

**TABLE 9.5.1 Lighting Power Densities Using the Building Area Method**

Building Area Type <sup>a</sup>	LPD (W/ft <sup>2</sup> )
Automotive facility	0.82
Convention center	1.08
Courthouse	1.05
Dining: bar lounge/leisure	0.99
Dining: cafeteria/fast food	0.90
Dining: family	0.89
Dormitory	0.61
Exercise center	0.88
Fire station	0.71
Gymnasium	1.00
Health-care clinic	0.87
Hospital	1.21
Hotel	1.00
Library	1.18
Manufacturing facility	1.11
Motel	0.88
Motion picture theater	0.83
Multifamily	0.60
Museum	1.06
Office	0.90
Parking garage	0.25
Penitentiary	0.97
Performing arts theater	1.39
Police station	0.96
Post office	0.87
Religious building	1.05
Retail	1.40
School/university	0.99
Sports arena	0.78
Town hall	0.92
Transportation	0.77
Warehouse	0.66
Workshop	1.20

<sup>a</sup>In cases where both a general building area type and a specific building area type are listed, the specific building area type shall apply.

types. Trade-offs among building area types are permitted provided that the total *installed interior lighting power* does not exceed the *interior lighting power allowance*.

## 9.6 Alternative Compliance Path: Space-by-Space Method

**9.6.1 Space-by-Space Method of Calculating Interior Lighting Power Allowance.** Use the following steps to determine the *interior lighting power allowance* by the Space-by-Space Method:

- For each *space* enclosed by partitions that are 80% of the ceiling height or taller, determine the appropriate *space*

type from Table 9.6.1. If a *space* has multiple functions, where more than one *space* type is applicable, that *space* shall be broken up into smaller subspaces, each using their own *space* type from Table 9.6.1. Any of these subspaces that are smaller in floor area than 20% of the original *space* and less than 1000 ft<sup>2</sup> need not be broken out separately. Include the floor area of balconies and other projections in this calculation.

- In calculating the area of each *space* and subspace, the limits of the area are defined by the centerline of interior *walls*, the dividing line between subspaces, and the outside surface of exterior *walls*.
- Based on the *space* type selected for each *space* or subspace, determine the *lighting power allowance* of each *space* or subspace by multiplying the calculated area of the *space* or subspace by the appropriate LPD determined in 9.6.1(a). For *space* types not listed, selection of a reasonable equivalent category shall be permitted.
- The *interior lighting power allowance* is the sum of *lighting power allowances* of all *spaces* and subspaces. Trade-offs among *spaces* and subspaces are permitted provided that the total *installed interior lighting power* does not exceed the *interior lighting power allowance*.

**9.6.2 Additional Interior Lighting Power.** When using the Space-by-Space Method, an increase in the *interior lighting power allowance* is allowed for specific lighting functions. Additional power shall be allowed only if the specified lighting is installed and automatically controlled, separately from the *general lighting*, to be turned off during nonbusiness hours. This additional power shall be used only for the specified *luminaires* and shall not be used for any other purpose, unless otherwise indicated.

An increase in the *interior lighting power allowance* is permitted in the following cases:

- For *spaces* in which lighting is specified to be installed in addition to the *general lighting* for the purpose of decorative appearance or for highlighting art or exhibits, provided that the additional lighting power shall not exceed 1.0 W/ft<sup>2</sup> of such *spaces*.
- For lighting *equipment* installed in sales areas and specifically designed and directed to highlight merchandise, calculate the additional lighting power as follows:

$$\begin{aligned} \text{Additional Interior Lighting Power Allowance} = & 1000 \text{ watts} + (\text{Retail Area 1} \times 0.6 \text{ W/ft}^2) \\ & + (\text{Retail Area 2} \times 0.6 \text{ W/ft}^2) \\ & + (\text{Retail Area 3} \times 1.4 \text{ W/ft}^2) \\ & + (\text{Retail Area 4} \times 2.5 \text{ W/ft}^2), \end{aligned}$$

where

- Retail Area 1 = the floor area for all products not listed in Retail Areas 2, 3, or 4;
- Retail Area 2 = the floor area used for the sale of vehicles, sporting goods, and small electronics;
- Retail Area 3 = the floor area used for the sale of furniture, clothing, cosmetics, and artwork; and
- Retail Area 4 = the floor area used for the sale of jewelry, crystal, and china.

# Lighting Compliance Documentation

Project Name: Sample (Part 11 TI): Retail - Building Area Method (D&D Lighting not allowed)		
Project Address:		Date:
Designer of Record:	Email:	Telephone:
Contact Person:	Email:	Telephone:
City:		Exterior Lighting Zone:

## Mandatory Provisions Checklist

- Lighting Control (9.4.1)
  - Automatic lighting shutoff controls are provided based on either a scheduling device or an occupant sensor (9.4.1.1)
  - Each enclosed space has its own control including bilevel or occupancy based where required (9.4.1.2)
  - Controls for parking garages, including bilevel, transition and perimeter control as required (9.4.1.3)
  - Automatic daylighting controls for primary sidelighted areas (9.4.1.4)
  - Automatic daylighting controls for toplighting (9.4.1.5)
  - Additional controls for display/accent, case, guest room, task, nonvisual and demonstration lighting applications (9.4.1.6)
  - Exterior lighting controls including automatic shutoff and bilevel as required (9.4.1.7)
- Exit signs do not exceed 5 W per face (9.4.2)
- Exterior lighting power (9.4.3) — See worksheet
- Functional testing completed on specified controls (9.4.4)

## Interior Lighting Power Allowance (Building Area Method – 9.5)

Building ID	Building Type (9.5.1)	Lighting Power Density, W/ft <sup>2</sup> (W/m <sup>2</sup> )	Building Area, ft <sup>2</sup> (m <sup>2</sup> )	Lighting Power Allowance (W)
	Retail	1.4	3,000	4,200
Total				4,200

## Interior Lighting Power Allowance (Space-by-Space Method – 9.6)

Space ID	Building Type/Space Type (9.6.1)	Lighting Power Density, W/ft <sup>2</sup> (W/m <sup>2</sup> )	Room Cavity Ratio	Space Area, ft <sup>2</sup> (m <sup>2</sup> )	Lighting Power Allowance (W)
Subtotal					
Controls Allowance (9.6.2c)					N/A
Total					

# Lighting Compliance Documentation

Project Name:	Sample (Part 11 TI):	Retail - Building Area Method (D&D Lighting not allowed)
Contact Person:	Email:	Telephone:

## Interior Connected Lighting Power

ID	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Type						Number of Luminaires	Watts/ Luminaire	Total Watts
		Incandescent	Fluorescent	HID	Line-Voltage Track	Low-Voltage Track	Other			
A	8ft Fluorescent Strip 2T8 (tandem)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	6	64	384
B	4ft Fluorescent Strip 1T8	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	4	32	128
C	1x4 Fluorescent Luminaire 2T8	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2	64	128
D	Track Lights CMH	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	55	39	2145
E	Fluorescent Down Lights 1CFL	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	12	32	384
		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
<b>Total</b>										3,169

## Additional Interior Lighting Power Allowance—Control Credits

Space ID	Space Name	Control Type (Table 9.6.2)	Control Factor (Table 9.6.2)	Installed Watts (W)	Additional Allowance (W)
	N/A w Building Area Method				
<b>Total</b>					

## Additional Interior Lighting Power Allowance – Decorative and Display

Space ID	Space Name	Type		Area, ft <sup>2</sup> (m <sup>2</sup> )	Unit Allowance, W/ft <sup>2</sup> (W/m <sup>2</sup> )	Allowance (W)	Luminaire ID's	Installed Power (W)
		Decorative	Display Lighting					
	N/A w Building Area Method	<input type="radio"/>	<input type="radio"/>					
		<input type="radio"/>	<input type="radio"/>					
		<input type="radio"/>	<input type="radio"/>					
		<input type="radio"/>	<input type="radio"/>					
		<input type="radio"/>	<input type="radio"/>					
		<input type="radio"/>	<input type="radio"/>					
		<input type="radio"/>	<input type="radio"/>					
		<input type="radio"/>	<input type="radio"/>					

Project Name:	Sample (Part 11 TI):	Retail - Building Area Method (D&D Lighting not allowed)	
Contact Person:	Email:	Telephone:	

### Additional Interior Connected Lighting Power

Space ID	Luminaire ID	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Type						Number of Luminaires	Watts/ Luminaire	Total Watts
			Incandescent	Fluorescent	HID	Line-Voltage Track	Low-Voltage Track	Other			
		N/A w Building Area Method	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			

## Exterior Building Lighting Power Allowance (Tradable Lighting Applications)

Application	Allowance	Area or Length, ft <sup>2</sup> or ft (m <sup>2</sup> or m)	Tradable Power Allowance
Tradable Power Allowance			

## Exterior Building Lighting Power Allowance (Non-Tradable Lighting Applications)

ID	Application	Allowance per Unit	Area or Length or Quantity	Non-Tradable Power Allowance
Non-Tradable Power Allowance				

## Exterior Connected Lighting Power (Tradable Applications)

ID	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Number of Luminaires	Watts/Luminaire	Total Watts
Total				

## Exterior Connected Lighting Power (Non-Tradable Applications)

ID	Non-Tradable Application	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Number of Luminaires	Watts/Luminaire	Total Watts
Total					

## Exterior Lighting Compliance Test

	Tradable Power Allowance (Watts)	+	Base site allowance	≥	Tradable Connected Lighting Power (Watts)
Non-Tradable Application	Non-Tradable Power Allowance (Watts)				Non-Tradable Connected Lighting Power (Watts)
		+		≥	
		+		≥	
		+		≥	
			Allocated base site allowance		Unallocated base site allowance
				≤	