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High-Performance Lighting Solutions

Lighting Specialist I (Certified LS1)

Access Fixtures

800-468-9925

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To,

I’m writing this to explain the technical data presented in this photometric analysis to those who I’m not able to speak with directly.

Key Points

- A photometric analysis provides a multidimensional simulation of a lighting design engineered to accomplish a application specific outcome, in this case, Recreational Pickleball and Volleyball Court that meets sporting standards. The criteria for each photometric varies by sport, application, municipal code, safety standard, structural restrictions, and personal preferences. We use Illuminating Engineering Society (IES) standards as well as specialist expertise when engineering lighting plans.

- Each sport has different lighting requirements with regard to footcandles, max/min ratio, and the location, height and angle of the fixtures.

- Important Sports Factors

- Footcandles:

Simply put, this is a unit of measurement for the amount of light projected onto a specific surface. More footcandles are required for fast moving sports with small balls such as hockey, tennis, and pickleball because it is more difficult to see the object in motion. Fewer footcandles are required for sports with large and/or slower moving balls such as basketball and bocce ball because it is easier to see the moving object.

- Max/Min:

A measure of how evenly the light is distributed on a specific surface. Lower max/min ratios are required for fast moving sports with small objects. If you have a high max/min ratio with “poor” lighting in one zone and “good” lighting in the other, when the ball is in motion you could lose sight of it when turning your head. Alternatively, if you had “good” light in one zone and “great” light in another, you would *still* lose track of the ball when trackng from zone to zone. *The reason for this is because, regardless of how many footcandles of light there are, if there is a contrast between two areas, your pupils will dilate and you can lose sight of your target.*

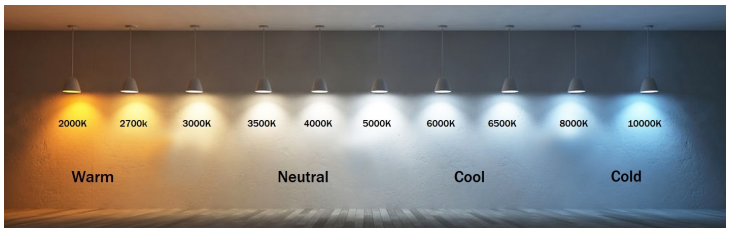
- Pole and fixture height, location and angles:

These factors vary based on the direction the light needs to be projected toward or restricted from as well as the game style, player body mechanics, and glare that may interfere with a players ability to perform. *If a sport requires that a player look upward, directly into the lighting fixture, they will experience discomfort due to glare and will be unable to play properly if light is not diffused.*

- Lighting Factors

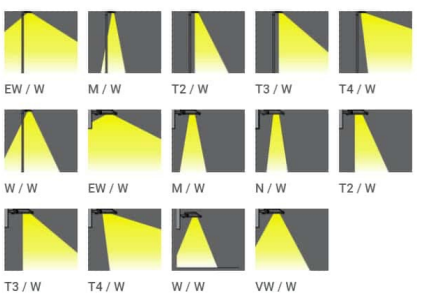
- Kelvin:

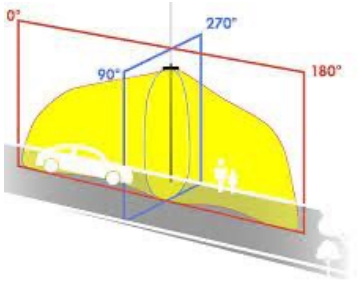
This is a measure of the color “warmth”. Most applications use between 3000k-5000k.

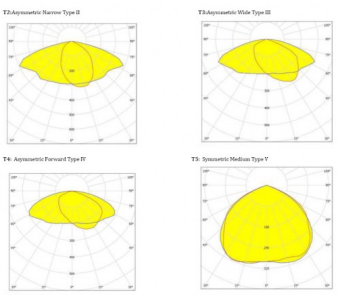


- Optics:

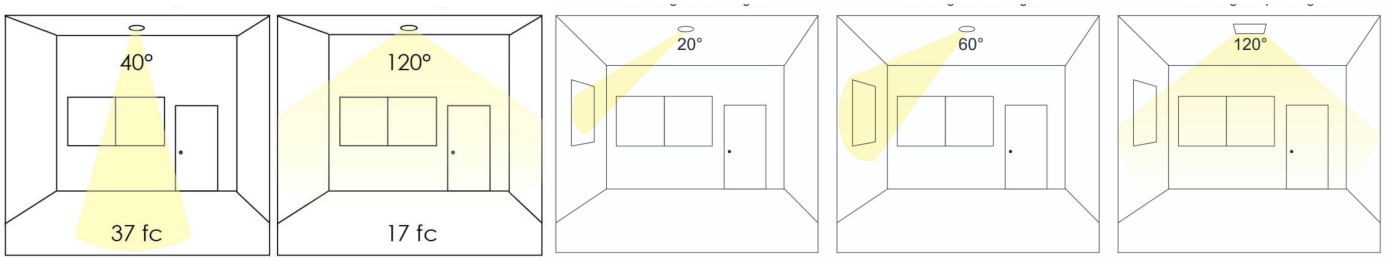
There are many types of optics that project light in unimaginable ways. Sometimes its spherical, other times it’s tubular, other times it is oblong. Furthermore, optics dictate the directions in which light is cast to ensure it’s hitting the correct areas efficiently and without excessive light trespass.







Footcandle Factors: Distance from light source, angle, optics, wattage, and kelvin.



This shows how optics change the number of footcandles on the floor. It also shows how optics affect light distribution.
You needed specialized optics to achieve the fc and Max/Min ratio presented in this photometric study.

Summary and Reccomendation

We ran numerous series of photometric scenarios to maximize efficiency, minimize cost, and reduce labor. This is my recommendation and is seen in this PDF.

Why do I reccomend _____?

All parts and materials are included (anchor bolts, poles, 2 3/8” tenon, slipfitter mount, and fixtures with their options)

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Table of contents

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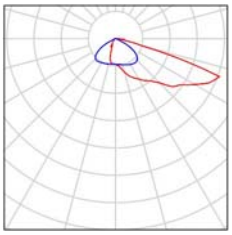
Pickelball single court / Luminaire parts list

2 Pieces	AF88X PAD480-T4VS-40K-3535F-V2-BLS Article No.: Luminous flux (Luminaire): 50563 lm Luminous flux (Lamps): 50514 lm Luminaire Wattage: 461.8 W Luminaire classification according to CIE: 100 CIE flux code: 32 68 95 100 100 Fitting: 1 x 4000K 3535F-V2 (Correction Factor 1.000).	See our luminaire catalog for an image of the luminaire.	

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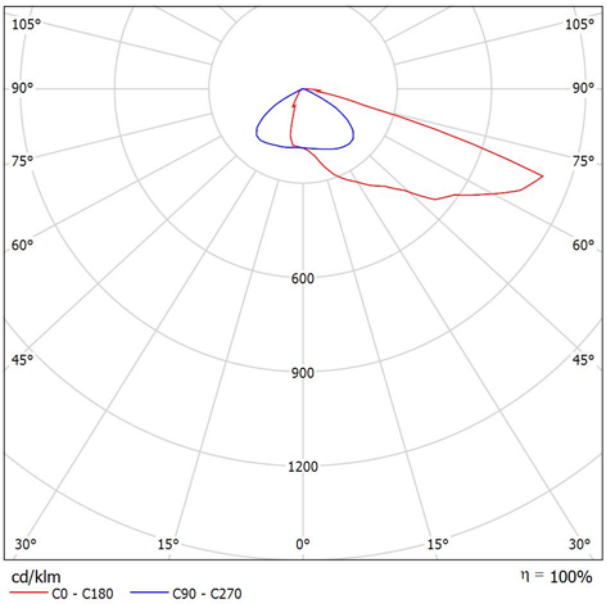
AF88X PAD480-T4VS-40K-3535F-V2-BLS / Luminaire Data Sheet

See our luminaire catalog for an image of the luminaire.

Luminous emittance 1:



Luminaire classification according to CIE: 100
CIE flux code: 32 68 95 100 100

Due to missing symmetry properties, no UGR table can be displayed for this luminaire.

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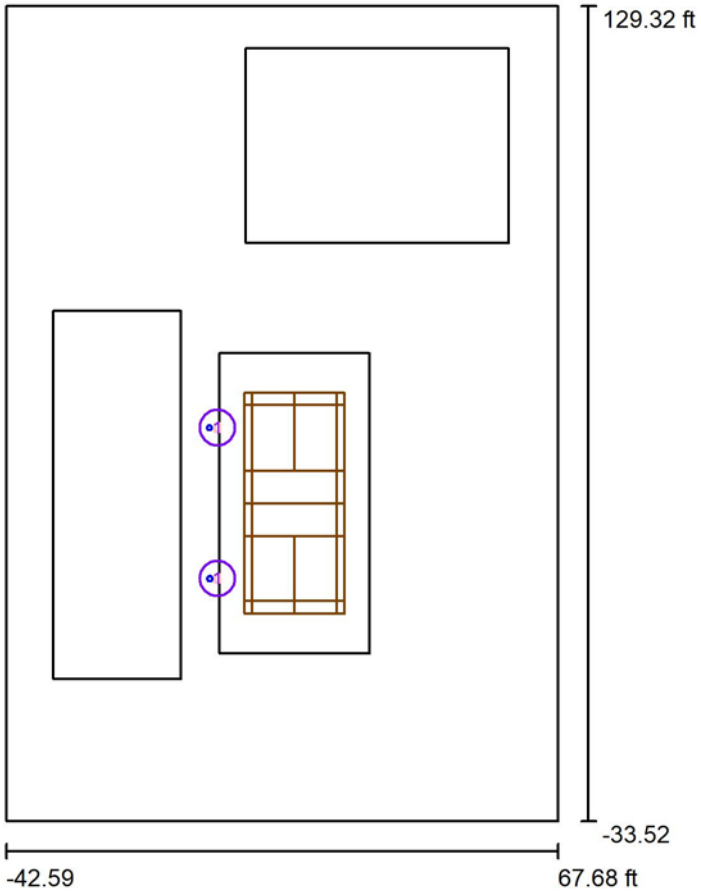
Exterior Scene 1 / Planning data



Maintenance factor: 0.90, ULR (Upward Light Ratio): 0.0%

Scale 1:461

Luminaire Parts List

No.	Pieces	Designation (Correction Factor)	Φ (Luminaire) [lm]	Φ (Lamps) [lm]	P [W]
1	2	AF88X PAD480-T4VS-40K-3535F-V2-BLS (1.000)	50563	50514	461.8
			Total: 101127	Total: 101029	923.6

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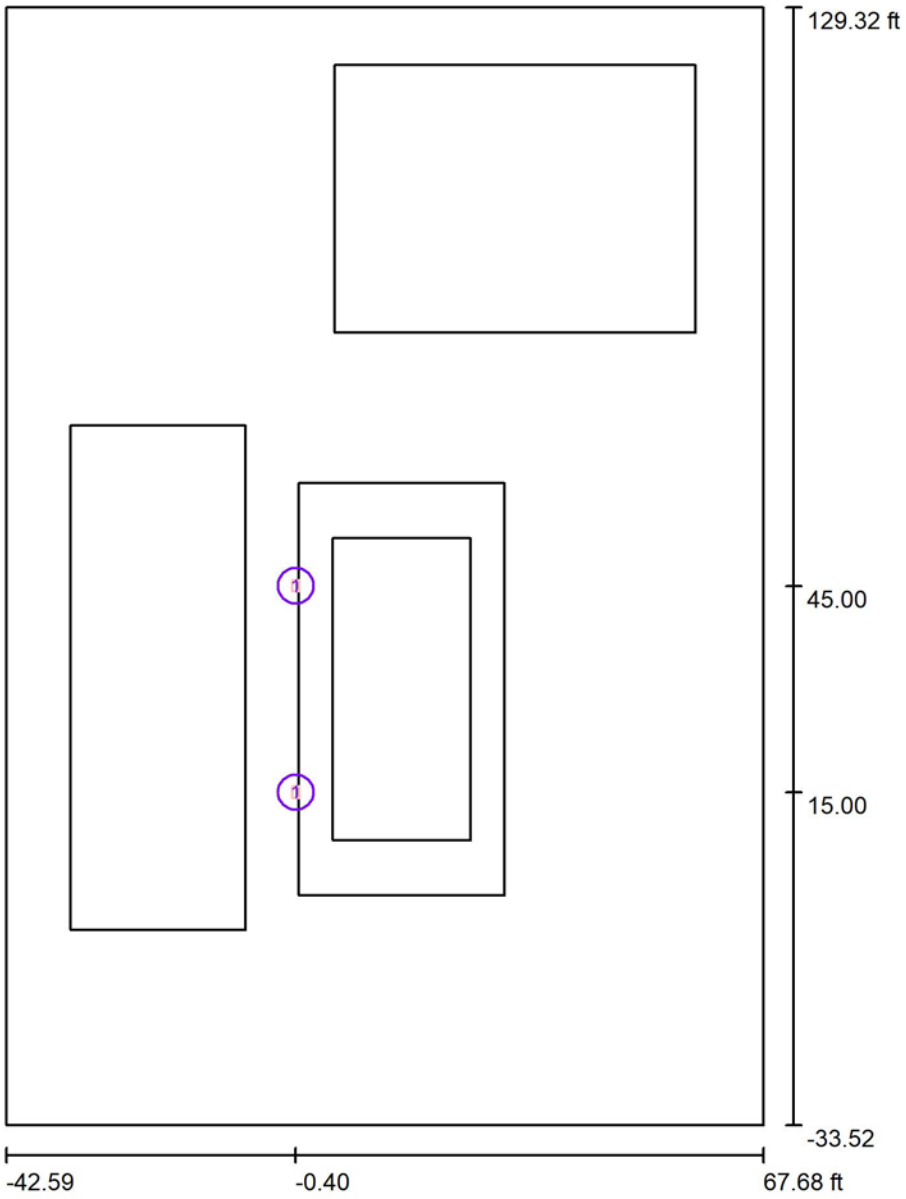
Exterior Scene 1 / Luminaires (layout plan)



Scale 1 : 336

Luminaire Parts List

No.	Pieces	Designation
1	2	AF88X PAD480-T4VS-40K-3535F-V2-BLS

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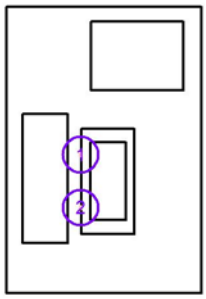
Exterior Scene 1 / Luminaires (coordinates list)

AF88X PAD480-T4VS-40K-3535F-V2-BLS

50563 lm, 461.8 W, 1 x 1 x 4000K 3535F-V2 (Correction Factor 1.000).



No.	Position [ft]			Rotation [°]		
	X	Y	Z	X	Y	Z
1	-0.400	45.000	17.000	0.0	0.0	0.0
2	-0.400	15.000	17.000	0.0	0.0	0.0

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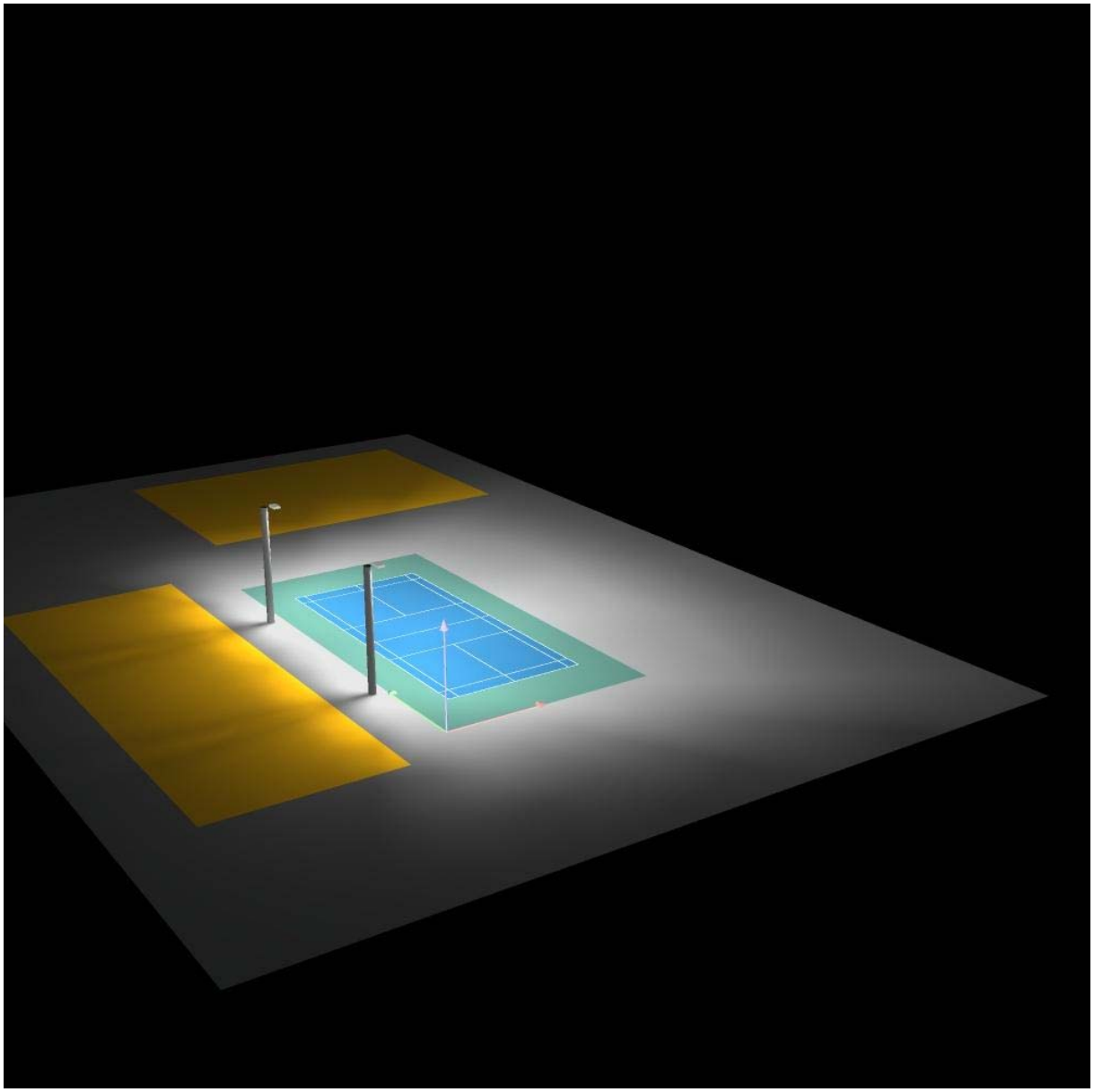
Exterior Scene 1 / 3D Rendering



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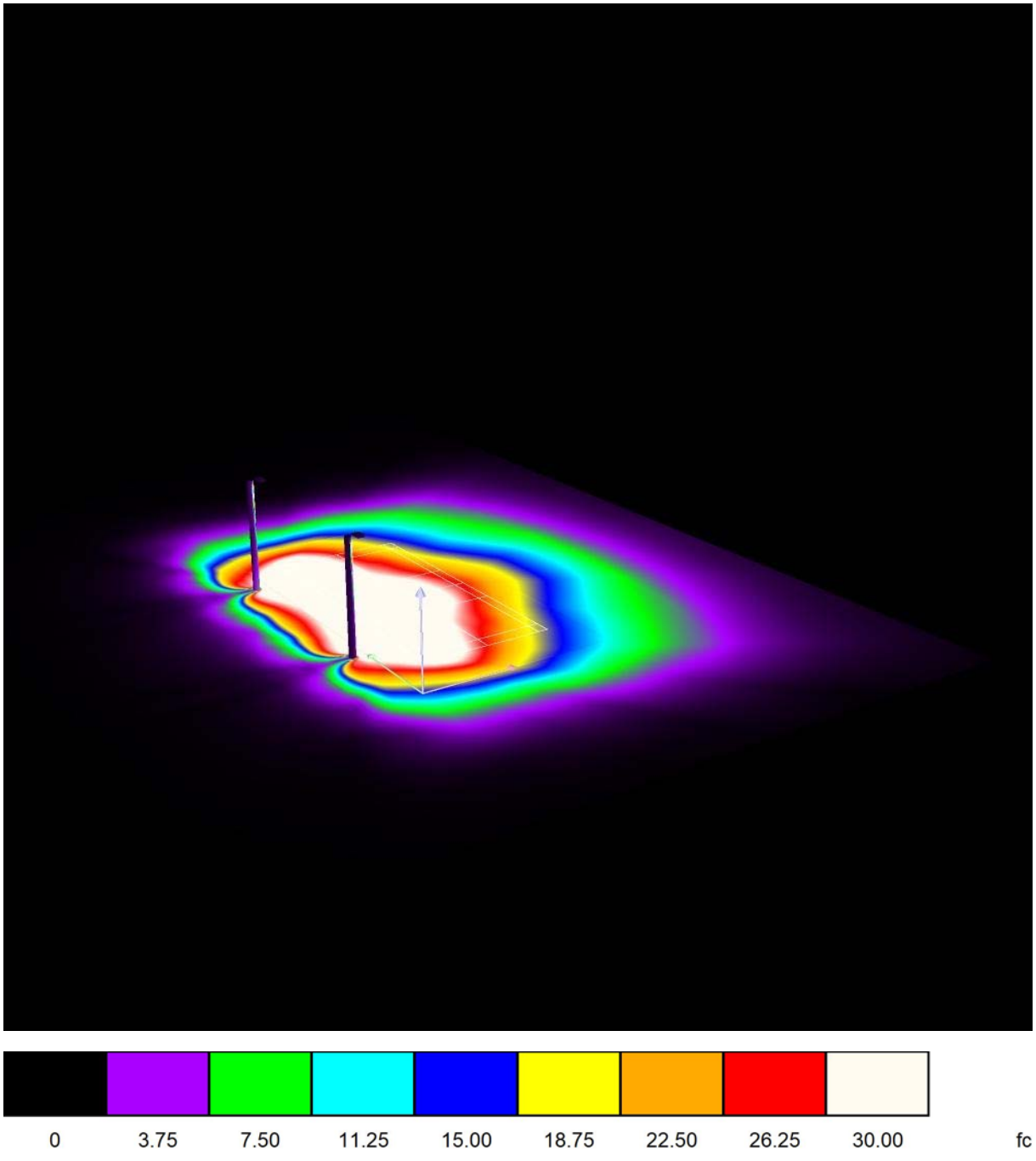
Exterior Scene 1 / False Colour Rendering



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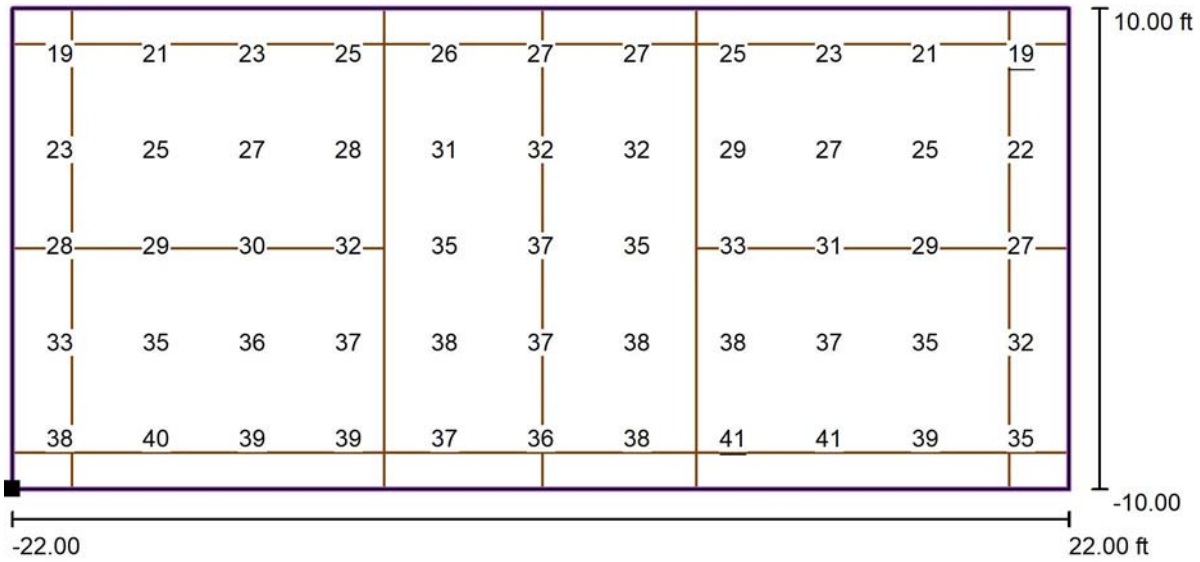
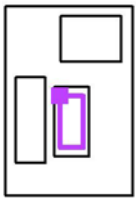
Exterior Scene 1 / Pickelball 1 Calculation Grid (PA) / Value Chart (E, Perpendicular)



Values in Footcandles, Scale 1 : 96

Position of surface in external scene:
Marked point: (5.000 ft, 52.000 ft, 0.000 ft)



Grid: 11 x 5 Points

E_{av} [fc]	E_{min} [fc]	E_{max} [fc]	u0	E_{min} / E_{max}
31	19	41	0.60	0.46

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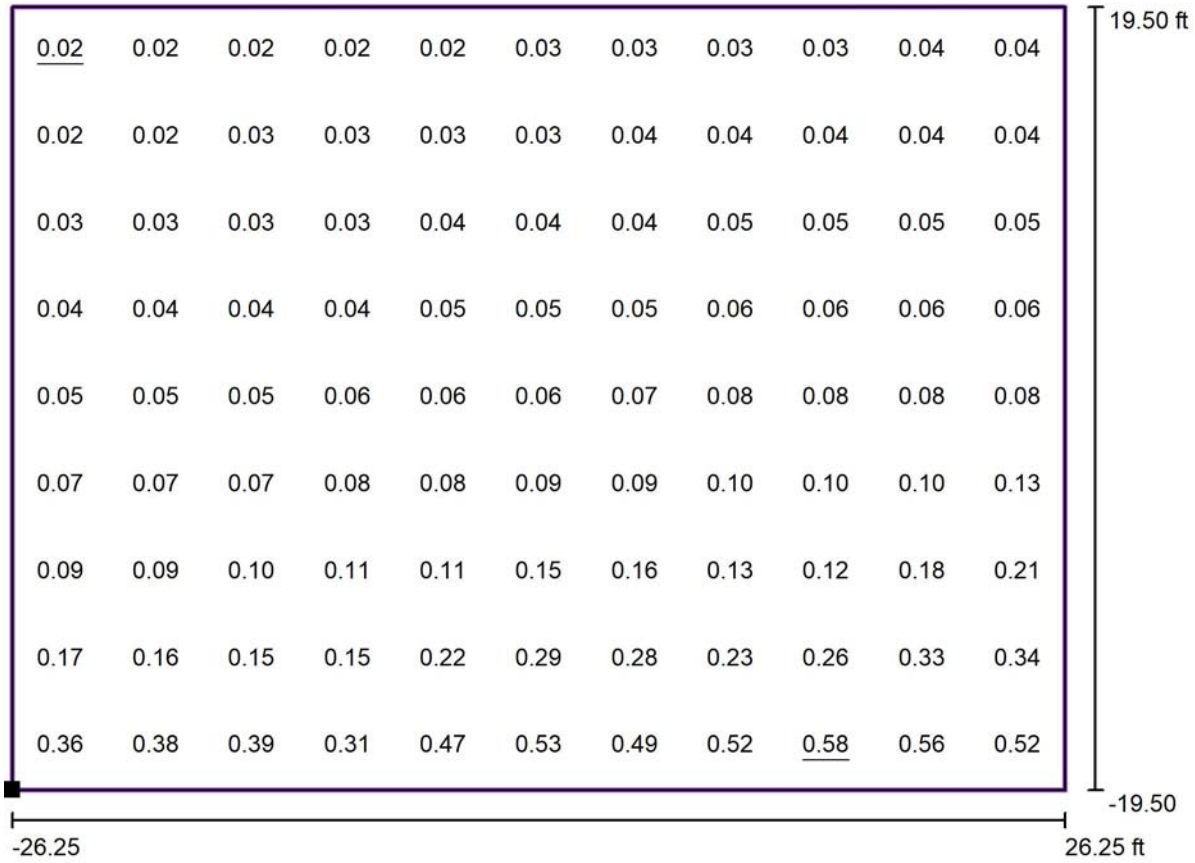
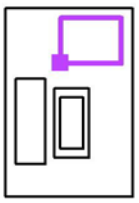
Exterior Scene 1 / Calculation Grid 1 / Value Chart (E, Perpendicular)

0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04
0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04
0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05	0.05
0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.06	0.06	0.06	0.06
0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.08	0.08	0.08	0.08
0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.10	0.13
0.09	0.09	0.10	0.11	0.11	0.15	0.16	0.13	0.12	0.18	0.21
0.17	0.16	0.15	0.15	0.22	0.29	0.28	0.23	0.26	0.33	0.34
0.36	0.38	0.39	0.31	0.47	0.53	0.49	0.52	0.58	0.56	0.52



Values in Footcandles, Scale 1 : 115

Position of surface in external scene:
Marked point: (5.277 ft, 81.920 ft, 0.000 ft)



Grid: 11 x 9 Points

E_{av} [fc]	E_{min} [fc]	E_{max} [fc]	u0	E_{min} / E_{max}
0.13	0.02	0.58	0.14	0.03

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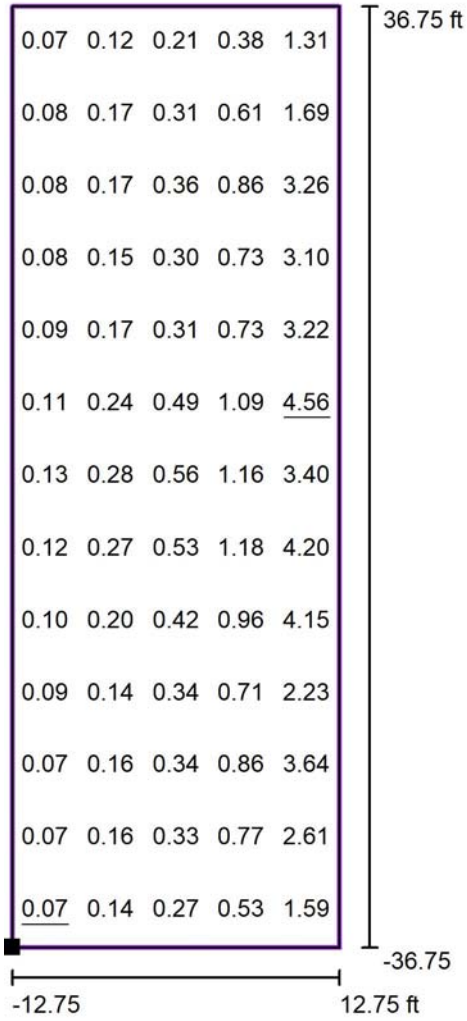
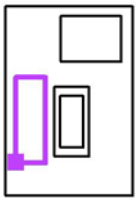
Exterior Scene 1 / Calculation Grid 2 / Value Chart (E, Perpendicular)



Values in Footcandles, Scale 1 : 180

Position of surface in external scene:
Marked point: (-33.224 ft, -5.110 ft, 0.000 ft)



Grid: 5 x 13 Points

E_{av} [fc]	E_{min} [fc]	E_{max} [fc]	u0	E_{min} / E_{max}
0.89	0.07	4.56	0.08	0.02