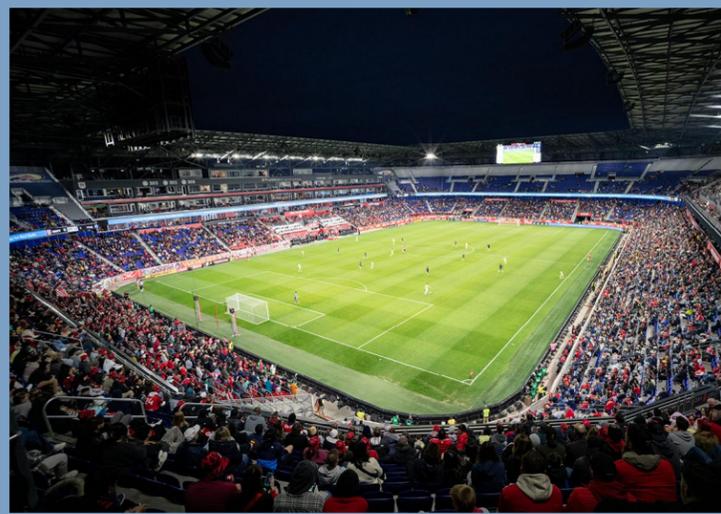

Appendix B

Lighting Analysis



Red Bull Arena, Harrison, New Jersey, USA



UBS Arena, Elmont, New York, USA



Tottenham Hotspur FC Training Ground, Tottenham, London, UK



Iowa Women of Achievement Bridge, Des Moines, Iowa, USA

South El Monte Athletic Fields

El Monte, CA



Sales Representative: Mike Marchetti · Designed By: William Isiminger · Design No.: 245317 · May 30, 2025

South El Monte Athletic Fields

El Monte, CA

LIGHTING SYSTEM

Structure/Fixture Summary						
Structure ID	Structure Height	Fixt. Attachment Ht.	Fixture Qty	Fixture Type	Design Load	Circuit
S1-S4	70'	70'	2	TLC-LED-900	1.76 kW	B
		70'	3	TLC-LED-1200	3.49 kW	B
S5-S8	70'	70'	2	TLC-LED-900	1.76 kW	A
		70'	3	TLC-LED-1200	3.49 kW	A
8			40		42.04 kW	

*Fixtures in this design have dimmed output values to meet design specific needs.

Circuit Summary			
Circuit	Description	Design Load	Fixture Qty
A	Soccer 1	21.02 kW	20
B	Soccer 2	21.02 kW	20

Fixture Type Summary								
Type	Circuit	Source	Avg. Wattage	Avg. Lumens	L90	L80	L70	Quantity
TLC-LED-1200	A	LED 5700K - 75 CRI	1165W	150,933	>120,000	>120,000	>120,000	12
TLC-LED-1200	B	LED 5700K - 75 CRI	1165W	152,335	>120,000	>120,000	>120,000	12
TLC-LED-900	A	LED 5700K - 75 CRI	880W	100,300	>120,000	>120,000	>120,000	8
TLC-LED-900	B	LED 5700K - 75 CRI	880W	99,368	>120,000	>120,000	>120,000	8

Single Fixture Amperage Draw Chart								
Driver Specifications (.90 min power factor)		Line Amperage Per Fixture (max draw)						
Single Phase Voltage		208	220	240	277	347	380	480
		(60)	(60)	(60)	(60)	(60)	(60)	(60)
TLC-LED-1200		6.9	6.5	6.0	5.2	4.2	3.8	3.0
TLC-LED-900		5.2	4.9	4.5	3.9	3.1	2.9	2.3

*Amp draw based on 100% fixture output, consult design specific datasheet for adjusted amperage draw chart

Light Level Summary

Calculation Grid Summary								
Grid Name	Calculation Metric	Illumination Ave					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Soccer 1	Horizontal Illuminance	30.77	24	39	1.63	1.28	A	20
Soccer 2	Horizontal Illuminance	31.36	24	38	1.63	1.33	B	20
Spill @ 3ft.	Horizontal Illuminance	0.0125	0.00	0.24	-	-	A,B	40
Spill @ 5ft.	Max Candela Metric	373.4009	0.00	4202.79	-	-	A,B	40
Spill @ 5ft.	Max Vertical Illuminance Metric	0.0156	0.00	0.25	-	-	A,B	40

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

Field Measurements: Individual field measurements may vary from computer-calculated predictions.

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								
Structure				Fixtures				
QTY	STRUCTURE ID	SIZE	GRADE ELEVATION	ABOVE FIELD LEVEL	FIXTURE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
4	S5-S8	70'	-	70'	TLC-LED-1200	3	3	0
				70'	TLC-LED-900	2	2	0
4	Totals					20	20	0

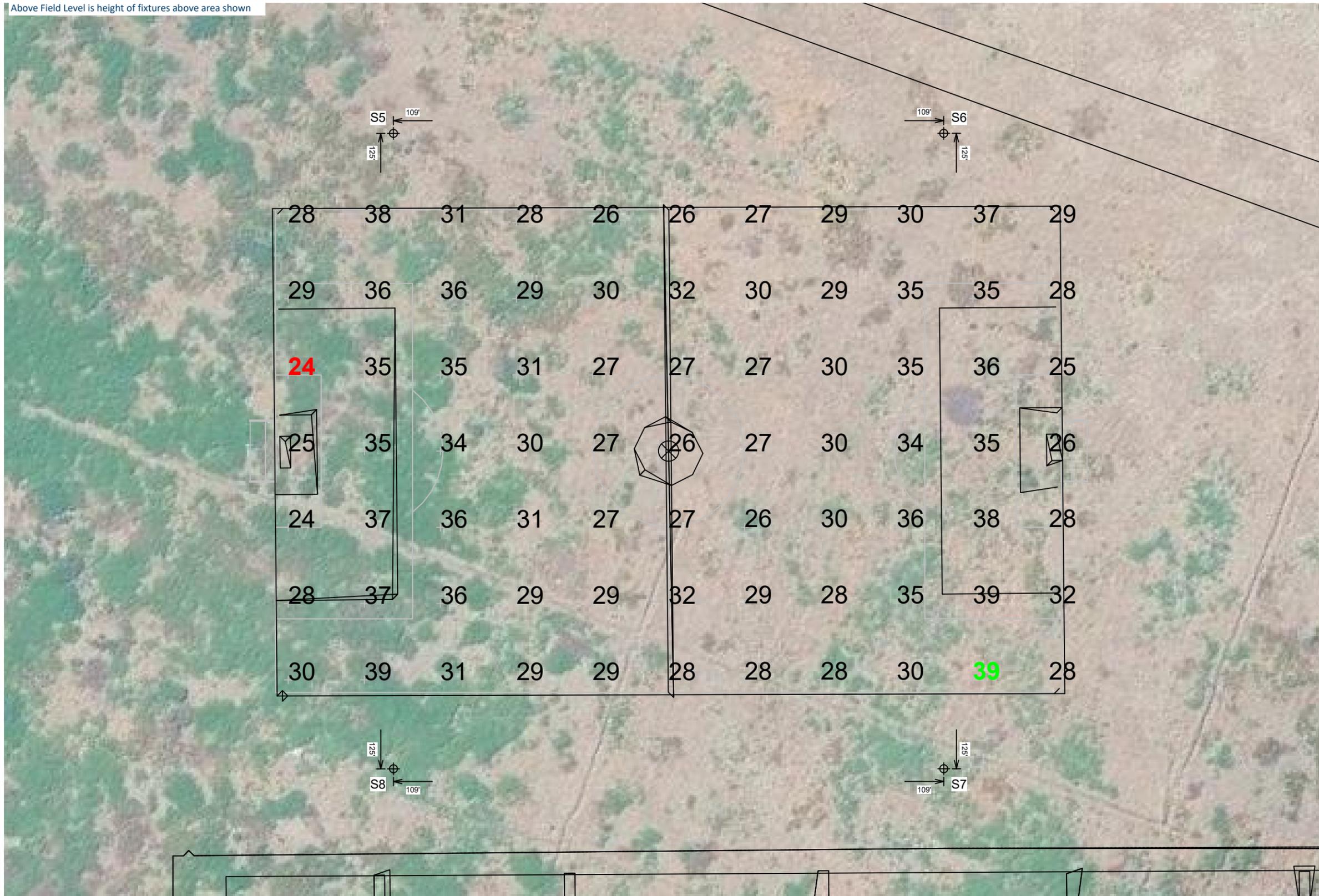
Above Field Level is height of fixtures above area shown

South El Monte Athletic Fields

El Monte, CA

Grid Summary	
Name:	Soccer 1
Size:	310' x 190'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

Illumination Summary	
	MAINTAINED HORIZONTAL FOOTCANDLES
Entire Grid	
Guaranteed Average:	30
Scan Average:	30.77
Maximum:	39
Minimum:	24
Avg/Min:	1.28
Guaranteed Max/Min:	2.5
Max/Min:	1.63
UG (adjacent pts):	1.52
CU:	0.82
No. of Points:	77
FIXTURE INFORMATION	
Applied Circuits:	A
No. of Fixtures:	20
Total Load:	21.02 kW

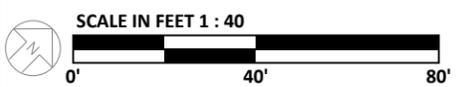


Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions.

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) ⊗

By: William Isiminger • File #245317A • 30-May-25



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ILLUMINATION SUMMARY

Equipment List For Areas Shown								
Structure				Fixtures				
QTY	STRUCTURE ID	SIZE	GRADE ELEVATION	ABOVE FIELD LEVEL	FIXTURE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
4	S1-S4	70'	-	70'	TLC-LED-1200	3	3	0
4				70'	TLC-LED-900	2	2	0
Totals						20	20	0

Above Field Level is height of fixtures above area shown



South El Monte Athletic Fields

El Monte, CA

Grid Summary	
Name:	Soccer 2
Size:	310' x 190'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

Illumination Summary	
	ENTIRE GRID
Guaranteed Average:	30
Scan Average:	31.36
Maximum:	38
Minimum:	24
Avg/Min:	1.33
Guaranteed Max/Min:	2.5
Max/Min:	1.63
UG (adjacent pts):	1.41
CU:	0.83
No. of Points:	77
FIXTURE INFORMATION	
Applied Circuits:	B
No. of Fixtures:	20
Total Load:	21.02 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.

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.

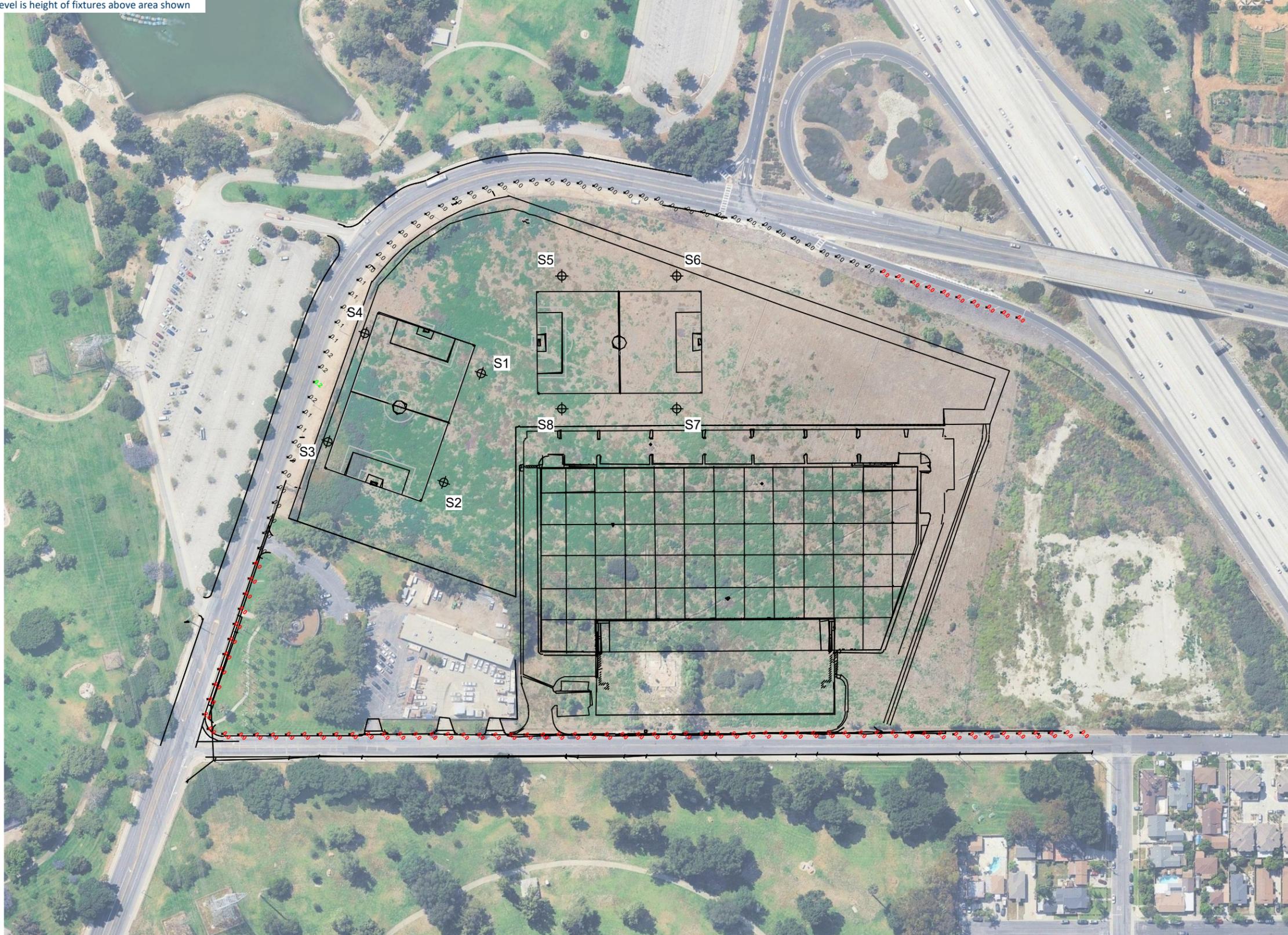


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Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Structure				Fixtures				
QTY	STRUCTURE ID	SIZE	GRADE ELEVATION	ABOVE FIELD LEVEL	FIXTURE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
8	S1-S8	70'	-	70'	TLC-LED-1200	3	3	0
				70'	TLC-LED-900	2	2	0
8	Totals					40	40	0

Above Field Level is height of fixtures above area shown



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

SCALE IN FEET 1 : 200
 0' 200' 400'
 ENGINEERED DESIGN By: William Isiminger • File #245317A • 30-May-25

South El Monte Athletic Fields

El Monte, CA

Grid Summary	
Name:	Spill @ 3ft.
Spacing:	30.0'
Height:	3.0' above grade

Illumination Summary	
	INITIAL HORIZONTAL FOOTCANDLES
Scan Average:	0.0125
Maximum:	0.24
Minimum:	0.00
CU:	0.00
No. of Points:	131
FIXTURE INFORMATION	
Applied Circuits:	A,B
No. of Fixtures:	40
Total Load:	42.04 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.

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.

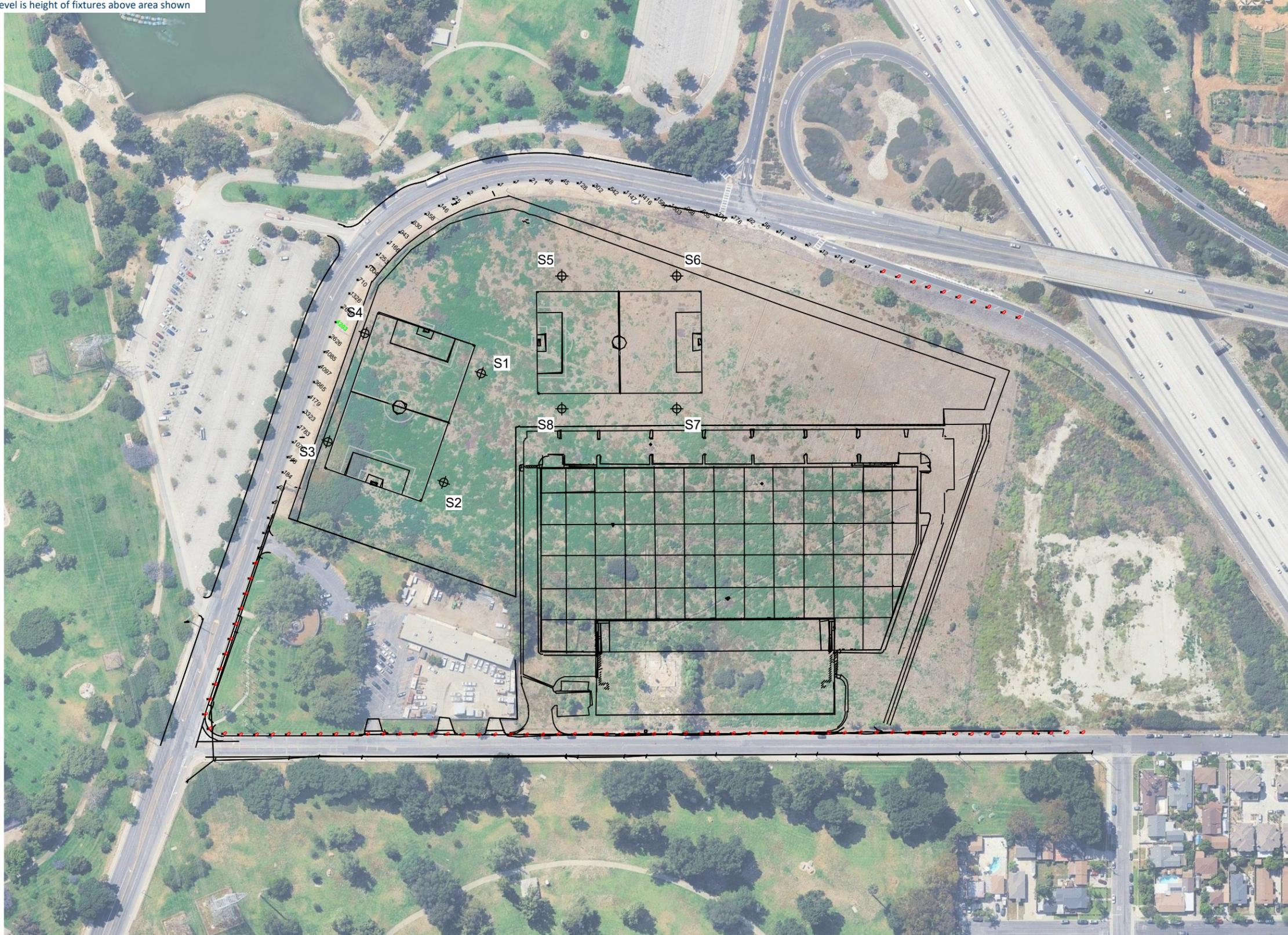


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ILLUMINATION SUMMARY

Equipment List For Areas Shown								
Structure				Fixtures				
QTY	STRUCTURE ID	SIZE	GRADE ELEVATION	ABOVE FIELD LEVEL	FIXTURE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
8	S1-S8	70'	-	70'	TLC-LED-1200	3	3	0
				70'	TLC-LED-900	2	2	0
8	Totals					40	40	0

Above Field Level is height of fixtures above area shown



South El Monte Athletic Fields

El Monte, CA

Grid Summary	
Name:	Spill @ 5ft.
Spacing:	30.0'
Height:	5.0' above grade

Illumination Summary		INITIAL CANDELA (PER FIXTURE)
		Entire Grid
Scan Average:	373.4009	
Maximum:	4202.79	
Minimum:	0.00	
CU:	0.00	
No. of Points:	131	
FIXTURE INFORMATION		
Applied Circuits:	A,B	
No. of Fixtures:	40	
Total Load:	42.04 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.

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.

SCALE IN FEET 1 : 200
 0' 200' 400'
 ENGINEERED DESIGN By: William Isiminger • File #245317A • 30-May-25

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



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ILLUMINATION SUMMARY

Equipment List For Areas Shown

QTY	Structure			Fixtures				
	STRUCTURE ID	SIZE	GRADE ELEVATION	ABOVE FIELD LEVEL	FIXTURE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
8	S1-S8	70'	-	70'	TLC-LED-1200	3	3	0
				70'	TLC-LED-900	2	2	0
8	Totals					40	40	0

Above Field Level is height of fixtures above area shown



South El Monte Athletic Fields

El Monte, CA

Grid Summary	
Name:	Spill @ 5ft.
Spacing:	30.0'
Height:	5.0' above grade

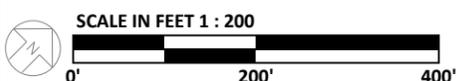
Illumination Summary		INITIAL MAX VERTICAL FOOTCANDLES
		Entire Grid
Scan Average:	0.0156	
Maximum:	0.25	
Minimum:	0.00	
CU:	0.00	
No. of Points:	131	
FIXTURE INFORMATION		
Applied Circuits:	A,B	
No. of Fixtures:	40	
Total Load:	42.04 kW	

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

Field Measurements: Individual field measurements may vary from computer-calculated predictions.

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.



ENGINEERED DESIGN By: William Isiminger • File #245317A • 30-May-25

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



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ILLUMINATION SUMMARY

South El Monte Athletic Fields

El Monte, CA

Equipment Layout

INCLUDES:
 · Soccer 1
 · Soccer 2

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

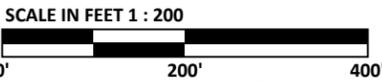
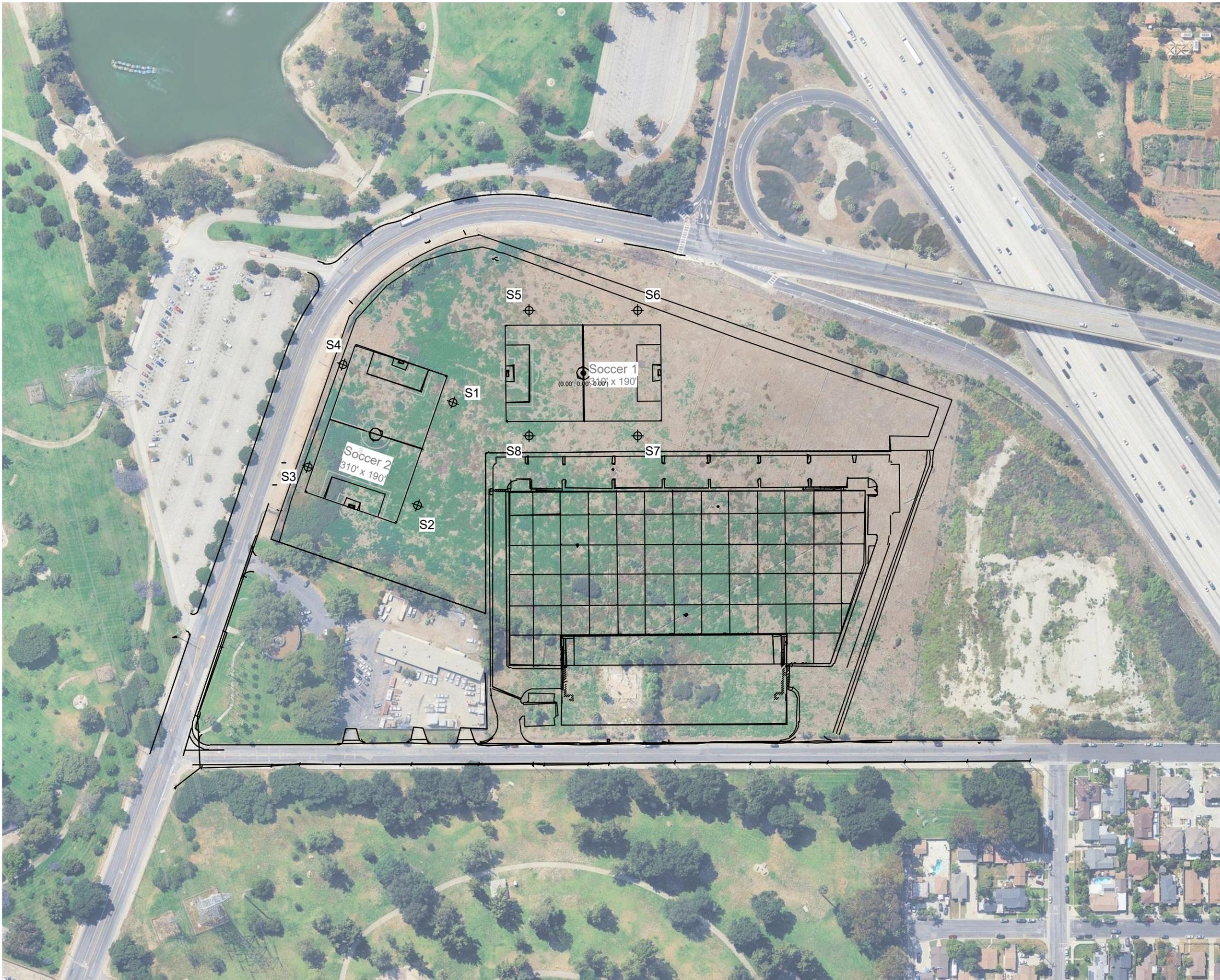
QTY	Structure			Fixtures		QTY/POLE
	STRUCTURE ID	SIZE	GLOBAL ELEVATION	ABOVE GLOBAL LEVEL	FIXTURE TYPE	
8	S1-S8	70'	-	70'	TLC-LED-1200	3
				70'	TLC-LED-900	2
8	Totals					40

Above Global Level is height of fixtures above design (0,0,0)

Single Fixture Amperage Draw Chart

Driver Specifications (.90 min power factor)	Line Amperage Per Fixture (max draw)						
	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1200	6.9	6.5	6.0	5.2	4.2	3.8	3.0
TLC-LED-900	5.2	4.9	4.5	3.9	3.1	2.9	2.3

*Amp draw based on 100% fixture output, consult design specific datasheet for adjusted amperage draw chart

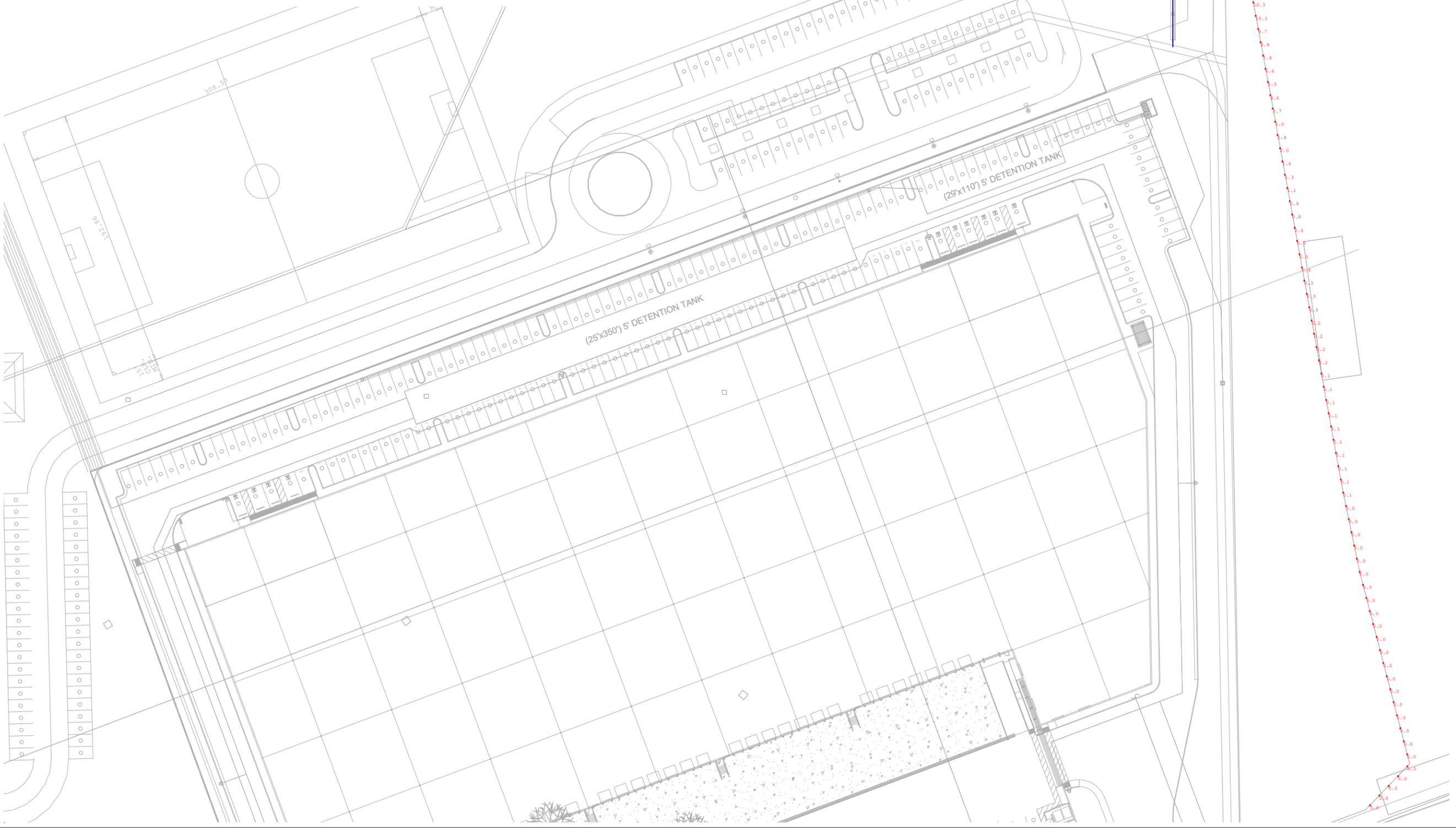


Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗



CALCULATION SUMMARY				
LABEL	UNIT	AVG	MAX	MIN
PROPERTY LINE - 3'-0" ABOVE GRADE	FC	1.77	10.30	0.00

LUMINAIRE SCHEDULE			
SYMBOL	QTY	DESCRIPTION	LLF
	1	14' x 48' 3,000 NIT LED BILLBOARD, 70' HEIGHT	0.9

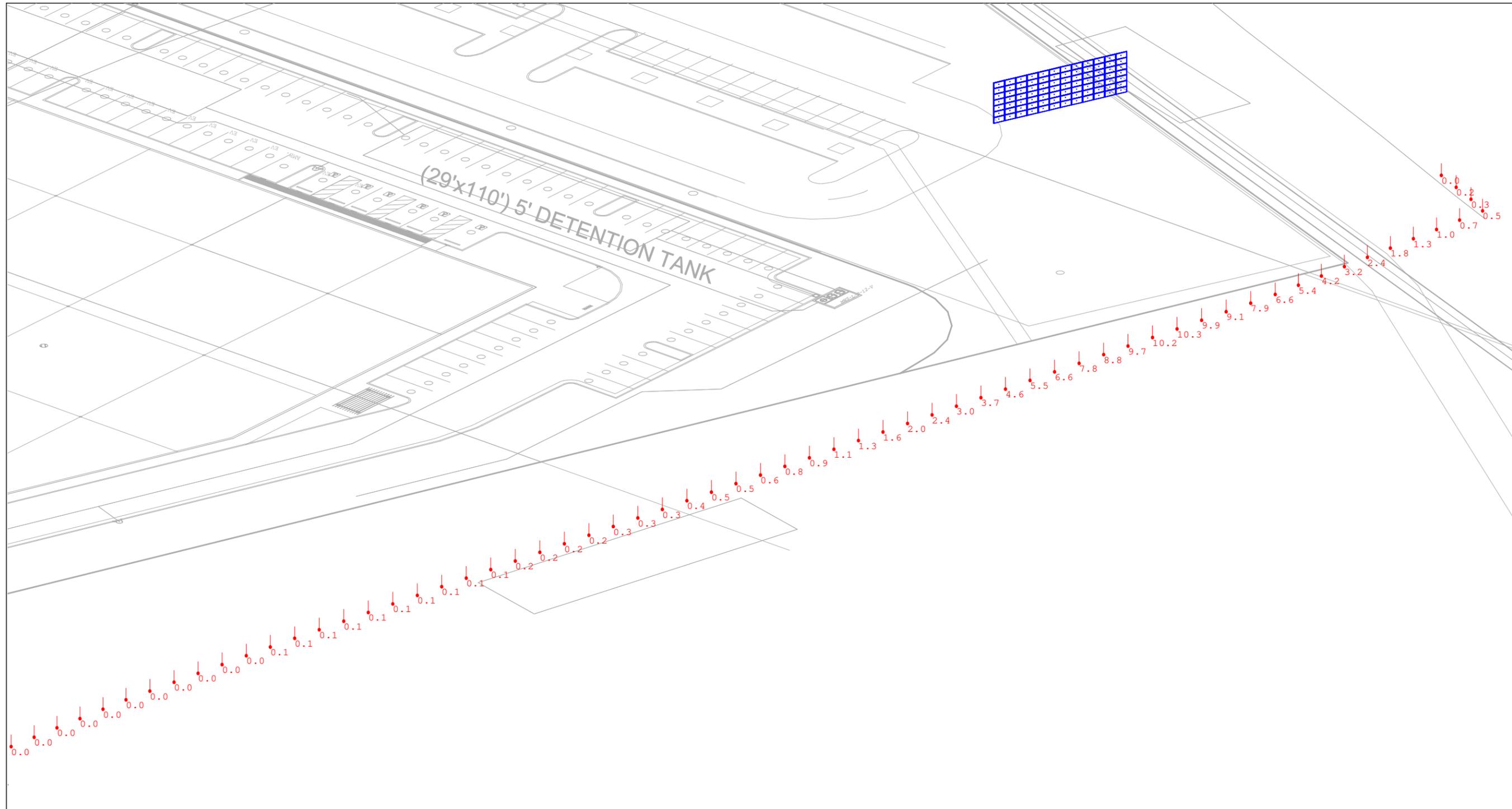


#	Date	Comments

Revisions

Drawn By:	
Checked By:	
Date:	6/24/2025
Scale:	1" = 75'

LED BILLBOARD PHOTOMETRIC
NIGHTTIME SIMULATION



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PTL	Illuminance	Fc	1.77	10.3	0.0	N.A.	N.A.

Luminaire Schedule							
Symbol	Qty	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts	
	168	CPX 2X4 3000LM 80 40K SWL MVOLT	0.900	3369	24.57	4127.76	

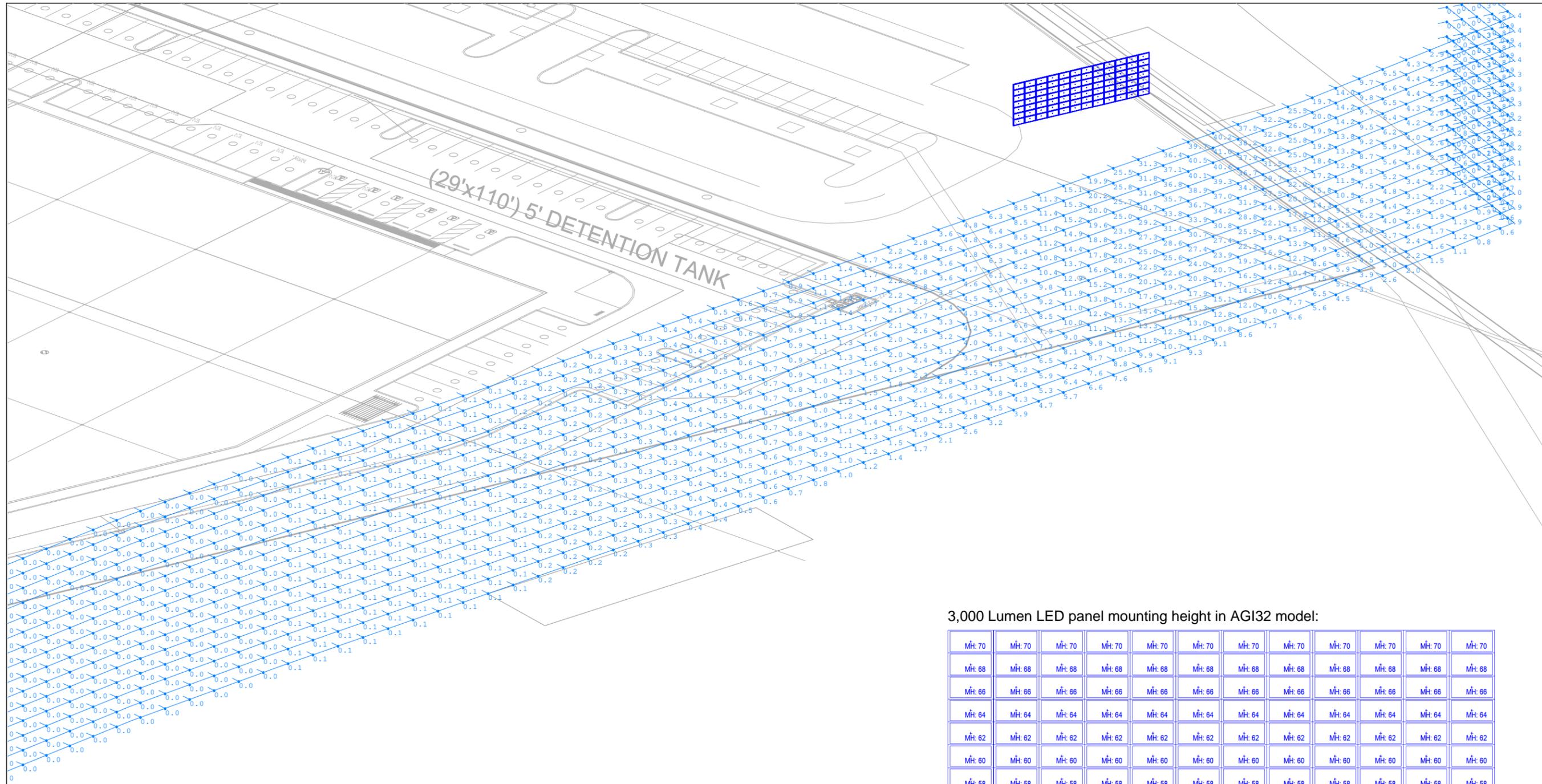


#	Date	Comments

Revisions

Drawn By:	
Checked By:	
Date:	6/24/2025
Scale:	NTS

LED BILLBOARD PHOTOMETRIC
NIGHTTIME SIMULATION



3,000 Lumen LED panel mounting height in AGI32 model:

MH: 70											
MH: 68											
MH: 66											
MH: 64											
MH: 62											
MH: 60											
MH: 58											

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PTL - PERP	Illuminance	Fc	3.71	41.0	0.0	N.A.	N.A.

Luminaire Schedule

Symbol	Qty	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
□	168	CPX 2X4 3000LM 80 40K SWL MVOLT	0.900	3369	24.57	4127.76



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Comments

Date

#

Revisions

Drawn By:

Checked By:

Date: 6/24/2025

Scale: NTS

LED BILLBOARD PHOTOMETRIC

NIGHTTIME SIMULATION