

Billings Downtown Skatepark

Billings, MT

Lighting System

Pole/Fixture Summary						
Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
SK1	50'	50'	2	TLC-LED-900	1.76 kW	A
SK2	50'	50'	4	TLC-LED-900	3.52 kW	A
SK3-SK4	50'	50'	2	TLC-LED-900	1.76 kW	A
SK5	50'	50'	4	TLC-LED-900	3.52 kW	A
SK6	50'	50'	2	TLC-LED-900	1.76 kW	A
6			16		14.08 kW	

Circuit Summary			
Circuit	Description	Load	Fixture Qty
A	Skate Park	14.08 kW	16

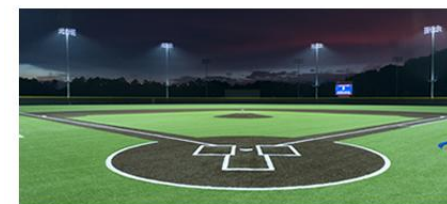
Fixture Type Summary							
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-900	LED 5700K - 75 CRI	880W	104,000	>120,000	>120,000	>120,000	16

Single Luminaire Amperage Draw Chart								
Driver 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	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)	
TLC-LED-900	5.2	4.9	4.5	3.9	3.1	2.9	2.3	

Light Level Summary

Calculation Grid Summary									
Grid Name	Calculation Metric	Illumination Ave					Circuits	Fixture Qty	
		Ave	Min	Max	Max/Min	Ave/Min			
50' Glare @ 5ft.	Max Candela (by Fixture)	172.180	2.11	557.95	264.036	81.480	A	16	
50' Spill @ 3ft.	Horizontal Illuminance	0.014	0.00	0.06	450.809	111.066	A	16	
50' Spill @ 5ft.	Max Vert Illuminance (by Light Bank)	0.016	0.00	0.06	483.888	137.106	A	16	
Skatepark	Horizontal Illuminance	39.7	27	45	1.70	1.49	A	16	

From Hometown to Professional



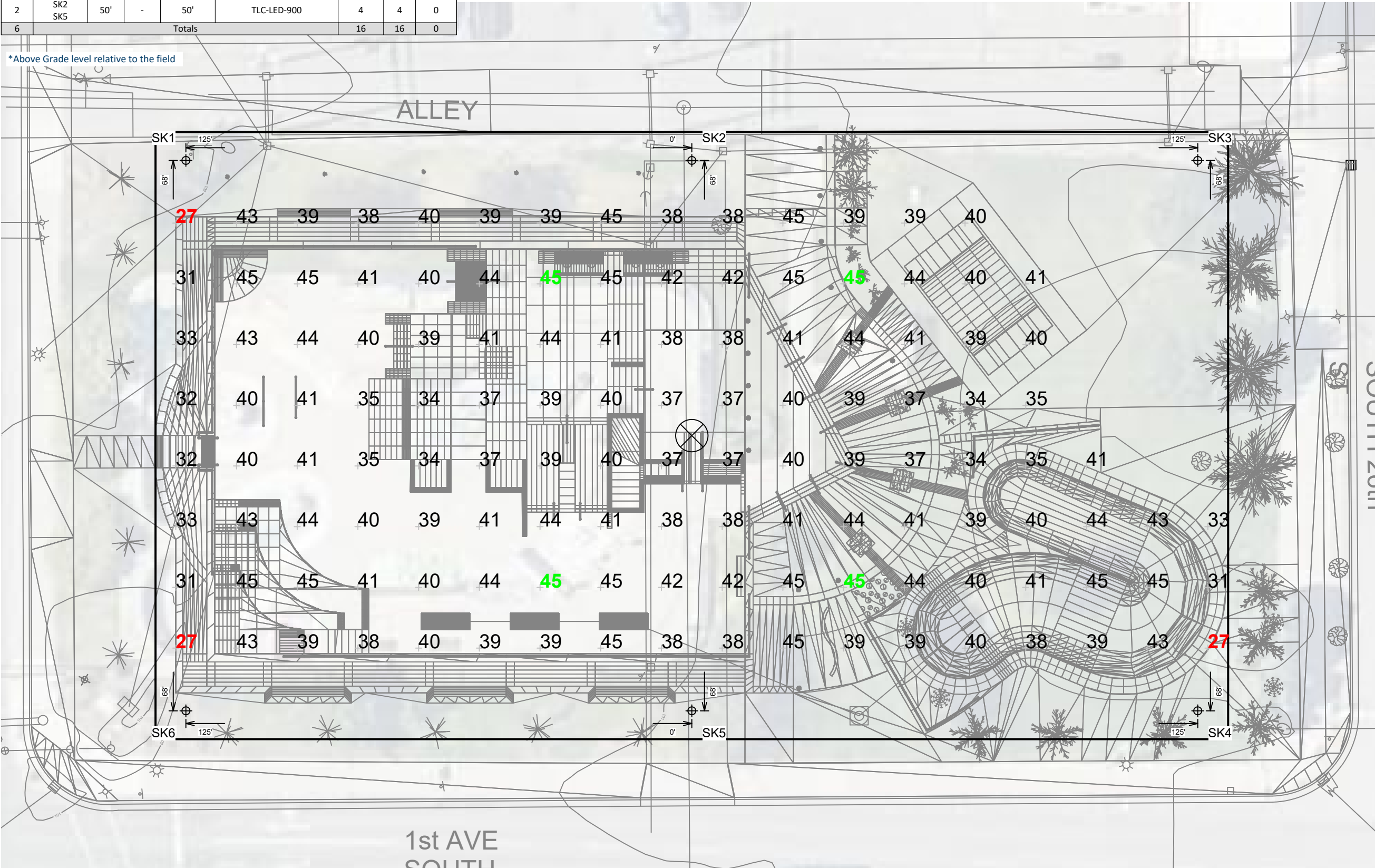
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Equipment List For Areas Shown

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	ABOVE GRADE LEVEL	LUMINAIRE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
4	SK1 SK3-SK4 SK6	50'	-	50'	TLC-LED-900	2	2	0
2	SK2 SK5	50'	-	50'	TLC-LED-900	4	4	0
6	Totals					16	16	0

*Above Grade level relative to the field



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Grid Summary	
Name:	Skatepark
Size:	265' x 150'
Spacing:	15.0' x 15.0'
Height:	3.0' above grade

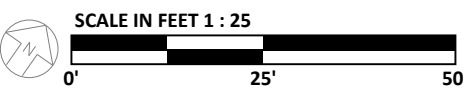
Illumination Summary	
MAINTAINED HORIZONTAL FOOTCANDLES	
Entire Grid	
Guaranteed Average:	30
Scan Average:	39.7
Maximum:	45
Minimum:	27
Avg/Min:	1.49
Guaranteed Max/Min:	2.5
Max/Min:	1.70
UG (adjacent pts):	1.62
CU:	0.77
No. of Points:	129
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	16
Total Load:	14.08 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.



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



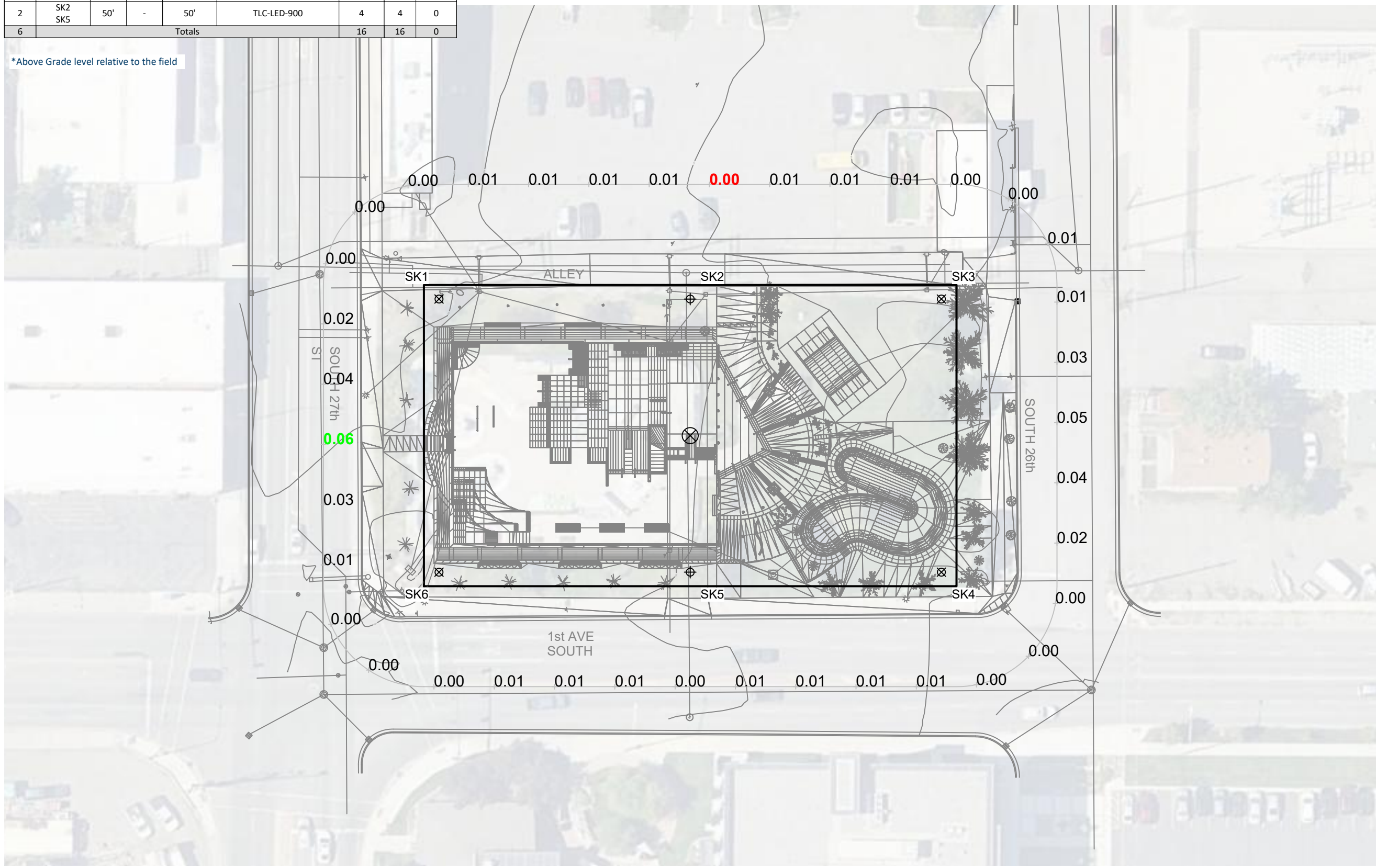
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ILLUMINATION SUMMARY

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2	SK2 SK5	50'	-	50'	TLC-LED-900	4	4	0
6	Totals					16	16	0

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Grid Summary	
Name:	50' Spill @ 3ft.
Spacing:	30.0'
Height:	3.0' above grade

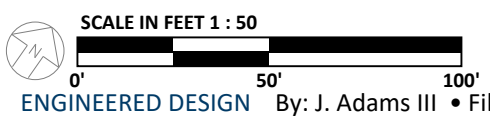
Illumination Summary	
INITIAL HORIZONTAL FOOTCANDLES	
Entire Grid	
Scan Average:	0.014
Maximum:	0.06
Minimum:	0.00
CU:	0.00
No. of Points:	38
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	16
Total Load:	14.08 kW

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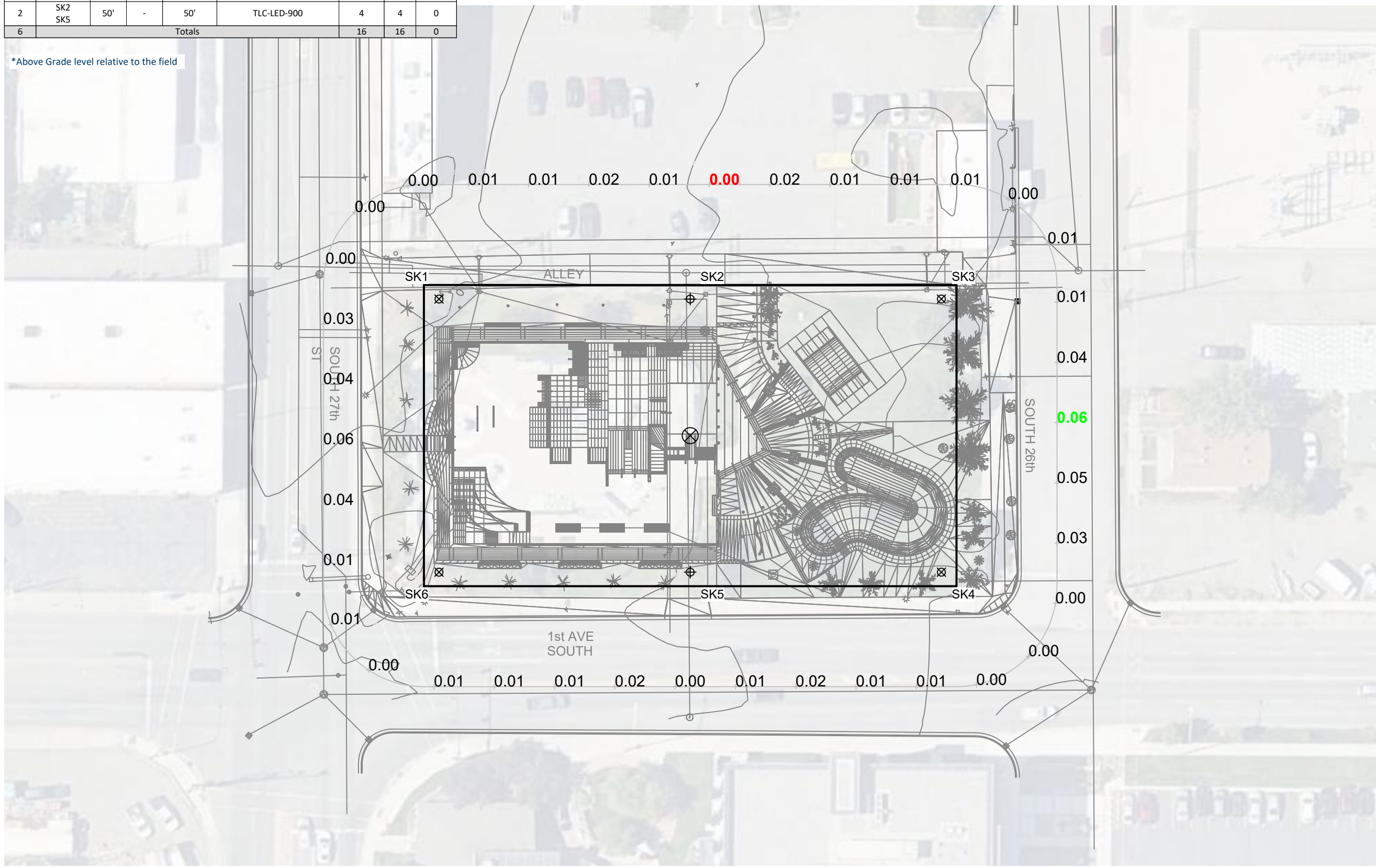
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ILLUMINATION SUMMARY

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Pole				Luminaires				
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2	SK2 SK5	50'	-	50'	TLC-LED-900	4	4	0
6	Totals					16	16	0

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Grid Summary	
Name:	50' Spill @ 5ft.
Spacing:	30.0'
Height:	5.0' above grade

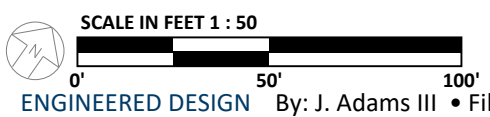
Illumination Summary	
INITIAL MAX VERTICAL FOOTCANDLES	
Entire Grid	
Scan Average:	0.016
Maximum:	0.06
Minimum:	0.00
CU:	0.00
No. of Points:	38
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	16
Total Load:	14.08 kW

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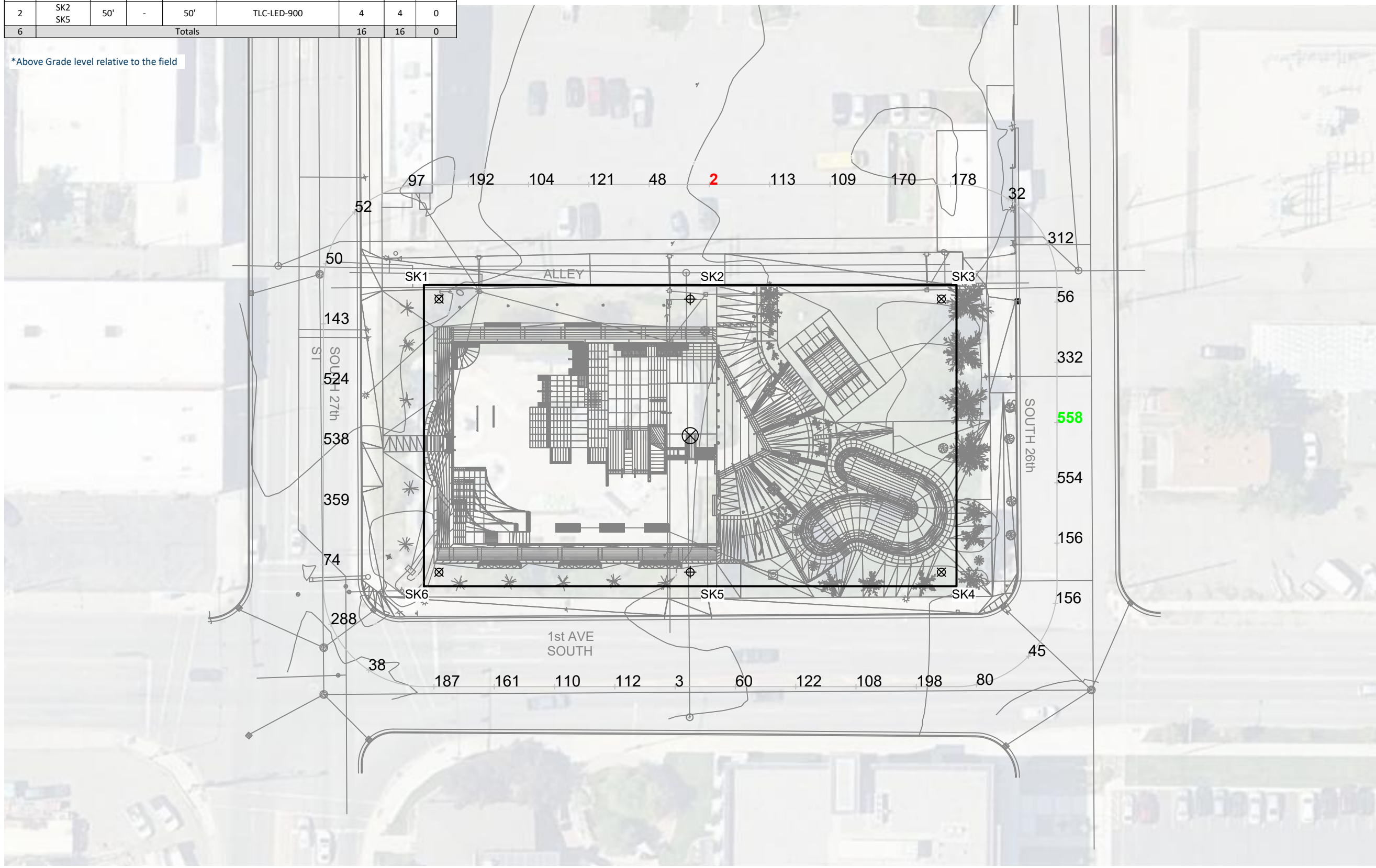
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Name:	50' Glare @ 5ft.
Spacing:	30.0'
Height:	5.0' above grade

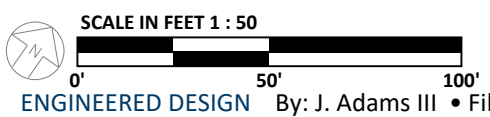
Illumination Summary	
INITIAL CANDELA (PER LIGHTBANK)	
Entire Grid	
Scan Average:	172.180
Maximum:	557.95
Minimum:	2.11
CU:	0.00
No. of Points:	38
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	16
Total Load:	14.08 kW

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ILLUMINATION SUMMARY

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Equipment Layout

INCLUDES:
- Skatepark

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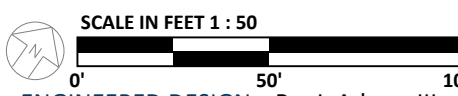
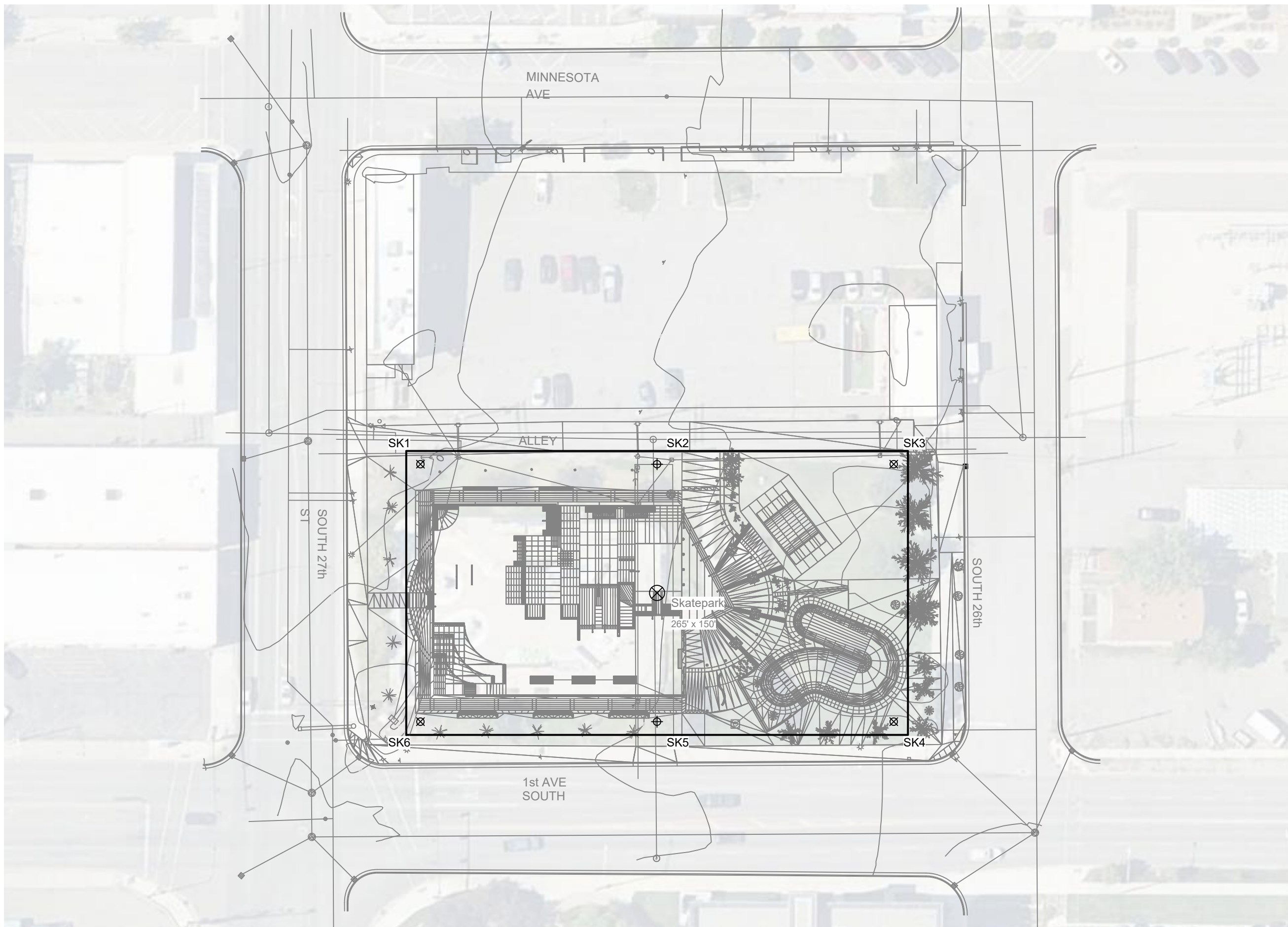
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2	SK2 SK5	50'	-	50'	TLC-LED-900	4
6	Totals					16

Single Luminaire Amperage Draw Chart

Driver 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	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-900	5.2	4.9	4.5	3.9	3.1	2.9	2.3



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EQUIPMENT LAYOUT