CRESTONE PEAK RESOURCES OPERATING, LLC
STATE SUNLIGHT/LONG

LIGHT MITIGATION PLAN

SECTION 27, TOWNSHIP 5 SOUTH, RANGE 65 WEST, 6TH P.M.
ARAPAHOE COUNTY, COLORADO

Prepared For:
Crestone Peak Resources Operating, LLC
Contact: Scott Farkas
555 17th Street, Suite 3700
Denver, CO 80202
Phone: (303) 294-7876

11/22/2024

Prepared By:
Uintah Engineering & Land Surveying, LLC
Paul Hawkes, PE
85 South 200 East
Vernal, UT 84078
Phone: (435) 789-1017

TABLE OF CONTENTS

Table of Contents 1
I. Introduction 2
II. General Location and Description 2
A. Location and Existing Conditions 2
B. Proposed Development 2
C. Proposed Lighting 2
III. Pre-Production Phase Facility Lighting Plan 3
A. Pad Construction Operations 3
B. Drilling Operations 3
C. Hydraulic Stimulation Operations 3
D. Regulations for Lighting Impacts to Health, Safety, and Welfare 4
IV. Production Phase Facility Lighting Plan 4
A. Drill-Out and Flowback Operations 5
B. Production Operations 6
C. Regulations for Lighting Impacts to Health, Safety, and Welfare 6
V. Lighting Standards and Best Management Practices (BMPs) – Rule 424.b. 8
VI. Pre-Production Phase Facility Lighting – 424.c. 9
VII. Production Phase Facility Lighting When Personnel Are On-Site and Not On-Site – 424.d.& e. 9
VIII. Cumulative Impacts – 424.f. 9
A. Pad Construction Operations 9
B. Drilling Operations 10
C. Hydraulic Stimulation Operations 10
D. Drill-Out Operations 10
E. Flowback Operations 11
IX. Conclusion 11
X. Appendix 12
Appendix A – Drilling Operations Lighting Plan 13
Appendix B – Hydraulic Stimulation Operations Lighting Plan 16
Appendix C – Drill-Out Operations Photometric Plan 18
Appendix D – Flowback Operations Photometric Plan 20
Appendix E – Light Fixture Specification Sheet 22

I. INTRODUCTION

This light mitigation plan is being prepared for the Crestone Peak Resources Operating, LLC's State Sunlight/Long project. The project consists of the development of infrastructure to support the drilling and production of thirty-two (32) proposed oil and gas wells located in Arapahoe County.

The purpose of this report is to demonstrate compliance with the various State and Local lighting regulations. This report will predict the light impacts that will occur during the different development phases (Pre-Production and Production) of the project and detail the various lighting mitigation standards and practices that will be used to limit light pollution and conform to the required lighting regulations. The intent of the project's lighting plan is to provide a safely lit workplace environment that protects the surrounding public and wildlife environment.

II. GENERAL LOCATION AND DESCRIPTION

A. LOCATION AND EXISTING CONDITIONS

The State Sunlight/Long is located on a 638.7-acre parcel of land owned by State of Colorado in Section 27, Township 5 South, Range 65 West, 6th P.M. The Site is located approximately 0.4-miles north and 0.5-miles east of the intersection of Smoky Hill Pkwy and Monaghan Rd; and will be accessed from an existing north-south two track, which will be upgraded. The proposed pad access road ties into the existing north-south two track and will run approximately 0.1 mile to the east. The parcel is zoned agricultural and the existing land-use is grazing land.

B. PROPOSED DEVELOPMENT

The proposed development will include construction of infrastructure to support oil and gas gathering from the proposed well pad. The total combined proposed working pad surface (WPS) will be 678,956 SF. The Pre-Production Phase will be the initial phase of the project beginning with the pad construction and will remain until all the wells have been drilled and hydraulically stimulated. The Production Phase will be the project's final phase and will include drill-out, flowback, and production activities. Due to the continuous nature of oil and gas operations, many of the pre-production activities mentioned above must be performed during night-time hours.

C. PROPOSED LIGHTING

Proposed lighting to facilitate low-light working conditions will be exterior flood and spot type lighting. For all work operations, the proposed lighting will be temporary and be provided by portable light towers and lights permanently affixed to equipment (e.g., the drilling rig). The development of the project will require most of the work operations to be performed continuously (7-days a week & 24-hour a day). Proposed lighting will change for each work operation of each phase of the project. The light fixture schedules for the proposed lighting are included below in each work operation section.

Lighting Best Management Practices (see Section V, below) will be used to minimize light pollution during all work operations of the proposed project. All lighting shall conform to Federal, State, and Industry recognized standards for both on-site workplace safety and off-site public and wildlife protection (OSHA, FAA, ECMC, IESNA, and ANSI). Care will be taken to keep lighting levels at the specified levels on the lighting plans while providing safe, well-lit working areas. Care will also be taken to prevent unintended light from leaving the site and becoming a hazard or nuisance to the public or surrounding wildlife habitat.

III. PRE-PRODUCTION PHASE FACILITY LIGHTING PLAN

The Pre-Production Phase will consist of the following work operations: Pad Construction Operations, Drilling Operations, and Hydraulic Stimulation Operations. The state and local governing lighting regulations for this section will be the ECMC's Rule 424, specifically 424.a.(2).A., which also includes Rule 424.c.. Lighting photometric plans for all operations of the Pre-Production Phase should address adequate lighting to ensure on- and off-site safety during work operations while assessing the lighting impacts to the health, safety, and welfare of persons occupying building units within 2,000-feet, motorists on roads within 2,000-feet, and wildlife in high priority habitats within 2,000-feet. All Lighting BMPs for this phase of the project shall conform to the Lighting Photometric Plan, Lighting Standards and Best Management Practices (BMPs) section of this project.

A. PAD CONSTRUCTION OPERATIONS

Pad Construction Operations typically consist of structure demolition, equipment haul-off, and grading of the proposed well pad to facilitate the development of the new wells. Pad Construction Operations also includes placing necessary utilities to support the wells. It is anticipated that work for this operation will only occur during daylight hours, which is adequate for safely completing Pad Construction Operations. No lighting, permanent or temporary, is planned for Pad Construction Operations.

B. DRILLING OPERATIONS

Drilling Operations consist of bringing a drill rig onto the site and drilling the proposed wells. This work operation will take place continuously (7-days a week & 24-hour a day). Current development plans include utilizing a single drilling rig development scenario during Drilling Operations. Lighting will be temporary and be provided by portable light towers and lights permanently affixed to the drilling rig. A Drilling Operations Photometric Plan and a Drilling Rig Photometric Plan are attached as Appendix A. All proposed lighting for safely completing the Drilling Operations is listed below:

Table 1 – Drilling Operations Lighting Fixture Schedule.

Light Type	Number of Units	Approximate Height, FT (above GE)	Wattage per Unit	Lumens per Unit	Total Lumens
3 Head Led Flood Lights, Mobile Telescoping Tower	4	25' Tower	120	135,513	542,052
Rig Mounted Floodlight	26	See Detail	120	40,000	1,040,000
Rig Mounted 4' LED	28	See Detail	120	6,080	170,240
Halo Lights Mounted on Derrick Crown	8	Crown Mount	120	104,517	836,136
				Total Lumens	2,588,428

All lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report, fixture specification sheet and BUG calculation are included in Appendix E. If deemed necessary, additional light units may be utilized to address safety concerns. In the event that additional lighting units may be necessary, the Drilling Supervisor will contact a lighting engineer to verify that additional lighting units and lighting BMPs will remain within the required lighting standards stated in this report.

C. HYDRAULIC STIMULATION OPERATIONS

Hydraulic Stimulation Operations consist of hydraulically fracturing (frac) the proposed wells. This work operation will take place continuously (7-days a week & 24-hour a day). Current development plans include utilizing a

single frac crew development scenario during Hydraulic Stimulation Operations. Lighting will be temporary and be provided by portable light towers. A Hydraulic Stimulation Operations Lighting Plan is attached as Appendix B. All proposed lighting for safely completing the Hydraulic Stimulation Operations is listed below:

Table 2 – Hydraulic Stimulation Operations Lighting Fixture Schedule.

Light Type	Number of Units	Approximate Height, FT (above GE)	Wattage per Unit	Lumens per Unit	Total Lumens
3 Head Led Flood Lights, Mobile Telescoping Tower	6	25' Tower	120	135,513	813,078
				Total Lumens	813,078

All lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report, fixture specification sheet and BUG calculation are included in Appendix E. If deemed necessary, additional light units may be utilized to address safety concerns. In the event that additional lighting units may be necessary, the Completions Supervisor will contact a lighting engineer to verify that additional lighting units and lighting BMPs will remain within the required lighting standards stated in this report.

D. Regulations for Lighting Impacts to Health, Safety, and Welfare

All lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report. As shown on the Drilling Operations Photometric Plan, Drilling Rig Photometric Plan, and Hydraulic Stimulation Operations Lighting Plan (Appendix A and Appendix B), lighting levels will be contained within the 100-foot offset of the WPS boundary during all work operations of Pre-Production Phase. As noted, lighting impacts for this phase of the project will be governed by Rule 424 of the ECMC. The following discusses the impacts to the public and surrounding habitat as defined Rule 424.c.(3).:

1. Persons Occupying Building Units within 2,000-feet of the Oil and Gas Facility:
    a. There is no Residential Building Units within 2,000-feet of the Oil and gas Facility. No impacts are anticipated to residential building unit owners due to the implemented lighting BMPs and the use of sound/visual mitigation walls.
2. Motorists on Roads within 2,000-feet of the Oil and Gas Facility:
    a. There are no public roads within 2,000' of the Oil & Gas Facility. No impacts are anticipated to motorists on the road due to the implemented lighting BMPs and the use of sound/visual mitigation walls.
3. Wildlife occupying any High Priority Habitat within 2,000-feet of the Oil and Gas Facility:
    a. There is one (1) High Priority Habitats within 2,000 feet of the Oil and Gas Facility. The Mule Deer Severe Winter Range high priority habitat within 2,000 feet. No impacts are anticipated to wildlife habitat due to the implemented lighting BMPs and the use of sound/visual mitigation walls.

IV. PRODUCTION PHASE FACILITY LIGHTING PLAN

The Production Phase will be the final phase of the project. The Production Phase will consist of the following work operations: Drill-Out and Flowback Operations and Productions Operations. The state and local governing lighting regulations for this section will be the ECMC's Rule 424, specifically 424.a.(2).B., which also includes Rule 424.d.&e.. Lighting photometric plans for all operations of the Production Phase should address adequate

lighting to ensure on- and off-site safety during work operations while assessing the lighting impacts to the health, safety, and welfare of persons occupying building units within 2,000-feet, motorists on roads within 2,000-feet, and wildlife in high priority habitats within 2,000-feet. Additionally, lighting photometric plans for all operations of the Production Phase are required to conform to a zoning/land-use maximum permissible light level defined in Rule 424.d.. The permissible light level is an overall average of the site's light intensity and is calculated by the total lumens divided by the total WPS. The site is within an agricultural zoning/land-use, with a maximum permissible light level of 2.5 lumens per square foot (LM/SF). All Lighting BMPs for this phase of the project shall conform to the Lighting Photometric Plan, Lighting Standards and Best Management Practices (BMPs) section of this project.

A. Drill-Out and Flowback Operations

Drill-Out and Flowback Operations consist of recovering fluids following Hydraulic Stimulation Operations. Flowback Operations also consist of equipment and material mobilization from the site. The mobilization activities may continue approximately 120 days following the drill-out work. These work operations will take place continuously and simultaneously (7-days a week & 24-hour a day). Lighting will be temporary and be provided by portable light towers. The Drill-Out Operations Photometric Plan is attached as Appendix C. All proposed lighting for safely completing Drill-Out Operations is listed below:

Table 3 – Drill-Out Operations Lighting Fixture Schedule.

Light Type	Number of Units	Approximate Height, FT (above GE)	Wattage per Unit	Lumens per Unit	Total Lumens
3 Head Led Flood Lights, Mobile Telescoping Tower	6	25' Tower	120	135,513	813,078
				Total Lumens	813,078

All lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report, fixture specification sheet and BUG calculation are included in Appendix E. If deemed necessary, additional light units may be utilized to address safety concerns. In the event that additional lighting units may be necessary, the Completions Supervisor will contact a lighting engineer to verify that additional lighting units and lighting BMPs will remain within the required lighting standards stated in this report.

It is expected that the temporary lighting utilized during Drill-Out Operations will not exceed the maximum permissible light level of 2.5 lumens per square foot (LM/SF) of the total WPS. The following is the calculated light levels for the Drill-Out Operations:

Table 4 – Calculated Drill-Out Operations Permissible Light Levels.

Description	Total Lumens	WPS (SF)	Maximum Permissible Light LM/SF	Calculated Permissible Light LM/SF
Drill-Out Temporary Lighting	813,078	678,956	2.5	1.2
			TOTAL LIGHT LEVEL	1.2

The Drill-Out Operations Photometric Plan in Appendix C, shows the calculated light distribution at the site during Drill-Out Operations. With this configuration, this work operation is within the recommended regulatory limits. No direct light is anticipated to leave the 100-foot offset of the WPS.

The Flowback Operations Photometric Plan is attached as Appendix D. All proposed lighting for safely completing Flowback Operations is listed below:

Table 5 – Flowback Operations Lighting Fixture Schedule.

Light Type	Number of Units	Approximate Height, FT (above GE)	Wattage per Unit	Lumens per Unit	Total Lumens
3 Head Led Flood Lights, Mobile Telescoping Tower	6	25' Tower	120	135,513	813,078
				Total Lumens	813,078

All lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report, fixture specification sheet and BUG calculation are included in Appendix E. If deemed necessary, additional light units may be utilized to address safety concerns. In the event that additional lighting units may be necessary, the Completions Supervisor will contact a lighting engineer to verify that additional lighting units and lighting BMPs will remain within the required lighting standards stated in this report.

It is expected that the temporary lighting utilized during Flowback Operations will not exceed the maximum permissible light level of 2.5 lumens per square foot (LM/SF) of the total WPS. The following is the calculated light levels for the Flowback Operations:

Table 6 – Calculated Flowback Operations Permissible Light Levels.

Description	Total Lumens	WPS (SF)	Maximum Permissible Light LM/SF	Calculated Permissible Light LM/SF
Flowback Temporary Lighting	813,078	678,956	2.5	1.2
			TOTAL LIGHT LEVEL	1.2

The Flowback Operations Photometric Plan in Appendix C, shows the calculated light distribution at the site during Flowback Operations. With this lighting configuration, this work operation is within the recommended regulatory limits. No direct light is anticipated to leave the 100-foot offset of the WPS.

B. Production Operations

Production operations consist of the daily gathering of the resources from the wells and maintenance of the permanent production equipment. Typically, productions operations will only occur during daylight hours. No lighting, permanent or temporary is anticipated on the site during production operations.

C. Regulations for Lighting Impacts to Health, Safety, and Welfare

All lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report. As shown on the Drill-Out Operation Photometric Plan and Flowback Operations Photometric Plan (Appendix C and Appendix D), lighting levels will be contained within the 100-foot offset of the WPS boundary during all work operations of the Production Phase. As noted, lighting impacts for this phase of the project will be governed by Rule 424 of the ECMC. The impacts to the public and surrounding habitat as defined Rule 424.d.(3).:

1. Persons Occupying Building Units within 2,000-feet of the Oil and Gas Facility:

   a. There is no Residential Building Units within 2,000-feet of the Oil and gas Facility. No impacts are anticipated to residential building unit owners due to the implemented lighting BMPs and the use of sound/visual mitigation walls.
2. Motorists on Roads within 2,000-feet of the Oil and Gas Facility:
   a. There are no public roads within 2,000' of the Oil & Gas Facility. No impacts are anticipated to motorists on the road due to the implemented lighting BMPs and the use of sound/visual mitigation walls.
3. Wildlife occupying any High Priority Habitat within 2,000-feet of the Oil and Gas Facility:
   a. There is one (1) High Priority Habitats within 2,000 feet of the Oil and Gas Facility. The Mule Deer Severe Winter Range high priority habitat within 2,000 feet. No impacts are anticipated to wildlife habitat due to the implemented lighting BMPs and the use of sound/visual mitigation walls.

REMAINDER OF PAGE INTENTIONALLY BLANK, BMP SECTION FOLLOWS

V. LIGHTING STANDARDS AND BEST MANAGEMENT PRACTICES (BMPs) – RULE 424.b.

The following lighting BMPs will be used to minimize and control light pollution:

- Most work operations will take place 7-days a week & 24-hour a day. Care will be taken to keep lighting levels at the specified levels on the lighting plans while providing safe, well-lit working areas during night-time and other low-light conditions. Care will also be taken to prevent unintended light from leaving the site and becoming a hazard or nuisance to the public or surrounding wildlife habitat.
- During the Pad Construction Operations, no night-time work is anticipated. Daylight work will be performed during this work operation.
- All lighting shall conform to Federal, State, and Industry recognized standards for both on-site workplace safety and off-site public protection (OSHA, FAA, ECMC, IESNA, and ANSI). No direct light, except those governed by FAA standards, shall shine beyond the boundaries of the WPS, especially onto public roads, adjacent properties, and/or high priority habitats. All lighting shall conform with all ECMC, county, municipal, and any applicable governing body's standards.
- Temporary lighting will be 3-head LED flood lights on mobile 25-foot telescoping towers. All temporary lighting shall confirm to the lighting photometric plans and fixture specification sheets and BUG calculations in Appendix E. All lighting will be capable of adjustment and directed inward and between 45-65 downward towards working areas on the WPS. No light should shine above the horizontal plane passing through the center point of the light source. Lights will be shielded with a photometric diffusion fabric or membrane tint to prevent direct or reflected direct light from leaving the site.
- Sound and visual mitigation walls will be erected around the perimeter of the working pad surface to assist with light containment.
- For workplace safety, neither the temporary 3-head LED flood light plants and the permanent LED flood lights will not be positioned in a manner that directs or reflects direct light towards the entrance of the WPS.
- Any lighting damaged and/or improperly directed or angled will be promptly fixed and/or corrected to conform to the lighting plan.
- For all work operations, once temporary lighting is in place and for any change to the lighting during any work operations, a lighting self-audit of the site will be performed to ensure that no unintended light will leave the site and become a hazard or a nuisance.
- For non-working or shut-down days where no personnel are on-site or in working areas, temporary lighting will be turned off. During Pre-production Operations (Drilling, Hydraulic Fracturing), it is expected that temporary lighting will be utilized during the entirety of operations. During the Drill out and Flowback phase of the Production Operations, it is expected that temporary lighting will be utilized during approximately 50% of the working hours during these operations while personnel are on-site and essential temporary lighting is needed. If no personnel are on-site and essential temporary lighting is needed, the essential temporary lighting will be inspected every 24 hours.
- Any additional light units used to address workplace safety concerns that are not shown on the lighting photometric plans will be verified by a lighting engineer to ensure that the modified lighting will remain within the required lighting standards stated in this report.

VI. PRE-PRODUCTION PHASE FACILITY LIGHTING – 424.c.

Pre-Production Phase facility lighting will be temporary exterior lighting. To ensure the safety of all persons on- and off-site and to wildlife and their habitats, all lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report.

The requirements of this section have already been incorporated in this report in Section III, above. Please refer to that section for the governing rules concerning safety and lighting impacts for this phase of the project.

VII. PRODUCTION PHASE FACILITY LIGHTING WHEN PERSONNEL ARE ON-SITE AND NOT ON-SITE – 424.d.& e.

To ensure the safety of all persons on- and off-site and to wildlife and their habitats, all lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report which discusses BMPs when personnel are both on-site and off-site.

For all work operations proposed lighting will be temporary and be provided by portable light towers and lights permanently affixed to construction and maintenance equipment. All temporary lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report.

The requirements of this section have already been incorporated in this report in Section IV and Section V, above. Please refer to those sections for the governing rules concerning lighting BMPs, safety, and lighting impacts for this phase of the project.

VIII. CUMULATIVE IMPACTS – 424.f.

No cumulative impacts according to ECMC's Rule 424.f. are anticipated due to the implemented lighting BMPs and no direct light reaching a building unit within 1-mile. The lighting plan for this project was developed so that the cumulative impact of the proposed lighting will conform to the required 4 lux at any residential building unit or high occupancy building unit within 1-mile of the site, measured at 5.5 feet above grade in a direct line of sight to the brightest light fixture on-site (Rule 424). For further reference, additional lighting levels at various points of interest around and from the WPS have been provided for each work operation below. Proposed lighting for this project will be contained within the 100-foot offset of the WPS boundary.

Light intensity calculations shown on the lighting plans are in foot-candles, which is defined as one lumen per square foot (LM/SF). Light intensity levels vary across the site and are dependent on the height, location, and brightness of the light source. Light intensity levels are affected by the relative position and reflect ability of objects and/or surfaces on the site. Foot-candles can be converted to lux (LM/SM) by using the following conversion: 1 Fc = 10.8 lux.

A. PAD CONSTRUCTION OPERATIONS

No lighting, permanent or temporary, is planned for Pad Construction Operations, so there will be no light intensity calculations.

B. Drilling Operations

Based upon the light intensity calculations shown on the Drilling Operations Photometric Plan in Appendix A, the maximum foot-candle (Fc) observed within the WPS during Drilling Operations will be located directly underneath the drilling rig, calculated as 153.2 Fc. The maximum foot-candle at the entrance of the WPS boundary will be at 0.0 Fc. The maximum foot-candle at the edge of the WPS boundary will be 0.1 Fc. The maximum foot-candle at the 100-foot offset of the WPS boundary will be 0.0 Fc. The maximum foot-candle at public roads within 1-mile of the WPS boundary will be 0.0 Fc. The maximum foot-candle at building units within 1-mile of the WPS boundary will be 0.0 Fc. The following is a summary of the calculated and required light intensity levels:

Table 7 – Drilling Operations Calculated Maximum Light Intensity at Points of Interest.

Point of Interest	Foot-Candle	Lux	Required
Within the WPS	153.2	1,654.6	N/A
At the Entrance of the WPS	0.0	0.0	N/A
At the Edge of the WPS	0.1	1.1	N/A
100-foot offset of the WPS boundary	0.0	0.0	N/A
Public Roads within 1-Mile of the WPS	0.0	0.0	N/A
Building Units within 1-Mile of the WPS	0.0	0.0	4 Lux

C. Hydraulic Stimulation Operations

Based upon the light intensity calculations shown on the Hydraulic Stimulation Operations Photometric Plan in Appendix B, the maximum foot-candle (Fc) observed within the WPS during Hydraulic Stimulation Operations will be located directly beneath the temporary portable light tower, calculated as 24.1 Fc. The maximum foot-candle at the entrance of the WPS is calculated at 0.0 Fc. The maximum foot-candle at the edge of the WPS is calculated as 0.1 Fc. The maximum foot-candle at the 100-foot offset of the WPS boundary will be 0.0 Fc. The maximum foot-candle at public roads within 1-mile of the WPS boundary will be 0.0 Fc. The maximum foot-candle at building units within 1-mile of the WPS boundary will be 0.0 Fc. The following is a summary of the calculated and required light intensity levels:

Table 8 – Hydraulic Stimulation Operations Calculated Maximum Light Intensity at Points of Interest.

Point of Interest	Foot-Candle	Lux	Required
Within the WPS	24.1	260.3	N/A
At the Entrance of the WPS	0.0	0.0	N/A
At the Edge of the WPS	0.1	1.1	N/A
100-foot offset of the WPS boundary	0.0	0.0	N/A
Public Roads within 1-Mile of the WPS	0.0	0.0	N/A
Building Units within 1-Mile of the WPS	0.0	0.0	4 Lux

D. Drill-Out Operations

Based upon the light intensity calculations shown on the Drill-out Operations Photometric Plan in Appendix C, the maximum foot-candle (Fc) observed within the WPS during drill-out operations will be located directly beneath the temporary portable light towers, calculated as 15.8 Fc. The maximum foot-candle at the entrance of the WPS is calculated at 0.1 Fc. The maximum foot-candle at the edge of the WPS is calculated as 0.1 Fc. The maximum foot-candle at the 100-foot offset of the WPS boundary will be 0.0 Fc. The maximum foot-candle at public roads within 1-mile of the WPS boundary will be 0.0 Fc. The maximum foot-candle at building units within 1-mile of the WPS boundary will be 0.0 Fc. The following is a summary of the calculated and required light

intensity levels:

Table 9 – Drill-Out Operations Calculated Maximum Light Intensity at Points of Interest.

Point of Interest	Foot-Candle	Lux	Required
Within the WPS	15.8	170.6	N/A
At the Entrance of the WPS	0.1	1.1	N/A
At the Edge of the WPS	0.1	1.1	N/A
100-foot offset of the WPS boundary	0.0	0.0	N/A
Public Roads within 1-Mile of the WPS	0.0	0.0	N/A
Building Units within 1-Mile of the WPS	0.0	0.0	4 Lux

E. FLOWBACK OPERATIONS

Based upon the light intensity calculations shown on the Flowback Operations Photometric Plan in Appendix D, the maximum foot-candle (Fc) observed within the WPS during flowback operations will be located directly beneath the temporary portable light towers, calculated as 15.8 Fc. The maximum foot-candle at the entrance of the WPS is calculated at 0.1 Fc. The maximum foot-candle at the edge of the WPS is calculated as 0.1 Fc. The maximum foot-candle at the 100-foot offset of the WPS boundary will be 0.0 Fc. The maximum foot-candle at public roads within 1-mile of the WPS boundary will be 0.0 Fc. The maximum foot-candle at building units within 1-mile of the WPS boundary will be 0.0 Fc. The following is a summary of the calculated and required light intensity levels:

Table 10 – Flowback Operations Calculated Maximum Light Intensity at Points of Interest.

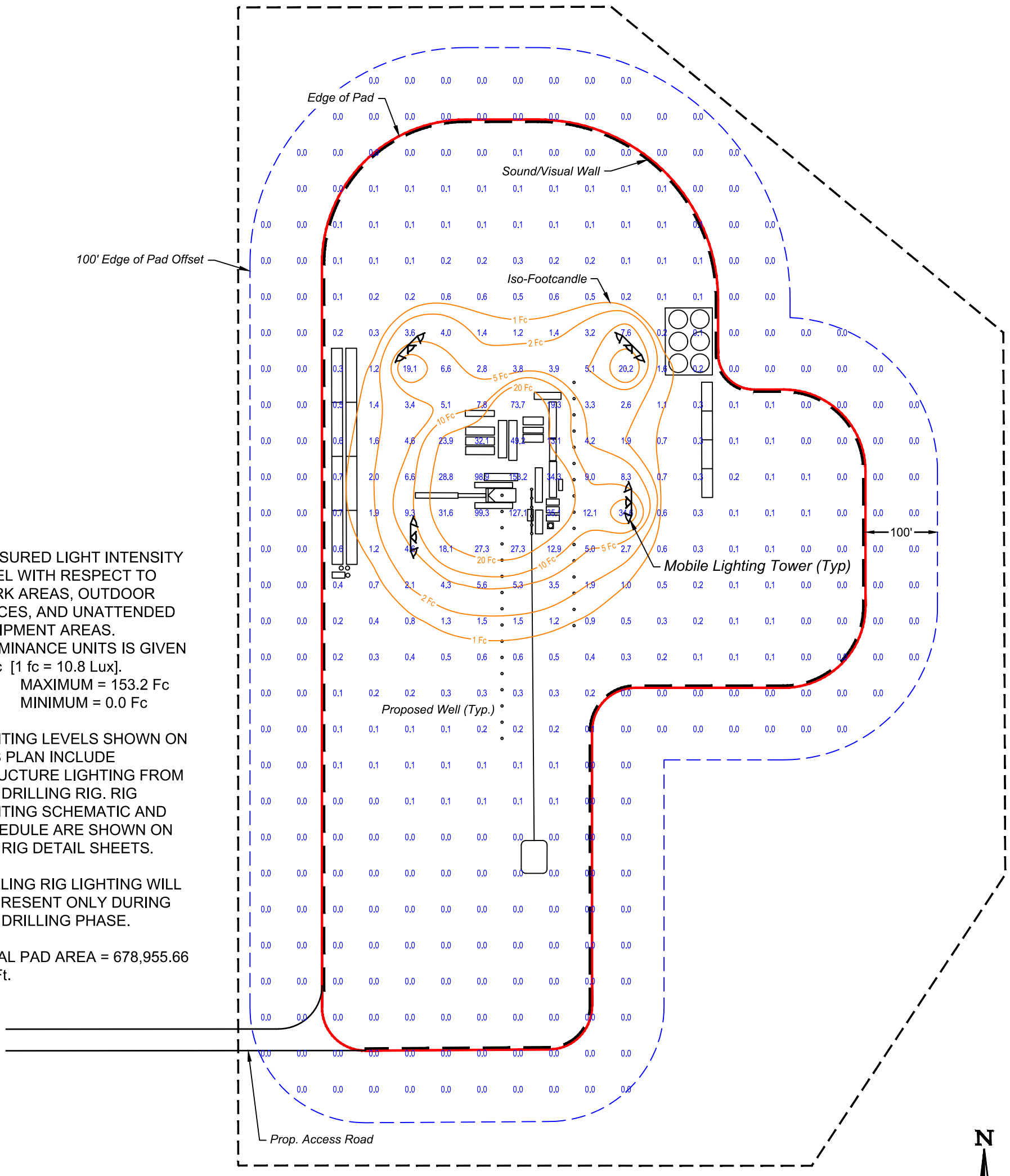
Point of Interest	Foot-Candle	Lux	Required
Within the WPS	15.8	170.6	N/A
At the Entrance of the WPS	0.1	1.1	N/A
At the Edge of the WPS	0.1	1.1	N/A
100-foot offset of the WPS boundary	0.0	0.0	N/A
Public Roads within 1-Mile of the WPS	0.0	0.0	N/A
Building Units within 1-Mile of the WPS	0.0	0.0	4 Lux

IX. CONCLUSION

This report was prepared in compliance with State and Local lighting regulations, specifically ECMC's Rule 424. The proposed lighting configurations, as shown on the Lighting Photometric Plans for the State Sunlight/Long project, conforms with the State and Local lighting regulations requirements. To ensure the safety of all persons on- and off-site and to wildlife and their habitats, all lighting shall conform to the Lighting Photometric Plans and the Lighting Standards and Best Management Practices (BMPs) section of this report.

X. APPENDIX

APPENDIX A – DRILLING OPERATIONS LIGHTING PLAN



NOTES:

1. MEASURED LIGHT INTENSITY LEVEL WITH RESPECT TO WORK AREAS, OUTDOOR SPACES, AND UNATTENDED EQUIPMENT AREAS. ILLUMINANCE UNITS IS GIVEN IN Fc [1 fc = 10.8 Lux].
   MAXIMUM = 153.2 Fc
   MINIMUM = 0.0 Fc

2. LIGHTING LEVELS SHOWN ON THIS PLAN INCLUDE STRUCTURE LIGHTING FROM THE DRILLING RIG. RIG LIGHTING SCHEMATIC AND SCHEDULE ARE SHOWN ON THE RIG DETAIL SHEETS.

3. DRILLING RIG LIGHTING WILL BE PRESENT ONLY DURING THE DRILLING PHASE.

4. TOTAL PAD AREA = 678,955.66 Sq. Ft.

1 DRILLING PAD SITE LIGHTING PHOTOMETRIC PLAN

SCALE: 1" = 120'

LIGHTING FIXTURE SCHEDULE

SYMBOL	LIGHT UNIT DESCRIPTION	BUG RATING	MOUNTING INFO	VOLTS	LAMP QUANTITY	LUMENS / LAMP	UNITS QUANTITY	LUMENS / UNIT	TOTAL LUMENS
	3 HEAD LED FLOOD LIGHTS, MOBILE TELESCOPING TOWER	B3-U3-G5	25' TOWER	120	3	45,171	4	135,513	542,052
	RIG MOUNTED FLOODLIGHT	B5-U3-G2	SEE DETAIL	120	1	40,000	26	40,000	1,040,000
	RIG MOUNTED 4' LED	B2-U3-G1	SEE DETAIL	120	1	6,080	28	6,080	170,240
	HALO LIGHTS MOUNTED ON DERRICK CROWN	B5-U5-G2	CROWN MOUNT	120	1	104,517	8	104,517	836,136

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

CRESTONE PEAK RESOURCES OPERATING LLC

STATE SUNLIGHT/LONG
SECTION 27, T5S, R65W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

SCALE: AS NOTED	DRAWN BY: C.C.	DATE DRAWN: 11-13-24
UELS FILE NO.: C - 7 8 7 5	REVISED:	

DRILLING OPERATIONS PHOTOMETRIC PLAN

= RIG MOUNTED 4' LED (9'H 11 UNITS)

= RIG MOUNTED 4' LED UNDER V-DOOR (18'H 1 UNIT)

= RIG MOUNTED 4' LED IN DERRICK (53'H-158'H 16 UNITS)

= RIG MOUNTED FLOODLIGHT (36'H 12 UNITS)

= RIG MOUNTED FLOODLIGHT (20'H 4 UNITS)

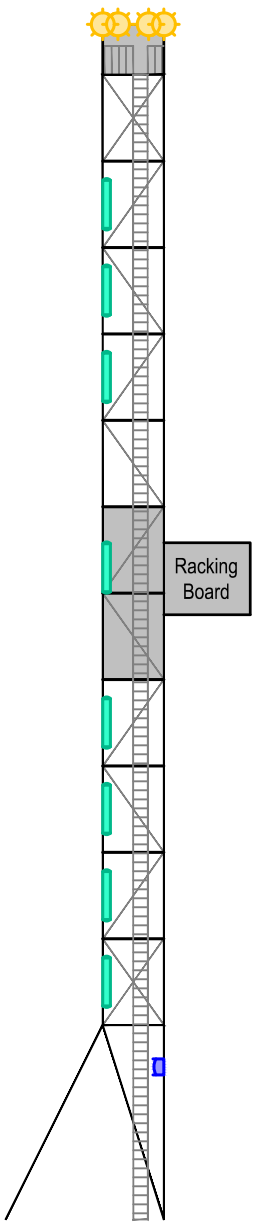
= RIG MOUNTED FLOODLIGHT (10'H 2 UNITS)

= RIG MOUNTED FLOODLIGHT (18'H 3 UNITS)

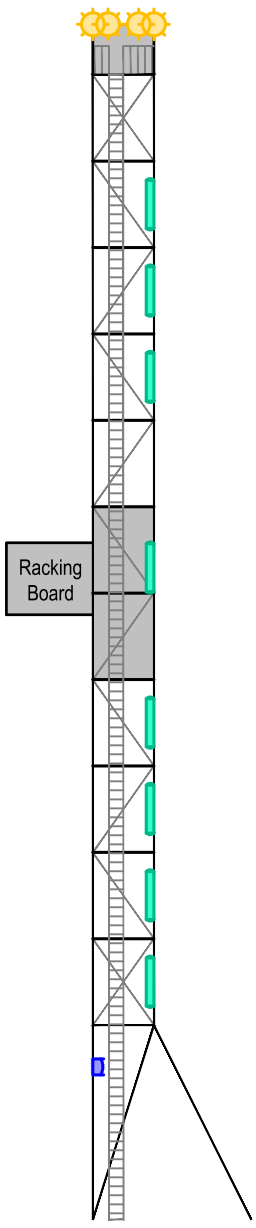
= RIG MOUNTED FLOODLIGHT (9'H 3 UNITS)

= RIG MOUNTED FLOODLIGHT IN DERRICK (41'H 2 UNITS)

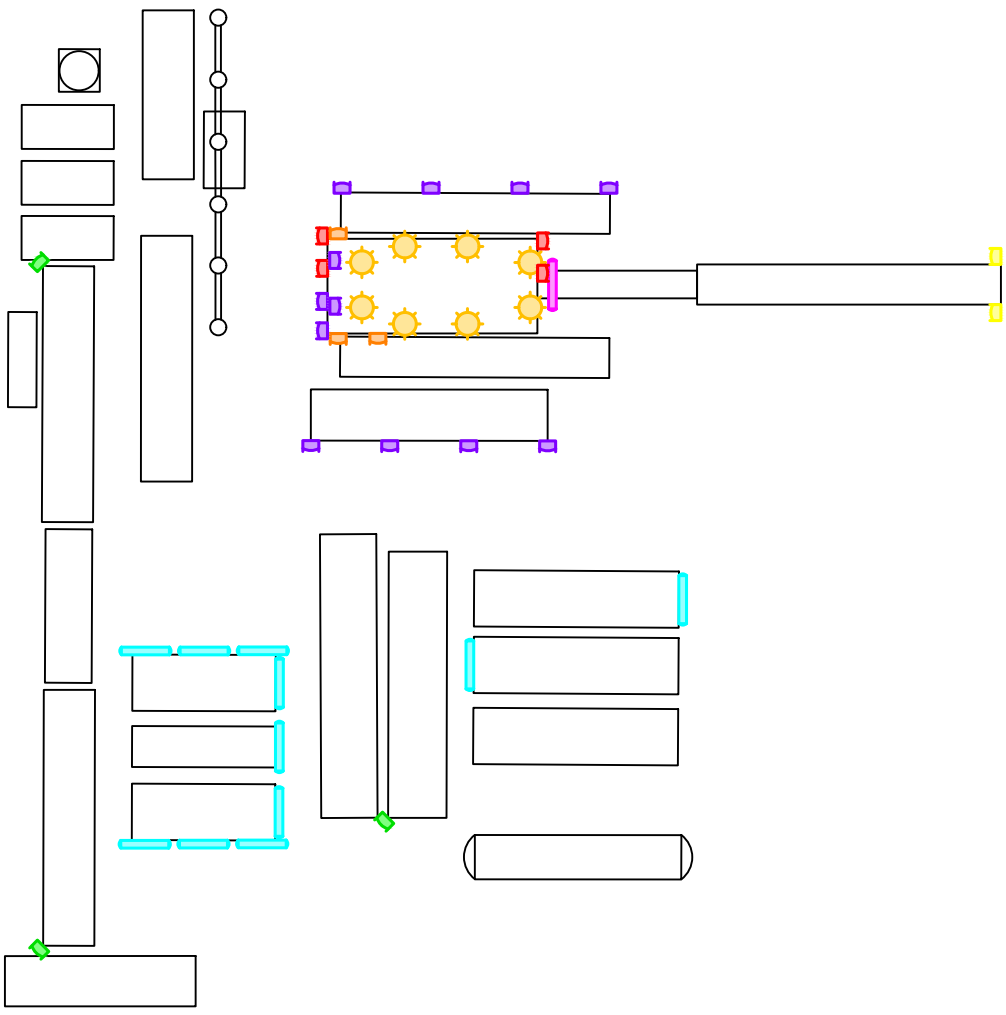
= HALO LIGHTS MOUNTED ON THE CROWN (167'H 8 UNITS)



DRILLER'S SIDE ELEVATION VIEW



OFF-DRILLER'S SIDE ELEVATION VIEW



1 DRILLING RIG LIGHTING DETAIL

SCALE: NO SCALE

LIGHTING FIXTURE SCHEDULE

SYMBOL	LIGHT UNIT DESCRIPTION	BUG RATING	MOUNTING INFO	VOLTS	LAMP QUANTITY	LUMENS / LAMP	UNITS QUANTITY	LUMENS / UNIT	TOTAL LUMENS
▭	RIG MOUNTED FLOODLIGHT	B5-U3-G2	SEE DETAIL	120	1	40,000	26	40,000	1,040,000
▬	RIG MOUNTED 4' LED	B2-U3-G1	SEE DETAIL	120	1	6,080	28	6,080	170,240
☼	HALO LIGHTS MOUNTED ON DERRICK CROWN	B5-U5-G2	CROWN MOUNT	120	1	104,517	8	104,517	836,136

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

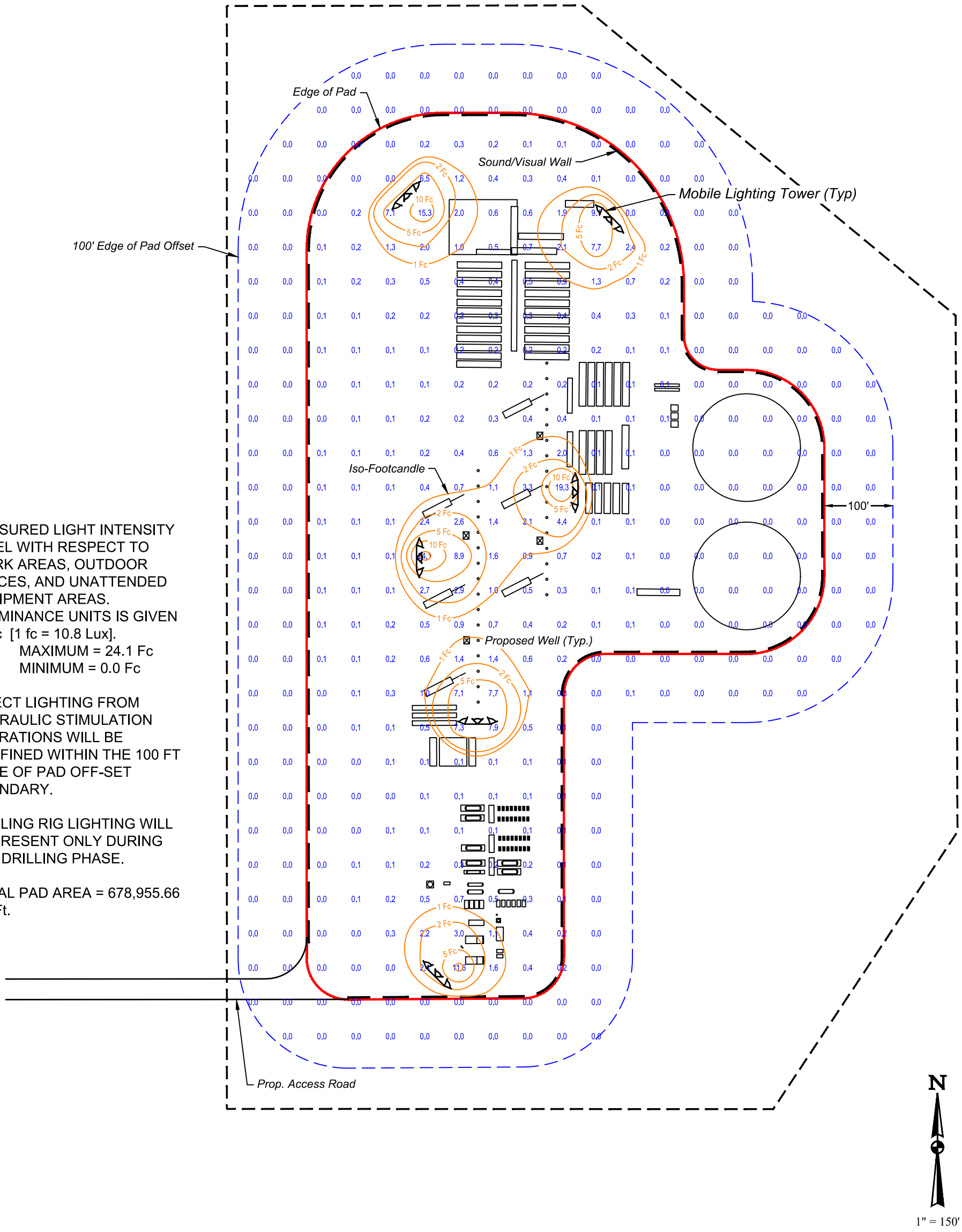
CRESTONE PEAK RESOURCES OPERATING LLC

STATE SUNLIGHT/LONG
SECTION 27, T5S, R65W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

SCALE: AS NOTED		DATE DRAWN: 11-13-24
UELS FILE NO.: C - 7 8 7 5		REVISED:

DRILLING OPERATIONS RIG PHOTOMETRIC PLAN

APPENDIX B – HYDRAULIC STIMULATION OPERATIONS LIGHTING PLAN



NOTES:

1. MEASURED LIGHT INTENSITY LEVEL WITH RESPECT TO WORK AREAS, OUTDOOR SPACES, AND UNATTENDED EQUIPMENT AREAS. ILLUMINANCE UNITS IS GIVEN IN Fc [1 fc = 10.8 Lux].
   MAXIMUM = 24.1 Fc
   MINIMUM = 0.0 Fc

2. DIRECT LIGHTING FROM HYDRAULIC STIMULATION OPERATIONS WILL BE CONFINED WITHIN THE 100 FT EDGE OF PAD OFF-SET BOUNDARY.

3. DRILLING RIG LIGHTING WILL BE PRESENT ONLY DURING THE DRILLING PHASE.

4. TOTAL PAD AREA = 678,955.66 Sq. Ft.

1 HYDRAULIC STIMULATION OPERATIONS LIGHTING PHOTOMETRIC PLAN

SCALE: 1" = 120'

LIGHTING FIXTURE SCHEDULE

SYMBOL	LIGHT UNIT DESCRIPTION	BUG RATING	MOUNTING INFO	VOLTS	LAMP QUANTITY	LUMENS / LAMP	UNITS QUANTITY	LUMENS / UNIT	TOTAL LUMENS
	3 HEAD LED FLOOD LIGHTS, MOBILE TELESCOPING TOWER	B3-U3-G5	25' TOWER	120	3	45,171	6	135,513	813,078

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

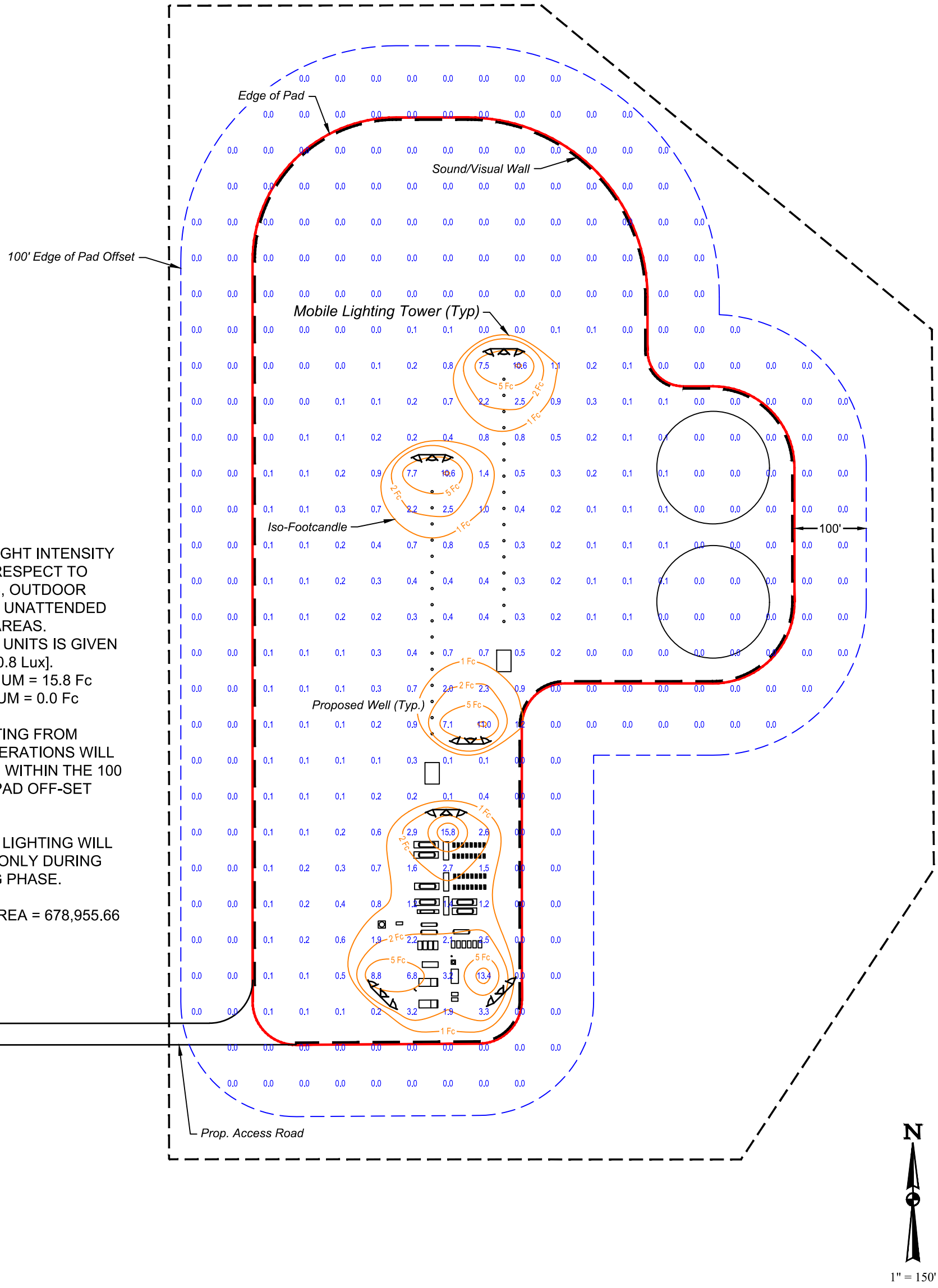
CRESTONE PEAK RESOURCES OPERATING LLC

STATE SUNLIGHT/LONG
SECTION 27, T5S, R65W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

SCALE: AS NOTED	DRAWN BY: C.C.	DATE DRAWN: 11-13-24
UELS FILE NO.: C - 7 8 7 5	REVISED:	

HYDRAULIC STIMULATION OPERATIONS PHOTOMETRIC PLAN

APPENDIX C – DRILL-OUT OPERATIONS PHOTOMETRIC PLAN



NOTES:

1. MEASURED LIGHT INTENSITY LEVEL WITH RESPECT TO WORK AREAS, OUTDOOR SPACES, AND UNATTENDED EQUIPMENT AREAS. ILLUMINANCE UNITS IS GIVEN IN Fc [1 fc = 10.8 Lux].
   MAXIMUM = 15.8 Fc
   MINIMUM = 0.0 Fc

2. DIRECT LIGHTING FROM DRILLOUT OPERATIONS WILL BE CONFINED WITHIN THE 100 FT EDGE OF PAD OFF-SET BOUNDARY.

3. DRILLING RIG LIGHTING WILL BE PRESENT ONLY DURING THE DRILLING PHASE.

4. TOTAL PAD AREA = 678,955.66 Sq. Ft.

1 DRILLOUT OPERATIONS LIGHTING PHOTOMETRIC PLAN

SCALE: 1" = 120'

LIGHTING FIXTURE SCHEDULE

SYMBOL	LIGHT UNIT DESCRIPTION	BUG RATING	MOUNTING INFO	VOLTS	LAMP QUANTITY	LUMENS / LAMP	UNITS QUANTITY	LUMENS / UNIT	TOTAL LUMENS
	3 HEAD LED FLOOD LIGHTS, MOBILE TELESCOPING TOWER	B3-U3-G5	25' TOWER	120	3	45,171	6	135,513	813,078

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

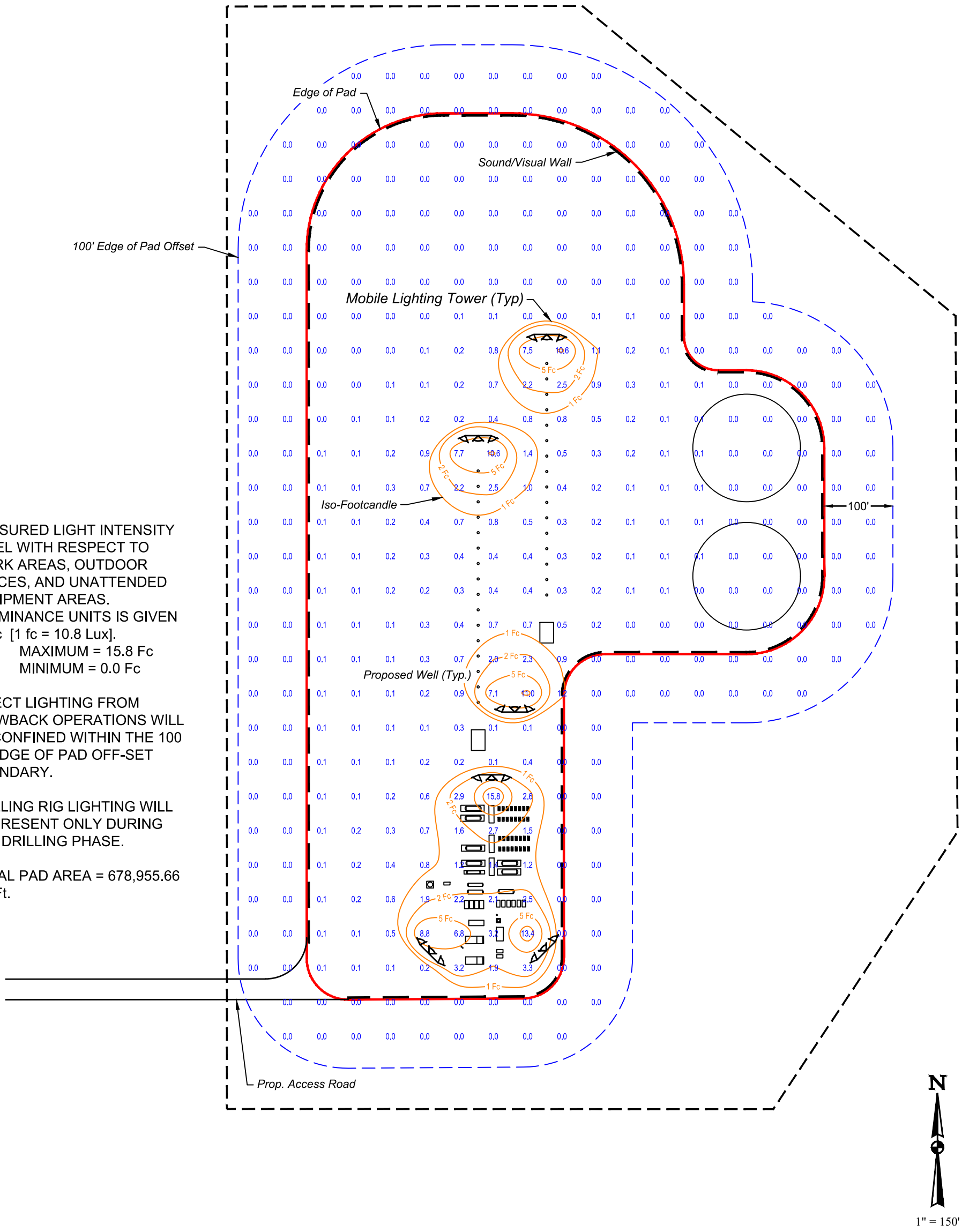
CRESTONE PEAK RESOURCES OPERATING LLC

STATE SUNLIGHT/LONG
SECTION 27, T5S, R65W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

SCALE: AS NOTED	DRAWN BY: C.C.	DATE DRAWN: 11-13-24
UELS FILE NO.: C - 7 8 7 5	REVISED:	

DRILLOUT OPERATIONS PHOTOMETRIC PLAN

APPENDIX D – FLOWBACK OPERATIONS PHOTOMETRIC PLAN



NOTES:

1. MEASURED LIGHT INTENSITY LEVEL WITH RESPECT TO WORK AREAS, OUTDOOR SPACES, AND UNATTENDED EQUIPMENT AREAS. ILLUMINANCE UNITS IS GIVEN IN Fc [1 fc = 10.8 Lux].
   MAXIMUM = 15.8 Fc
   MINIMUM = 0.0 Fc

2. DIRECT LIGHTING FROM FLOWBACK OPERATIONS WILL BE CONFINED WITHIN THE 100 FT EDGE OF PAD OFF-SET BOUNDARY.

3. DRILLING RIG LIGHTING WILL BE PRESENT ONLY DURING THE DRILLING PHASE.

4. TOTAL PAD AREA = 678,955.66 Sq. Ft.

1 FLOWBACK OPERATIONS LIGHTING PHOTOMETRIC PLAN

SCALE: 1" = 120'

LIGHTING FIXTURE SCHEDULE

SYMBOL	LIGHT UNIT DESCRIPTION	BUG RATING	MOUNTING INFO	VOLTS	LAMP QUANTITY	LUMENS / LAMP	UNITS QUANTITY	LUMENS / UNIT	TOTAL LUMENS
	3 HEAD LED FLOOD LIGHTS, MOBILE TELESCOPING TOWER	B3-U3-G5	25' TOWER	120	3	45,171	6	135,513	813,078

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

CRESTONE PEAK RESOURCES OPERATING LLC

STATE SUNLIGHT/LONG
SECTION 27, T5S, R65W, 6th P.M.
ARAPAHOE COUNTY, COLORADO

SCALE: AS NOTED	DRAWN BY: C.C.	DATE DRAWN: 11-13-24
UELS FILE NO.: C - 7 8 7 5	REVISED:	

FLOWBACK OPERATIONS PHOTOMETRIC PLAN

APPENDIX E – LIGHT FIXTURE SPECIFICATION SHEET

FXLED300SF

Ultra high output, high efficiency LED floodlight with NEMA Types: 7H x 6V, 6H x 4V, 4H x 6V, 5H x 5V and 3H x 3V. patent-pending "Air-Flow" technology ensures long LED and driver lifespan. Use for general and security lighting for large areas, building façades, signs and landscapes.

Color: Bronze

Weight: 66.1 lbs

Project:	**Type:**
Prepared By:	**Date:**

Driver Info

Type	Constant Current
120V	2.65A
208V	1.59A
240V	1.38A
277V	1.17A
Input Watts	325.9W

LED Info

Watts	300W
Color Temp	5000K (Cool)
Color Accuracy	72 CRI
L70 Lifespan	100,000 Hours
Lumens	45,171
Efficacy	138.6 lm/W

Technical Specifications

Compliance

UL Listed:

Suitable for wet locations. Suitable for ground mounting.

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires and LED components have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80.

Optical

NEMA Type:

NEMA Beam Spread of 7H x 6V

Performance

Lifespan:

100,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations

Construction

IP Rating:

Ingress Protection rating of IP66 for dust and water

Maximum Ambient Temperature:

Suitable for use in up to 40°C (104°F)

Effective Projected Area:

EPA = 4

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Thermal Management:

Superior thermal management with external "Air-Flow" fins

Lens:

Tempered glass lens

Housing:

Die-cast aluminum housing and door frame

Mounting:

Heavy-duty slipfitter for 2 3/8"OD pipe

Reflector:

Specular and semi-specular vacuum-metalized polycarbonate

Gaskets:

High-temperature silicone gaskets

Technical Specifications (continued)

Construction

Finish:

Formulated for high durability and long-lasting color

Green Technology:

Mercury and UV free. RoHS-compliant components.

Tilt Increment:

Rotates in 6 degree increments

LED Characteristics

LEDs:

Multip-chip, high-output, long-life LEDs

Color Consistency:

7-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warrantied to shift no more than 200K in color temperature over a 5-year period

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Electrical

Drivers:

Constant Current, 1050mA, 50/60 Hz, 120-277V, 4 kV surge protection, 120V: 2.65A, 208V: 1.59A, 240V: 1.38A, 277V: 1.17A, THD <20%, Power Factor: 99%

THD:

9.26% at 120V, 12.56% at 277V

Power Factor:

99.3% at 120V, 96.6% at 277V

Note:

All values are typical (tolerance +/- 10%)

Other

Equivalency:

Equivalent to 1000W Metal Halide

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

Buy American Act Compliance:

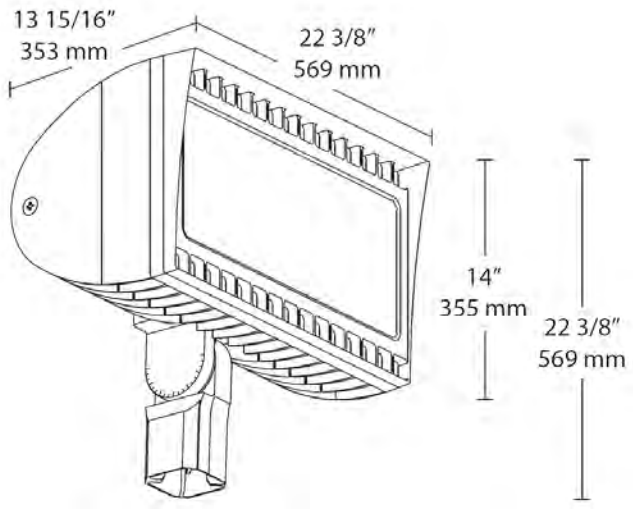
RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Listings

DLC Listed:

This product is listed by Design Lights Consortium (DLC) as an ultra-efficient premium product that qualifies for the highest tier of rebates from DLC Member Utilities. DLC Product Code: PF5PMFXJ

Dimensions



Features

- 300W replaces 1000 MH floodlights
- 100,000-hour LED lifespan
- 5-Year, No-Compromise Warranty

Ordering Matrix

Family	Wattage	Mounting	Color Temp	NEMA Type	Finish	Driver Options	Options	Other Options
FXLED	300	SF						
	200 = 200W **300 =** 300W	**SF =** Slipfitter **T =** Trunnion	**Blank =** 5000K (Cool) **N =** 4000K (Neutral) **Y =** 3000K (Warm)	**Blank =** 7H x 6V **B64 =** 6H x 4V **B55 =** 5H x 5V **B33 =** 3H x 3V **B46 =** 4H x 6V	**Blank =** Bronze **W =** White	**Blank =** 120-277V **/480 =** 480V **/BL =** Bi-Level (Slipfitters only) [1] **/D10 =** 0-10V Dimming	**Blank =** No option **/PCS =** 120V Swivel **/PCS2 =** 277V Swivel **/PCT =** 120-277V Twistlock **/PCT4 =** 480V Twistlock **/PCS4 =** 480V Swivel **/LC =** Lightcloud® Controller	**USA =** BAA Compliant **Blank =** Standard

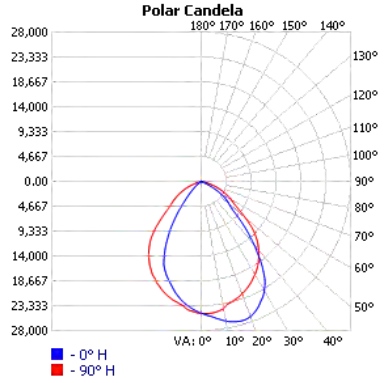
[1] Slipfitter models only

OUTDOOR PHOTOMETRIC REPORT
CATALOG: DLF20180512001-1A

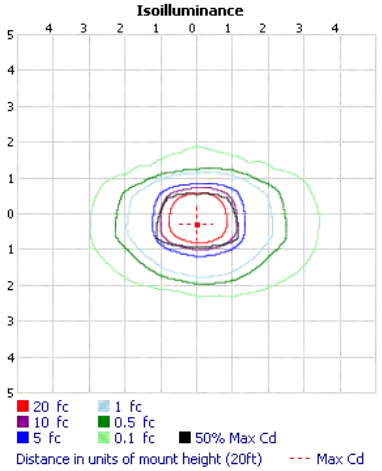
Manufacturer:	RAB LIGHTING INC. RC LIGHTING
Test #:	DLF20180512001-1a
Test Lab:	Deliver Co. Ltd.
Description:	
Lamp Output:	Total luminaire Lumens: 45103.4, absolute photometry *
Input Wattage:	325.921
Luminous Opening:	Circular (Dia: 22.83")
Max Cd:	27,239.9 at Horizontal: 0°, Vertical: 16.5°
Roadway Class:	VERY SHORT, TYPE I

No Photo Available

Polar Candela



Isoilluminance



*Test based on absolute photometry where lamp lumens=lumens total.
*Cutoff Classification and efficiency cannot be properly calculated for absolute photometry.

OUTDOOR PHOTOMETRIC REPORT
CATALOG: DLF20180512001-1A

AcuityBrands.

Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	18,690.3	41.4%
0-40	29,337.7	65%
0-60	42,583.7	94.4%
60-90	2,457.7	5.4%
70-100	418.6	0.9%
90-120	9.1	0%
0-90	45,041.4	99.9%
90-180	62.0	0.1%
0-180	45,103.4	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	2,334.2	5.2%	90-100	0.9	0%
10-20	6,607.3	14.6%	100-110	2.7	0%
20-30	9,748.8	21.6%	110-120	5.5	0%
30-40	10,647.4	23.6%	120-130	8.8	0%
40-50	8,468.9	18.8%	130-140	11.6	0%
50-60	4,777.1	10.6%	140-150	12.6	0%
60-70	2,040.1	4.5%	150-160	11.0	0%
70-80	398.6	0.9%	160-170	6.9	0%
80-90	19.0	0.0%	170-180	2.0	0%

Roadway Summary

Distribution:	TYPE I, VERY SHORT	
Max Cd, 90 Deg Vert:		3.8
Max Cd, 80 to <90 Deg:		308.4
	Lumens	% Lamp
Downward Street Side:	26,990.1	59.8%
Downward House Side:	18,050.8	40%
Downward Total:	45,040.9	99.9%
Upward Street Side:	26.9	0.1%
Upward House Side:	35.1	0.1%
Upward Total:	62.0	0.1%
Total Lumens:	45,102.9	100%

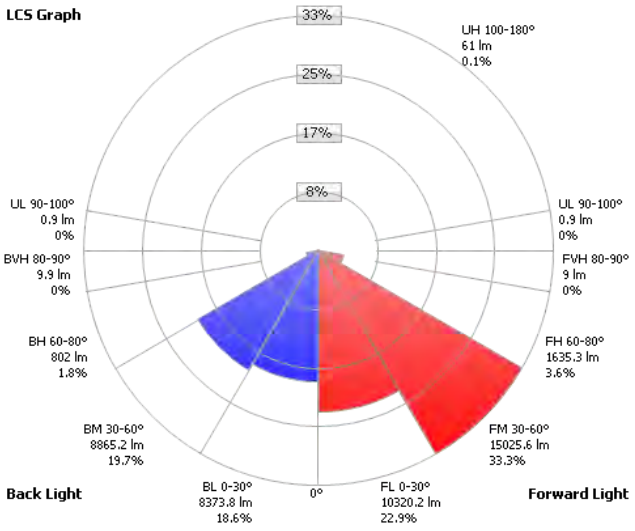
LCS Table

BUG Rating	**B5 - U3 - G2**	
Forward Light	Lumens	Lumens %
Low(0-30):	10,320.2	22.9%
Medium(30-60):	15,025.6	33.3%
High(60-80):	1,635.3	3.6%
Very High(80-90):	9.0	0%
Back Light		
Low(0-30):	8,373.8	18.6%
Medium(30-60):	8,865.2	19.7%
High(60-80):	802.0	1.8%
Very High(80-90):	9.9	0%
Uplight		
Low(90-100):	0.9	0%
High(100-180):	61.0	0.1%
Trapped Light:	0.5	0%

OUTDOOR PHOTOMETRIC REPORT
CATALOG: DLF20180512001-1A

AcuityBrands.

LCS Graph



Scale = Max LCS %

Trapped Light: 0.5 lm, 0%

DLF20180512001-1A
VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: DLF20180512001-1A

Candela Table - Type C

	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345
0	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723	24723
5	25531	25538	25456	25319	25148	24940	24750	24549	24339	24161	24032	23919	23726	23677	23725	23816	23927	24116	24325	24537	24778	25034	25323	25536
10	26599	26549	26320	25822	25184	24585	24150	23775	23474	23188	22961	22772	22440	22409	22460	22573	22608	22915	23320	23745	24345	25288	25973	26423
15	27176	27145	26788	25884	24752	23819	23170	22588	22011	21674	21473	21214	20673	20648	20774	20920	21510	22021	22600	23266	24291	25196	26122	26773
20	26971	26987	26591	25677	24674	23366	22407	21655	20819	20032	19575	19384	18886	18821	18785	19404	20131	20870	21623	22592	23965	25047	25673	26308
25	25638	25840	25463	25294	24228	22628	21393	20438	19417	18510	17795	17518	16631	16803	17180	17847	18569	19495	20345	21623	23222	24424	24708	24830
30	23616	23919	23989	24229	23388	21636	20147	19016	17906	17053	15855	14452	12884	13334	14771	16160	16905	17982	18925	20408	22238	23163	23019	22702
35	20145	20819	21863	22602	22255	20388	18632	17490	16381	15170	12674	10633	8825	9400	11255	13878	15303	16185	17157	18770	20826	21360	20662	19131
40	15281	16093	18358	20485	20598	18638	16732	15665	14727	12296	8892	6633	5029	5527	7443	10749	13502	14089	14977	16699	18949	18991	16564	14424
45	10412	11347	13880	17302	18479	16464	14389	13570	12707	8880	5297	3615	2700	2979	4071	7097	11075	11509	11841	13815	16449	15163	12044	9819
50	6988	7432	9249	12936	15758	13334	11051	10717	9880	5392	2880	1827	1133	1337	2068	3840	7398	8094	8338	10062	12732	10867	7674	6776
55	5448	5803	6395	8507	11436	9551	7785	7384	6146	2756	1225	612	502	502	714	1801	3845	6073	6437	7648	8026	6358	5576	5109
60	3279	3679	4574	5133	6772	7467	6188	5729	3052	1132	466	398	405	357	395	579	1898	4582	4901	6003	5142	3731	3612	2915
65	1064	1425	2340	3043	3960	5640	4550	4150	1426	402	355	355	357	355	339	326	785	2842	3322	4143	2670	2052	1484	761
70	204	212	478	1352	2167	3614	2942	2405	516	277	310	212	157	157	210	251	226	1208	1764	2100	1302	641	183	178
75	86	98	124	154	722	1231	1157	763	194	200	150	107	56	54	83	87	160	199	550	431	299	98	79	59
80	31	32	34	53	89	244	308	108	117	60	40	17	12	12	15	23	33	71	135	61	33	17	20	17
85	0	0	1	3	9	33	73	58	14	9	6	5	3	3	3	4	6	8	13	6	1	0	0	0
90	0	0	0	1	1	1	4	4	2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
95	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
100	0	0	1	1	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	2	1	1	1	0
105	1	1	1	2	2	2	2	2	2	2	2	2	3	4	4	5	5	5	4	3	2	2	1	1
110	1	1	2	2	3	3	3	3	3	3	3	3	5	6	7	8	7	7	6	5	4	3	2	2
115	2	2	3	3	4	4	4	4	4	5	4	4	8	8	10	11	10	10	9	7	6	5	4	3
120	3	3	4	4	5	5	5	6	6	6	6	6	11	12	13	14	13	12	11	10	8	7	6	5
125	4	5	5	6	6	6	7	7	7	7	7	8	15	16	16	16	16	15	14	12	11	10	9	8
130	6	6	7	7	8	8	8	9	9	9	9	10	20	20	20	20	19	18	17	16	15	13	13	12
135	8	8	8	9	9	9	10	10	10	11	11	12	24	24	24	23	22	22	21	19	18	17	16	16
140	10	10	10	11	11	11	11	12	12	13	13	14	28	27	27	26	25	25	24	23	22	21	20	20
145	12	12	12	13	13	13	13	14	14	14	15	15	30	30	30	29	28	28	27	26	25	24	24	24
150	13	13	14	15	15	15	15	15	16	16	17	17	32	32	31	30	30	30	30	29	28	27	27	27
155	15	15	16	17	17	16	16	17	17	18	18	18	33	33	32	32	31	31	31	31	30	29	29	30
160	17	17	18	18	18	17	17	17	18	19	19	19	32	32	32	33	31	31	31	31	31	31	31	32
165	18	18	19	19	18	18	17	17	18	19	20	20	32	32	31	30	30	30	30	30	30	31	31	32
170	18	18	18	18	17	17	16	16	17	17	18	18	27	27	27	27	26	26	26	27	27	27	28	29
175	18	17	18	18	18	17	17	17	17	18	18	18	24	24	24	24	24	24	23	24	24	25	26	26
180	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23

Pauluhn DFL HID hazardous area floodlights

Cl. I, Div. 2, Groups A, B, C, D
Cl. I, Zone 2, AEx nR II
Cl. II, Div. 1, Groups F, G (250W max.)
Ex nR II

Marine & Wet Locations
NEMA 4X
IP66

Applications:

- Onshore drilling and exploration
- Pipeline compressor and storage
- Corrosive environments
- Façade security lighting

Features:

- 150-400W high pressure sodium or 175-400W metal halide
- AEx nR, Ex nR restricted breathing rating is standard – restricted breathing offers cooler T-numbers for increased hazardous locations suitability
- NEMA 7x6 butterfly beam floodlight pattern – wide, uniform and far reaching to provide excellent efficiency and more light where you need it
- NEMA Type 4X and IP66 heavy duty, die cast copper-free aluminum construction is designed for use indoors and outdoors in marine and wet locations with stainless steel external hardware suitable for saltwater and corrosive applications
- 40°C, 55°C and 65°C ambient suitability – addresses high ambient common at industrial facilities
- Low ambient capability to -40°C – perfect for colder climates
- Hinged door frame assembly – has captive cover screws for ease of relamping
- Yoke mount design – standard construction provides the greatest mounting flexibility; can be mounted vertically (wall), horizontally (rooftop or floor) or any angle in between
- 3-axis resonance withstand and UL844 vibration compliant – can stand up to the tough jobs
- Precision formed aluminum reflector – superior beam control, distribution and efficiency
- High light output with a low cost of operation – cost-effectiveness in a high wattage floodlight
- Slipfitter adapter for pole mounting and wall mounting bracket available

Certifications and compliances:

- Class I, Division 2, Groups A, B, C, D
- Class I, Zone 2, AEx nR II
- Class II, Division 1, Groups F, G (250W maximum)
- Ex nR II
- UL/cUL844 – Hazardous Locations
- UL/cUL1598 – Luminaires
- UL/cUL1598A – Supplemental Requirements for Luminaires for Installation on Marine Vessels
- 60079-15
- NEMA Type 4X
- IP66
- Marine and wet locations
- ABS

Standard materials and finishes:

- Housing and lens frame – heavy duty die cast copper-free aluminum with Corro-free epoxy powder coat finish
- Lens – heat- and impact-resistant tempered glass
- Gasket – one-piece silicone
- Mounting brackets – aluminum with Corro-free epoxy powder coat finish
- Reflector – precision formed aluminum
- Lamp holder – porcelain
- Hardware – stainless steel

Technical specifications:

- Entries – one ¾" AEx/Ex gland
- Wind rating – EPA: 2.90 at vertical
- Lamp type – high pressure sodium; probe start metal halide[A]; pulse start metal halide (lamps not provided)
- Lamp holder – mogul base
- Ballast – multi-tap 120/208/240/277V, 60 Hz (standard); 220-240V, 50 Hz (optional); tri-tap 120/277/347V (optional); 480V (optional)

Mounting option:

- Yoke mount

Photometrics:

- Refer to www.eaton.com (under the Resources tab of each product family) for specific photometric IES files

[A] Not available in the U.S.

Pauluhn DFL HID hazardous area floodlights

Cl. I, Div. 2, Groups A, B, C, D
Cl. I, Zone 2, AEx nR II
Cl. II, Div. 1, Groups F, G (250W max.)
Ex nR II

Marine & Wet Locations
NEMA 4X
IP66

Options:

Description	Suffix
• Lamps included	**LB**
• 480V	**480**
Replace /MT in catalog number with /480	
• 230V	**230**
Replace /220 ONLY in catalog number with /230	

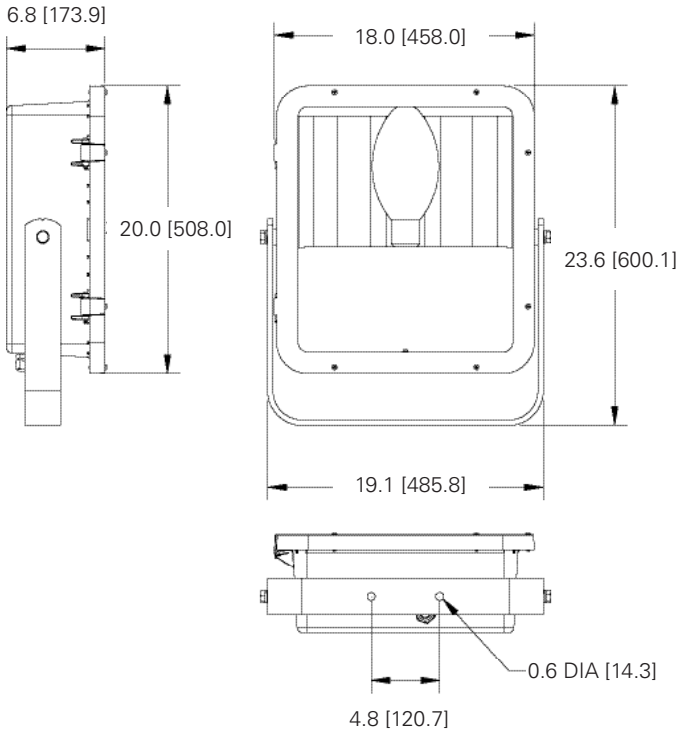
Accessories (ordered separately):

Description	Cat. #
• Pole mount slipfitter adapter	**SFA6**
• Wall mount bracket adapter	**SWB6**
• Bull horn, 2 tenon, gray	**BLHN2**
• Bull horn, 3 tenon, gray	**BLHN3**

Ordering information:

Cat. #	Lamp type	Watts	Weight (lbs.)	ANSI lamp type	Zone T-code	Division T-code	Ambient temperature °C	Supply wire °C
DFLMY250/MT 76 S828	Pulse start metal halide	250	42.0	M153	T3	T1	40/55/65	90/90/105
DFLMY400/MT 76 S828	Pulse start metal halide	400	44.0	M155	T3	T1	40/55	105/105
DFLMY320/MT 76 S828	Pulse start metal halide	320	44.0	M154	T3	T1	40/55	105/105
DFLMY250/TT 76C	Probe start metal halide	250	42.0	M58C	T3	T1	40/55/65	90/90/105
DFLMY400/TT 76C	Probe start metal halide	400	44.0	M59C	T3	T1	40/55	90/105
DFLMY250/220 50 76C	Probe start metal halide	250	42.0	M58C	T3	T1	40/55/65	90/90/105
DFLMY400/220 50 76C	Probe start metal halide	400	44.0	M59C	T3	T1	40/55	90/105
DFLSY250/MT 76	High pressure sodium	250	40.0	S50	T3	T1	40/55/65	90/90/105
DFLSY400/MT 76	High pressure sodium	400	44.0	S51	T3	T1	40/55	90/105
DFLSY250/TT 76	High pressure sodium	250	40.0	S50	T3	T1	40/55/65	90/90/105
DFLSY400/TT 76	High pressure sodium	400	44.0	S51	T3	T1	40/55	90/105
DFLSY250/220 50 76	High pressure sodium	250	40.0	S50	T3	T1	40/55/65	90/90/105
DFLSY400/220 50 76	High pressure sodium	400	44.0	S51	T3	T1	40/55	90/105

Dimensions (in inches):



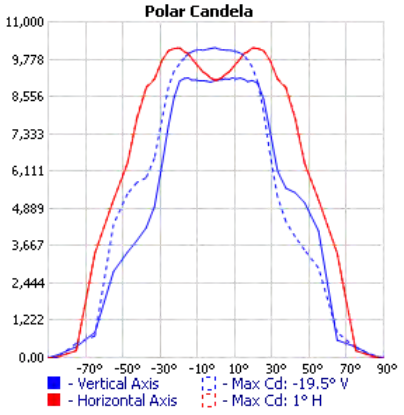
Bull horns – provided with 2 3/8" pole tenon

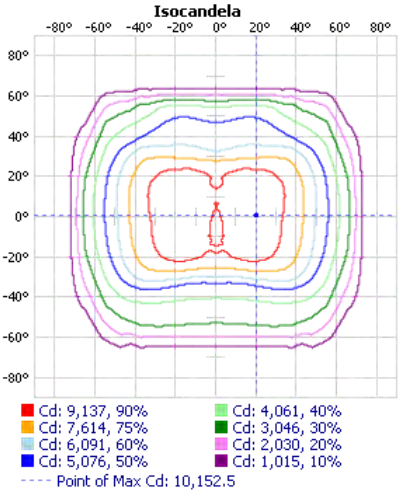
BLamp is not included unless option 'L' is selected.
CNot available in the U.S.

FLOOD PHOTOMETRIC REPORT
CATALOG: DFLMYM400

Manufacturer:	COOPER CROUSE-HINDS
Test #:	11598-PLA
Test Lab:	COOPER CROUSE-HINDS
Catalog:	DFLMYM400
Description:	CAST ALUMINUM HOUSING, FORMED SPECULAR HAMMERTONE REFLECTOR, CLEAR GLASS ENCLSOURE.
Lamp Catalog:	SYLVANIA MS400/PS/BD
Lamp:	ONE CLEAR VBD M59 400 WATT PS METAL HALIDE LAMP RATED AT 40,000 LUMENS.
Lamp Output:	1 lamp, rated Lumens/lamp: 40000
Input Wattage:	400
Luminous Opening:	Rectangle (L: 0.38M, W: 0.25M)
Nema Type:	7 X 6
Max Cd:	10,152.5 at Horizontal: -19.5°, Vertical: 1°
Efficiency:	60.1%

No Photo Available





FLOOD PHOTOMETRIC REPORT
CATALOG: DFLMYM400

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	7,879.7	19.7%	32.7%
0-40	12,625.4	31.6%	52.4%
0-60	21,101.7	52.8%	87.7%
60-90	2,972.4	7.4%	12.3%
0-90	24,074.1	60.2%	100%

Lumens Per Zone

Zone	Lumens	% Total
0-10	882.6	3.7%
10-20	2,711.4	11.3%
20-30	4,285.7	17.8%
30-40	4,745.7	19.7%
40-50	4,592.7	19.1%
50-60	3,883.6	16.1%
60-70	2,280.3	9.5%
70-80	623.4	2.6%
80-90	68.7	0.3%

Flood Summary

	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	58.8%	23,517.5	145.1	128.3
Beam (50%):	43%	17,215.4	111.2	83.8
Total:	60.1%	24,025.1		

11598-PLA
VISUAL PHOTOMETRIC TOOL

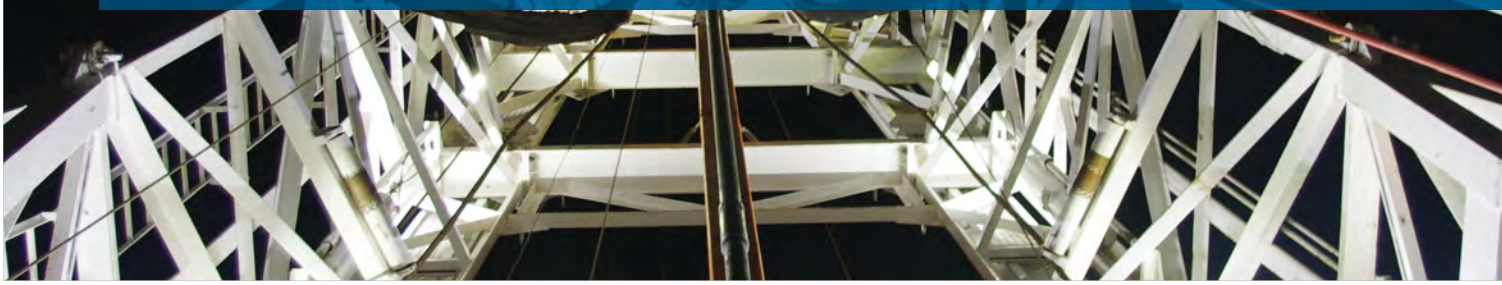
FLOOD PHOTOMETRIC REPORT
CATALOG: DFLMYM400

Candela Table - Type B

	-90	-85	-75	-65	-55	-15	-5	0	5	15	55	65	75	85	90
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85	0	2	5	6	8	14	18	22	18	14	8	6	5	2	0
75	0	7	14	35	62	435	366	358	366	435	62	35	14	7	0
65	0	12	53	95	493	673	583	574	583	673	493	95	53	12	0
55	0	15	103	164	2037	4414	4149	4154	4149	4414	2037	164	103	15	0
15	0	28	220	3227	5049	9964	9283	9122	9283	9964	5049	3227	220	28	0
5	0	30	229	3419	5189	9940	9330	9141	9330	9940	5189	3419	229	30	0
0	0	27	228	3424	5171	9970	9276	9087	9276	9970	5171	3424	228	27	0
-5	0	27	225	3366	5089	9935	9238	9059	9238	9935	5089	3366	225	27	0
-15	0	28	219	3119	4871	9799	9231	9166	9231	9799	4871	3119	219	28	0
-55	0	17	110	206	1786	2902	2855	2825	2855	2902	1786	206	110	17	0
-65	0	15	62	135	509	839	838	834	838	839	509	135	62	15	0
-75	0	8	28	66	113	336	354	355	354	336	113	66	28	8	0
-85	0	2	10	17	27	74	72	89	72	74	27	17	10	2	0
-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Hazardous Area LED Lighting

Available November 2014



Introducing

Pauluhn™ DLL Series Linear LED for land-based rigs

Introduction:

The Pauluhn DLL Linear LED by Eaton's Crouse-Hinds is specifically designed to replace fluorescent T12, T8 and T5HO lighting on land-based and offshore drilling platforms. The rugged and durable design features the industry's most versatile and flexible mounting options. The Pauluhn DLL is the ideal solution for high vibration, impact and hose down in drilling applications.

Applications:

Land-based and offshore rigs; areas include: derrick, mast, SCR house, top drive, operator's house, power and pump stations.

Key features & benefits:

- Industry-leading efficacy: up to 130 LPW
- -40°C to +65°C ambient operating temperature
- Ultra slim (less than 3" height) low profile fixture
- Versatile ceiling/swivel, wall, flush, pole and pendant mounting options
- Standard wide and optional narrow optics for uniform illumination in control room and drill mast
- Four points of secondary retention and through feed wiring options
- Ability to withstand 2,000 psi of hose pressure from a 5 foot distance and 5G 3-axis vibration
- Emergency battery back-up (90 minutes) and surge protection options (up to 10kV)

Electrical specifications:

	2 ft.	4 ft.
Voltage	100-277 VAC/108-250 VDC; 347-480 VAC	
Amperage @ 120VAC	0.24	0.46
Wattage @ 120 VAC	29W typical	55W typical
Lumen output	3,600	7,100
Frequency	50/60 Hz	50/60 Hz
Power factor @ 100 VAC	0.90	0.95
THD	<20%	<20%

*Preliminary typical values; data subject to change.

Certifications:

NEC standards:

- Class I, Division 2, Groups A, B, C, D
- Class II, Division 1, Groups F, G - *pending*
- Class I, Zone 2
- NEMA 4X; IP66
- Marine and Wet Locations

UL standards:

- UL844 Electrical Fixture Hangers for Hazardous Locations
- UL1598 Luminaire
- UL1598A Luminaire for Installation on Marine Vessels
- UL924 for Emergency Lighting - *pending*

CSA standard:

- C22.2 No. 137

Additional certifications:

- ABS design assessed - *pending*

Materials:

Housing:

- Copper-free aluminum
- Optional Corro-free™ epoxy powder coat

Lens:

- Glass or polycarbonate
- Diffused glass or polycarbonate

Mounting:

Versatile mounting options:

- Back mount (fixed/ceiling)
- Back mount (swivel/ceiling)
- Offset ceiling mount
- Offset wall mount
- Pole mount
- Pendant mount

Easily retrofit to:

- Existing Pauluhn DuraPro and MagnaPro fluorescent light fixtures
- Rig-A-Lite and Snelson C1D2 fluorescent lighting fixtures

Crouse-Hinds
by EATON

Ordering information

Part number example

DLL4N/UNV1 S903 TF P

DLL series linear LED, cool white, 4 foot, ½" hubs, 80° narrow light pattern, 100-277 VAC driver, polycarbonate lens, through feed hubs, painted

DLL **4** **N** **/UNV1** **S903** **TF** **P**

Series

DLL	Pauluhn DLL series linear LED luminaire

Optics

BLANK	Wide (120°)
N	Narrow (80°)

Finish

BLANK	Natural aluminum
P	Painted (gray, epoxy)

Through feed

TF	Pull wire included in fixture

Length/lumens

4	4 foot length, 7,100 lumens
2	2 foot length, 3,600 lumens

Consult factory/customer service for availability

EM1	EM 100-277VAC; normal mode: 6,700 lumens; battery mode: 14% of full output
EM2	EM 100-277VAC; normal mode: 3,600 lumens; battery mode: 35% of full output
EM3	EM 347-480VAC; normal mode: 6,700 lumens; battery mode: 14% of full output
EM4	EM 347-480VAC; normal mode: 3,600 lumens; battery mode: 35% of full output

Lens

BLANK	Glass
S903	Polycarbonate
S891	Diffused glass
S903D	Diffused polycarbonate

Voltage

/UNV1	100-277 VAC; 108-250 VDC
/UNV34	347-480 VAC

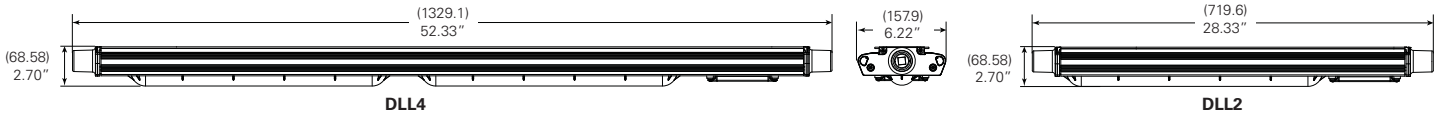
Accessories (ordered separately)

DP1057MTK	Flush/back mount back plate *(compatible with DuraPro)*
DP1050MTK	Ceiling/swivel mount *(compatible with DuraPro)*
DP1053MTK	Ceiling/wall mount offset *(compatible with DuraPro)*
DP1054MTK KIT	Ceiling mount bracket and adapter kit *(compatible with MagnaPro)*
DP1052MTK	Offset wall mount *(compatible with DuraPro)*
PM KIT 1.25	Pole mount kit, 1.25" conduit
PM KIT 2.0	Pole mount kit, 2.00" conduit
PM KIT 2.5	Pole mount kit, 2.50" conduit
PEND HAZ KIT 2	Pendant mount kit for 2 ft. linear
PEND HAZ KIT 4	Pendant mount kit for 4 ft. linear
SS KIT	Safety chain kit
VMVL/UNV1 80W 1A KIT	1 amp driver replacement kit 100-277 VAC for 4 ft. linear
VMVL/UNV34 80W 1A KIT	1 amp driver replacement kit 347-480 VAC for 4 ft. linear
VMVL/UNV1 80W 0.5A KIT	0.5 amp driver replacement kit 100-277 VAC for 2 ft. linear
VMVL/UNV34 80W 0.5A KIT	0.5 amp driver replacement kit 347-480 VAC for 4 ft. linear

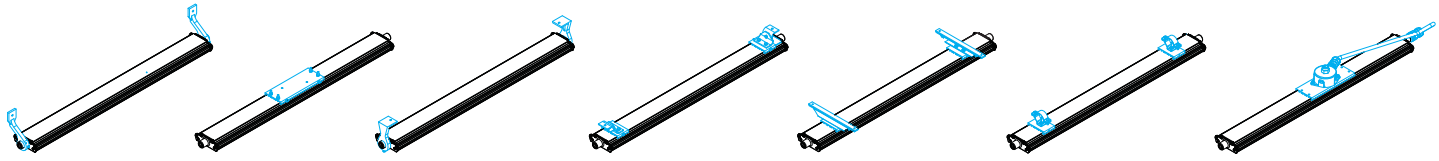
Consult factory/customer service for availability

CABLE KIT 1	TECK armored cable (5 ft.) with TMCX glands
CABLE KIT 2	P Type armored cable (5 ft.) with ADE 6F glands
CABLE KIT 3	Metal clad armored cable (5 ft.) with TMCX glands
EM2 UNV1	Battery back-up 2 ft. LED kit, no cable/gland *(loose ¾" entry hubs)*
EM2 UNV34	Battery back-up 2 ft. LED kit, no cable/gland *(loose ¾" entry hubs)*
EM4 UNV1	Battery back-up 4 ft. LED kit, no cable/gland *(loose ¾" entry hubs)*
EM4 UNV34	Battery back-up 4 ft. LED kit, no cable/gland *(loose ¾" entry hubs)*
SRG UNV1	10kV/KA surge protection kit for 100-277 VAC
SRG UNV34	10kV/KA surge protection kit for 347-480 VAC
EM2 UNV1 SRG	Battery back-up 2 ft. LED with integral surge protector
EM2 UNV34 SRG	Battery back-up 2 ft. LED with integral surge protector
EM4 UNV1 SRG	Battery back-up 4 ft. LED with integral surge protector
EM4 UNV34 SRG	Battery back-up 4 ft. LED with integral surge protector

Dimensions & mounting options:



DLL4 **DLL2**



Offset wall **DP1052MTK**

Flush ceiling **DP1057MTK**

Offset ceiling **DP1053MTK**

Ceiling/swivel **DP1050MTK**

Ceiling and adapter **DP1054MTK KIT**

Pole mount **PM KIT 1.25/2/2.5**

Pendant mount **PEND HAZ KIT 2/4**

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Crouse-Hinds business
1201 Wolf Street
Syracuse, NY 13208

Powering Business Worldwide

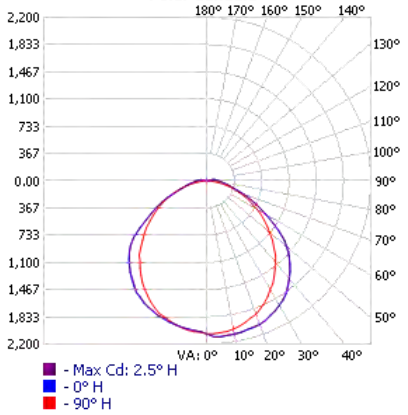
Printed in USA
Publication No. 5147-1014
October 2014

OUTDOOR PHOTOMETRIC REPORT
CATALOG: DLLA4/UNV1-S903D

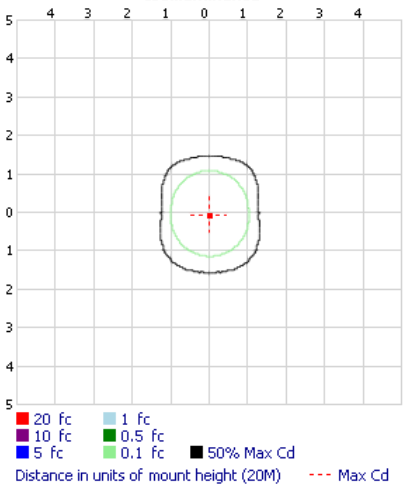
Manufacturer:	COOPER CROUSE-HINDS
Test #:	210804_VM_02B_MLLA4_M2_Diff_2108174
Test Lab:	SYR
Test Date:	08/17/21
Catalog:	DLLA4/UNV1-S903D
Description:	DLLA4/UNV1-S903D, 4Ft Linear, Diffuse Poly Lens, 120-Degree
Lamp Output:	Total luminaire Lumens: 6080.3, absolute photometry *
Input Wattage:	62
Luminous Opening:	Rectangle (L: 51.6", W: 5.52")
Max Cd:	2,108.0 at Horizontal: 2.5°, Vertical: 5°
Roadway Class:	Type VS

No Photo Available

Polar Candela



Isoilluminance



*Test based on absolute photometry where lamp lumens=lumens total.
*Cutoff Classification and efficiency cannot be properly calculated for absolute photometry.

OUTDOOR PHOTOMETRIC REPORT
CATALOG: DLLA4/UNV1-S903D

Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	1,619.8	26.6%
0-40	2,671.2	43.9%
0-60	4,730.0	77.8%
60-90	1,247.9	20.5%
70-100	645.1	10.6%
90-120	100.1	1.6%
0-90	5,977.9	98.3%
90-180	102.4	1.7%
0-180	6,080.3	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	195.1	3.2%	90-100	81.2	1.3%
10-20	562.0	9.2%	100-110	18.3	0.3%
20-30	862.6	14.2%	110-120	0.5	0%
30-40	1,051.4	17.3%	120-130	0.4	0%
40-50	1,093.2	18.0%	130-140	0.9	0%
50-60	965.6	15.9%	140-150	0.3	0%
60-70	684.0	11.3%	150-160	0.4	0%
70-80	381.7	6.3%	160-170	0.2	0%
80-90	182.1	3.0%	170-180	0.1	0%

Roadway Summary

Distribution:		Type VS
Max Cd, 90 Deg Vert:		156.9
Max Cd, 80 to <90 Deg:		274.4
	Lumens	% Lamp
Downward Street Side:	3,043.2	50.1%
Downward House Side:	2,935.2	48.3%
Downward Total:	5,978.4	98.3%
Upward Street Side:	53.6	0.9%
Upward House Side:	48.6	0.8%
Upward Total:	102.3	1.7%
Total Lumens:	6,080.7	100%

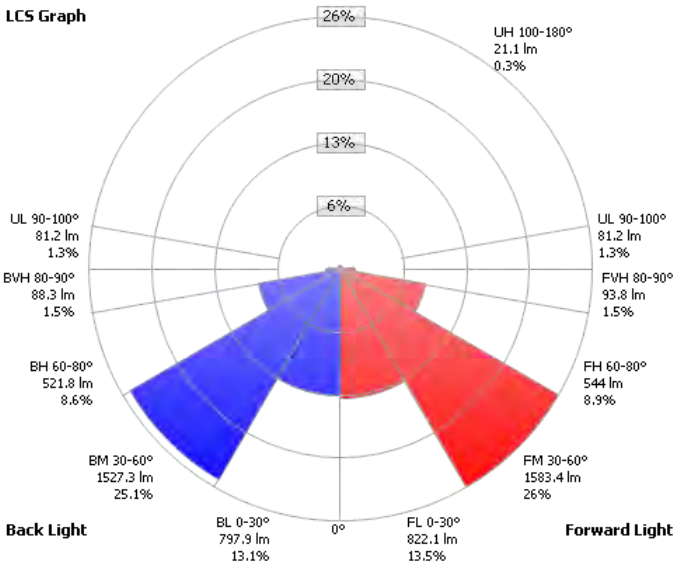
LCS Table

BUG Rating	**B2 - U3 - G1**	
Forward Light	Lumens	Lumens %
Low(0-30):	822.1	13.5%
Medium(30-60):	1,583.4	26%
High(60-80):	544.0	8.9%
Very High(80-90):	93.8	1.5%
Back Light		
Low(0-30):	797.9	13.1%
Medium(30-60):	1,527.3	25.1%
High(60-80):	521.8	8.6%
Very High(80-90):	88.3	1.5%
Uplight		
Low(90-100):	81.2	1.3%
High(100-180):	21.1	0.3%
Trapped Light:	0.000	0%


210804_VM_02B_MLLA4_M2_DIFF_2108174
VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: DLLA4/UNV1-S903D

LCS Graph



Scale = Max LCS %

Trapped Light: 0 lm, 0%

OUTDOOR PHOTOMETRIC REPORT
CATALOG: DLLA4/UNV1-S903D

Candela Table - Type C

	0	30	60	90	120	150	180	210	240	270	300	330	360
0	2062	2062	2062	2062	2062	2062	2062	2062	2062	2062	2062	2062	2062
5	2104	2084	2058	2052	2040	2042	2024	2038	2036	2040	2042	2058	2104
10	2092	2070	2028	2026	2006	2010	2002	2010	2002	2006	2012	2044	2092
15	2074	2050	1992	1973	1956	1975	1972	1980	1952	1953	1973	2022	2074
20	2060	2026	1936	1913	1893	1934	1934	1937	1894	1898	1931	2006	2060
25	2004	1962	1862	1815	1800	1863	1880	1869	1820	1802	1862	1945	2004
30	1934	1887	1760	1690	1699	1782	1813	1800	1725	1687	1757	1873	1934
35	1848	1793	1659	1568	1592	1710	1725	1707	1622	1558	1657	1788	1848
40	1715	1671	1528	1426	1462	1584	1613	1604	1493	1409	1528	1676	1715
45	1573	1519	1391	1263	1322	1459	1497	1472	1361	1266	1391	1531	1573
50	1401	1359	1235	1097	1170	1308	1350	1329	1228	1108	1236	1358	1401
55	1167	1170	1064	938	1013	1148	1108	1160	1059	945	1074	1184	1167
60	910	937	890	773	843	902	868	907	897	790	893	956	910
65	696	716	706	611	680	700	674	684	730	638	730	727	696
70	512	528	527	456	517	503	465	501	547	482	543	529	512
75	352	361	370	313	350	332	325	336	367	333	390	365	352
80	261	259	255	180	236	241	252	242	254	199	267	273	261
85	190	194	163	62	152	181	187	179	162	80	171	199	190
90	151	141	100	3	94	131	143	136	108	20	111	148	151
95	120	103	60	0	49	105	114	103	58	15	64	103	120
100	94	83	7	10	3	73	89	74	7	9	13	72	94
105	48	18	0	0	0	10	39	14	0	0	0	25	48
110	2	2	4	0	3	5	0	6	0	0	1	1	2
115	0	0	0	0	0	0	0	9	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	1	0	0
125	1	0	0	0	0	0	0	0	0	0	7	0	1
130	0	0	0	0	0	0	0	0	5	0	2	0	0
135	4	2	3	3	0	2	0	0	0	1	0	0	4
140	10	0	3	0	2	0	0	0	1	0	0	0	10
145	0	2	0	0	0	5	0	0	0	0	2	1	0
150	0	0	0	0	0	0	0	0	0	0	0	3	0
155	0	4	0	2	1	0	0	0	3	0	0	0	0
160	1	0	2	4	0	0	0	0	0	1	0	0	1
165	7	0	0	1	2	0	1	0	5	0	0	1	7
170	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	8	4	1	10	0	5	1	3	3	1	2	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0

HYLITE™
LED Lighting

Available in Five Popular Lumen Packages and in NEMA 2, 3, 4, 5 and 6 Beam Spreads to suit a Variety of Flood Lighting Applications

140 LpW | IP67 | Glare-Free, UGR <19

AEON™
Flood Light

With Enhanced Glare-Free Illumination and various Beam Spreads, AEON Provides Crisp Illumination, avoiding any Visual Discomfort. AEON's Proprietary Optics produce the Ideal Light Distribution and Beam Angles for Variety of Flood Lighting applications, while saving you up to 83% in Energy use compared to Traditional Lighting.

Engineered with State-of-the-Art technology for Efficiency, Glare Control, and Uniformity, the AEON features Instant On/Off, Dimming, Full Controllability, High Energy Efficiency, Flicker-Free Lighting and Complete Flexibility.

The AEON delivers Simple, Smart and Easy-to-use Flood Lighting Solutions that provide Advanced Functionality, Versatility and Operational Efficiency.

The Most Efficient and the Most Powerful LED Flood Light in the Industry!

Additional Options available for all Models:

- Full RGB Colors and DMX Controls
- With Remote Drivers
- Extended Warranty
- Complete Package with Poles, Platforms & Cross-Arms

100% Project Financing Available

5 Popular Delivered Lumen Packages:

230W: 33,100lm (~1000W HID)
310W: 44,100lm (~1500W HID)
440W: 62,100lm (~2000W HID)
520W: 73,500lm (~3000W HID)
750W: 105,000lm (~4000W HID)

SAVE UP TO 83% ON YOUR ENERGY COSTS

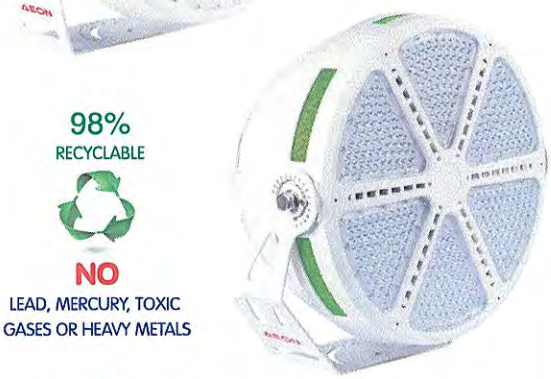
Illuminating facts about High Performance AEON™ LED Flood Light
Better for your Eyes, Better for the Planet.

What makes the AEON™ LED Flood Light your Lighting Solution of Choice?

- The most powerful Flood Light Luminaire with the Highest Reliability Level: Incredibly High 95% Total Efficiency and with the Highest Efficacy in its own Class: Up to 140 Delivered LpW. More Light with Fewer Fixtures.
- Heavy-duty, Lightweight and Durable Die-Cast Design for High Wear Resistance: Withstands Harsh, Extreme Outdoor Conditions and Corrosive Environments.
- Proprietary Thermal Efficient Design with Passive Cooling Maximizes Heat Dissipation for Longer Life of the Luminaire. Designed for Greater Life Expectancy in Warmer Climates.
- Patented Revolutionary Aerodynamic Design for Minimal Wind Resistance.
- State-of-the-Art, Aesthetically Pleasant Compact Design with No Exposed Electronics or Wiring. Rugged, Weather-tight Design, IP67 Rated for Wet location.
- Patented Cross-Vent Convection Design for Longer Life of LED Package and Electronics.
- Adjustable in 15° Increments: 0-90° Orient and 270° Tilt Angle.
- Scalable LED Modules in NEMA 2, 3, 4, 5 and 6 Beam Spreads allows for Optimized Configuration for different applications.
- Proprietary Glare-Free Illumination: No Visual Discomfort. UGR <19.
- Precise, Custom-engineered Optics with Controlled Intensity and Uniformity: Maintains Consistent Delivered Foot Candles over the Luminaries life.
- High Color Rendition showing True Colors: CRI >85.
- Proprietary Design offers Uniform and Constant Light Levels throughout the Life of the Luminaire with Minimal Lumen Depreciation.
- Avoids Light Pollution and Trespass: Optical Accuracy. Directs Light precisely where needed without any Spillage.
- Advance Technology for Luminaire Longevity: Integrated Power Supply Operates at Lower Temperature and at incredible 95% Efficiency.
- Technology within the Fixture: No Outside Exposure to any Sensitive Electronic Components.
- Operational Flexibility: Adaptable to Various Intelligent Lighting Controls: Wired or Wireless, Wi-Fi, Bluetooth, Zigbee, Dali, AirMesh Networks, Hybrid Networked Lighting Controls, etc.
- Ultra-Low EMI eliminates Electrical Interference with surrounding Electronic Systems.
- Excellent for 4K, Ultra-HD and HDTV Broadcasting, Digital Photography and Flicker-free Slow-Motion Recording for Optimal Television and Security Viewing.
- IP67 - Complete Protection against Dust, Debris and Water Infiltration.

Proprietary & Patented Designs!

DLC QPL LISTED PREMIUM



98% RECYCLABLE

NO LEAD, MERCURY, TOXIC GASES OR HEAVY METALS

Designed, Engineered & Assembled in the USA

GSA®

Contract 47QSWA20D0040

AEON™ Flood Light

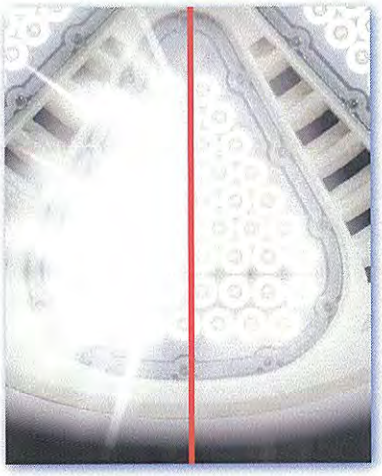
Enjoy a Drastic Reduction in your Monthly Utility Bill and Eliminate Costly Maintenance Expenses. AEON™...a Favorable Impact on your Bottom-line.

AEON Model	Watts	Delivered Lumens	HID Equivalent	Energy Savings*	Input Line Current (A) 120V	277V	347V	480V	Net Weight	EPA (Sq. Ft.)
HL-AF-230WD	230W	33,100	1000W	77%	2.1A	0.9A	0.7A	0.5A	29 lbs.	1.6
HL-AF-310WD	310W	44,100	1500W	79%	2.8A	1.2A	1.0A	0.7A	34 lbs.	1.6
HL-AF-440WD	440W	62,100	2000W	78%	3.9A	1.7A	1.4A	1.0A	44 lbs.	2.2
HL-AF-520WD	520W	73,500	3000W	83%	4.6A	2.0A	1.6A	1.2A	48 lbs.	2.2
HL-AF-750WD	750W	105,000	4000W	81%	6.7A	2.9A	2.3A	1.7A	66 lbs.	3.0

** Does not include Ballast Loss, Maintenance, Replacement Lamp Savings and Disposal Costs which amount to an additional Savings of 30~50%!*

- Rugged, Durable and Compact Luminaire stands up to the most demanding Elements and is Excellent for use in Hot & Humid Climates and Suitable for use in Corrosive Environments.
- UV Stabilized Electrostatic Finish and Stainless Steel Hardware to withstand Extreme Outdoor Conditions.
- Incredibly Long-Life Span of over 100,000 Hours.
- Simple, Reliable, and Affordable, Maintenance-free Design.
- Advanced Functionality and User Friendly with Quick Connect System: Lenses, Modules and Drivers are Field-Changeable.
- Solid-State: No Moving Parts. Ideal for High Vibration Areas (ANSI C136.31, 3G Rated).
- Standard Included: Instant On/Off, Continuous Dimming, 10 ft. Prewired Sheathed Cord, Hoist Hook and 3.3 ft (1m) Stainless Steel Safety Cable.
- Several Mounting Options: Yoke, Pendent, Wire Loop or Hook.
- 10kA / 20kV Inline Surge Protection against Over Voltage, Short Circuit, and Over Temperature.
- Suitable for Ambient Temperatures: -40°F~+122°F (-40°C~+50°C).
- RoHS Compliant: No Lead, Mercury, Toxic Gases or any Hazardous Materials. Facilitates LEED® points.
- Environmentally Friendly: 98% Recyclable.
- Neighborhood-Friendly: No Spillage or Sky Glow.
- Save Labor Cost Significantly: Quick & Easy Installation Process.
- Lowest Total Cost of Ownership. Shortest Payback Period and a High ROI.
- Meets/Exceeds National and International Standards

US Patents: D866,832, D866,833, D866,834, D866,835



Standard LED Optics

AEON™ Proprietary Glare-Free LED Optics

Multi-Voltage Options

120-277VAC / 347-480VAC

2-for-1 Replacement. More Light Less Luminaires

SAVE UP TO 83% ON YOUR ENERGY COSTS

5 Popular Delivered Lumen Packages

- Scalable LED Modules in NEMA 2, 3, 4, 5 and 6 Beam Spreads allows for Optimized Configuration for different Applications
- Various Delivered Lumen Packages to suit a Variety of Indoor and Outdoor Applications

DLC QPL LISTED PREMIUM · ETL LISTED c US · FC · ANSI American National Standards Institute · ASTM INTERNATIONAL · IEC · CE · Pb lead-free · RoHS 2002/95/EC

98% RECYCLABLE

NO LEAD, MERCURY, TOXIC GASES OR HEAVY METALS

ECO FRIENDLY

AEON™ Flood Light

NEMA Beam Charts

230WD - NEMA 2

Distance	Max FC	Beam Diameter
50 ft.	99	11.8 ft.
75 ft.	44	17.7 ft.
100 ft.	25	23.5 ft.
150 ft.	11	35.3 ft.
200 ft.	6	47.1 ft.

Beam Angle: 14°
Field Angle: 25°

230WD - NEMA 3

Distance	Max FC	Beam Diameter
50 ft.	53	20.2 ft.
75 ft.	23	30.3 ft.
100 ft.	13	40.4 ft.
150 ft.	6	60.7 ft.
200 ft.	3	80.9 ft.

Beam Angle: 23°
Field Angle: 43°

230WD - NEMA 4

Distance	Max FC	Beam Diameter
50 ft.	34	27.0 ft.
75 ft.	15	40.5 ft.
100 ft.	8	54.0 ft.
150 ft.	4	81.0 ft.
200 ft.	2	108.0 ft.

Beam Angle: 30°
Field Angle: 64°

230WD - NEMA 5

Distance	Max FC	Beam Diameter
50 ft.	25	30.9 ft.
75 ft.	11	46.2 ft.
100 ft.	6	61.6 ft.
150 ft.	3	92.5 ft.
200 ft.	2	123.3 ft.

Beam Angle: 35°
Field Angle: 80°

230WD - NEMA 6

Distance	Max FC	Beam Diameter
50 ft.	13	40.9 ft.
75 ft.	6	61.2 ft.
100 ft.	3	81.7 ft.
150 ft.	2	122.4 ft.
200 ft.	1	163.3 ft.

Beam Angle: 45°
Field Angle: 114°

310WD - NEMA 2

Distance	Max FC	Beam Diameter
50 ft.	135	11.3 ft.
75 ft.	60	17.0 ft.
100 ft.	34	22.6 ft.
150 ft.	15	34.0 ft.
200 ft.	8	45.1 ft.

Beam Angle: 14°
Field Angle: 24°

310WD - NEMA 3

Distance	Max FC	Beam Diameter
50 ft.	71	19.4 ft.
75 ft.	32	29.0 ft.
100 ft.	18	38.7 ft.
150 ft.	8	58.0 ft.
200 ft.	5	77.4 ft.

Beam Angle: 22°
Field Angle: 42°

310WD - NEMA 4

Distance	Max FC	Beam Diameter
50 ft.	45	26.6 ft.
75 ft.	20	40.0 ft.
100 ft.	11	53.1 ft.
150 ft.	5	80.0 ft.
200 ft.	3	106.3 ft.

Beam Angle: 30°
Field Angle: 64°

310WD - NEMA 5

Distance	Max FC	Beam Diameter
50 ft.	33	30.5 ft.
75 ft.	15	46.0 ft.
100 ft.	8	61.0 ft.
150 ft.	4	91.5 ft.
200 ft.	2	122.0 ft.

Beam Angle: 34°
Field Angle: 80°

310WD - NEMA 6

Distance	Max FC	Beam Diameter
50 ft.	18	41.0 ft.
75 ft.	8	61.3 ft.
100 ft.	5	81.7 ft.
150 ft.	2	122.5 ft.
200 ft.	1	163.3 ft.

Beam Angle: 45°
Field Angle: 114°

440WD - NEMA 2

Distance	Max FC	Beam Diameter
33 ft.	375	7.4 ft.
66 ft.	94	14.7 ft.
99 ft.	42	22.1 ft.
133 ft.	23	29.4 ft.
200 ft.	10	44.2 ft.

Beam Angle: 13°
Field Angle: 24°

440WD - NEMA 3

Distance	Max FC	Beam Diameter
33 ft.	187	12.5 ft.
66 ft.	47	25.0 ft.
99 ft.	21	37.4 ft.
133 ft.	12	49.9 ft.
200 ft.	5	74.8 ft.

Beam Angle: 22°
Field Angle: 45°

440WD - NEMA 4

Distance	Max FC	Beam Diameter
33 ft.	180	14.9 ft.
66 ft.	45	29.8 ft.
99 ft.	20	44.6 ft.
133 ft.	11	59.5 ft.
200 ft.	5	89.3 ft.

Beam Angle: 26°
Field Angle: 58°

440WD - NEMA 5

Distance	Max FC	Beam Diameter
33 ft.	93	22.8 ft.
66 ft.	23	45.6 ft.
99 ft.	10	68.4 ft.
133 ft.	6	91.2 ft.
200 ft.	3	136.9 ft.

Beam Angle: 39°
Field Angle: 80°

440WD - NEMA 6

Distance	Max FC	Beam Diameter
33 ft.	55	27.3 ft.
66 ft.	14	54.5 ft.
99 ft.	6	81.8 ft.
133 ft.	3	109.1 ft.
200 ft.	2	163.6 ft.

Beam Angle: 45°
Field Angle: 115°

520WD - NEMA 2

Distance	Max FC	Beam Diameter
33 ft.	416	7.3 ft.
66 ft.	104	14.6 ft.
99 ft.	46	21.9 ft.
133 ft.	26	29.2 ft.
200 ft.	12	43.8 ft.

Beam Angle: 13°
Field Angle: 24°

520WD - NEMA 3

Distance	Max FC	Beam Diameter
33 ft.	221	12.8 ft.
66 ft.	55	25.6 ft.
99 ft.	25	38.4 ft.
133 ft.	14	51.2 ft.
200 ft.	6	76.7 ft.

Beam Angle: 22°
Field Angle: 45°

520WD - NEMA 4

Distance	Max FC	Beam Diameter
33 ft.	213	15.1 ft.
66 ft.	53	30.2 ft.
99 ft.	24	45.3 ft.
133 ft.	13	60.4 ft.
200 ft.	6	90.6 ft.

Beam Angle: 26°
Field Angle: 58°

520WD - NEMA 5

Distance	Max FC	Beam Diameter
33 ft.	110	22.7 ft.
66 ft.	28	45.4 ft.
99 ft.	12	68.1 ft.
133 ft.	7	90.9 ft.
200 ft.	3	136.3 ft.

Beam Angle: 38°
Field Angle: 80°

520WD - NEMA 6

Distance	Max FC	Beam Diameter
33 ft.	66	27.3 ft.
66 ft.	17	54.5 ft.
99 ft.	7	81.8 ft.
133 ft.	4	109.0 ft.
200 ft.	2	163.5 ft.

Beam Angle: 45°
Field Angle: 114°

750WD - NEMA 2

Distance	Max FC	Beam Diameter
33 ft.	501	8.2 ft.
66 ft.	125	16.4 ft.
133 ft.	31	32.8 ft.
200 ft.	14	49.2 ft.
300 ft.	6	73.7 ft.

Beam Angle: 14°
Field Angle: 27°

750WD - NEMA 3

Distance	Max FC	Beam Diameter
33 ft.	278	12.7 ft.
66 ft.	70	25.5 ft.
133 ft.	17	51.0 ft.
200 ft.	8	76.5 ft.
300 ft.	4	114.7 ft.

Beam Angle: 23°
Field Angle: 46°

750WD - NEMA 4

Distance	Max FC	Beam Diameter
33 ft.	305	15.1 ft.
66 ft.	76	30.2 ft.
133 ft.	19	60.3 ft.
200 ft.	9	90.4 ft.
300 ft.	4	135.7 ft.

Beam Angle: 26°
Field Angle: 57°

750WD - NEMA 5

Distance	Max FC	Beam Diameter
33 ft.	158	22.5 ft.
66 ft.	39	45.0 ft.
133 ft.	10	89.9 ft.
200 ft.	4	134.9 ft.
300 ft.	2	202.3 ft.

Beam Angle: 39°
Field Angle: 81°

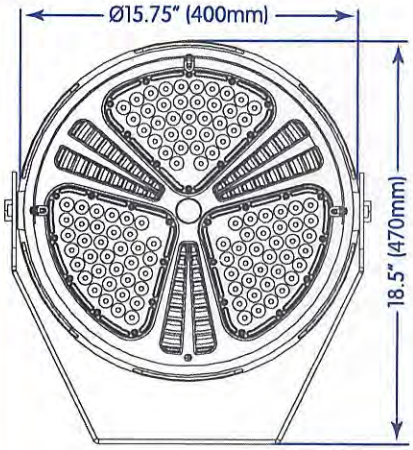
750WD - NEMA 6

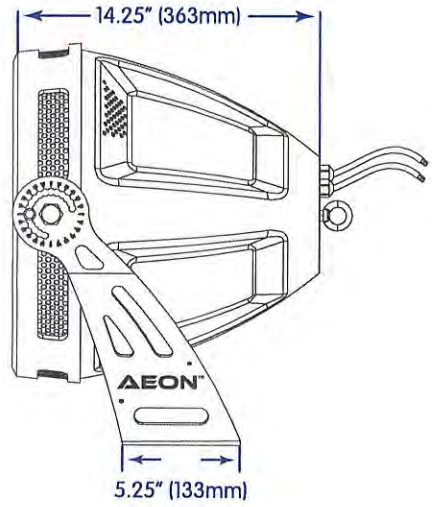
Distance	Max FC	Beam Diameter
33 ft.	90	27.6 ft.
66 ft.	22	55.1 ft.
133 ft.	6	110.3 ft.
200 ft.	3	165.4 ft.
300 ft.	1	248.1 ft.

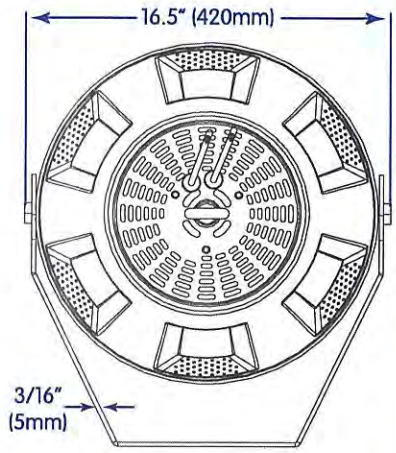
Beam Angle: 46°
Field Angle: 119°

AEON™ Flood Light

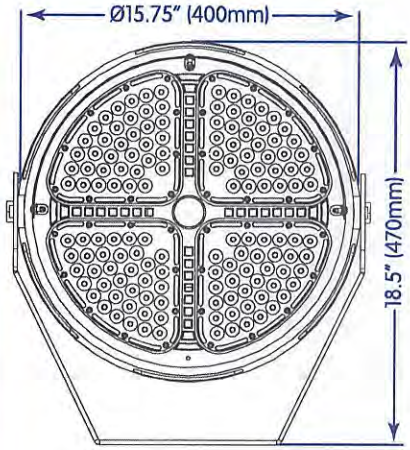
HL-AF-230WD

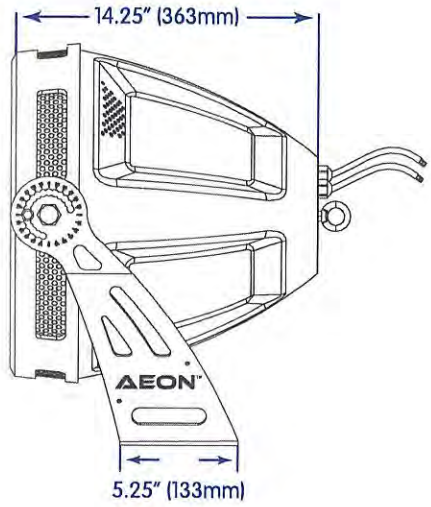


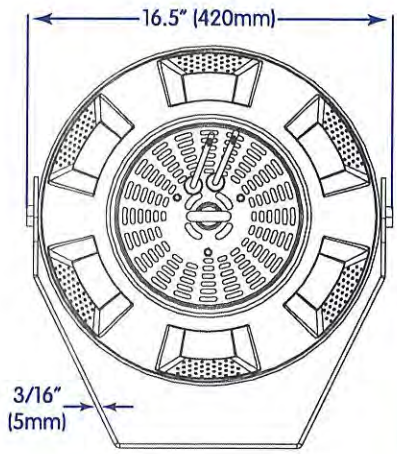




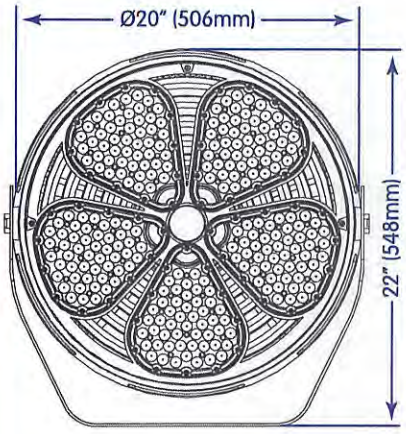
HL-AF-310WD

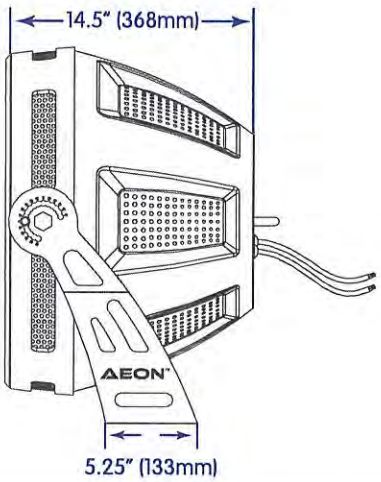


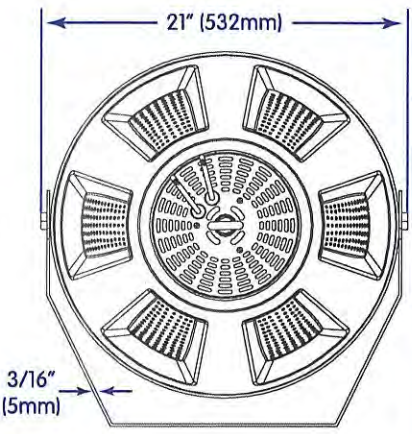




HL-AF-440WD



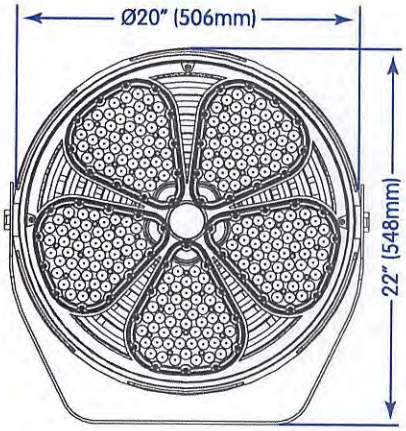


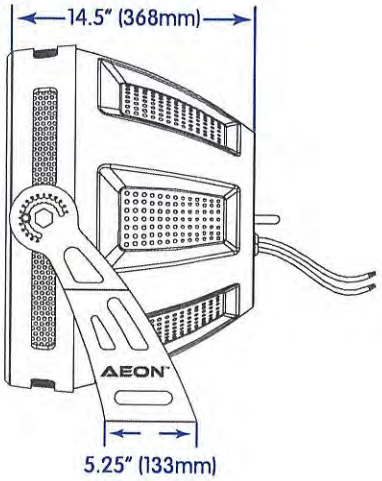


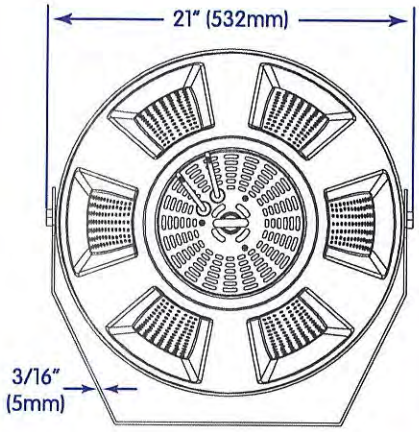
HYLITE™
LED Lighting

AEON™ Flood Light

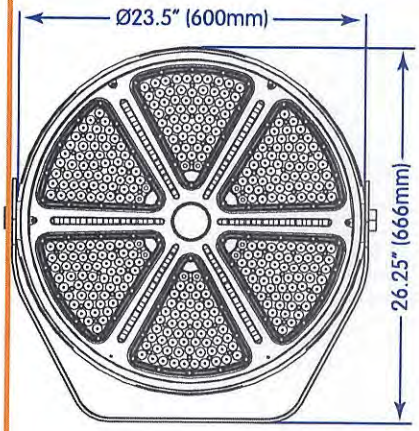
HL-AF-520WD

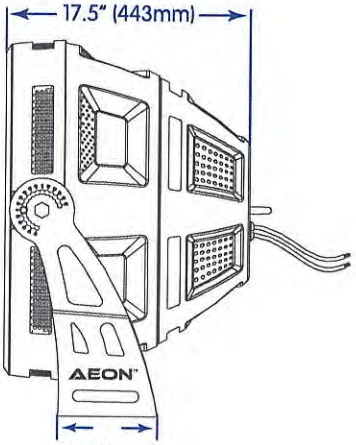


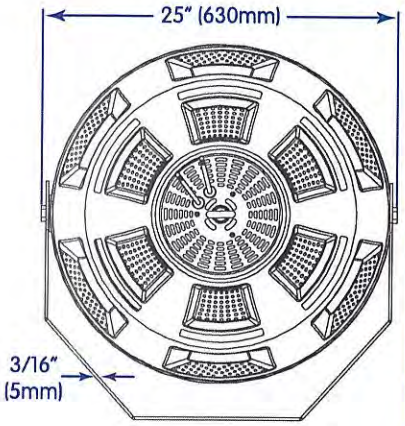




HL-AF-750WD







Ordering Nomenclature:

HL	–	AF	–	440WD	–	50K	–	N6	–	277V	–	WH	–	PCK-7
COMPANY		SERIES		WATTS		CCT		NEMA SPREAD		VOLTAGE		COLOR		OPTIONS
				230WD 310WD 440WD 520WD 750WD		50K = 5000K 57K = 5700K Important Note: Standard CCT: 5000K 5700K available as "Special Order" only and with Longer Lead Times		2 3 4 5 6		277V = 120V-277V 480V = 347V-480V		WH = White GY = Gray BK = Black Important Note: Standard Color: White Gray and Black available as "Special Orders" only and with Longer Lead Times		See Options, below

Options:

YB-2331	High Mast / Indirect Lighting Yoke Bracket for 230W-310W
YB-4452	High Mast / Indirect Lighting Yoke Bracket for 440W-520W
YB-7500	High Mast Yoke Bracket for 750W
PCK-7	Photo Control Receptacle Kit Only (Photocell not included)
NMA-1270F	Indirect Lighting Mount Adapter, 3/4NPT
NLM-1840	Indirect Lighting Loop Mount Assembly
PMA-1230B	Pendant Mount Adapter, 3/4NPT
HMA-34NPT	Hook Mount Adapter, 3/4NPT

As part of the company's continuous product improvement program, HyLite reserves the right to change materials or modify the design of its product without notification. All Specifications subject to change without notice. All values are design and/or typical values when measured under laboratory conditions. Actual Values depend upon the ambient temperature of the installation location. Please consult factory for your specific requirements.

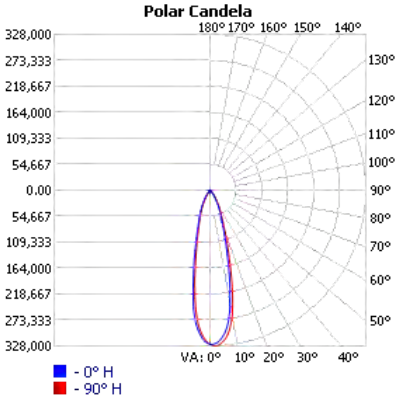
For more information, please visit: https://aeonledlighting.com/

OUTDOOR PHOTOMETRIC REPORT
CATALOG: HL-AF-750WD-50K-N4/HL-AS-750WD-50K-N4

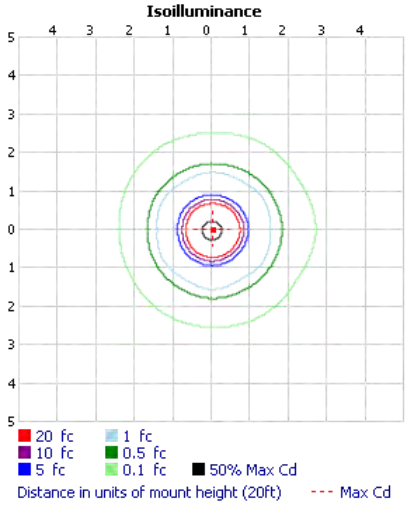
Manufacturer:	AEON
Test Lab:	EVERFINE
Test Date:	2018-05-23
Catalog:	HL-AF-750WD-50K-N4/HL-AS-750WD-50K-N4
Description:	
Lamp Output:	1 lamp, rated Lumens/lamp: 104517.1
Input Wattage:	745
Luminous Opening:	Rectangle (L: 23.62", W: 23.62")
Max Cd:	327,849.8 at Horizontal: 90°, Vertical: 2°
CUTOFF CLASS:	Cutoff
Roadway Class:	VERY SHORT, TYPE I
Efficiency:	99.9%

No Photo Available

Polar Candela



Isoilluminance



VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: HL-AF-750WD-50K-N4/HL-AS-750WD-50K-N4

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	84,421.3	80.8%	80.8%
0-40	93,990.2	89.9%	90%
0-60	99,617.7	95.3%	95.4%
60-90	1,909.3	1.8%	1.8%
70-100	983.7	0.9%	0.9%
90-120	712.2	0.7%	0.7%
0-90	101,526.9	97.1%	97.2%
90-180	2,915.0	2.8%	2.8%
0-180	104,442.0	99.9%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	26,398.8	25.3%	90-100	183.0	0.2%
10-20	36,399.8	34.9%	100-110	223.7	0.2%
20-30	21,622.7	20.7%	110-120	305.5	0.3%
30-40	9,568.9	9.2%	120-130	419.8	0.4%
40-50	3,428.8	3.3%	130-140	516.3	0.5%
50-60	2,198.7	2.1%	140-150	528.1	0.5%
60-70	1,108.5	1.1%	150-160	425.7	0.4%
70-80	555.3	0.5%	160-170	243.3	0.2%
80-90	245.5	0.2%	170-180	69.6	0.1%

Roadway Summary

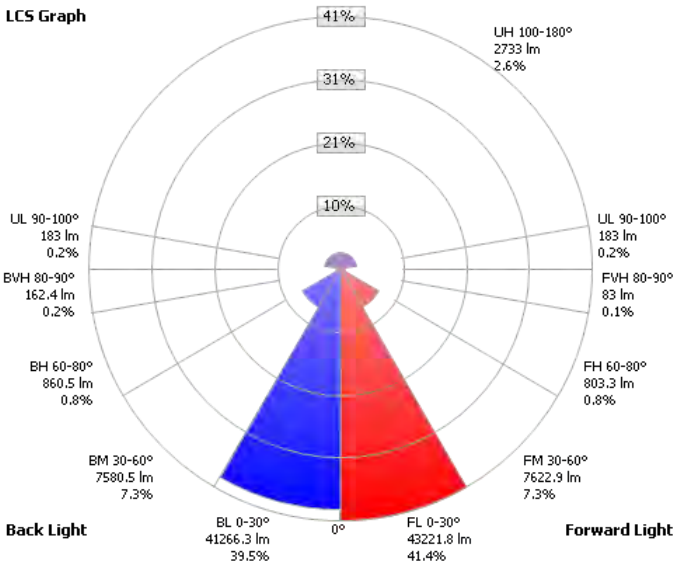
Cutoff Classification:		CUTOFF
Distribution:		TYPE I, VERY SHORT
Max Cd, 90 Deg Vert:		262.9
Max Cd, 80 to <90 Deg:		502.4
	Lumens	% Lamp
Downward Street Side:	51,731.0	49.5%
Downward House Side:	49,869.6	47.7%
Downward Total:	101,600.6	97.2%
Upward Street Side:	1,312.0	1.3%
Upward House Side:	1,603.9	1.5%
Upward Total:	2,915.9	2.8%
Total Lumens:	104,516.5	100%

LCS Table

BUG Rating	**B5 - U5 - G2**	
Forward Light	Lumens	Lumens %
Low(0-30):	43,221.8	41.4%
Medium(30-60):	7,622.9	7.3%
High(60-80):	803.3	0.8%
Very High(80-90):	83.0	0.1%
Back Light		
Low(0-30):	41,266.3	39.5%
Medium(30-60):	7,580.5	7.3%
High(60-80):	860.5	0.8%
Very High(80-90):	162.4	0.2%
Uplight		
Low(90-100):	183.0	0.2%
High(100-180):	2,733.0	2.6%
Trapped Light:	0.6	0%

OUTDOOR PHOTOMETRIC REPORT
CATALOG: HL-AF-750WD-50K-N4/HL-AS-750WD-50K-N4

LCS Graph



Scale = Max LCS %

Trapped Light: 0.6 lm, 0%

VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: HL-AF-750WD-50K-N4/HL-AS-750WD-50K-N4

Candela Table - Type C

	0	30	60	90	120	150	180	210	240	270	300	330	360
0	324112	324112	324112	324112	324112	324112	324112	324112	324112	324112	324112	324112	324112
5	308496	310908	312076	318820	310132	304406	294297	292992	290285	284292	293419	300423	308496
10	242201	249025	251951	267957	243095	229742	205855	203574	196652	185337	204251	221273	242201
15	139473	144922	147786	164056	142461	131618	116191	114452	110248	102828	113475	123716	139473
20	78565	80447	81246	90059	81019	75322	69256	68071	66612	63467	68200	72215	78565
25	48786	49220	49579	54918	50860	47620	44484	43266	43154	40327	43368	45563	48786
30	29012	29247	29435	33639	30589	28516	26122	25608	25298	23243	25302	26853	29012
35	15487	15413	15717	18357	16518	15305	13964	13581	13554	11866	13545	14013	15487
40	7333	7204	7446	8862	7927	7207	6610	6446	6516	5777	6324	6599	7333
45	4192	4106	4178	4642	4425	4335	4215	4197	4228	3825	4059	4035	4192
50	3243	3179	3278	3489	3419	3290	3145	3126	3093	2853	3018	3088	3243
55	2666	2429	2683	2689	2721	2441	2635	2254	2612	2062	2531	2270	2666
60	1825	1750	1969	1978	1955	1728	1593	1542	1496	1355	1477	1582	1825
65	1073	1165	1121	1349	1172	1188	1017	1080	974	902	909	1059	1073
70	693	761	729	943	809	823	725	756	698	585	589	672	693
75	465	509	487	683	607	619	559	571	538	375	394	448	465
80	280	299	298	502	457	446	408	407	388	190	220	249	280
85	131	138	142	348	323	313	291	287	276	77	91	108	131
90	64	65	66	263	258	256	255	253	250	61	60	61	64
95	70	68	68	260	262	263	264	262	260	76	73	72	70
100	88	87	87	272	275	276	278	276	274	99	95	92	88
105	117	115	115	290	294	297	300	299	297	136	128	123	117
110	160	158	158	320	326	331	336	335	334	188	177	169	160
115	222	218	217	365	373	380	386	386	384	260	245	234	222
120	303	299	297	423	433	441	449	449	447	353	334	320	303
125	407	401	399	494	505	514	523	522	520	461	442	427	407
130	526	522	518	574	587	597	606	607	602	576	561	550	526
135	649	642	640	661	678	690	700	701	695	666	674	671	649
140	764	758	756	760	778	792	800	804	789	567	773	781	764
145	861	858	854	854	872	887	890	894	869	654	846	871	861
150	928	928	923	928	942	958	954	955	916	642	883	927	928
155	954	957	949	964	969	982	976	969	917	574	884	941	954
160	937	940	928	954	946	955	950	932	875	795	854	909	937
165	880	880	864	902	882	884	881	855	802	774	801	841	880
170	803	793	780	823	799	792	797	761	723	727	741	762	803
175	729	710	699	743	721	711	720	685	661	689	692	695	729
180	695	695	695	695	695	695	695	695	695	695	695	695	695

Champ-Pak CPMV

LED wall pack for hazardous areas

Safe. Reliable. Efficient.

3,000, 5,000 & 7,000 lumen models

EATON
Powering Business Worldwide

Safe. Reliable. Efficient.

Featuring a broad range of LED luminaires for harsh, hazardous and industrial environments, Eaton's Crouse-Hinds delivers lighting solutions that perform reliably in even the worst operating conditions. **This reduces energy, maintenance, and manpower costs.**

Why LED?

Energy efficiency
LED average energy consumption is significantly less than traditional fluorescent and HID fixtures

Start/restart time
Instant illumination vs. 10 minute restrike time for HID

Light quality
Higher color rendering compared to fluorescent and HID

Environmental benefits
Mercury-free LED eliminates disposal costs and lower energy consumption for a smaller carbon footprint

Why Crouse-Hinds?

Industry-best reliability
Built to withstand a wide array of applications

Thermal management
Effective heat sinking ensures longer life

Quality of light
Custom optics designed to maximize light distribution and intensity

Globally certified
Designed to global specifications for IEC and NEC applications

Serviceable drivers
Easy access to drivers for service or replacement

Design features

Built to last:
- Type 4X rated
- Impact-resistant lens sealed from the outside environment provides ingress protection against water and dust
- 60,000+ hours of operation at 55°C
- 5 year fixture warranty†

† Refer to the authorized distributor price book for Crouse-Hinds standard Terms and Conditions.

High efficiency:
- Up to 116 lumens per watt
- Optional photocell

Multiple lens options:
- Clear glass lens standard
- Optional lenses include:
  - Diffused glass
  - Clear polycarbonate
  - Diffused polycarbonate

Simple installation and replacement:
- Contractor-friendly design is ideal for both retrofit and new construction
- Available with lever lock connectors

Additional options:
- Yoke and hub mounts
- Photocell

Rugged design
- Engineered to perform in ambient temperatures from -40°C to +55°C
- Die cast aluminum LED housing provides efficient thermal path to heat sink assembly
- Vertical fin design facilitates air flow and dust shedding

Why choose Champ-Pak LED wall packs?

Reliability. CPMV LED wall packs are engineered to deliver high lumen output and maintenance-free long life in the toughest conditions.

CPMV7L vs. 150 watt HID

70% ENERGY EFFICIENCY

65% TOTAL COST OF OWNERSHIP

100% MAINTENANCE REDUCTION

Assumptions: Calculations based on overall life of the LED system. Energy cost of $.09 per kilowatt; 24 hour per day operation; labor rate of $75 each for 2 workers; average time for fixture maintenance of 1 hour.

Champ-Pak® CPMV LED wall pack

Rugged wall pack solutions.

Eaton's Crouse-Hinds Champ-Pak CPMV LED wall packs are engineered to provide maintenance-free illumination, long life and high performance in Class I, Division 2 areas.

The Champ CPMV LED is available from 3,000 to 7,000 lumens and is designed for extreme conditions and hazardous applications.

Available models:

Model number	Nominal lumens*	Watts	Efficacy	Equivalent MH luminaire
CPMV3L	3,400	30.6	111 Lm/W	70W
CPMV5L	5,200	44.8	116 Lm/W	100W
CPMV7L	6,800	58.9	115 Lm/W	150W-175W

*Nominal lumens based on 5000K CCT with clear glass lens. Wattage measured at 120 VAC.

Primary applications:

- Oil and gas refineries, drilling rigs, petrochemical facilities, food and beverage facilities, platforms, loading docks, tunnels, outdoor wall mounted general area lighting, and where flammable vapors, gases, ignitable dusts, fibers or flyings are present
- Locations requiring continuous and consistent light levels in extreme ambient temperatures
- Where extremely corrosive, wet, dusty, hot and/or cold conditions exist
- NEMA 4X, marine, wet locations and hose-down environments
- Classified and hazardous locations

Certifications & compliances:

- DesignLights Consortium® Qualified *(pending)*
- NEC and CEC
  - UL Standards: UL1598, UL1598A, UL 844, UL8750
  - CSA Standard: C22.2 No. 137
- Class I, Division 2, Groups A, B, C, D,
- Class II, Division 1, Groups E, F, G
- Class III & Simultaneous Presence
- Marine and Wet Locations, NEMA 4X and IP66

Temperature codes:

Classified area	40°C	55°C
Class I, Division 2 Groups A, B, C, D	**T5**	**T4A**
Class II, Division 1 Groups E, F, G	**T4A**	**T4A**
Simultaneous presence	**T3**	**T3**

Electrical ratings:

	120V		277V		347V		480V	
Model number	**Input power**	**Input amps**	**Input power**	**Input amps**	**Input power**	**Input amps**	**Input power**	**Input amps**
CPMV3L	30.6	0.26	30.6	0.11	29.9	0.09	30.3	0.07
CPMV5L	44.8	0.37	43.9	0.16	43.3	0.13	43.7	0.09
CPMV7L	58.9	0.50	57.8	0.23	56.0	0.16	56.2	0.12

All models	
Voltage range, VAC	120-277V at 50/60 Hz, 347-480V at 60 Hz
Voltage range, VDC	125/250VDC
Power factor	≥0.90
Surge	6kV standard
THD	≤ 20%
Dimming	0-10V

Champ-Pak CPMV wall packs are designed, tested and certified for extreme environments

Ordering information

CPMV5L-UNIV1-PC1

Part number example

CPMV3LWY-UNV1-S891 PC1

Champ-Pack CPMV LED wall pack, NEC/CEC rated, 3,400 lumens, 3000K warm white, wide optic,yoke mount, 120-277 VAC, diffused glass window, 120V photocell

CPMV 3L W Y - UNV1 - S891 PC1

Light source/intensity

3L	3,400 nominal lumens
5L	5,200 nominal lumens
7L	6,800 nominal lumens

Color temperature

BLANK	Cool (5000K)
N*	Neutral (4000K)
W	Warm (3000K)

*Consult factory for availability.

Optics

BLANK	Wide
R5	Narrow

Mounting

BLANK	Wall
H	Hub
Y	Yoke

Voltage

-UNV1	120-277 VAC, 50/60 Hz; 125, 250VDC
-UNV34	347-480 VAC, 50/60 Hz

Lens type

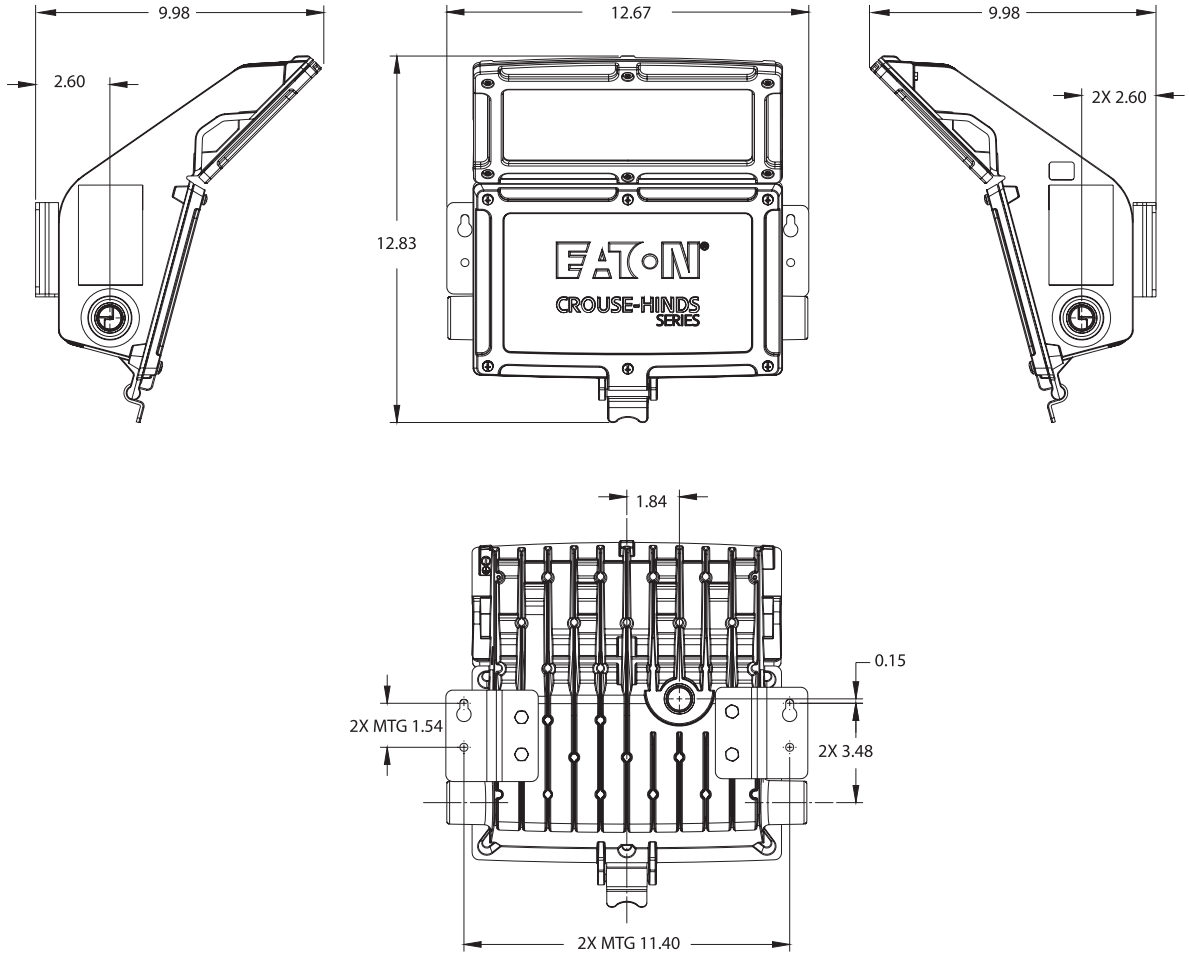
BLANK	Clear glass
S891	Diffused glass
S903	Clear polycarbonate
S903D	Diffused polycarbonate

Photocell*

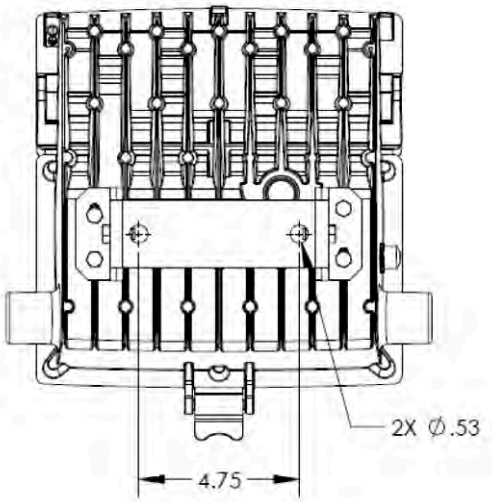
PC1	120V
PC2	208-277V

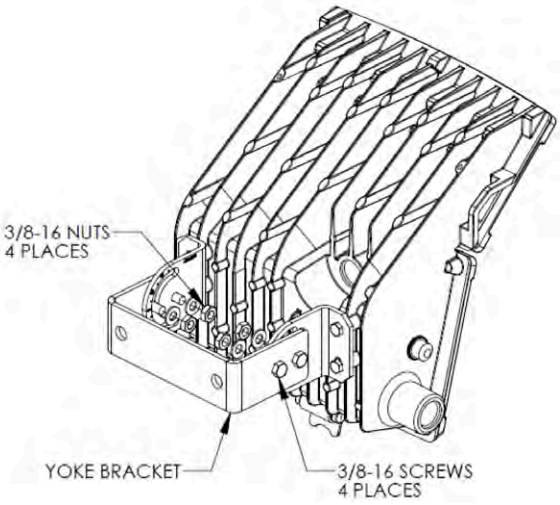
*Class I, Division 2 only.

Dimensions: standard wall mount

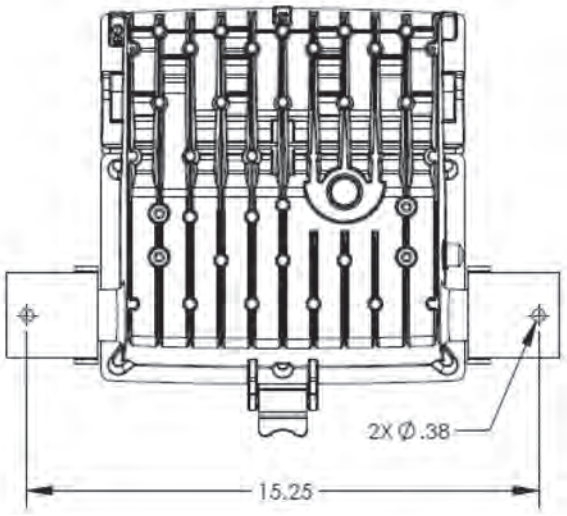


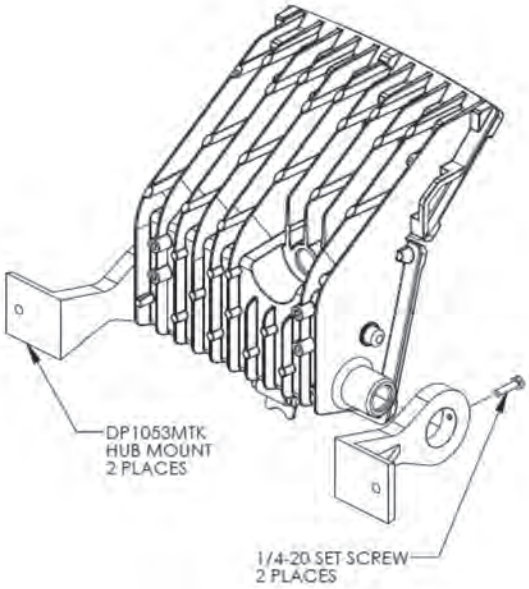
Dimensions: Yoke mount

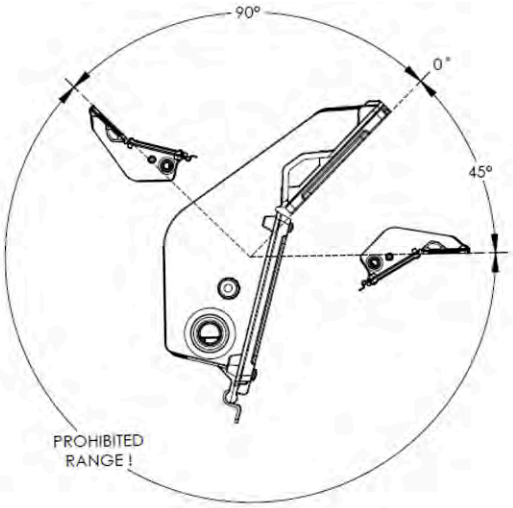




Dimensions: Hub mount







Mounting method	Angle range	Mounting surface
Wall (standard)	Fixed	Wall
Yoke	+45° to -90°	Wall, Ceiling, Horizontal Surface/Ground
Hub (DP1053MTK)	+45° to -90°	Wall, Ceiling, Horizontal Surface/Ground

Note: Class II, Div.1 and Simultaneous Presence Class I, Div. 2 and Class II will be limited to 0° to +45° aiming range only.

Photometrics

CPMV3L-UNV1

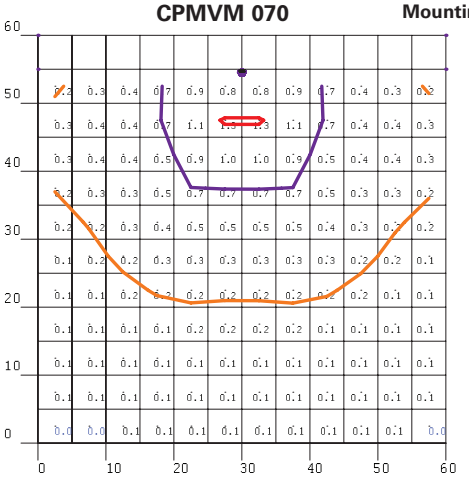
Illuminance (Fc)	
Average	0.3
Min.	0.0
Max.	1.6

CPMVM 070

Illuminance (Fc)	
Average	0.3
Min.	0.0
Max.	1.3

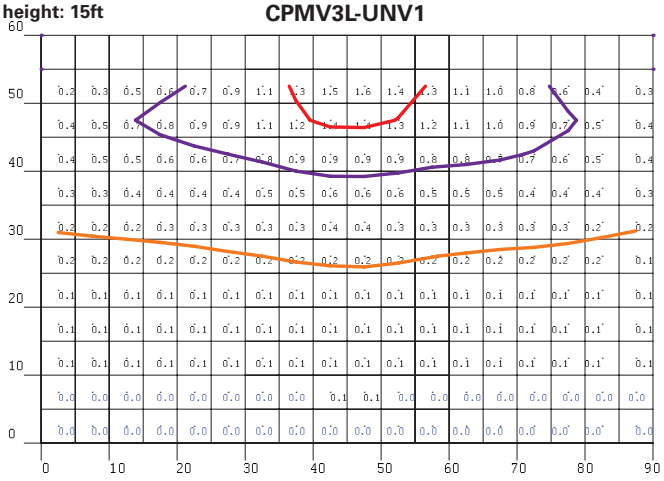
Mounting height: 15ft

CPMVM 070



Point by point Foot-Candles
Distance in feet

CPMV3L-UNV1



Point by point Foot-Candles
Distance in feet

CPMV5L-UNV1

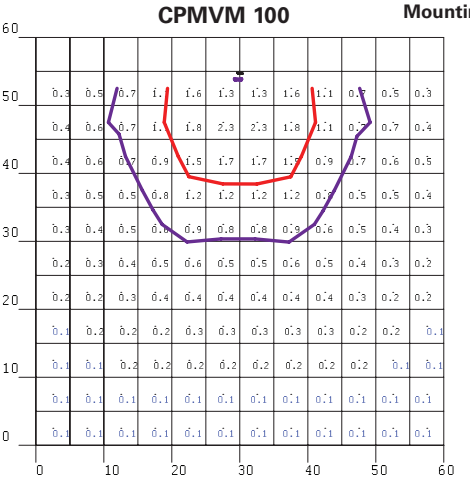
Illuminance (Fc)	
Average	0.5
Min.	0.0
Max.	2.4

CPMVM 100

Illuminance (Fc)	
Average	0.5
Min.	0.1
Max.	2.3

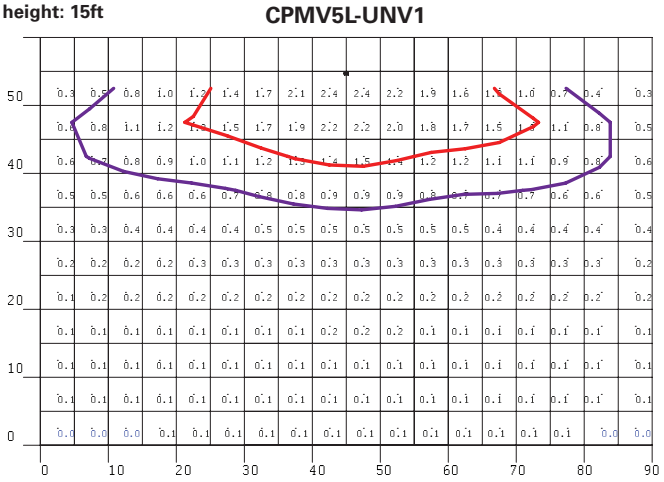
Mounting height: 15ft

CPMVM 100



Point by point Foot-Candles
Distance in feet

CPMV5L-UNV1



Point by point Foot-Candles
Distance in feet

CPMV7L-UNV1

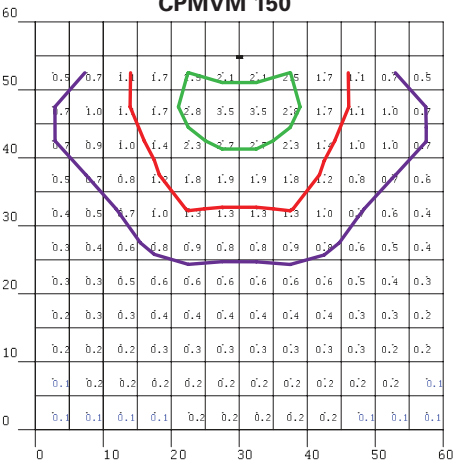
Illuminance (Fc)	
Average	0.7
Min.	0.1
Max.	3.2

CPMVM 150

Illuminance (Fc)	
Average	0.8
Min.	0.1
Max.	1.5

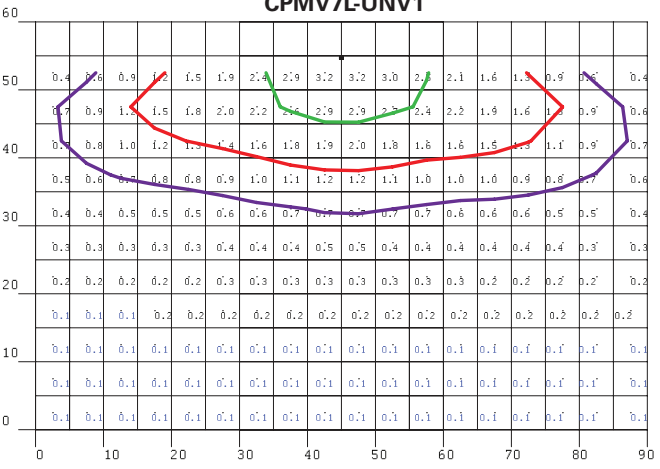
Mounting height: 15ft

CPMVM 150



Point by point Foot-Candles
Distance in feet

CPMV7L-UNV1



Point by point Foot-Candles
Distance in feet

U.S. (global headquarters): Eaton's Crouse-Hinds Division

1201 Wolf Street
Syracuse, NY 13208

(866) 764-5454
FAX: (315) 477-5179
FAX Orders Only:
(866) 653-0640

crousecustomerctr@eaton.com

Canada

Toll Free: 800-265-0502
FAX: (800) 263-9504
FAX Orders only: (866) 653-0645

Middle East

971 4 8066100
FAX: 971 4 8894813

chmesales@eaton.com

Korea

82 2 6380 4032
82-2-6380-4070

ECHKsales@eaton.com

Mexico/Latin America/Caribbean

52-555-804-4000
FAX: 52-555-804-4020

ventascentromex@eaton.com

Singapore

65-6645-9888
FAX: 65-6297-4819

chsi-sales@eaton.com

Australia

1300-332-866
FAX: 61-2-9693-5127

crousehindsanz@eaton.com

Europe (Germany)

49 (0) 6271 806-500
49 (0) 6271 806-476

info-ex@eaton.com

China

86-21-2899-3600
FAX: 86-21-2899-4055

echsales@eaton.com

India

91-124-4683888
FAX: 91-124-4683899

cchindia@eaton.com

For more information:

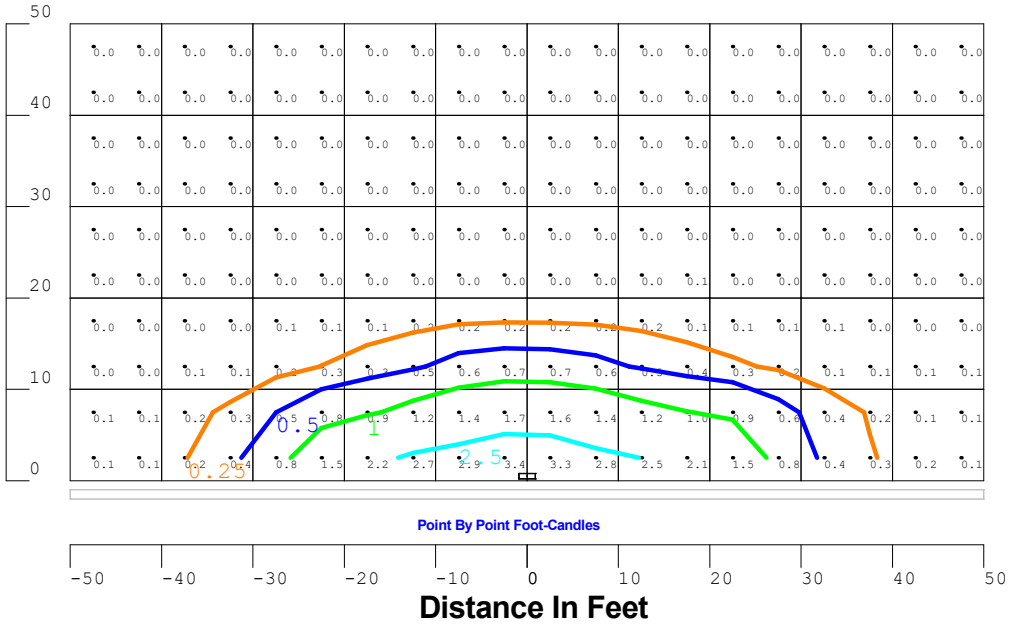
If further assistance is required, please contact an authorized Eaton Distributor, Sales Office, or Customer Service Department.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Printed in USA
Publication No. 5429-0520
May 2020

Powering Business Worldwide

CPMV3LW-UNV1 - Tilted 45 Deg
MH: 10 **Ft.**



Luminaire Schedule				
Symbol	**Qty**	**Label**	**Arrangement**	**Description**
	1	CPMV3LW-UNV1 - Tilted 45 Deg	SINGLE	CPMV3LW-UNV1

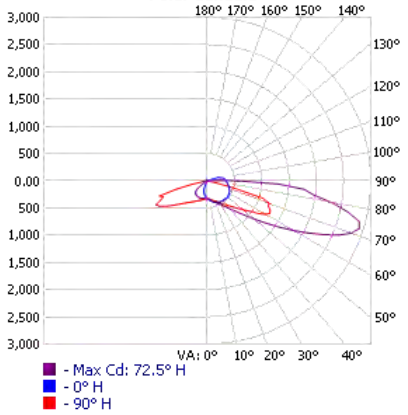
Calculation Summary							
Label	**CalcType**	**Units**	**Avg**	**Max**	**Min**	**Avg/Min**	**Max/Min**
CPMV-LED Grid	Illuminance	Fc	0.3	3.4	0.0	N.A.	N.A.

OUTDOOR PHOTOMETRIC REPORT
CATALOG: CPMV3L-UNV1

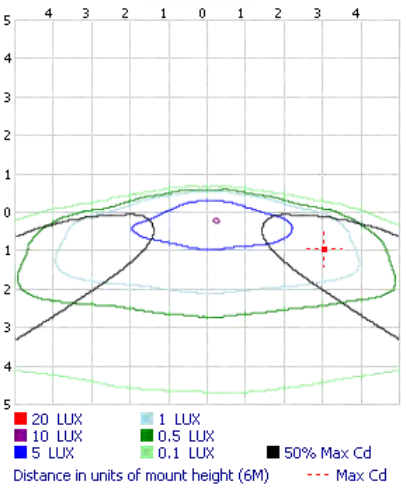
Manufacturer:	COOPER CROUSE-HINDS
Test #:	R19_545A_CPMV3L_Clr_Gl_Ty1_190731
Test Lab:	Eaton Crouse-Hinds Syracuse
Test Date:	07/31/19
Catalog:	CPMV3L-UNV1
Description:	CPMV3L/UNV1 with Type 1 Optics. Clear Glass Window.
Lamp Output:	Total luminaire Lumens: 3097.5, absolute photometry *
Input Wattage:	29.7
Luminous Opening:	Rectangle (L: 0.09M, W: 0.27M)
Max Cd:	2,920.4 at Horizontal: 72.5°, Vertical: 72.5°
Roadway Class:	MEDIUM, TYPE III

No Photo Available

Polar Candela



Isoilluminance



*Test based on absolute photometry where lamp lumens=lumens total.
*Cutoff Classification and efficiency cannot be properly calculated for absolute photometry.

OUTDOOR PHOTOMETRIC REPORT
CATALOG: CPMV3L-UNV1

Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	285.4	9.2%
0-40	499.9	16.1%
0-60	1,202.6	38.8%
60-90	1,638.7	52.9%
70-100	1,245.8	40.2%
90-120	255.8	8.3%
0-90	2,841.4	91.7%
90-180	256.1	8.3%
0-180	3,097.5	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	31.5	1.0%	90-100	188.2	6.1%
10-20	96.1	3.1%	100-110	65.5	2.1%
20-30	157.8	5.1%	110-120	2.1	0.1%
30-40	214.6	6.9%	120-130	0.0	0%
40-50	291.5	9.4%	130-140	0.0	0%
50-60	411.1	13.3%	140-150	0.1	0%
60-70	581.1	18.8%	150-160	0.1	0%
70-80	624.8	20.2%	160-170	0.1	0%
80-90	432.8	14.0%	170-180	0.0	0%

Roadway Summary

Distribution:	TYPE III, MEDIUM	
Max Cd, 90 Deg Vert:	1,350.3	
Max Cd, 80 to <90 Deg:	2,719.0	
	Lumens	% Lamp
Downward Street Side:	2,544.3	82.1%
Downward House Side:	297.0	9.6%
Downward Total:	2,841.3	91.7%
Upward Street Side:	255.8	8.3%
Upward House Side:	0.1	0%
Upward Total:	255.9	8.3%
Total Lumens:	3,097.2	100%

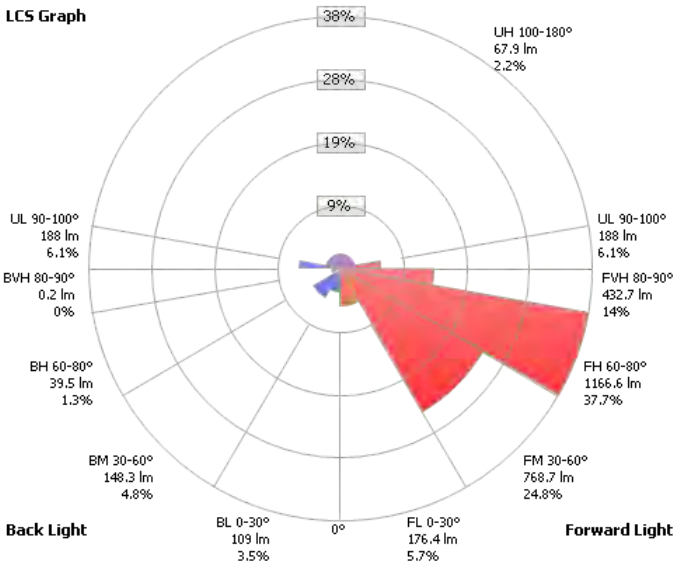
LCS Table

BUG Rating	**B0 - U3 - G3**	
Forward Light	Lumens	Lumens %
Low(0-30):	176.4	5.7%
Medium(30-60):	768.7	24.8%
High(60-80):	1,166.6	37.7%
Very High(80-90):	432.7	14%
Back Light		
Low(0-30):	109.0	3.5%
Medium(30-60):	148.3	4.8%
High(60-80):	39.5	1.3%
Very High(80-90):	0.2	0%
Uplight		
Low(90-100):	188.0	6.1%
High(100-180):	67.9	2.2%
Trapped Light:	0.2	0%

R19_545A_CPMV3L_CLR_GL_TY1_190731
VISUAL PHOTOMETRIC TOOL

OUTDOOR PHOTOMETRIC REPORT
CATALOG: CPMV3L-UNV1

LCS Graph



Scale = Max LCS %

Trapped Light: 0.2 lm, 0%

OUTDOOR PHOTOMETRIC REPORT
CATALOG: CPMV3L-UNV1

Candela Table - Type C

	0	30	60	90	120	150	180	210	240	270	300	330	360
0	330	330	330	330	330	330	330	330	330	330	330	330	330
5	352	350	345	334	320	306	301	305	317	333	342	346	352
10	373	373	367	349	312	285	270	284	309	342	360	369	373
15	397	397	397	370	313	254	232	253	307	360	386	394	397
20	418	427	431	395	306	223	191	217	300	379	414	419	418
25	435	453	467	421	294	186	92	177	287	402	446	444	435
30	445	479	514	465	281	90	32	83	265	433	489	462	445
35	454	499	577	520	260	36	5	26	236	469	540	482	454
40	459	519	659	589	187	6	0	3	162	516	603	506	459
45	467	540	774	684	84	1	0	1	78	577	694	522	467
50	476	559	928	814	24	0	0	0	30	664	813	541	476
55	470	569	1121	984	4	0	0	0	2	786	963	557	470
60	462	574	1334	1234	0	0	0	0	0	936	1160	558	462
65	450	570	1560	1270	0	0	0	0	0	1040	1399	561	450
70	431	560	1708	1201	0	0	0	0	0	859	1621	553	431
75	408	546	1796	486	1	0	0	0	0	588	1787	541	408
80	383	521	1723	23	0	0	0	0	0	87	1874	519	383
85	362	484	1418	2	0	0	0	0	0	5	1695	485	362
90	342	452	933	0	0	0	0	0	0	0	1178	452	342
95	318	409	492	0	0	0	0	0	0	0	606	397	318
100	295	324	130	0	0	0	0	0	0	0	206	327	295
105	224	219	11	0	0	0	0	0	0	0	20	235	224
110	89	22	1	0	0	0	0	0	0	0	0	43	89
115	0	0	0	0	0	0	0	0	0	0	0	3	0
120	1	0	0	0	0	0	0	0	0	0	0	0	1
125	1	0	0	0	0	0	0	0	0	0	0	0	1
130	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0
140	1	1	0	1	0	0	0	0	0	0	0	0	1
145	3	0	0	0	0	0	0	0	0	0	0	0	3
150	0	0	0	0	0	0	1	0	0	0	0	0	0
155	1	0	0	0	0	1	0	0	0	0	0	0	1
160	0	1	1	0	1	0	0	0	0	0	0	0	0
165	0	0	2	0	0	0	0	0	0	0	0	0	0
170	0	1	0	0	0	1	0	0	0	0	0	0	0
175	0	0	0	0	1	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0