

# Rochester University Soccer Baseball

Rochester Hills, MI

## Lighting System

Pole / Fixture Summary						
Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
A1-A2	70'	70'	4	TLC-LED-1500	5.72 kW	A
		16'	1	TLC-BT-575	0.58 kW	A
		90'	9	TLC-LED-1500	12.87 kW	A
B1-B2	90'	90'	1	TLC-LED-900	0.89 kW	A
		16'	1	TLC-BT-575	0.58 kW	A
		80'	6	TLC-LED-1500	8.58 kW	A
C1-C2	80'	80'	1	TLC-LED-900	0.89 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
		80'	6	TLC-LED-1500	8.58 kW	A
D1-D2	80'	80'	2	TLC-LED-1500	8.58 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
<b>8</b>			<b>66</b>		<b>81.96 kW</b>	

Circuit Summary			
Circuit	Description	Load	Fixture Qty
A	Baseball	81.96 kW	66

Fixture Type Summary							
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1500	LED 5700K - 75 CRI	1430W	160,000	>120,000	>120,000	>120,000	50
TLC-LED-900	LED 5700K - 75 CRI	890W	89,600	>120,000	>120,000	>120,000	4
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	12

## Light Level Summary

Calculation Grid Summary								
Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Baseball 150' Spill	Horizontal Illuminance	0.13	0.02	0.56	27.92	6.69	A	66
Baseball 150' Spill	Max Candela Metric	17902	1804	65342	36.22	9.92	A	66
Baseball 150' Spill	Max Vertical Illuminance Metric	0.35	0.06	1.09	18.46	5.79	A	66
Baseball (Infield)	Horizontal Illuminance	56.3	48	69	1.45	1.17	A	66
Baseball (Outfield)	Horizontal Illuminance	51.2	36	66	1.86	1.42	A	66
Blanket Grid	Horizontal	9.94	0	71	0.00		A	66

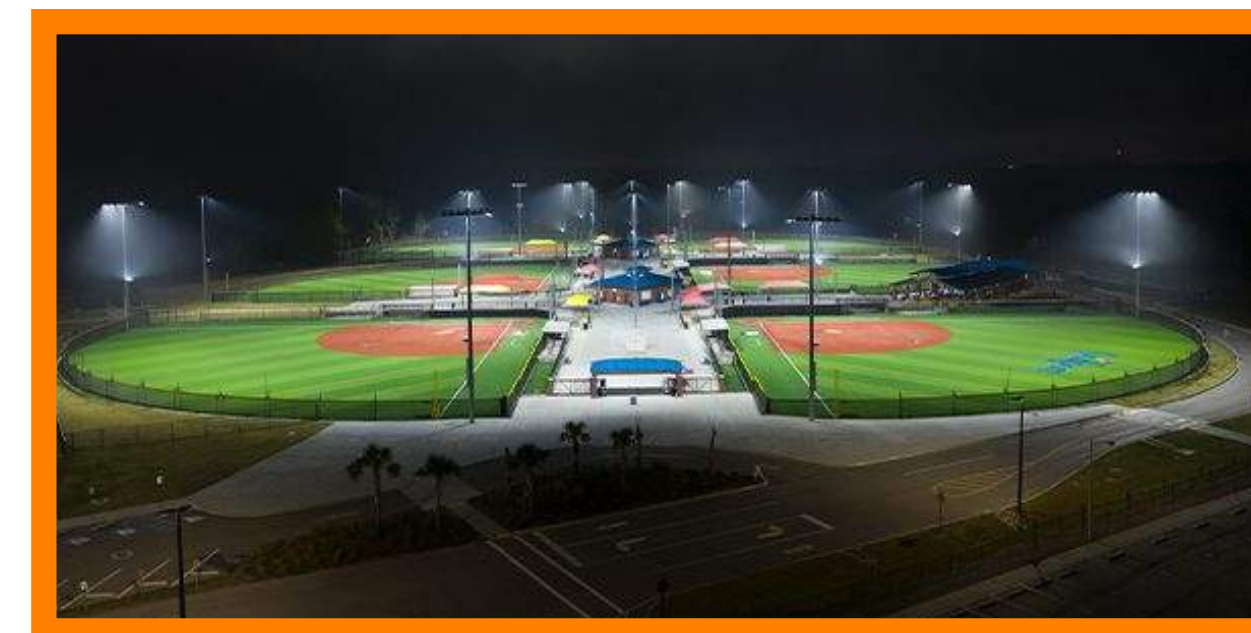


PHOTO A



PHOTO B

ENGINEERED DESIGN By: B.Guler · File #214586B · 28-Jul-22

The proposed lighting plan will need a waiver from the City's Exterior Lighting requirements in accordance with Section 138-10.205, as the lighting necessary at sports fields does not meet ordinance requirements. The applicant shall provide information to document the following conditions which must be met in order for the waiver to be approved by the Planning Commission.

1. The waiver or modification is necessary because of safety or design factors unique to the use, circumstance or site.
2. The minimum possible light intensity is used that would be adequate for the intended purpose. Consideration to maximizing safety and energy conservation and to minimizing light pollution, off-site glare and light trespass on to neighboring properties or streets rights-of-way.

## REQUEST FOR WAIVER

A WAIVER IS BEING REQUESTED FROM THE CITY OF ROCHESTER HILLS TO EXTERIOR LIGHTING REQUIREMENTS (SECTION 138-10.205).

THE MINIMUM LIGHTING REQUIREMENTS FOR NCAA BASEBALL FIELDS IS:  
 HORIZONTAL LIGHT LEVELS: 70 FOOTCANDLES INFIELD / 50 FOOTCANDLES OUTFIELD  
 HORIZONTAL UNIFORMITY: 2.0:1 INFIELD, 2.5:1 OUTFIELD  
 GRID SPACING: 30 FT X 30 FT

THE MINIMUM LIGHTING REQUIREMENTS FOR NCAA SOCCER AND LACROSSE FIELD IS:  
 HORIZONTAL LIGHT LEVELS: 50 FOOTCANDLES  
 HORIZONTAL UNIFORMITY: 2.0:1  
 GRID SPACING: 30 FT X 30 FT

THE DISTANCE TO THE NEAREST RESIDENCE, OR RIGHT-OF-WAY VARIES.  
 POLE # A1 IS APPROXIMATELY 400 LF TO THE AVON ROAD ROW DIRECTLY SOUTH OF THE COMPLEX.  
 POLE # B1 IS OVER 1,350 LF TO A RESIDENTIAL AREA TO THE WEST  
 POLE # B2 IS APPROXIMATELY 350 LF TO THE ROW TO WORRIER WAY, EAST OF THE LIGHT POLE  
 POLE # D2 IS OVER 1,000 LF FROM A RESIDENTIAL NEIGHBORHOOD TO THE NORTH.

THE LIGHT SCAN PROVIDED ON SHEET ES1.02 INDICATES 0.00 LUMENS CAN BE DETECTED BEYOND 180' FROM ANY OF THE EIGHT POLES SURROUNDING THE PROPOSED ATHLETIC FACILITY.

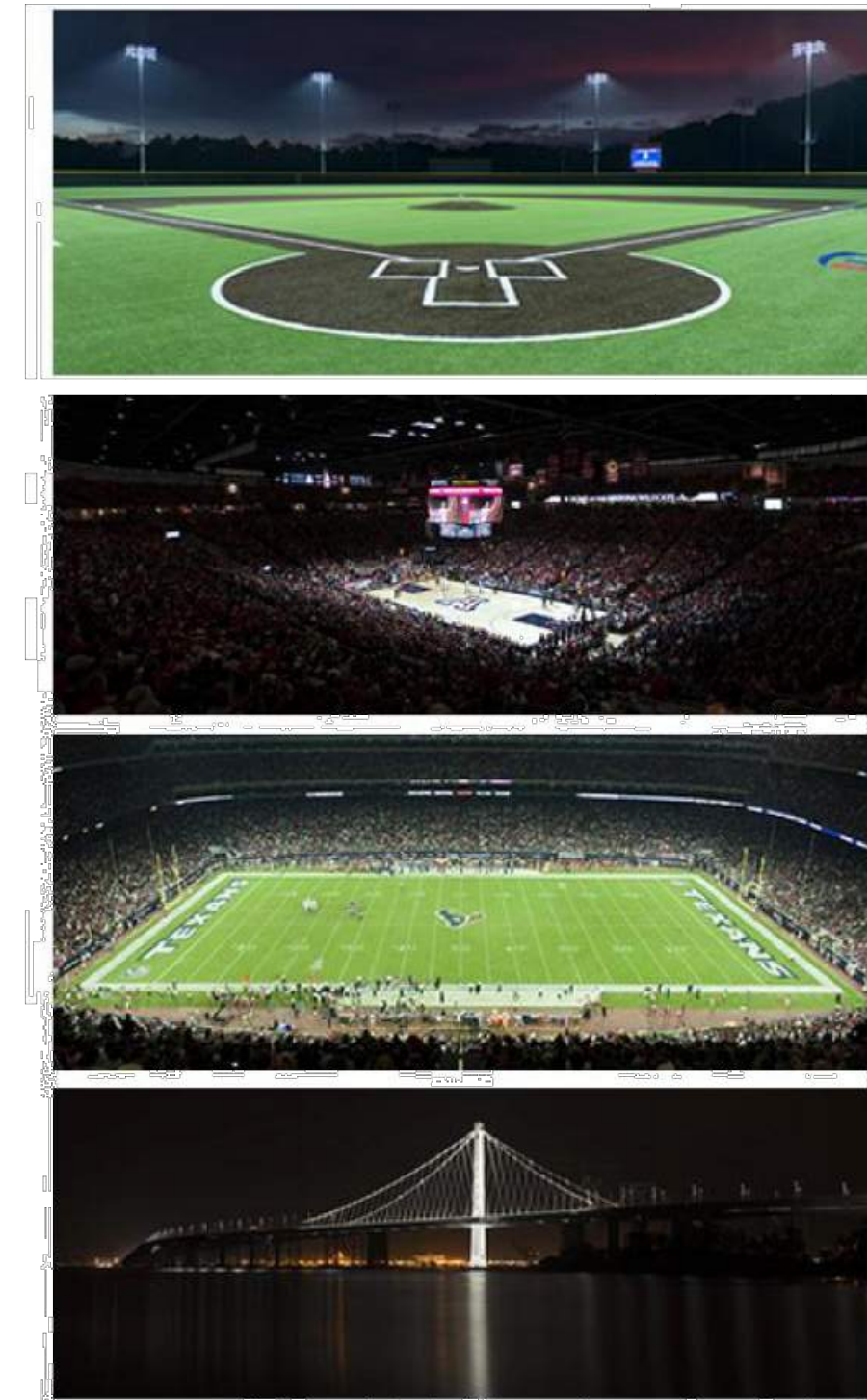
NOT ONLY ARE THE LIGHT LUMENS AT 0.00, BUT THE DESIGN OF THE FIXTURES TO BE USED ARE REVOLUTIONARY. THE TRADITIONAL FIXTURES USED AT MOST STADIUMS IN THE AREA, UTILIZE A 400 WATT METAL HALIDE UNIT THAT RESEMBLES A SEMICIRCLE. THESE UNITS ARE THEN AIMED TOWARD THE FIELD. WHEN THE LIGHTS ARE ENERGIZED, THE ACTUAL FIXTURE CAN BE SEEN FROM A DISTANCE. THEY ARE NOW REFERRED TO AS "GLARE BOMBS".

THE FIXTURES TO BE USED AT ROCHESTER UNIVERSITY HAVE A FLAT PROFILE BUT ARE STILL ABLE TO PROVIDE THE NEEDED LUMENS ONTO THE FIELD WITHOUT THE TYPICAL APPEARANCE FROM THE METAL HALIDE SYSTEMS.

THE PHOTOS BELOW ILLUSTRATE THE ADVANTAGES OF THIS FIXTURE.  
 PHOTO A CLEARLY PORTRAYS THE DOWNWARD TRAJECTORY OF THE FOOTCANDLES/ LUMENS.  
 PHOTO B PROVIDES AN AT-GRADE EXAMPLE OF THE BENEFITS OF THE LOW PROFILE FIXTURE IN ELIMINATING THE "GLARE BOMB" APPEARANCE.

WE, RESPECTFULLY, REQUEST A WAIVER BE GRANTED BASED UPON THE INFORMATION PROVIDED.

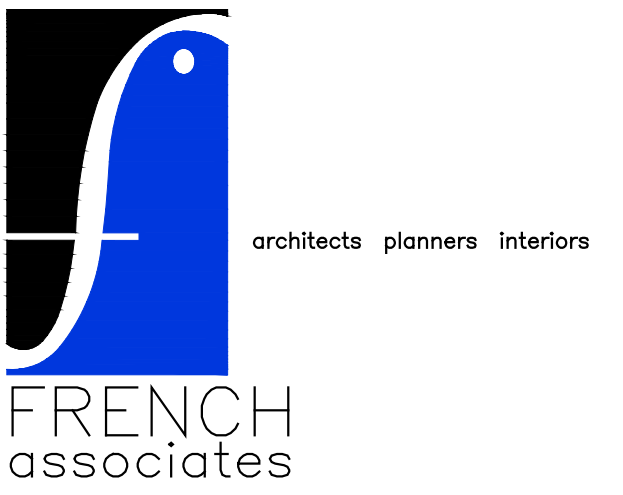
## From Hometown to Professional



Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2022 Musco Sports Lighting, LLC.

## PROJECT SUMMARY

ISSUE DATE	ISSUED FOR
10/5/22	BIDS
12/2/22	SITE PLAN RESUBMITTAL
DRAWN	BSL
CHECKED	MJS
APPROVED	MJS



236 Mill Street  
 Rochester, MI 48307  
 T 248.656.1377  
 F 248.656.7746  
 © FRENCH ASSOCIATES, INC.



PROJECT  
**ROCHESTER UNIVERSITY ATHLETIC FIELD IMPROVEMENTS**  
 ROCHESTER HILLS MICHIGAN

SHEET  
**PROJECT SUMMARY**

PROJECT NUMBER  
**2020-003**

SHEET NUMBER  
**ES1.00**

EQUIPMENT LIST FOR AREAS SHOWN									
Pole				Luminaires					
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS	
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0	
				70'	TLC-LED-1200	4	4	0	
2	B1-B2	90'	-	15.5'	TLC-BT-575	1	1	0	
				90'	TLC-LED-1500	10	10	0	
4	C1-C2	70'	-	70'	TLC-LED-1500	7	7	0	
	D1-D2			15.5'	TLC-BT-575	2	2	0	
TOTALS						68	68	0	

Rochester University Soccer Baseball  
Rochester Hills, MI

GRID SUMMARY	
Name:	Baseball
Size:	Irregular 330' / 466' / 330'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY		
MAINTAINED HORIZONTAL FOOTCANDLES		
	Infield	Outfield
<b>Guaranteed Average:</b>	<b>50</b>	<b>50</b>
Scan Average:	53.41	52.74
Maximum:	63	61
Minimum:	48	41
Avg / Min:	1.11	1.29
<b>Guaranteed Max / Min:</b>	<b>2</b>	<b>2</b>
Max / Min:	1.32	1.50
UG (adjacent pts):	1.25	1.49
CU:	0.74	
No. of Points:	25	117

LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	68
Total Load:	84.9 kW

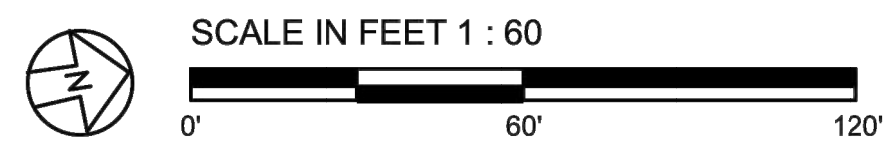
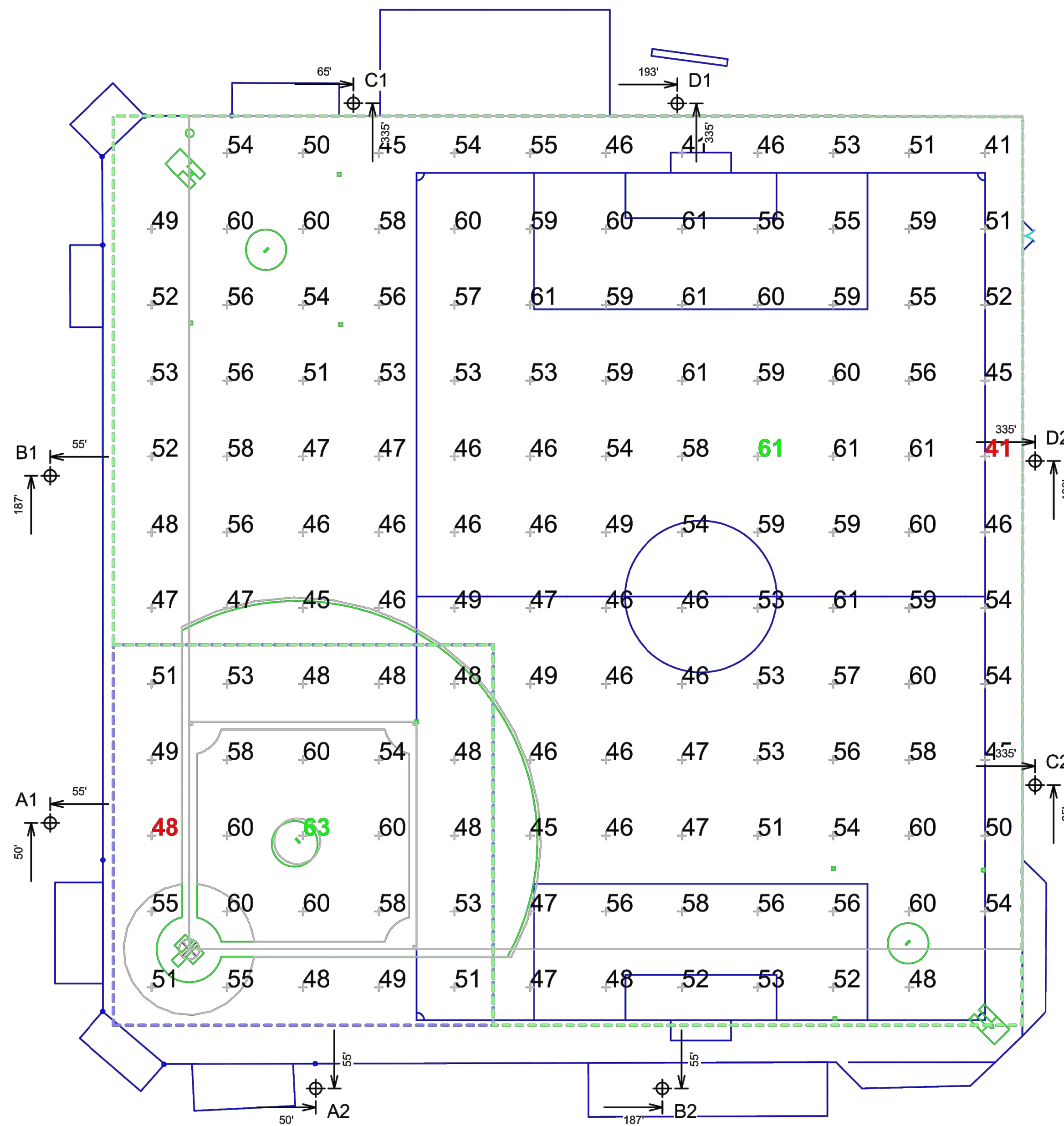
ISSUE DATE	ISSUED FOR
6/20/2022	SITE PLAN REVIEW
12/2/22	NO CHANGE

**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.



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

ENGINEERED DESIGN By: B.Guler · File #214586A · 06-Jun-22



Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2022 Musco Sports Lighting, LLC.

ILLUMINATION SUMMARY

PROJECT  
ROCHESTER UNIVERSITY

ROCHESTER HILLS MICHIGAN

SHEET  
ILLUMINATION SUMMARY

PROJECT NUMBER  
2020-003

SHEET NUMBER  
ES1.01

236 MILL STREET  
ROCHESTER, MI 48307  
T: 248.656.1377  
frenchcia.com  
© FRENCH ASSOCIATES, INC.









