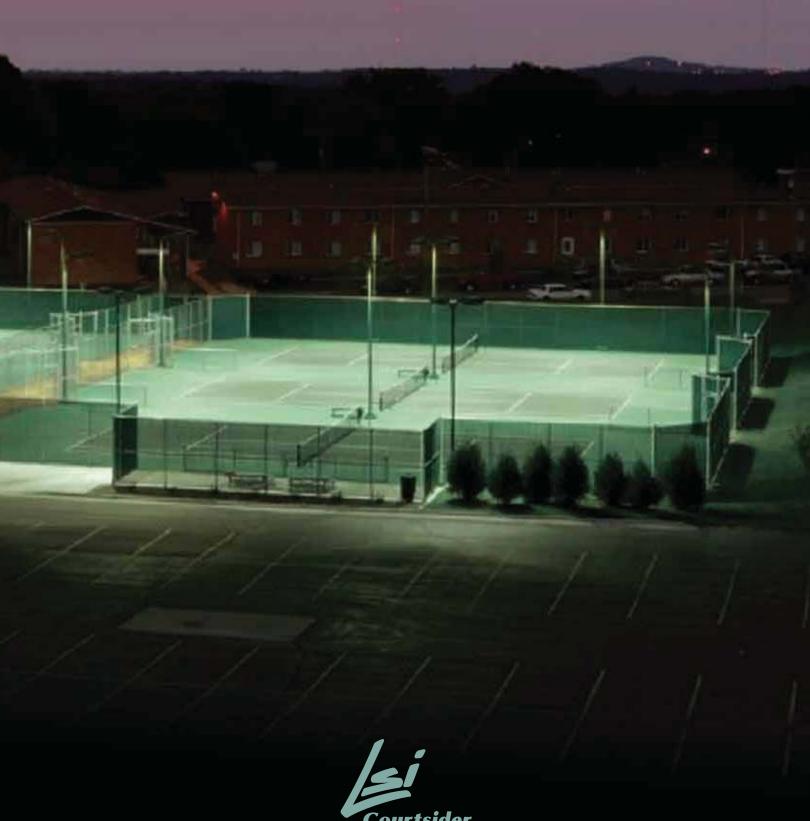


# Full Cutoff Sports Lighting Community-Friendly Illumination for Sports Facilities



Courtsider Sports Lighting™

## Full Cutoff, Community-Friendly Illumin



Nighttime lighting at outdoor recreational facilities poses special challenges for planners, developers and facility owners. The challenge is to provide sufficient illumination for players and fans, while at the same time reducing the impact the lighting may have on surrounding residents and the quality of their nighttime environment.

Full cutoff, community-friendly sports lighting provides brilliant illumination on the playing area, while also eliminating the three most common concerns associated with typical sports floodlighting systems:

#### **Glare**

The harsh brightness produced by floodlighting fixtures that can be seen from great distances (sometimes miles away).

#### **Light Trespass**

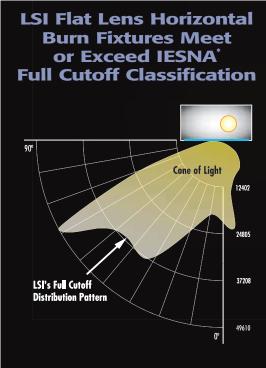
The uncontrolled illumination that spills past the sports facility boundaries and into neighborhoods.

#### Sky Glow

The illumination of the night sky caused by the upward component of the floodlight's beam.

## What is Full Cutoff Sports Lighting?

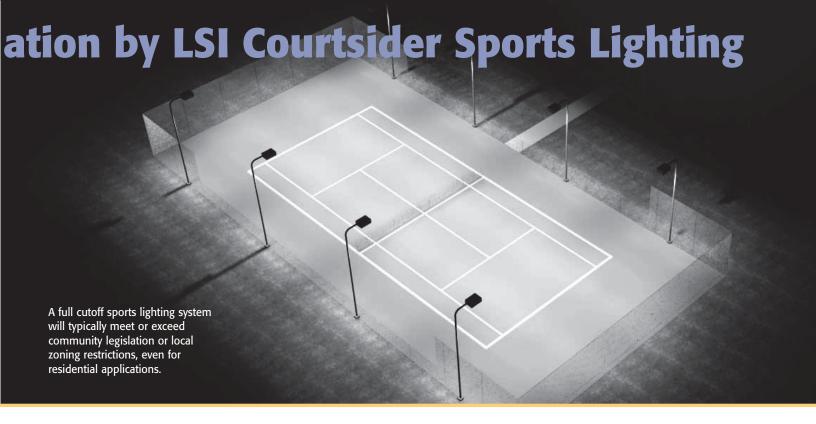
Full cutoff lighting, as defined by the Illuminating Engineering Society of North America (IESNA) is a lighting fixture that projects all of its light in a downward direction. Full cutoff lighting fixtures emit no upward component of light while providing precise, controlled illumination to the playing area.



To be considered full cutoff, the fixture must meet or exceed the IESNA full cutoff classification:

A light fixture with a light distribution where no candela (light) occurs at or above an angle of 90° above nadir. Additionally, the candela per 1000 lamp lumens does not numerically exceed 100 (10%) at a vertical angle 80° above nadir. This applies only to all lateral angles around the luminaire.

\* The Illuminating Engineering Society of North America (IESNA) is an organization dedicated to advancing knowledge and disseminating information for the improvement of the lighted environment to the benefit of society.



## **Full Cutoff Sports Lighting vs. Traditional Sports Floodlighting**

**Full Cutoff Sports Lighting** increases the level of useable light on the playing area while addressing light impact concerns such as glare reduction, light spillage and sky glow. Full cutoff lighting systems utilize a recessed lamp in a fixture housing that is parallel with the playing surface. This design increases playing area illumination, reduces glare and light spillage in surrounding areas and eliminates upward light and sky glow.

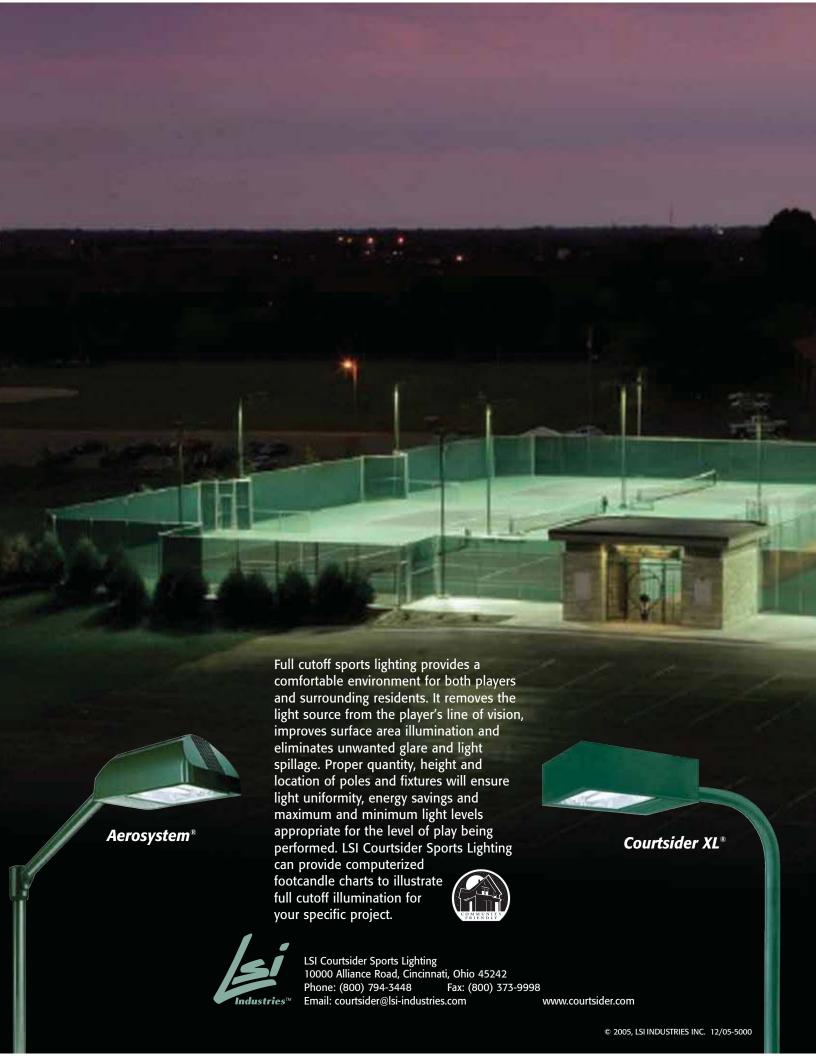
**Traditional floodlighting** is characterized by high levels of brightness (glare), uncontrolled illumination outside the boundaries of the facility (spill light), and a noticeable luminous haze above the playing area (sky glow). Visors, louvers and shields are often used to try to minimize the negative effects of floodlighting. These devices reduce fixture efficiency and have only limited ability to reduce glare, spillage and sky glow.



Full cutoff lighting produces more useable illumination.



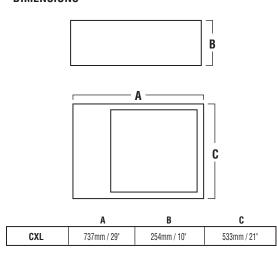
Floodlighting produces uncontrolled light.



#### **COURTSIDER® XL**



#### DIMENSIONS

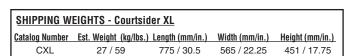


LUMINAIRE EPA* CHART - Courtsider XL			
CXL			
	Single	4.8	
	D180°	9.7	
<b>Z</b> _	D70°	8.0	
X	Q90°	16.4	

Note: House Side Shield adds to fixture EPA. Consult factory.
\*includes upsweep brackets

- HOUSING The housing is one-piece, formed aluminum, rectangular in shape with square corners. Corners are welded and finished to produce a clean, sharp appearance while increasing housing strength and ensuring weather-tight construction.
- DOOR FRAME Recessed aluminum door frame with two captive stainless steel fasteners to provide secure closure. The door frame features a one-piece continuous gasket for maximum sealing to the housing.
- **LENS / GASKET** The clear, flat, tempered glass lens is sealed to the door frame with EPDM gasketing.
- SOCKET Porcelain mogul-base socket with spring reinforced contacts. Sockets are pulse-rated.
- LIGHT SOURCES The 1000W Metal Halide lamp utilizes the standard clear BT-56 envelope. The 875W and 750W Pulse-Start Metal Halide lamps utilize the reduced clear BT-37 envelope.
- **BALLAST** High-power factor CWA type ballast. All ballasts are designed for -20°F (-29°C) operation, and are mounted to the housing reinforcing plate. Lamp ignitor included where required.

- REFLECTOR The high performance reflector consists of a combination of specular and hammertone aluminum. The reflector provides uniform Forward Throw (FT) distribution with sharp backlight cutoff. An integral lamp grip device is provided to insure proper lamp positioning. Photometric data is tested in accordance with IESNA guidelines.
- FINISHES Each fixture is finished with LSI's DuraGrip® Polyester powder finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling, and is guaranteed for five full years. Standard colors include black, green, bronze, platinum plus, metallic silver, buff, white, and graphite.
- MOUNTING HARDWARE The fixture is furnished with installed stainless steel, threaded mounting studs protruding from the rear of the housing. Stainless steel nuts and washers used to secure the fixture to the bracket are also included.







Project Name\_\_\_\_\_\_ Fixture Type \_\_\_\_\_\_ © 2011
Catalog #\_\_\_\_\_\_ LSI INDUSTRIES INC.

#### **COURTSIDER® XL**

#### LUMINAIRE ORDERING INFORMATION

**CXLS** FT 1000 MH F MT **BLK** TYPICAL ORDER EXAMPLE:



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Luminaire Prefix	Distribution	Lamp Wattage	Light Source	Lens	Line Voltage	Finish
CXLS	FT - Forward Throw 3 - Type III <sup>1</sup>	1000 875 750	MH – Metal Halide 1000 Watt PSMH – Pulse-Start Metal Halide 750, 875 Watt	F - Flat Clear Tempered Glass	MT - Multi-Tap <sup>2</sup> 480 220/240V 50HZ <sup>3</sup>	BLK - Black GRN - Green BRZ - Bronze PLP - Platinum Plus BUF - Buff WHT - White GPT - Graphite MSV - Metallic Silver

ACCESSORY ORDERING INFORMATION	(Accessories are field installed)
Description	Order Number
HSS - House Side Shield <sup>4</sup>	122521BLK+
+Black only	

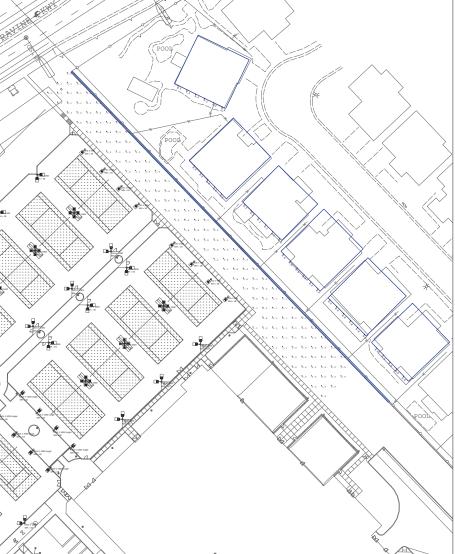


#### House Side Shield (HSS)

- 1 The Type III (3) reflector is supplied on fixtures for the Quad 90 assembly only
  2 MT Multi Tap consists of 120V, 208V, 240V and 277V and is prepared for highest voltage. Alternate voltages will require field adjustment.
- 3 For international applications where 50hz power is standard (e.g. Europe & Asia).4 Under normal use, the Courtsider XL fixture produces acceptable light cutoff. For highly sensitive applications, the optional external rear cutoff shield is available.

ELECTRI	ELECTRICAL REQUIREMENTS						
	1000W	875W	750W				
120V	9.2 amps	7.8 amps	6.8 amps				
208V	5.3 amps	4.5 amps	3.9 amps				
240V	4.6 amps	3.9 amps	3.4 amps				
277V	4 amps	3.4 amps	2.9 amps				
347V	3.1 amps	2.7 amps	2.3 amps				
480V	2.3 amps	2 amps	1.7 amps				





Luminaire Schedule							
Symbol	Qty	Label	Description	Lumens/Lamp	LLF	Lum. Watts	
	10	CXLS-3-1000	LSI CXLS-3-1000-MH-F	107800	0.722	1080	
\$	20	CXLS-1-1000	LSI CXLS-1-1000-MH-	107800	0.722	1080	
	24	CXLS-1-1000 single	LSI CXLS-1-1000-MH	107800	0.722	1080	
—•	8	CXL-1-HSS	LSI CXL FT 1000 MH MT F HSS	107800	0.817	1080	

Label         CalcType         Units         Avg         Max         Min         Avg/Min         Max/Min           Divider         Illuminance         Fc         0.49         3.6         0.0         N.A.         N.A.           House 2_Side_4_1         Illuminance         Fc         0.05         0.1         0.0         N.A.         N.A.           House 1_Side_4         Illuminance         Fc         0.00         0.1         0.1         1.00         1.00           House 4_Side_4         Illuminance         Fc         0.05         0.1         0.0         N.A.         N.A.           House 5_Side_3         Illuminance         Fc         0.00         0.0         0.0         N.A.         N.A.           House 5_Side_4         Illuminance         Fc         0.00         0.0         0.0         N.A.         N.A.           House 5_Side_3         Illuminance         Fc         0.00         0.0         0.0         N.A.         N.A.           House 5_Side_4         Illuminance         Fc         0.02         0.1         0.0         N.A.         N.A.           Tennis Court 10         Illuminance         Fc         48.62         73.0         39.3         1.24	Calculation Summary							
House 2_Side_4_1	Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
House 1_Side_4	Divider	Illuminance	Fc	0.49	3.6	0.0	N.A.	N.A.
House 3 Side_4	Houise 2_Side_4_1	Illuminance	Fc	0.05	0.1	0.0	N.A.	N.A.
House 4_Side_4         Illuminance         Fc         0.05         0.1         0.0         N.A.         N.A.           House 5_Side_3         Illuminance         Fc         0.00         0.0         0.0         N.A.         N.A.           House 6_Side_4         Illuminance         Fc         0.02         0.1         0.0         N.A.         N.A.           Tennis Court 1         Illuminance         Fc         48.62         73.0         39.3         1.24         1.86           Tennis Court 10         Illuminance         Fc         47.36         74.3         35.9         1.32         2.07           Tennis Court 11         Illuminance         Fc         49.13         75.2         40.2         1.22         1.87           Tennis Court 12         Illuminance         Fc         44.23         68.6         33.0         1.34         2.08           Tennis Court 13         Illuminance         Fc         44.58         73.6         32.8         1.36         2.24           Tennis Court 14         Illuminance         Fc         63.95         96.0         46.2         1.38         2.08           Tennis Court 2         Illuminance         Fc         48.06         67.3         32	House 1_Side_4	Illuminance	Fc	0.08	0.1	0.0	N.A.	N.A.
House 5_Side_3	House 3_Side_4	Illuminance	Fc	0.10	0.1	0.1	1.00	1.00
House 6 Side_4	House 4_Side_4	Illuminance	Fc	0.05	0.1	0.0	N.A.	N.A.
Tennis Court 1         Illuminance         Fc         48.62         73.0         39.3         1.24         1.86           Tennis Court 10         Illuminance         Fc         47.36         74.3         35.9         1.32         2.07           Tennis Court 11         Illuminance         Fc         49.13         75.2         40.2         1.22         1.87           Tennis Court 12         Illuminance         Fc         44.23         68.6         33.0         1.34         2.08           Tennis Court 13         Illuminance         Fc         44.58         73.6         32.8         1.36         2.24           Tennis Court 4         Illuminance         Fc         63.95         96.0         46.2         1.38         2.08           Tennis Court 2         Illuminance         Fc         43.60         67.3         32.4         1.35         2.08           Tennis Court 3         Illuminance         Fc         48.05         70.3         39.2         1.23         1.79           Tennis Court 4         Illuminance         Fc         47.92         69.7         38.6         1.24         1.81           Tennis Court 5         Illuminance         Fc         44.57         74.0	House 5_Side_3	Illuminance	Fc	0.00	0.0	0.0	N.A.	N.A.
Tennis Court 10         Illuminance         Fc         47.36         74.3         35.9         1.32         2.07           Tennis Court 11         Illuminance         Fc         49.13         75.2         40.2         1.22         1.87           Tennis Court 12         Illuminance         Fc         44.23         68.6         33.0         1.34         2.08           Tennis Court 13         Illuminance         Fc         44.58         73.6         32.8         1.36         2.24           Tennis Court 14         Illuminance         Fc         63.95         96.0         46.2         1.38         2.08           Tennis Court 2         Illuminance         Fc         43.60         67.3         32.4         1.35         2.08           Tennis Court 3         Illuminance         Fc         48.05         70.3         39.2         1.23         1.79           Tennis Court 4         Illuminance         Fc         44.18         69.5         32.8         1.35         2.12           Tennis Court 5         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 6         Illuminance         Fc         63.94         96.1	House 6_Side_4	Illuminance	Fc	0.02	0.1	0.0	N.A.	N.A.
Tennis Court 11         Illuminance         Fc         49.13         75.2         40.2         1.22         1.87           Tennis Court 12         Illuminance         Fc         44.23         68.6         33.0         1.34         2.08           Tennis Court 13         Illuminance         Fc         44.58         73.6         32.8         1.36         2.24           Tennis Court 14         Illuminance         Fc         63.95         96.0         46.2         1.38         2.08           Tennis Court 2         Illuminance         Fc         43.60         67.3         32.4         1.35         2.08           Tennis Court 3         Illuminance         Fc         48.05         70.3         39.2         1.23         1.79           Tennis Court 4         Illuminance         Fc         47.92         69.7         38.6         1.24         1.81           Tennis Court 5         Illuminance         Fc         44.18         69.5         32.8         1.35         2.12           Tennis Court 6         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 7         Illuminance         Fc         63.94         96.1	Tennis Court 1	Illuminance	Fc	48.62	73.0	39.3	1.24	1.86
Tennis Court 12         Illuminance         Fc         44.23         68.6         33.0         1.34         2.08           Tennis Court 13         Illuminance         Fc         44.58         73.6         32.8         1.36         2.24           Tennis Court 14         Illuminance         Fc         63.95         96.0         46.2         1.38         2.08           Tennis Court 2         Illuminance         Fc         43.60         67.3         32.4         1.35         2.08           Tennis Court 3         Illuminance         Fc         48.05         70.3         39.2         1.23         1.79           Tennis Court 4         Illuminance         Fc         47.92         69.7         38.6         1.24         1.81           Tennis Court 5         Illuminance         Fc         44.18         69.5         32.8         1.35         2.12           Tennis Court 6         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 7         Illuminance         Fc         63.94         96.1         46.7         1.37         2.06           Tennis Court 8         Illuminance         Fc         52.14         80.8	Tennis Court 10	Illuminance	Fc	47.36	74.3	35.9	1.32	2.07
Tennis Court 13         Illuminance         Fc         44.58         73.6         32.8         1.36         2.24           Tennis Court 14         Illuminance         Fc         63.95         96.0         46.2         1.38         2.08           Tennis Court 2         Illuminance         Fc         43.60         67.3         32.4         1.35         2.08           Tennis Court 3         Illuminance         Fc         48.05         70.3         39.2         1.23         1.79           Tennis Court 4         Illuminance         Fc         47.92         69.7         38.6         1.24         1.81           Tennis Court 5         Illuminance         Fc         44.18         69.5         32.8         1.35         2.12           Tennis Court 6         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 7         Illuminance         Fc         63.94         96.1         46.7         1.37         2.06           Tennis Court 8         Illuminance         Fc         52.14         80.8         38.6         1.35         2.09	Tennis Court 11	Illuminance	Fc	49.13	75.2	40.2	1.22	1.87
Tennis Court 14         Illuminance         Fc         63.95         96.0         46.2         1.38         2.08           Tennis Court 2         Illuminance         Fc         43.60         67.3         32.4         1.35         2.08           Tennis Court 3         Illuminance         Fc         48.05         70.3         39.2         1.23         1.79           Tennis Court 4         Illuminance         Fc         47.92         69.7         38.6         1.24         1.81           Tennis Court 5         Illuminance         Fc         44.18         69.5         32.8         1.35         2.12           Tennis Court 6         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 7         Illuminance         Fc         63.94         96.1         46.7         1.37         2.06           Tennis Court 8         Illuminance         Fc         52.14         80.8         38.6         1.35         2.09	Tennis Court 12	Illuminance	Fc	44.23	68.6	33.0	1.34	2.08
Tennis Court 2         Illuminance         Fc         43.60         67.3         32.4         1.35         2.08           Tennis Court 3         Illuminance         Fc         48.05         70.3         39.2         1.23         1.79           Tennis Court 4         Illuminance         Fc         47.92         69.7         38.6         1.24         1.81           Tennis Court 5         Illuminance         Fc         44.18         69.5         32.8         1.35         2.12           Tennis Court 6         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 7         Illuminance         Fc         63.94         96.1         46.7         1.37         2.06           Tennis Court 8         Illuminance         Fc         52.14         80.8         38.6         1.35         2.09	Tennis Court 13	Illuminance	Fc	44.58	73.6	32.8	1.36	2.24
Tennis Court 3         Illuminance         Fc         48.05         70.3         39.2         1.23         1.79           Tennis Court 4         Illuminance         Fc         47.92         69.7         38.6         1.24         1.81           Tennis Court 5         Illuminance         Fc         44.18         69.5         32.8         1.35         2.12           Tennis Court 6         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 7         Illuminance         Fc         63.94         96.1         46.7         1.37         2.06           Tennis Court 8         Illuminance         Fc         52.14         80.8         38.6         1.35         2.09	Tennis Court 14	Illuminance	Fc	63.95	96.0	46.2	1.38	2.08
Tennis Court 4         Illuminance         Fc         47.92         69.7         38.6         1.24         1.81           Tennis Court 5         Illuminance         Fc         44.18         69.5         32.8         1.35         2.12           Tennis Court 6         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 7         Illuminance         Fc         63.94         96.1         46.7         1.37         2.06           Tennis Court 8         Illuminance         Fc         52.14         80.8         38.6         1.35         2.09	Tennis Court 2	Illuminance	Fc	43.60	67.3	32.4	1.35	2.08
Tennis Court 5         Illuminance         Fc         44.18         69.5         32.8         1.35         2.12           Tennis Court 6         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 7         Illuminance         Fc         63.94         96.1         46.7         1.37         2.06           Tennis Court 8         Illuminance         Fc         52.14         80.8         38.6         1.35         2.09	Tennis Court 3	Illuminance	Fc	48.05	70.3	39.2	1.23	1.79
Tennis Court 6         Illuminance         Fc         44.57         74.0         32.9         1.35         2.25           Tennis Court 7         Illuminance         Fc         63.94         96.1         46.7         1.37         2.06           Tennis Court 8         Illuminance         Fc         52.14         80.8         38.6         1.35         2.09	Tennis Court 4	Illuminance	Fc	47.92	69.7	38.6	1.24	1.81
Tennis Court 7         Illuminance         Fc         63.94         96.1         46.7         1.37         2.06           Tennis Court 8         Illuminance         Fc         52.14         80.8         38.6         1.35         2.09	Tennis Court 5	Illuminance	Fc	44.18	69.5	32.8	1.35	2.12
Tennis Court 8 Illuminance Fc 52.14 80.8 38.6 1.35 2.09	Tennis Court 6	Illuminance	Fc	44.57	74.0	32.9	1.35	2.25
	Tennis Court 7	Illuminance	Fc	63.94	96.1	46.7	1.37	2.06
Tennis Court 9 Illuminance Fc 40.37 66.2 24.3 1.66 2.72	Tennis Court 8	Illuminance	Fc	52.14	80.8	38.6	1.35	2.09
	Tennis Court 9	Illuminance	Fc	40.37	66.2	24.3	1.66	2.72



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510-982-3900 2322 6th Street Berkeley, CA 94710

916-772-5800 1310 Blue Oaks Blvd Suite 400 Roseville, CA, 95678

Study

4.95

Lifetime Light Trespass St Sales Contact: Keith Roberts 916-772-5800 x 3226 keithr@ltgsys.com

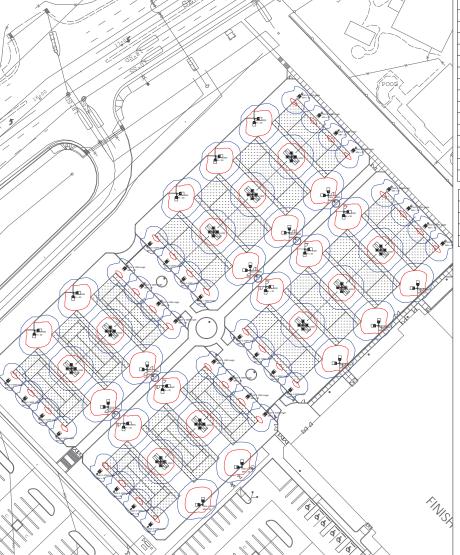
Date: 4/5/2013

Calc By: Robert Betsch Voice: (510) 982-3908 robertb@ltgsys.com

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This report attempts to approximate the maintained light levels and is based on the information provided to Lighting Systems. Please verify data to ensure accuracy of the report. Many factors that can affect field-measured lighting levels cannot be anticipated anticipated in the calculation and as such Lighting Systems cannot warranty lighting levels. The product labels/descriptions on this calculation are for photometric purposes only and may need to be revised for real world conditions.

Plan View



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Tennis Court 1	Illuminance	Fc	50.21	71.1	39.3	1.28	1.81
Tennis Court 10	Illuminance	Fc	48.97	72.0	38.2	1.28	1.88
Tennis Court 11	Illuminance	Fc	50.76	70.5	41.0	1.24	1.72
Tennis Court 12	Illuminance	Fc	45.97	66.9	38.4	1.20	1.74
Tennis Court 13	Illuminance	Fc	46.25	72.0	38.9	1.19	1.85
Tennis Court 14	Illuminance	Fc	56.17	76.0	46.8	1.20	1.62
Tennis Court 2	Illuminance	Fc	45.19	65.4	37.9	1.19	1.73
Tennis Court 3	Illuminance	Fc	49.86	67.0	39.9	1.25	1.68
Tennis Court 4	Illuminance	Fc	49.73	66.2	39.7	1.25	1.67
Tennis Court 5	Illuminance	Fc	45.91	67.5	38.4	1.20	1.76
Tennis Court 6	Illuminance	Fc	46.24	72.7	38.9	1.19	1.87
Tennis Court 7	Illuminance	Fc	56.03	77.5	46.8	1.20	1.66
Tennis Court 8	Illuminance	Fc	52.96	70.1	41.3	1.28	1.70
Tennis Court 9	Illuminance	Fc	41.99	63.7	29.4	1.43	2.17

Luminaire Sch	edule					
Symbol	Qty	Label	Description	Lumens/Lamp	LLF	Lum. Watts
+	10	CXLS-3-1000	LSI CXLS-3-1000-MH-F	107800	0.722	1080
\$	20	CXLS-1-1000	LSI CXLS-1-1000-MH-	107800	0.722	1080
1	32	CXLS-1-1000 single	LSI CXLS-1-1000-MH	107800	0.722	1080



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916-772-5800 1310 Blue Oaks Blvd Suite 400 Roseville, CA, 95678

**Tennis Courts** 

Date: 3/26/2013

Calc By: Robert Betsch Voice: (510) 982-3908 robertb@ltgsys.com

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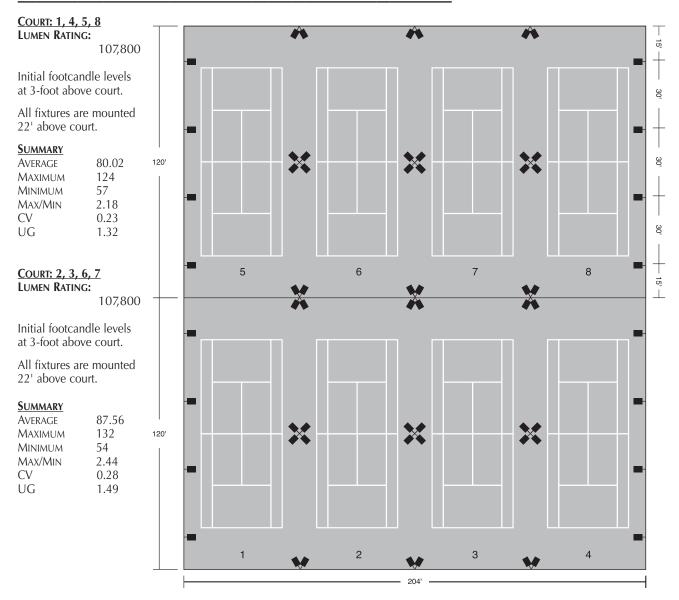
Sales Contact: Keith Roberts 916-772-5800 x 3226 keithr@ltgsys.com Lifetime

This report attempts to approximate the maintained light levels and is based on the information provided to Lighting Systems. Please verify data to ensure accuracy of the report. Many factors that can affect field-measured lighting levels cannot be anticipated anticipated in the calculation and as such Lighting Systems cannot warranty lighting levels. The product labels/descriptions on this calculation are for photometric purposes only and may need to be revised for real world conditions.

Plan View

#### NARROW EIGHT-COURT

### CLUB/TOURNAMENT PLAY 204' X 240'



## CLUB/TOURNAMENT PLAY 156' X 240'

#### COURT: 1, 3, 4, 6 RATING:

107,800

Initial footcandle levels at 3-foot above court.

All fixtures are mounted 22' above court.

#### **SUMMARY**

Average	79.0
Maximum	126
MINIMUM	54
Max/Min	2.33
CV	0.24
UG	1.39

#### COURT: 2, 5 LUMEN RATING:

107,800

Initial footcandle levels at 3-foot above court.

All fixtures are mounted 22' above court.

#### SUMMARY

Average	84.20
Maximum	129
MINIMUM	41
Max/Min	3.15
CV	0.32
UG	1.62

