Interpretation of Current IES Illuminance Standards

The following document is an interpretation of the Illuminating Engineering Society's (IES) Illuminance Recommendations based upon *The Lighting Handbook, 10th Edition*. The chart does not contain every component found in the IES Illuminance Recommendations tables; however, each value corresponds to the proper recommendations. The document's purpose is to be used as a tool to identify recommended horizontal illuminance targets in a given application, task, and viewing specific.

Introduction: How to Use the Table

In this table, a building space is identified by four features. These are: building type, application, task, and viewing specific. The first category, building type, describes the general purpose of the building. There are twelve different building types, such as Education, Health Care, Library, and Manufacturing. Within each building type, there are numerous applications. There are various tasks within each application, and there are various viewing specifics per task.

To select the proper horizontal illuminance target, identify the building type, application, task, and viewing specific. Table 1 is an example table of values with the categories highlighted. When there are both a general and a more definitive viewing specific listed, the more definitive viewing specific shall apply.

The values listed per viewing specific are: the horizontal target, gauge, and work plane. The horizontal target is the recommended horizontal illuminance target of the given space in footcandles. The gauge is whether the illuminance value of the space should be an average, minimum, or maximum. The work plane is the height at which the horizontal target is measured.

The horizontal illuminance targets are values in which at least half of the visual ages of observers are between the ages of 25 and 65. If half of the visual observers are under the age of 25, the horizontal target is divided by two. If half of the visual observers are over the age of 65, the horizontal target is multiplied by two.

According to Section 4.12.4 of *The Lighting Handbook, 10th Edition*, modeled horizontal illuminance targets within ± 10% of the recommended horizontal target are deemed acceptable. Therefore, there is an acceptable range of ±10% of each listed horizontal target.

Table 1.

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Common Applications	Administration	Filing	Constant	30	Avg	2'-6"
			Intermittent	15	Avg	2'-6"
			Seldom	10	Avg	2'-6"
		Interviews	Conversational	15	Avg	2'-6"
			Formal	40	Avg	2'-6"
		Mailing Facilities	General	10	Avg	Floor
			Security Inspection	100	Avg	3'-6"
			Sorting	30	Avg	2'-6"
	Building Entries	Vestibules—High Activity	Day	15	Avg	Floor
			Night	10	Avg	Floor
		Vestibules—Medium Activity	Day	10	Avg	Floor
			Night	5	Avg	Floor
		Vestibules—Low Activity	Day	7.5	Avg	Floor
			Night	4	Avg	Floor

Table of Contents

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Common Applications	Administration	Filing	Constant	30	Avg	2'-6"
			Intermittent	15	Avg	2'-6"
			Seldom	10	Avg	2'-6"
		Interviews	Conversational	15	Avg	2'-6"
			Formal	40	Avg	2'-6"
		Mailing Facilities	General	10	Avg	Floor
			Security Inspection	100	Avg	3'-6"
			Sorting	30	Avg	2'-6"
	Building Entries	Vestibules—High Activity	Day	15	Avg	Floor
			Night	10	Avg	Floor
		Vestibules—Medium Activity	Day	10	Avg	Floor
			Night	5	Avg	Floor
		Vestibules—Low Activity	Day	7.5	Avg	Floor
			Night	4	Avg	Floor
	Conferencing	Meeting	Discourse	30	Avg	2'-6"
		Presentation	Formal speaking—AV	3	Avg	2'-6"
		Video Conferencing	Faces	30	Avg	4'-0"
	Food Services	Bar	General Seating	5	Avg	2'-0"
			Lounge	10	Avg	2'-0"
			Work Surfaces	10	Avg	Surface
		Cashiers	Cashiers	20	Avg	2'-6"
		Cleanup	Cleanup	10	Min	2'-6"
		Dining Areas	Cafeterias	15	Avg	Table
			Coffee Shops	10	Avg	Table
		Dining Areas—Hospitality, Properties, 3-meal dining rooms	Breakfast	10	Avg	Table
			Lunch	5	Avg	Table
			Dinner	2	Avg	Table
			Specialty dining	1	Avg	Table
		Dining Areas—Restaurants	Casual dining	10	Avg	Table
			Fast food dining	20	Avg	Table
			Fine dining	3	Avg	Table
		Kitchens	Dishwashing	20	Min	2'-6"
			Food Preparation	50	Min	Surface
		Kitchens—Storage	Equipment, utensils, ware	20	Min	2'-6"
			Non-refrigerated food	10	Min	2'-6"
			Refrigerated food	10	Min	2'-6"
		Refuse/Soiled Ware Return	Refuse/Soiled Ware Return	10	Min	Return
		Serveries	Grab-and-go displays	20	Min	Surface
			Employee-served	50	Min	Surface
		Toilet Rooms	Staff-dedicated	20	Min	2'-6"
		Vending/Ice Rooms	Vending/Ice Rooms	10	Avg	3'-0"
		Wine Cellar	Display and Tasting	10	Avg	3'-6"

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Common Applications	IT	Active operations	Administrative tasks	30	Avg	2'-6"
			Programming	10	Avg	2'-6"
		Machine area	CPUs, servers, switches	10	Avg	3'-0"*
			Equipment service	50	Avg	3'-0"
	Reading and Writing	Electronic Readers	LCD or LED device	15	Avg	Device
		Facsimile	Analog	50	Avg	2'-6"
			Digital	30	Avg	2'-6"
		Handwritten Work	Ballpoint—Black	30	Avg	2'-6"
			Ballpoint—Red, Blue	40	Avg	2'-6"
			Pencil—Graphite	30	Avg	2'-6"
			Pencil—Red	50	Avg	2'-6"
		Print Media	6-pt Font	50	Avg	2'-6"
			8- and 10-pt Font	30	Avg	2'-6"
			12-pt Font	20	Avg	2'-6"
		VDT Screen and Keyboard	CSA/ISO Types I and II, Positive polarity	30	Avg	2'-6"
	Support Spaces	Break/Lunch Rooms	Break/Lunch Rooms	10	Avg	2'-6"
		Coat Check	Coat Rooms	30	Avg	3'-0"
		Copy/Print Rooms	General	10	Avg	Floor
			Machines	30	Avg	3'-6"
		Electrical Closets	Electrical Closets	10	Avg	3'-0"
		Equipment Rooms	Equipment Rooms	20	Avg	3'-0"
		Interstitial Space	Interstitial Space	3	Avg	Floor
		Janitor's Closet	Janitor's Closet	10	Avg	Floor
		Laundry	Cart Washer Area	30	Avg	3'-0"
			Clean Linen Assembly	50	Avg	3'-0"
			Clean Linen Processing	30	Avg	3'-0"
			Distribution Area	20	Avg	Floor
			General	30	Avg	3'-6"
			Linen Repair	100	Avg	2'-6"
			Linen Storage	10	Avg	Floor
			Production and Support	30	Avg	3'-0"
			Sorting and Washing	30	Avg	3'-0"
		Receiving/Shipping	Dock	10	Avg	Floor
			Receiving/Staging	30	Avg	Floor
		Storage	Bulky items	5	Avg	Floor
			Equipment	20	Avg	Floor
			Medium items	10	Avg	Floor
			Frequent Use	10	Avg	Floor
			Infrequent Use	5	Avg	Floor
			Small items	20	Avg	Floor
	Toilets/ Locker Rooms	Toilets/ Locker Rooms	General	5	Avg	Floor
			Showers	10	Avg	Floor

Applications		Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Common Applications	Transition Spaces	Transitional Spaces	ATMs and Service Kiosks	20	Avg	3'-0"
		Circulation Corridors	Independent Passageways	5	Avg	Floor
		Elevators	Freight Cab Interior	5	Avg	Floor
			Passenger Cab Interior	5	Avg	Floor
		Lobbies	General—Day	10	Avg	Floor
			General—Night	5	Avg	Floor
			Distant from entries	10	Avg	Floor
			Information Desk	30	Avg	3'-0"*
			Reading/Work Areas	15	Avg	2'-6"
			Security Screenings	20	Avg	3'-0"
		Lounges	Clubs and Game Rooms—General	4	Avg	2'-6"
			Pleasure Reading	20	Avg	2'-6"*
			Reading/Work Areas	15	Avg	2'-6"
			Social/Waiting Areas	4	Avg	Floor
		Reception/Waiting Areas	Reception Desk	40	Avg	3'-0"*
			Waiting Areas	20	Avg	Floor*
		Stairs	High Activity	10	Avg	Floor
			Live Surveillance	10	Avg	Floor
			Typical	5	Avg	Floor

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Courts and Correctional	Correctional Facilities	Activity Room	Activity Room	40	Avg	Floor
		Armory	Armory	50	Avg	Floor
			General	30	Avg	Floor
			Inspection Table	100	Avg	Floor
			Racks	50	Avg	3'-0"
		Attorney/Client Interview Rooms	Attorney/Client Interview Rooms	40	Avg	2'-6"
		Cells	Group Cells—Day	20	Avg	Floor
			Individual Cells—Day	20	Avg	Floor
			Task Areas	30	Avg	Floor
		Circulation Corridors	Public	5	Avg	Floor
			Secure—Day	20	Avg	Floor
			Secure—Lockdown	40	Avg	Floor
			Staff	5	Avg	Floor
		Control Posts	Direct-view Observation—General	2	Avg	Floor
			Direct-view Observation—Task Area	10	Avg	2'-6"
			Video-view Observation—General	10	Avg	Floor
			Video-view Observation—Task Area	30	Avg	2'-6"
		Counseling	Counseling	30	Avg	2'-6"
		Firing Range	Firing Range	30	Avg	3'-0"
		Food Service	Canteen Dining	15	Avg	Table
		Intake and Release Area	General	20	Avg	Floor
			Hygiene Suite—Changing Room	10	Avg	Floor
			Hygiene Suite—Shower	10	Avg	Floor
			Hygiene Suite—Toilet	20	Avg	Floor
			Identification Processing	50	Avg	3'-6"
			Property—Inventory	50	Avg	3'-6"
			Property Room—Face of Shelving	30	Avg	3'-6"
			Property Room—General	5	Avg	Floor
			Secure Storage	10	Avg	Floor
			Security Screening	40	Avg	3'-0"
			Toilets—Detainees and Inmates	20	Avg	Floor
			Waiting—Detainees Group	7.5	Avg	Floor
			Waiting—Isolation Cell	20	Avg	Floor
		Recreation	Outdoor Exercise Area	10	Avg	3'-6"
		Security	Screening—Detainees and Inmates	40	Avg	3'-0"
			Vestibules	40	Avg	3'-0"
		Visiting Room	Visiting Room	30	Avg	2'-6"

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Courts and Correctional	Forensics Laboratories	Laboratories	Benches—Electronic Analyses	30	Avg	2'-6"
			Benches—Physical Analyses	100	Avg	3'-0"
			General	30	Avg	3'-0"
		Vehicle Analyses	General	50	Avg	Floor
			Task at bench and hood	100	Avg	3'-6"
	Judicial Facilities	Attorneys' Workroom	General	10	Avg	Floor
			Table	50	Avg	2'-6"
		Attorney/Witness Room	Attorney/Witness Room	30	Avg	2'-6"
		Courtroom	Attorneys' Tables	50	Avg	2'-6"
			AV Presentation—General	7.5	Avg	2'-0"
			Bailiff Station	50	Avg	2'-6"
			Bench and Clerks	50	Avg	2'-6"
			Evidence Table	50	Avg	2'-6"
			Jury Box	30	Avg	2'-6"
			Lectern or Podium	50	Avg	2'-6"
			Public Seating	10	Avg	2'-6"
			Witness Stand	30	Avg	2'-6"
		Grand Jury Suite	General	50	Avg	2'-6"
		Judges' Chamber Suite	General	15	Avg	Floor
			Desk	50	Avg	2'-6"
		Judicial Assistant and Law Clerks	General	15	Avg	Floor
			Desk	50	Avg	2'-6"
		Jury Pool Suite	Lounge and Assembly	15	Avg	2'-6"
			Registration	50	Avg	2'-6"
		News Media Room	News Media Room	30	Avg	2'-6"
		Sound Lock Entrance	Sound Lock Entrance	10	Avg	Floor
		Trial Jury Suite	Jury Room—General	30	Avg	2'-6"
	Municipal Facilities	Police Station	*See Correctional Facilities*			
		Fire Station	Apparatus Bays—General	30	Avg	Floor
			Apparatus Bays—Perimeter	40	Avg	3'-0"
			Hose Tower	30	Avg	3'-0"

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Education	Auditoria	Circulation	All but AV or performance	1	Min	Floor
		Lecture Hall	Audience—AV and notes	5	Avg	2'-0"
			Audience—AV, no notes	1	Avg	Floor
			Audience—Presentation	1	Avg	Floor
			Audience—No AV	10	Avg	2'-0"
			Demonstration	100	Avg	3'-0"
			Speaker/Panel—No AV	50	Avg	2'-6"
		Multipurpose	Exhibition	30	Avg	2'-6"
			Study	30	Avg	2'-6"*
			Testing—Combination	30	Avg	2'-6"*
			Testing—Laptop only	15	Avg	2'-6"*
			Testing—Paper only	40	Avg	2'-6"*
		Performance— Amateur productions	House—Pre/Post event	7.5	Avg	Floor
			Stage—Dance	30	Avg	5'-0"
			Stage—Demonstration	100	Avg	3'-0"
			Stage—Music	30	Avg	4'-0"
			Stage—Theater	30	Avg	5'-0"
		Prefunction	During event	5	Avg	Floor
			Pre/Post event	15	Avg	Floor
		Sound and light lock	Pre/Post event	10	Avg	Floor
	Classrooms	Arts	Art Studios	50	Avg	2'-6"
			Kiln Room	50	Avg	2'-6"
			Music Room	30	Avg	4'-0"
		General Classrooms	AV (dedicated viewing)	5	Avg	2'-6"
			Dedicated VDT screens	15	Avg	2'-6"
			Hardcopy and writing	40	Avg	2'-6"
		Home Economics	Home Economics	50	Min	Surface
		Science Lab	Bench	50	Avg	3'-0"
			Demonstration Area	100	Avg	3'-0"
		Shops	Assembly	100	Avg	3'-0"
			Inspection	100	Avg	3'-0"
			Machining	100	Avg	3'-0"
			Woodworking	100	Avg	3'-0"
		Study Halls	Study Halls	30	Avg	3'-0"*
	Dormitories	Dorm Room	General	4	Avg	Floor
		Kitchen	General	50	Avg	3'-0"
		Living Room	Living Room	30	Avg	Floor
		Media Lounge	Media Lounge	10	Avg	2'-6"
		Multipurpose	Multipurpose	30	Avg	2'-6"
	Sports	Fieldhouse	Fieldhouse	50	Avg	2'-6"
		Gymnasia	Assembly	15	Avg	2'-6"
			General Activities	30	Avg	2'-6"
			Physical Education	50	Avg	2'-6"

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Health Care	Ambulatory Care	Emergency Entrance	Lobby—Day	30	Avg	2'-6"
			Vestibule—Day	20	Avg	Floor
		Examination & Treatment	Exam Table	100	Avg	3'-0"
			General	50	Avg	3'-0"
		Life Support Unit	General	30	Avg	3'-0"
		Observation & Treatment	General	10	Avg	3'-0"
			Over Bed	50	Avg	3'-0"
		Security Examination	Security Examination	50	Avg	3'-0"
	Anesthesia	Anesthesiology	General	50	Avg	3'-0"
		Storage	Storage	10	Avg	Floor
		Workroom	Workroom	30	Avg	2'-6"
	Consultation	Conversational	Conversational	15	Avg	Floor
		Form-Filling, Instructional Reading, Medication and Chart Review	Form-Filling, Instructional Reading, Medication and Chart Review	40	Avg	Floor
		Observing/Teaching	Observing/Teaching	50	Avg	Floor
	Corridors	Laboratories	Laboratories	10	Avg	Floor
		Nursing	In-patient—Day	10	Avg	Floor
			Intensive Care—Day	10	Avg	Floor
			Surgery Pre- and Post-Op	10	Avg	Floor
		Quarters	Quarters	4	Avg	Floor
	Dental Suite	Dental Suite	Corridor	20	Avg	Floor
		Examination, Hygiene, and Treatment	Examination, Hygiene, and Treatment	100	Avg	3'-0"
		Oral Surgery	Cleanup/Setup	100	Avg	3'-0"
			General	200	Avg	3'-0"
		Preparations, Sterilization	Preparations, Sterilization	50	Avg	2'-6"
		Preventive Dentistry	Preventive Dentistry	50	Avg	2'-6"
		Prosthetics Laboratory	General	50	Avg	3'-0"
		Recovery	Rest	10	Avg	3'-0"
		Supply Room	Supply Room	30	Avg	2'-6"
	Diagnostic Procedures	Endoscopy	Procedure Room—General	50	Avg	3'-0"
			Decontamination	30	Avg	2'-6"
			Workroom	50	Avg	2'-6"
		Electrocardiography (ECG or EKG)	General	15	Avg	2'-6"
			Machine	30	Avg	2'-6"
		Electroencephalography (EEG)	Examination	50	Avg	2'-6"
			General	30	Avg	2'-6"
			Instrument and Workroom	50	Avg	2'-6"
		Electromyography (EMG)	Electromyography (EMG)	30	Avg	2'-6"
		Pulmonary Function Test	Examination	50	Avg	2'-6"
			General	30	Avg	2'-6"

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Health Care	Dialysis Centers	Dialysis Centers	Dialysate Preparation	50	Avg	2'-6"
			Equipment Service Room	30	Avg	2'-6"
			Equipment Service Room—Storage	10	Avg	2'-6"
			Final Water Treatment	30	Avg	2'-6"
			Treatment Room	20	Avg	2'-6"
	Ear, Nose, and Throat	Audiometry Testing	Control Booth or Room	30	Avg	2'-6"
			Testing Booth or Room	50	Avg	2'-6"
		Speech Pathology Therapy	Speech Pathology Therapy	50	Avg	2'-6"
		Workroom	General	30	Avg	Floor
	Eye Clinic	Examination and Treatment	Examination and Treatment	50	Avg	2'-6"
		Refraction Testing	Refraction Testing	20	Avg	2'-6"
		Visual Field/Dark-adaptation Testing	Visual Field/Dark-adaptation Testing	50	Avg	2'-6"
	Laboratories	Laboratories	Benches	100	Avg	3'-0"
			General	30	Avg	3'-0"
	Medication	Medication	Medication Stations	50	Avg	3'-0"
			Medication Storage	30	Avg	3'-0"
	Morgue	Autopsy Rooms	Cleanup/Setup	100	Avg	3'-0"
			General	200	Avg	3'-0"
	Nurses' Stations	In-patient	Work Station—Day	50	Avg	Floor
		Intensive Care	Work Station—Day	50	Avg	Floor
	Obstetrics	Birthing Rooms	General	5	Avg	Floor
		Delivery Rooms	General	50	Avg	3'-0"
		Labor Rooms	General	30	Avg	3'-0"
		Nurseries	General	10	Avg	3'-0"
		Post-delivery Recovery	Observation	50	Avg	3'-0"
			Rest	10	Avg	3'-0"
	Oncology	Chemotherapy	Agent Preparation	100	Avg	Floor
			Treatment—Preparation	100	Avg	3'-0"
			Treatment—Procedure	20	Avg	3'-0"
	Patient Services	Agent Cashier (Discharge)	General	15	Avg	Floor
			Transaction Area	30	Avg	2'-6"
		Patient Rooms	General	5	Avg	Floor
			Isolation Anteroom	10	Avg	Floor
		Service Alcove	Work Counter	30	Avg	3'-0"
	Pharmacies	Controlled Substances	Vault	75	Avg	3'-0"
		Drug Receiving, Record Control, and Storage	Drug Receiving, Record Control, and Storage	75	Avg	Floor
		Drug Vault	Drug Vault	30	Avg	3'-0"
		Filling and Assembly	Filling and Assembly	100	Avg	3'-0"
		General	General	50	Avg	3'-0"
		Prosthetics and Medical Supplies	Prosthetics and Medical Supplies	30	Avg	Floor

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Health Care	Radiology	Control Alcove or Booth	Control Alcove or Booth	10	Avg	Floor
		Diagnostics	Film Sorting	50	Avg	2'-6"
			Image Viewing	30	Avg	2'-6"
			Preparation	50	Avg	3'-0"
			Procedure	5	Avg	3'-0"
	Sterile Processing and Distribution	Bulk Storage Area	Bulk Storage Area	10	Avg	Floor
		Preparation, Assembly, and Sterilization	Preparation, Assembly, and Sterilization	30	Avg	2'-6"
		Sterile and Non-sterile Storage	Sterile and Non-sterile Storage	30	Avg	Floor
	Support Spaces	Staff Quarters	Bedroom—General	5	Avg	Floor
	Surgical Suites	Patient holding Area	Patient holding Area	50	Avg	3'-0"
		Recovery	General—Observation	50	Avg	3'-0"
			General—Rest	10	Avg	3'-0"
	Therapy	Corrective Clinic	Corrective Clinic	50	Avg	2'-6"
		Educational/Vocational	Educational/Vocational	50	Avg	2'-6"
		Group Therapy Room	General	20	Avg	Floor
		Orthotic & Splinting Area	Fine Detail	100	Avg	3'-0"
			General	30	Avg	3'-0"
		Physical	Clinics	50	Avg	3'-0"
			General	10	Avg	Floor
			Tables and Individual Exercise	30	Avg	3'-0"
			Treatment Areas	50	Avg	3'-0"

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Hospitality and Entertainment	Ballroom	Breakout/Prefunction	Circulation	5	Avg	Floor
			No Event/Off Hours	5	Avg	Floor
			Registration Tables	20	Avg	2'-6"
			Social Function	10	Avg	2'-6"
		Dancing	Social Function	3	Avg	Floor
		Exhibition	Exhibition	50	Avg	3'-0"
		Meeting	Meeting	40	Avg	2'-6"
	Control Booths	Live Productions	General—Cleanup	20	Avg	Floor
			General—Pre/Post-show	5	Avg	Floor
			General—Set-up/Tear down	40	Avg	Floor
		Studio Productions	General—Cleanup	30	Avg	Floor
			General—During production	10	Avg	Floor
			General—Set-up/Tear down	50	Avg	Floor
	Exhibit Halls	Circulation Concourses	Circulation	10	Avg	Floor
			Registration Stations	40	Avg	3'-6"
		General Exhibition	High Light Setting	50	Avg	Floor
			Low Light Setting	15	Avg	Floor
	Fitness Centers	Exercise Areas	Aerobics	15	Avg	Floor
			Group Exercise	30	Avg	Floor
			Personal Strength Training	40	Avg	Floor
	Guest Rooms	Entrance/Foyer	Entrance/Foyer	2	Avg	Floor
		General	General	2	Avg	Floor
		Kitchenette	Kitchenette	50	Avg	Surface
	Theaters, Film	Cleanup	Cleanup	15	Avg	2'-6"
		House	Pre/Post-show, Intermission	5	Avg	Floor
	Theaters, Stage	Dressing Room	General	20	Avg	2'-6"
		Green Room	General	4	Avg	2'-6"
		House	Pre/Post-Show, Intermission	10	Avg	Floor
Library	Library Proper	Audio Listening Room	Audio Listening Room	10	Avg	2'-6"
		Book Lending	Book Stacks—General	20	Min	Floor
			Lending Desk—Self-service	30	Avg	2'-6"
			Lending Desk—Staffed	50	Avg	2'-6"
		Book Processing	Book Processing	10	Avg	2'-6"
		Computer Center	Computer Center	30	Avg	2'-6"
		Genealogy	General	10	Avg	Floor
		General	General	10	Avg	Floor
		Special Collections	Archival Storage	30	Avg	3'-0"
		Teen Services	Reading and Study Room	15	Avg	Floor
		Youth Services	Reading and Story Room	15	Avg	Floor

Applications		Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane[3]
Manufacturing	Basic Industrial Tasks	Assembly	Difficult	100	Avg	-
			Exacting	300	Avg	-
			Simple	30	Avg	-
		Component Manufacturing	Fine	100	Avg	-
			Large	30	Avg	-
			Medium	50	Avg	-
		Inspection	Difficult	100	Avg	-
			Exacting	300	Avg	-
			Simple	30	Avg	-
		Machining	Fine bench or machine work	300	Avg	-
			Fine grinding	300	Avg	-
			Medium bench or machine work	50	Avg	-
			Rough bench or machine work	30	Avg	-
		Maintenance	Maintenance	50	Avg	-
		Manual Crafting	Coarse	30	Avg	-
			Exacting	300	Avg	-
			Fine	100	Avg	-
			Medium	50	Avg	-
		Materials Handling	Loading	10	Avg	-
			Picking stock, classifying	10	Avg	-
			Wrapping, packing, and labeling	30	Avg	-
		Raw Material Processing	Coarse	10	Avg	-
			Medium	30	Avg	-
			Fine	50	Avg	-
			Very fine	100	Avg	-
		Warehousing and Storage	Inactive	5	Avg	-
			Active: bulky items; large labels	10	Avg	-
			Active: small items; small labels	30	Avg	-
		Welding	Orientation	30	Avg	-
			Precision manual arc-welding	300	Avg	-
	Specific Industrial Tasks	Aircraft Maintenance	Docking	75	Avg	-
			System repairs	75	Avg	-
		Aircraft Manufacturing	General—Rough easy seeing	30	Avg	-
			General—Rough difficult seeing	75	Avg	-
			General—Medium	75	Avg	-
			General—Fine	150	Avg	-
			General—Extra fine	300	Avg	-

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane[3]
Manufacturing	Specific Industrial Tasks	Bakeries	Decorating and icing—Mechanical	30	Avg	-
			Decorating and icing—Hand	75	Avg	-
			Other	30	Avg	-
		Book Binding	Cutting, punching, stitching	75	Avg	-
			Embossing and inspection	150	Avg	-
			Folding, assembly, pasting	30	Avg	-
		Breweries	Brew house	30	Avg	-
		Candy Making	Chocolate and cream making	30	Avg	-
			Hand decorating	30	Avg	-
			Hard candy—cutting, sorting	75	Avg	-
		Canning and Preserving	Canning—Continuous belt canning	75	Avg	-
			Cutting and pitting	75	Avg	-
			Examination of canned samples	150	Avg	-
			Final sorting	75	Avg	-
			Inspection	150	Avg	-
		Clay and Concrete Products	Color and glazing—fine work	150	Avg	-
			Color and glazing—rough work	75	Avg	-
			Grinding filter presses, kiln rooms	15	Avg	-
		Cleaning and Pressing Industry	Checking and sorting	75	Avg	-
			Dry and wet cleaning	75	Avg	-
			Inspection and spotting	300	Avg	-
			Repair and alteration	150	Avg	-
			Steaming	75	Avg	-
		Clothing Manufacturer	Cutting	300	Avg	-
			Examining	500	Avg	-
			Fitting, bundling, shading, stitching	30	Avg	-
			Measuring	30	Avg	-
			Preparation of trimming, piping	75	Avg	-
			Receiving, opening, storing, shipping	30	Avg	-

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane[3]
Manufacturing	Specific Industrial Tasks	Dairy Products	Bottle sorting	75	Avg	-
			Bottle washers	30	Avg	-
			Filling-inspection	75	Avg	-
			Laboratories	75	Avg	-
			Pasteurizers	30	Avg	-
			Separators	30	Avg	-
			Tanks, vats—Light interiors	15	Avg	-
			Tanks, vats—Dark interiors	75	Avg	-
			Weighing room	30	Avg	-
		Electrical Equipment Manufacturing	Impregnating	30	Avg	-
			Insulating: coil winding	75	Avg	-
		Flour Mills	Aisle ways and walkways	30	Avg	-
			Bin checking	30	Avg	-
			Man lifts	30	Avg	-
			Packing	30	Avg	-
			Product control	150	Avg	-
			Rolling, sifting, purifying	75	Avg	-
		Forge Shops	Forge Shops	75	Avg	-
		Foundries	Annealing furnaces	30	Avg	-
			Cleaning	30	Avg	-
			Core making—Fine	150	Avg	-
			Core making—Medium	75	Avg	-
			Grinding and chipping	150	Avg	-
			Molding—Medium	150	Avg	-
			Molding—Large	75	Avg	-
			Pouring	75	Avg	-
			Sorting	75	Avg	-
		Garages—Service	Active traffic areas	15	Avg	-
			Repairs	75	Avg	-
			Write-up	30	Avg	-
		Glass Works	General	15	Avg	-
		Hat Manufacturing	Cleaning, refining, dyeing, braiding	75	Avg	-
			Forming, sizing, finishing	150	Avg	-
		Laundries	Flat work ironing, weighing, marking	30	Avg	-
			Fine hand ironing	75	Avg	-
			Machine and press finishing, sorting	75	Avg	-
			Washing	30	Avg	-
		Meat Packing	Cleaning, cutting, cooking, grinding	30	Avg	-
			Slaughtering	30	Avg	-

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane[3]
Manufacturing	Specific Industrial Tasks	Print Industries	Type foundries—Casting	75	Avg	-
			Type foundries—Font assembly	30	Avg	-
			Printing plants—Color inspection	150	Avg	-
			Printing plants—Composing room	75	Avg	-
			Printing plants—Presses	150	Avg	-
			Printing plants—Proofreading	150	Avg	-
		Sewn Products	Cloth inspection and perching	300	Avg	-
			Designing	150	Avg	-
			Fitting	300	Avg	-
			Knitting	150	Avg	-
			Measuring	75	Avg	-
			Sewing	300	Avg	-
			Spreading and cutting	150	Avg	-
			Stitch marking	300	Avg	-
		Sheet Metal Works	Medium and Ordinary bench work	75	Avg	-
			Tin plate inspection, galvanizing	150	Avg	-

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Office	Administration	Filing	Constant	30	Avg	2'-6"
			Intermittent	15	Avg	2'-6"
			Seldom	10	Avg	2'-6"
		Interviews	Conversational	15	Avg	2'-6"
			Formal	40	Avg	2'-6"
		Mailing Facilities	General	10	Avg	Floor
			Security Inspection	100	Avg	3'-6"
			Sorting	30	Avg	2'-6"
	Conferencing	Meeting	Discourse	30	Avg	2'-6"
		Presentation	Formal Speaking—AV	3	Avg	2'-6"
		Video Conferencing	Faces	30	Avg	4'-0"
	Drafting and Design	Blueline Blueprint	Blueline Blueprint	50	Avg	3'-0"
	Financial Facilities	Banking Lobbies	General	10	Avg	Floor
		Safe Deposit Boxes	General	5	Avg	Floor
	IT	Active operations	Administrative tasks	30	Avg	2'-6"
			Programming	10	Avg	2'-6"
		Machine area	CPUs, servers, switches, etc.	10	Avg	3'-0"*
			Equipment service	50	Avg	3'-0"
	Post Offices	Consumer Lobby	General	10	Avg	Floor
		P.O. Boxes	General	5	Avg	Floor
		Processing Center	Distribution	50	Avg	3'-6"
			Sorter	50	Avg	3'-6"
	Reading and Writing	Electronic Readers	LCD or LED device	15	Avg	Device
		Facsimile	Analog	50	Avg	2'-6"
			Digital	30	Avg	2'-6"
		Handwritten Work	Ballpoint—Black	30	Avg	2'-6"
			Ballpoint—Red, Blue	40	Avg	2'-6"
			Pencil—Graphite	30	Avg	2'-6"
			Pencil—Red	50	Avg	2'-6"
		Print Media	6-pt Font	50	Avg	2'-6"
			8- and 10-pt Font	30	Avg	2'-6"
			12-pt Font	20	Avg	2'-6"
		VDT Screen and Keyboard	CSA/ISO Types I and II, Positive polarity	30	Avg	2'-6"

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Retail	Malls, Indoor	Concourses	Concourses	10	Avg	Floor
		Information Desks	Information Desks	30	Avg	3'-0"
		Retail Kiosks	Displays—Horizontal	30	Avg	3'-0"
			General	10	Avg	Floor
			Transaction Counter	30	Avg	3'-0"
	Retailing, Indoor	Fitting Rooms	Dressing Areas—Typical	30	Avg	Floor
		Automotive Sales/ Service	General retail	50	Avg	2'-6"
			Service—General	50	Avg	Floor
			Service—Task at bench	100	Avg	3'-6"
			Service—Work-order	40	Avg	3'-6"
		Department Store	Circulation	15	Avg	Floor
			General retail	40	Avg	2'-6"
		Designer Shop Boutique	Circulation	7.5	Avg	Floor
			General retail	20	Avg	2'-6"
		Discount	Circulation	20	Avg	Floor
			General retail	50	Avg	2'-6"
		Drug and Convenience	Circulation	20	Avg	Floor
			General retail	50	Avg	2'-6"
		Fine/Precious Jewelry	Circulation	15	Avg	Floor
			General retail	40	Avg	2'-6"
		Furniture	Circulation	7.5	Avg	Floor
			General retail	20	Avg	2'-6"
		Grocery/Supermarket	Circulation	20	Avg	Floor
			General retail	50	Avg	2'-6"
		Home/Bath Bedding	Circulation	15	Avg	Floor
			General retail	40	Avg	2'-6"
		Mass Merchant	Circulation	20	Avg	Floor
			General retail	50	Avg	2'-6"
		Specialty Retailer	Circulation	15	Avg	Floor
			General retail	40	Avg	2'-6"
		Upscale Crystal, China, Silver	Circulation	15	Avg	Floor
			General retail	40	Avg	2'-6"
		Upscale Department	Circulation	10	Avg	Floor
			General retail	30	Avg	2'-6"
		Upscale Specialty	Circulation	10	Avg	Floor
			General retail	30	Avg	2'-6"
		Warehouse Store	Circulation	20	Avg	Floor
			General retail	50	Avg	2'-6"
		Sales Transaction Areas	Sales Transaction Areas	30	Avg	3'-6"

Applications		Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Retail	Retailing, Outdoor	Automotive Sales	Sales—High Activity—LZ4[4]	15	Avg	4'-0"
			Sales—High Activity—LZ3[4]	10	Avg	4'-0"
			Sales—High Activity—LZ2[4]	7.5	Avg	4'-0"
			Sales—High Activity—LZ1[4]	5	Avg	4'-0"
			Sales—Medium Activity—LZ4[4]	10	Avg	4'-0"
			Sales—Medium Activity—LZ3[4]	7.5	Avg	4'-0"
			Sales—Medium Activity—LZ2[4]	5	Avg	4'-0"
			Sales—Medium Activity—LZ1[4]	4	Avg	4'-0"
			Sales—Low Activity—LZ4[4]	7.5	Avg	4'-0"
			Sales—Low Activity—LZ3[4]	5	Avg	4'-0"
			Sales—Low Activity—LZ2[4]	4	Avg	4'-0"
			Sales—Low Activity—LZ1[4]	3	Avg	4'-0"
		Dispensing Islands	High Activity—LZ4[4]	20	Avg	Ground
			High Activity—LZ3[4]	15	Avg	Ground
			High Activity—LZ2[4]	10	Avg	Ground
			High Activity—LZ1[4]	7.5	Avg	Ground
			High Activity—LZ0[4]	5	Avg	Ground
			Medium Activity—LZ4[4]	15	Avg	Ground
			Medium Activity—LZ3[4]	10	Avg	Ground
			Medium Activity—LZ2[4]	7.5	Avg	Ground
			Medium Activity—LZ1[4]	5	Avg	Ground
			Medium Activity—LZ0[4]	4	Avg	Ground
			Low Activity—LZ4[4]	10	Avg	Ground
			Low Activity—LZ3[4]	7.5	Avg	Ground
			Low Activity—LZ2[4]	5	Avg	Ground
			Low Activity—LZ1[4]	4	Avg	Ground
			Low Activity—LZ0[4]	3	Avg	Ground

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Sports and Recreation (Indoor)	Animal Shows	Some spectators	Some spectators	50	Avg	3'-0"[5]
		No spectators	No spectators	30	Avg	3'-0"[5]
	Archery	Some spectators	Shooting Line	30	Avg	3'-0"[5]
		No spectators	Shooting Line	20	Avg	3'-0"[5]
	Basketball	Over 5000 spectators	Over 5000 spectators	100	Avg	3'-0"[5]
		Under 5000 spectators	Under 5000 spectators	75	Avg	3'-0"[5]
		Some spectators	Some spectators	50	Avg	3'-0"[5]
		No spectators	No spectators	30	Avg	3'-0"[5]
	Billiards	Under 5000 spectators	Table and Rails	50	Avg	Surface[6]
		Some spectators	Table and Rails	30	Avg	Surface[6]
		No spectators	Social recreation	20	Avg	Surface[6]
	Bowling	Under 5000 spectators	Approach	50	Avg	Surface[6]
			Lane	75	Avg	Surface[6]
		Some spectators	Approach	30	Avg	Surface[6]
			Lane	50	Avg	Surface[6]
		No spectators	Approach	10	Avg	Surface[6]
			Lane	15	Avg	Surface[6]
	Boxing and Wrestling	Under 5000 spectators	Under 5000 spectators	100	Avg	3'-0"[5]
		Some spectators	Some spectators	75	Avg	3'-0"[5]
		No spectators	No spectators	50	Avg	3'-0"[5]
	Darts	Some spectators	Some spectators	30	Avg	3'-0"[5]
		No spectators	No spectators	20	Avg	3'-0"[5]
	Gymnastics	Under 5000 spectators	Under 5000 spectators	75	Avg	3'-0"[5]
		Some spectators	Some spectators	50	Avg	3'-0"[5]
		No spectators	No spectators	30	Avg	3'-0"[5]
	Handball/ Racquetball	Some spectators	Some spectators	75	Avg	3'-0"[5]
		No spectators	No spectators	50	Avg	3'-0"[5]
	Ice Hockey	Under 5000 spectators	Under 5000 spectators	100	Avg	3'-0"[5]
		Some spectators	Some spectators	75	Avg	3'-0"[5]
		No spectators	No spectators	50	Avg	3'-0"[5]
	Running Track	Under 5000 spectators	Under 5000 spectators	75	Avg	3'-0"[5]
		Some spectators	Some spectators	50	Avg	3'-0"[5]
		No spectators	No spectators	30	Avg	3'-0"[5]
	Skating	Ice—Figure Skating	Under 5000 spectators	100	Avg	3'-0"[5]
			Some spectators	75	Avg	3'-0"[5]
			No spectators	50	Avg	3'-0"[5]
			Social recreation	20	Avg	Surface
		Ice—Speed Skating	Under 5000 spectators	30	Avg	Surface[6]
			Some spectators	20	Avg	Surface[6]
		Roller	Social recreation	10	Avg	Surface[6]

Applications		Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Sports and Recreation (Indoor)	Swimming	Under 5000 spectators	Water Surface	50	Avg	Water Surface
			Deck Surface	20	Avg	Deck Surface
		Some spectators	Water Surface	30	Avg	Water Surface
			Deck Surface	10	Avg	Deck Surface
		No spectators	Water Surface	30	Avg	Water Surface
			Deck Surface	10	Avg	Deck Surface
	Table Tennis	Social Recreational	Social recreational	10	Avg	3'-0"[5]
	Tennis	Under 5000 spectators	Under 5000 spectators	100	Avg	3'-0"[5]
		Some spectators	Some spectators	75	Avg	3'-0"[5]
		No spectators	No spectators	50	Avg	3'-0"[5]
	Volleyball	Under 5000 spectators	Under 5000 spectators	75	Avg	3'-0"[5]
		Some spectators	Some spectators	50	Avg	3'-0"[5]
		No spectators	No spectators	30	Avg	3'-0"[5]

	Applications	Task	Viewing Specific	Horizontal Targets (fc)	Gauge	Work Plane
Transportation	Aviation Terminals	Baggage—Claim	General	10	Avg	Floor
		Baggage—Handling	Automated	15	Avg	1'-0"*
			Manual	30	Avg	1'-0"*
		Baggage—Service Office	Baggage Storage	40	Avg	3'-0"
			General	5	Avg	Floor
		Bus and Shuttle Pick-up/Drop-off	Covered—Low Activity—LZ4[4]	1	Avg	Grade
			Uncovered—Low Activity—LZ4[4]	0.5	Avg	Grade
		Concourses	General	5	Avg	Floor
			Seating	15	Avg	2'-6'
		Gate Areas	Seating	15	Avg	2'-6"
		Information Desks	Information Desks	15	Avg	3'-6"
		Security Screening	Credentialing Area	20	Avg	3'-0"
			Queuing	10	Avg	Floor
			Screening—Private Rooms	40	Avg	3'-0"
			Screening—Public	20	Avg	3'-0"
		Stairs	High Activity	10	Avg	Floor
			Typical	5	Avg	Floor
		Ticketing	Agent Counter	30	Avg	3'-0"
			Queuing	5	Avg	Floor
			Service Kiosks	20	Avg	3'-0"
	Train Stations	Embark/Disembark	Platform/Car Threshold	10	Avg	Floor
			Platform/Queuing	5	Avg	Floor
Worship	Contemporary Form	Congregation	Collective Meditation	10	Avg	2'-0"
			Pre/Post Worship	30	Avg	3'-0"
			Sermon/Worship	10	Avg	2'-0"
		Sacristy	Sacristy	30	Avg	2'-6"
	Traditional Form	Congregation	Collective Meditation	4	Avg	2'-0"
			Pre/Post Worship	10	Avg	3'-0"
			Sermon/Worship	4	Avg	2'-0"
		Sacristy	Sacristy	30	Avg	2'-6"

General Table Notes

General
* IES work plane not specified, NCAT suggestion of work plane.

Health Care
1. Many Health Care viewing specifics are designated as task lighting or equipment lighting. These viewing specifics are not listed. Listed viewing specifics are general area of coverage recommendations by IESNA.
2. Any task involving surgeries or specific medical procedures are not listed.

Manufacturing
3. Work plane to be determined by designer.

Retail & Transportation
4. IES Nighttime Outdoor Lighting Zone Table

Lighting Zone	Description
LZ4	High Ambient Lighting
LZ3	Moderately High Ambient Lighting
LZ2	Moderate Ambient Lighting
LZ1	Low Ambient Lighting
LZ0	No Ambient Lighting

Sports & Recreation
5. Work plane above competition surface at listed distance.
6. Work plane at competition surface.

Glossary of Terms

Common Applications: A generalized IES building type where the listed applications, tasks, and viewing specifics are common spaces in buildings. For example, the application of Reading and Writing occurs in the Office and Education building types.

Administration: Management of any office, business, or organization.

Building Entries: Entry and/or exit vestibules.

Conferencing: The activity of meeting to discuss, present, strategize, and/or learn, in person and/or by video conference.

Food Service: The making and serving of food. The lighting for food service addresses the dining situation.

Information Technology (IT): Activities related to computing technology. These can include areas such as administration, machine or equipment installations, and/or media and/or equipment storage within a building.

Reading and Writing: Activities associated with reading and writing. These occur within multiple building types, and familiarity with these activities will aid in the selection of the task and viewing specific.

Support Spaces: A space other than workstations occupied by staff and/or primary or secondary circulation space. These include, but are not limited to, conference rooms, filing areas, and reception spaces.

Toilets/Locker Rooms: Building restrooms, showers, lockers, etc. Lighting in these spaces is best addressed by highlighting specific task areas.

Transition Spaces: Public spaces and passageways. These include, but are not limited to, elevators, corridors, lobbies, and lounges.

Courts and Correctional: Buildings pertaining to courts of law and incarceration, including correctional and judicial facilities, forensics labs, and municipal facilities.

Education: Buildings pertaining to public and private K-12 schools and higher education, such as universities, colleges, and vocational schools.

Health Care: Buildings pertaining to the services offered by the medical and health professions.

Hospitality and Entertainment: Buildings that have lodging accommodations and/or house meetings, events, and/or recreation. Aesthetic and analytic lighting are of equal importance.

Library: Buildings where books, periodicals, newspapers, pamphlets, prints, records, and tapes are kept for reading, reference, or lending. Lighting in a library setting should be about efficiently using resources and comfort.

Manufacturing: Buildings in which the activity of processing a raw material and/or combining materials into a finished product occurs, especially by the means of a large-scale industrial operation. Lighting helps provide the visibility necessary for complex tasks that must be performed safely and efficiently.

Office: Buildings pertaining to business, clerical, and/or professional activities. High quality lighting that is both visually effective and appealing provides employees the best environmental and operating value.

Retail: Buildings or exterior spaces pertaining to the sale of goods to consumers. Lighting contributes to branding and the sale merchandise.

Sports and Recreation: Buildings pertaining to activity done for competition or enjoyment.

Transportation: Buildings that house a system of moving people.

Worship: Buildings pertaining to the activity of religious reverence.