Sports Lighting Technology

Presented
by

Mike Berry, Field Sales New England

Musco Partnerships

ECAC

USA BASEBALL

NCAA

CHARACTER COURAGE LOYALTY
LITTLE LEAGUE BASEBALL

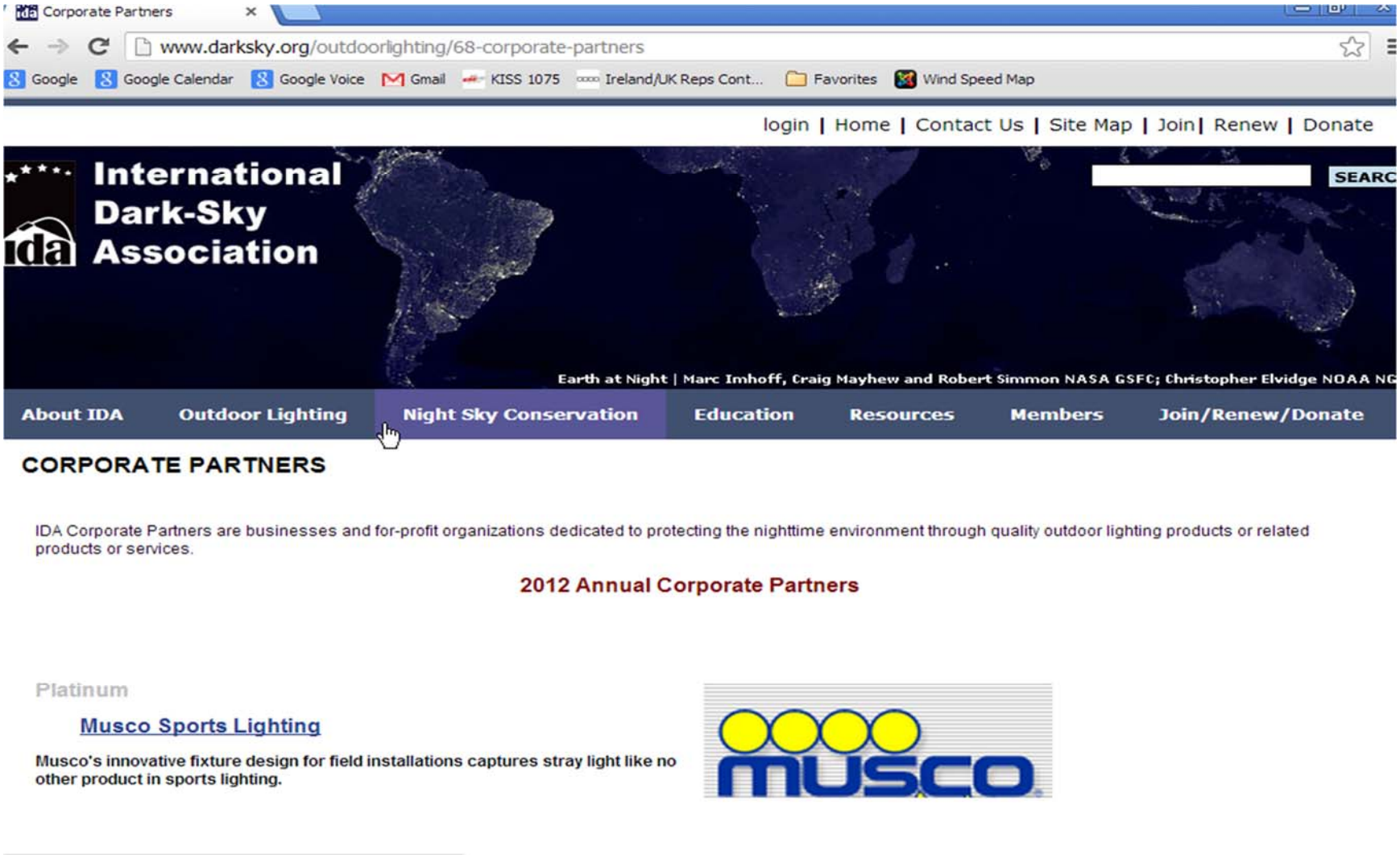
ASA USA SOFTBALL

MAJOR PARTNER
AHRENS NATIONAL RECREATION AND PARK ASSOCIATION INSTITUTE

US SOCCER FOUNDATION™

BABE RUTH BASEBALL

IDA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CORPORATE PARTNERS
IDA Corporate Partners are businesses and for-profit organizations dedicated to protecting the nighttime environment through quality outdoor lighting products or related products or services.
2012 Annual Corporate Partners
Platinum
Musco Sports Lighting
Musco's innovative fixture design for field installations captures stray light like no other product in sports lighting.
musco

IDA

Board of Directors Letter

MONRAD ENGINEERING INC
CONSULTING ELECTRICAL ENGINEERS

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Principals:
Fernando Galvez, P.E., RCDD, CTM
Joseph F. Smith, P.E.
Christian K. Monrad, P.E., LEED® AP

Lawrence E. Monrad, P.E., Emeritus

April 8, 2008

Musco Lighting
100 1st Ave. West
Oscaloosa, IA 52577

Attn: Brad Schlesselman, Lighting Specialist

Re: Southern Arizona Sports Lighting Applications

Dear Brad,

As discussed, the Musco Light Structure Green (LSG) has been installed in numerous local sports field lighting applications in the metropolitan Tucson area and in the nearby municipality of Sahuarita, Arizona. It is our understanding that Pima County and the Town of Sahuarita have high regard for these various installations and I am impressed with them as well. The night-time sports lighting performance and daytime aesthetics of the LSG offerings with their updated finishes are outstanding, in my opinion.

Given proper mounting heights and aiming angles, this system provides excellent glare control, minimal light trespass / spill lighting, and greatly curtails contributions to skyglow from direct uplighting components. Given our progressive local lighting ordinances, these features are critical to successful sports lighting project implementation. The energy efficiency of the Light Structure Green technology compared to other product offerings is also noteworthy.

Yours Truly,
MONRAD ENGINEERING, INC.

ED AP

Treasurer

Christian K. Monrad

Christian K. Monrad (PE) is the vice president of Monrad Engineering of Tucson, Arizona, USA, and has over eighteen years of experience in lighting design, specification, construction administration, and compliance with various regional lighting ordinances. His projects have included lighting systems for numerous schools, roadways and parking facilities, as well as retail, aviation, industrial, institutional, athletic, medical, and commercial applications throughout southern Arizona. He is a U.S. Green Building Council LEED® Accredited Professional, a former president of the Southern Arizona Section of the Illuminating Engineering Society of North America, and a member of the National Society of Professional Engineers.

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Evolution of Light Control

Musco's History of Innovation

2005

Musco introduces the Light Structure Green System

Core Values of Light Structure Green System

- **Constant Light**
- **50% Reduction in Spill and Glare**
- **25 Year Warranty**
- **50% Reduction in Energy Use**

Constant 25 Warranty

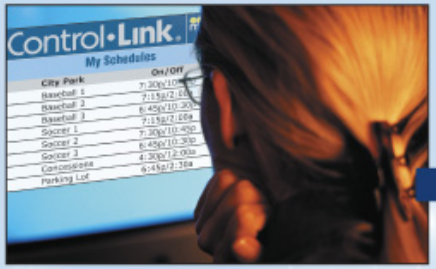
- **25 year *proactive* warranty includes:**
- **Lamp outages – Musco responsible for all lamp outages**
- **Group Relamping – Musco provides group re-lamping after 5,000 hours**
- **Local, factory-trained field technicians and Musco certified contractors are available to respond quickly to specific needs**
- **Guaranteed light levels for 25 years!**

Lighting Services Team

Maintaining Trouble-free Sports Lighting

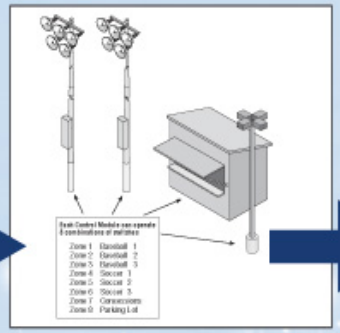
Control-Link® System

Flexible Control…Solid Management



1 Enter schedules at your convenience

2 Schedules are stored on-site, backed-up at Control-Link Central™



3 Equipment is controlled automatically

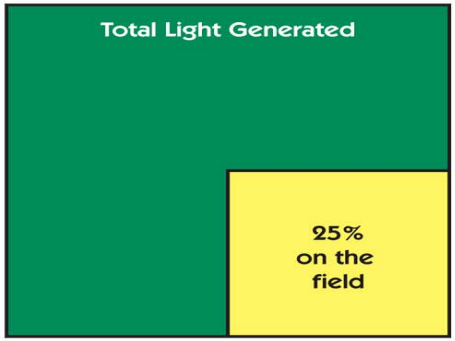
4 Control-Link Central™ provides support, monitoring and usage data

Total Light Control™	Light·Structure GREEN™	
		
7.5 kWh	**40% Less Energy** **$1,106** (5,000 Hour Savings)	4.34 kWh
	More than 50% **Spill Light Reduction** **for Average Facility**	
EPA 20 Sq. Ft.	**71% Reduced** **Windload**	EPA 5.7 Sq. Ft.

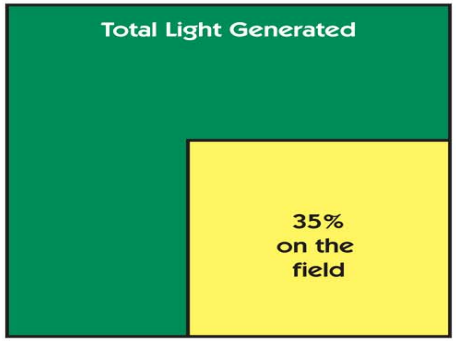
kW consumption does not include ballast factor

Improved Efficiency

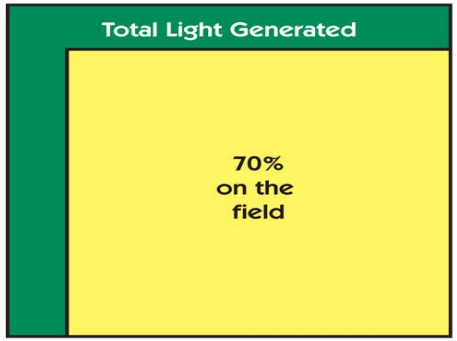
1976



1989



2005



Field Scan

Name:	**Manchester Field**
Location:	Winchester,MA

GRID SUMMARY

Name:	Soccer
Size:	340' x 210'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	HORIZONTAL FOOTCANDLES
	Entire Grid
Guaranteed Average:	50
Scan Average:	50.45
Maximum:	66.3
Minimum:	33
Avg / Min:	1.51
Guaranteed Max / Min:	2
Max / Min:	1.98
UG (adjacent pts):	1.44
CU:	0.65
CV:	0.18
No. of Points:	84

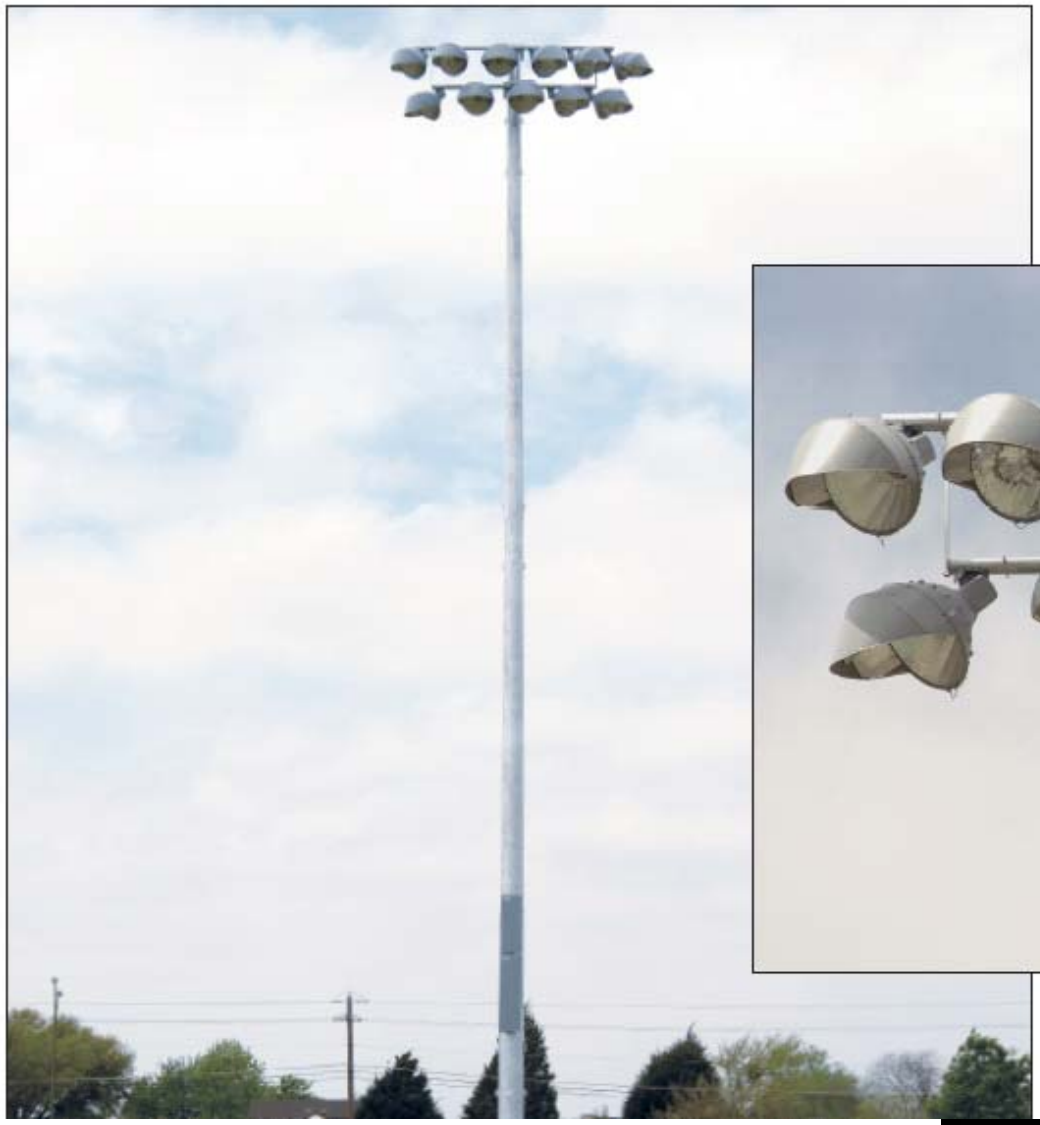
LUMINAIRE INFORMATION	
Luminaire Type:	Green Generation
Rated Lamp Life:	5,000 hours
Design Lumens:	134,000
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	44
Avg KW:	68.82 (74.8 max)

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.

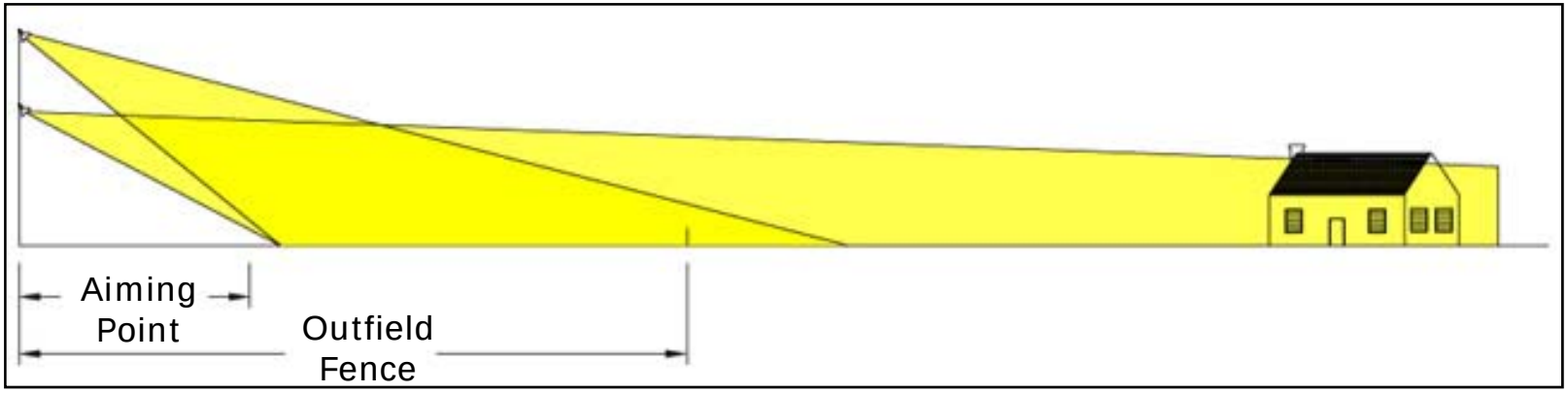
Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.



Spill and Glare

MOUNTING HEIGHTS-

Taller poles ensure proper aiming angles, decrease glare for players, and decrease off-site spill light.



Low Mounting Heights-Blinding Lights


NEW SHARON HIGH SCHOOL — New Sharon, IA
1 Softball Field: 50/30 constant footcandles
System Energy Consumption:
Prior technology – 42.1 kWh
New technology – 23.5 kWh


FLOWING WELLS DISTRICT PARK — Tucson, AZ
2–225' Little League Baseball® Fields
System Energy Consumption:
Prior technology – 110.2 kWh
New technology – 62.6 kWh
Environmental Light Control:
• Met strict local light control ordinances
• Fields located 100 feet apart
• Less than .5 footcandles between fields

Local Project References

- Wakefield High School and Galvin Middle School
- Woburn High School
- Andover High School
- Reading High School
- North Reading High School
- Medford High School
- Morelli Field Melrose
- Malden Catholic
- Mystic Valley
- Pine Banks Park


MUSCO
Lighting
We Make It Happen.