

Project description

Install 4 light poles at Edy Ridge with lights mounted on the Back side of two poles, At the Middle School install 2 poles that will face out into the outfield of the middle school's baseball field and the other one would face out into the outfield of the Hopkins baseball field. Along with the Link lighting controls provide underground boring of the feeder conduit from S1 to the existing 480 v pad mount transformer, a branch circuit conduit trenched from S1 to S2, a branch circuit conduit from S2 to S3 and a bored conduit from S1 to S4. Steel plate the ground to allow access to the park for a crane, Access the existing 480 Volt pad mounted transformer to install a feeder breaker for the electrical service located on pole S1. The electrical service at S1 will be designed and incorporated into the MUSCO control panel and will be UL.

Musco Equipment (EDY Ridge)

Light-Structure Green™ System delivered to your site in Five Easy Pieces™

- 4 - Pre-cast concrete bases
- 4 – 70' Galvanized steel poles
- UL Listed remote electrical component enclosure
- Pole length wire harness
- 38 - Factory-aimed and assembled luminaries
- Control Cabinet, wireless operating control

NOTE: The above includes 5 additional fixtures on the backside of pole S3 & S4 to light practice areas adjacent to the field.

The Above Also Includes:

- Energy savings of more than 50% over a standard lighting system
- 50% less spill and glare light than Musco's prior industry leading technology
- Musco Constant 25™ warranty and maintenance program that eliminates 100% of your maintenance costs for 25 years, including labor and materials
- Guaranteed constant footcandles for 25 years, per IESNA RP-06-01
- One group re-lamp at the end of the lamps' rated life, 5000 hours
- Reduced energy consumption per hour
- Lighting Contactors sized for voltage and phase at the site and our Control & Monitoring System for flexible control and solid management of your lighting system

Musco Equipment (Sherwood MS)

Light-Structure Green™ System delivered to your site in Five Easy Pieces™

- 2 - Pre-cast concrete bases
- 2 – 70' Galvanized steel poles
- UL Listed remote electrical component enclosure
- Pole length wire harness
- 10 - Factory-aimed and assembled luminaries
- Control Cabinet, wireless operating control
- Provide a detailed foundation design, signed and sealed by a licensed structural engineer registered in the State of Oregon. Structural code and wind speed = 2009 IBC, 100 MPH C.
- Provide off loading equipment.at site.



Control System Summary

Project Specific Notes:

Project Information

Project #: 139697
 Project Name: Edy Ridge Elementary Football/Track
 Date: 01/14/13
 Project Engineer: Eric Svenby
 Sales Representative: Tim Butz
 Control System Type: Control and Monitoring
 Communication Type: Digital Cellular
 Scan: 139697R1
 Distribution Panel Location or ID:
 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 48
2. Surge Protection Device	6 X 10
Total Contactors	6 30 AMP
Total Off/On/Auto Switches:	

Materials Checklist

Contractor/Customer Supplied:

- A single 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
 - Thermal/Magnetic circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- Wiring:
 - Dedicated control power circuit
 - Power circuit to and from lighting contactors
 - Monitoring circuit from surge protection device to Control and Monitoring cabinet 1
 - Harnesses for cabinets at remote locations
 - Means of grounding, including lightning ground protection
- 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
- Control circuit lock-on device to prevent unauthorized power interruption to control power
- Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central(TM) 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 Plan
 QTY SIZE
 6 30 AMP
 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 ballast 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 UL 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

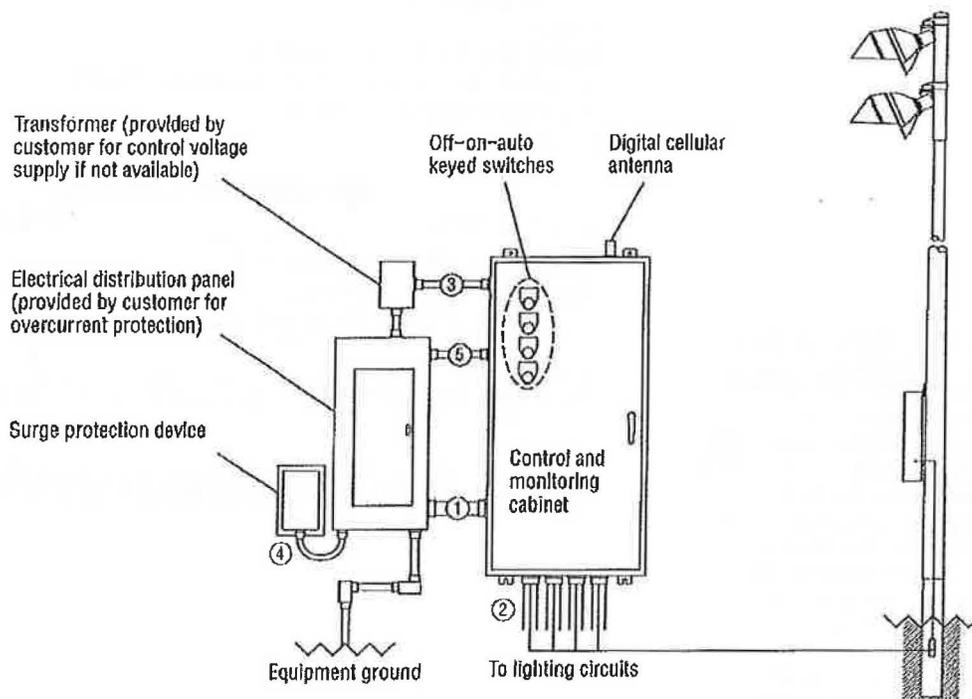


Control System Summary

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Form: T-5030-1

Control-Link. Control and Monitoring System – Digital Cellular



Wire	Description	# of Wires	Typ. Wire Size (AWG)	Max. Wire Length (FT)	Wire from Musco	Notes
1	Line power to contactors, and equipment grounding conductor	Note A	Note B	27	No	A – E
2	Load power to lighting circuits	Note A	Note B	N/A	No	A – D
3	Control power (dedicated, 20A)	3	12	N/A	No	C, D
4	Surge protection device to distribution panel	--	--	N/A	Yes	F
5	Surge protection device monitoring	3	14	N/A	Yes	C, D, F

- Notes:
- A. Voltage and phasing per the notes on cover page.
 - B. Calculate per load and voltage drop.
 - C. All conduit diameters should be per code.
 - D. Refer to control and monitoring system installation instructions for more details on equipment information and the installation requirements.
 - E. Contact Musco if maximum wire length from circuit breaker to contactor exceeds value in chart.
 - F. Refer to surge protection device installation instructions for more details on equipment information and the installation requirements.

IMPORTANT: Control (3) and monitoring (5) wires must be in separate conduit from line and load power wiring (1, 2).

R60-25-00_D



Control System Summary

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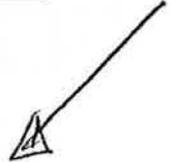
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 Form: T-6030-1

SWITCHING SCHEDULE

Field Type	Zones	Zone Description
Football	1	Football
Other	2	Practice Area

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 1555.0 SEALED: 241.0

BALLAST SPECIFICATIONS .90 Minimum Power Factor	VOLTAGE: 480v THREE PHASE						
BALLAST OPERATING VOLTAGE	208	220	240	277	347	380	480
1500 Watt Metal Halide Lamp Operating line amperage per fixture- maximum	8.6	8.3	7.5	6.5	5.1	4.7	3.7
1000 Watt Metal Halide Lamp Operating line amperage per fixture- maximum	6.5	6.4	5.8	4.9	4.0	3.6	2.9



CIRCUIT SUMMARY BY ZONE						
POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
F1	Football	7	18.5	30	C1	1
F2	Football	7	18.5	30	C2	1
F3	Football	7	18.5	30	C3	1
F4	Football	7	18.5	30	C4	1
F1	Practice Area	5	14.8	30	C5	2
F2	Practice Area	5	14.8	30	C6	2



Control System Summary

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 Form: T-5030-1

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 F1	18.50		
1	1	C2	Pole F2	18.50		
1	1	C3	Pole F3	18.50		
1	1	C4	Pole F4	18.50		
1	1	C5	Pole F1	14.80		
1	1	C6	Pole F2	14.80		

ZONE SCHEDULE				
ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	CIRCUIT DESCRIPTION	
			POLE ID	CONTACTOR ID
Zone 1	1	Football	F1	C1
			F2	C2
			F3	C3
			F4	C4
Zone 2	2	Practice Area	F1	C5
			F2	C6



LIGHT STRUCTURE GREEN - GENERAL INFORMATION

QUALITY:

1) Single Manufacturer of entire system

Musco is the only manufacturer that produces entire lighting systems at their fabrication plant. Other lighting companies "outsource" their steel pole fabrication needs to third party manufacturers, thereby losing quality control of a major component in the sports lighting system.

2) Complete UL Listing as a system, not an assembly of UL Listed parts.

The Musco Light Structure Green lighting system is UL approved as a system while other manufacturers provide UL listed parts only, NOT a complete system.

3) Welded steel cross arms

Musco is the only manufacturer that welds all crossarms to the steel pole top section. This provides the highest quality of construction as well as unsurpassed durability. All other manufacturers use bolt-on connections.

DURABILITY:

1) Pre-cast Concrete Base

Musco provides a pre-cast concrete foundation. This eliminates welded base plates with anchor bolts or direct burial steel, which are often associated with corrosion and potential failure issues. Musco is the sole manufacturer of this critical component in a quality lighting system.

2) Remote Electrical Component Enclosure ("ECE")

The ECE is constructed of aluminum, allowing the coolest operation possible of lighting ballasts located inside. All other manufacturers use a steel construction (either painted or galvanized). Musco employs a unique ballast mounting design which utilizes the inside walls of the ECE

to efficiently transfer heat out of the enclosure. We also use a unique patented connection system to the steel pole allowing efficient transfer of enclosure weight to the pole as well as threadless hub wire way access into the pole. All other manufacturers use a bolt-on connection with threaded hub connections which gives corrosion a place to develop.

AVAILABILITY:

Standard delivery time of all Musco products is four weeks. For the Light Structure System, this includes everything from pre-cast concrete bases to factory wired and pre-aimed fixtures that are ready to install. Standard delivery time for steel pole production and delivery by other manufacturers is typically 12 to 14 weeks.

FITNESS FOR A PARTICULAR USE:

1) Lighting Performance/Spill & Glare Light Control

Musco is the industry leader in providing quality lighting on the field as well as being able to reduce spill light from off-site residential areas, this, in addition to the keeping unwanted glare from players and spectators is more of what separates Musco from other manufacturers. These Musco advantages, in part, are based on Musco's Sports Cluster Green (SCG) fixture and its revolutionary reflector system. The SCG fixture c/w its cast aluminum housing, its segmented reflector system and the 1500 watt "Z" lamp all contribute to Musco's ability to control spill light and glare.

2) Reflector System

Musco's Sports Cluster Green (SCG) fixture and its revolutionary reflector system produces more light on the field(s) and less off the field(s) while reducing glare both on and off the Field(s). The SCG fixture has a cast aluminum housing (other manufacturers use a spun aluminum reflector) and its segmented reflector system give us the flexibility to direct light where we want to, contributing to Musco's ability to lead the industry in controlling unwanted spill light and glare.

3) "Z" Lamp

The lamps used in the SCG fixtures are a 1500 Watt Phillips "Z" lamp and have a rated life of 5,000 hours as compared to other manufacturers 3,000 hour lamps. The arc tube in this lamp has been offset by 30 degrees for increased lamp output and efficiency.

4) Energy Savings

Light Structure Green (LSG) using Musco's unparalleled photometric capabilities, Musco's "Z" lamp and "Smart Lamp" technology, translates into substantial energy savings. The "Smart Lamp" regulates the amount of power used by the lamp in order to maintain light levels on the field(s) while reducing energy consumption by as much as 40%. Other manufacturers consume up to 40% more power and as the light output of the lamps decrease so do the light levels on the field(s) affecting the playability of the field(s)

ACCOUNTABILITY:

1) Post Installation System "Fine Tuning"

Musco Lighting is the only manufacturer that provides factory technicians and field sales/service representatives to perform any fine tune adjustments after installation to assure maximum performance on-field, and more importantly, off-site. This service is part of the Musco performance guarantee that ensures all components of the lighting system are to the customer's specifications.

2) Warranty

The 25 year (10,000 hr) Warranty is a comprehensive warranty and maintenance program, providing all parts and labor, including one complete lamp replacement after 5000 hours of operation (entire lamp life). The Warranty guarantees specified light levels will be maintained for the entire life of the lamp.



MY PROJECT

Name: Edy Ridge Elementary Football/Track
 Location: Sherwood, OR

EQUIPMENT LAYOUT

INCLUDES:
 - Football
 - Track

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 (1m) of design locations.

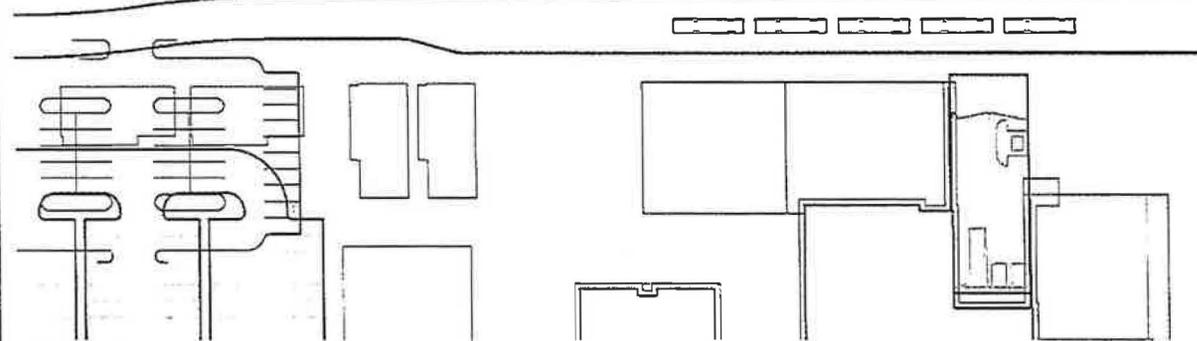
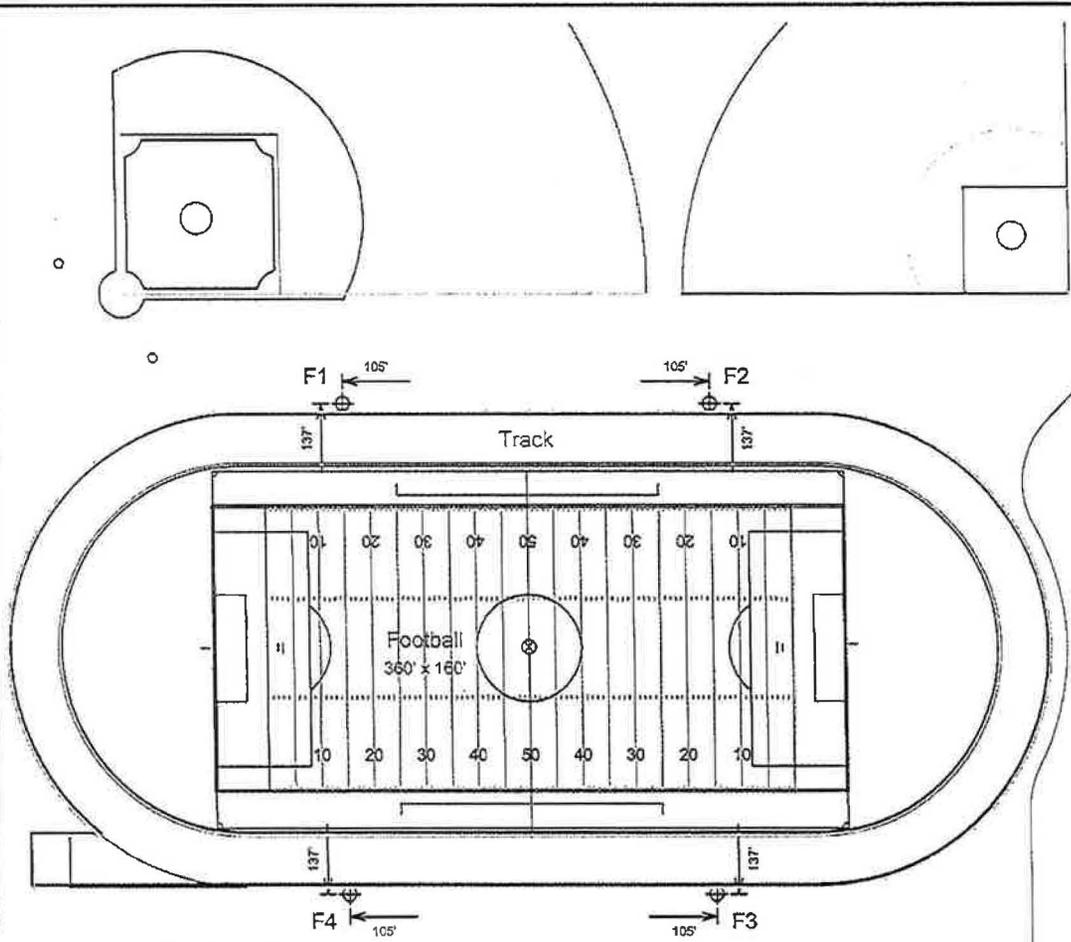
EQUIPMENT LIST FOR AREAS SHOWN

QTY	LOCATION	Pole SIZE	GRADE ELEVATION	Luminaires		QTY / POLE
				MOUNTING HEIGHT	LAMP TYPE	
2	F1-F2	70'	-	70'	1500W MZ	7/5*
2	F3-F4	70'	-	70'	1500W MZ	7
4	TOTALS					38

* This structure utilizes a back-to-back mounting configuration

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 (50)	380 (60)	480 (50)
Single Phase Voltage	8.6	8.3	7.5	6.5	5.1	4.7	3.7
1500 watt MZ							



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

ENGINEERED DESIGN

By: Eric Svenby
 File # / Date: 139697R1 14-Jan-13

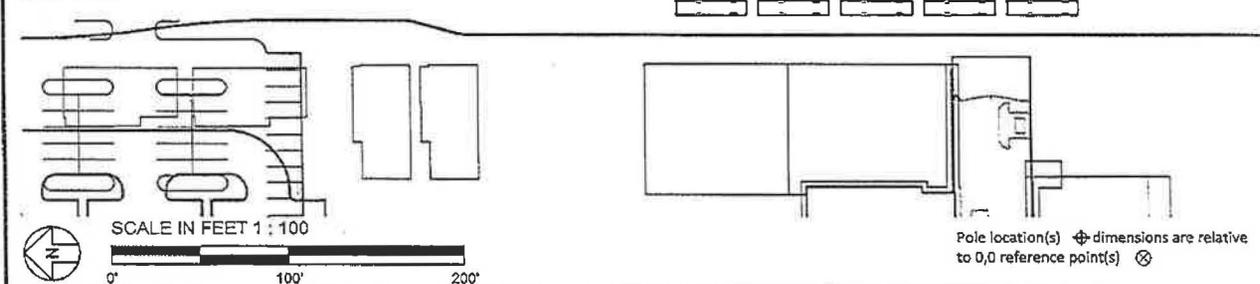
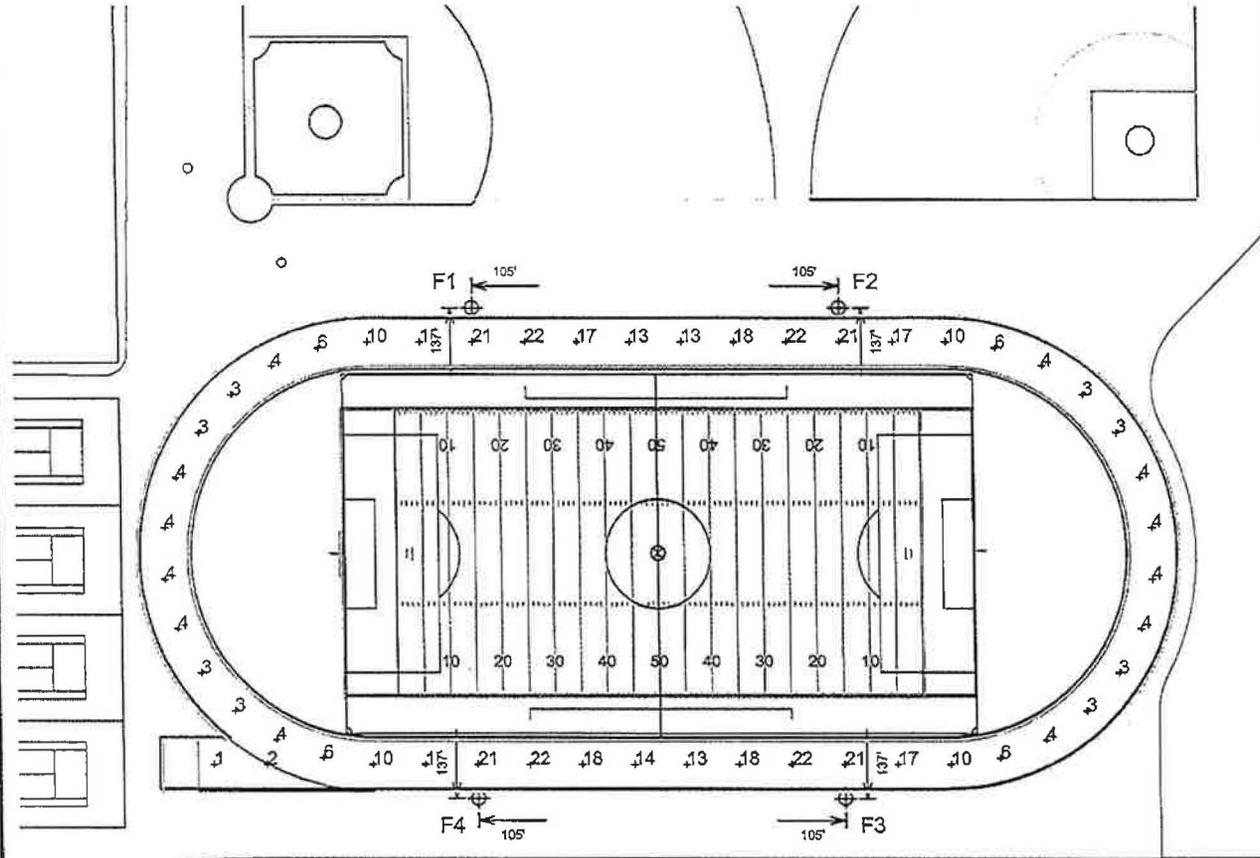
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EQUIPMENT LAYOUT



EQUIPMENT LIST FOR AREAS SHOWN									
Pole				Luminaires					
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS	
2	F1-F2	70'	-	70'	1500W MZ	7/5*	7	5	
2	F3-F4	70'	-	70'	1500W MZ	7	7	0	
4	TOTALS						38	28	10

* This structure utilizes a back-to-back mounting configuration



MY PROJECT

Name: Edy Ridge Elementary Football/Track
Location: Sherwood, OR

GRID SUMMARY

Name: Track
Size: Irregular
Spacing: 30.0' x 30.0'
Height: 3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	HORIZONTAL FOOTCANDLES
Entire Grid	
Scan Average:	9.9
Maximum:	22
Minimum:	1
Avg / Min:	10.22
Max / Min:	22.79
UG (adjacent pts):	0.00
CV:	0.74
No. of Points:	50
LUMINAIRE INFORMATION	
Luminaire Type:	Green Generation
Rated Lamp Life:	5,000 hours
Avg Lumens / Lamp:	134,000
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	28
Avg KW:	43.79 (47.6 max)

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

Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

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 (1m) of design locations.

ENGINEERED DESIGN

By: Eric Svenby
File # / Date: 139697R1 14-Jan-13

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ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	70'	-	70'	1500W MZ	7/5*	5	7
TOTALS							24	14

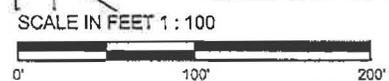
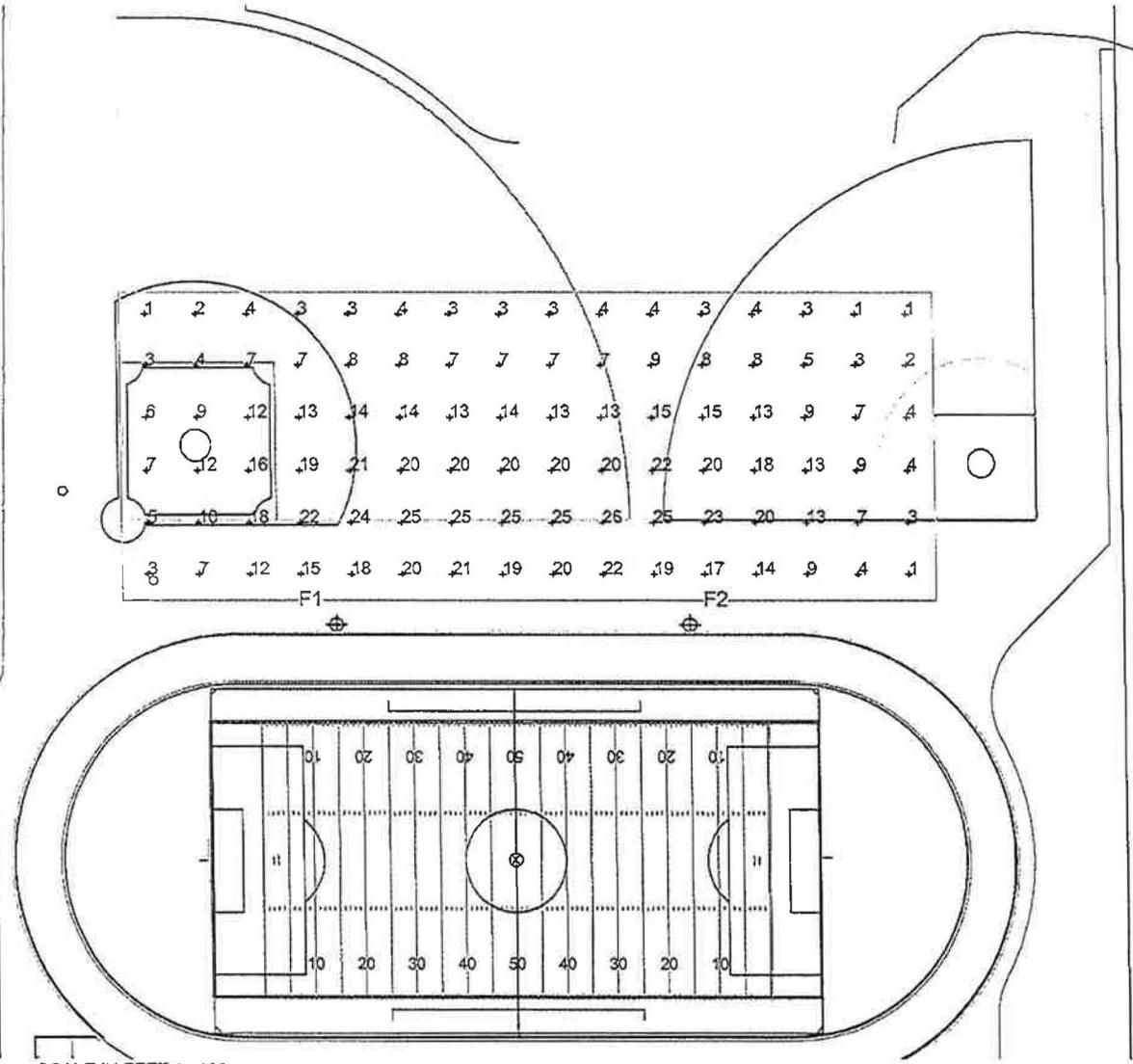
* This structure utilizes a back-to-back mounting configuration



MY PROJECT	
Name:	Edy Ridge Elementary Football/Track
Location:	Sherwood, OR

GRID SUMMARY	
Name:	Practice Area
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

CONSTANT ILLUMINATION	
SUMMARY	HORIZONTAL FOOTCANDLES
	Entire Grid
Scan Average:	11.5
Maximum:	26
Minimum:	1
Avg / Min:	11.59
Max / Min:	26.23
UG (adjacent pts):	3.16
CV:	0.65
No. of Points:	96
LUMINAIRE INFORMATION	
Luminaire Type:	Green Generation
Rated Lamp Life:	5,000 hours
Avg Lumens / Lamp:	134,000
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	10
Avg KW:	15.64 (17.0 max)



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: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

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 (1m) of design locations.

ENGINEERED DESIGN		
By:	Eric Svenby	
File # / Date:	139697R1	14-Jan-13

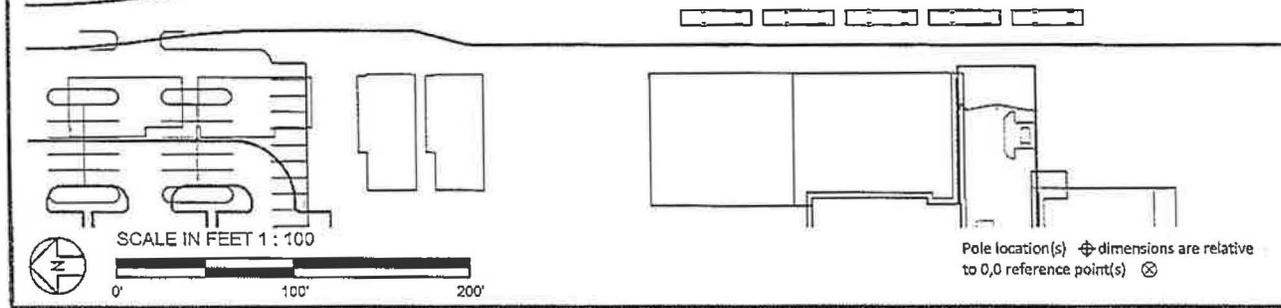
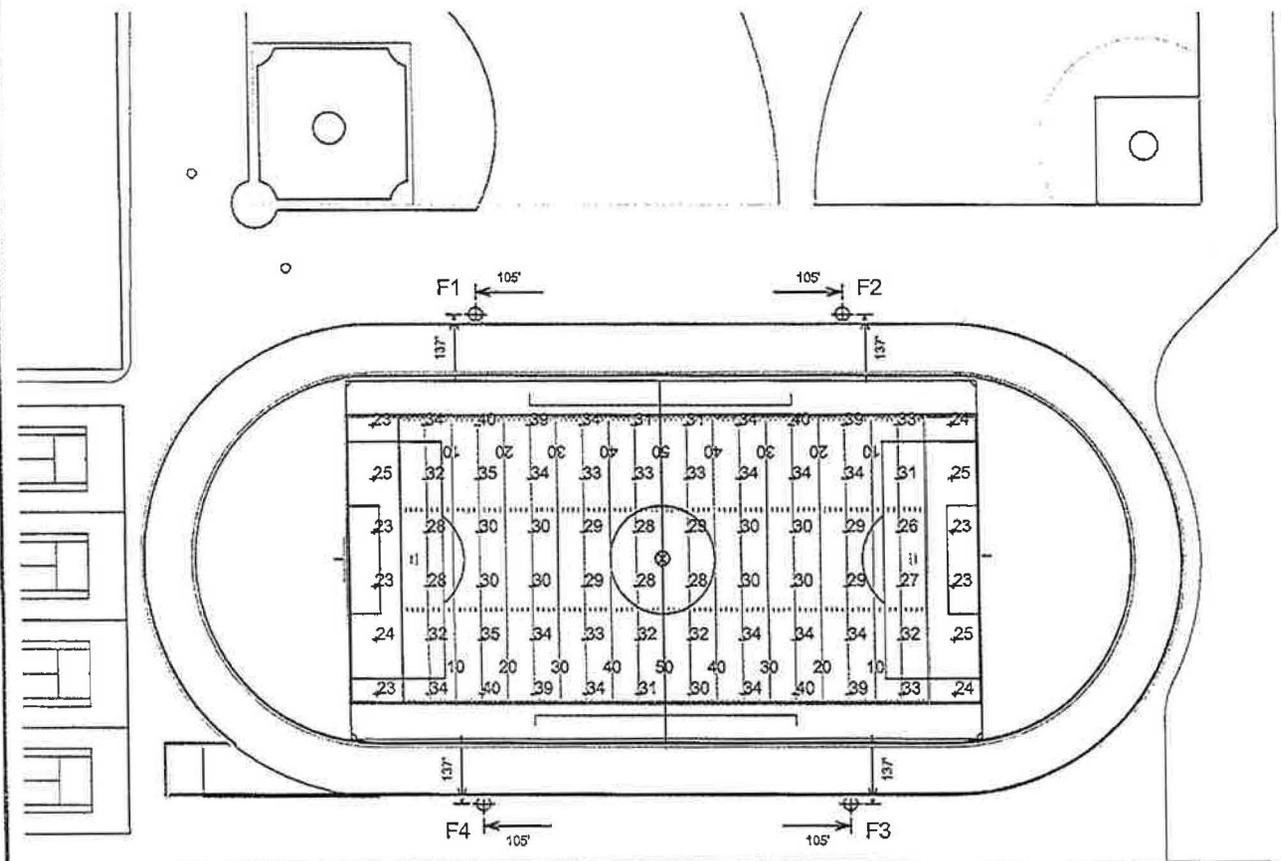
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ILLUMINATION SUMMARY



EQUIPMENT LIST FOR AREAS SHOWN								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1-F2	70'	-	70'	1500W MZ	7/5*	7	5
2	F3-F4	70'	-	70'	1500W MZ	7	7	0
4	TOTALS					38	28	10

* This structure utilizes a back-to-back mounting configuration



MY PROJECT	
Name:	Edy Ridge Elementary Football/Track
Location:	Sherwood,OR

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

CONSTANT ILLUMINATION SUMMARY		HORIZONTAL FOOTCANDLES
Entire Grid		
Guaranteed Average:	30	
Scan Average:	31.1	
Maximum:	40	
Minimum:	23	
Avg / Min:	1.36	
Guaranteed Max / Min:	2.5	
Max / Min:	1.74	
UG (adjacent pts):	1.46	
CV:	0.15	
No. of Points:	72	
LUMINAIRE INFORMATION		
Luminaire Type:	Green Generation	
Rated Lamp Life:	5,000 hours	
Avg Lumens / Lamp:	134,000	
Avg Lamp Tilt Factor:	1.000	
No. of Luminaires:	28	
Avg KW:	43.79 (47.6 max)	

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

Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

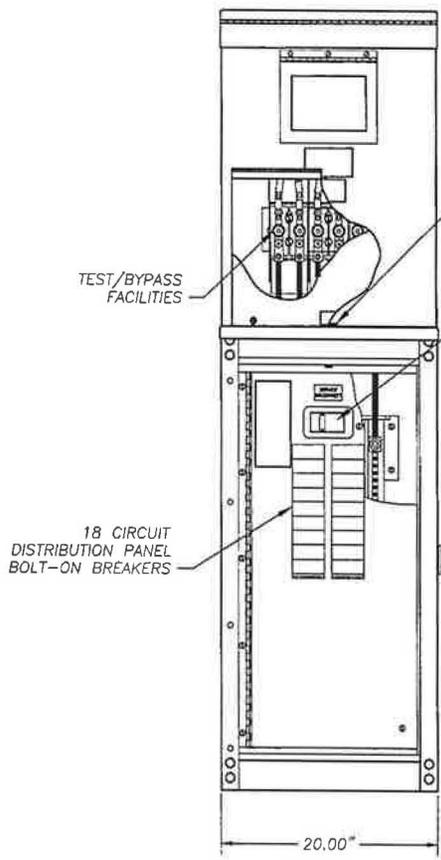
Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

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ILLUMINATION SUMMARY



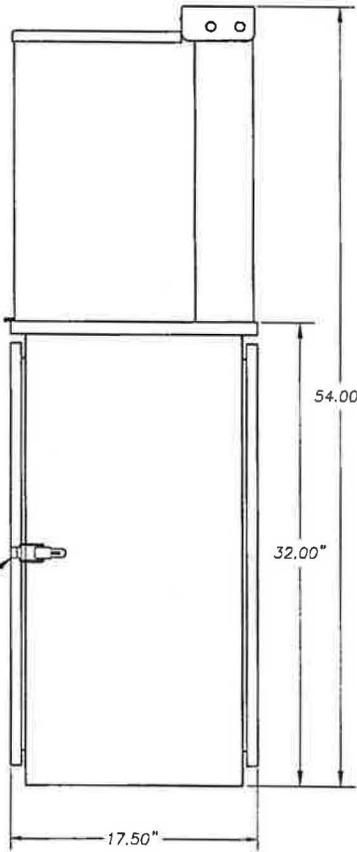
FRONT VIEW
(LOWER DOOR REMOVED)

UTILITY SEAL/PADLOCK PROVISION

3-POLE
240/480 VAC
MAIN BREAKER
(35K AIC)

18 CIRCUIT
DISTRIBUTION PANEL
BOLT-ON BREAKERS

TEST/BYPASS
FACILITIES



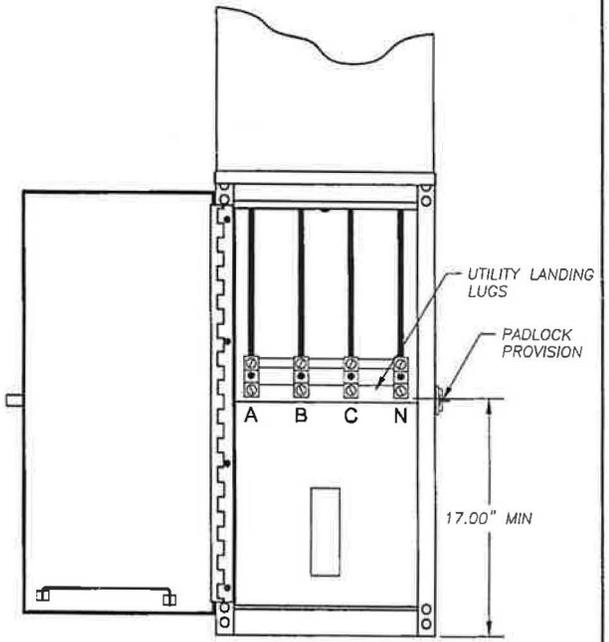
SIDE VIEW

PADLOCK
PROVISION

54.00"

32.00"

17.50"



BACK VIEW
(LOWER DOOR OPEN)

UTILITY LANDING
LUGS

PADLOCK
PROVISION

A B C N

17.00" MIN

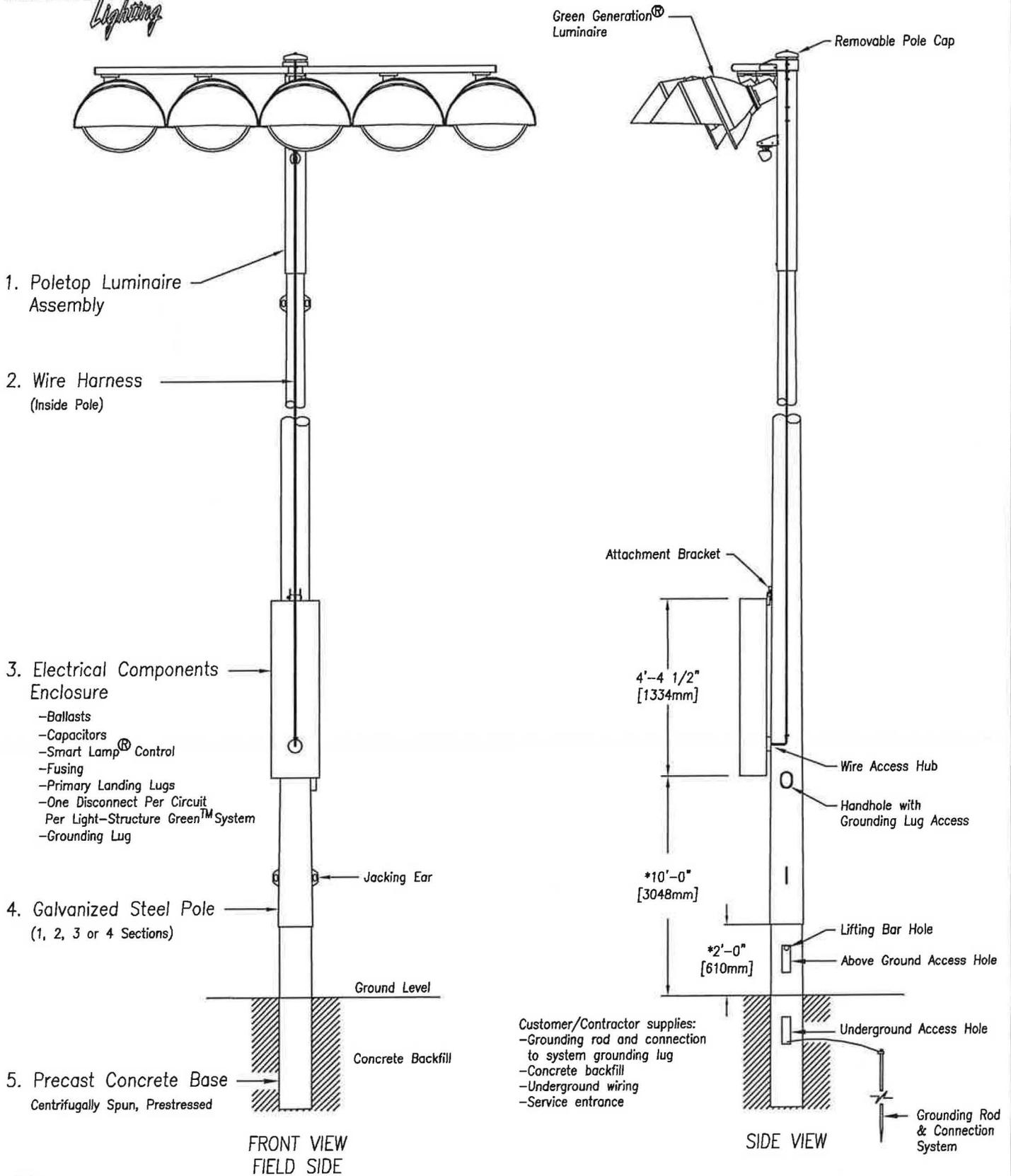
NOTES:

1. UL LISTED ENCLOSED INDUSTRIAL CONTROL PANEL.
2. SHORT CIRCUIT RATING: 10,000 MAX. @ 480 VAC.
3. CONSTRUCTION: TYPE 3R
4. FINISH: PAINT ANSI 61 LIGHT GRAY.

COOPER B-Line			
SHERMAN, TEXAS			
COMMERCIAL METER PEDESTAL CMP4421MCH1			
SUBMITTAL DRAWING			REV: -
DRAWN BY: HANLEY	DATE: 7/8/04	SIZE: C	ECO: -
<small>THIS DRAWING AND/OR TECHNICAL INFORMATION CONTAINED HEREIN IS THE PROPERTY OF COOPER B-LINE, INC. ("B-LINE"). IT IS ISSUED IN CONFIDENCE FOR B-LINE ENGINEERING PURPOSES ONLY AND MAY NOT BE REPRODUCED OR USED FOR ANY PURPOSES WHATSOEVER WITHOUT THE EXPRESS WRITTEN PERMISSION OF B-LINE TO THE EFFECT. THIS DRAWING AND/OR TECHNICAL INFORMATION IS THE PROPERTY OF B-LINE AND IS LOANED FOR YOUR USE ONLY. IT IS TO BE RETURNED WITH ITS ATTACHED PAPERWORK TO THE B-LINE OFFICE.</small>			

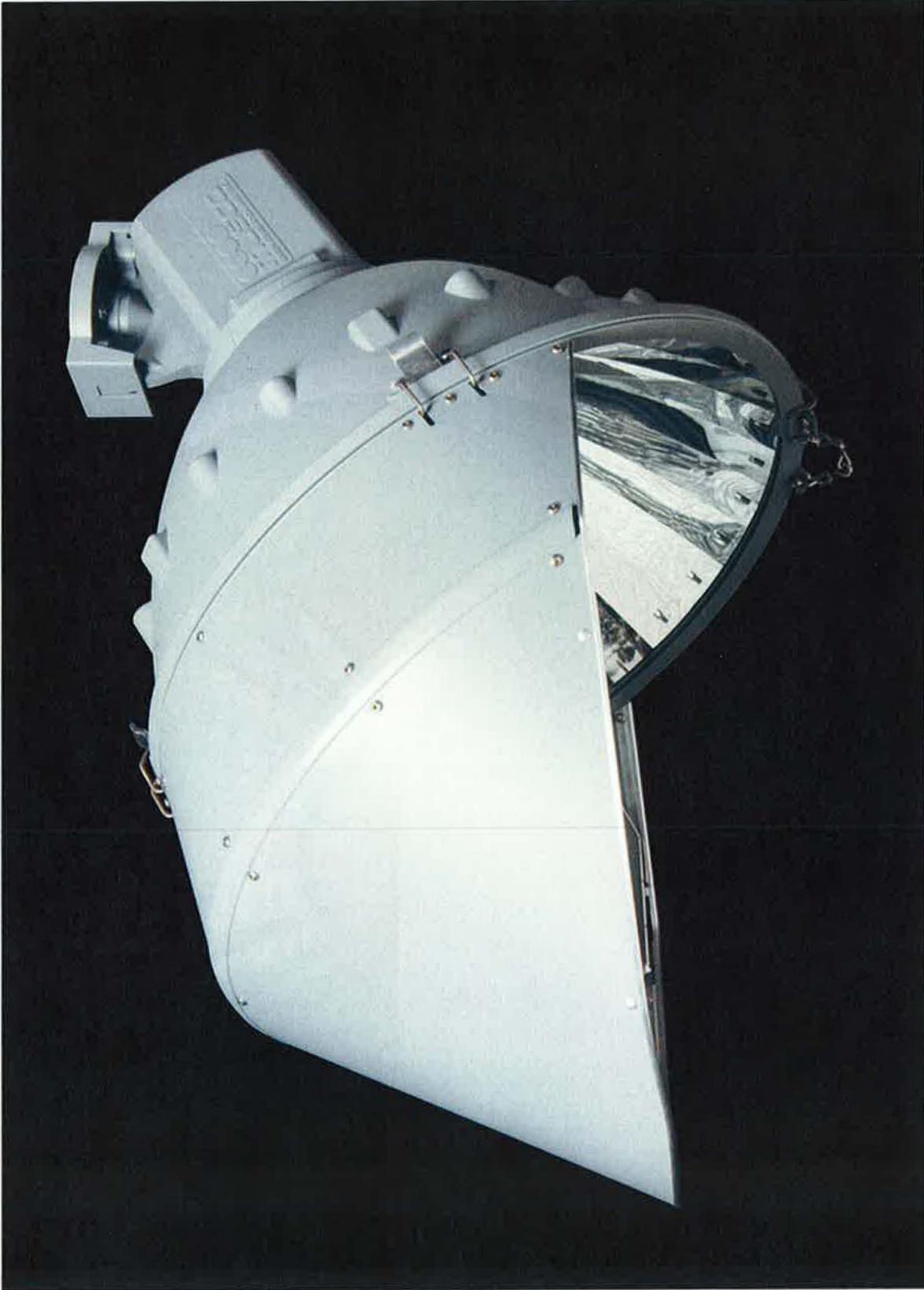


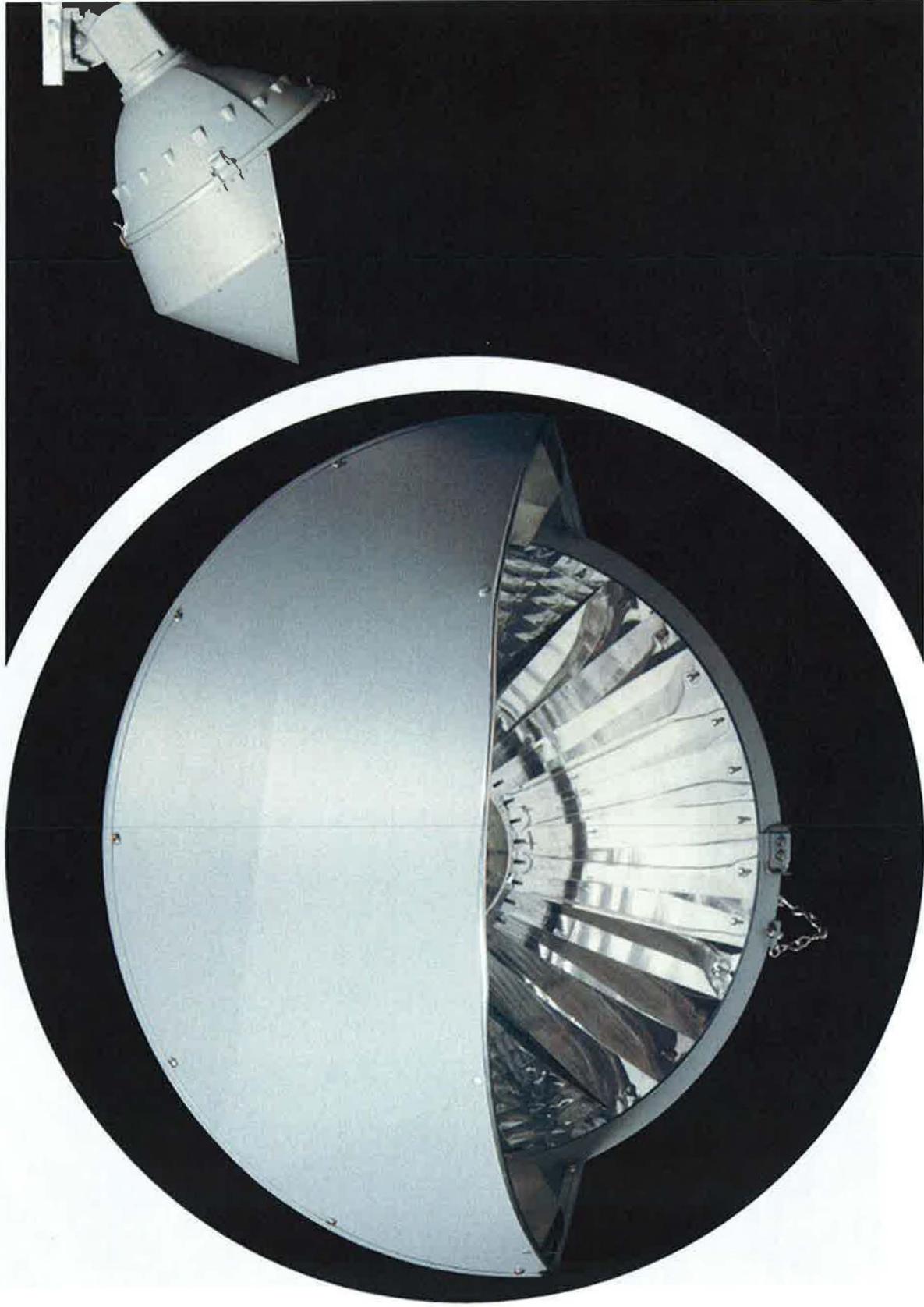
Typical Light-Structure Green™ System Detail – 5 Luminaires

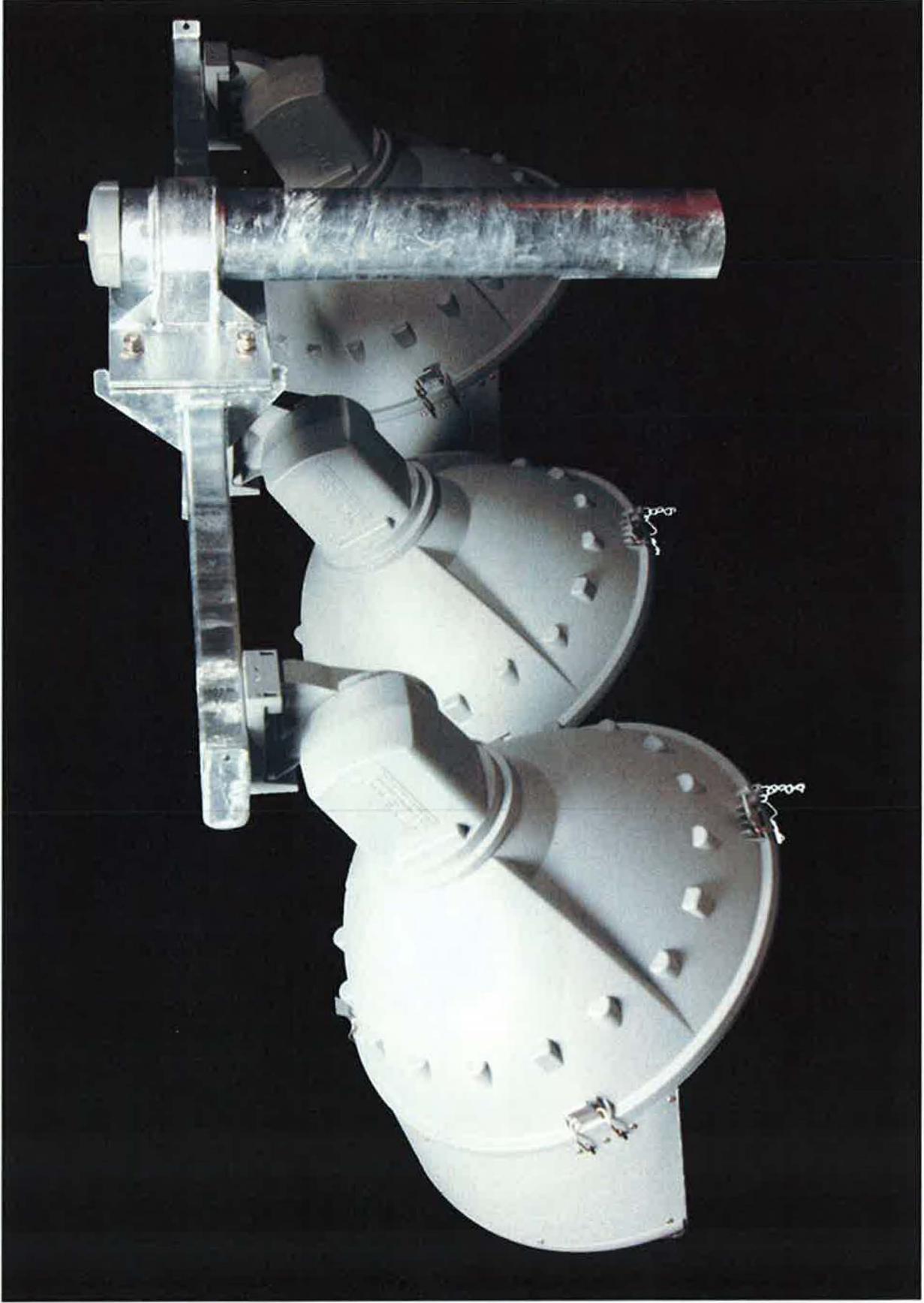


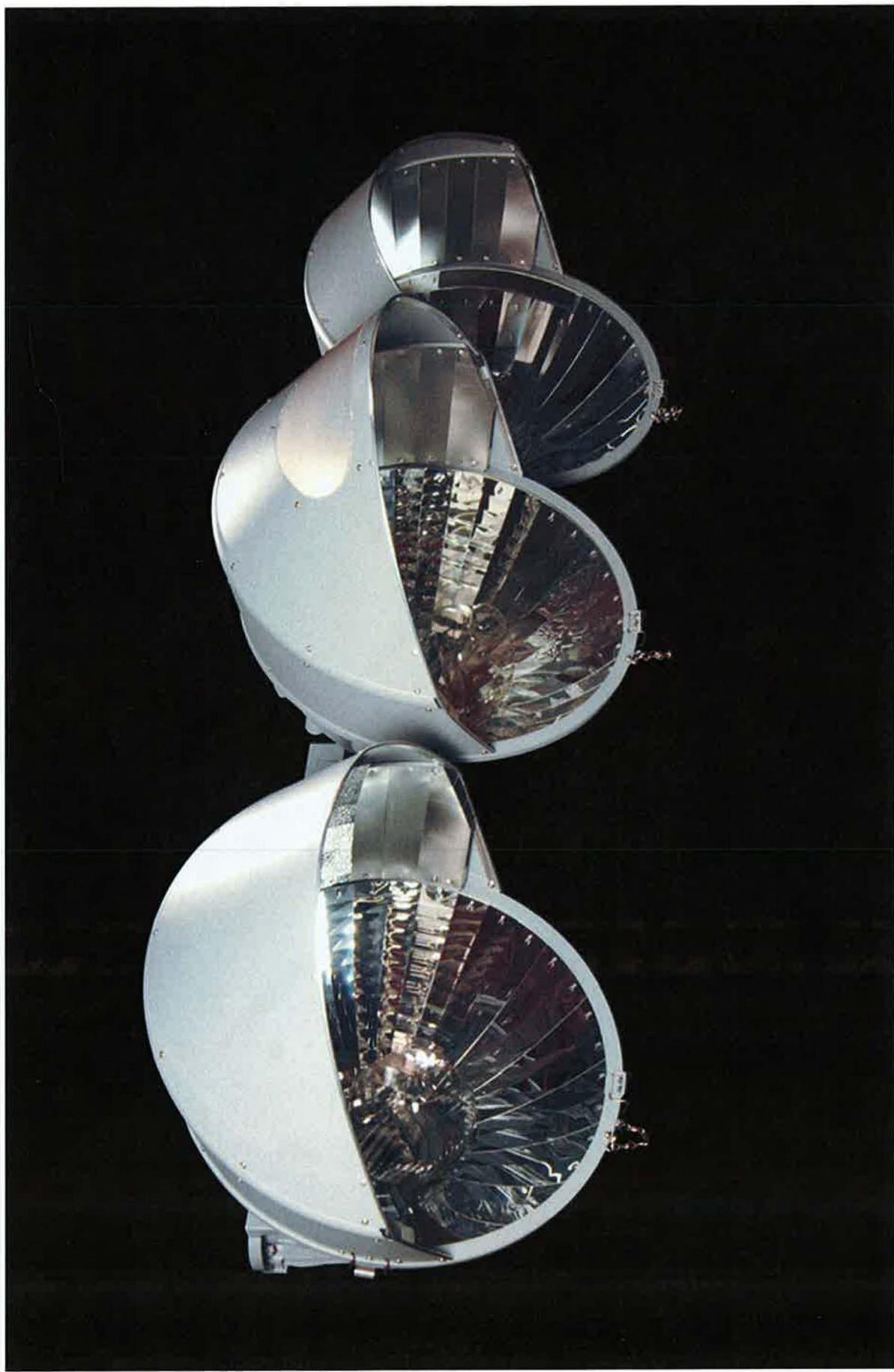
Notes:

1. This drawing is not to scale.
2. * This dimension for reference only. Variances may occur depending on steel pole tolerances, concrete tolerances, galvanizing thickness, hole depth accuracy.
3. Musco provides a base installation bar, an installation level modified for taper, and installation wedges.
4. Provisions for auxiliary equipment such as speaker or security lighting can be incorporated.
5. Copyright 1991, 2007, 2008 Musco Lighting. Patents issued and pending.





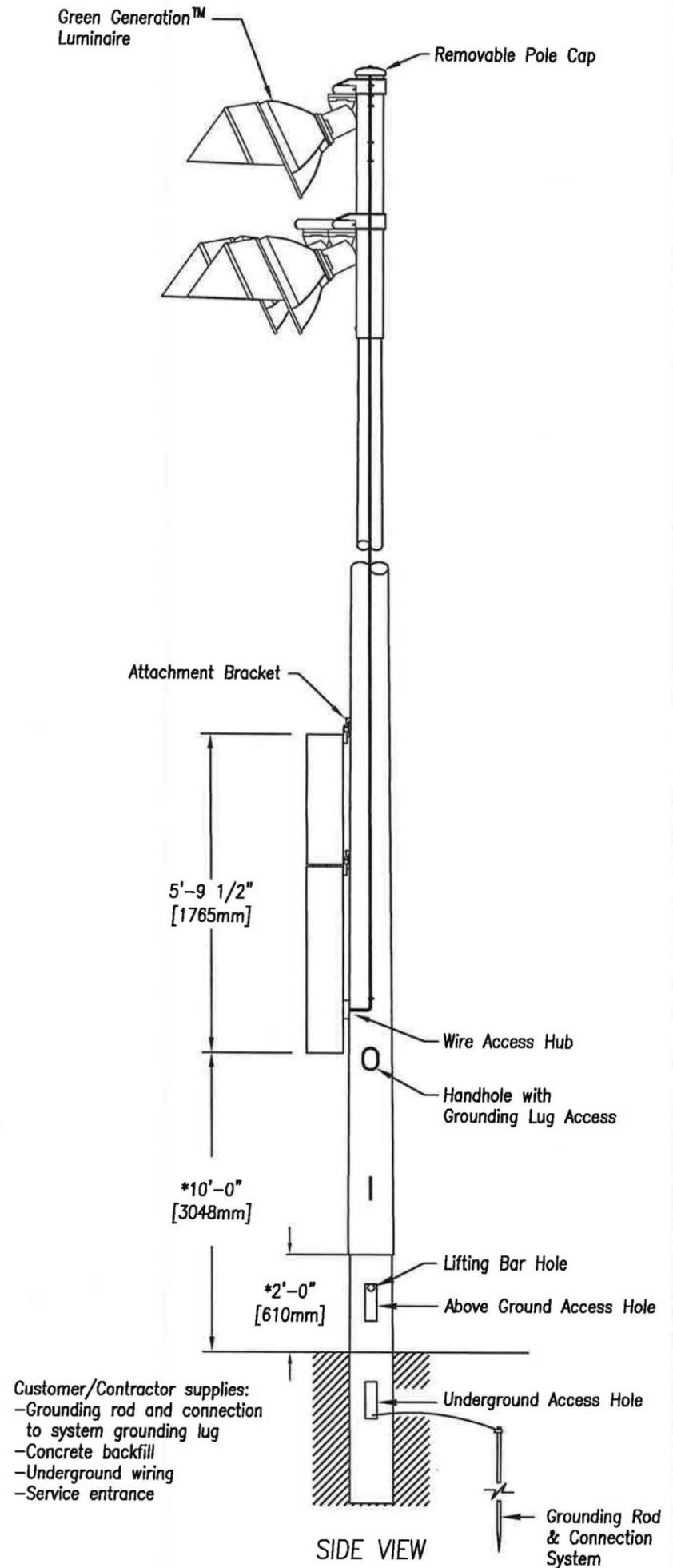
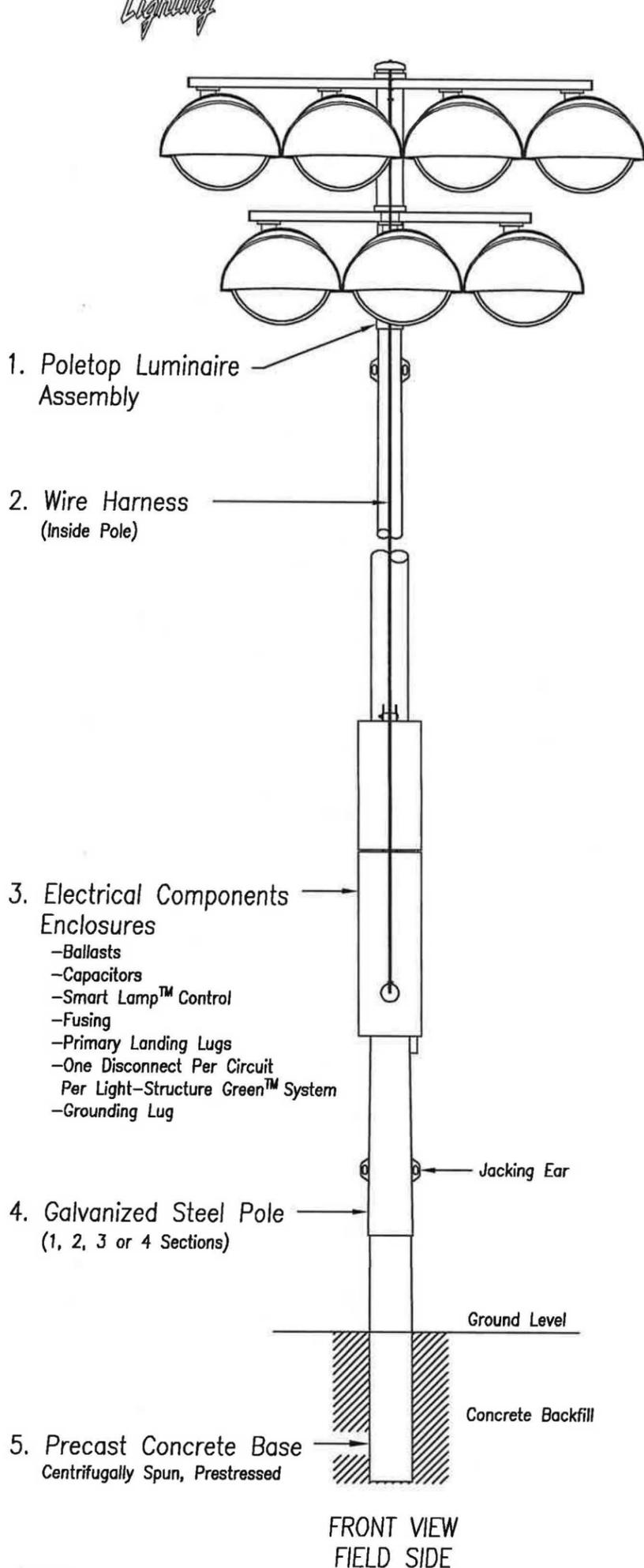








Typical Light-Structure Green™ System Detail – 7 Luminaires



Notes:

1. This drawing is not to scale.
2. * This dimension for reference only. Variances may occur depending on steel pole tolerances, concrete tolerances, galvanizing thickness, hole depth accuracy.
3. Musco provides a base installation bar, an installation level modified for taper, and installation wedges.
4. Provisions for auxiliary equipment such as speaker or security lighting can be incorporated.
5. Copyright 1991, 2005 Musco Lighting. Patents issued and pending.

