

Recreational Sports Lighting Playbook

Lighting Applications

Consider **specific lighting tasks** to be performed plus considerations including **minimizing sky glow / light trespass / light pollution and spill light**, then choose distribution(s) and aim luminaires accordingly.

- Meeting **illumination and uniformity criteria** per ANSI/IES RP-6 Class IV Recreational Event.
- **Well-designed optics** put optimum illumination on playing surfaces and minimize or eliminate wasted spill light, including beyond the property line; **consideration for neighbors** is important.
- **Optics and luminaires specifically designed for Recreational Sports** improve lighting while avoiding unwanted features – saving time and money.
- **Visor shielding** helps minimize sky glow / uplight light trespass. **Standard visor always included** makes it worry-free, eliminating having to choose it as an option.
- **Proper aiming** is critical to optimize lighting on playing surfaces while minimizing or eliminating sky glow / light trespass / light pollution and spill light. Best-in-class luminaires enable **BOTH vertical AND horizontal aiming** while providing **aiming marks** and ability to **lock aiming in place**.
 - **Aiming laser** is a plus for more precise aiming per your application layouts.

Capitalize on **energy savings and related cost savings** by upgrading from HID to LED.

- Example – football (a.k.a. soccer): 1100W HID vs. 370W LED = 730W savings x 56 luminaires x \$0.130 CAD* = **\$5,314.40 CAD saved per field per kWhr**
- 36 luminaires x 5 hours a day x 4 days a week x 32 weeks annually x 0.512kW x \$0.130 CAD* = **\$1,533.54 CAD “typ. avg.” annual savings per field** [“avg.” 36 lum.s per field across multiple sports, 32 weeks = Mar-Sep, weighted avg. 512W energy savings GMFL-A01 to A03 vs. HID, \$0.130 CAD per kWhr commercial energy cost as of 6/23/2023 – [*reference this URL](#)]

Luminaire optics classified by recognized **NEMA distributions** (ex: 4x4) provide specific horizontal **AND** vertical field angle information helping you select the proper optics for your lighting tasks.

Luminaires with **numerous NEMA distribution options** enable mixing distributions, flexibility in design, and the ability to specify **one luminaire to meet all your Recreational Sports lighting needs**.

Consider the type of sports being played, whether strictly **ground versus aerial** – or a **combination** of both. Selecting the right optics and aiming properly are key for optimizing the playing experience for athletes as well as the viewing experience for fans.

- Ground sports may use shorter poles (ex: 6 meters or approx. 20 feet) while aerial sports may use taller poles (ex: 9 meters or approx. 30 feet). Taller poles often enable greater coverage of the playing area and adjacent areas as needed (depending upon optics used). As pole heights vary, consider luminaire lumen output and how aiming is set accordingly.

Recreational Sports Lighting Playbook

- Also consider whether the sports are **unidirectional** such as ski jumping, or **multi-directional** such as baseball and football (a.k.a. soccer). Multi-directional sports require viewing the playing object from multiple horizontal and vertical positions, so lighting must be aimed accordingly to optimize lighting the object while also minimizing or eliminating disability glare.

Specific sports considerations include:

- **Baseball and Softball**
 - Per RP-6: Since baseballs are typically white (light colored; likewise, softballs are often white or yellow), background luminance should be low to help reduce direct glare.
 - Remember that players will look up to track fly balls. Care must be taken regarding pole location and luminaire aiming to prevent direct glare, and to illuminate all sides of the ball while in flight; do NOT want to put the ball in shadow as it moves toward players – more difficult to find and track, can also result in temporarily losing sight of the ball.
 - *NOTE: For poles installed on the side of the outfield along the foul lines, special care must be taken to ensure luminaires are NOT aimed at players causing disability glare. Consider adding supplemental lower lumen output floodlights mounted lower on the pole aimed up to help illuminate the ball while in flight.*
- **Basketball**
 - Recommend **four poles** (two poles per side) to illuminate courts **AND** backboards **more evenly** from both sides; also tends to **improve uniformity**.
- **Football (a.k.a. Soccer)**
 - When necessary, consider a **mix of distributions to improve illumination levels** versus increasing lumen output / wattage; may also **improve uniformity**.
- **Tennis**
 - Per RP-6: Since tennis balls are typically yellow (light colored), background luminance should be low to help reduce direct glare.
 - Pole locations are typically selected to provide uniform lighting on the entire court while accenting the net area.
 - Recommend **six poles** (three poles per side) to provide **lighting on all sides of the ball** throughout the entire length of the playing area; also tends to **improve uniformity**.
 - *NOTE: Four poles (two per side) can be used to save money, but it may be more difficult to provide as high a light level at the net and on the back court. Uniformity may also be worse, and aiming can tend to be more at players causing disability glare.*
 - *NOTE: When it is not possible to install poles at the court centerline (ex: with multi-court layouts where there is consideration for player safety concerns), recommended to increase pole heights to alleviate this disability glare concern.*

Recreational Sports Lighting Playbook

- **American Football**
 - Recommend **six poles** (three poles per side) to balance costs and installation considerations. Six poles versus four poles typically means shorter poles – lower cost – and shorter aiming points – lower lumen output / wattage required to throw a shorter distance; also tends to **improve uniformity**.
 - Uniformity or aiming advantages that could occur when going to eight poles can be overshadowed by the additional costs for mounting equipment, luminaires, electrical service to the poles, and labor

Recreational Sports Lighting Playbook

Luminaires

Consider **ease of installation** when replacing existing HID or LED luminaires with new LED luminaires.

- Standard Yoke mounting makes retrofitting simple and quick
- Yoke to tenon mounting adapter accessory (YTA) expands installation capabilities

Outdoor luminaires must have **required ratings** including:

- Underwriters Laboratories (cULus) Wet Location
- Ingress Protection rated IP66 in all aiming positions
- Wide operating temperature range
- Normal vibration rating
- Withstands wind gusts up to 160.9 km per hour (100 mph)
- **Luminaire Useful Life** accounting for a wide array of considerations over the extended life of the product including and in addition to LED lumen maintenance

Outdoor luminaires must also be **designed and built to exacting quality and durability standards** to withstand harsh outdoor environments, including:

- Low copper aluminum housing for low resistance to corrosion, structural steel mounting Yoke
- Chromate conversion polyester powdercoat finish that further protects against corrosion
- Integral cast heatsink fins = optimum thermal transfer, passive cooling – no moving parts to fail
- Gaskets around entire perimeter of lenses and enclosed compartments for optimum IP66 seal
- IP66 liquid tight cord seal where power cord exits luminaire
- Extra-hard usage severe service power cord ('S' designation) with oil-resistant ('O' designation) plus weather and water resistant rated for outdoor use ('W' designation) outer jacket
- Tier 1 LEDs, drivers, surge protectors
- Luminaires assembled in compliance with applicable standards to eliminate ESD events
- Drivers with built-in protection from short circuits, voltage overload and current overload – automatic recovery after correction
- 10kV/10kA surge protector standard, 20kV/10kA optional for extra protection
- UV stabilized optical grade polymer refractor lenses

Recreational Sports Lighting Playbook

Inspiration

The following Recreational Sports example application layouts are provided to inspire you with examples of how GMFL GameFlood LED floodlights can be used to promote an enhanced experience via optimal lighting for ANSI/IES RP-6 Class IV Recreational Event spaces, such as:

- K-12 schools
- Collegiate training facilities
- Municipal parks
- Amateur league venues

For help with your specific Recreational Sports lighting needs, contact your local Stonco Keene Sales Representative.

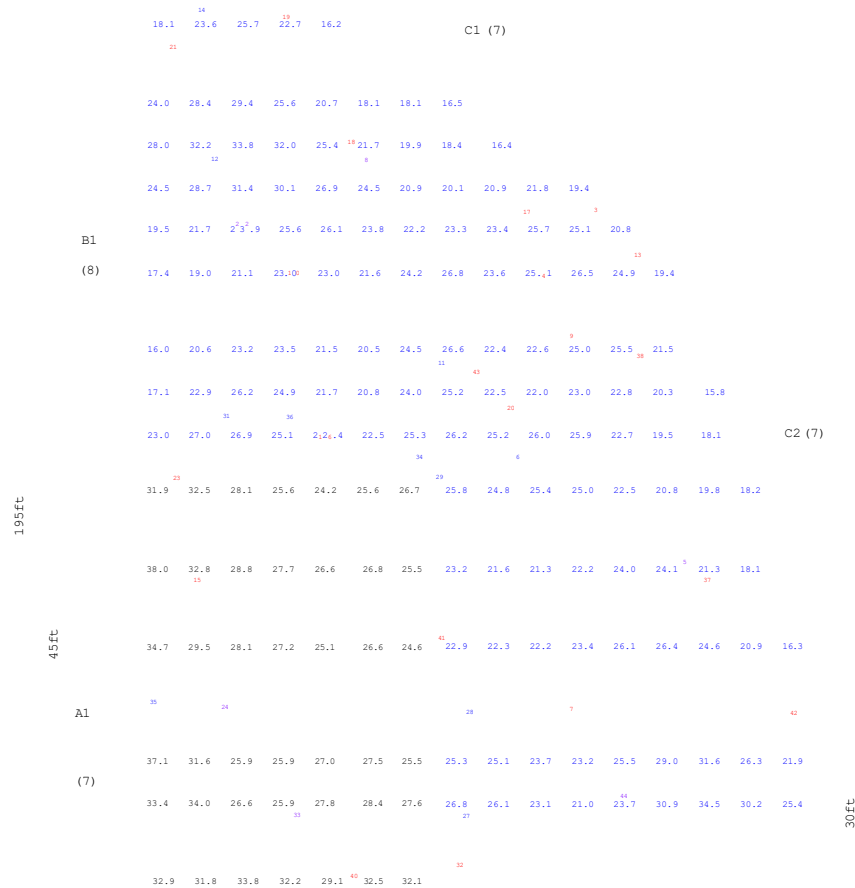


Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Lum. Lumens	LLF	Description	Lum. Watts	Total Watts	LER
	14	GMFL-A02-740-3X3	Single	81466	0.850	GameFlood 4000K, NEMA 3x3	500	7000	163
	24	GMFL-A02-740-4X4	Single	81249	0.850	GameFlood 4000K, NEMA 4x4	500	12000	162
	6	GMFL-A03-740-6X6	Single	100096	0.850	GameFlood 4000K, NEMA 6x6	630	3780	159

INFIELD POLE FIXTURES ARE SHOWN MOUNTED AT 60 FEET AFG AND OUTFIELD FIXTURES ARE SHOWN AT 70 FEET AFG

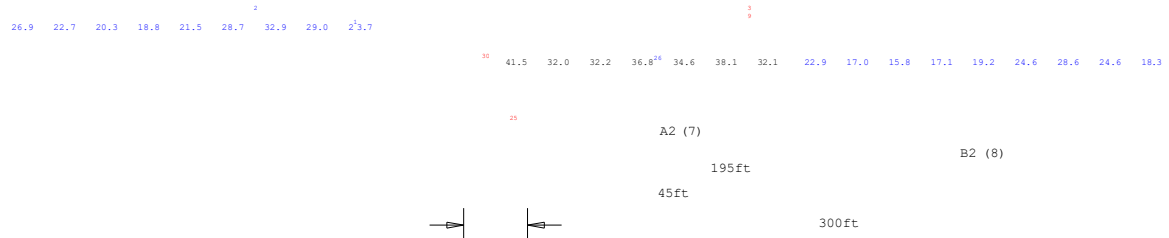
Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Infield FC at 3ft AFG	Illuminance	Fc	30.05	41.5	24.2	1.24	1.71
Outfield FC at 3ft AFG	Illuminance	Fc	23.43	34.5	15.8	1.48	2.18

ALL VALUES SHOWN ARE HORIZONTAL MAINTAINED FOOTCANDLES AT 3 FEET ABOVE FINISHED GRADE
 RF-6 TARGETS FOR OUTDOOR BASEBALL - CLASS IV ARE:
 INFIELD = 30FC AVG AND 2.5:1 MAX-TO-MIN,
 OUTFIELD = 20FC AVG AND 3.0:1 MAX-TO-MIN

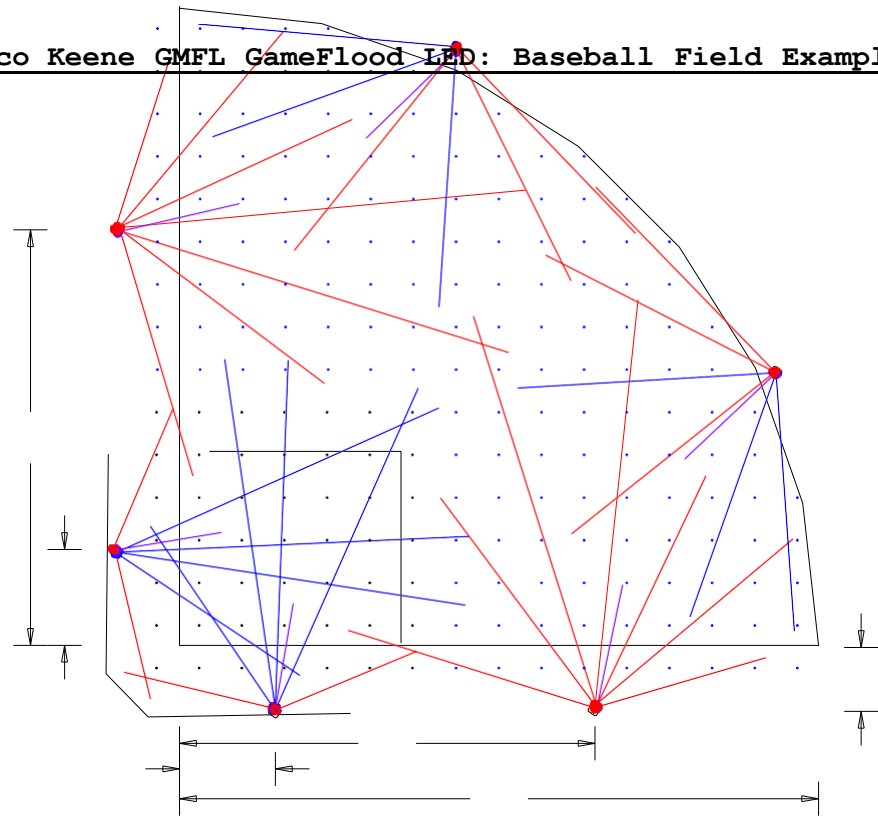


Copyright 2024 Signify Holding. All rights reserved. The information provided herein is subject to change, without notice. Signify does not give any representation or warranty as to the accuracy or completeness of the information included herein and shall not be liable for any action in reliance thereon. The information presented in this document is not intended as any commercial offer and does not form part of any quotation or contract, unless otherwise agreed by Signify.

Example application layout for illustration purposes only. Your specific application performance may vary.



Stonco Keene GMFL GameFlood LED: Baseball Field Example Layout



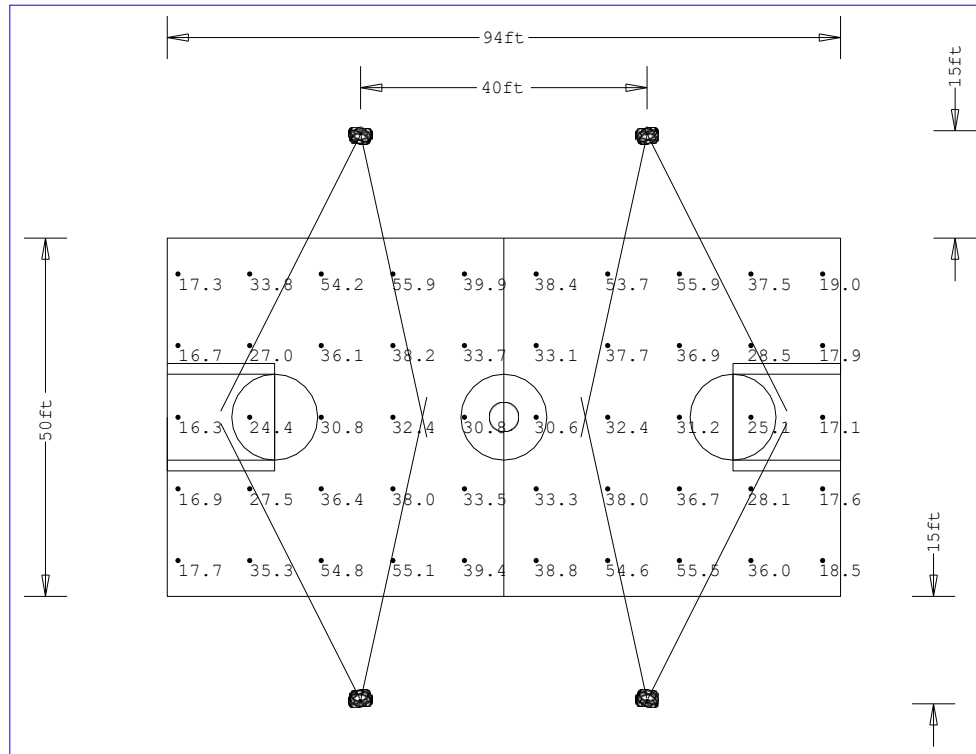


Luminaire Schedule										
Project: Recreational Soccer Field LED Lighting										
Symbol	Qty	Label	Arrangement	Lum. Lumens	LLF	Description	Lum. Watts	Total Watts	LER	
☉	8	GMFL-A01-740-6x6	Single	61176	0.850	GameFlood 4000K, NEMA 6x6	370.5	2964	165	

ALL FIXTURES ARE SHOWN AT 25 FEET ABOVE FINISHED GRADE

Calculation Summary									
Project: Recreational Soccer Field LED Lighting									
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min		
Court Area FC at 3ft AFG	Illuminance	Fc	33.88	55.9	16.3	2.08	3.43		

ALL VALUES SHOWN ARE HORIZONTAL MAINTAINED FOOTCANDLES AT 3 FEET ABOVE FINISHED GRADE
 RP-6 LIGHT LEVEL TARGETS FOR OUTDOOR BASKETBALL - CLASS IV ARE 20FC AVERAGE AND 4:1 MAXIMUM-TO-MINIMUM



Stonco Keene GMFL GameFlood LED: Basketball Court Example Layout

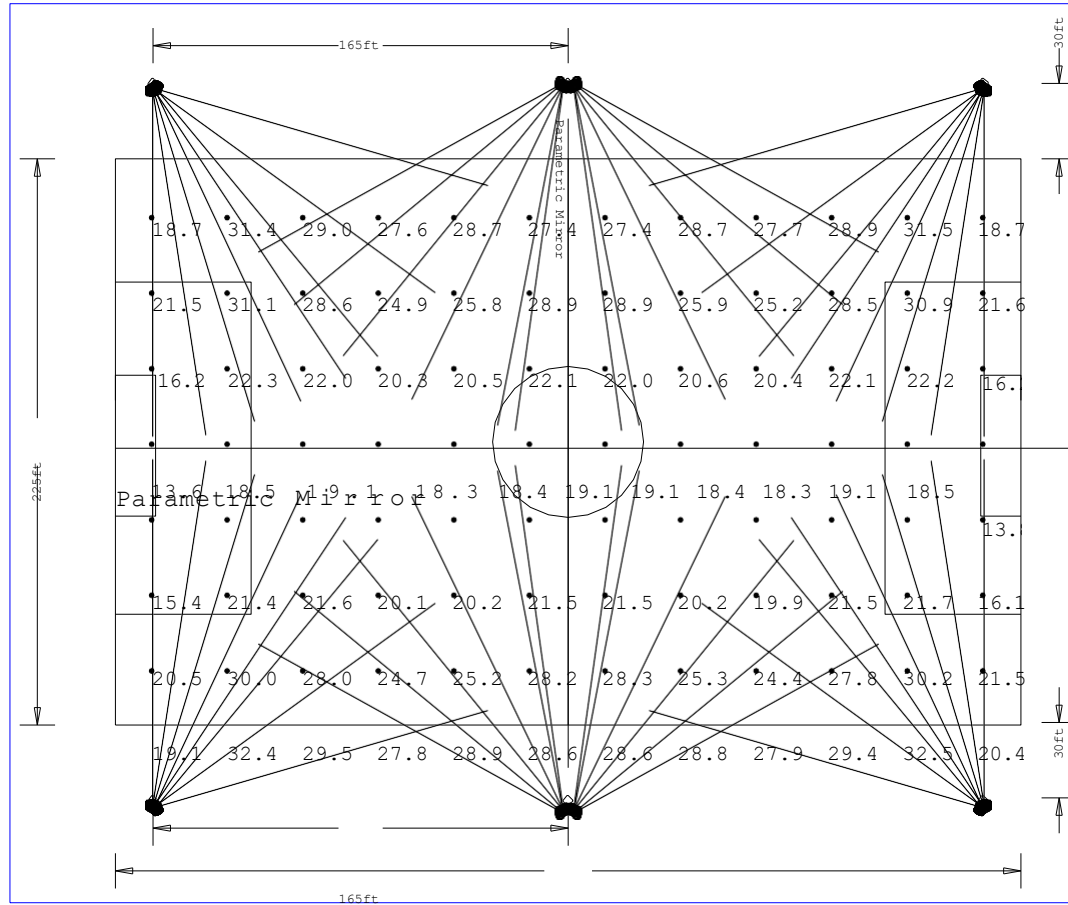


Luminaire Schedule									
Project: Recreational Soccer Field LED Lighting									
Symbol	Qty	Label	Arrangement	Lum. Lumens	LLF	Description	Lum. Watts	Total Watts	LER
☉	56	GMFL-A01-740-4x4	Single	61242	0.850	GameFlood 4000K, NEMA 4x4	369.7	20703.201	165

ALL FIXTURES ARE SHOWN AT 50 FEET ABOVE FINISHED GRADE

Calculation Summary								
Project: Recreational Soccer Field LED Lighting								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	
Soccer Field FC at 3ft AFG	Illuminance	Fc	23.78	32.3	13.6	1.75	2.39	

ALL VALUES SHOWN ARE HORIZONTAL MAINTAINED FOOTCANDLES AT 3 FEET ABOVE FINISHED GRADE
 RP-6 LIGHT LEVEL TARGETS FOR OUTDOOR FOOTBALL (SOCCER) - CLASS IV ARE 20FC AVERAGE AND 3:1 MAXIMUM-TO-MINIMUM



Stonco Keene GMFL GameFlood LED: Football (a.k.a. Soccer) Field Example Layout

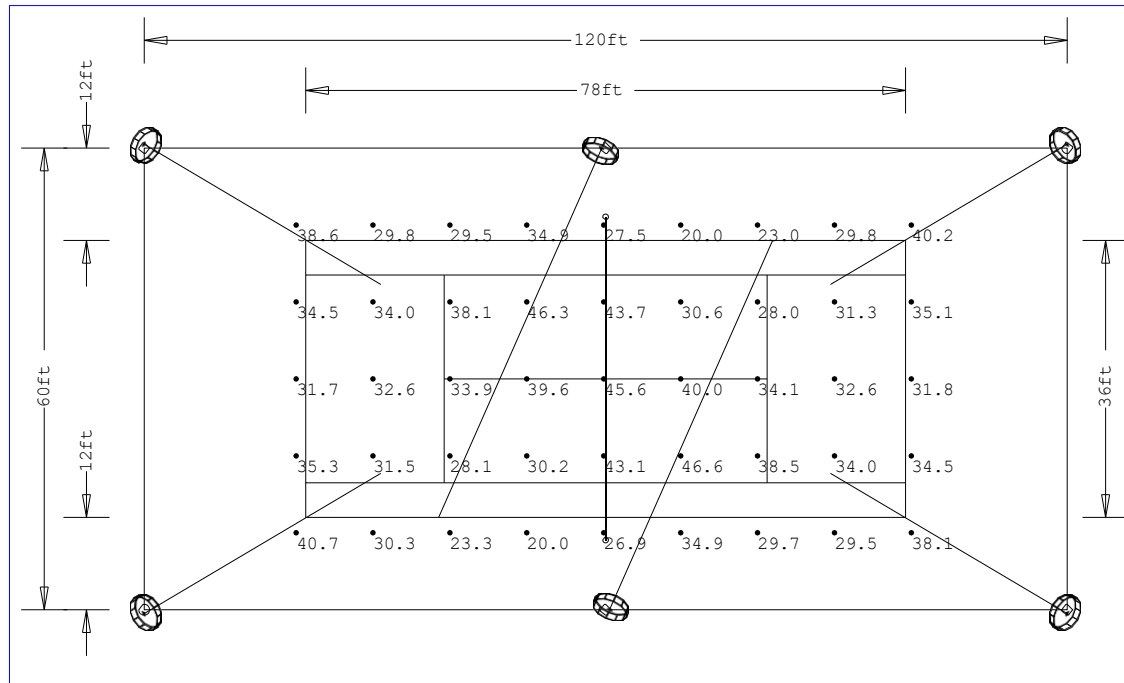


Luminaire Schedule									
Project: Tennis Court LED Lighting									
Symbol	Qty	Label	Arrangement	Lum. Lumens	LLF	Description	Lum. Watts	Total Watts	LER
☉	6	GMFL-A01-740-5x5	Single	62877	0.850	GameFlood 4000K, NEMA 5x5	370.2	2221.2	170

ALL FIXTURES ARE SHOWN MOUNTED AT 30 FEET ABOVE FINISHED GRADE

Calculation Summary							
Project: Tennis Court LED Lighting							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Tennic Court FC at 3ft AFG	Illuminance	Fc	33.60	46.6	20.0	1.68	2.33

ALL VALUES SHOWN ARE HORIZONTAL MAINTAINED FOOTCANDLES AT 3 FEET ABOVE FINISHED GRADE
 RP-6 LIGHT LEVEL TARGETS FOR OUTDOOR TENNIS - CLASS IV ARE 30FC AVERAGE AND 2.5:1 MAXIMUM-TO-MINIMUM



Stonco Keene GMFL GameFlood LED: Tennis Court Example Layout

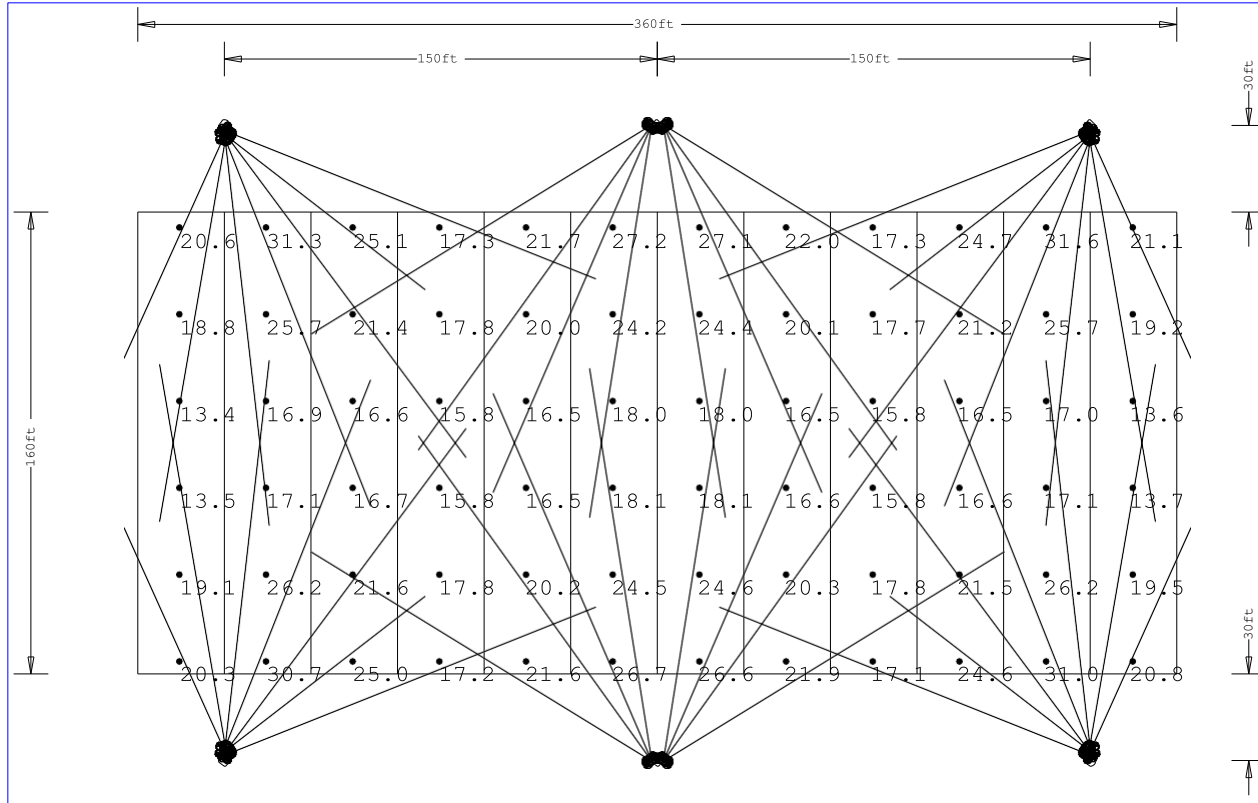


Luminaire Schedule									
Project: Recreational Soccer Field LED Lighting									
Symbol	Qty	Label	Arrangement	Lum. Lumens	LLF	Description	Lum. Watts	Total Watts	LER
☉	44	GMFL-A01-740-5x5	Single	62877	0.850	GameFlood 4000K, NEMA 5x5	370.2	16288.801	170

ALL FIXTURES ARE SHOWN AT 50 FEET ABOVE FINISHED GRADE

Calculation Summary						
Project: Recreational Soccer Field LED Lighting						
Label	CalcType	Units	Avg	Max	Min	Max/Min
Soccer Field FC at 3ft AFG	Illuminance	Fc	20.50	31.6	13.4	2.36

ALL VALUES SHOWN ARE HORIZONTAL MAINTAINED FOOTCANDLES AT 3 FEET ABOVE FINISHED GRADE
 RP-6 LIGHT LEVEL TARGETS FOR OUTDOOR FOOTBALL - CLASS IV ARE 20FC AVERAGE AND 3:1 MAXIMUM-TO-MINIMUM



Stonco Keene GMFL GameFlood LED: American Football Field Example Layout