

ILLUMINATION RECOMMENDATIONS-OUTDOOR

These recommendations for outdoor lighting are for average maintained (mean) illuminance at grade except in the case of roadways where they are average for the end of the lamp life. Except where specifically indicated, the layout and coverage arrangements and footcandle/uniformity graphs on subsequent pages are configured so that reasonable uniformity is obtained with commonly available wide distribution lighting equipment such as a NEMA 5X5 (or wider) floodlight and ANSI Type II, III, IV, and V roadway distributions. The illuminance recommendations herein are extractions from *IESNA LIGHTING HANDBOOK*.

GENERAL APPLICATION	AVERAGE MAINTAINED FOOTCANDLES	
	BRIGHT	DARK
AIRPORTS		
Hanger aprons to approximately 50 feet (15M) out	1.0	
Service aprons to approximately 200 feet (61M)	2.0	
Center of aircraft service (vertical)	5.0	
BUILDING EXTERIOR-SITE AREAS ADJACENT TO		
Active entrances-pedestrian or vehicle	5.0	
Inactive entrances-normally locked	1.0	
Vital locations or structures (security)	5.0	
Building surroundings	1.0	
BUILDING FLOODLIGHTING		
Light Surrounding Surface	5.0	2.0
Medium Gray Surrounding Surface	7.0	3.0
Medium Dark Surrounding Surface	7.0	4.0
Dark Surrounding Surface	10.0	5.0
CENTRAL STATIONS-ELECTRIC UTILITY		
Barge unloading, car dumping	5.0	
Conveyors	2.0	
Storage tanks	1.0	
Storage piles-coal, ash	0.2	
Substation general lighting	2.0	
FLOODLIGHTED SIGNS		
Bright surroundings, light surfaces	50.0	
Bright surroundings, dark surfaces	100.0	
Dark surroundings, light surfaces	20.0	
Dark surroundings, dark surfaces	50.0	
PARKING AREAS		
High activity	5.0	
Medium activity	3.0	
Low activity	1.0	
QUARRIES AND OPEN MINES		
Men and machines	5.0	
ROADWAYS-NON-DEDICATED AND PRIVATE		
High activity	2.0	
Medium activity	1.0	
Low activity	0.5	
SHIPPING-PIERS		
Freight	20.0	
Passengers	20.0	
Surrounding active areas	5.0	
YARDS		
General	5.0	
Prison-general lighting	5.0	
Railroad-general lighting bare yard	1.0	
Storage-inactive	1.0	
Storage-active	20.0	

ILLUMINANCE METHOD-RECOMMENDED VALUES						
Road and Pedestrian Conflict Area		Pavement Classification (Minimum Maintained Average Values)			Uniformity Ratio	Veiling Luminance Ratio
Road	Pedestrian Conflict Area	R1 lux/ft ²	R2 & R3 lux/ft ²	R4 lux/ft ²	E _{avg} /E _{min}	L _{vmax} /L _{avg}
Freeway Class A		6.0/0.6	6.0/0.6	8.0/0.8	3.0	0.3
Freeway Class B		4.0/0.4	6.0/0.6	5.0/0.5	3.0	0.3
Expressway	High	10.0/1.0	14.0/1.4	13.0/1.3	3.0	0.3
	Medium	8.0/0.8	12.0/1.2	10.0/1.0	3.0	0.3
	Low	6.0/0.6	9.0/0.9	8.0/0.8	3.0	0.3
Major	High	12.0/1.2	17.0/1.7	15.0/1.5	3.0	0.3
	Medium	9.0/0.9	13.0/1.3	11.0/1.1	3.0	0.3
	Low	6.0/0.6	9.0/0.9	8.0/0.8	3.0	0.3
Collector	High	8.0/0.8	12.0/1.2	10.0/1.0	4.0	0.4
	Medium	6.0/0.6	9.0/0.9	8.0/0.8	4.0	0.4
	Low	4.0/0.4	6.0/0.6	5.0/0.5	4.0	0.4
Local	High	6.0/0.6	9.0/0.9	8.0/0.8	6.0	0.4
	Medium	5.0/0.5	7.0/0.7	6.0/0.6	6.0	0.4
	Low	3.0/0.3	4.0/0.4	4.0/0.4	6.0	0.4

NOTE: Minimum Average FCS refers to average footcandles at end-of-life lamp or group relamping.

LUMINANCE METHOD-RECOMMENDED VALUES					
Road and Pedestrian Conflict Area		Average Luminance	Uniformity Ratio	Uniformity Ratio	Veiling Luminance Ratio
Road	Pedestrian Conflict Area	L _{avg} (cd/m ²)	L _{avg} /L _{min} (Maximum Allowed)	L _{max} /L _{min} (Maximum Allowed)	L _{vmax} /L _{avg} (Maximum Allowed)
Freeway Class A		0.6	3.5	6.0	0.3
Freeway Class B		0.4	3.5	6.0	0.3
Expressway	High	1.0	3.0	5.0	0.3
	Medium	0.8	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
Major	High	1.2	3.0	5.0	0.3
	Medium	0.9	3.0	5.0	0.3
	Low	0.6	3.5	6.0	0.3
Collector	High	0.8	3.0	5.0	0.4
	Medium	0.6	3.5	6.0	0.4
	Low	0.4	4.0	8.0	0.4
Local	High	0.6	6.0	10.0	0.4
	Medium	0.5	6.0	10.0	0.4
	Low	0.3	6.0	10.0	0.4

