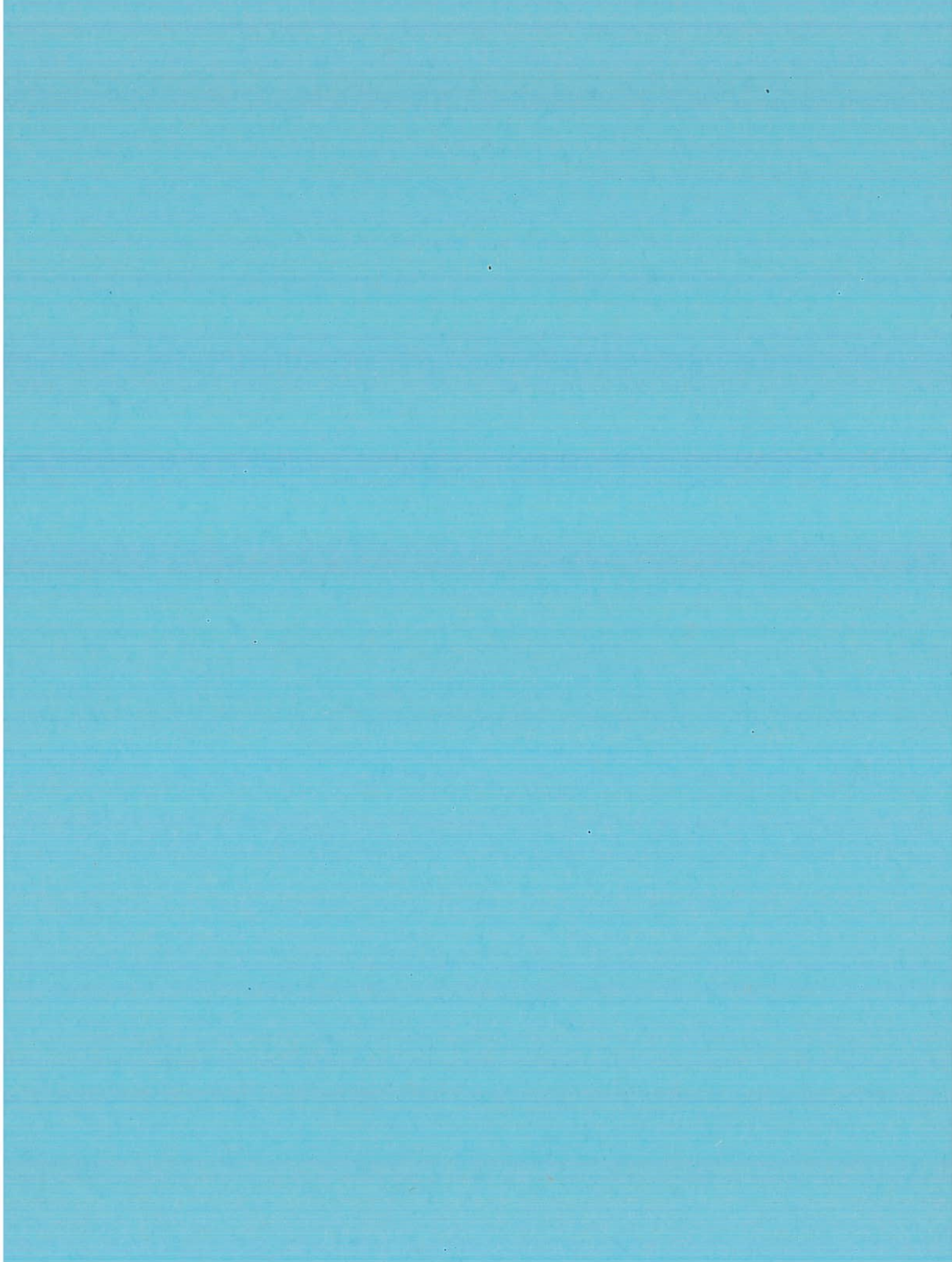


# *Appendix B*

Skatepark Lighting Plan and Light Spill Analysis



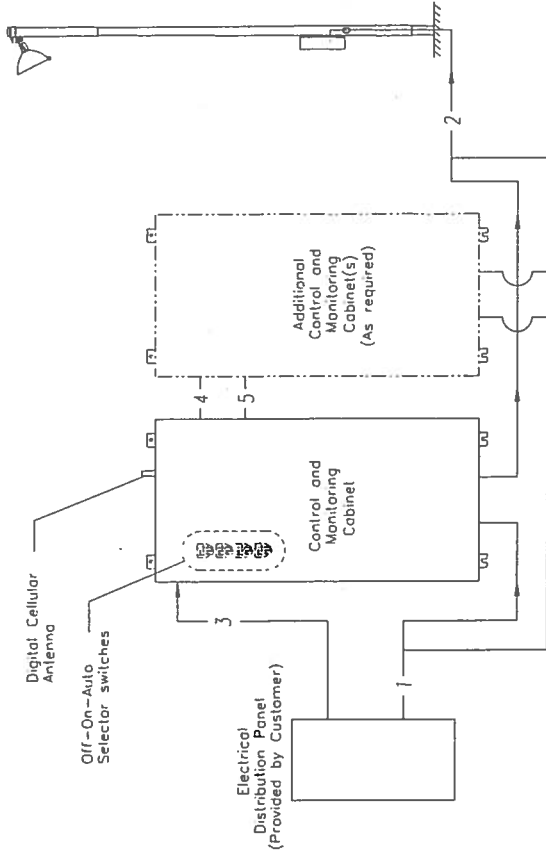


# MUSCO CONTROL SYSTEM SUMMARY

<b>Project Number:</b>	116635
<b>Project Name:</b>	Grijalva Skate Park
<b>Prepared by:</b>	MARK BELLOMA
<b>Sales Rep:</b>	Mike Marchetti
<b>Scan:</b>	116635lsg
<b>Date:</b>	07/25/2005
<b>Service Location:</b>	1 of 1

CONTROL SYSTEM TYPE: Control and Monitoring Typical

## Control and Monitoring Typical Equipment Layout



### EQUIPMENT LISTING

DESCRIPTION APPROXIMATE SIZE

- CONTROL AND MONITORING CABINET 24 X 48

QTY SIZE

TOTAL CONTACTORS: 3 30 AMP

TOTAL Off/On/Auto SWITCHES: 1

Wiring Details						
WIRE	DESCRIPTION	VOLTAGE	# OF WIRES	TYP. SIZE	NOTES	SUPPLIER
1	POWER TO LIGHTING CONTACTORS (LINE)	NOTE A	NOTE A	NOTE B	A thru E	CONTRACTOR
2	POWER FROM CONTACTORS TO POLES (LOAD)	NOTE A	NOTE A	NOTE B	A thru E	CONTRACTOR
3	CONTROL VOLTAGE (20 AMP)	120V (AC)	3	12	C.D.E	MUSCO
4	CONTROL VOLTAGE HARNESES	120V (AC)	--	--	C.D.E	MUSCO
5	MONITORING MODULE COMMUNICATION CABLE	N/A	1	--	C.D.E	MUSCO

Note:

- Voltage and phasing per the notes on page 2.
- Calculate per load, voltage drop.
- For more information on equipment, see attached drawings.
- Refer to installation instructions for details on equipment mounting and conduit entry points.
- Power circuits (wire #1-4) must be run in separate conduit from non-power circuits (wire #5).



# MUSCO CONTROL SYSTEM SUMMARY



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<b>Scan:</b>	116635lsg
<b>Service Location:</b>	1 of 1
<b>Date:</b>	07/25/2005

CIRCUIT SUMMARY BY POLE ID						
POLE	CIRCUIT NAME	# OF FIXT	FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
P1	Zone 1	2	7.4	30	C1	1
P2	Zone 1	2	7.4	30	C2	1
P3	Zone 1	2	7.4	30	C3	1

## IMPORTANT NOTES:

- This design is based on 480 VOLTS, 3 phase. If voltage is other, equipment costs may be affected. Contact your Musco sales representative.
- When 3 phase service is available, all 3 phases are to be run to each pole.
- One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit.
- If the lighting system will be fed from more than one service location, additional equipment may be required.
- Entrance hub and locknut materials must be die-cast zinc, copper free die-cast aluminum or PVC and must meet NEMA 4 enclosure sealing requirements.
- A single 120V control circuit must be supplied to each control system.
- Size overcurrent devices using the full load amps column of the chart. Full load amps based on an assumed power factor of 0.9.

## SWITCHING SCHEDULE

CONTROL POWER CONSUMPTION	
120V SINGLE PHASE (SEE NOTE 6)	
VA LOADING OF MUSCO SUPPLIED EQUIPMENT	INRUSH: 295.0 SEALED: 107.5

<b>Field Type</b>	<b>Zones</b>	<b>Customer Field Name</b>
RECTANGL	1	Horizontal Illuminance

# MUSCO CONTROL SYSTEM SUMMARY

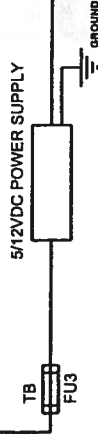
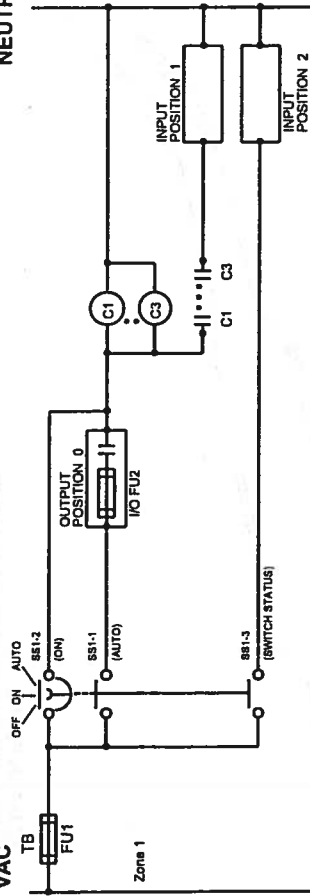


<b>Project Number:</b>	116635		
<b>Project Name:</b>	Grijaiva Skate Park		
<b>Prepared by:</b>	MARK BELLOMA		
<b>Sales Rep:</b>	Mike Marchetti	<b>Date:</b>	07/25/2005
<b>Scan:</b>	116635lsg		
<b>Service Location:</b>	1 of 1		

PANEL SUMMARY						
CABINET #	CONTROL MODULE LOCATION	CONT. ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID BY OTHERS	CIRCUIT BREAKER POSITION BY OTHERS
1	1	C1	Pole P1	7.40		
1	1	C2	Pole P2	7.40		
1	1	C3	Pole P3	7.40		

ZONE SCHEDULE				
ZONE	REC RELAY #	ZONE DESCRIPTION	POLE ID	CIRCUIT DESCRIPTION
Zone 1	1	Zone 1	P1 P2 P3	C1 C2 C3





BILL OF MATERIALS			
ITEM	DESCRIPTION	VENDOR	VENDOR PIN
SS1-SS8	SELECTOR SWITCH ASSY.	MUSCO	CS-1380-1
TB FUSE #1, #2	FUSE, 10 AMP	BLISSMAN	MDA 10
TB FUSE #3	FUSE, 5 AMP	BLISSMAN	MDA 5
OUTPUT	GRAYHILL OUTPUT	GRAYHILL	70G-JACSAJ-QT1
INPUT	GRAYHILL INPUT	GRAYHILL	70G-JACSL-QT1
C	CONTACTOR, 30A	SQUARE D	LC1D3267
	CONTACTOR, 80A	SQUARE D	LC1D801G7
	CONTACTOR, 100A	SQUARE D	LC1D150G6

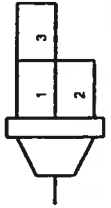


ILLUSTRATION OF CONTACT BLOCK  
LOCATION ON SELECTOR SWITCH (TOP VIEW)

SELECTOR SWITCH # 1-8						
CONTACT BLOCK	OFF	ON	AUTO	ON TO AUTO	AUTO TO ON	FUNCTION
1	0	0	X	X	X	AUTO MODE
2	0	X	0	X	X	ON MODE
3	0	0	0	X	N/A	SWITCH STATUS

PROJECT#: 116635  
 PROJ NAME: Grijalva Skate Park  
 LOCATION: Orange, CA USA  
 VANTAGE ORD: 0  
 DRAWING #: CG-635-1  
 CABINET: 1

**EQUIPMENT LIST FOR AREAS SHOWN**

Pole		Luminaires					
QTY	LOCATION	GRADE ELEVATION	OUNTING HEIGHT	LAMP TYPE	QTY/POLE	THIS GRID	OTHER GRID
3	P1-P3	50'	50'	1500W MZ	2	2	0
← TOTALS →					6	6	0



**GUARANTEED PERFORMANCE**

**ILLUMINATION SUMMARY**

**RectangleField1**  
 GRIJALVA SKATE PARK  
 ORANGE, CA

**RectangleField1**

- Size: 150' x 130'
- Grid Spacing = 10.0' x 10.0'
- Values given at 3.0' above grade

- Luminaire Type: Green Generation
- Rated Lamp Life: 50000 hours
- Avg Lumens/Lamp: 134,000

**HORIZONTAL ILLUMINATION**

Statistical

Area

No. of Target Points: 101

Average: 32.1

Maximum: 42

Minimum: 22

Avg/Min: 1.45

Max/Min: 1.90

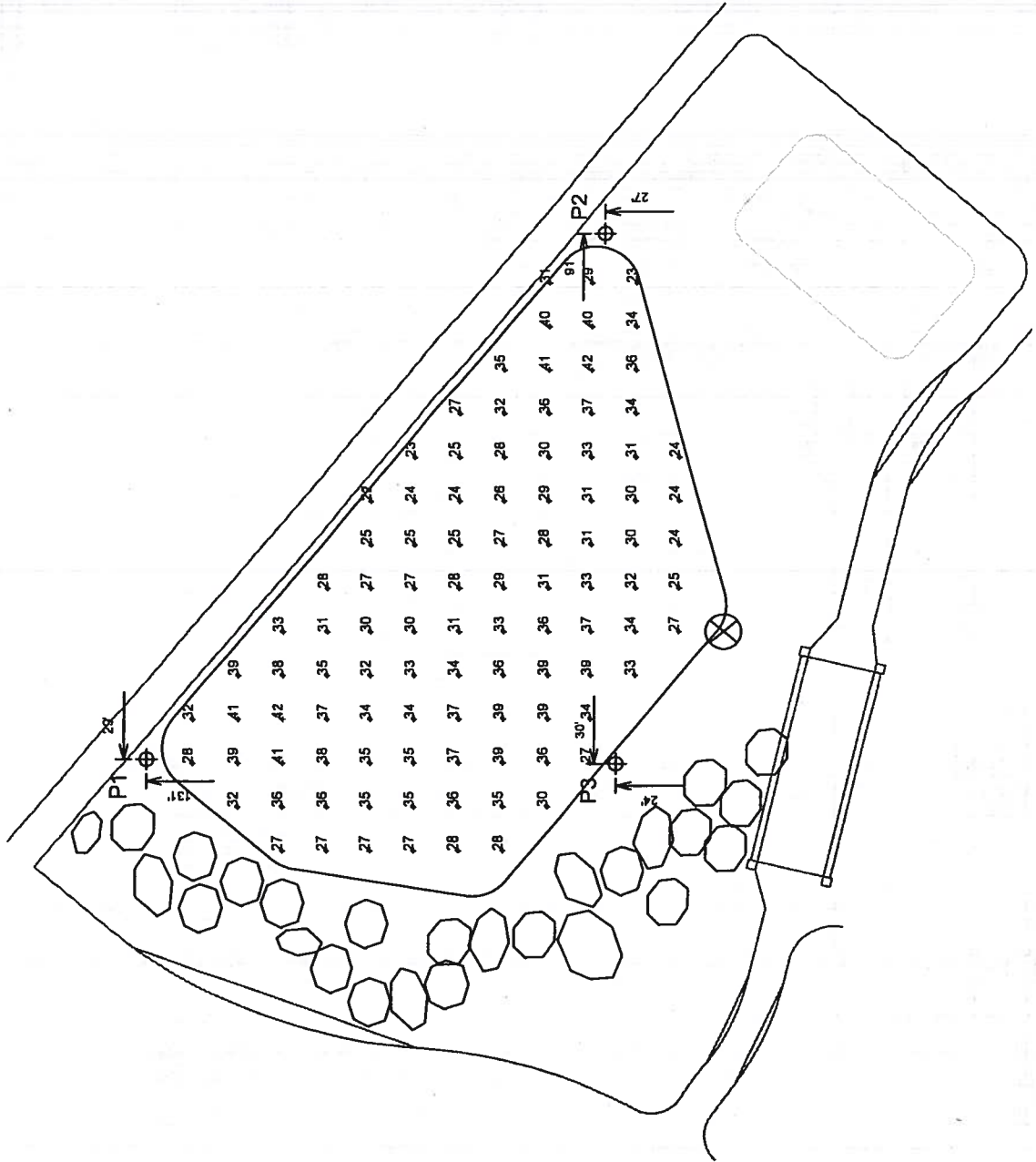
UG (Adjacent Pts): 1.45

CV: 0.160

Average Lamp Tilt Factor: 1.000

Number of Luminaires: 6

Avg KWh Consumption over 5000 hours: 9.36



SCALE IN FEET 1 : 40

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

**Guaranteed Performance:** The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

**Field Measurements:** Averages shall be +/-10% in accordance with IESNA RP-6-01. Individual measurements may vary from computer 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 ballast and structures located within 3 feet of design locations.

By: \_\_\_\_\_ Date: 25-Jul-05

File #: 1166351sg

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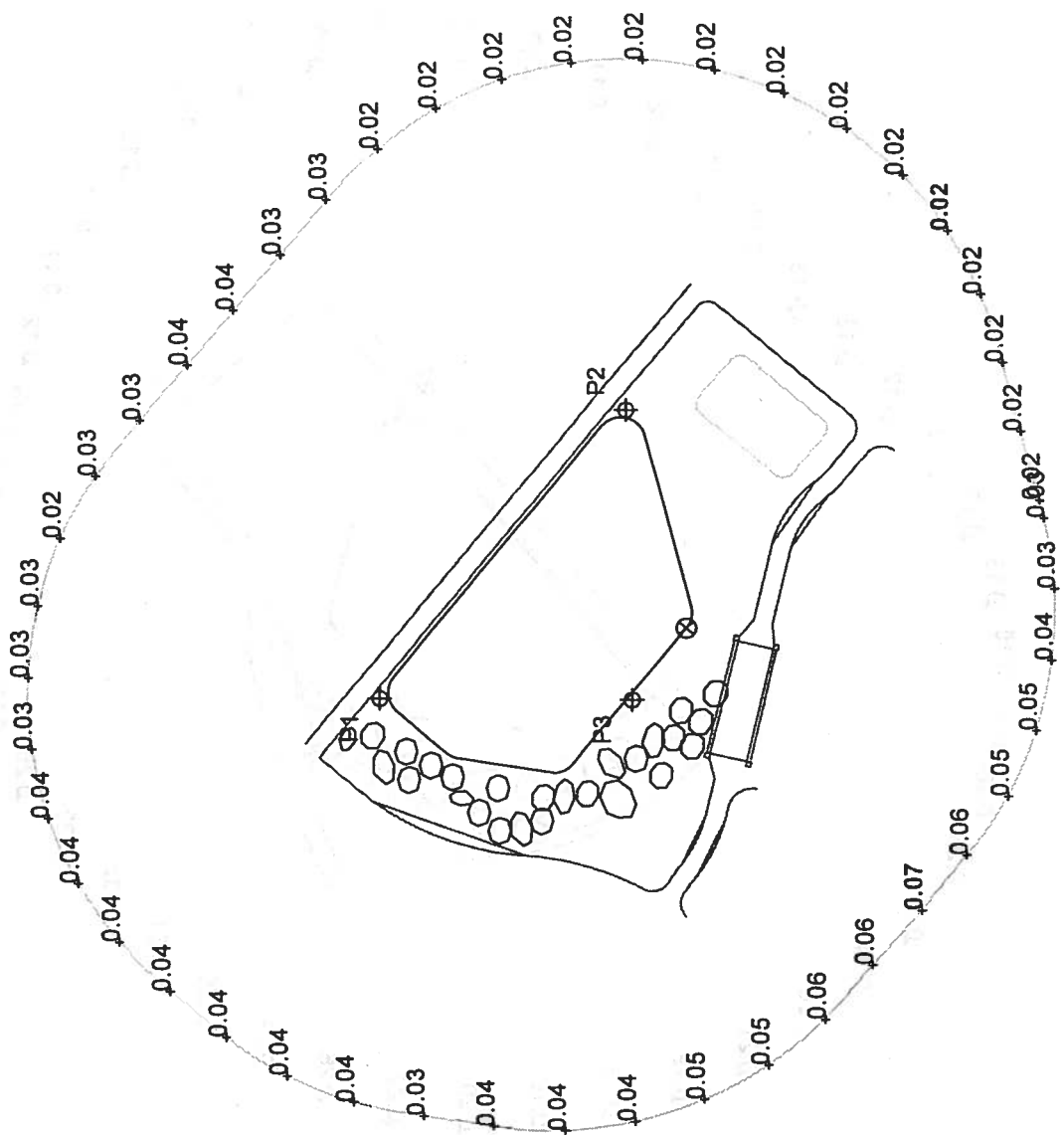
**EQUIPMENT LIST FOR AREAS SHOWN**

Pole		Luminaires					
QTY	LOCATION	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	THIS GRID	OTHER GRID	
3	P1-P3	-	50'	1500W MZ	2	0	
3	← TOTALS					6	0



**GUARANTEED PERFORMANCE**

ILLUMINATION SUMMARY	
<b>SPILL</b> GRIJALVA SKATE PARK ORANGE, CA	
<b>SPILL</b>	
· Grid Spacing = 30.0'	
· Values given at 3.0' above grade	
· Luminaire Type: Green Generation	
· Rated Lamp Life: 5000 hours	
· Avg Lumens/Lamp: 134,000	
CONSTANT ILLUMINATION	
HORIZONTAL FOOTCANDLES	
Statistical	
No. of Target Points:	46
Average:	0.034
Maximum:	0.07
Minimum:	0.02
Average Lamp Tilt Factor:	1.000
Number of Luminaires:	6
Avg KWh Consumption over 5000 hours:	9.36



**Guaranteed Performance:** The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

**Field Measurements:** Averages shall be +/- 10% in accordance with IESNA RP-6-01. Individual measurements may vary from computer predictions.

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By: \_\_\_\_\_ Date: 25-Jul-05

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SCALE IN FEET 1 : 80



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

