

Cheshire Academy Multipurpose Field

Cheshire, CT

Lighting System

Pole / Fixture Summary						
Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
A1	70'	70'	3	TLC-LED-1200	3.51 kW	A
		16'	1	TLC-BT-575	0.58 kW	A
A2	70'	70'	3	TLC-LED-1200	3.51 kW	B
		70'	2	TLC-LED-1500	2.86 kW	C
		16'	1	TLC-BT-575	0.58 kW	B
B2	70'	70'	7	TLC-LED-1500	10.01 kW	B
		16'	2	TLC-BT-575	1.15 kW	B
F1	70'	70'	9	TLC-LED-1500	12.87 kW	B
		16'	2	TLC-BT-575	1.15 kW	B
F2	70'	70'	9	TLC-LED-1500	12.87 kW	C
		16'	2	TLC-BT-575	1.15 kW	C
F3	70'	70'	5	TLC-LED-1500	7.15 kW	C
		16'	2	TLC-BT-575	1.15 kW	C
T1-T4	50'	50'	3	TLC-LED-900	2.67 kW	D
10			60		69.21 kW	

Circuit Summary			
Circuit	Description	Load	Fixture Qty
A	Softball	4.09 kW	4
B	Softball Multipurpose	29.26 kW	24
C	Multipurpose	25.18 kW	20
D	Tennis	10.68 kW	12

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	32
TLC-LED-1200	LED 5700K - 75 CRI	1170W	136,000	>120,000	>120,000	>120,000	6
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	10
TLC-LED-900	LED 5700K - 75 CRI	890W	89,600	>120,000	>120,000	>120,000	12

Light Level Summary

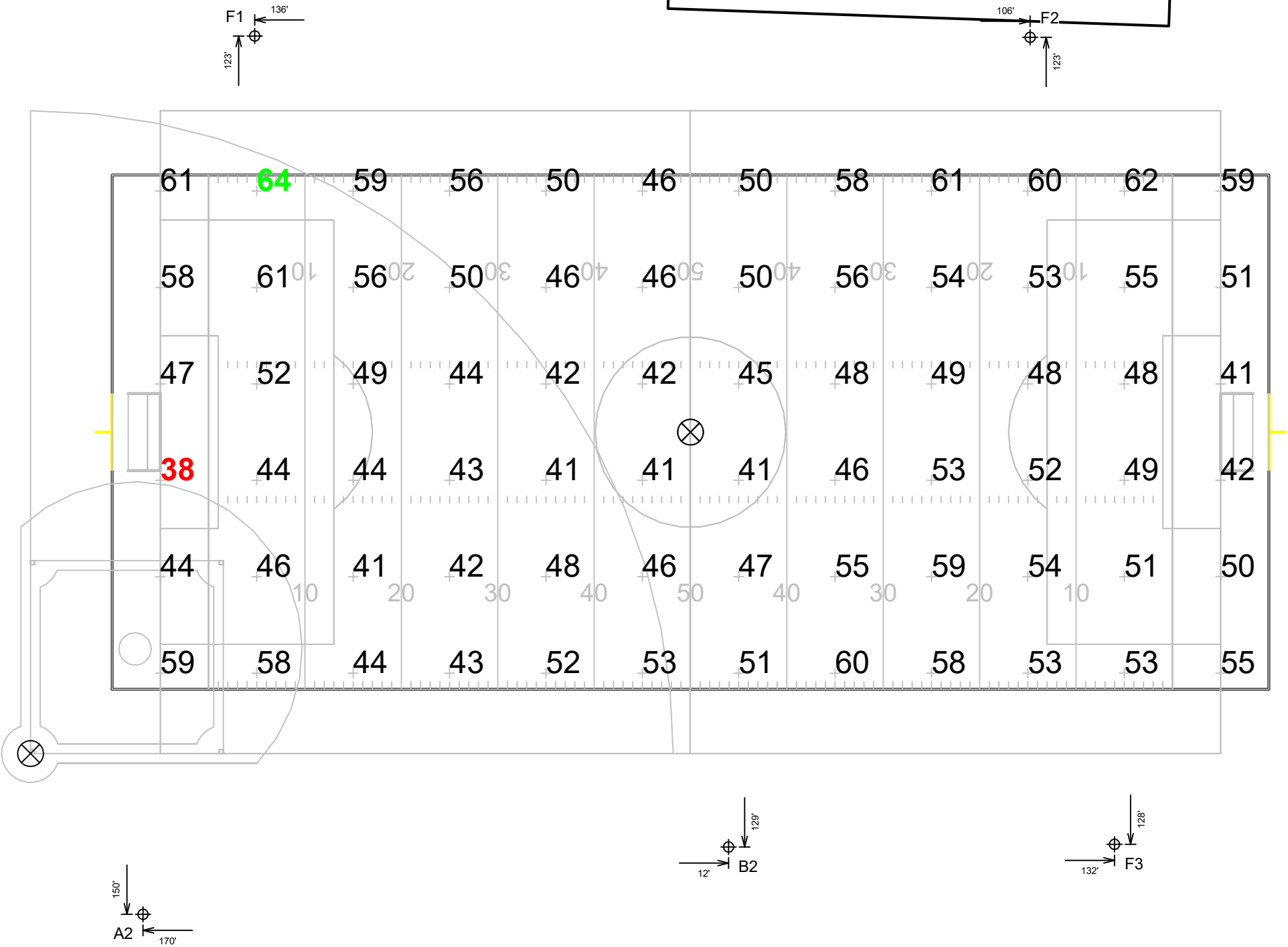
Calculation Grid Summary								
Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Football	Horizontal Illuminance	50.5	38	64	1.65	1.33	B,C	44
Soccer	Horizontal Illuminance	50.1	41	61	1.50	1.22	B,C	44
Softball (Infield)	Horizontal Illuminance	51.4	38	60	1.59	1.35	A,B	28
Softball (Outfield)	Horizontal Illuminance	44.3	36	59	1.66	1.23	A,B	28
Spill Grid	Horizontal	0.02	0	0.18	0.00		A,B,C,D	60
Tennis	Horizontal Illuminance	54.8	43	62	1.43	1.27	D	12

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
1	A2	70'	-1'	69'	TLC-LED-1200	3	3	0
				14.5'	TLC-BT-575	1	1	0
				69'	TLC-LED-1500	2	2	0
1	B2	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	7	7	0
2	F1-F2	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	9	9	0
1	F3	70'	-	15.5'	TLC-BT-575	2	2	0
				70'	TLC-LED-1500	5	5	0
5	TOTALS					44	44	0



Cheshire Academy Multipurpose Field  
Cheshire, CT

GRID SUMMARY	
Name:	Football
Size:	360' x 160'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY	
MAINTAINED HORIZONTAL FOOTCANDLES	
Entire Grid	
Guaranteed Average:	50
Scan Average:	50.50
Maximum:	64
Minimum:	38
Avg / Min:	1.31
Guaranteed Max / Min:	2
Max / Min:	1.65
UG (adjacent pts):	1.34
CU:	0.56
No. of Points:	72
LUMINAIRE INFORMATION	
Applied Circuits:	B, C
No. of Luminaires:	44
Total Load:	54.45 kW

**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.

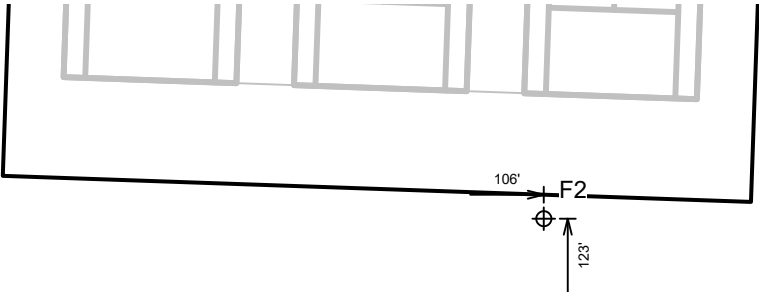
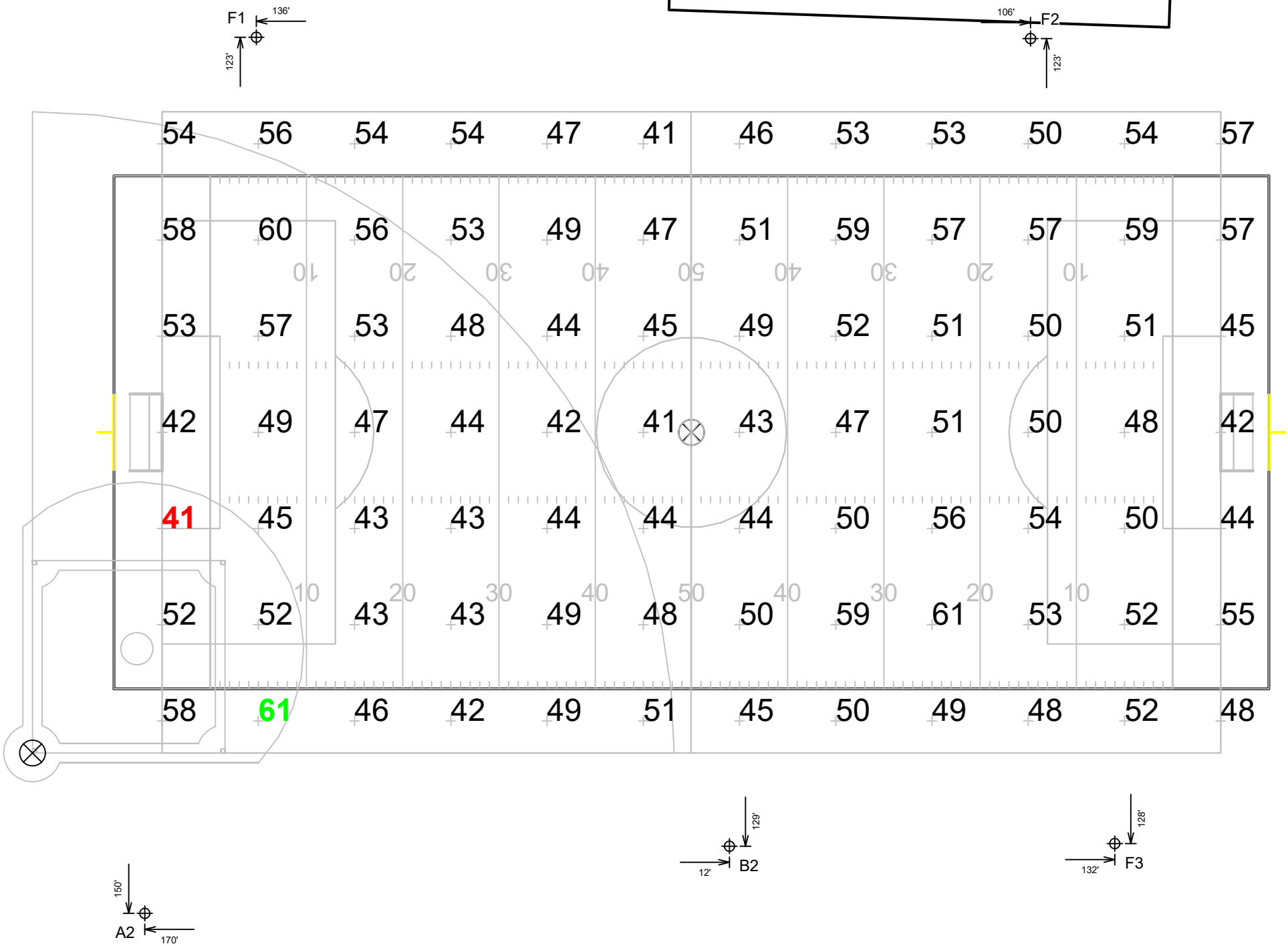
**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2021 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
1	A2	70'	-	70'	TLC-LED-1200	3	3	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	2	2	0
1	B2	70'	1'	16.5'	TLC-BT-575	2	2	0
				71'	TLC-LED-1500	7	7	0
				16.5'	TLC-BT-575	2	2	0
2	F1-F2	70'	1'	71'	TLC-LED-1500	9	9	0
				16.5'	TLC-BT-575	2	2	0
				71'	TLC-LED-1500	9	9	0
1	F3	70'	1'	16.5'	TLC-BT-575	2	2	0
				71'	TLC-LED-1500	5	5	0
				71'	TLC-LED-1500	5	5	0
5	TOTALS					44	44	0



## Cheshire Academy Multipurpose Field

Cheshire, CT

GRID SUMMARY	
Name:	Soccer
Size:	330' x 200'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY	
MAINTAINED HORIZONTAL FOOTCANDLES	
Entire Grid	
Guaranteed Average:	50
Scan Average:	50.05
Maximum:	61
Minimum:	41
Avg / Min:	1.23
Guaranteed Max / Min:	2
Max / Min:	1.50
UG (adjacent pts):	1.32
CU:	0.65
No. of Points:	84

LUMINAIRE INFORMATION	
Applied Circuits:	B, C
No. of Luminaires:	44
Total Load:	54.45 kW

**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.



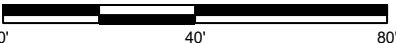
**We Make It Happen.**

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2021 Musco Sports Lighting, LLC.

## ILLUMINATION SUMMARY



SCALE IN FEET 1 : 40



EQUIPMENT LIST FOR AREAS SHOWN								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
1	A2	70'	-	70'	TLC-LED-1200	3	3	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	2	0	2
1	B2	70'	1'	16.5'	TLC-BT-575	2	2	0
				71'	TLC-LED-1500	7	7	0
1	F1	70'	1'	16.5'	TLC-BT-575	2	2	0
				71'	TLC-LED-1500	9	9	0
4	TOTALS					30	28	2

Cheshire Academy Multipurpose Field  
Cheshire, CT

GRID SUMMARY	
Name:	Softball
Size:	200'/200'/200' - basepath 60'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

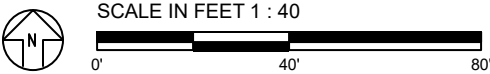
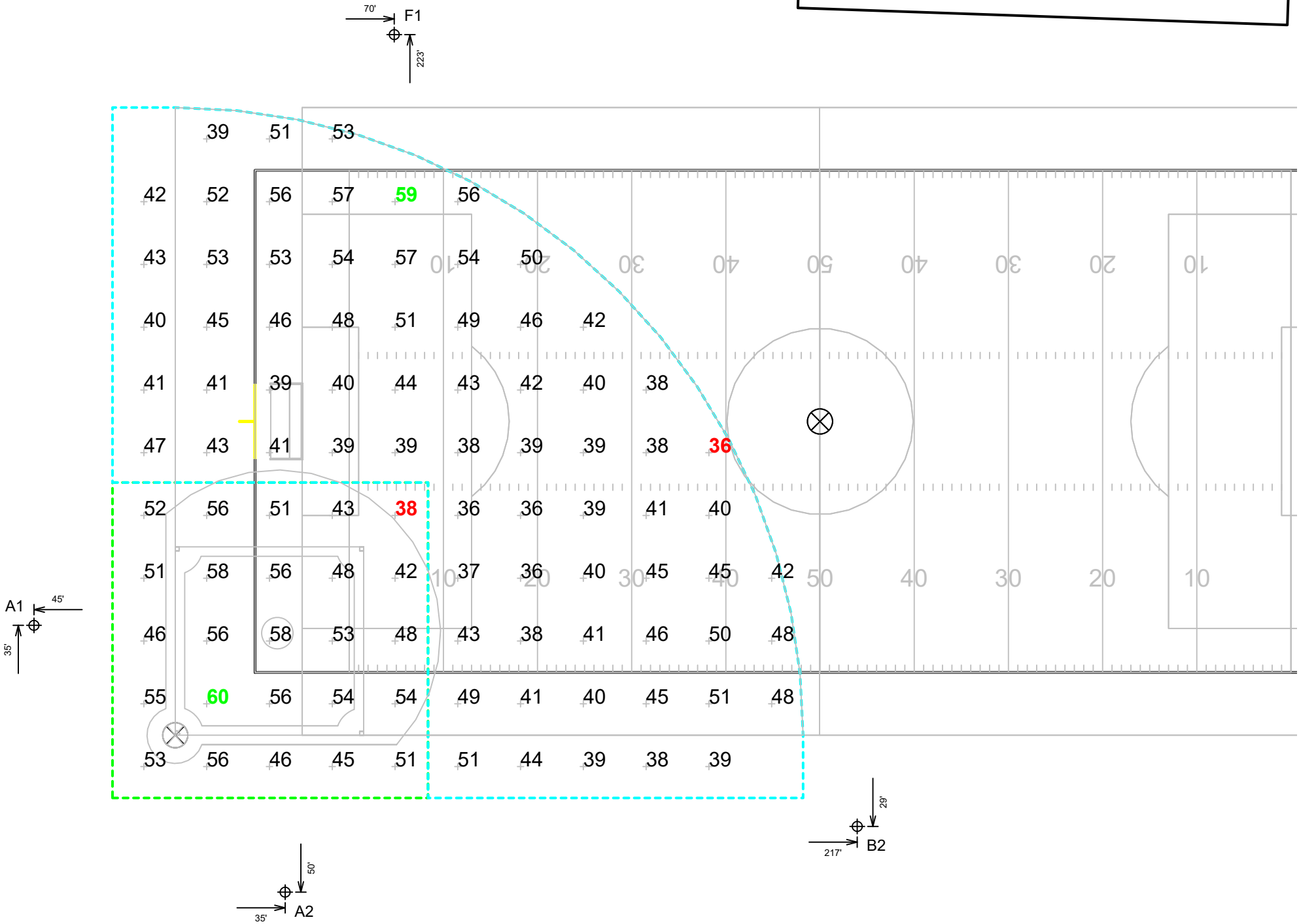
ILLUMINATION SUMMARY		
MAINTAINED HORIZONTAL FOOTCANDLES		
	Infield	Outfield
Guaranteed Average:	50	30
Scan Average:	51.40	44.31
Maximum:	60	59
Minimum:	38	36
Avg / Min:	1.36	1.25
Guaranteed Max / Min:	2	2.5
Max / Min:	1.59	1.66
UG (adjacent pts):	1.23	1.32
CU:	0.49	
No. of Points:	25	71
LUMINAIRE INFORMATION		
Applied Circuits:	A, B	
No. of Luminaires:	28	
Total Load:	33.35 kW	

**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) ⊗

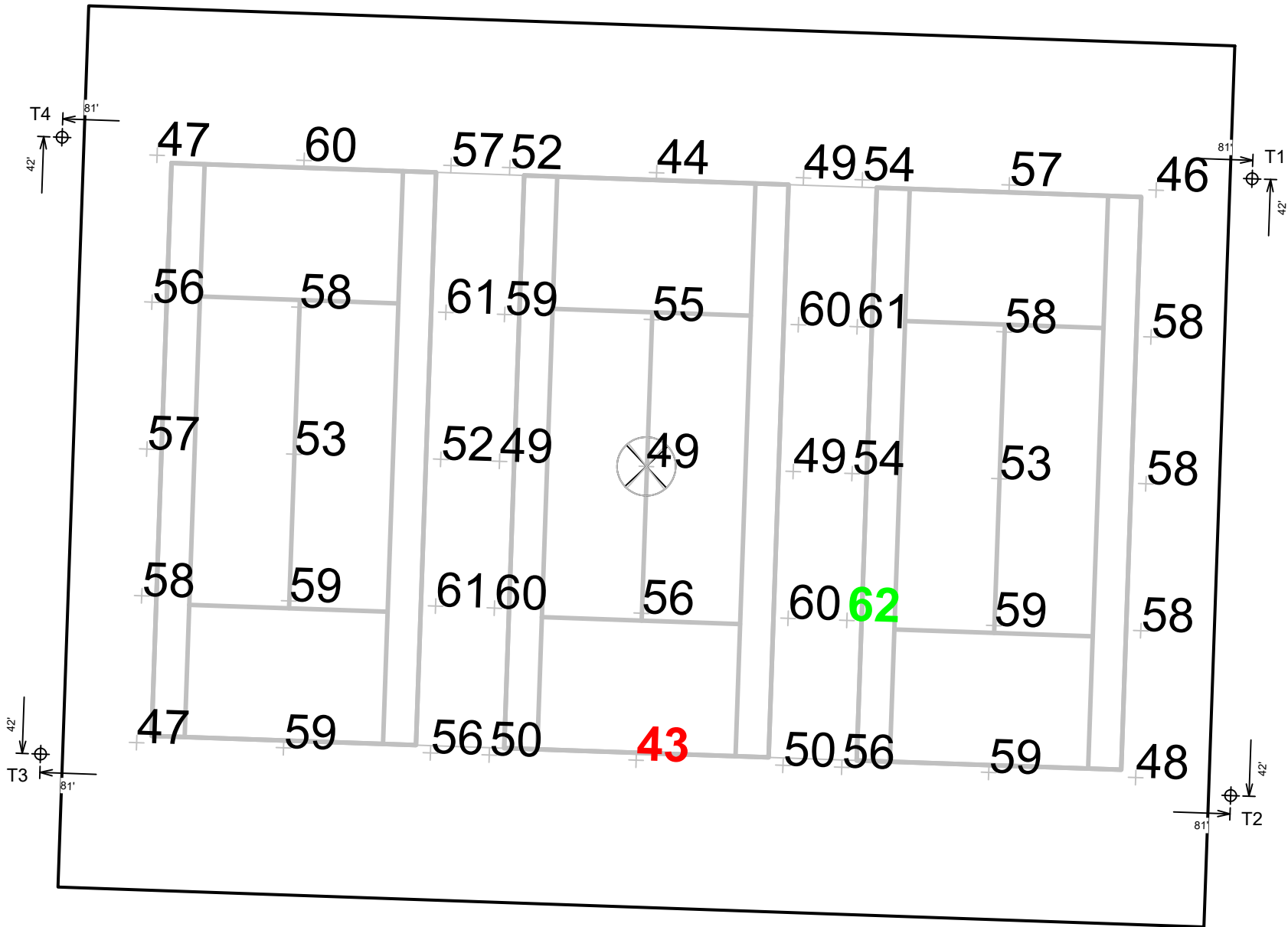


We Make It Happen®

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2021 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
4	T1-T4	50'	-	50'	TLC-LED-900	3	3	0
4	TOTALS					12	12	0



## Cheshire Academy Multipurpose Field

Cheshire, CT

GRID SUMMARY	
Name:	Tennis
Size:	3 Court - 12' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

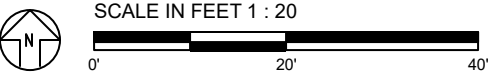
ILLUMINATION SUMMARY	
MAINTAINED HORIZONTAL FOOTCANDLES	
Entire Grid	
Guaranteed Average:	50
Scan Average:	54.81
Maximum:	62
Minimum:	43
Avg / Min:	1.26
Guaranteed Max / Min:	2
Max / Min:	1.43
UG (adjacent pts):	0.00
CU:	0.89
No. of Points:	45
LUMINAIRE INFORMATION	
Applied Circuits:	D
No. of Luminaires:	12
Total Load:	10.68 kW

**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.



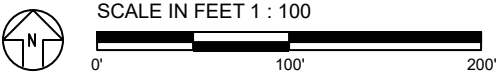
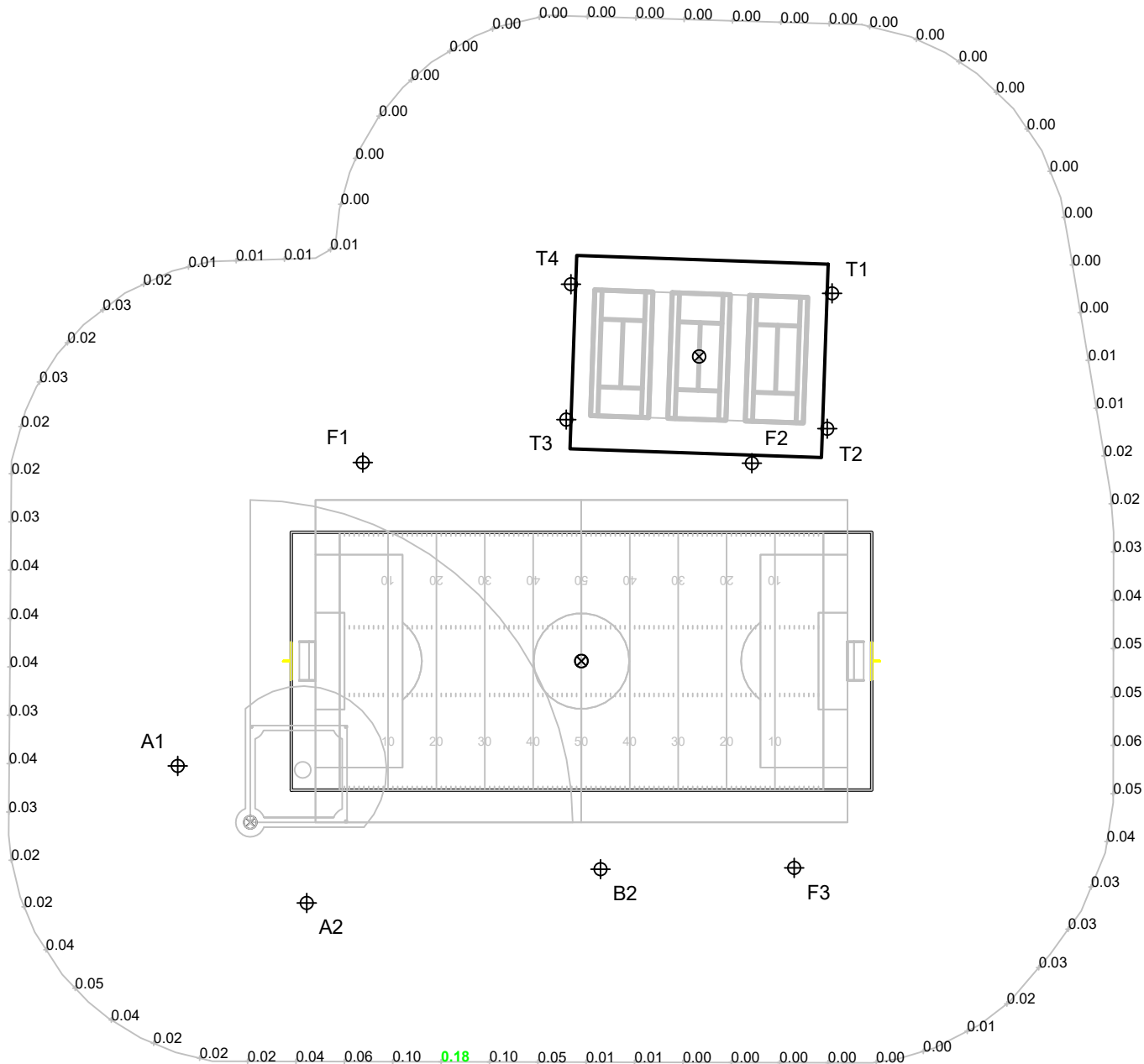
Pole location(s)  $\oplus$  dimensions are relative to 0,0 reference point(s)  $\otimes$



We Make It Happen<sup>®</sup>

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2021 Musco Sports Lighting, LLC.

EQUIPMENT LIST FOR AREAS SHOWN								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A1	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1200	3	3	0
1	A2	70'	-	70'	TLC-LED-1200	3	3	0
				15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	2	2	0
1	B2	70'	1'	16.5'	TLC-BT-575	2	2	0
				71'	TLC-LED-1500	7	7	0
2	F1-F2	70'	1'	16.5'	TLC-BT-575	2	2	0
				71'	TLC-LED-1500	9	9	0
1	F3	70'	1'	16.5'	TLC-BT-575	2	2	0
				71'	TLC-LED-1500	5	5	0
4	T1-T4	50'	1'	51'	TLC-LED-900	3	3	0
10	TOTALS					60	60	0



ENGINEERED DESIGN By: Aaron Rose · File #213555A · 16-Dec-21

## Cheshire Academy Multipurpose Field

Cheshire, CT

GRID SUMMARY	
Name:	Spill Grid
Spacing:	30.0'
Height:	7.0' above grade

ILLUMINATION SUMMARY	
HORIZONTAL FOOTCANDLES	
Scan Average:	Entire Grid 0.0224
Maximum:	0.18
Minimum:	0.00
No. of Points:	77
LUMINAIRE INFORMATION	
Applied Circuits:	A, B, C, D
No. of Luminaires:	60
Total Load:	69.21 kW

**Guaranteed Performance:** The ILLUMINATION described above is guaranteed per your Musco Warranty document.

**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.



Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2021 Musco Sports Lighting, LLC.

### ILLUMINATION SUMMARY



Cheshire Academy Multipurpose Field  
Cheshire, CT

EQUIPMENT LAYOUT

INCLUDES:

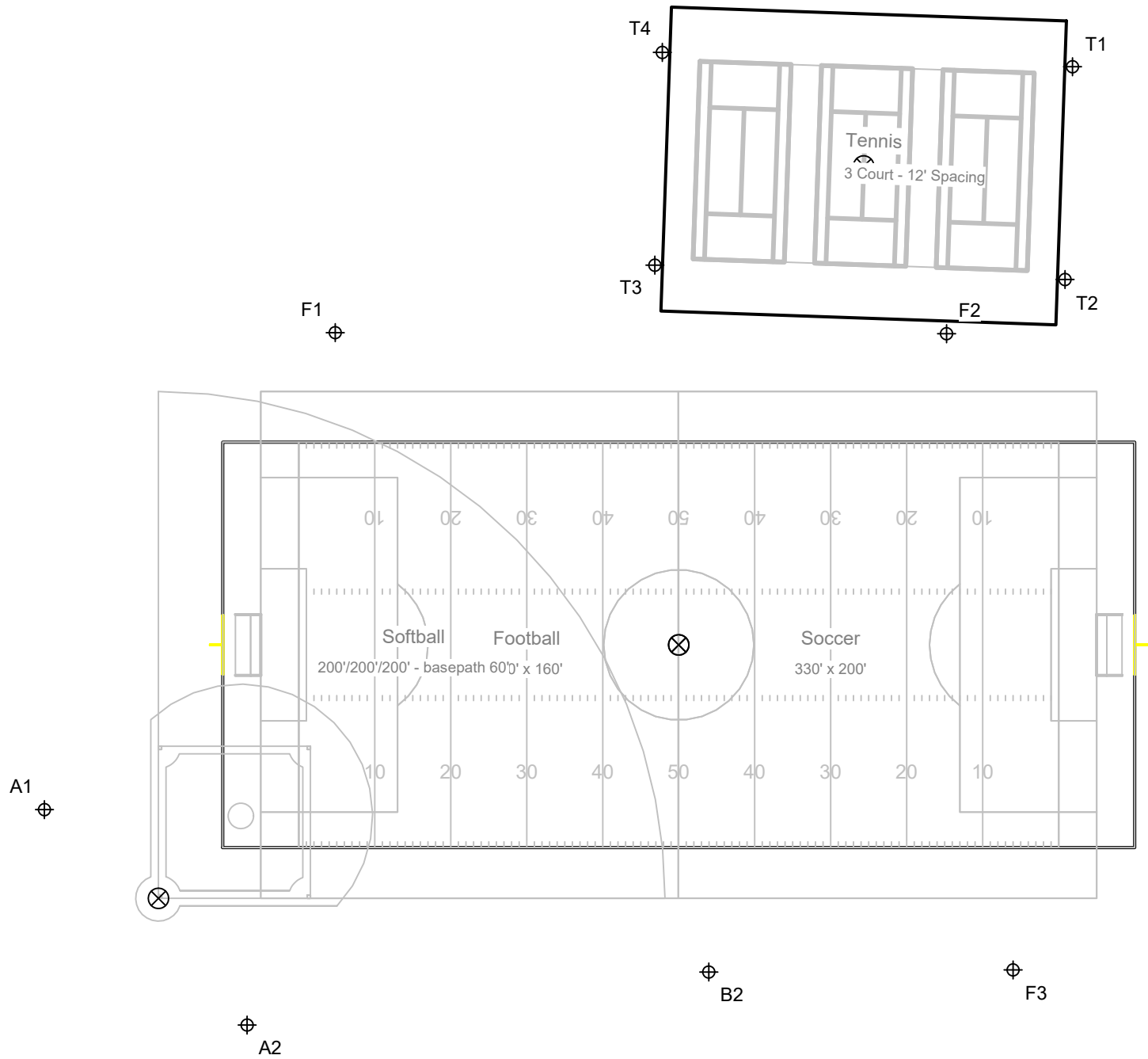
- Football
- Soccer
- Softball
- Tennis

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

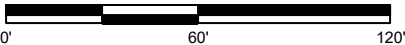
**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
Single Phase Voltage							
TLC-LED-1500	8.5	8.1	7.4	6.4	5.1	4.7	3.7
TLC-LED-1200	7.0	6.6	6.1	5.2	4.2	4.0	3.0
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-900	5.3	5.0	4.6	4.0	3.2	2.9	2.3



SCALE IN FEET 1 : 60



ENGINEERED DESIGN By: Aaron Rose · File #213555A · 16-Dec-21

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, 2021 Musco Sports Lighting, LLC.

EQUIPMENT LAYOUT



# Control System Summary

## Project Specific Notes:

## Project Information

Project #: 213555  
Project Name: Cheshire Academy Multipurpose Field  
Date: 12/16/21  
Project Engineer: Aaron Rose  
Sales Representative: Mike Mahoney  
Control System Type: Control-Link™ Control and Monitoring System  
Communication Type: PowerLine-ST  
Scan: 213555A  
Document ID: 213555P1V1-1216140734  
Distribution Panel Location or ID: Service 1  
Total # of Distribution Panel Locations for Project: 1  
Design Voltage/Hertz/Phase: 480/60/3  
Control Voltage: 120

## Equipment Listing

DESCRIPTION	APPROXIMATE SIZE	
1. Control and Monitoring Cabinet	24 X 72	
	QTY	SIZE (AMPS)
Total Contactors	11	30 AMP
Total Off/On/Auto Switches:	4	

## Materials Checklist

### Contractor/Customer Supplied:

- ☐ A dedicated control circuit must be supplied per distribution panel location
  - If the control voltage is NOT available, a control transformer is required
- ☐ Electrical distribution panel to provide overcurrent protection for circuits
  - HID rated or D-curve circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- ☐ Wiring
  - See chart on page 2 for wiring requirements
  - Equipment grounding conductor and splices must be insulated (per circuit)
  - Lightning ground protection (per pole), if not Musco supplied
- ☐ Electrical conduit wireway system
  - Entrance hubs rated NEMA 4, must be die-cast zinc, PVC, or copper-free die-cast aluminum
- ☐ Mounting hardware for cabinets
- ☐ Breaker lock-on device to prevent unauthorized power interruption to control power and powerline connection (if present)
- ☐ Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central™ operations center at 877/347-3319 to schedule activation of the control system upon completion of the installation.

Note: Activation may take up to 1 1/2 hours.

Preliminary Plans!  
Confirm all Details - voltage,  
# of distribution panels, etc.

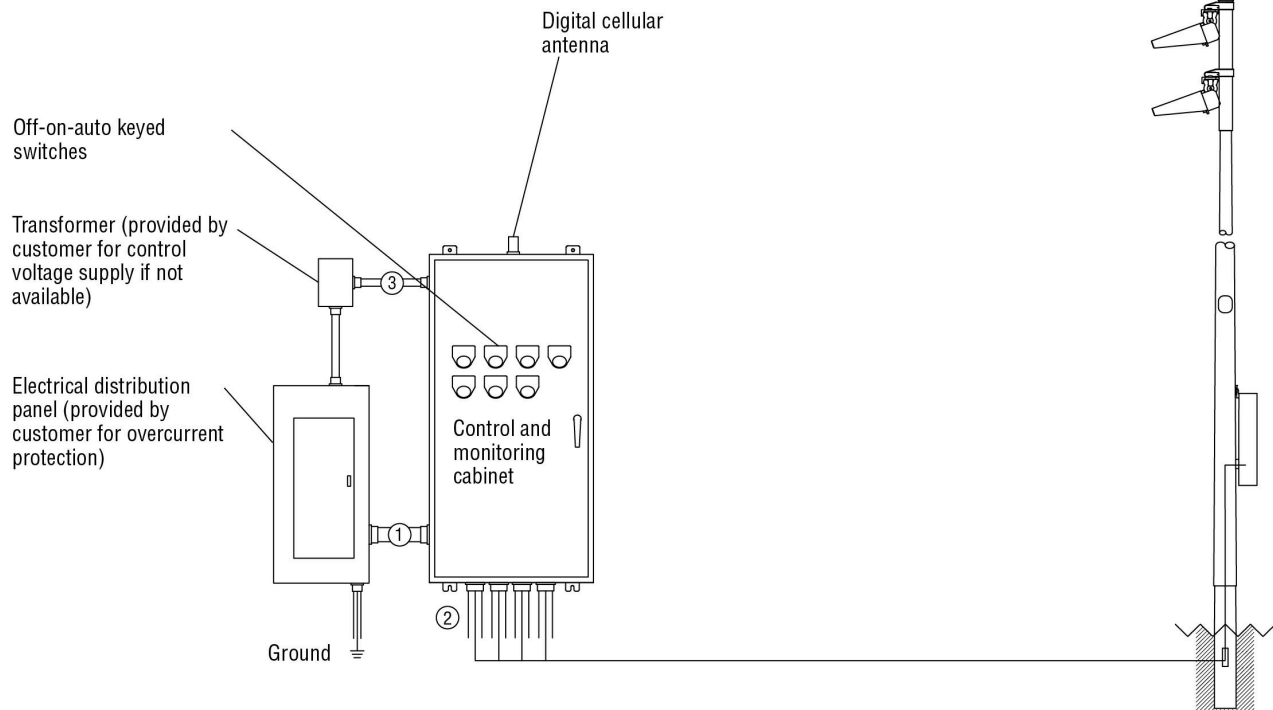
## IMPORTANT NOTES

1. Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are 100% rated for the published continuous load. All contactors are 3 pole.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. A single control circuit must be supplied per control system.
6. Size overcurrent devices using the full load amps column of the Circuit Summary By Zone chart- Minimum power factor is 0.9.

NOTE: Refer to Installation Instructions for more details on equipment information and the installation requirements.



## Control•Link® Control and Monitoring System



Conduit ID	Description	# of Wires	Wire (AWG)	Conduit (in)	Max. Wire Length (ft)	MUSCO Supplied	Notes
1	Line power to contactors, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
2	Load power to lighting circuits, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
3	Control power (dedicated, 20A)	3	12	*C	N/A	No	C,E

\* Notes:

- A. See voltage and phasing per the notes on cover page.
- B. Calculate per load and voltage drop.
- C. All conduit diameters should be per code unless otherwise specified to allow for connector size.
- D. Equipment grounding conductor and any splices must be insulated.
- E. Refer to control and monitoring system installation instructions for more details on equipment information and the installation requirements.

IMPORTANT: Control wires (3) must be in separate conduit from line and load power wires (1, 2).

R60-100-00\_B



# Control System Summary

Cheshire Academy Multipurpose Field / 213555 - 213555A  
Service 1 - Page 3 of 4

## SWITCHING SCHEDULE

<u>Field/Zone Description</u>	<u>Zones</u>
<b>Softball</b>	<b>1,2</b>
-Softball	1
-Softball/Multipurpose	2
<b>Football</b>	<b>2,3</b>
-Softball/Multipurpose	2
-Multipurpose	3
<b>Soccer</b>	<b>2,3</b>
-Softball/Multipurpose	2
-Multipurpose	3
<b>Tennis</b>	<b>4</b>

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 3268.0
	SEALED: 361.8

## CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	# OF DRIVERS	*FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
A1	Softball	4	4	6.5	30	C1	1
A2	Softball/Multipurpose	4	4	6.5	30	C2	2
B2	Softball/Multipurpose	9	9	17.3	30	C3	2
F1	Softball/Multipurpose	11	11	21.7	30	C4	2
A2	Multipurpose	2	2	6.4	30	C5	3
F2	Multipurpose	11	11	21.7	30	C6	3
F3	Multipurpose	7	7	14.1	30	C7	3
T1	Tennis	3	3	4.0	30	C8	4
T2	Tennis	3	3	4.0	30	C9	4
T3	Tennis	3	3	4.0	30	C10	4
T4	Tennis	3	3	4.0	30	C11	4

\*Full Load Amps based on amps per driver.

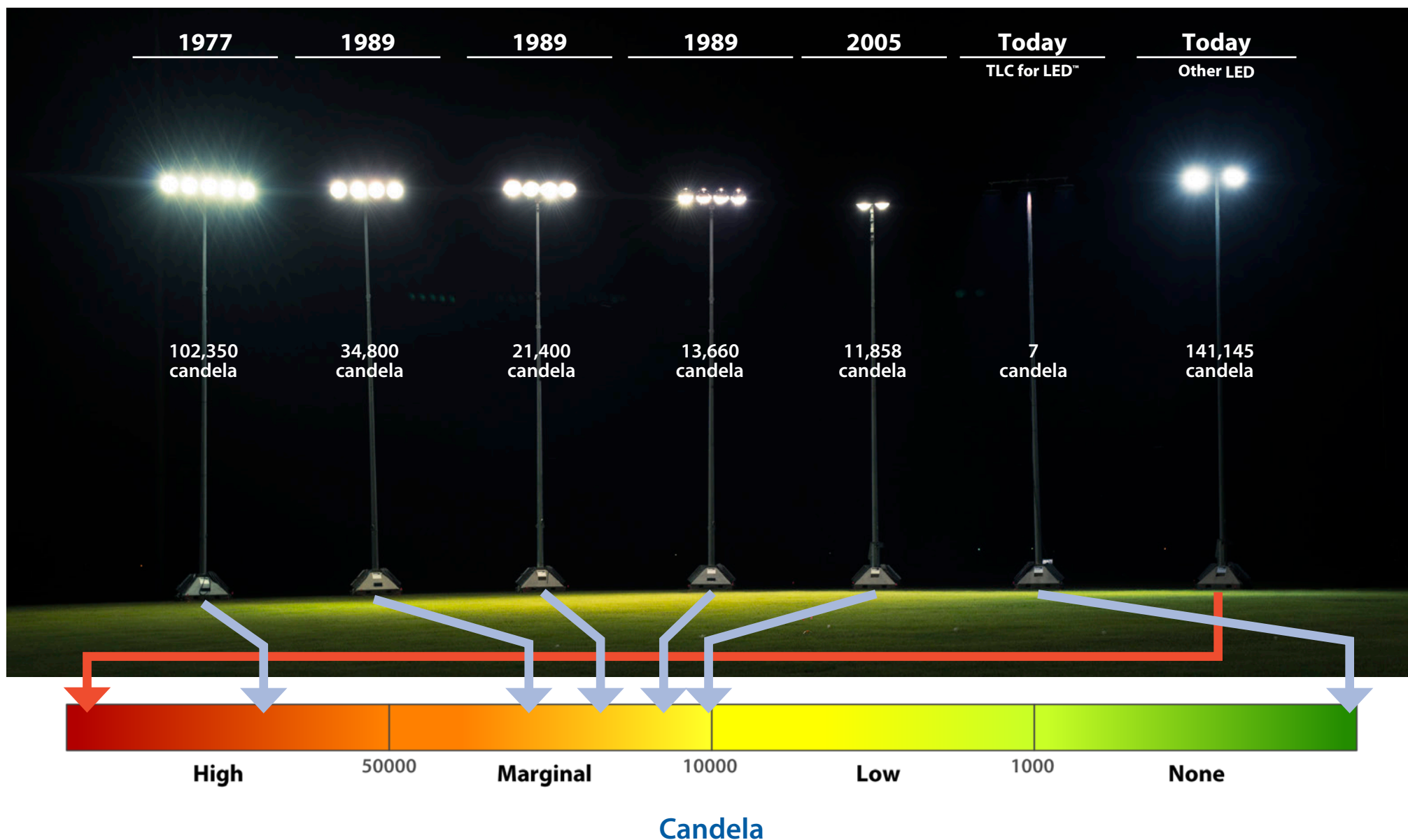


# Control System Summary

Cheshire Academy Multipurpose Field / 213555 - 213555A  
Service 1 - Page 4 of 4

PANEL SUMMARY						
CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole A1	6.50		
1	1	C2	Pole A2	6.50		
1	1	C3	Pole B2	17.28		
1	1	C4	Pole F1	21.74		
1	1	C5	Pole A2	6.41		
1	1	C6	Pole F2	21.74		
1	1	C7	Pole F3	14.07		
1	1	C8	Pole T1	3.97		
1	1	C9	Pole T2	3.97		
1	1	C10	Pole T3	3.97		
1	1	C11	Pole T4	3.97		

ZONE SCHEDULE				
ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	CIRCUIT DESCRIPTION	
			POLE ID	CONTACTOR ID
Zone 1	1	Softball	A1	C1
Zone 2	2	Softball/Multipurpose	A2	C2
			B2	C3
			F1	C4
Zone 3	3	Multipurpose	A2	C5
			F2	C6
			F3	C7
Zone 4	4	Tennis	T1	C8
			T2	C9
			T3	C10
			T4	C11



Candela values (single fixture) reported from photometric reports at 15° above the beam center.

Photographed at 100 ft (30 m) from field edge. Used equal parameters for: on-field light level per pole, mounting height, luminaire aiming angles, and pole distance from aiming point.