

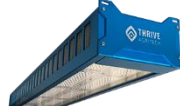
Lighting Designs for Flowering Cannabis



Products for Flowering Cannabis

Introduction

This guide describes lighting designs for the flowering stage of cannabis production using Thrive Agritech's Boost, Apex and Pinnacle LED grow lights. Contact Thrive Agritech for a customized lighting design if needed. An overview of Thrive Agritech's lighting products is shown below, as well as general guidelines of recommended products at varying light intensities and mounting heights.

	BOOST XE	APEX	PINNACLE
			
Input Power	120 Watts	300 Watts	600 Watts
Input Voltage	110-277V	110-277V or 347-480V	110-277V or 347-480V
Light Output	336 umols/sec	780 umols/sec	1,680 umols/sec
Efficiency	2.8 umols/joule	2.6 umols/joule	2.8 umols/joule
Driver	Internal	External	External
Dimming	Yes	Yes	Yes
IP66	Yes	Yes	Yes
UL / DLC Listed	Yes	Yes	Yes
Warranty	5 Years	5 Years	5 Years

Light Intensity (PPFD)

	800	900	1,000	1,200	1,400	1,800	Application
6" - 14"							Multi-tier Racks
14" - 30"							Multi-tier Racks
30" - 48"							Single-tier Sea-of-Green

Boost

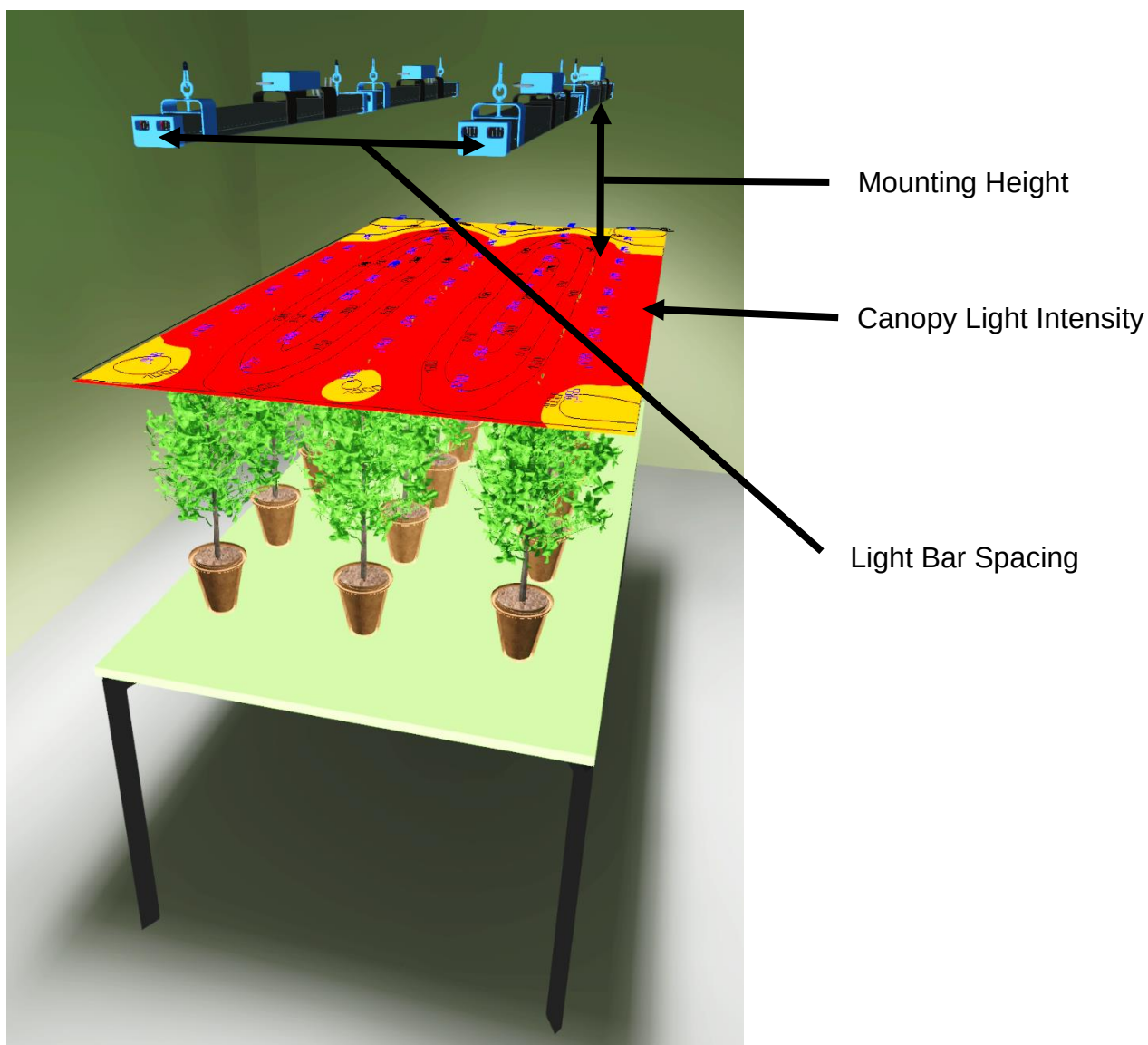
Apex

Pinnacle

Lighting Design Overview

Lighting designs in this guide provide the following information:

- Light Intensity on the canopy
- Canopy dimensions (length x width)
- Quantity of light bars
- Mounting height (bottom of light bar to canopy)
- Center spacing between light bars



Choosing a Lighting Design

How to choose a lighting design:

- 1) Select the size of your canopy
 - a) 20'x40' Single Tier Sea-of-Green / Rolling Benches
 - b) 4'x8' Bench for multi-tier racks
- 2) Select desired light intensity (PPFD) and mounting height.
- 3) Review the detailed lighting design on the page number specified in the far-right column.

20'x40' Sea-of-Green / Rolling Benches

<i>PPFD ($\mu\text{mols}/\text{m}^2/\text{sec}$)</i>	<i>Mounting Height</i>	<i>Product</i>	<i>Number of Lights</i>	<i>Page Number for Design</i>
800	36"	Pinnacle	40	4
900	36"	Pinnacle	40	5
1,000	32"	Pinnacle	45	6
1,200	32"	Pinnacle	54	7
1,500	32"	Pinnacle	70	8
1,700	32"	Pinnacle	80	9

4'x8' Multi-tier Racks

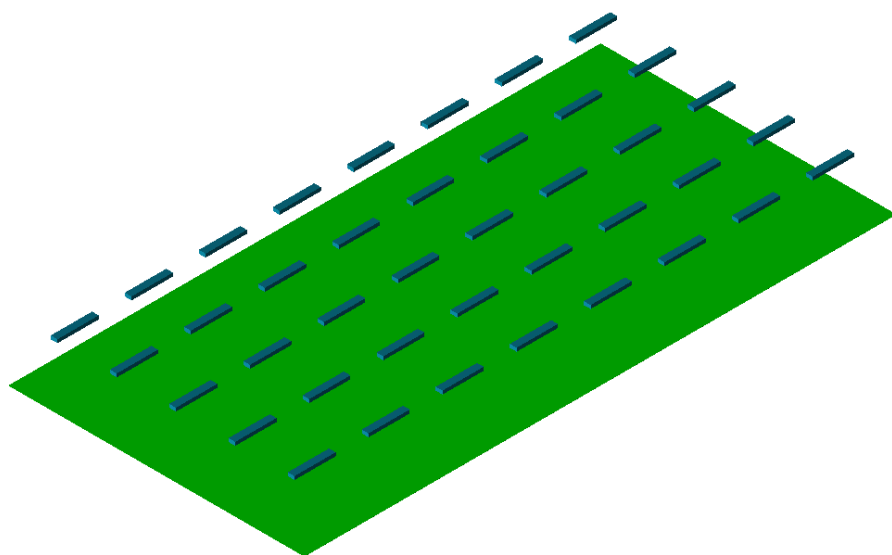
<i>PPFD ($\mu\text{mols}/\text{m}^2/\text{sec}$)</i>	<i>Mounting Height</i>	<i>Product</i>	<i>Number of Lights</i>	<i>Page Number for Design</i>
700	24"	Apex	3	10
800	8"	Boost	8	11
900	8"	Boost	9	12
	15"	Apex	4	13
1,000	8"	Boost	10	14
1,200	15"	Apex	5	15
1,400	15"	Apex	6	16
1,800	15"	Apex	8	17

20'x40' Sea-of-Green, 800 PPFD
36-inch Mounting Height, Pinnacle

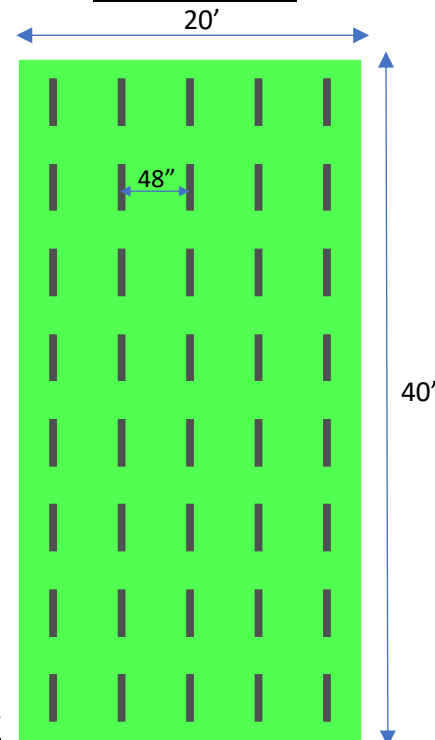
Lighting Design

- # of Pinnacle light bars: 40 (5 lines of 8 lights/line)
- Mounting Height: 36-inches over the canopy
- Light Bar Center Spacing: 48-inches

Isometric View



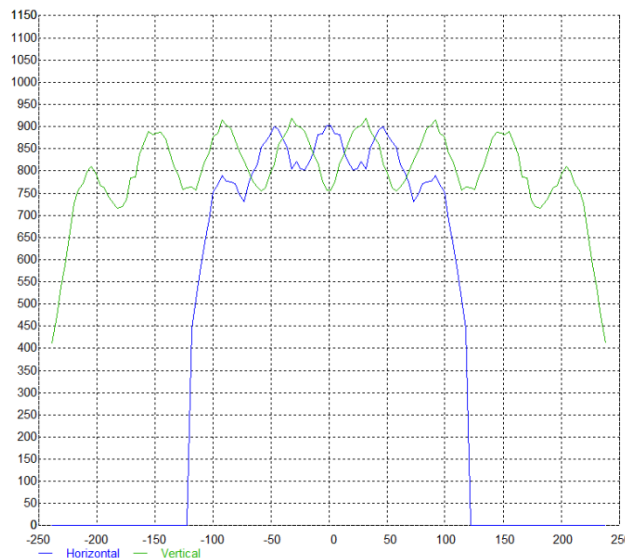
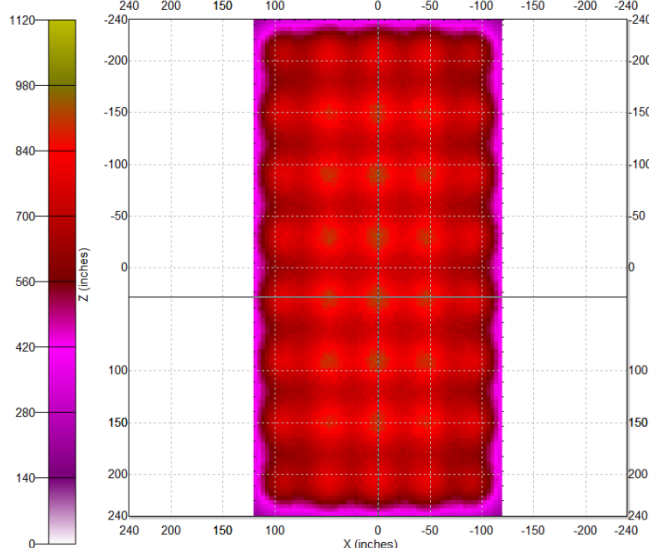
Top Down View



Light Intensity Map on 20'x40' Canopy

PPFD = 800 $\mu\text{mol}/\text{m}^2/\text{sec}$

$\mu\text{mol}/\text{m}^2/\text{sec}$



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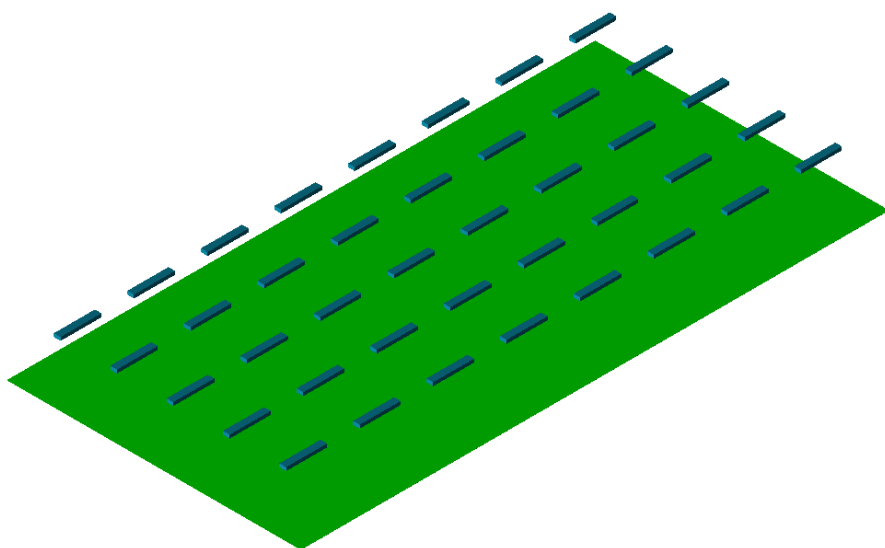
800-205-7216

20'x40' Sea-of-Green, 900 PPFD
36-inch Mounting Height, Pinnacle

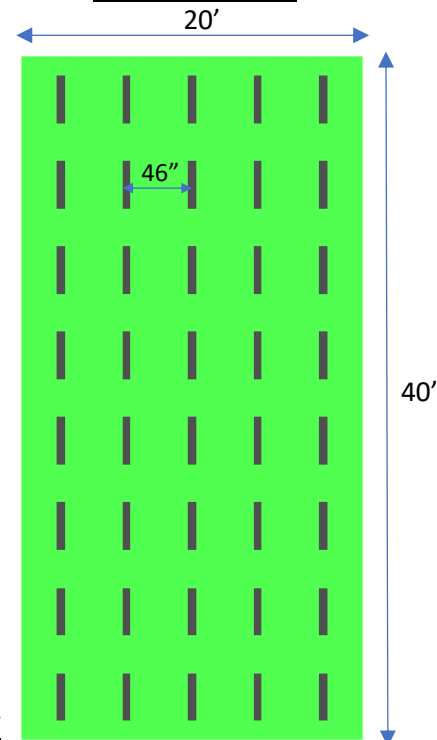
Lighting Design

- # of Pinnacle light bars: 40 (5 lines of 8 lights/line)
- Mounting Height: 36-inches over the canopy
- Light Bar Center Spacing: 46-inches

Isometric View

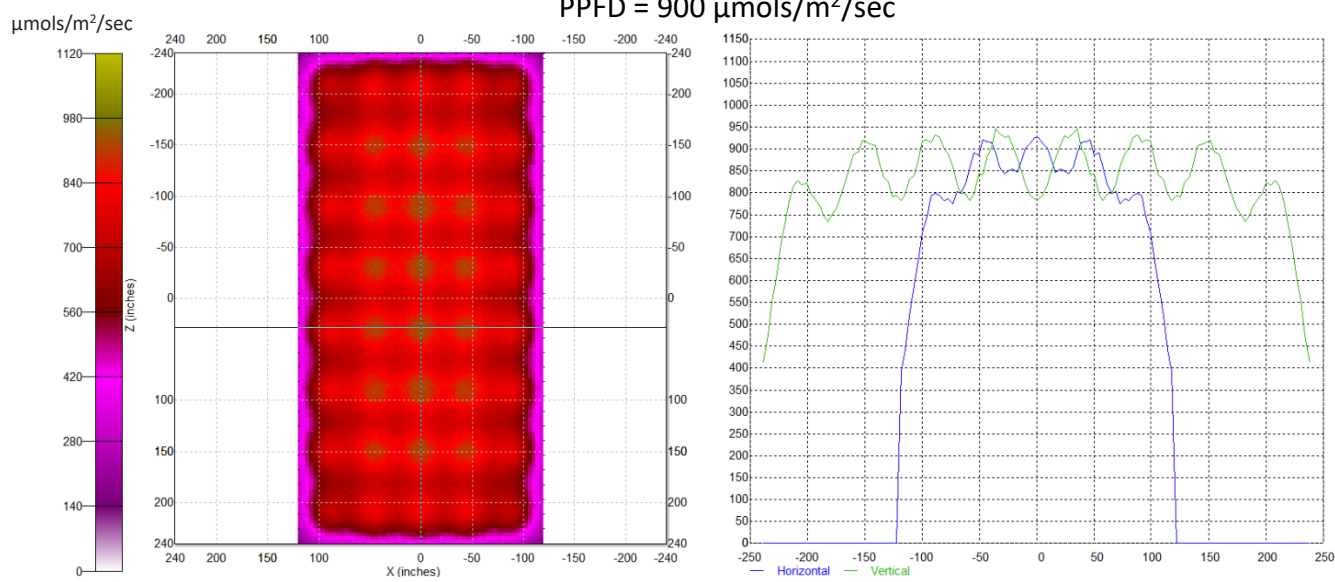


Top Down View



Light Intensity Map on 20'x40' Canopy

PPFD = 900 $\mu\text{mol}/\text{m}^2/\text{sec}$



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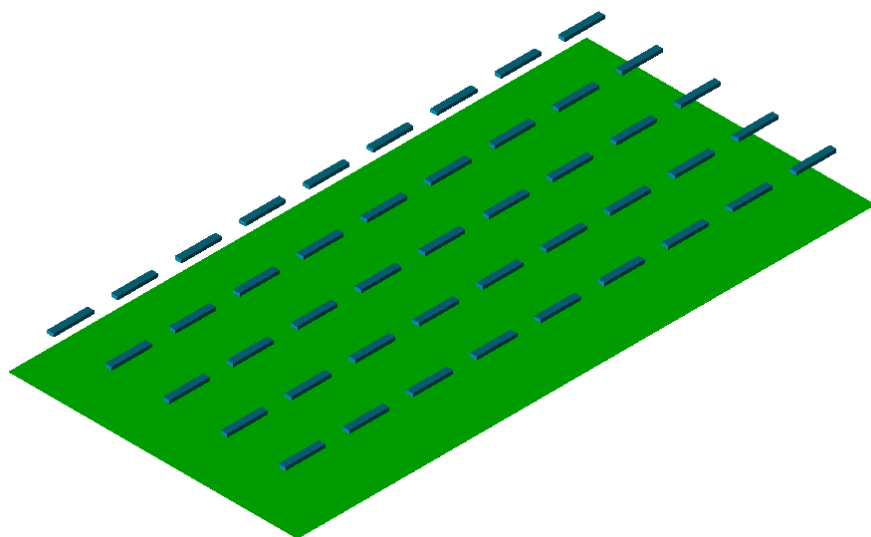
800-205-7216

20'x40' Sea-of-Green, 1,000 PPFD
32-inch Mounting Height, Pinnacle

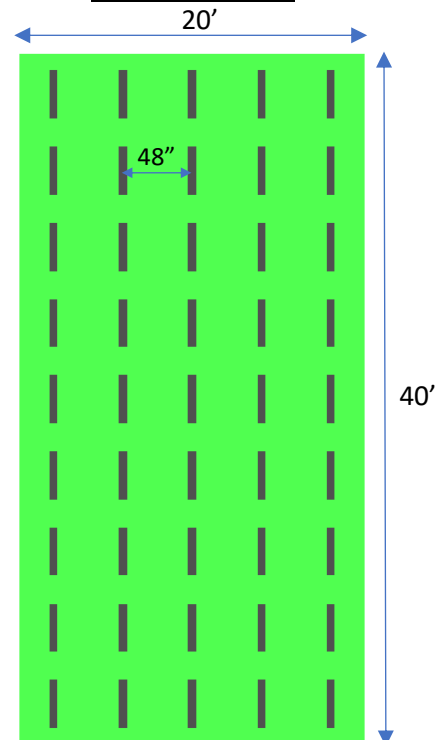
Lighting Design

- # of Pinnacle light bars: 45 (5 lines of 9 lights/line)
- Mounting Height: 32-inches over the canopy
- Light Bar Center Spacing: 48-inches

Isometric View

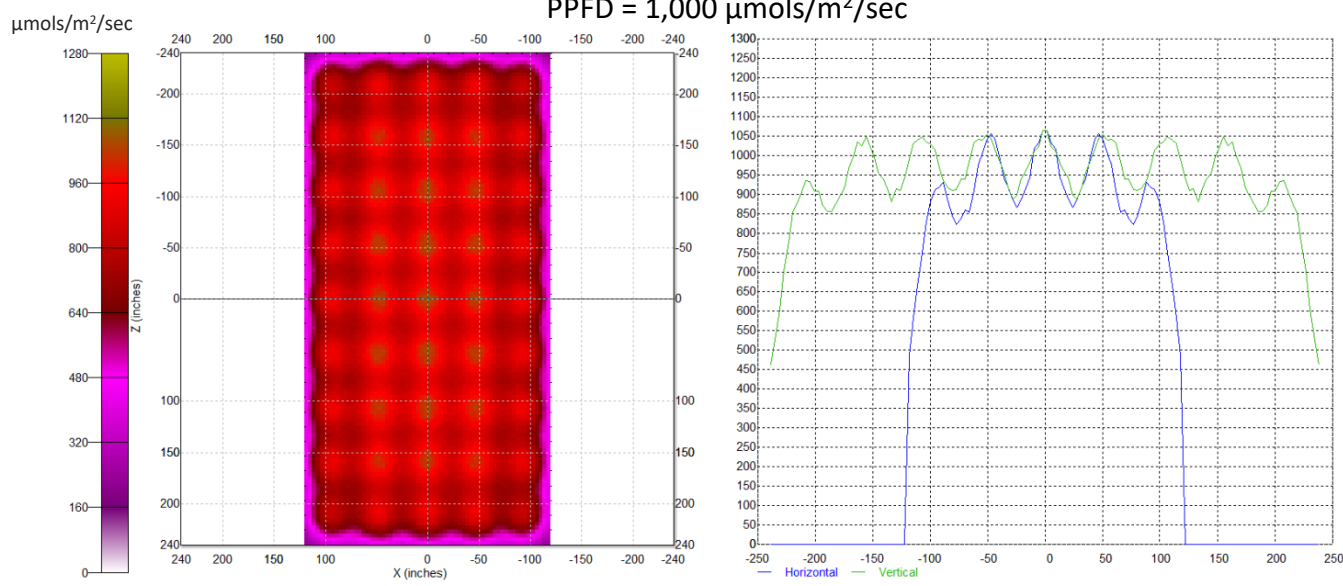


Top Down View



Light Intensity Map on 20'x40' Canopy

PPFD = 1,000 $\mu\text{mol}/\text{m}^2/\text{sec}$



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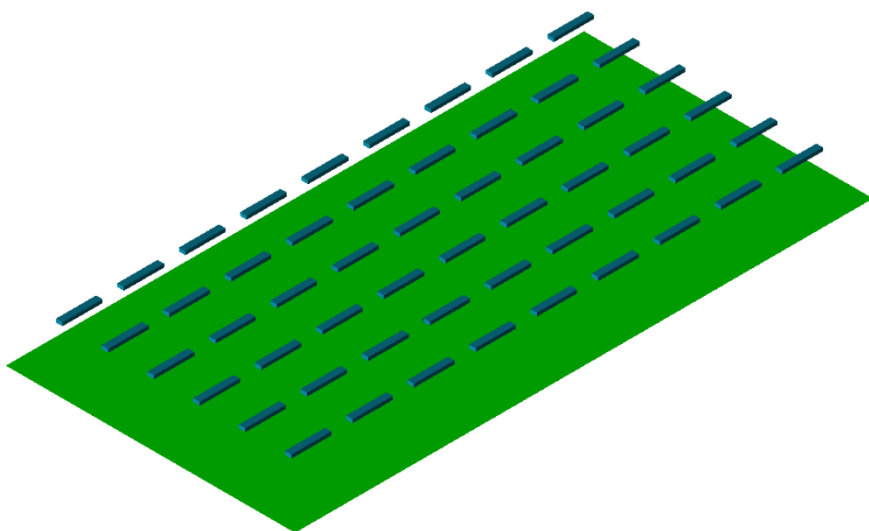
800-205-7216

20'x40' Sea-of-Green, 1,200 PPFD
32-inch Mounting Height, Pinnacle

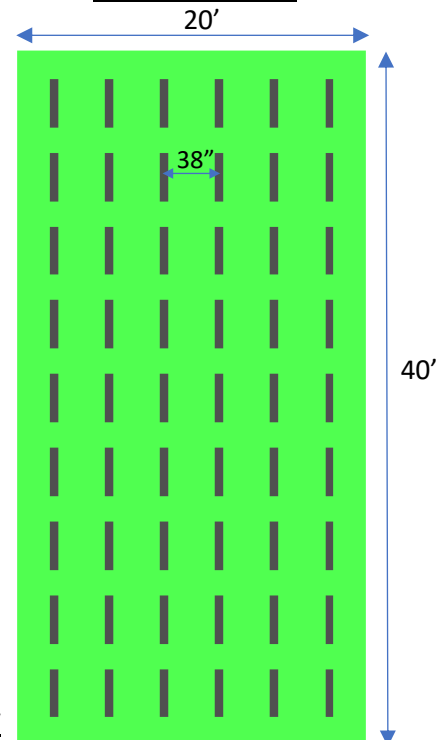
Lighting Design

- # of Pinnacle light bars: 54 (6 lines of 9 lights/line)
- Mounting Height: 32-inches over the canopy
- Light Bar Center Spacing: 38-inches

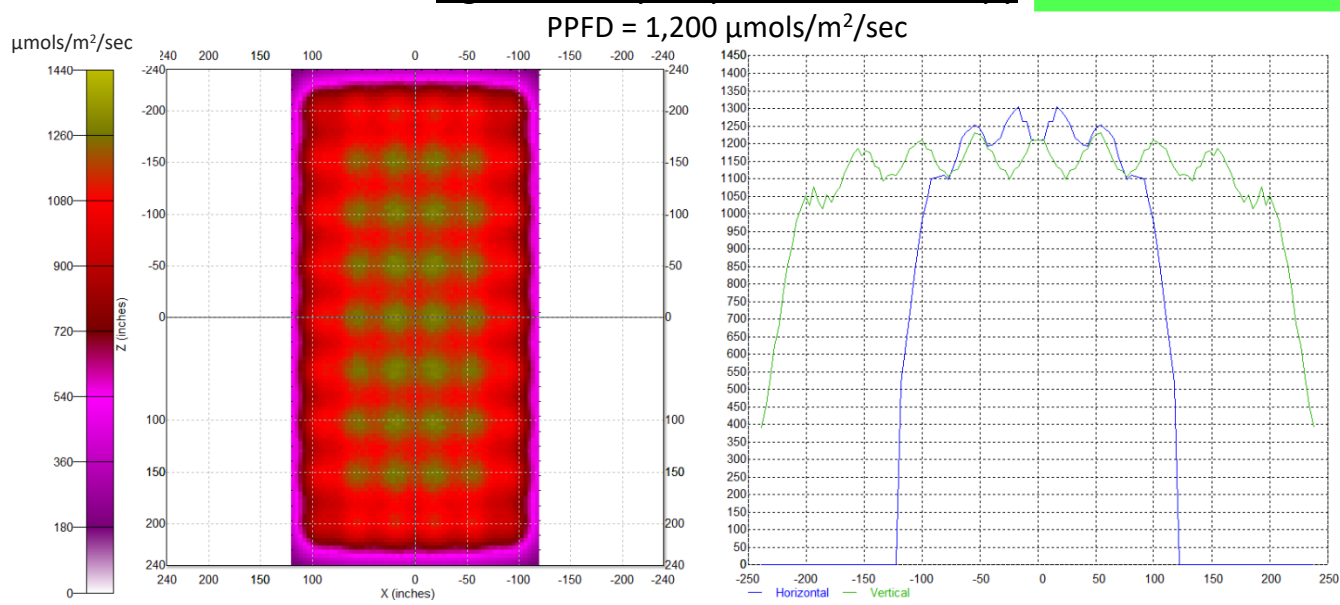
Isometric View



Top Down View



Light Intensity Map on 20'x40' Canopy

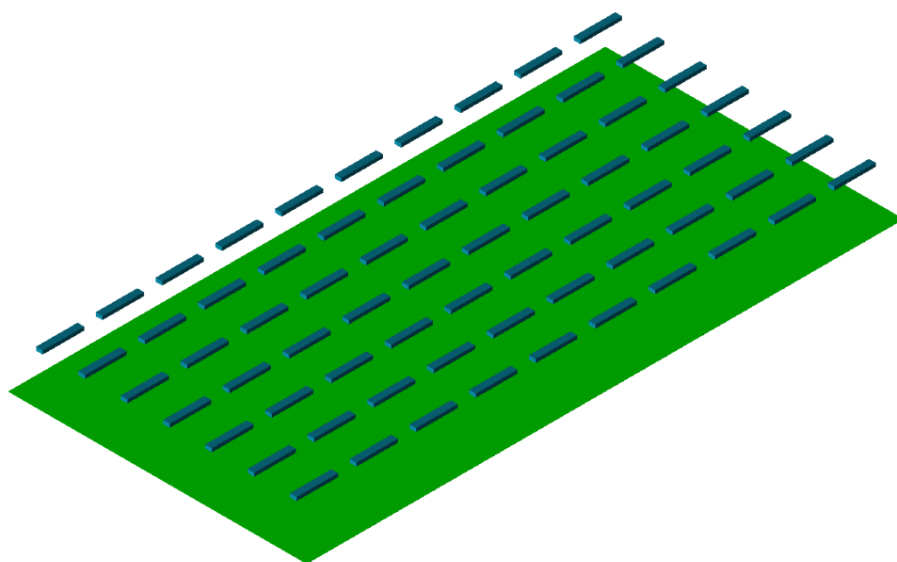


20'x40' Sea-of-Green, 1,500 PPFD
32-inch Mounting Height, Pinnacle

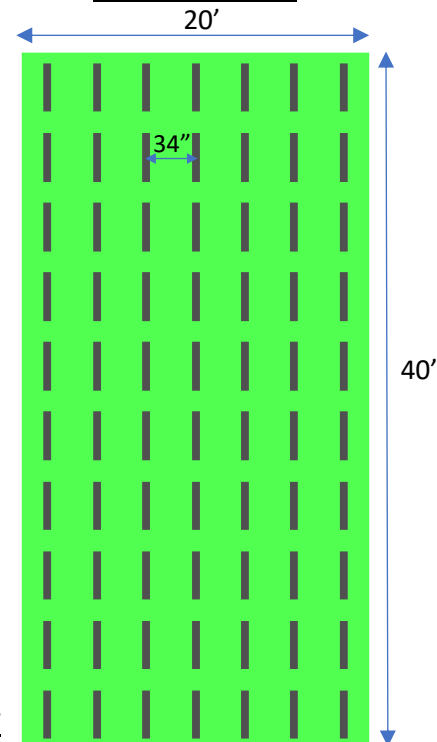
Lighting Design

- # of Pinnacle light bars: 70 (7 lines of 10 lights/line)
- Mounting Height: 32-inches over the canopy
- Light Bar Center Spacing: 34-inches

Isometric View

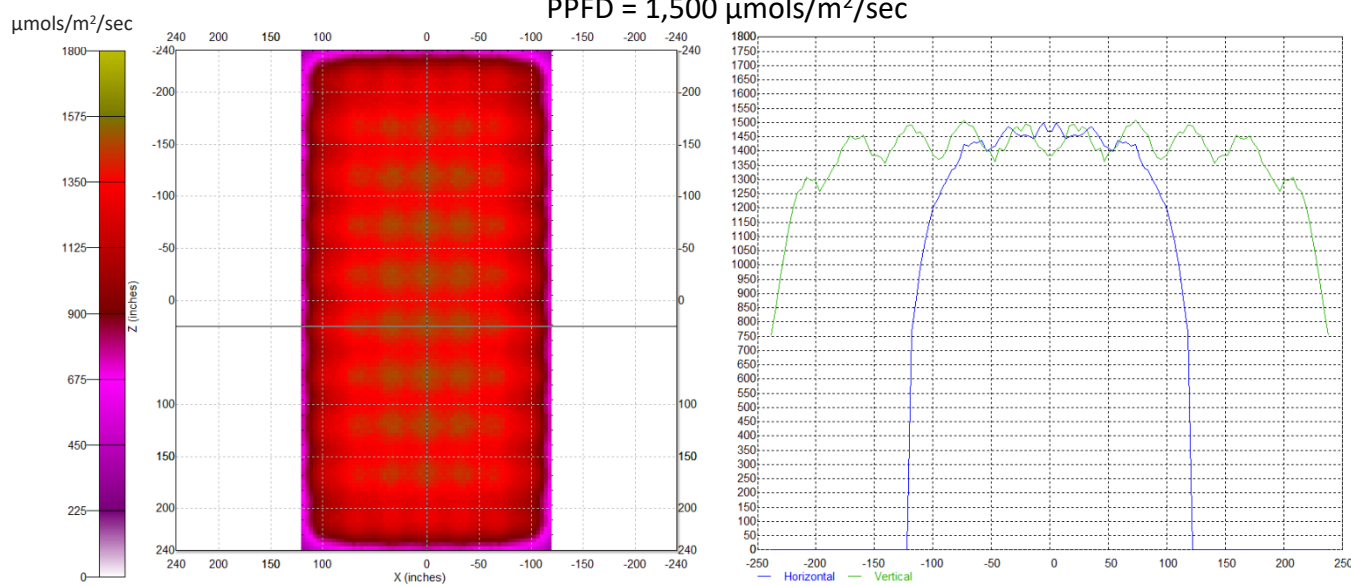


Top Down View



Light Intensity Map on 20'x40' Canopy

PPFD = 1,500 $\mu\text{mol}/\text{m}^2/\text{sec}$

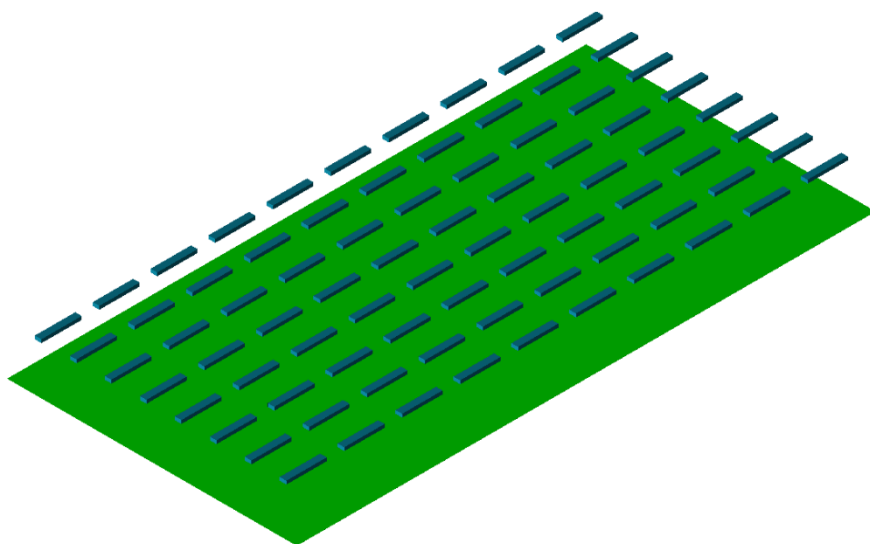


20'x40' Sea-of-Green, 1,700 PPFD
32-inch Mounting Height, Pinnacle

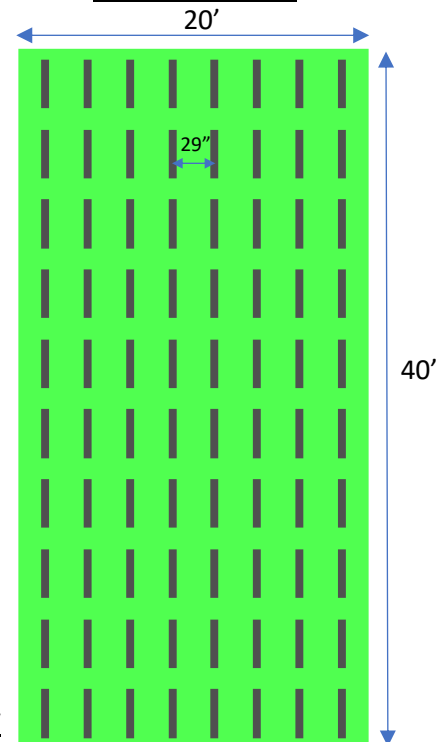
Lighting Design

- # of Pinnacle light bars: 80 (8 lines of 10 lights/line)
- Mounting Height: 32-inches over the canopy
- Light Bar Center Spacing: 29-inches

Isometric View

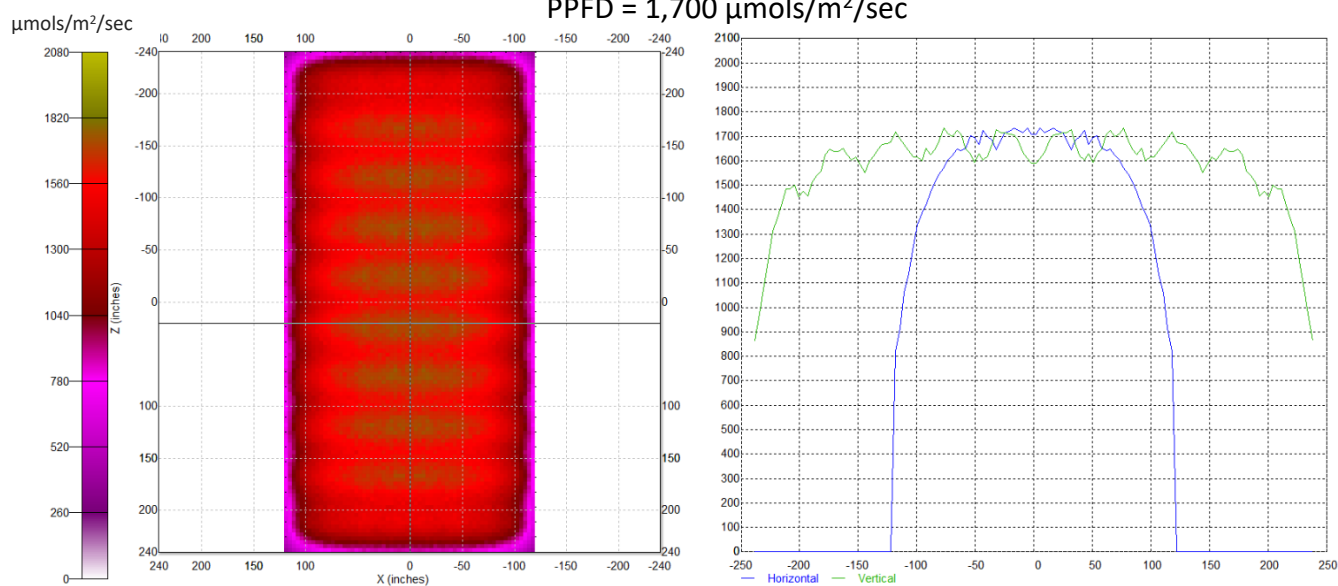


Top Down View



Light Intensity Map on 20'x40' Canopy

PPFD = 1,700 $\mu\text{mol}/\text{m}^2/\text{sec}$

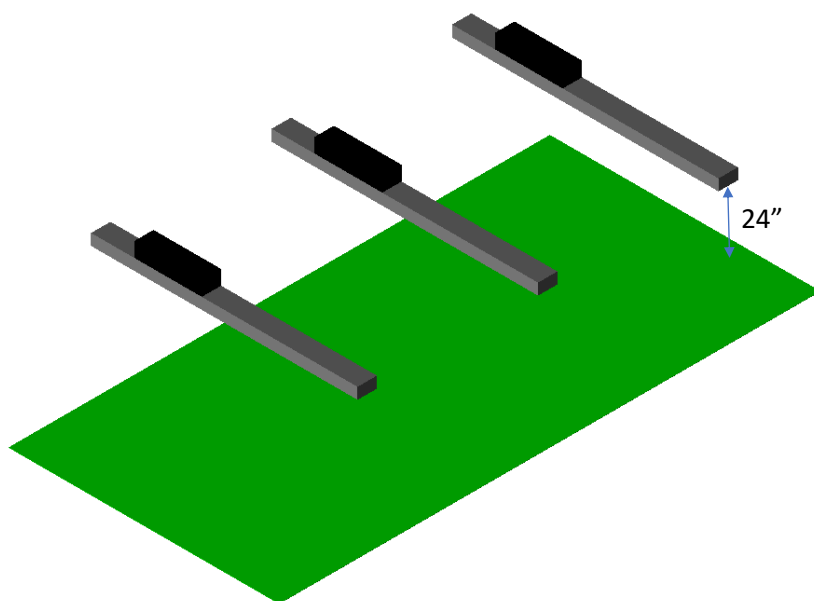


4'x8' Multi-tier Rack, 700 PPFD 24-inch Mounting Height, Apex

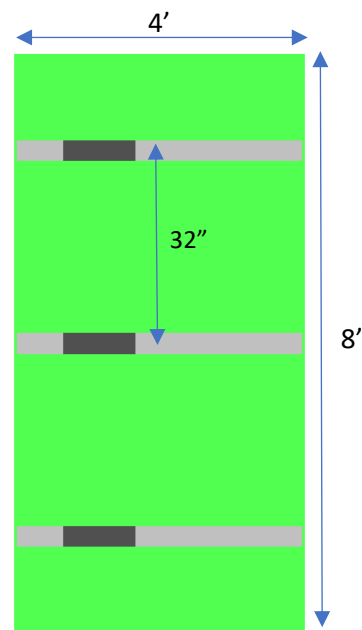
Lighting Design

- # of Apex light bars: 3
- Mounting Height: 24-inches over the canopy
- Light Bar Center Spacing: 32-inches

Isometric View



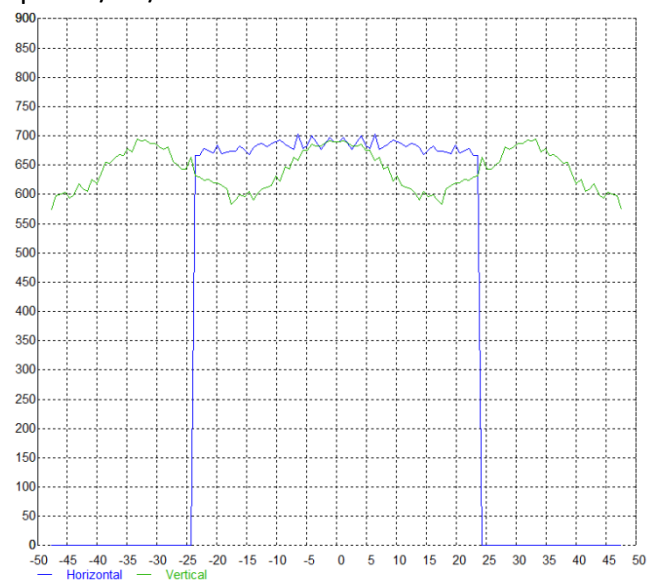
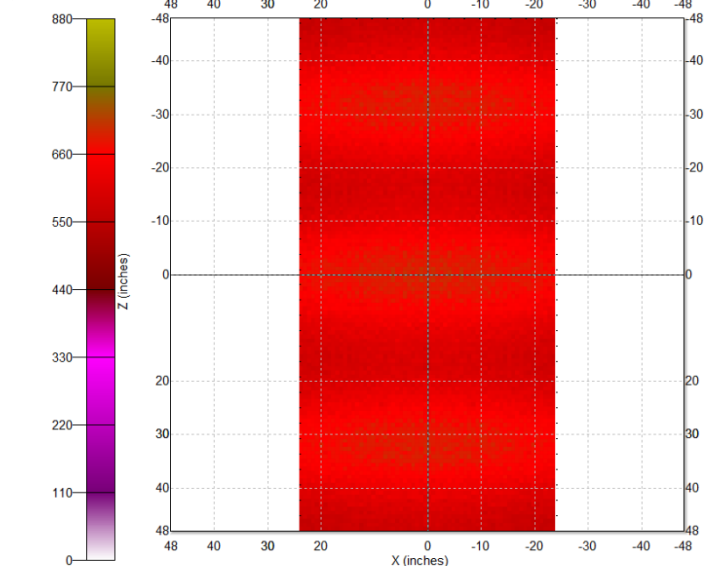
Top Down View



Light Intensity Map on 4'x8' Canopy

PPFD = 700 $\mu\text{mol}/\text{m}^2/\text{sec}$

$\mu\text{mol}/\text{m}^2/\text{sec}$



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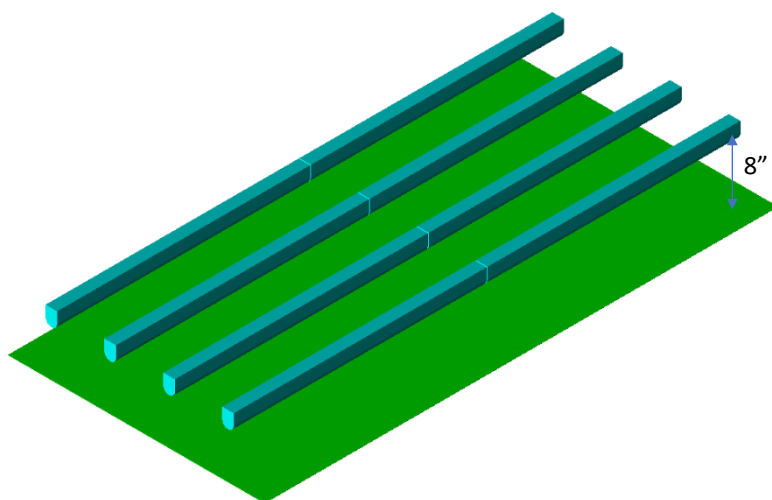
800-205-7216

4'x8' Multi-tier Rack, 800 PPFD
8-inch Mounting Height, Boost

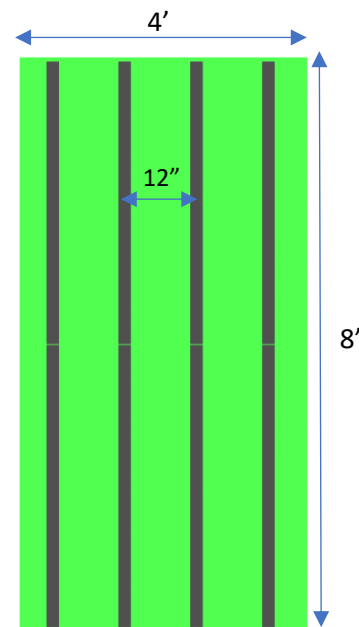
Lighting Design

- # of Boost light bars: 8 (4 lines of 2 lights/line)
- Mounting Height: 8-inches over the canopy
- Light Bar Center Spacing: 12-inches

Isometric View

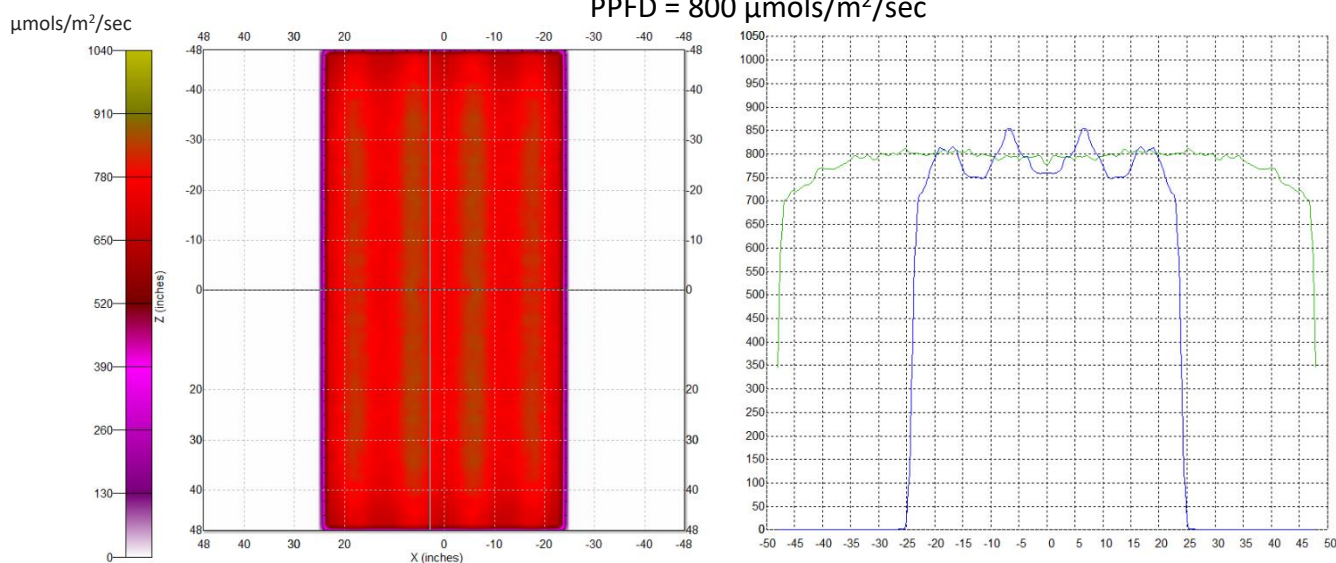


Top Down View



Light Intensity Map on 4'x8' Canopy

PPFD = 800 $\mu\text{mol}/\text{m}^2/\text{sec}$

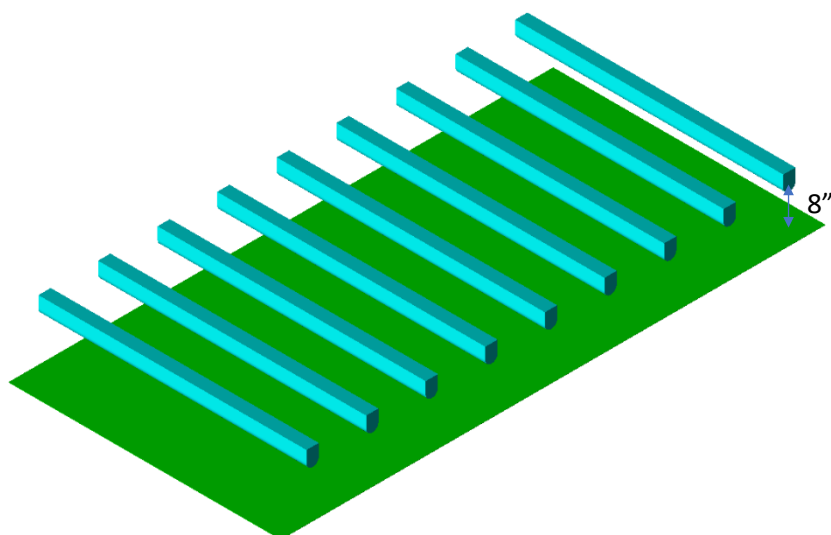


4'x8' Multi-tier Rack, 900 PPFD
8-inch Mounting Height, Boost

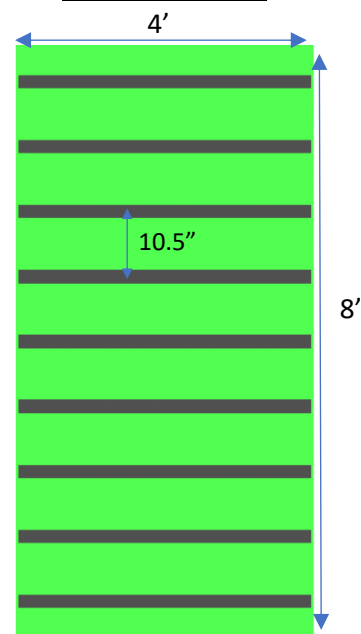
Lighting Design

- # of Boost light bars: 9
- Mounting Height: 8-inches over the canopy
- Light Bar Center Spacing: 10.5-inches

Isometric View

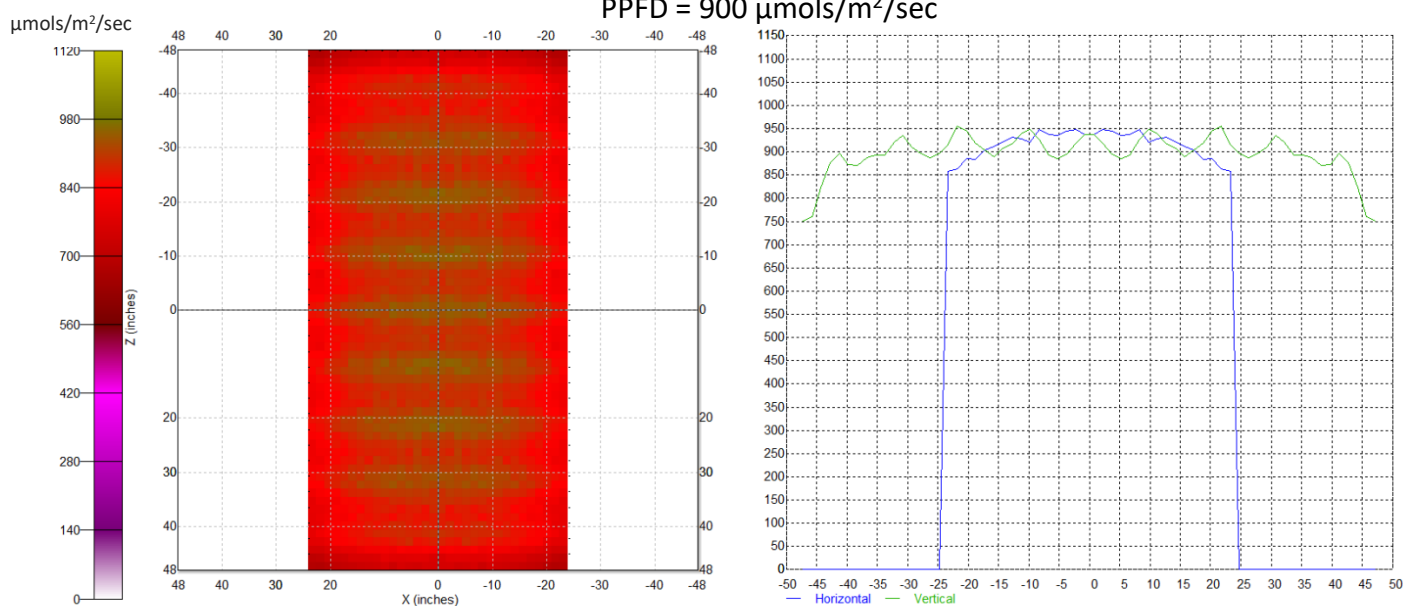


Top Down View



Light Intensity Map on 4'x8' Canopy

PPFD = 900 $\mu\text{mol}/\text{m}^2/\text{sec}$

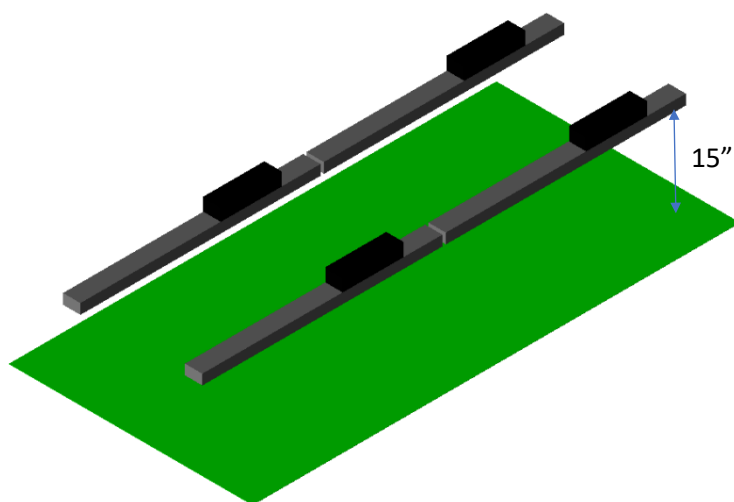


4'x8' Multi-tier Rack, 900 PPFD 15-inch Mounting Height, Apex

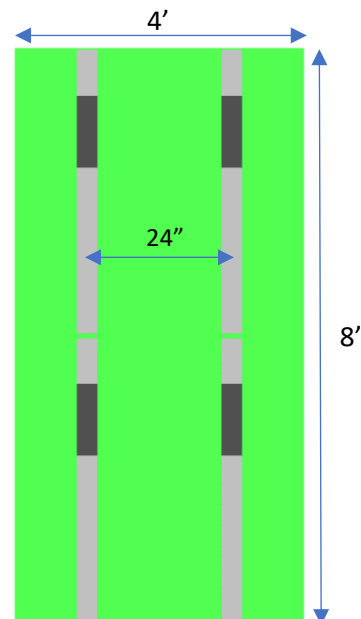
Lighting Design

- # of Apex light bars: 4 (2 lines of 2 lights/line)
- Mounting Height: 15-inches over the canopy
- Light Bar Center Spacing: 24-inches

Isometric View

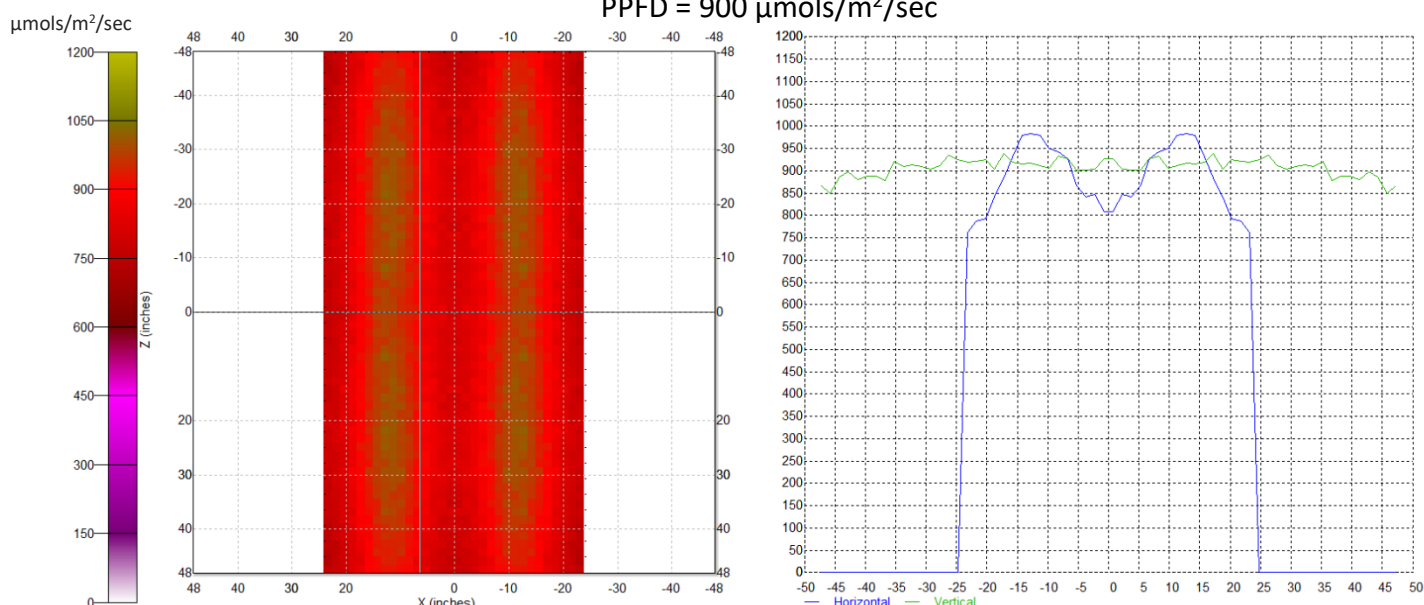


Top Down View



Light Intensity Map on 4'x8' Canopy

PPFD = 900 $\mu\text{mol}/\text{m}^2/\text{sec}$



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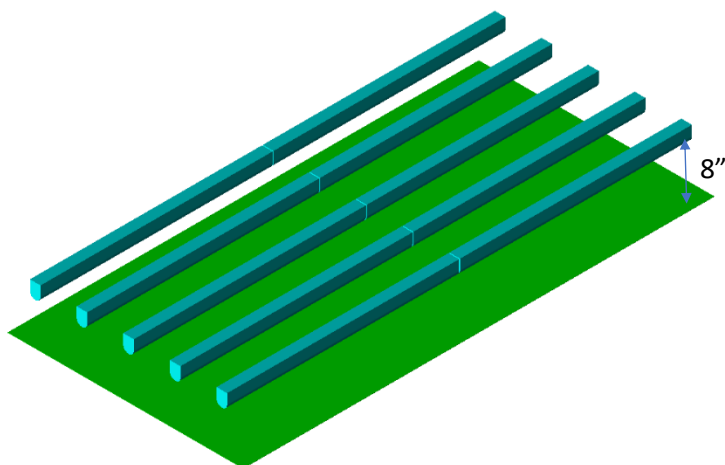
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4'x8' Multi-tier Rack, 1,000 PPFD
8-inch Mounting Height, Boost

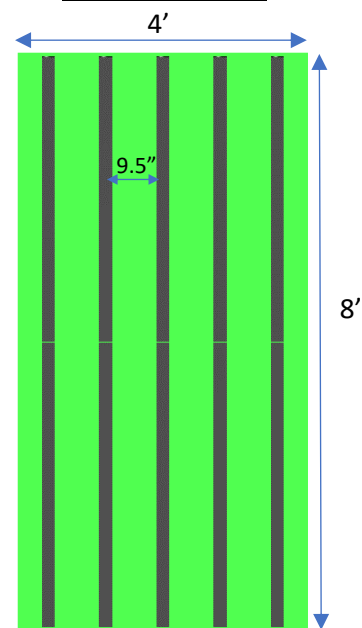
Lighting Design

- # of Boost light bars: 10 (5 lines of 2 lights/line)
- Mounting Height: 8-inches over the canopy
- Light Bar Center Spacing: 9.5-inches

Isometric View



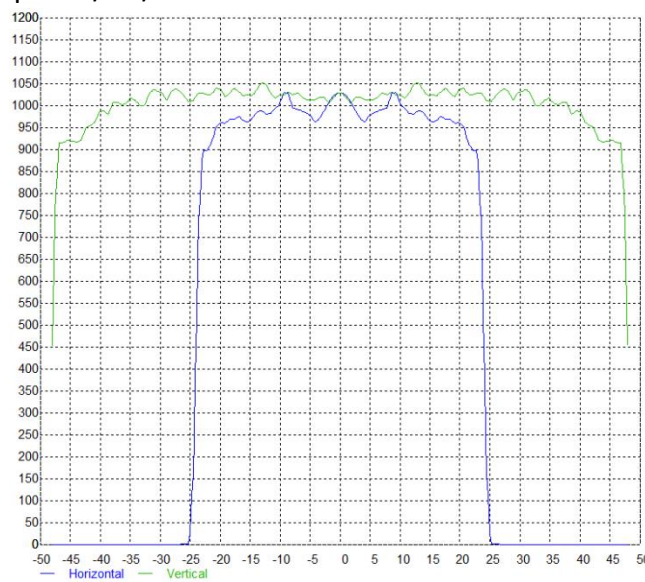
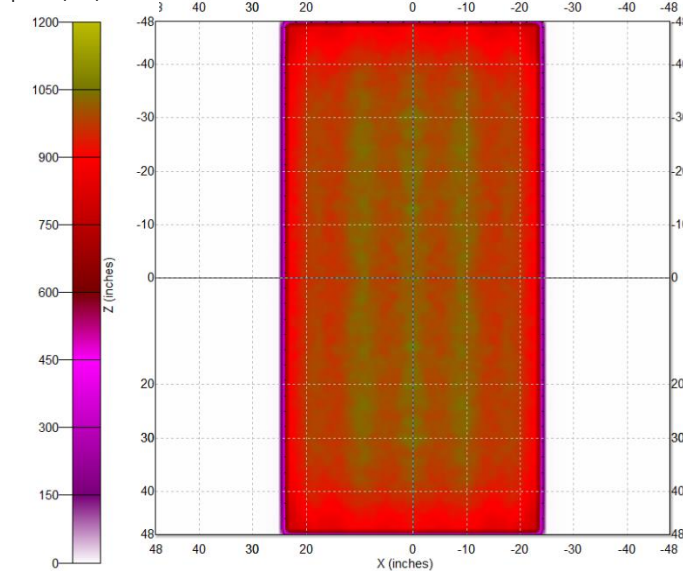
Top Down View



Light Intensity Map on 4'x8' Canopy

PPFD = 1,000 $\mu\text{mol}/\text{m}^2/\text{sec}$

$\mu\text{mol}/\text{m}^2/\text{sec}$

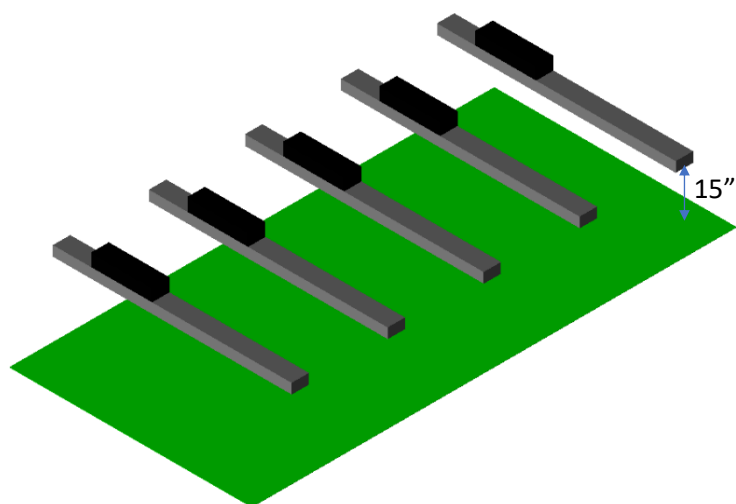


4'x8' Multi-tier Rack, 1,200 PPFD 15-inch Mounting Height, Apex

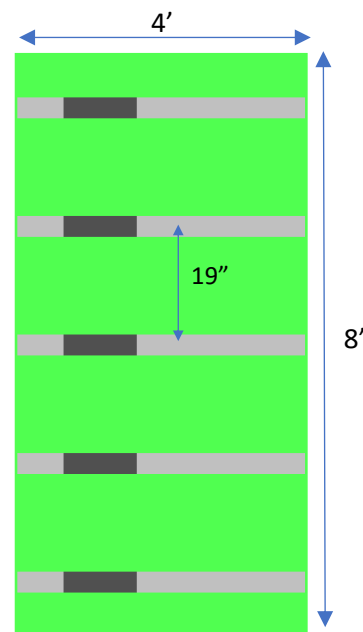
Lighting Design

- # of Apex light bars: 5
- Mounting Height: 15-inches over the canopy
- Light Bar Center Spacing: 19-inches

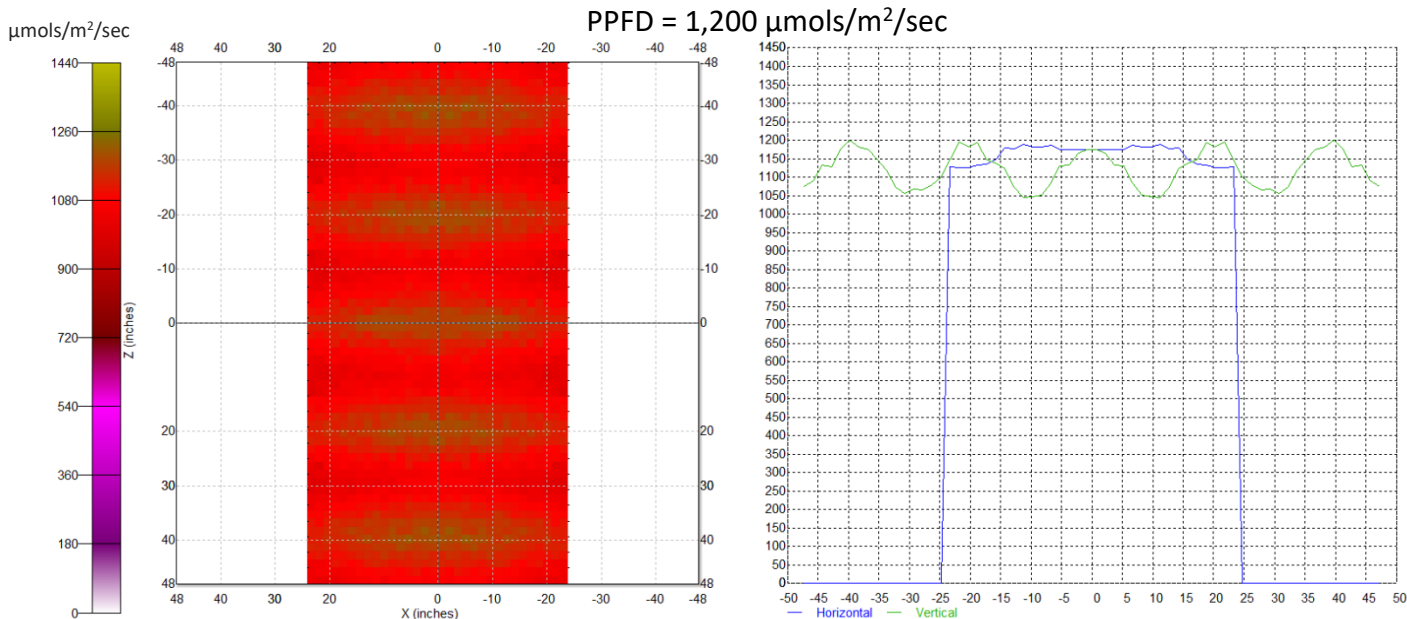
Isometric View



Top Down View



Light Intensity Map on 4'x8' Canopy

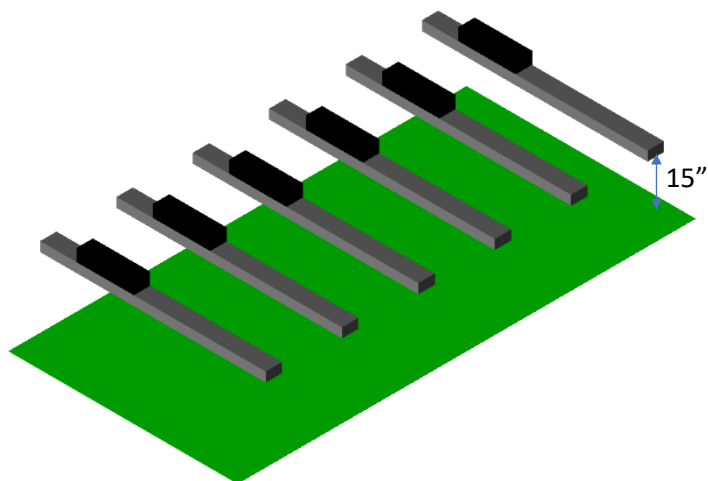


4'x8' Multi-tier Rack, 1,400 PPFD 15-inch Mounting Height, Apex

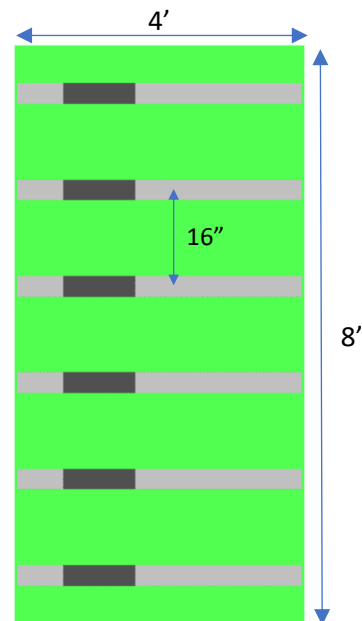
Lighting Design

- # of Apex light bars: 6
- Mounting Height: 15-inches over the canopy
- Light Bar Center Spacing: 16-inches

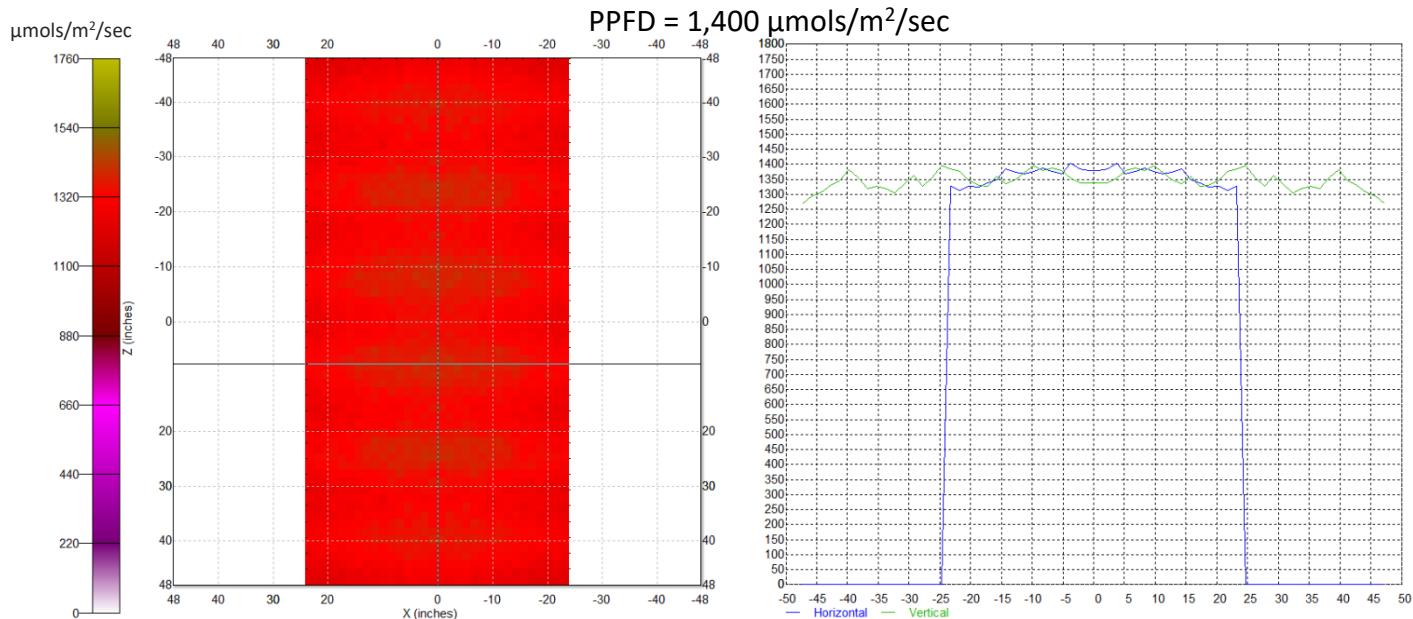
Isometric View



Top Down View



Light Intensity Map on 4'x8' Canopy

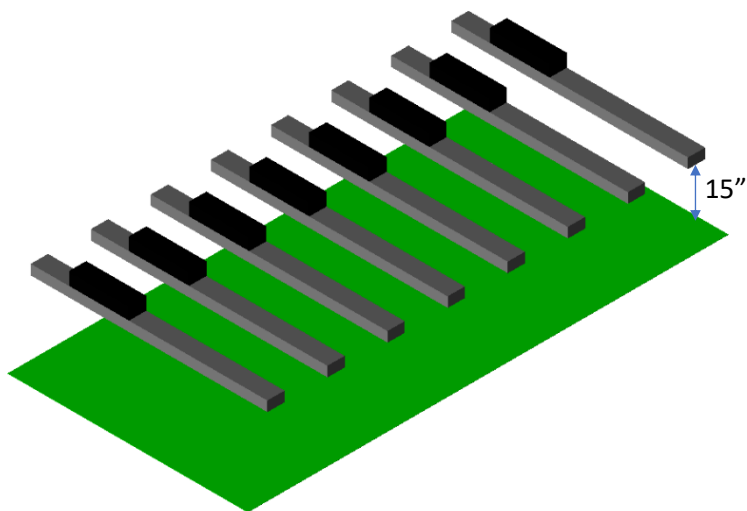


4'x8' Multi-tier Rack, 1,800 PPFD 15-inch Mounting Height, Apex

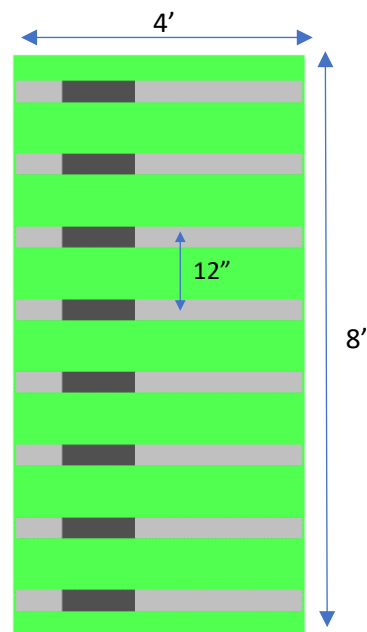
Lighting Design

- # of Apex light bars: 8
- Mounting Height: 15-inches over the canopy
- Light Bar Center Spacing: 12-inches

Isometric View



Top Down View



Light Intensity Map on 4'x8' Canopy

