a (17)		838380	820682						176	1.45	81	177	179	1.33	74	1.00E-02	180	8.43E-03	6.22	0.00E+00	0.00E+00	9				
LS3a (18)		838381	820667						186	1.45	81	187	189	1.34	75	1.00E-02	190	7.19E-03	6.49	0.00E+00	0.00E+00	9				
LS3a (19)		838378	820651						199	1.46	82	200	202	1.36	76	1.00E-02	203	5.89E-03	6.85	0.00E+00	0.00E+00	8				
LS3a (20)		838370	820638						214	1.47	82	215	217	1.37	77	1.00E-02	218	4.77E-03	7.24	0.00E+00	0.00E+00	8				
LS3a (21)		838359	820626						230	1.48	83	231	233	1.38	77	1.00E-02	234	3.87E-03	7.64	0.00E+00	0.00E+00	7				
LS3a (22)		838346	820618						245	1.48	83	246	248	1.39	78	1.00E-02	249	3.24E-03	7.98	0.00E+00	0.00E+00	7				
LS3a (23)		838331	820614						258	1.49	83	259	261	1.40	78	1.00E-02	262	2.77E-03	8.29	0.00E+00	0.00E+00	7				
LS3a (24)		838316	820613						270	1.49	83	270	273	1.41	79	1.00E-02	273	2.44E-03	8.56	0.00E+00	0.00E+00	7				
sum										0.00E+00											sum	1.55E-01				
Light Sources drawing are referred to Page 4 in Appendix 11G		LS3b	Light Sources Type	SFC02	Approximate reflectance factor for concrete ground												0.4									
LS3b (1)	6890	838287	820850	31	10	1.53	86	5.00E-03	232	1.93E-05	232	1.48	83	1.00E-02	232	7.68E-05	12.80	2.46E-04	1.23E-04	4						
LS3b (2)		838272	820851																		247	1.53	86	5.00E-03	247	1.60E-05
sum										3.53E-05											sum	1.41E-04				
Light Sources drawing are referred to Page 4 in Appendix 11G		LS3c	Light Sources Type	SFC03	Approximate reflectance factor for Concrete ground												0.4									
LS3c (5)	21600	838310	820873	15.8	212	5.2	1.55	87	5.00E-03	212	4.12E-05	212	5.2	1.52	85	1.00E-02	212	6.58E-05	16.81	6.92E-04	5.97E-04	3				
LS3c (6)	36000	838322	820838	15.8	191	5.2	1.54	86	5.00E-03	191	9.40E-05	191	5.2	1.52	85	1.00E-02	191	1.50E-04	16.07	1.51E-03	1.19E-03	4				
LS3c (7)	36000	838283	820875	15.8	238	5.2	1.55	87	5.00E-03	238	4.87E-05	238	5.2	1.53	85	1.00E-02	238	7.79E-05	17.59	8.58E-04	8.10E-04	3				
LS3c (8)	36000	838308	820869	15.8	213	5.2	1.55	87	5.00E-03	213	6.80E-05	213	5.2	1.52	85	1.00E-02	213	1.09E-04	16.83	1.14E-03	9.90E-04	3				

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (f \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_v = \sum 10 (E_e / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$	
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree								
		LS3c (9)	36000	838321			820844	15.8						192	5.2								1.54
LS3c (10)	36000	838340	820794	15.8	168	5.2	1.54	86	5.00E-03	168	1.37E-04	168	5.2	1.51	84	1.00E-02	168	2.19E-04	15.18	2.08E-03	1.46E-03	4	
LS3c (11)	36000	838357	820748	15.8	158	5.2	1.54	86	5.00E-03	159	1.64E-04	158	5.2	1.51	84	1.00E-02	159	2.63E-04	14.75	2.42E-03	1.61E-03	4	
LS3c (14)	32400	838373	820703	26.8	164	5.8	1.54	86	5.00E-03	164	1.49E-04	164	5.8	1.50	84	1.00E-02	164	2.38E-04	14.20	2.12E-03	1.31E-03	4	
LS3c (16)	25200	838385	820669	43.8	176	22.8	1.44	81	5.00E-03	178	3.60E-04	176	22.8	1.32	73	1.00E-02	178	5.62E-04	6.05	2.18E-03	2.47E-04	9	
LS3c (17)	18000	838332	820810	43.8	177	22.8	1.44	81	5.00E-03	178	2.54E-04	177	22.8	1.32	74	1.00E-02	178	3.97E-04	6.07	1.54E-03	1.76E-04	9	
LS3c (18)	18000	838341	820786	43.8	168	22.8	1.44	80	5.00E-03	169	2.96E-04	168	22.8	1.31	73	1.00E-02	169	4.62E-04	5.82	1.73E-03	1.82E-04	10	
LS3c (19)	18000	838349	820762	43.8	163	22.8	1.43	80	5.00E-03	164	3.23E-04	163	22.8	1.30	72	1.00E-02	164	5.02E-04	5.69	1.84E-03	1.85E-04	10	
LS3c (20)	18000	838358	820738	43.8	161	22.8	1.43	80	5.00E-03	163	3.33E-04	161	22.8	1.30	72	1.00E-02	163	5.17E-04	5.64	1.88E-03	1.86E-04	10	
LS3c (21)	14400	838366	820715	43.8	163	22.8	1.43	80	5.00E-03	165	2.56E-04	163	22.8	1.30	72	1.00E-02	165	3.98E-04	5.70	1.46E-03	1.48E-04	10	
LS3c (22)	18000	838308	820860	43.8	210	22.8	1.46	82	5.00E-03	211	1.52E-04	210	22.8	1.36	76	1.00E-02	211	2.40E-04	6.94	1.06E-03	1.57E-04	8	
LS3c (23)	18000	838320	820839	43.8	193	22.8	1.45	81	5.00E-03	194	1.97E-04	193	22.8	1.34	75	1.00E-02	194	3.09E-04	6.49	1.28E-03	1.67E-04	9	
LS3c (24)	21600	838318	820833	43.8	194	22.8	1.45	81	5.00E-03	195	2.33E-04	194	22.8	1.34	75	1.00E-02	195	3.65E-04	6.52	1.52E-03	2.00E-04	9	
sum										3.20E-03		sum										5.02E-03	

Light Sources drawing are referred to Page 4 in Appendix 11G

LS3d      Light Sources Type      SFC07&8      Approximate reflectance factor for lawn      0.2

LS3d(1)	2252000	838307	820838	68	210	47	1.35	75	0.00E+00	215	0.00E+00	210	47	1.15	64	1.00E-02	215	2.79E-02	3.83	0.00E+00	0.00E+00	15
LS3d(2)	2252000	838321	820825	68	194	47	1.33	74	0.00E+00	200	0.00E+00	194	47	1.12	62	1.00E-02	200	3.44E-02	3.58	0.00E+00	0.00E+00	16
LS3d(3)	2252000	838328	820805	68	185	47	1.32	74	0.00E+00	191	0.00E+00	185	47	1.10	61	1.00E-02	191	3.93E-02	3.43	0.00E+00	0.00E+00	16
LS3d(4)	2252000	838336	820785	68	178	47	1.31	73	0.00E+00	184	0.00E+00	178	47	1.08	60	1.00E-02	184	4.35E-02	3.31	0.00E+00	0.00E+00	17
LS3d(5)	2252000	838343	820766	68	173	47	1.31	73	0.00E+00	179	0.00E+00	173	47	1.07	59	1.00E-02	179	4.69E-02	3.23	0.00E+00	0.00E+00	17
LS3d(6)	2252000	838351	820746	68	170	47	1.30	73	0.00E+00	177	0.00E+00	170	47	1.07	59	1.00E-02	177	4.89E-02	3.18	0.00E+00	0.00E+00	17
LS3d(7)	2252000	838358	820726	68	171	47	1.30	73	0.00E+00	177	0.00E+00	171	47	1.07	59	1.00E-02	177	4.83E-02	3.20	0.00E+00	0.00E+00	17
LS3d(8)	2252000	838365	820706	68	174	47	1.31	73	0.00E+00	180	0.00E+00	174	47	1.07	60	1.00E-02	180	4.64E-02	3.24	0.00E+00	0.00E+00	17
LS3d(9)	2252000	838372	820690	68	178	47	1.31	73	0.00E+00	184	0.00E+00	178	47	1.08	60	1.00E-02	184	4.37E-02	3.31	0.00E+00	0.00E+00	17
LS3d(10)	2252000	838373	820683	68	180	47	1.32	73	0.00E+00	186	0.00E+00	180	47	1.09	60	1.00E-02	186	4.20E-02	3.35	0.00E+00	0.00E+00	17
LS3d(11)	2252000	838375	820674	68	185	47	1.32	74	0.00E+00	191	0.00E+00	185	47	1.10	61	1.00E-02	191	3.93E-02	3.43	0.00E+00	0.00E+00	16
LS3d(12)	2252000	838374	820666	68	191	47	1.33	74	0.00E+00	197	0.00E+00	191	47	1.11	62	1.00E-02	197	3.59E-02	3.53	0.00E+00	0.00E+00	16
LS3d(13)	2252000	838373	820657	68	198	47	1.34	75	0.00E+00	204	0.00E+00	198	47	1.13	63	1.00E-02	204	3.25E-02	3.65	0.00E+00	0.00E+00	15
LS3d(14)	2252000	838370	820649	68	206	47	1.35	75	0.00E+00	212	0.00E+00	206	47	1.14	64	1.00E-02	212	2.92E-02	3.78	0.00E+00	0.00E+00	15
LS3d(15)	2252000	838365	820641	68	215	47	1.36	76	0.00E+00	220	0.00E+00	215	47	1.16	64	1.00E-02	220	2.62E-02	3.91	0.00E+00	0.00E+00	14
LS3d(16)	2252000	838360	820635	68	223	47	1.36	76	0.00E+00	228	0.00E+00	223	47	1.17	65	1.00E-02	228	2.34E-02	4.05	0.00E+00	0.00E+00	14
LS3d(17)	2252000	838353	820629	68	232	47	1.37	77	0.00E+00	237	0.00E+00	232	47	1.19	66	1.00E-02	237	2.11E-02	4.18	0.00E+00	0.00E+00	13
LS3d(18)	2252000	838345	820625	68	240	47	1.38	77	0.00E+00	245	0.00E+00	240	47	1.20	67	1.00E-02	245	1.91E-02	4.31	0.00E+00	0.00E+00	13
LS3d(19)	2252000	838337	820622	68	248	47	1.38	77	0.00E+00	252	0.00E+00	248	47	1.21	67	1.00E-02	252	1.76E-02	4.42	0.00E+00	0.00E+00	13
LS3d(20)	2252000	838328	820620	68	256	47	1.39	78	0.00E+00	260	0.00E+00	256	47	1.22	68	1.00E-02	260	1.61E-02	4.54	0.00E+00	0.00E+00	12
LS3d(21)	2252000	838320	820620	68	262	47	1.39	78	0.00E+00	267	0.00E+00	262	47	1.23	68	1.00E-02	267	1.50E-02	4.64	0.00E+00	0.00E+00	12
LS3d(22)	2252000	838311	820620	68	269	47	1.40	78	0.00E+00	273	0.00E+00	269	47	1.23	69	1.00E-02	273	1.40E-02	4.74	0.00E+00	0.00E+00	12
LS3d(23)	2252000	838302	820622	68	274	47	1.40	78	0.00E+00	278	0.00E+00	274	47	1.24	69	1.00E-02	278	1.32E-02	4.82	0.00E+00	0.00E+00	12
LS3d(24)	2252000	838294	820624	68	279	47	1.40	78	0.00E+00	283	0.00E+00	279	47	1.25	69	1.00E-02	283	1.25E-02	4.89	0.00E+00	0.00E+00	12
LS3d(25)	2252000	838286	820627	68	284	47	1.41	79	0.00E+00	288	0.00E+00	284	47	1.25	70	1.00E-02	288	1.20E-02	4.96	0.00E+00	0.00E+00	11
LS3d(26)	2252000	838278	820632	68	287	47	1.41	79	0.00E+00	291	0.00E+00	287	47	1.25	70	1.00E-02	291	1.16E-02	5.01	0.00E+00	0.00E+00	11
LS3d(27)	2252000	838268	820630	68	296	47	1.41	79	0.00E+00	300	0.00E+00	296	47	1.26	70	1.00E-02	300	1.06E-02	5.14	0.00E+00	0.00E+00	11

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/2h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (f \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eye $= E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_v = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$					
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2h	$\Phi$ Degree												
LS3d(28)	2252000	838259	820639	68	299	47	1.42	79	0.00E+00	303	0.00E+00	299	47	1.27	71	1.00E-02	303	1.03E-02	5.18	0.00E+00	0.00E+00	11					
LS3d(29)	2252000	838242	820659	68	304	47	1.42	79	5.00E-03	307	1.28E-02	304	47	1.27	71	1.00E-02	307	9.87E-03	5.24	6.69E-02	5.74E-03	11					
LS3d(30)	2252000	838230	820682	68	306	47	1.42	79	5.00E-03	310	1.25E-02	306	47	1.27	71	1.00E-02	310	9.66E-03	5.28	6.59E-02	5.72E-03	11					
LS3d(31)	2252000	838221	820706	68	306	47	1.42	79	5.00E-03	310	1.25E-02	306	47	1.27	71	1.00E-02	310	9.63E-03	5.28	6.57E-02	5.72E-03	11					
LS3d(32)	2252000	838216	820731	68	304	47	1.42	79	5.00E-03	308	1.27E-02	304	47	1.27	71	1.00E-02	308	9.85E-03	5.25	6.68E-02	5.74E-03	11					
LS3d(33)	2252000	838220	820756	68	296	47	1.41	79	5.00E-03	300	1.37E-02	296	47	1.26	70	1.00E-02	300	1.06E-02	5.14	7.05E-02	5.81E-03	11					
LS3d(34)	2252000	838227	820781	68	286	47	1.41	79	5.00E-03	290	1.52E-02	286	47	1.25	70	1.00E-02	290	1.17E-02	4.99	7.59E-02	5.91E-03	11					
LS3d(35)	2252000	838238	820803	68	275	47	1.40	78	5.00E-03	279	1.70E-02	275	47	1.24	69	1.00E-02	279	1.31E-02	4.83	8.22E-02	6.02E-03	12					
sum										9.64E-02											sum	8.55E-01					
sum										9.96E-02											sum	1.01E+00					
<b>Light source LS4: Office Block</b>																											
Light Sources drawing are referred to Page 4 in Appendix 11G		LS4a	Light Sources Type	SFC04	Approximate reflectance factor for wall surface										0.6												
sum										0.00E+00											sum	0.00E+00					
Light Sources drawing are referred to Page 4 in Appendix 11G		LS4b	Light Sources Type	SFC03	Approximate reflectance factor for grass										0.2												
LS4b (2)	75600	838203	820408	17.8	498	3.2	1.56	88	5.00E-03	498	6.86E-06	498	3	1.56	87	1.00E-02	498	5.49E-06	24.18	1.66E-04	2.96E-04	2					
sum										6.86E-06											sum	5.49E-06					
Light Sources drawing are referred to Page 4 in Appendix 11G		LS4c	Light Sour	SFC09	Approximate reflectance factor for dark stone										0.3												
LS4c (1)	426000	838204	820363	49.5	533	28.5	1.52	85	5.00E-03	534	2.80E-04	533	29	1.46	82	1.00E-02	534	No reflection		11.29	3.16E-03	1.23E-03	5				
LS4c (2)	426000	838204	820348	49.5	545	28.5	1.52	85	5.00E-03	545	2.62E-04	545	29	1.47	82	1.00E-02	545			11.44	3.00E-03	1.20E-03	5				
LS4c (3)	426000	838204	820334	49.5	557	28.5	1.52	85	5.00E-03	557	2.45E-04	557	29	1.47	82	1.00E-02	557			11.59	2.84E-03	1.17E-03	5				
LS4c (4)	284000	838204	820319	49.5	569	28.5	1.52	85	5.00E-03	570	1.53E-04	569	29	1.47	82	1.00E-02	570			11.74	1.80E-03	7.60E-04	5				
sum										9.40E-04											sum	0.00E+00					
sum										9.47E-04											sum	5.49E-06					
<b>Light source LS6: Podium Deck</b>																											
Light Sources drawing are referred to Page 4 in Appendix 11G		LS6a	Light Sources Type	SFC02	Approximate reflectance factor for Concrete ground										0.4												
LS6a (1)		838568	820568		236		1.56	87	5.00E-03	236	5.53E-06	236	3	1.55	87	1.00E-02	236	8.84E-06	20.98	1.16E-04	1.56E-04	3					
LS6a (2)		838555	820564		236		1.56	87	5.00E-03	236	5.48E-06	236	3	1.55	87	1.00E-02	236	8.77E-06	20.99	1.15E-04	1.55E-04	3					
LS6a (3)		838541	820561		238		1.56	87	5.00E-03	238	5.39E-06	238	3	1.55	87	1.00E-02	238	8.62E-06	21.02	1.13E-04	1.53E-04	3					
LS6a (4)		838528	820558		240		1.56	87	5.00E-03	240	5.24E-06	240	3	1.55	87	1.00E-02	240	8.38E-06	21.08	1.10E-04	1.50E-04	3					
LS6a (5)		838514	820554		243		1.56	87	5.00E-03	243	5.05E-06	243	3	1.55	87	1.00E-02	243	8.07E-06	21.15	1.07E-04	1.46E-04	3					
LS6a (6)		838501	820551		247		1.56	87	5.00E-03	247	4.82E-06	247	3	1.55	87	1.00E-02	247	7.71E-06	21.23	1.02E-04	1.41E-04	3					
LS6a (7)		838488	820547		251		1.56	87	5.00E-03	251	4.57E-06	251	3	1.55	87	1.00E-02	251	7.31E-06	21.33	9.75E-05	1.35E-04	3					
LS6a (8)		838474	820544		256		1.56	87	5.00E-03	256	4.30E-06	256	3	1.55	87	1.00E-02	256	6.89E-06	21.44	9.23E-05	1.29E-04	3					
LS6a (9)		838464	820549		253		1.56	87	5.00E-03	253	4.46E-06	253	3	1.55	87	1.00E-02	253	7.13E-06	21.37	9.53E-05	1.33E-04	3					
LS6a (10)		838558	820550		251		1.56	87	5.00E-03	251	4.58E-06	251	3	1.55	87	1.00E-02	251	7.32E-06	21.32	9.76E-05	1.35E-04	3					
LS6a (11)		838562	820536		266		1.56	87	5.00E-03	266	3.85E-06	266	3	1.55	87	1.00E-02	266	6.17E-06	21.63	8.34E-05	1.19E-04	3					
LS6a (12)		838566	820522		280		1.56	87	5.00E-03	280	3.28E-06	280	3	1.55	87	1.00E-02	280	5.25E-06	21.91	7.19E-05	1.05E-04	3					
LS6a (13)		838569	820507		295		1.56	87	5.00E-03	295	2.81E-06	295	3	1.55	87	1.00E-02	295	4.50E-06	22.17	6.24E-05	9.35E-05	3					
LS6a (14)		838573	820493		310		1.56	87	5.00E-03	310	2.43E-06	310	3	1.55	87	1.00E-02	310	3.89E-06	22.41	5.45E-05	8.35E-05	3					
LS6a (15)		838576	820479		325		1.56	87	5.00E-03	325	2.11E-06	325	3	1.55	87	1.00E-02	325	3.38E-06	22.64	4.79E-05	7.48E-05	3					
LS6a (16)		838581	820465		339		1.56	87	5.00E-03	339	1.85E-06	339	3	1.55	87	1.00E-02	339	2.96E-06	22.84	4.23E-05	6.74E-05	3					

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (r \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_v = \sum \Sigma 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$			
							d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree										
		X (m)	Y (m)	Z (mPD)																					
LS6a (17)	6890	838584	820450	18	354	3	1.56	88	5.00E-03	354	1.63E-06	354	3	1.55	87	1.00E-02	354	2.61E-06	23.04	3.76E-05	6.08E-05	2			
LS6a (18)		838588	820436		369		1.56	88	5.00E-03	369	1.44E-06	369	3	1.55	87	1.00E-02	369	2.31E-06	23.22	3.35E-05	5.51E-05	2			
LS6a (19)		838591	820421		384		1.56	88	5.00E-03	384	1.28E-06	384	3	1.56	87	1.00E-02	384	2.05E-06	23.39	2.99E-05	4.99E-05	2			
LS6a (20)		838577	820417		385		1.56	88	5.00E-03	385	1.27E-06	385	3	1.56	87	1.00E-02	385	2.02E-06	23.41	2.96E-05	4.95E-05	2			
LS6a (21)		838562	820414		387		1.56	88	5.00E-03	387	1.25E-06	387	3	1.56	87	1.00E-02	387	2.00E-06	23.42	2.93E-05	4.91E-05	2			
LS6a (22)		838547	820410		389		1.56	88	5.00E-03	389	1.23E-06	389	3	1.56	87	1.00E-02	389	1.97E-06	23.45	2.89E-05	4.84E-05	2			
LS6a (23)		838535	820436		362		1.56	88	5.00E-03	362	1.53E-06	362	3	1.55	87	1.00E-02	362	2.45E-06	23.13	3.54E-05	5.78E-05	2			
LS6a (24)		838531	820450		347		1.56	88	5.00E-03	347	1.73E-06	347	3	1.55	87	1.00E-02	347	2.77E-06	22.95	3.97E-05	6.37E-05	2			
LS6a (25)		838527	820465		333		1.56	87	5.00E-03	333	1.96E-06	333	3	1.55	87	1.00E-02	333	3.14E-06	22.75	4.47E-05	7.06E-05	3			
LS6a (26)		838516	820485		312		1.56	87	5.00E-03	312	2.38E-06	312	3	1.55	87	1.00E-02	312	3.81E-06	22.45	5.35E-05	8.22E-05	3			
LS6a (27)		838512	820501		296		1.56	87	5.00E-03	296	2.78E-06	296	3	1.55	87	1.00E-02	296	4.45E-06	22.19	6.17E-05	9.27E-05	3			
LS6a (28)		838486	820477		321		1.56	87	5.00E-03	321	2.19E-06	321	3	1.55	87	1.00E-02	321	3.50E-06	22.58	4.94E-05	7.66E-05	3			
LS6a (29)		838485	820494		305		1.56	87	5.00E-03	305	2.56E-06	305	3	1.55	87	1.00E-02	305	4.10E-06	22.33	5.72E-05	8.70E-05	3			
LS6a (30)		838481	820467		332		1.56	87	5.00E-03	332	1.98E-06	332	3	1.55	87	1.00E-02	332	3.16E-06	22.74	4.49E-05	7.09E-05	3			
LS6a (31)		838230	820297		575		1.57	88	5.00E-03	575	3.81E-07	575	3	1.56	87	1.00E-02	575	6.09E-07	24.91	9.49E-06	1.80E-05	2			
LS6a (50)		838404	820176		631		1.57	88	5.00E-03	631	2.88E-07	631	3	1.56	87	1.00E-02	631	4.62E-07	25.20	7.27E-06	1.41E-05	2			
LS6a (51)		838436	820567		242		1.56	87	5.00E-03	242	5.07E-06	242	3	1.55	87	1.00E-02	242	8.11E-06	21.14	1.07E-04	1.46E-04	3			
LS6a (52)		838459	820563		240		1.56	87	5.00E-03	240	5.21E-06	240	3	1.55	87	1.00E-02	240	8.34E-06	21.09	1.10E-04	1.49E-04	3			
LS6a (53)		838430	820560		251		1.56	87	5.00E-03	251	4.55E-06	251	3	1.55	87	1.00E-02	251	7.28E-06	21.33	9.71E-05	1.35E-04	3			
LS6a (54)		838445	820559		248		1.56	87	5.00E-03	248	4.74E-06	248	3	1.55	87	1.00E-02	248	7.59E-06	21.26	1.01E-04	1.39E-04	3			
LS6a (55)		838452	820547		257		1.56	87	5.00E-03	257	4.24E-06	257	3	1.55	87	1.00E-02	257	6.78E-06	21.46	9.10E-05	1.28E-04	3			
sum																									
										1.15E-04															
LS6b(56)		6890	838534		820543		18	255	3	1.56	87	5.00E-03	255	4.36E-06	255	3	1.55	87	1.00E-02	255	6.98E-06	21.41	9.34E-05	1.31E-04	3
LS6b(57)			838538		820526			272		1.56	87	5.00E-03	272	3.60E-06	272	3	1.55	87	1.00E-02	272	5.76E-06	21.75	7.84E-05	1.13E-04	3
LS6b(58)	838542		820510	289	1.56	87		5.00E-03		289	3.01E-06	289	3	1.55	87	1.00E-02	289	4.81E-06	22.06	6.64E-05	9.85E-05	3			
LS6b(59)	838546		820493	305	1.56	87		5.00E-03		305	2.54E-06	305	3	1.55	87	1.00E-02	305	4.06E-06	22.34	5.67E-05	8.64E-05	3			
LS6b(60)	838551		820474	325	1.56	87		5.00E-03		325	2.10E-06	325	3	1.55	87	1.00E-02	325	3.36E-06	22.64	4.76E-05	7.45E-05	3			
LS6b(61)	838555		820458	342	1.56	87		5.00E-03		342	1.81E-06	342	3	1.55	87	1.00E-02	342	2.89E-06	22.88	4.14E-05	6.60E-05	3			
LS6b(62)	838560		820441	359	1.56	88		5.00E-03		359	1.56E-06	359	3	1.55	87	1.00E-02	359	2.50E-06	23.10	3.61E-05	5.88E-05	2			
LS6b(63)	838564		820425	376	1.56	88		5.00E-03		376	1.36E-06	376	3	1.55	87	1.00E-02	376	2.18E-06	23.30	3.18E-05	5.26E-05	2			
LS6b(64)	838567		820387	414	1.56	88		5.00E-03		414	1.02E-06	414	3	1.56	87	1.00E-02	414	1.64E-06	23.71	2.42E-05	4.15E-05	2			
LS6b(65)	838575		820375	427	1.56	88		5.00E-03		427	9.31E-07	427	3	1.56	87	1.00E-02	427	1.49E-06	23.83	2.22E-05	3.84E-05	2			
LS6b(66)	838548		820382	417	1.56	88		5.00E-03		417	1.00E-06	417	3	1.56	87	1.00E-02	417	1.60E-06	23.74	2.37E-05	4.08E-05	2			
LS6b(67)	838531		820377	420	1.56	88		5.00E-03		420	9.75E-07	420	3	1.56	87	1.00E-02	420	1.56E-06	23.77	2.32E-05	3.99E-05	2			
LS6b(68)	838560		820372	428	1.56	88		5.00E-03		428	9.23E-07	428	3	1.56	87	1.00E-02	428	1.48E-06	23.84	2.20E-05	3.82E-05	2			
LS6b(69)	838541		820367	431	1.56	88		5.00E-03		431	9.07E-07	431	3	1.56	87	1.00E-02	431	1.45E-06	23.87	2.16E-05	3.76E-05	2			
LS6b(70)	838525		820365	432	1.56	88		5.00E-03		432	8.96E-07	432	3	1.56	87	1.00E-02	432	1.43E-06	23.88	2.14E-05	3.72E-05	2			
LS6b(71)	838513		820358	439	1.56	88		5.00E-03		439	8.56E-07	439	3	1.56	87	1.00E-02	439	1.37E-06	23.94	2.05E-05	3.58E-05	2			
LS6b(72)	838502		820344	454	1.56	88		5.00E-03		454	7.75E-07	454	3	1.56	87	1.00E-02	454	1.24E-06	24.07	1.86E-05	3.30E-05	2			
LS6b(73)	838502		820361	436	1.56	88		5.00E-03		436	8.71E-07	436	3	1.56	87	1.00E-02	436	1.39E-06	23.92	2.08E-05	3.63E-05	2			
LS6b(74)	838501		820376	421	1.56	88		5.00E-03		421	9.69E-07	421	3	1.56	87	1.00E-02	421	1.55E-06	23.78	2.30E-05	3.97E-05	2			
LS6b(75)	838498		820393	404	1.56	88		5.00E-03		404	1.10E-06	404	3	1.56	87	1.00E-02	404	1.75E-06	23.61	2.59E-05	4.40E-05	2			
LS6b(76)	838493		820410	387	1.56	88		5.00E-03		387	1.24E-06	387	3	1.56	87	1.00E-02	387	1.99E-06	23.43	2.92E-05	4.88E-05	2			



Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/2h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (r \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eye $= E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_v = \sum 10 (E_e) / \theta^2$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2h	$\Phi$ Degree							
LS6b(77)		838487	820426		372	1.56	88	5.00E-03	372	1.41E-06	372	3	1.55	87	1.00E-02	372	2.25E-06	23.26	3.27E-05	5.40E-05	2	
LS6b(78)		838478	820442		357	1.56	88	5.00E-03	357	1.59E-06	357	3	1.55	87	1.00E-02	357	2.54E-06	23.08	3.66E-05	5.95E-05	2	
LS6b(79)		838469	820456		344	1.56	88	5.00E-03	344	1.78E-06	344	3	1.55	87	1.00E-02	344	2.84E-06	22.91	4.07E-05	6.51E-05	2	
LS6b(80)		838471	820475		325	1.56	87	5.00E-03	325	2.10E-06	325	3	1.55	87	1.00E-02	325	3.36E-06	22.65	4.76E-05	7.45E-05	3	
LS6b(81)		838456	820472		330	1.56	87	5.00E-03	330	2.02E-06	330	3	1.55	87	1.00E-02	330	3.23E-06	22.71	4.59E-05	7.22E-05	3	
LS6b(82)		838448	820487		317	1.56	87	5.00E-03	317	2.28E-06	317	3	1.55	87	1.00E-02	317	3.64E-06	22.52	5.13E-05	7.93E-05	3	
LS6b(83)		838445	820504		301	1.56	87	5.00E-03	301	2.65E-06	301	3	1.55	87	1.00E-02	301	4.24E-06	22.27	5.91E-05	8.94E-05	3	
LS6b(84)		838446	820521		284	1.56	87	5.00E-03	284	3.17E-06	284	3	1.55	87	1.00E-02	284	5.07E-06	21.97	6.97E-05	1.03E-04	3	
LS6b(85)		838458	820538		265	1.56	87	5.00E-03	265	3.89E-06	265	3	1.55	87	1.00E-02	265	6.23E-06	21.61	8.41E-05	1.20E-04	3	
LS6b(86)		838480	820276		522	1.57	88	5.00E-03	522	5.08E-07	522	3	1.56	87	1.00E-02	522	8.13E-07	24.59	1.25E-05	2.30E-05	2	
LS6b(87)		838471	820264		534	1.57	88	5.00E-03	534	4.74E-07	534	3	1.56	87	1.00E-02	534	7.58E-07	24.67	1.17E-05	2.17E-05	2	
LS6b(104)		838256	820344		521	1.57	88	5.00E-03	521	5.12E-07	521	3	1.56	87	1.00E-02	521	8.20E-07	24.58	1.26E-05	2.32E-05	2	
LS6b(105)		838242	820355		519	1.57	88	5.00E-03	519	5.18E-07	519	3	1.56	87	1.00E-02	519	8.29E-07	24.56	1.27E-05	2.34E-05	2	
LS6b(106)		838228	820362		520	1.57	88	5.00E-03	520	5.15E-07	520	3	1.56	87	1.00E-02	520	8.24E-07	24.57	1.27E-05	2.33E-05	2	
LS6b(107)		838223	820313		564	1.57	88	5.00E-03	564	4.04E-07	564	3	1.56	87	1.00E-02	564	6.46E-07	24.85	1.00E-05	1.89E-05	2	
LS6b(108)		838235	820308		563	1.57	88	5.00E-03	563	4.06E-07	563	3	1.56	87	1.00E-02	563	6.49E-07	24.84	1.01E-05	1.90E-05	2	
LS6b(109)	6890	838231	820340	18	537	1.57	88	5.00E-03	537	4.66E-07	537	3	1.56	87	1.00E-02	537	7.46E-07	24.68	1.15E-05	2.14E-05	2	
LS6b(110)		838260	820370		496	1.56	88	5.00E-03	496	5.92E-07	496	3	1.56	87	1.00E-02	496	9.47E-07	24.41	1.44E-05	2.62E-05	2	
LS6b(111)		838246	820373		502	1.56	88	5.00E-03	502	5.74E-07	502	3	1.56	87	1.00E-02	502	9.18E-07	24.44	1.40E-05	2.55E-05	2	
LS6b(112)		838230	820379		505	1.56	88	5.00E-03	505	5.63E-07	505	3	1.56	87	1.00E-02	505	9.00E-07	24.47	1.38E-05	2.51E-05	2	
LS6b(113)		838260	820391		479	1.56	88	5.00E-03	479	6.59E-07	479	3	1.56	87	1.00E-02	479	1.05E-06	24.28	1.60E-05	2.87E-05	2	
LS6b(114)		838244	820390		487	1.56	88	5.00E-03	487	6.25E-07	487	3	1.56	87	1.00E-02	487	1.00E-06	24.34	1.52E-05	2.75E-05	2	
LS6b(115)		838226	820398		492	1.56	88	5.00E-03	492	6.09E-07	492	3	1.56	87	1.00E-02	492	9.74E-07	24.37	1.48E-05	2.69E-05	2	
LS6b(116)		838238	820409		476	1.56	88	5.00E-03	476	6.73E-07	476	3	1.56	87	1.00E-02	476	1.08E-06	24.25	1.63E-05	2.93E-05	2	
LS6b(117)		838253	820409		467	1.56	88	5.00E-03	467	7.09E-07	467	3	1.56	87	1.00E-02	467	1.13E-06	24.18	1.71E-05	3.06E-05	2	
LS6b(118)		838267	820410		459	1.56	88	5.00E-03	459	7.49E-07	459	3	1.56	87	1.00E-02	459	1.20E-06	24.12	1.81E-05	3.20E-05	2	
LS6b(119)		838270	820426		444	1.56	88	5.00E-03	444	8.25E-07	444	3	1.56	87	1.00E-02	444	1.32E-06	23.99	1.98E-05	3.48E-05	2	
LS6b(120)		838241	820423		462	1.56	88	5.00E-03	462	7.32E-07	462	3	1.56	87	1.00E-02	462	1.17E-06	24.14	1.77E-05	3.14E-05	2	
LS6b(121)		838254	820432		448	1.56	88	5.00E-03	448	8.07E-07	448	3	1.56	87	1.00E-02	448	1.29E-06	24.02	1.94E-05	3.41E-05	2	
LS6b(122)		838282	820444		422	1.56	88	5.00E-03	422	9.62E-07	422	3	1.56	87	1.00E-02	422	1.54E-06	23.79	2.29E-05	3.95E-05	2	
LS6b(123)		838266	820447		428	1.56	88	5.00E-03	428	9.23E-07	428	3	1.56	87	1.00E-02	428	1.48E-06	23.84	2.20E-05	3.82E-05	2	
LS6b(124)		838253	820451		433	1.56	88	5.00E-03	433	8.91E-07	433	3	1.56	87	1.00E-02	433	1.43E-06	23.89	2.13E-05	3.71E-05	2	
LS6b(125)		838295	820460		401	1.56	88	5.00E-03	401	1.12E-06	401	3	1.56	87	1.00E-02	401	1.79E-06	23.58	2.64E-05	4.48E-05	2	
LS6b(126)		838273	820465		410	1.56	88	5.00E-03	410	1.05E-06	410	3	1.56	87	1.00E-02	410	1.68E-06	23.67	2.49E-05	4.25E-05	2	
LS6b(127)		838258	820471		414	1.56	88	5.00E-03	414	1.02E-06	414	3	1.56	87	1.00E-02	414	1.63E-06	23.71	2.42E-05	4.15E-05	2	
LS6b(128)		838288	820472		396	1.56	88	5.00E-03	396	1.17E-06	396	3	1.56	87	1.00E-02	396	1.87E-06	23.52	2.75E-05	4.64E-05	2	
LS6b(129)		838304	820478		381	1.56	88	5.00E-03	381	1.30E-06	381	3	1.56	87	1.00E-02	381	2.09E-06	23.37	3.05E-05	5.07E-05	2	
LS6b(130)		838318	820486		367	1.56	88	5.00E-03	367	1.46E-06	367	3	1.55	87	1.00E-02	367	2.34E-06	23.20	3.39E-05	5.56E-05	2	
LS6b(131)		838338	820495		349	1.56	88	5.00E-03	349	1.71E-06	349	3	1.55	87	1.00E-02	349	2.73E-06	22.97	3.92E-05	6.31E-05	2	
LS6b(132)		838353	820504		334	1.56	87	5.00E-03	334	1.95E-06	334	3	1.55	87	1.00E-02	334	3.11E-06	22.77	4.43E-05	7.01E-05	3	
LS6b(133)		838377	820501		326	1.56	87	5.00E-03	326	2.09E-06	326	3	1.55	87	1.00E-02	326	3.34E-06	22.65	4.74E-05	7.41E-05	3	
LS6b(134)		838404	820495		321	1.56	87	5.00E-03	321	2.19E-06	321	3	1.55	87	1.00E-02	321	3.51E-06	22.58	4.95E-05	7.70E-05	3	
LS6b(135)		838419	820491		320	1.56	87	5.00E-03	320	2.20E-06	320	3	1.55	87	1.00E-02	320	3.53E-06	22.57	4.98E-05	7.73E-05	3	

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/2h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (f \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_v = \sum I_0 (E_e) / \theta^2$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$
							d/h	$\Phi$ Degree						d/2h	$\Phi$ Degree							
		X (m)	Y (m)	Z (mPD)																		
LS6b(136)		838436	820484		322	1.56	87	5.00E-03	322	2.16E-06	322	3	1.55	87	1.00E-02	322	3.46E-06	22.60	4.88E-05	7.61E-05	3	
LS6b(137)		838433	820501		306	1.56	87	5.00E-03	306	2.51E-06	306	3	1.55	87	1.00E-02	306	4.02E-06	22.36	5.62E-05	8.57E-05	3	
LS6b(138)		838416	820507		306	1.56	87	5.00E-03	306	2.53E-06	306	3	1.55	87	1.00E-02	306	4.05E-06	22.35	5.66E-05	8.62E-05	3	
LS6b(139)		838396	820512		309	1.56	87	5.00E-03	309	2.46E-06	309	3	1.55	87	1.00E-02	309	3.94E-06	22.39	5.51E-05	8.43E-05	3	
LS6b(140)		838371	820515		315	1.56	87	5.00E-03	315	2.31E-06	315	3	1.55	87	1.00E-02	315	3.69E-06	22.50	5.19E-05	8.01E-05	3	
LS6b(141)		838350	820524		318	1.56	87	5.00E-03	318	2.25E-06	318	3	1.55	87	1.00E-02	318	3.60E-06	22.54	5.07E-05	7.86E-05	3	
LS6b(142)		838326	820510		343	1.56	87	5.00E-03	343	1.79E-06	343	3	1.55	87	1.00E-02	343	2.87E-06	22.89	4.10E-05	6.56E-05	3	
LS6b(143)		838310	820503		357	1.56	88	5.00E-03	357	1.59E-06	357	3	1.55	87	1.00E-02	357	2.55E-06	23.07	3.67E-05	5.96E-05	2	
LS6b(144)		838297	820495		371	1.56	88	5.00E-03	371	1.41E-06	371	3	1.55	87	1.00E-02	371	2.26E-06	23.25	3.29E-05	5.42E-05	2	
LS6b(145)		838284	820490		383	1.56	88	5.00E-03	383	1.29E-06	383	3	1.56	87	1.00E-02	383	2.06E-06	23.38	3.01E-05	5.02E-05	2	
LS6b(146)		838268	820486		396	1.56	88	5.00E-03	396	1.17E-06	396	3	1.56	87	1.00E-02	396	1.87E-06	23.52	2.74E-05	4.63E-05	2	
LS6b(147)		838260	820506		386	1.56	88	5.00E-03	386	1.26E-06	386	3	1.56	87	1.00E-02	386	2.02E-06	23.41	2.95E-05	4.94E-05	2	
LS6b(148)		838275	820507		375	1.56	88	5.00E-03	375	1.37E-06	375	3	1.55	87	1.00E-02	375	2.19E-06	23.29	3.19E-05	5.29E-05	2	
LS6b(149)		838289	820510		364	1.56	88	5.00E-03	364	1.50E-06	364	3	1.55	87	1.00E-02	364	2.41E-06	23.16	3.48E-05	5.70E-05	2	
LS6b(150)		838302	820519		349	1.56	88	5.00E-03	349	1.70E-06	349	3	1.55	87	1.00E-02	349	2.71E-06	22.98	3.90E-05	6.27E-05	2	
LS6b(151)		838314	820527		335	1.56	87	5.00E-03	335	1.92E-06	335	3	1.55	87	1.00E-02	335	3.07E-06	22.79	4.37E-05	6.92E-05	3	
LS6b(152)		838334	820529		323	1.56	87	5.00E-03	323	2.15E-06	323	3	1.55	87	1.00E-02	323	3.44E-06	22.61	4.87E-05	7.59E-05	3	
LS6b(153)		838368	820533		301	1.56	87	5.00E-03	301	2.64E-06	301	3	1.55	87	1.00E-02	301	4.22E-06	22.28	5.88E-05	8.90E-05	3	
LS6b(154)		838385	820544		283	1.56	87	5.00E-03	283	3.18E-06	283	3	1.55	87	1.00E-02	283	5.09E-06	21.97	6.99E-05	1.03E-04	3	
LS6b(155)		838388	820527		298	1.56	87	5.00E-03	298	2.75E-06	298	3	1.55	87	1.00E-02	298	4.39E-06	22.21	6.10E-05	9.18E-05	3	
LS6b(156)		838401	820542		278	1.56	87	5.00E-03	278	3.35E-06	278	3	1.55	87	1.00E-02	278	5.36E-06	21.88	7.33E-05	1.07E-04	3	
LS6b(157)		838408	820524		292	1.56	87	5.00E-03	292	2.90E-06	292	3	1.55	87	1.00E-02	292	4.64E-06	22.12	6.41E-05	9.58E-05	3	
LS6b(158)		838416	820537		277	1.56	87	5.00E-03	277	3.39E-06	277	3	1.55	87	1.00E-02	277	5.42E-06	21.86	7.41E-05	1.08E-04	3	
LS6b(159)		838424	820525		286	1.56	87	5.00E-03	286	3.08E-06	286	3	1.55	87	1.00E-02	286	4.93E-06	22.02	6.78E-05	1.00E-04	3	
LS6b(160)		838433	820537		272	1.56	87	5.00E-03	272	3.58E-06	272	3	1.55	87	1.00E-02	272	5.73E-06	21.76	7.79E-05	1.13E-04	3	
LS6b(161)		838437	820519		288	1.56	87	5.00E-03	288	3.03E-06	288	3	1.55	87	1.00E-02	288	4.85E-06	22.05	6.68E-05	9.90E-05	3	
LS6b(162)		838445	820538		268	1.56	87	5.00E-03	268	3.77E-06	268	3	1.55	87	1.00E-02	268	6.03E-06	21.67	8.17E-05	1.17E-04	3	
LS6b(163)		838431	820552		258	1.56	87	5.00E-03	258	4.20E-06	258	3	1.55	87	1.00E-02	258	6.71E-06	21.48	9.01E-05	1.27E-04	3	
LS6b(164)		838367	820549		288	1.56	87	5.00E-03	288	3.03E-06	288	3	1.55	87	1.00E-02	288	4.85E-06	22.05	6.68E-05	9.91E-05	3	
LS6b(165)		838351	820543		301	1.56	87	5.00E-03	301	2.65E-06	301	3	1.55	87	1.00E-02	301	4.24E-06	22.27	5.91E-05	8.94E-05	3	
LS6b(166)		838335	820546		308	1.56	87	5.00E-03	308	2.49E-06	308	3	1.55	87	1.00E-02	308	3.98E-06	22.38	5.57E-05	8.50E-05	3	
LS6b(167)		838319	820546		318	1.56	87	5.00E-03	318	2.25E-06	318	3	1.55	87	1.00E-02	318	3.60E-06	22.54	5.08E-05	7.86E-05	3	
LS6b(168)		838304	820542		330	1.56	87	5.00E-03	330	2.02E-06	330	3	1.55	87	1.00E-02	330	3.23E-06	22.71	4.58E-05	7.20E-05	3	
LS6b(169)		838294	820533		343	1.56	87	5.00E-03	343	1.79E-06	343	3	1.55	87	1.00E-02	343	2.86E-06	22.90	4.10E-05	6.55E-05	3	
LS6b(170)		838280	820528		356	1.56	88	5.00E-03	356	1.61E-06	356	3	1.55	87	1.00E-02	356	2.57E-06	23.06	3.70E-05	6.01E-05	2	
LS6b(171)		838264	820525		368	1.56	88	5.00E-03	368	1.45E-06	368	3	1.55	87	1.00E-02	368	2.32E-06	23.21	3.36E-05	5.53E-05	2	
LS6b(172)		838353	820559		287	1.56	87	5.00E-03	287	3.06E-06	287	3	1.55	87	1.00E-02	287	4.90E-06	22.03	6.75E-05	9.99E-05	3	
LS6b(173)		838334	820567		292	1.56	87	5.00E-03	292	2.90E-06	292	3	1.55	87	1.00E-02	292	4.65E-06	22.12	6.42E-05	9.59E-05	3	
LS6b(174)		838318	820563		305	1.56	87	5.00E-03	305	2.56E-06	305	3	1.55	87	1.00E-02	305	4.09E-06	22.33	5.71E-05	8.69E-05	3	
LS6b(175)		838305	820559		317	1.56	87	5.00E-03	317	2.28E-06	317	3	1.55	87	1.00E-02	317	3.65E-06	22.52	5.13E-05	7.94E-05	3	
LS6b(176)		838290	820558		327	1.56	87	5.00E-03	327	2.07E-06	327	3	1.55	87	1.00E-02	327	3.31E-06	22.67	4.70E-05	7.36E-05	3	
LS6b(177)		838282	820546		341	1.56	87	5.00E-03	341	1.82E-06	341	3	1.55	87	1.00E-02	341	2.92E-06	22.87	4.17E-05	6.65E-05	3	
LS6b(178)		838269	820543		352	1.56	88	5.00E-03	352	1.66E-06	352	3	1.55	87	1.00E-02	352	2.65E-06	23.01	3.81E-05	6.16E-05	2	

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eye $= E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_v = \sum L_i \times 10^{(E_i/E_h)^2}$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree							
LS6b(179)		838255	820541		364		1.56	88	5.00E-03	364	1.50E-06	364	3	1.55	87	1.00E-02	364	2.40E-06	23.16	3.48E-05	5.69E-05	2
LS6b(180)		838257	820557		351		1.56	88	5.00E-03	351	1.68E-06	351	3	1.55	87	1.00E-02	351	2.69E-06	22.99	3.86E-05	6.23E-05	2
LS6b(181)		838276	820563		333		1.56	87	5.00E-03	333	1.95E-06	333	3	1.55	87	1.00E-02	333	3.12E-06	22.76	4.44E-05	7.02E-05	3
LS6b(182)		838296	820576		310		1.56	87	5.00E-03	310	2.43E-06	310	3	1.55	87	1.00E-02	310	3.88E-06	22.41	5.44E-05	8.34E-05	3
LS6b(183)		838315	820583		292		1.56	87	5.00E-03	292	2.90E-06	292	3	1.55	87	1.00E-02	292	4.64E-06	22.12	6.42E-05	9.58E-05	3
LS6b(184)		838331	820582		282		1.56	87	5.00E-03	282	3.23E-06	282	3	1.55	87	1.00E-02	282	5.16E-06	21.94	7.08E-05	1.04E-04	3
LS6b(185)		838343	820577		278		1.56	87	5.00E-03	278	3.36E-06	278	3	1.55	87	1.00E-02	278	5.38E-06	21.87	7.35E-05	1.07E-04	3
LS6b(186)		838339	820602		262		1.56	87	5.00E-03	262	4.03E-06	262	3	1.55	87	1.00E-02	262	6.45E-06	21.55	8.69E-05	1.23E-04	3
LS6b(187)		838323	820599		274		1.56	87	5.00E-03	274	3.50E-06	274	3	1.55	87	1.00E-02	274	5.60E-06	21.80	7.63E-05	1.11E-04	3
LS6b(188)		838308	820597		286		1.56	87	5.00E-03	286	3.08E-06	286	3	1.55	87	1.00E-02	286	4.93E-06	22.02	6.78E-05	1.00E-04	3
LS6b(189)		838291	820602		296		1.56	87	5.00E-03	296	2.80E-06	296	3	1.55	87	1.00E-02	296	4.48E-06	22.18	6.21E-05	9.32E-05	3
LS6b(190)		838281	820581		316		1.56	87	5.00E-03	317	2.28E-06	316	3	1.55	87	1.00E-02	317	3.65E-06	22.52	5.14E-05	7.94E-05	3
LS6b(191)		838263	820571		337		1.56	87	5.00E-03	337	1.89E-06	337	3	1.55	87	1.00E-02	337	3.02E-06	22.82	4.30E-05	6.83E-05	3
LS6b(192)		838268	820590		321		1.56	87	5.00E-03	321	2.19E-06	321	3	1.55	87	1.00E-02	321	3.50E-06	22.58	4.94E-05	7.68E-05	3
LS6b(193)		838274	820609		304		1.56	87	5.00E-03	304	2.58E-06	304	3	1.55	87	1.00E-02	304	4.13E-06	22.32	5.76E-05	8.75E-05	3
LS6b(194)		838256	820600		324		1.56	87	5.00E-03	324	2.13E-06	324	3	1.55	87	1.00E-02	324	3.41E-06	22.63	4.82E-05	7.52E-05	3
LS6b(195)		838251	820582		339		1.56	87	5.00E-03	339	1.85E-06	339	3	1.55	87	1.00E-02	339	2.96E-06	22.84	4.23E-05	6.74E-05	3
LS6b(196)		838243	820565		356		1.56	88	5.00E-03	356	1.61E-06	356	3	1.55	87	1.00E-02	356	2.57E-06	23.06	3.71E-05	6.01E-05	2
LS6b(197)		838235	820576		356		1.56	88	5.00E-03	356	1.61E-06	356	3	1.55	87	1.00E-02	356	2.57E-06	23.06	3.70E-05	6.01E-05	2
LS6b(198)		838240	820592		341		1.56	87	5.00E-03	341	1.82E-06	341	3	1.55	87	1.00E-02	341	2.91E-06	22.87	4.16E-05	6.63E-05	3
LS6b(199)		838244	820611		327		1.56	87	5.00E-03	327	2.07E-06	327	3	1.55	87	1.00E-02	327	3.32E-06	22.67	4.70E-05	7.36E-05	3
							sum				2.37E-04						sum				3.79E-04	
Light Sources drawing are referred to Page 4 in Appendix 11G																						
		LS6d	Light Sources Type	SFC09	Approximate reflectance factor for Concrete ground										0.4							
LS6d (1)		838510	820534		263		1.56	87	5.00E-03	263	5.48E-05	263	4	1.54	86	1.00E-02	263	8.77E-05	19.93	1.09E-03	1.32E-03	3
LS6d (2)		838429	820709		121		1.55	87	5.00E-03	122	4.16E-04	121	4	1.51	84	1.00E-02	122	8.85E-04	16.76	6.97E-03	5.97E-03	3
LS6d (3)		838514	820520		277		1.56	87	5.00E-03	277	3.50E-05	277	4	1.54	86	1.00E-02	277	7.46E-05	21.85	7.65E-04	1.11E-03	3
LS6d (4)		838436	820690		132		1.55	87	5.00E-03	132	3.27E-04	132	4	1.51	85	1.00E-02	132	6.98E-04	17.31	5.67E-03	5.18E-03	3
LS6d (5)		838493	820530		268		1.56	87	5.00E-03	268	3.88E-05	268	4	1.54	86	1.00E-02	268	8.28E-05	21.67	8.41E-04	1.21E-03	3
LS6d (6)	71000	838493	820530	25	268	4	1.54	86	1.00E-02	268	8.28E-05	21.67	8.41E-04	1.21E-03	3							
LS6d (7)		838493	820530		268		1.56	87	5.00E-03	268	3.88E-05	268	4	1.54	86	1.00E-02	268	8.28E-05	21.67	8.41E-04	1.21E-03	3
LS6d (8)		838493	820530		268		1.56	87	5.00E-03	268	3.88E-05	268	4	1.54	86	1.00E-02	268	8.28E-05	21.67	8.41E-04	1.21E-03	3
LS6d (9)		838497	820515		282		1.56	87	5.00E-03	282	3.32E-05	282	4	1.54	86	1.00E-02	282	7.09E-05	21.94	7.29E-04	1.07E-03	3
LS6d (10)		838493	820515		282		1.56	87	5.00E-03	282	3.32E-05	282	4	1.54	86	1.00E-02	282	7.09E-05	21.94	7.29E-04	1.07E-03	3
LS6d (11)		838497	820515		282		1.56	87	5.00E-03	282	3.32E-05	282	4	1.54	86	1.00E-02	282	7.09E-05	21.94	7.29E-04	1.07E-03	3
LS6d (12)		838497	820515		282		1.56	87	5.00E-03	282	3.32E-05	282	4	1.54	86	1.00E-02	282	7.09E-05	21.94	7.29E-04	1.07E-03	3
LS6d (13)		838476	820526		274		1.56	87	5.00E-03	274	3.63E-05	274	4	1.54	86	1.00E-02	274	7.74E-05	21.79	7.91E-04	1.15E-03	3
LS6d (14)		838476	820526		274		1.56	87	5.00E-03	274	3.63E-05	274	4	1.54	86	1.00E-02	274	7.74E-05	21.79	7.91E-04	1.15E-03	3
LS6d (15)		838480	820511		288		1.56	87	5.00E-03	288	3.13E-05	288	4	1.54	86	1.00E-02	288	6.67E-05	22.05	6.89E-04	1.02E-03	3
LS6d (16)		838480	820511		288		1.56	87	5.00E-03	288	3.13E-05	288	4	1.54	86	1.00E-02	288	6.67E-05	22.05	6.89E-04	1.02E-03	3
							sum				1.26E-03						sum				2.65E-03	
							1.61E-03										3.21E-03					
Light source LS7: Road Lighting																						

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries $\Phi = \arctan(d/2h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (f \times f \times \beta \times I \times \cos\Phi) / d^2$	tan $\Phi$	Eye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_v = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2h	$\Phi$ Degree							
LS7(1)	17672.605	838525	820610	6	187	15	1.49	83	0.00E+00	188	0.00E+00	187	15	1.49	83	1.00E+00	188	4.00E-02	8.67	0.00E+00	0.00E+00	7
LS7(2)	10551.9244	838163	820463		483		1.54	86	0.00E+00	484	0.00E+00	483		1.54	86	1.00E+00	484	1.40E-03	15.15	0.00E+00	0.00E+00	4
sum 0.00E+00 <b>Light source LS8: Ancillary Building</b> sum 4.14E-02																						
L05R	400000	838082	820761	50	433	29	1.50	84	0.00E+00	434	0.00E+00	433	29	1.50	84	1.00E+00	434	1.42E-01	9.79	0.00E+00	0.00E+00	6
L13R	500000	837884	820306	50	798	29	1.53	86	0.00E+00	799	0.00E+00	370	29	1.49	84	1.00E+00	371	2.84E-01	14.02	0.00E+00	0.00E+00	4
sum 0.00E+00 <b>Total sum 1.30E-03</b> sum 1.42E-01 <b>sum 1.22E+00 5.76E-01 1.14E-01</b>																						

Ehav	Lvl	$L_{ve} = 0.035 p E_{hav} / \pi$	Glare rating = $27 + 24 \log_{10} (L_{vl})$
1.22E+00	1.14E-01	0.0109	47

Glare impact calculation to Light Sensitivity Receiver L06T

Future Road D2

Sensitivity Receiver L06T Coordinate		
X (m)	Y (m)	Z (mPD)
838804	820736	7

The inverse square law and cosine law can be used to calculate illuminance at a point from intensity data.

horizontal illuminance (lx)  $E_h = (r \times f \times \beta \times I \times \cos\theta) / d^2$

where I is intensity of lighting source (cd),

$\beta$  is beam factor (proportion of lamp lumens contained within the beam)

d is the distance from the light source to sensitive receiver (m),

$\theta$  is the angle of incidence of the intensity of a light source,

f is maintenance factor= 0.7

r is Approximate reflectance for concrete ground= 0.4

for wall surface= 0.8

for grass= 0.2

Direct Light											Reflected light					Illuminance at the observer's eye in a plane perpendicular to the line of sight caused by the lighting installation E eye											
Light source LS1: Main Stadium																											
Light Sources drawing are referred to Page 4 in Appendix 11G		LS1a	Light Sources Type	SFC02	Approximate reflectance factor for concrete ground																	0.4					
Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (f \times \beta \times I \times \cos\theta) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (r \times f \times \beta \times I \times \cos\theta) / d^2$	tan $\Phi$	Eeye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_{vl} = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\theta = 90 - \Phi$					
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree												
LS1a (10)	6890	838379	820483	18	495	11.5	1.55	87	No direct light	No direct light	495	16.5	1.50	84	1.00E-02	495	5.23E-06	17.18	0.00E+00	0.00E+00	3						
LS1a (11)		838394	820482		483	1.55	87	483			483		1.50	84	1.00E-02	483	5.64E-06	17.01	0.00E+00	0.00E+00	3						
LS1a (12)		838408	820479		472	1.55	87	472			472		1.50	84	1.00E-02	472	6.03E-06	16.86	0.00E+00	0.00E+00	3						
LS1a (13)		838422	820474		463	1.55	87	464			464		1.50	84	1.00E-02	464	6.37E-06	16.73	0.00E+00	0.00E+00	3						
LS1a (14)		838435	820466		457	1.55	87	457			457		1.50	84	1.00E-02	458	6.63E-06	16.63	0.00E+00	0.00E+00	3						
LS1a (15)		838446	820457		454	1.55	87	454			454		1.50	84	1.00E-02	454	6.79E-06	16.58	0.00E+00	0.00E+00	3						
LS1a (16)		838457	820446		452	1.55	87	453			453		1.50	84	1.00E-02	453	6.85E-06	16.56	0.00E+00	0.00E+00	3						
LS1a (17)		838466	820434		453	1.55	87	453			453		1.50	84	1.00E-02	453	6.82E-06	16.57	0.00E+00	0.00E+00	3						
LS1a (18)		838474	820422		456	1.55	87	456			456		1.50	84	1.00E-02	456	6.70E-06	16.61	0.00E+00	0.00E+00	3						
LS1a (19)		838481	820408		461	1.55	87	461			461		1.50	84	1.00E-02	461	6.49E-06	16.68	0.00E+00	0.00E+00	3						
LS1a (20)		838485	820394		468	1.55	87	468			468		1.50	84	1.00E-02	469	6.17E-06	16.80	0.00E+00	0.00E+00	3						
LS1a (21)		838486	820378		478	1.55	87	479			478		1.50	84	1.00E-02	479	5.79E-06	16.95	0.00E+00	0.00E+00	3						
LS1a (22)		838486	820363		490	1.55	87	490			490		1.50	84	1.00E-02	490	5.40E-06	17.11	0.00E+00	0.00E+00	3						
LS1a (23)		838486	820348		502	1.55	87	502			502		1.51	84	1.00E-02	502	5.03E-06	17.27	0.00E+00	0.00E+00	3						
LS1a (24)		838486	820333		513	1.55	87	513			513		1.51	84	1.00E-02	513	4.70E-06	17.43	0.00E+00	0.00E+00	3						
LS1a (25)		838485	820318		526	1.55	87	526			526		1.51	84	1.00E-02	526	4.37E-06	17.59	0.00E+00	0.00E+00	3						
LS1a (26)		838481	820303		540	1.55	87	540			540		1.51	85	1.00E-02	540	4.03E-06	17.77	0.00E+00	0.00E+00	3						
LS1a (27)		838475	820290		554	1.55	87	555			554		1.51	85	1.00E-02	555	3.73E-06	17.95	0.00E+00	0.00E+00	3						
LS1a (28)		838467	820276		570	1.55	87	570			570		1.51	85	1.00E-02	570	3.43E-06	18.13	0.00E+00	0.00E+00	3						
LS1a (29)		838458	820264		585	1.55	87	585			585		1.51	85	1.00E-02	585	3.17E-06	18.31	0.00E+00	0.00E+00	3						
LS1a (30)		838448	820253		600	1.55	87	600			600		1.52	85	1.00E-02	600	2.94E-06	18.47	0.00E+00	0.00E+00	3						
LS1a (31)		838436	820244		614	1.55	87	614			614		1.52	85	1.00E-02	614	2.74E-06	18.63	0.00E+00	0.00E+00	3						
sum											0.00E+00		sum										1.15E-04				
Light Sources drawing are referred to Page 4 in Appendix 11G		LS1b	Light Sources Type		SFC10	Approximate reflectance factor for wall surface																	0.8				

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h) - 2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (r \times \beta \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/2/h) - 2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (r \times \beta \times \cos\Phi) / d^2$	tan $\Phi$	Eeye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_{vl} = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$							
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree														
LS1b (10)	272000	838379	820483	40	495	33.5	1.50	84	No direct light	496	No direct light	498	33.5	1.44	80	1.00E-02	499	8.15E-04	9.72	0.00E+00	0.00E+00	6							
LS1b (11)		838394	820482		483		1.50	84		484		486		1.43	80		1.00E-02	487	8.78E-04	9.56	0.00E+00	0.00E+00	6						
LS1b (12)		838408	820479		472		1.50	84		473		475		1.43	80		1.00E-02	476	9.37E-04	9.42	0.00E+00	0.00E+00	6						
LS1b (13)		838422	820474		463		1.50	84		465		466		1.43	80		1.00E-02	468	9.91E-04	9.30	0.00E+00	0.00E+00	6						
LS1b (14)		838435	820466		457		1.50	84		459		460		1.43	80		1.00E-02	462	1.03E-03	9.22	0.00E+00	0.00E+00	6						
LS1b (15)		838446	820457		454		1.50	84		455		457		1.43	80		1.00E-02	458	1.05E-03	9.17	0.00E+00	0.00E+00	6						
LS1b (16)		838457	820446		452		1.50	84		454		455		1.42	80		1.00E-02	457	1.06E-03	9.15	0.00E+00	0.00E+00	6						
LS1b (17)		838466	820434		453		1.50	84		454		456		1.42	80		1.00E-02	457	1.06E-03	9.16	0.00E+00	0.00E+00	6						
LS1b (18)		838474	820422		456		1.50	84		457		459		1.43	80		1.00E-02	460	1.04E-03	9.20	0.00E+00	0.00E+00	6						
LS1b (19)		838481	820408		461		1.50	84		462		464		1.43	80		1.00E-02	465	1.01E-03	9.27	0.00E+00	0.00E+00	6						
LS1b (20)		838485	820394		468		1.50	84		470		471		1.43	80		1.00E-02	473	9.60E-04	9.37	0.00E+00	0.00E+00	6						
LS1b (21)		838486	820378		478		1.50	84		480		481		1.43	80		1.00E-02	483	9.02E-04	9.51	0.00E+00	0.00E+00	6						
LS1b (22)		838486	820363		490		1.50	84		491		493		1.44	80		1.00E-02	494	8.41E-04	9.66	0.00E+00	0.00E+00	6						
LS1b (23)		838486	820348		502		1.50	84		503		505		1.44	80		1.00E-02	506	7.84E-04	9.81	0.00E+00	0.00E+00	6						
LS1b (24)		838486	820333		513		1.51	84		514		516		1.44	81		1.00E-02	517	7.33E-04	9.96	0.00E+00	0.00E+00	6						
LS1b (25)		838485	820318		526		1.51	84		527		529		1.44	81		1.00E-02	530	6.82E-04	10.12	0.00E+00	0.00E+00	6						
LS1b (26)		838481	820303		540		1.51	84		541		543		1.45	81		1.00E-02	544	6.31E-04	10.29	0.00E+00	0.00E+00	6						
LS1b (27)		838475	820290		554		1.51	85		555		557		1.45	81		1.00E-02	558	5.83E-04	10.47	0.00E+00	0.00E+00	5						
LS1b (28)		838467	820276		570		1.51	85		571		573		1.45	81		1.00E-02	574	5.38E-04	10.65	0.00E+00	0.00E+00	5						
LS1b (29)		838310	820455		569		1.51	85		570		572		1.45	81		1.00E-02	573	5.41E-04	10.63	0.00E+00	0.00E+00	5						
LS1b (30)		838322	820465		554		1.51	85		555		557		1.45	81		1.00E-02	558	5.85E-04	10.46	0.00E+00	0.00E+00	5						
LS1b (31)		838335	820472		538		1.51	84		539		541		1.45	81		1.00E-02	542	6.36E-04	10.27	0.00E+00	0.00E+00	6						
sum										0.00E+00		sum										1.83E-02							
Light Sources drawing are referred to Page 4 in Appendix 11G		LS1c	Light Sources Type		LED																								
LS1c (1)		756000	838470		820427		17.5	455		11		1.55		87	5.00E-03		455	4.40E-04	455	11	1.52	85	1.00E-02	456	1.76E-03	16.91	7.44E-03	6.50E-03	3
sum										4.40E-04		sum										1.76E-03							
sum										4.40E-04		sum										2.02E-02							
<b>Light Source LS2: Public Sports Ground</b>																													
Light Sources drawing are referred to Page 4 in Appendix 11G		LS2b	Light Sources Type		SFC6		Approximate reflectance factor for grass																	0.2					
sum										0.00E+00		sum										0.00E+00							
<b>Light Source LS3: Indoor Sports Centre</b>																													
Light Sources drawing are referred to Page 4 in Appendix 11G		LS3d	Light Sources Type		SFC07&8	Approximate reflectance factor for runway																0.4							
LS3d(1)	2252000	838307	820838	68	507	62	1.45	81	5.00E-03	511	3.63E-03	507	62	1.33	74	1.00E-02	511	5.75E-03	6.38	2.32E-02	2.92E-03	9							
LS3d(2)	2252000	838321	820825	68	492	62	1.45	81	5.00E-03	495	3.99E-03	492	62	1.32	74	1.00E-02	496	6.31E-03	6.22	2.48E-02	2.97E-03	9							
LS3d(3)	2252000	838328	820805	68	481	62	1.44	81	5.00E-03	485	4.25E-03	481	62	1.32	73	1.00E-02	485	6.72E-03	6.12	2.60E-02	3.02E-03	9							
LS3d(4)	2252000	838336	820785	68	471	62	1.44	81	5.00E-03	475	4.51E-03	471	62	1.31	73	1.00E-02	476	7.12E-03	6.02	2.72E-02	3.05E-03	9							
LS3d(5)	2252000	838343	820766	68	462	62	1.44	80	5.00E-03	466	4.78E-03	462	62	1.31	73	1.00E-02	466	7.54E-03	5.93	2.83E-02	3.09E-03	10							
LS3d(6)	2252000	838351	820746	68	454	62	1.44	80	5.00E-03	458	5.05E-03	454	62	1.30	73	1.00E-02	458	7.96E-03	5.84	2.95E-02	3.12E-03	10							
LS3d(7)	2252000	838358	820726	68	447	62	1.43	80	5.00E-03	451	5.28E-03	447	62	1.30	72	1.00E-02	451	8.32E-03	5.77	3.05E-02	3.15E-03	10							
LS3d(8)	2252000	838365	820706	68	440	62	1.43	80	5.00E-03	445	5.51E-03	440	62	1.30	72	1.00E-02	445	8.67E-03	5.70	3.14E-02	3.17E-03	10							
LS3d(9)	2252000	838372	820690	68	435	62	1.43	80	5.00E-03	439	5.71E-03	435	62	1.29	72	1.00E-02	440	8.98E-03	5.65	3.22E-02	3.20E-03	10							
LS3d(10)	2252000	838373	820683	68	434	62	1.43	80	5.00E-03	438	5.75E-03	434	62	1.29	72	1.00E-02	439	9.04E-03	5.63	3.24E-02	3.20E-03	10							
LS3d(11)	2252000	838375	820674	68	434	62	1.43	80	5.00E-03	438	5.75E-03	434	62	1.29	72	1.00E-02	438	9.05E-03	5.63	3.24E-02	3.20E-03	10							
LS3d(12)	2252000	838374	820666	68	436	62	1.43	80	5.00E-03	440	5.68E-03	436	62	1.29	72	1.00E-02	440	8.94E-03	5.65	3.21E-02	3.19E-03	10							
LS3d(13)	2252000	838373	820657	68	439	62	1.43	80	5.00E-03	443	5.57E-03	439	62	1.29	72	1.00E-02	443	8.76E-03	5.68	3.17E-02	3.18E-03	10							

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h)-2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (I \times \beta \times \cos^2 \Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries $\Phi = \arctan(d/2/h)-2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (I \times \beta \times \cos^2 \Phi) / d^2$	tan $\Phi$	Eeye = $E_h \times \tan \Phi$	Total Veiling Luminance from all luminaries $L_{vl} = \sum 10 (E_e / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\Theta = 90 - \Phi$									
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree																
		LS3d(14)	2252000	838370			820649	68						443	62								1.43	80	5.00E-03	448	5.40E-03	443	62	1.30	72
LS3d(15)	2252000	838365	820641	68	449	62	1.43	80	5.00E-03	453	5.20E-03	449	62	1.30	72	1.00E-02	454	8.19E-03	5.79	3.01E-02	3.14E-03	10									
LS3d(16)	2252000	838360	820635	68	456	62	1.44	80	5.00E-03	460	4.97E-03	456	62	1.30	73	1.00E-02	460	7.84E-03	5.86	2.92E-02	3.11E-03	10									
LS3d(17)	2252000	838353	820629	68	464	62	1.44	80	5.00E-03	468	4.73E-03	464	62	1.31	73	1.00E-02	468	7.46E-03	5.94	2.81E-02	3.08E-03	10									
LS3d(18)	2252000	838345	820625	68	472	62	1.44	81	0.00E+00	476	0.00E+00	472	62	1.31	73	1.00E-02	476	7.09E-03	6.03	0.00E+00	0.00E+00	9									
LS3d(19)	2252000	838337	820622	68	481	62	1.44	81	0.00E+00	484	0.00E+00	481	62	1.32	73	1.00E-02	485	6.74E-03	6.11	0.00E+00	0.00E+00	9									
LS3d(20)	2252000	838328	820620	68	490	62	1.45	81	0.00E+00	494	0.00E+00	490	62	1.32	74	1.00E-02	494	6.38E-03	6.20	0.00E+00	0.00E+00	9									
LS3d(21)	2252000	838320	820620	68	498	62	1.45	81	0.00E+00	502	0.00E+00	498	62	1.33	74	1.00E-02	502	6.06E-03	6.29	0.00E+00	0.00E+00	9									
LS3d(22)	2252000	838311	820620	68	507	62	1.45	81	0.00E+00	511	0.00E+00	507	62	1.33	74	1.00E-02	511	5.77E-03	6.37	0.00E+00	0.00E+00	9									
LS3d(23)	2252000	838302	820622	68	515	62	1.45	81	0.00E+00	519	0.00E+00	515	62	1.33	74	1.00E-02	519	5.51E-03	6.45	0.00E+00	0.00E+00	9									
LS3d(24)	2252000	838294	820624	68	523	62	1.45	81	0.00E+00	526	0.00E+00	523	62	1.34	75	1.00E-02	526	5.27E-03	6.53	0.00E+00	0.00E+00	9									
LS3d(25)	2252000	838286	820627	68	530	62	1.46	81	0.00E+00	534	0.00E+00	530	62	1.34	75	1.00E-02	534	5.07E-03	6.60	0.00E+00	0.00E+00	9									
LS3d(26)	2252000	838278	820632	68	537	62	1.46	81	5.00E-03	540	3.08E-03	537	62	1.34	75	1.00E-02	540	4.89E-03	6.66	2.05E-02	2.81E-03	9									
LS3d(27)	2252000	838268	820630	68	546	62	1.46	82	5.00E-03	550	2.92E-03	546	62	1.35	75	1.00E-02	550	4.64E-03	6.75	1.97E-02	2.78E-03	8									
LS3d(28)	2252000	838259	820639	68	554	62	1.46	82	5.00E-03	558	2.80E-03	554	62	1.35	75	1.00E-02	558	4.45E-03	6.83	1.91E-02	2.75E-03	8									
LS3d(29)	2252000	838242	820659	68	567	62	1.46	82	5.00E-03	570	2.61E-03	567	62	1.35	76	1.00E-02	570	4.16E-03	6.95	1.81E-02	2.71E-03	8									
LS3d(30)	2252000	838230	820682	68	577	62	1.46	82	5.00E-03	580	2.48E-03	577	62	1.36	76	1.00E-02	580	3.95E-03	7.04	1.75E-02	2.67E-03	8									
LS3d(31)	2252000	838221	820706	68	584	62	1.47	82	5.00E-03	588	2.39E-03	584	62	1.36	76	1.00E-02	588	3.81E-03	7.11	1.70E-02	2.65E-03	8									
LS3d(32)	2252000	838216	820731	68	588	62	1.47	82	5.00E-03	591	2.35E-03	588	62	1.36	76	1.00E-02	591	3.74E-03	7.14	1.68E-02	2.64E-03	8									
LS3d(33)	2252000	838220	820756	68	585	62	1.47	82	5.00E-03	588	2.38E-03	585	62	1.36	76	1.00E-02	588	3.79E-03	7.11	1.69E-02	2.65E-03	8									
LS3d(34)	2252000	838227	820781	68	579	62	1.46	82	5.00E-03	582	2.46E-03	579	62	1.36	76	1.00E-02	582	3.92E-03	7.06	1.74E-02	2.67E-03	8									
LS3d(35)	2252000	838238	820803	68	570	62	1.46	82	5.00E-03	574	2.57E-03	570	62	1.36	76	1.00E-02	574	4.09E-03	6.98	1.79E-02	2.69E-03	8									
sum										1.12E-01											sum	2.24E-01									
sum										1.12E-01											sum	2.24E-01									
Light Sources drawing are referred to Page 4 in Appendix 11G										LS4a	Light Sources Type	Approximate reflectance factor for wall surface	0.6											sum	0.00E+00	2					
sum										0.00E+00											sum	0.00E+00									
Light Sources drawing are referred to Page 4 in Appendix 11G										LS6a	Light Sources Type	Approximate reflectance factor for Concrete ground	0.4											sum	0.00E+00	2					
sum										0.00E+00											sum	0.00E+00									
LS6b(60)	6890	838551	820474	18	364	11.5	1.54	86	5.00E-03	364	5.74E-06	364	11.5	1.51	84	1.00E-02	366	7.19E-04	15.02	8.62E-05	5.94E-05	4									
LS6b(61)		838555	820458		373		1.54	86	5.00E-03	373	5.33E-06	373			373	1.51	84	1.00E-02	375	6.67E-04	15.20	8.10E-05	5.71E-05	4							
LS6b(62)		838560	820441		383		1.54	86	5.00E-03	383	4.93E-06	383			383	1.51	85	1.00E-02	384	6.18E-04	15.38	7.59E-05	5.48E-05	4							
LS6b(63)		838564	820425		393		1.54	86	5.00E-03	393	4.56E-06	393			393	1.51	85	1.00E-02	395	5.72E-04	15.57	7.10E-05	5.25E-05	4							
LS6b(64)		838567	820387		422		1.54	86	5.00E-03	422	3.69E-06	422			422	1.52	85	1.00E-02	423	4.63E-04	16.07	5.92E-05	4.67E-05	4							
LS6b(65)		838575	820375		427		1.54	86	5.00E-03	427	3.55E-06	427			427	1.52	85	1.00E-02	429	4.46E-04	16.16	5.74E-05	4.57E-05	4							
LS6b(66)		838548	820382		437		1.54	86	5.00E-03	437	3.33E-06	437			437	1.52	85	1.00E-02	438	4.18E-04	16.31	5.43E-05	4.41E-05	4							
LS6b(67)		838531	820377		451		1.55	87	5.00E-03	451	3.02E-06	451			451	1.52	85	1.00E-02	452	3.79E-04	16.54	4.99E-05	4.17E-05	3							
LS6b(68)		838560	820372		439		1.54	86	5.00E-03	439	3.28E-06	439			439	1.52	85	1.00E-02	440	4.12E-04	16.34	5.36E-05	4.37E-05	4							
LS6b(69)		838541	820367		453		1.55	87	5.00E-03	453	2.99E-06	453			453	1.52	85	1.00E-02	454	3.75E-04	16.56	4.94E-05	4.14E-05	3							
LS6b(70)		838525	820365		464		1.55	87	5.00E-03	464	2.77E-06	464			464	1.52	85	1.00E-02	466	3.48E-04	16.74	4.63E-05	3.96E-05	3							
LS6b(71)		838513	820358		477		1.55	87	5.00E-03	477	2.55E-06	477			477	1.52	85	1.00E-02	478	3.21E-04	16.93	4.32E-05	3.78E-05	3							
LS6b(72)		838502	820344		496		1.55	87	5.00E-03	496	2.28E-06	496			496	1.52	85	1.00E-02	497	2.86E-04	17.19	3.92E-05	3.53E-05	3							
LS6b(73)		838502	820361		482		1.55	87	5.00E-03	482	2.48E-06	482			482	1.52	85	1.00E-02	483	3.12E-04	16.99	4.22E-05	3.72E-05	3							
LS6b(74)		838501	820376		470		1.55	87	5.00E-03	470	2.66E-06	470			470	1.52	85	1.00E-02	471	3.35E-04	16.83	4.48E-05	3.88E-05	3							
LS6b(75)		838498	820393		460		1.55	87	5.00E-03	460	2.85E-06	460			460	1.52	85	1.00E-02	461	3.58E-04	16.67	4.75E-05	4.03E-05	3							
LS6b(76)		838493	820410		450		1.55	87	5.00E-03	451	3.03E-06	450			450	1.52	85	1.00E-02	452	3.81E-04	16.53	5.01E-05	4.18E-05	3							

Light Source ID.	Light source intensity I(cd)	Position of Light Source Coordinate			Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/h)-2$		Beam factor $\beta = 0.005$ for spill light	Distance D (m)	Horizontal plane illuminance (lux) $E_h = (r \times f \times \beta \times \cos\Phi) / d^2$	Horizontal Distance d (m)	Vertical Distance h (m)	Angle between vertical plane of observer's line of sight and the direction of the light incident from the individual luminaries from the individual luminaries $\Phi = \arctan(d/2/h)-2$		Beam factor $\beta = 0.01$ for deflection	Average Distance between GSRs and Light Source (m)	Horizontal plane illuminance (lux) $E_{hav} = (r \times f \times \beta \times \cos\Phi) / d^2$	tan $\Phi$	Eeye = $E_h \times \tan\Phi$	Total Veiling Luminance from all luminaries $L_{vl} = \sum 10 (E_{eye} / \theta^2)$	the angle between the observer's line of sight and the direction of the light incident from the individual luminaire $\theta = 90 - \Phi$
		X (m)	Y (m)	Z (mPD)			d/h	$\Phi$ Degree						d/2/h	$\Phi$ Degree							
LS6b(77)		838487	820426		443	1.54	87	5.00E-03	443	3.18E-06	443			1.52	85	1.00E-02	445	3.99E-04	16.42	5.22E-05	4.30E-05	3
LS6b(78)		838478	820442		439	1.54	86	5.00E-03	439	3.27E-06	439			1.52	85	1.00E-02	440	4.11E-04	16.35	5.35E-05	4.37E-05	4
LS6b(79)		838469	820456		437	1.54	86	5.00E-03	437	3.33E-06	437			1.52	85	1.00E-02	438	4.18E-04	16.31	5.43E-05	4.41E-05	4
LS6b(80)		838471	820475		423	1.54	86	5.00E-03	424	3.65E-06	423			1.52	85	1.00E-02	425	4.58E-04	16.09	5.87E-05	4.64E-05	4
LS6b(81)		838456	820472		437	1.54	86	5.00E-03	437	3.32E-06	437			1.52	85	1.00E-02	438	4.17E-04	16.31	5.42E-05	4.41E-05	4
LS6b(82)		838448	820487		434	1.54	86	5.00E-03	434	3.38E-06	434			1.52	85	1.00E-02	436	4.25E-04	16.27	5.50E-05	4.45E-05	4
LS6b(83)		838445	820504		427	1.54	86	5.00E-03	428	3.55E-06	427			1.52	85	1.00E-02	429	4.45E-04	16.16	5.73E-05	4.57E-05	4
LS6b(84)		838446	820521		417	1.54	86	5.00E-03	417	3.81E-06	417			1.52	85	1.00E-02	419	4.79E-04	15.99	6.10E-05	4.76E-05	4
LS6b(85)		838458	820538		399	1.54	86	5.00E-03	399	4.37E-06	399			1.51	85	1.00E-02	400	5.47E-04	15.67	6.84E-05	5.13E-05	4
LS6b(86)		838480	820276		563	1.55	87	5.00E-03	563	1.55E-06	563			1.53	86	1.00E-02	564	1.95E-04	18.05	2.80E-05	2.79E-05	3
LS6b(87)		838471	820264		577	1.55	87	5.00E-03	577	1.44E-06	577			1.53	86	1.00E-02	578	1.81E-04	18.22	2.62E-05	2.66E-05	3
									sum	9.39E-05						sum	1.18E-02					
Light Sources drawing are referred to Page 4 in Appendix 11G																						
		LS6d	Light Sources Type		SFC09	Approximate reflectance factor for Lawn						0.2										
LS6d (1)		838510	820534		357	1.52	85	5.00E-03	357	1.01E-04	357	19	1.52	85	1.00E-02	357	4.03E-05	11.50	1.16E-03	4.70E-04	5	
LS6d (2)		838429	820709		376	1.52	85	5.00E-03	377	8.61E-05	376	19	1.52	85	1.00E-02	377	3.44E-05	11.87	1.02E-03	4.41E-04	5	
LS6d (3)		838514	820520		362	1.52	85	5.00E-03	363	9.64E-05	362	19	1.52	85	1.00E-02	363	3.86E-05	11.61	1.12E-03	4.61E-04	5	
LS6d (4)		838436	820690		371	1.52	85	5.00E-03	372	8.96E-05	371	19	1.52	85	1.00E-02	372	3.59E-05	11.78	1.06E-03	4.48E-04	5	
LS6d (5)		838493	820530		373	1.52	85	5.00E-03	374	8.81E-05	373	19	1.52	85	1.00E-02	374	3.53E-05	11.81	1.04E-03	4.45E-04	5	
LS6d (6)		838493	820530		373	1.52	85	5.00E-03	374	8.81E-05	373	19	1.52	85	1.00E-02	374	3.53E-05	11.81	1.04E-03	4.45E-04	5	
LS6d (7)		838493	820530		373	1.52	85	5.00E-03	374	8.81E-05	373	19	1.52	85	1.00E-02	374	3.53E-05	11.81	1.04E-03	4.45E-04	5	
LS6d (8)	71000	838493	820530	25	373	1.52	85	5.00E-03	374	8.81E-05	373	19	1.52	85	1.00E-02	374	3.53E-05	11.81	1.04E-03	4.45E-04	5	
LS6d (9)		838497	820515		378	1.52	85	5.00E-03	379	8.46E-05	378	19	1.52	85	1.00E-02	379	3.38E-05	11.91	1.01E-03	4.37E-04	5	
LS6d (10)		838497	820515		378	1.52	85	5.00E-03	379	8.46E-05	378	19	1.52	85	1.00E-02	379	3.38E-05	11.91	1.01E-03	4.37E-04	5	
LS6d (11)		838497	820515		378	1.52	85	5.00E-03	379	8.46E-05	378	19	1.52	85	1.00E-02	379	3.38E-05	11.91	1.01E-03	4.37E-04	5	
LS6d (12)		838497	820515		378	1.57	88	5.00E-03	379	6.87E-06	378	19	1.52	85	1.00E-02	379	3.38E-05	25.71	1.77E-04	3.56E-04	2	
LS6d (13)		838476	820526		390	1.52	85	5.00E-03	390	7.74E-05	390	19	1.52	85	1.00E-02	390	3.10E-05	12.12	9.38E-04	4.21E-04	5	
LS6d (14)		838476	820526		390	1.52	85	5.00E-03	390	7.74E-05	390	19	1.52	85	1.00E-02	390	3.10E-05	12.12	9.38E-04	4.21E-04	5	
LS6d (15)		838480	820511		395	1.52	85	5.00E-03	395	7.46E-05	395	19	1.52	85	1.00E-02	395	2.98E-05	12.20	9.10E-04	4.15E-04	5	
LS6d (16)		838480	820511		395	1.52	85	5.00E-03	395	7.46E-05	395	19	1.52	85	1.00E-02	395	2.98E-05	12.20	9.10E-04	4.15E-04	5	
									sum	1.29E-03						sum	5.47E-04					
										1.38E-03							1.23E-02					
Light source LS7: Road Lighting																						
L6T	39306.3104	838792	820717	5	23	1.5	1.50	84	0.00E+00	23	0.00E+00	23	1.5	1.50	84	1.00E+00	23	5.08E+00	9.85	0.00E+00	0.00E+00	6
									sum	0.00E+00						sum	5.08E+00					
Light source LS8: Ancillary Building																						
L05R	300000	838082	820761	50	723	43.5	1.51	85	0.00E+00	724	0.00E+00	723	44	1.51	85	1.00E+00	724	3.43E-02	10.49	0.00E+00	0.00E+00	5
									sum	0.00E+00						sum	3.43E-02					
Total sum 1.14E-01 sum 5.37E+00 7.05E-01 9.46E-02																						

Ehav	Lvl	$L_{ve} = 0.035p E_{hav} / \pi$	Glare rating = $27 + 24 \log_{10} (L_{vl} / L_{ve})^{0.9}$
5.37E+00	9.46E-02	0.0479	31