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Applications | Lighting for Education

Table 24.2 | Educational Facilities Illuminance Recommendations continued from previous page

Applications and Tasks ^a	Notes	Recommended Maintained Illuminance Targets (lux) ^{b,c,d}						Uniformity Targets ^e			Typical Area of Coverage ^f		
		Horizontal (E _h) Targets			Vertical (E _v) Targets			Over Area of Coverage			Task Proper	Room or Task Area Designated Area	
		Visual Ages of Observers (years) where at least half are			Visual Ages of Observers (years) where at least half are			1 st ratio E ₁ /2 nd ratio E ₂ , if different uniformities apply	Max:Avg	Avg:Min			Max:Min
Category	<25	25-65	>65	Gauge	Category	<25	25-65	>65	Gauge				
AUDITORIUM	(continued)												
Performance	Dedicated to artistic performances (likely fixed seating). For dedicated theaters see 28 LIGHTING FOR HOSPITALITY AND ENTERTAINMENT												
• House	As the architect coordinates contrast markings with steps, curbs, and ramps, localized lighting may be deemed appropriate.												
• During event		2	2	2	Min	F	5	10	20	Avg	5:1/3:1		
• Pre/Post event		L	37.5	75	150	Avg	K	25	50	100	Avg	3:1	
• Stage	See AUDITORIUM/Circulation												
• Access ramps/stairs	See AUDITORIUM/Circulation												
• Amateur productions													
• Dance (performance)	E _a effort; E _s @5' AFF	P	150	300	600	Avg	R	250	500	1000	Avg	1.5:1	
• Demonstration		T	500	1000	2000	Avg	R	250	500	1000	Avg	3:1	
• Music		P	150	300	600	Avg	R	250	500	1000	Avg	2:1	
• Theater	Simple, no stage lighting cues	P	150	300	600	Avg	P	150	300	600	Avg	2:1	
• Professional productions	Stage lighting as determined by production crew. See IES DG-20-09 Stage Lighting: A Guide to the Planning of Theaters and Auditoriums for guidance on architectural and electrical infrastructure												
Production	Anteroom or transition space adjoining auditorium												
• During event		K	25	50	100	Avg	L	15	30	60	Avg	3:1	
• Pre/Post event, intermission		N	75	150	300	Avg	L	37.5	75	150	Avg	3:1	
Sound and light link	Transition from lobby or foyer space adjoining auditorium												
• During event		2	2	2	Min	I	15	30	60	Avg	5:1/3:1		
• Pre/Post event, intermission		M	50	100	200	Avg	K	25	50	100	Avg	3:1	
BUILDING ENTRIES	See 22 LIGHTING FOR COMMON APPLICATIONS												
CLASSROOMS													
Arts													
• Art Station		R	250	500	1000	Avg	P	150	300	600	Avg	3:1	
• Graphic Arts													
• Displays													
• Fine art	See 21 LIGHTING FOR ART												
• Permanent/Temporary	Awards, student art, plaques												
Dimensional													
• Dark finish	≥50% reflectance		3 times background illuminance				3 times background illuminance				4:1		
• Light finish	≥50% reflectance		3 times background illuminance				3 times background illuminance				4:1		
Horizontal													
• Dark finish	≥50% reflectance		3 times background illuminance				3 times background illuminance				4:1		
• Light finish	≥50% reflectance		3 times background illuminance				3 times background illuminance				4:1		
Vertical													
• Dark finish	≥50% reflectance		3 times background illuminance				3 times background illuminance				4:1		
• Light finish	≥50% reflectance		3 times background illuminance				3 times background illuminance				4:1		

Table 24.2 | Educational Facilities Illuminance Recommendations continued next page

Notes for Table 24.2

The table column headings are discussed in detail in 24.3 Illuminance Criteria. See 12.5.5 Illuminance for discussion on procedures for establishing illuminance targets for a project.

a. Applications, tasks, or viewing specifics encountered on any given project may be different from these and may warrant different criteria. See 24.2.1 Applications and Tasks. The designer is responsible for making final determinations of applications, tasks, and illuminance criteria.

b. Values cited are to be maintained over time on the area of coverage.

c. Values cited are consensus and deemed appropriate for respective functional activity. In a few situations, code requirements are within 10% of IES recommendations. This is apparently an artifact of metrication. Footcandle conversions of any values cited in Table 24.2 should be made at 1 ft to 10 ft.

d. Targets are intended to apply to the respective plane of the task. Regardless, codes and ordinances may supersede any of the IES criteria for any of the applications and tasks and the designer must design accordingly.

e. Illuminance uniformity targets offer best results when planned in conjunction with luminance ratios and surface reflectances. Any parenthetical uniformity values reference respective parenthetical applications or tasks, such as a curfew situation associated with nighttime outdoor lighting.

f. Applications and tasks cited with sunburst icons are candidates for strategies employing any combination of daylighting and electric lighting to achieve target values during daylight hours. Daylighting may require nontraditional approaches.

g. Tasks with specular components, like computers with CSA-ISO Type III screens or printed tasks with glossy ink or glossy paper, are prone to veiling reflections. The likelihood of an application or task's predisposition to veiling reflections is indicated by the reflected light icon: black and white signals high likelihood; gray and white signals moderate likelihood; pale gray and white signals some likelihood; and all white signals little to no likelihood.

h. The designer must establish areas of coverage to which targets apply. Green highlight identifies task proper or task area as the typical area of coverage for respective cited targets. Amber highlight identifies room or designated area as the typical area of coverage for respective cited targets.

i. Alternatively, design to specific tasks, if known, from READING AND WRITING. For applications where task position is known, such as an office desk or a reading chair, a more efficient approach is likely achieved when target illuminance is applied to the "Task Proper or Task Area."

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