

ACQ
1206

City of Madison
Department of Public Works
PARKS DIVISION

City-County Building, Suite 104
210 Martin Luther King, Jr. Blvd.
PO Box 2987
Madison, WI 53701-2987

play
**MADISON
PARKS**

Graphical Scale
0 50 ft
N

PROJECT:

***GOODMAN ICE
RINK LIGHTING***

***GOODMAN PARK
37 VAN DEUSEN ST
MADISON, WI 53703***

Although every effort has been made in preparing these plans and checking them for accuracy, the contractor and subcontractors must check all details and dimensions of their trade and be responsible for the same.

ITEM	DATE
Drawn by: CCS	1-26-2017

PUBLIC WORKS PROJECT #:
####

SHEET TITLE:

ELECTRICAL PLAN

SHEET NUMBER:

E-1

play
**MADISON
PARKS**

PROJECT:

*GOODMAN
PARK ICE RINK
LIGHTING*

*GOODMAN PARK
37 VAN DEUSEN ST
MADISON, WI 53703*

Although every effort has been made in preparing these plans and checking them for accuracy, the contractor and subcontractors must check all details and dimensions of their trade and be responsible for the same.

ITEM	DATE
Drawn by: CCS	1-26-2017

PUBLIC WORKS PROJECT #:

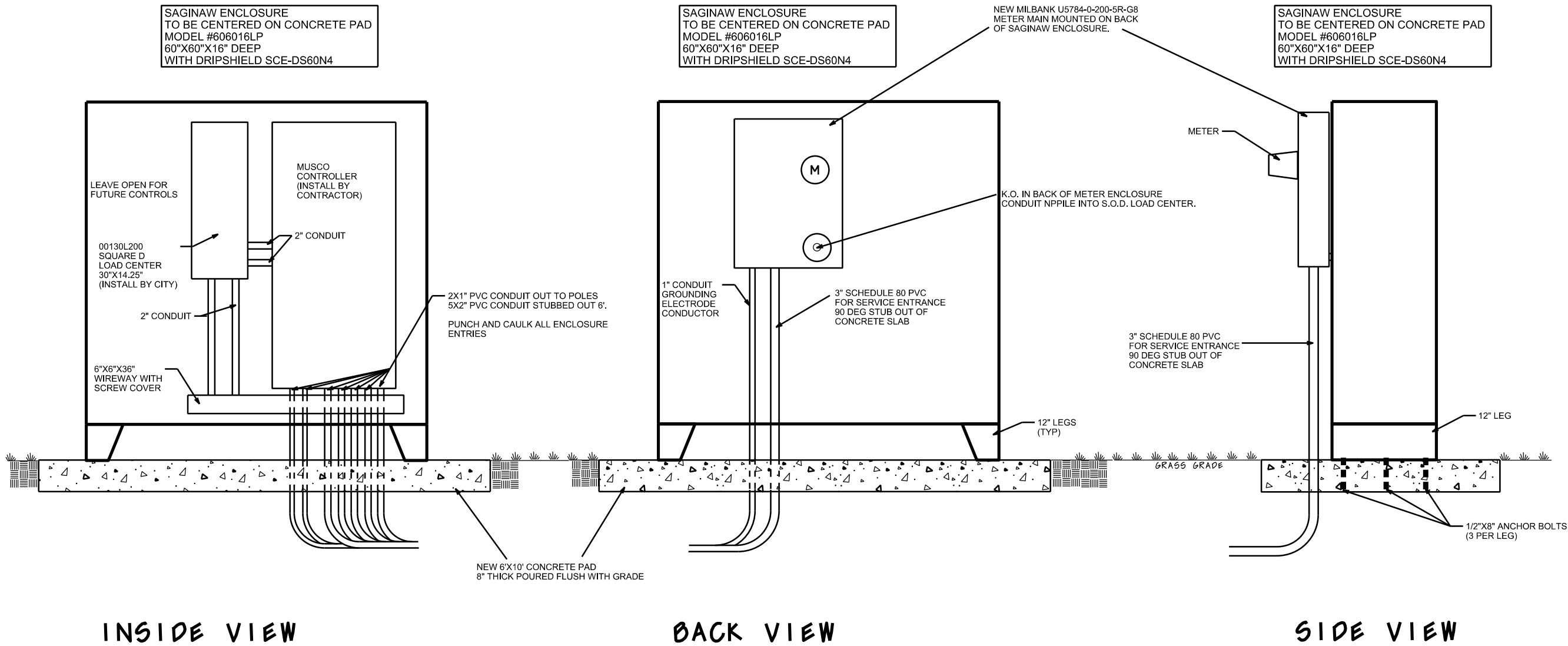
####

SHEET TITLE:

ELECTRICAL PLAN

SHEET NUMBER:

E-2



Goodman-Franklin Park Ice Rink

Madison, WI

NOTES: - Blue line in Spill Grid represents .5 FC threshold

Lighting System

Pole / Fixture Summary						
Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Group
P1-P2	40'	40'	4	96 LED	1.60 kW	A
2			8		3.20 kW	

Group Summary			
Group	Description	Load	Fixture Qty
A	Ice Rink	3.2 kW	8

Fixture Type Summary							
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
96 LED	LED 5700K - 75 CRI	400W	38,600	61,000	>72,000	>72,000	8

Light Level Summary

Calculation Grid Summary							
Grid Name	Calculation Metric	Illumination				Groups	Fixture Qty
		Ave	Min	Max	Max/Min		
Ice Rink	Horizontal Illuminance	13.1	4	22	6.29	A	8
Spill Grid	Horizontal	5.24	0	23	5944.41	A	8

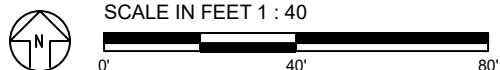
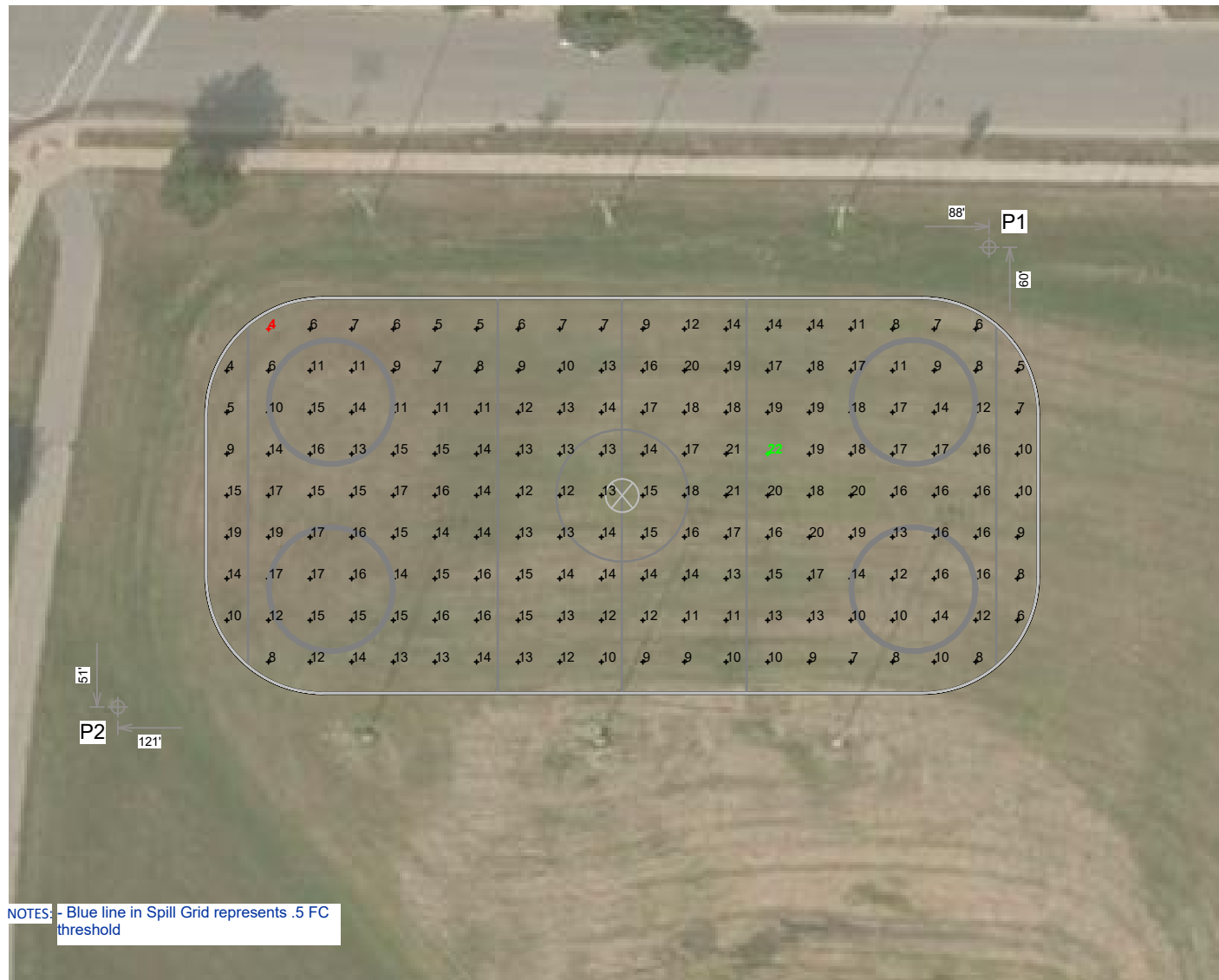
From Hometown to Professional



We Make It Happen.®

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	P1-P2	40'	-	40'	96 LED	4	4	0
2	TOTALS					8	8	0



ENGINEERED DESIGN By: Jacob McCrea • File #175085 • 26-Jul-16

Goodman-Franklin Park Ice Rink

Madison, WI

GRID SUMMARY

Name: Ice Rink
Size: 200' x 95'
Spacing: 10.0' x 10.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid

Scan Average: 13.13

Maximum: 22

Minimum: 4

Avg / Min: 3.71

Max / Min: 6.29

UG (adjacent pts): 1.99

CU: 0.71

No. of Points: 176

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI

Luminaire Output: 38,600 lumens

No. of Luminaires: 8

Total Load: 3.2 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
96 LED	61,000	>72,000	>72,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume $\pm 3\%$ nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2016 Musco Sports Lighting, LLC.

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	P1-P2	40'	-	40'	96 LED	4	4	0
2	TOTALS					8	8	0

Goodman-Franklin Park Ice Rink

Madison, WI

GRID SUMMARY

Name: Spill Grid
Size: 200' x 95'
Spacing: 10.0' x 10.0'
Height: 4.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid

Scan Average: 5.24
Maximum: 23
Minimum: 0
Avg / Min: 1332.06
Max / Min: 5944.41
UG (adjacent pts): 147.50
CU: 0.98
No. of Points: 609

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 38,600 lumens
No. of Luminaires: 8
Total Load: 3.2 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
96 LED	61,000	>72,000	>72,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

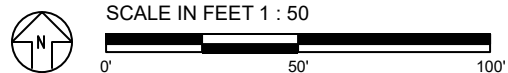
Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



NOTES: - Blue line in Spill Grid represents .5 FC threshold



ENGINEERED DESIGN By: Jacob McCrea • File #175085 • 26-Jul-16

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗



We Make It Happen.

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2016 Musco Sports Lighting, LLC.

ILLUMINATION SUMMARY

NOTES: - Blue line in Spill Grid represents .5 FC threshold



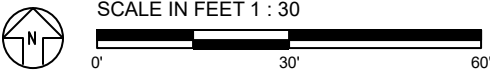
Goodman-Franklin Park Ice Rink

Madison, WI



EQUIPMENT LAYOUT						
INCLUDES:						
· Skating Rink						
Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.						
Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.						

EQUIPMENT LIST FOR AREAS SHOWN						
Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
2	P1-P2	40'	-	40'	96 LED	4
2	TOTALS					8

SINGLE LUMINAIRE AMPERAGE DRAW CHART							
Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
96 LED	-	-	-	-	-	-	-



ENGINEERED DESIGN By: Jacob McCrea • File #175085 • 26-Jul-16

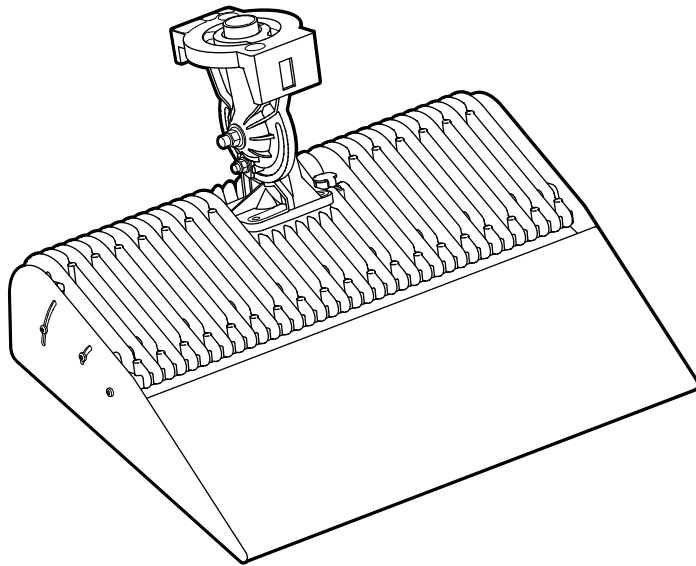
Pole location(s)  dimensions are relative to 0,0 reference point(s) 



We Make It Happen®

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2016 Musco Sports Lighting, LLC.

EQUIPMENT LAYOUT



Luminaire Data

Weight (luminaire)	35 lb (16 kg)
UL listing number	E338094
UL Listed for USA / Canada	UL1598 CSA-C22.2 No. 250.0
Material and finish	Die-cast aluminum, anodized, CASTGUARD™ coated, and powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)

Photometric Characteristics

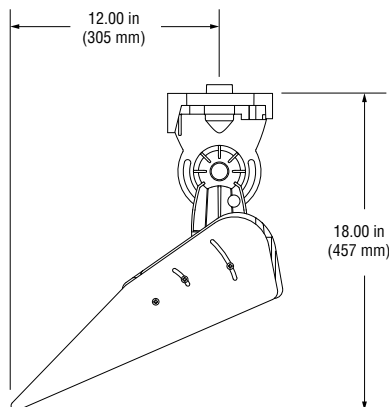
Projected lumen maintenance per IES TM-21-11

L90 (12k)	=61,000 h
L80 (12k)	>72,000 h
L70 (12k)	>72,000 h
CIE correlated color temperature	5700 K
Color Rendering Index (CRI), typical	75
Color Rendering Index (CRI), minimum	70
Lumens ¹	38,600

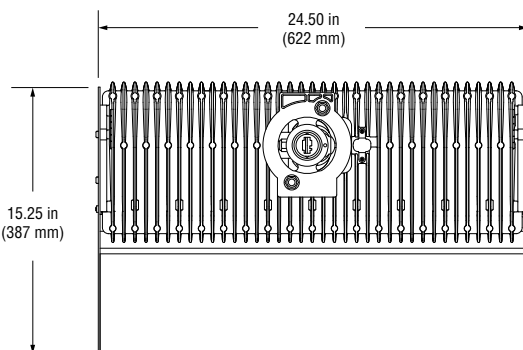
Footnotes:

1) Incorporates appropriate dirt depreciation factor for life of luminaire.

Side



Top



Datasheet: 96 LED Luminaire and Driver

Driver Data

Electrical Data

Rated Wattage¹

Per driver..... 800 W

Per luminaire 400 W

Number of luminaires per driver..... 2

Starting (inrush) current..... <40 A, 256 μ s

Fuse Rating 15 A

UL ambient temperature rating 50°C
(122°F)

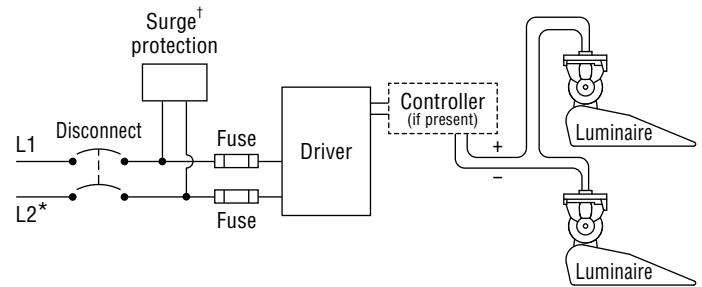
Efficiency 95%

Dimming mode..... optional

Range, energy consumption 15–100%

Range, light output..... 20–100%

Typical Wiring



* If L2 (com) is neutral then not switched or fused.

† Not present if indoor installation.

	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
Max operating current ²	5.12 A	4.92 A	4.66 A	4.44 A	4.26 A	3.70 A	2.96 A	2.70 A	2.56 A	2.48 A	2.14 A

Footnotes:

1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25° C ambient temperature environment.

2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See Musco Control System Summary for circuit information.



Model 96 LED
(347–480V only)

