16510 – INTERIOR LIGHTING

1 – GENERAL

1.01 – SECTION INCLUDES

A. Design standards for new construction and major renovations.
B. Occupancy Sensor locations & types
C. Light power density limits
D. Special Use Spaces – All special use spaces are excluded from this guideline and shall be addressed on an individual basis and addressed during individual project design.

1.02 – REFERENCES

A. Illuminating Engineering Society of North America (IESNA), Lighting Handbook, Ninth Edition
B. ANSI/IESNA RP-3-00, Lighting for Educational Facilities
C. ANSI/IESNA RP-16-05, Nomenclature and Definitions for Illuminating Engineering
D. NECA/IESNA 500-2006, Standard for Installing Indoor Commercial Lighting System
E. International Energy Conservation Code, latest edition

1.03 – SUBMITTALS – not used

A. Manufacturer's cut sheet for fixtures with completed manufacturer's ordering information.

1.04 – QUALITY ASSURANCE

A. Meet the following standards for illuminance at the work plane, color rendering, and light color temperature.

Area	Recommended Footcandle Level		CRI	CCT	Work plane Height (inches)	
	Horizontal Work plane	Vertical Work plane			Horizontal	Vertical
Auditorium						
without Desktop	10		80-100	3000 - 4200 K	0	
with Desktop	30		80-100	3000 - 4200 K	30	
Lounge	10	3	100	3000 K	24-36	60-78
Lobby	10	3	100	3000 K	0	60-78
Reception Area	10	3	100	3000 K	36	60-78
Conference Room						
General	30	5	80	4200 K	30	30-48
Video Conference	50	30	80	4200 K	30	30-48
Stairways and Corridors	5	10	80	4200 K	0	60-84
Classroom	30/50/100		80	4200 K	30	
White Board		5				36-60
Chalk Board		50				36-60
Art Classroom	30/50/100	30	(1)	(2)	30	36-60
Drafting	30/50/100	10	80	4200 K	30	36-60
Family Consumer Science	50	10	80	4200 K	36	60-78
Science Laboratory	50	30	80	4200 K	36-60	60-78
Lecture Hall						
Audience Area	30		80-100	3000 - 4200 K	30	
Demonstration Area	100	50	80-100	3000 - 4200 K	36	36-60
Music	30		80	4200 K	30	
Gymnasium						
Basketball	100	30	80	4000 K	0	110-150
Social Events	5	3	100	2700 - 3000 K	0	30-78
Cafeteria						
Dining	10	3	80	4200 K	30	30-48
Cashier	30	3	80	4200 K	30	30-48
Food Display	50		80	4200 K	30	30-48
Kitchen	50	3	80	4200 K	36	36-48

B. Design within the following Lighting Power Density limitations as per International Energy Conservation Code (IECC) Table 505.4.2, Interior Lighting Power Allowances, latest edition:

Lighting Power Density	
Building Area Type	Watts/ft^2
Dining: Cafeteria	1.4
Dormitory	1.0
Exercise Center	1.0
Gymnasium	1.1
Library	1.3
Office	1.0
Performing Arts Theater	1.6
School/University	1.2
Workshop	1.4

1.05 – DELIVERY, STORAGE & HANDLING – not used.

1.06 – COORDINATION – not used.

2 – PRODUCTS

2.01 – MANUFACTURERS – not used.

2.02 – LUMINAIRES – not used.

2.03 – CONTROL UNITS

When appropriate, interior lighting circuits shall include occupancy sensors.

A. Occupancy sensor locations & types.

Area	Occupancy Sensor Type
Cafeteria	Passive Infrared, Ultrasonic
Conference Room	Ultrasonic, Dual Technology
Classroom	Ultrasonic, Dual Technology
Closet	Passive Infrared, Ultrasonic
Corridor	Ultrasonic, Passive infrared, Dual Technology
Science Laboratory	Ultrasonic, Dual Technology
Gymnasium	Dual Technology
Lecture Hall	Dual Technology
Library	
Reading Stacks Bookstack	Ultrasonic Ultrasonic
Lobby	Passive Infrared, Dual Technology
Locker Room	Ultrasonic

Area	Occupancy Sensor Type
Office	Passive Infrared, Ultrasonic, Dual Technology
Mechanical Rooms	Dual Technology
Dormitory General Areas Restrooms Laundry Dwelling Area Study Area	 Ultrasonic Ultrasonic, Dual Technology Ultrasonic Passive Infrared Dual Technology
Restrooms	Ultrasonic, Dual Technology
Maintenance Shops/Custodial Areas	Dual Technology
Storage	Passive Infrared, Ultrasonic

2.04 – LAMPS – not used.

3 – EXECUTION – not used.

END OF SECTION