

Appendices

Appendix B Lighting Study

Appendices

This page intentionally left blank.

Wilson Middle School

Glendale, CA

Lighting System

Pole / Fixture Summary						
Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
P1-P3	70'	15'	2	TLC-BT-575	1.15 kW	A
		70'	5	TLC-LED-1150	5.75 kW	A
P4-P6	70'	20'	2	TLC-BT-575	1.15 kW	A
		70'	5	TLC-LED-1150	5.75 kW	A

Circuit Summary			
Circuit	Description	Load	Fixture Qty
A	Multipurpose	41.4 kW	42

Fixture Type Summary							
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1150	LED 5700K - 75 CRI	1150W	121,000	>63,500	>63,500	>63,500	30
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>63,500	>63,500	>63,500	12

Light Level Summary

Calculation Grid Summary								
Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Multipurpose	Horizontal Illuminance	30.7	24	39	1.65	1.28	A	42
Spill	Horizontal	0.29	0	4.91	0.00		A	42
Spill	Max Candela (by Fixture)	2344	0	15825	0.00		A	42
Spill	Max Vertical Illuminance Metric	0.32	0	4.98	0.00		A	42

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
3	P1-P3	70'	-	15'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	5	5	0
3	P4-P6	70'	-	20'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	5	5	0
6	TOTALS					42	42	0



Wilson Middle School

Glendale, CA

GRID SUMMARY

Name: Multipurpose
Size: 492' x 180'
Spacing: 30.0' x 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid
Guaranteed Average: 30
 Scan Average: 30.69
 Maximum: 39
 Minimum: 24
 Avg / Min: 1.30
Guaranteed Max / Min: 3
 Max / Min: 1.65
 UG (adjacent pts): 1.45
 CU: 0.67
 No. of Points: 102

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 121,000 / 52,000 lumens
No. of Luminaires: 42
Total Load: 41.4 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>63,500	>63,500	>63,500
TLC-BT-575	>63,500	>63,500	>63,500

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.

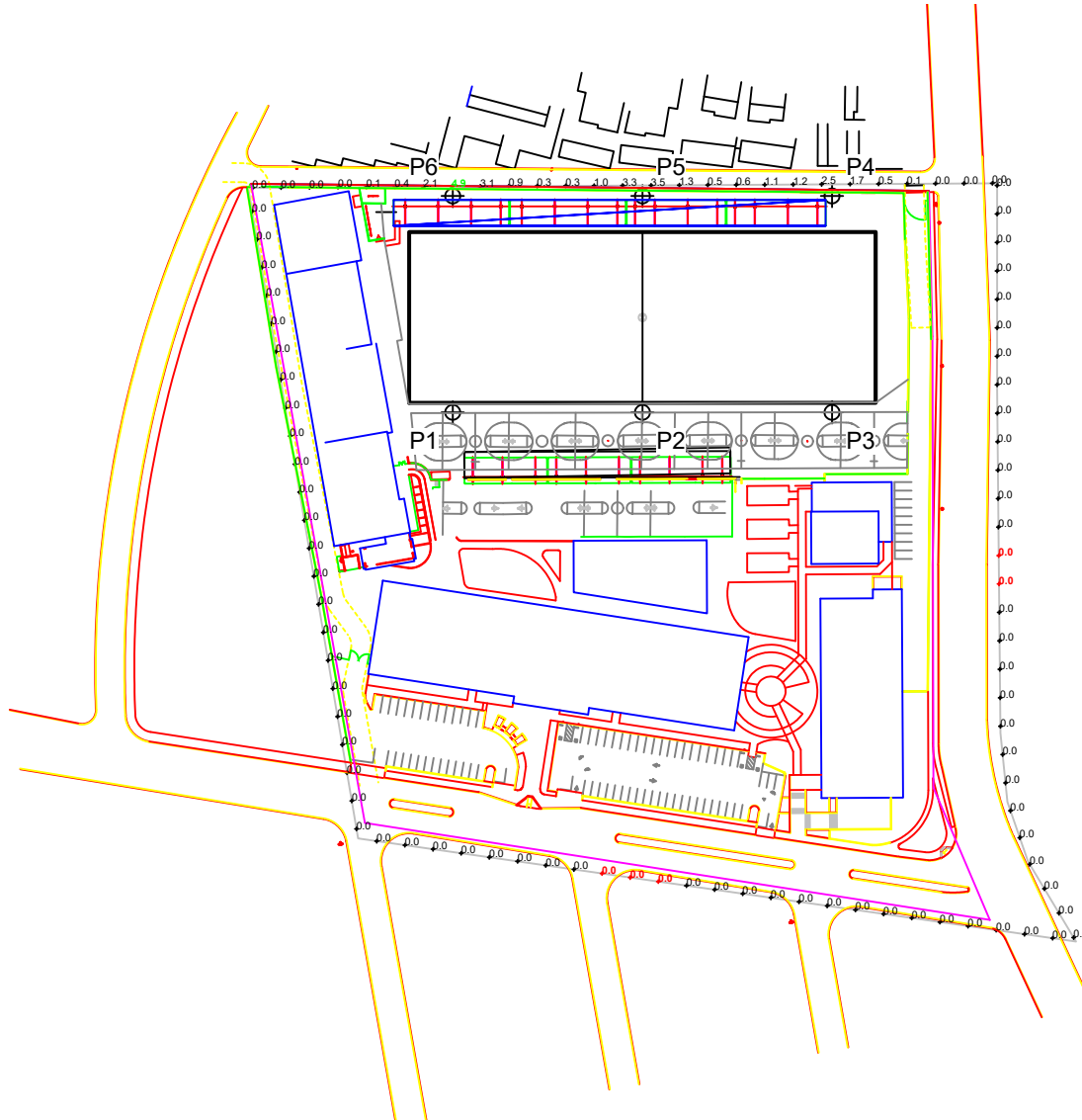


We Make It Happen.

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2018 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
3	P1-P3	70'	-	15'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	5	5	0
3	P4-P6	70'	-	20'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	5	5	0
6	TOTALS					42	42	0



SCALE IN FEET 1 : 200



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

ENGINEERED DESIGN By: Daniel Lohman • File #186740c • 01-Jun-18

Wilson Middle School

Glendale,CA

GRID SUMMARY

Name: Spill
Spacing: 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

Entire Grid
Scan Average: 0.2856
Maximum: 4.91
Minimum: 0.00
No. of Points: 103

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 121,000 / 52,000 lumens
No. of Luminaires: 42
Total Load: 41.4 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>63,500	>63,500	>63,500
TLC-BT-575	>63,500	>63,500	>63,500

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.



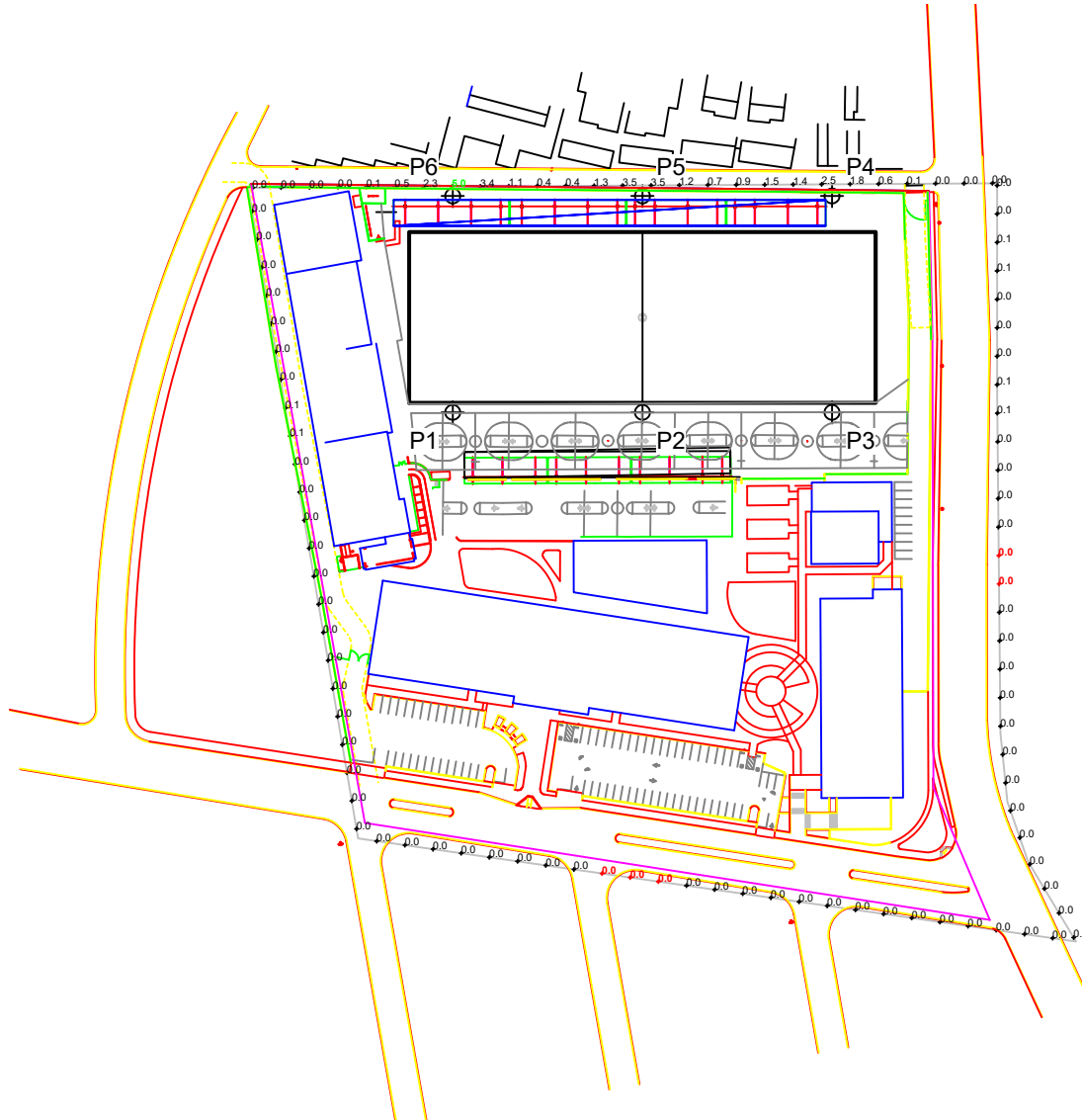
We Make It Happen®

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2018 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
3	P1-P3	70'	-	15'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	5	5	0
3	P4-P6	70'	-	20'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	5	5	0
6	TOTALS					42	42	0



SCALE IN FEET 1 : 200



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

ENGINEERED DESIGN By: Daniel Lohman • File #186740c • 01-Jun-18

Wilson Middle School

Glendale,CA

GRID SUMMARY

Name: Spill
Spacing: 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

Entire Grid
Scan Average: 0.3217
Maximum: 4.98
Minimum: 0.00
No. of Points: 103

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 121,000 / 52,000 lumens
No. of Luminaires: 42
Total Load: 41.4 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>63,500	>63,500	>63,500
TLC-BT-575	>63,500	>63,500	>63,500

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.



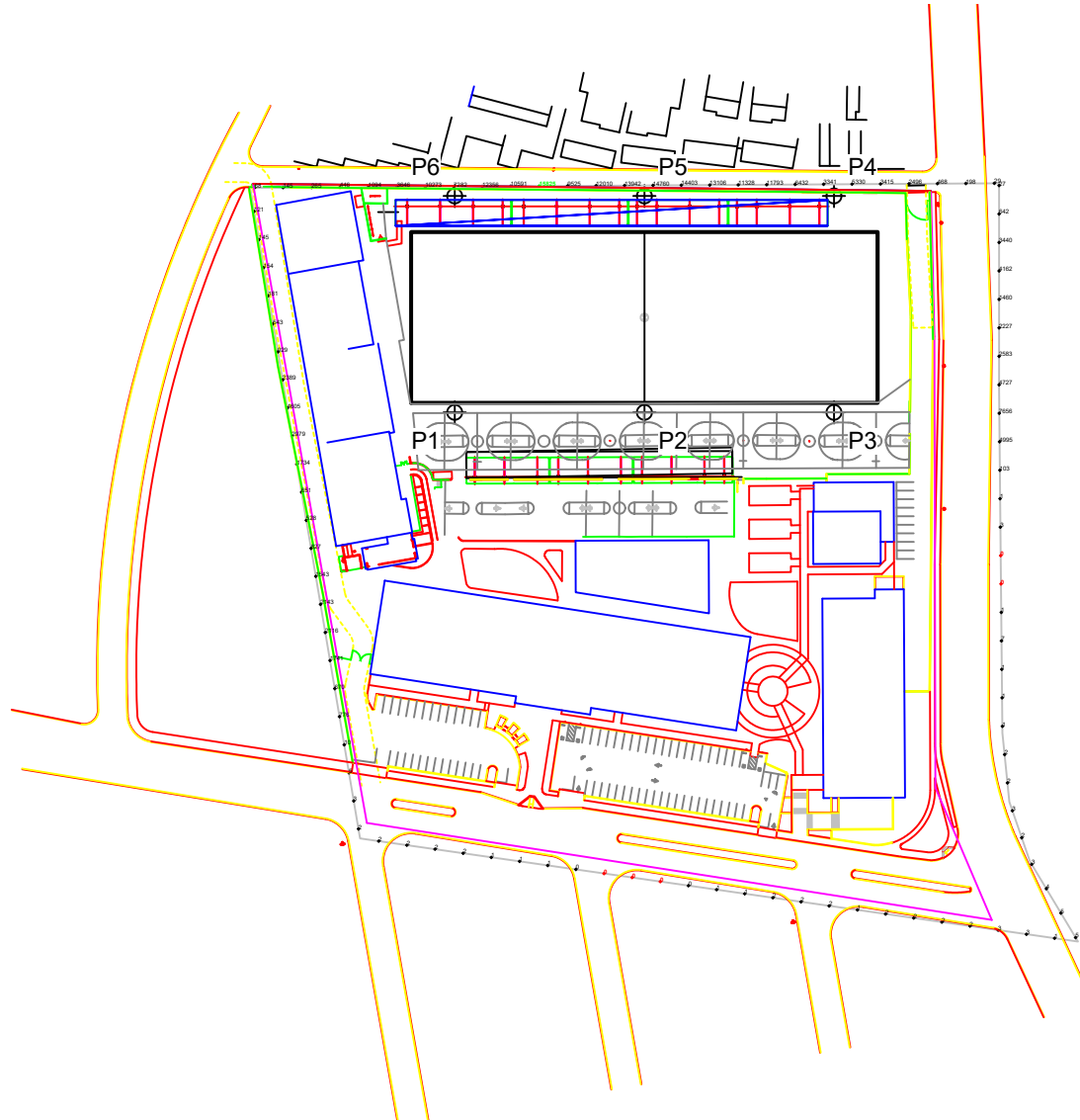
We Make It Happen.®

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2018 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
3	P1-P3	70'	-	15'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	5	5	0
3	P4-P6	70'	-	20'	TLC-BT-575	2	2	0
				70'	TLC-LED-1150	5	5	0
6	TOTALS					42	42	0



SCALE IN FEET 1 : 200



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

ENGINEERED DESIGN By: Daniel Lohman • File #186740c • 01-Jun-18

Wilson Middle School

Glendale,CA

GRID SUMMARY

Name: Spill
Spacing: 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED CANDELA (PER FIXTURE)

Entire Grid
Scan Average: 2344.2686
Maximum: 15825.33
Minimum: 0.00
No. of Points: 103

LUMINAIRE INFORMATION

Color / CRI: 5700K - 75 CRI
Luminaire Output: 121,000 / 52,000 lumens
No. of Luminaires: 42
Total Load: 41.4 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>63,500	>63,500	>63,500
TLC-BT-575	>63,500	>63,500	>63,500

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.



We Make It Happen®

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2018 Musco Sports Lighting, LLC.

ILLUMINATION SUMMARY

Wilson Middle School

Glendale, CA

EQUIPMENT LAYOUT

INCLUDES:

· Multipurpose

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

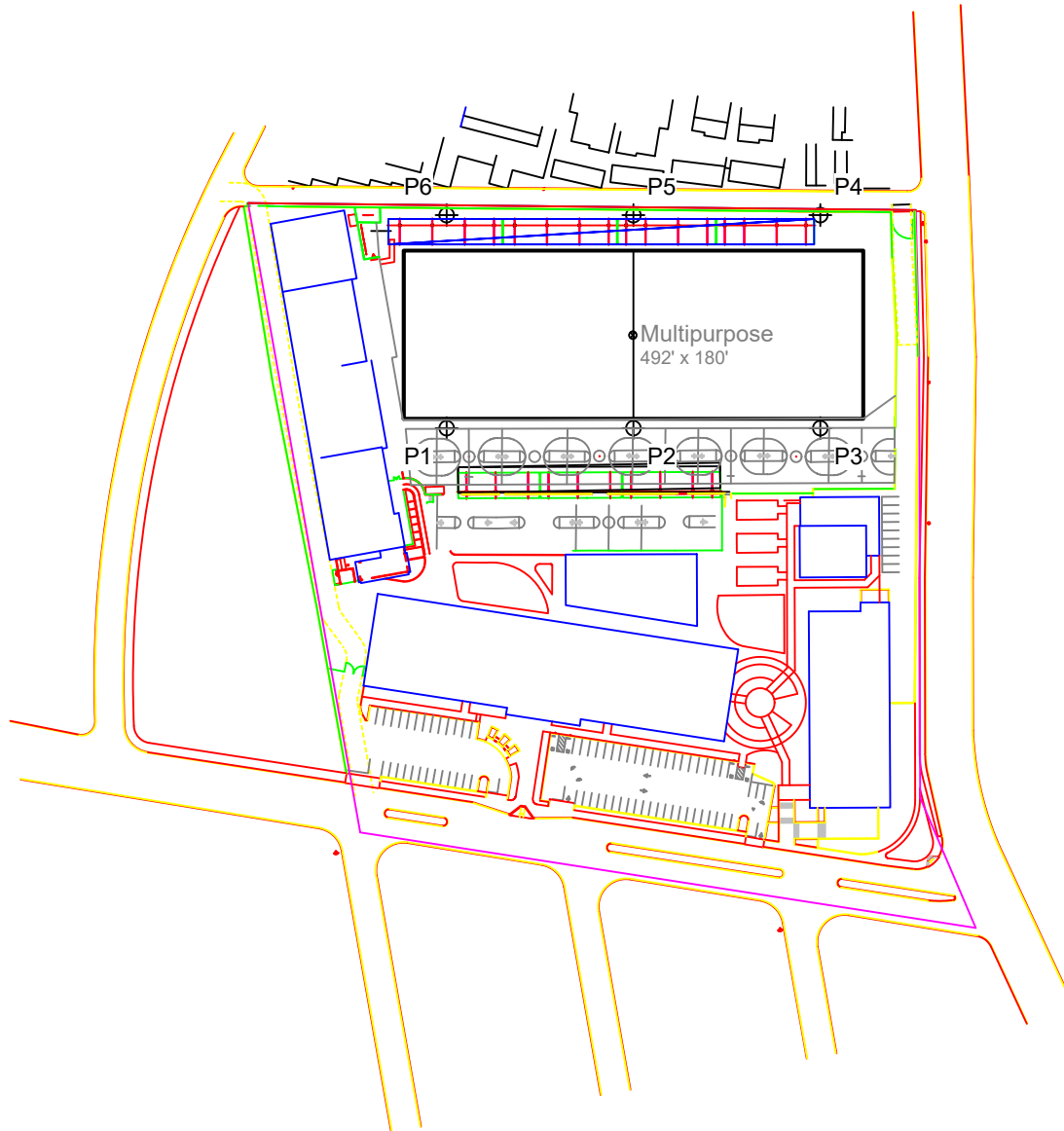
Installation Requirements: Results assume $\pm 3\%$ nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

QTY	LOCATION	Pole		GRADE ELEVATION	Luminaires		QTY / POLE
		SIZE			MOUNTING HEIGHT	LUMINAIRE TYPE	
3	P1-P3	70'		-	15'	TLC-BT-575	2
					70'	TLC-LED-1150	5
3	P4-P6	70'		-	20'	TLC-BT-575	2
					70'	TLC-LED-1150	5
6	TOTALS						42

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)
TLC-LED-1150	6.8	6.5	5.9	5.1	4.1	3.7	3.0
TLC-BT-575	3.2	3.0	2.8	2.4	1.9	1.7	1.4



SCALE IN FEET 1 : 200



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



Wilson Middle School

Glendale, CA

GLARE IMPACT

Summary

Map indicates the maximum candela an observer would see when facing the brightest light source from any direction.

A well-designed lighting system controls light to provide maximum useful on-field illumination with minimal destructive off-site glare.

GLARE

Candela Levels

High Glare: 150,000 or more candela

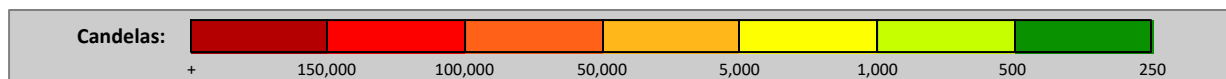
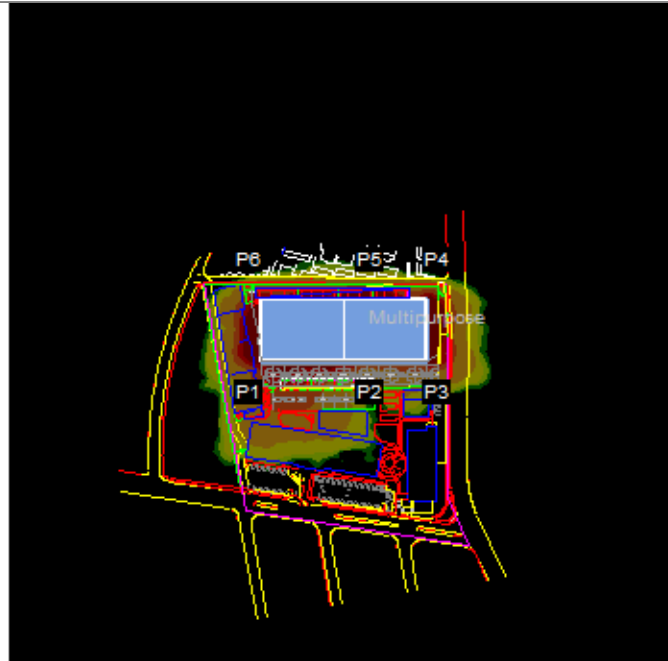
Should only occur on or very near the lit area where the light source is in direct view. Care must be taken to minimize high glare zones.

Significant Glare: 25,000 to 75,000 candela

Equivalent to high beam headlights of a car.

Minimal to No Glare: 500 or less candela

Equivalent to 100W incandescent light bulb.



We Make It Happen®

Not to be reproduced in whole or part without the written consent of Musco Sports Lighting, LLC. ©1981, 2018 Musco Sports Lighting, LLC.