

Bobbie Walthall

To: David L. Corliss
Subject: RE: CC Agenda Items for 12/10/13 - attachments for Lighting at Rock Chalk Park SUP-12-00225

From: John Wilkins [<mailto:John.Wilkins@GouldEvans.com>]
Sent: Thursday, December 05, 2013 11:39 AM
To: David L. Corliss; Ernie Shaw; Mark Hecker; Craig Penzler
Cc: Charles Soules
Subject: Re: CC Agenda Items for 12/10/13 - attachments for Lighting at Rock Chalk Park SUP-12-00225

Dave – If this additional information is helpful for the stadiums, please feel free to forward on.

I've attached the design criteria the ncaa recommends for sports venues. In concert with KU, the design for the stadium lighting was based on regional broadcast for each of the 3 venues. Additionally in our experience when working on stadiums in close proximity to residential, the taller the poles the better relative to focusing the light on the fields and avoiding spillage into the surrounding neighborhoods. At the Tulane Football Stadium we are working on, the neighbors originally wanted 60' poles, however through light modeling and the use of some outside experts, we were able to demonstrate and reach consensus with the neighbors that 100' and in some cases a couple of 120' poles actually were far more desirable for the neighbors.

Given the distance the stadiums are from the surrounding property lines, the heights that were designed for Rock Chalk Park are the appropriate height to balance the design criteria for the fields and avoid the glare to the surrounding neighbors.

John

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NCAA Best Lighting Practices

Goals: 1. **Quality TV Broadcasts:** To establish best practices for lighting televised NCAA events, providing quality broadcasts within a reasonable budget. The light level expectations are applicable for both SD and HD broadcast.
 2. **Value-based Lighting System:** To provide recommended best practices for lighting college level sporting events with considerations for quality lighting for player safety; reduced energy, maintenance and life-cycle costs; and environmental sensitivity.
Considerations: 1. Size of facility, 2. Level of TV broadcast, 3. Validation of light levels, and 4. Cost consciousness.

		Baseball	Basketball*	Football	Ice Hockey	Lacrosse	Soccer	Softball	Swimming / Water Polo	Tennis	Track & Field		Volleyball	Wrestling / Boxing**	
		Infield / Outfield							Infield / Outfield			Track	Field		
Intercollegiate Play (no broadcast)	Horizontal Footcandles:	70 / 50	80	50	100	50	50	70 / 50	50	75	30	50	80	80*	
	Horizontal Uniformity:	2:1 / 2.5:1	2:1	2:1	2.5:1	2:1	2:1	2:1 / 2.5:1	2.5:1	1.7:1	3:1	3:1	2:1	2:1	
	Typical Seating:	N/A	N/A	Under 5K	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Pole position:	6+ poles	N/A	4+ poles	N/A	4+ poles	4+ poles	4+ poles	N/A	4+ poles	4+ poles	4+ poles	N/A	N/A	
Regional Broadcast	Horizontal Footcandles:	100 / 70	80	75	100	75	75	100/70	75	75	75	75	80	80*	
	Horizontal Uniformity:	1.5:1 / 2:1	2:1	2:1	2:1	2:1	2:1	1.5:1 / 2:1	2:1	1.7:1	2:1	2:1	2:1	2:1	
	Camera #1	1st & 3rd Bases	Center main side	50 yd line	Center main side	Center main side	Center main side	1st & 3rd Bases	Center main side	High End	Center main side	Center main side	Center main side	Center main side	
	Vertical Footcandles:	70 / 40	75	75	75	75	75	70 / 40	75	75	75	75	75	75	
	Vertical Uniformity:	N/A	2:1	2:1	2:1	2:1	2:1	N/A	2:1	2:1	2:1	2:1	2:1	2:1	
	Camera #2	High Home Plate	End	End Zone	End	End	End	High Home Plate	End	Net	N/A	N/A	End	End	
	Vertical:	70 / 40	45	45	45	45	45	70 / 40	45	45	N/A	N/A	45	45	
	Typical Seating:	N/A	N/A	5 - 25K	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Pole position:	6+ poles	N/A	6+ poles	N/A	6+ poles	6+ poles	6+ poles	N/A	4+ poles	6+ poles	6+ poles	N/A	N/A		
National Broadcast	Horizontal Footcandles:	Same as Regional Broadcast	100	100	100	100	100	Same as Regional Broadcast	100	100	100	100	100	100	
	Horizontal Uniformity:		1.7:1	1.7:1	1.7:1	1.7:1	1.7:1		1.7:1	1.7:1	1.7:1	1.7:1	1.7:1	1.7:1	1.7:1
	Camera #1		Center main side	50 yd line	Center main side	Center main side	Center main side		Center main side	Center main side	High End	Center main side	Center main side	Center main side	Center main side
	Vertical Footcandles:		100	100	100	100	100		100	100	100	100	100	100	100
	Vertical Uniformity:		1.7:1	1.7:1	1.7:1	1.7:1	1.7:1		1.7:1	1.7:1	1.7:1	1.7:1	1.7:1	1.7:1	1.7:1
	Camera #2		End	End Zone	End	End	End		End	End	Net	N/A	N/A	End	End
	Vertical Footcandles:		60	60	60	60	60		60	60	60	N/A	N/A	60	60
	Typical Seating:		N/A	25 - 45K	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pole position:	N/A	6+ poles	N/A	6+ poles	6+ poles	6+ poles	6+ poles	N/A	4+ poles	6+ poles	6+ poles	N/A	N/A		
National Championship Final Site	Horizontal Footcandles:	125 / 100	125	125	125	125	125	125 / 100	125	125	125	125	125	125	
	Horizontal Uniformity:	1.3:1 / 1.7:1	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	1.3:1 / 1.7:1	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	
	Camera #1	1st & 3rd Bases	Center main side	50 yd line	Center main side	Center main side	Center main side	1st & 3rd Bases	Center main side	High End	Center main side	Center main side	Center main side	Center main side	
	Vertical Footcandles:	90 / 50	125	125	125	125	125	90 / 50	125	125	125	125	125	125	
	Vertical Uniformity:	N/A	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	N/A	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	
	Camera #2	High Home Plate	End	End Zone	End	End	End	High Home Plate	End	Net	N/A	N/A	End	End	
	Vertical Footcandles:	90 / 50	75	75	75	75	75	90 / 50	75	75	N/A	N/A	75	75	
	Vertical Uniformity:	N/A	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1	N/A	2.5:1	1.7:1	N/A	N/A	2.5:1	2.5:1	
Typical Seating:	N/A	N/A	45K+	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Pole position:	6+ poles	N/A	6+ poles	N/A	6+ poles	6+ poles	6+ poles	N/A	4+ poles	8+ poles	6+ poles	N/A	N/A		

*Refer to NCAA Basketball Championships Best Lighting Practices for television broadcast located under the Basketball link

**Competition is typically held at the same venue as basketball or volleyball

Notes:

1. All footcandle levels are target minimum averages
2. New lighting system designs are recommended to use 0.7 Recoverable Light Loss Factor or Constant Illumination
3. Lamp Characteristics
 - a. Minimum color temperature must be 3600 degrees Kelvin
 - b. Minimum Color Rendering Index (CRI) must be 65
4. Refer to the NCAA Broadcast Lighting Requirements for additional information
5. Refer to sport and broadcast specific documents for design examples and verification forms

Contact NCAA at 317/917-6222 or www.NCAA.com with questions.