Compliance Forms—Lighting

Instructions

The following compliance forms are provided to assist in understanding and documenting compliance with the lighting requirements of ASHRAE/IES Standard 90.1-2019. Electronic versions of the compliance forms are available for download from ASHRAE's website.

The lighting forms are organized into eight sections on four pages, beginning with header information and mandatory measures and concluding with exterior lighting.

Project Name: Enter the name of the project. This should agree with the name that is used on the plans and specifications or the common name used to refer to the project.

Project Address: Enter the street address of the project, for instance, "142 First Street."

Date: Enter the date when the compliance documentation was completed.

Designer of Record/Telephone: Enter the name, email address, and telephone number of the designer of record for the project. This will generally be an architecture firm.

Contact Person/Telephone: Enter the name and telephone number of the person who should be contacted if there are questions about the compliance documentation.

City, County, and Zip Code: Enter the name of the city where the project is located, including the state or province and postal code, for instance, "Riverside, CA 94105."

Exterior Lighting Zone: Enter the exterior lighting zone (see Table 9.4.2-1). This must be an integer between 0 and 4.

Mandatory Provisions Checklist

This section of the compliance form summarizes the mandatory provisions for the design of the lighting system. The mandatory measures are organized on this form in the same order as they are in the Standard. Check the box to indicate that the mandatory requirement applies to the building and that the building complies with the requirement. If the requirement is not applicable, then check the N/A box.

Interior Lighting Power Allowance (Simplified Building Method)

Complete this section of the form if the Simplified Building Method (Section 9.3) is used to determine the interior lighting power allowance. Complete a row in this table for each space type in your building.

Building ID: An identifying number or designation that keys the building to the plans and specifications.

Building Type/Interior Space Type: Indicate the Building Type and then select a space type from the matching building type table in Section 9.3.1.

Lighting Power Density: Enter the lighting power density that corresponds to the space type entered in the first column.

Space Area: Enter the space floor area for this space type.

Lighting Power Allowance: Multiply the lighting power density (LPD) times the space area to get the lighting power allowance and enter the product in this box. Once the lighting power allowance is calculated for each space type, then sum the values and enter the sum in the box labeled Total.

Interior Lighting Power Allowance (Building Area Method)

Complete this section of the form if the Building Area Method (Section 9.5) is used to determine the interior lighting power allowance. Complete a row in this table for each building type in your building. For instance, if

you have a three-story building with the first floor retail and the upper two floors office, you would enter two building types.

Building ID: An identifying number or designation that keys the building to the plans and specifications.

Building Type: Select a building type from the first column of Table 9.5.1 and write it in this column.

Lighting Power Density: Select the lighting power density from Table 9.5.1 that corresponds to the building type entered in the first column.

Building Area: Enter the building floor area for this building type.

Lighting Power Allowance: Multiply the lighting power density (LPD) times the building area to get the lighting power allowance and enter the product in this box. Once the lighting power allowance is calculated for each building type, then sum the values and enter the sum in the box labeled Total.

Interior Lighting Power Allowance (Space-by-Space Method)

Complete this section of the form if the Space-by-Space Method (Section 9.6) is used to determine the interior lighting power allowance. Complete a row in this table for each unique space in your building.

Building ID: Enter the room number or other designation that keys the space to the plans and specifications.

Building Type/Space Type: Select a building type and space type from Table 9.6.1 and write them in this column. An example would be "Library: Reading Area," where "Library" is the building type and "Reading Area" is the space type.

Lighting Power Density: Select the LPD from Table 9.6.1 that corresponds to the building type and space type entered in the first column. This value should include the 20% increase for a high room cavity ratio when appropriate.

Room Cavity Ratio: If the LPD is increased by 20% due to a high room cavity ratio, then the calculated room cavity ratio should be entered in this column. If no adjustment is made, this column may be left blank.

Space Area: Enter the floor area for this space.

Lighting Power Allowance: Multiply the LPD by the space area to get the lighting power allowance (in watts) and enter the product in this box.

Subtotal: Sum the lighting power allowance for each of the spaces and enter the total in this box. This is the lighting power allowance before possible credits for automatic controls.

Controls Allowance: If additional power is being claimed for automatic lighting controls per Section 9.6.3, then enter the calculated watts from page 3 of the compliance form in this box.

Total: Sum the subtotal and controls allowance. This is the maximum interior power, excluding special power for decorative lighting and display, which is treated separately in the use-it-or-lose-it category (see page 3 of the compliance form).

Interior Connected Lighting Power

Use this portion of the form to calculate the connected lighting power for the interior of the building. Fill out a row in this table for each type of luminaire you have. This list should match the lighting fixture schedule found on the electrical drawings or in the specifications.

ID: Enter a code number or identification number for each luminaire type that is consistent with the lighting schedule in the plans and specifications. This identification should enable a plan checker to identify the location of luminaires of this type on the plans.

Luminaire Description: Provide a description of the luminaire, including information such as the number of lamps, watts per lamp, and type of fixture.

Type: Select one column to indicate the type of lighting source used for this luminaire. The choices are incandescent, LED, fluorescent, high-intensity discharge (HID), line-voltage track, low-voltage track, and other.

Number of Luminaires: Enter the number of luminaires of this type that are located in the building.

Watts/Luminaire: Enter the total watts of power per luminaire. Be sure to include consideration of the driver or power supply and any other factors that affect input power.

Total Watts: Calculate the total watts of power for this luminaire by multiplying the power per luminaire times the number of luminaires.

Total: Calculate the total installed watts for the building by adding the total watts for each luminaire type. In order for the building to comply, this value must be less than the total lighting power allowance calculated with either the Space-by-Space Method (Section 9.6) or the Building Area Method (Section 9.5).

Additional Interior Lighting Power Allowance—Control Credits

Use this portion of the form to calculate any additional power due to the installation of automatic lighting controls meeting the requirements of Section 9.6.3.

Space ID: Enter the room number or other designation that keys the space to the plans and specifications.

Building Type/Space Type: Select a building type and space type from Table 9.6.1 and write them in this column. An example would be "Library: Reading Area," where "Library" is the building type and "Reading Area" is the space type.

Control Type: Select a control type from Table 9.6.3.

Control Factor: Select the appropriate control factor from Table 9.6.3. This may vary with different spaces.

Installed Watts: Enter the installed watts that are controlled.

Additional Allowance: Multiply the control factor times the installed watts to determine the additional power.

Total: Sum the additional power for all controls and carry this value to page 1 of the compliance form, where the interior lighting power allowance is determined using the Space-by-Space Method (Section 9.6).

Additional Interior Lighting Power Allowance—Decorative and Display

Use this section of the form to identify additional lighting power that is permitted by Section 9.6.2. This section of the Standard allows additional lighting power for decorative purposes such as wall sconces or chandeliers and for display lighting in sales areas. These special lighting power allowances may only be used for their intended purpose. If the installed power is smaller than the allowance, the surplus power may not be allocated to another portion of the building.

Space ID: Enter an identification code for the space where the special allowance applies. This code should be consistent with the numbering scheme on the plans. Typically, the room number from the plans will be entered in this box.

Space Name: Enter a descriptive name for the space. This should be consistent with the name used on the room schedule on the plans. The Space ID, however, is the principal link back to the plans from the compliance form.

Type: Enter the type of special allowance that applies. Choose just one. The choices are decorative and display lighting. See Section 9.6.2 of the Standard for more details on these allowances.

Area: Enter the applicable area for the special allowance.

Unit Allowance: This allowance is fixed. Enter 0.75 W/ft^2 (8.1 W/ m^2) for the decorative allowance or either 0.45, 1.05, or 1.88 W/ft^2 (4.8, 11, or 20 W/ m^2) for the display lighting allowance. See Section 9.6.2 of the Standard for more details.

Allowance: Calculate the allowance by multiplying the area times the unit allowance. Enter the product in this box.

Luminaire IDs: Enter the identification numbers of the luminaires used for the intended purpose. If the allowance is for decorative lighting, the ID should reference a luminaire that satisfies the decorative lighting requirement. The IDs entered in this column should be consistent with those used in the lighting schedule on the plans and in the section of the lighting compliance form labeled Additional Interior Connected Lighting Power.

Installed Power: Enter the lighting power actually installed in the room for the intended use. If the allowance is for decorative or display lighting, this value should represent the lighting power for the qualifying fixtures. This value must be lower than the allowance for each type of allowance and within each room. In other words, the value in the last column must be less than the value in the next to last column in every row of the table.

Additional Interior Connected Lighting Power

This portion of the compliance form provides additional documentation on the lighting equipment installed for the additional decorative or display lighting allowance. Multiple rows must be completed in this form for each space type on page 2 of the form, where an additional power allowance is claimed for decorative or display lighting. This form lists all the luminaires used for each application. Essentially, it documents the Installed Power field of the previous page.

Space ID: This field should correspond to one of the Space ID fields on the previous form. The luminaire described on this row of the form is used for the decorative or display allowance claimed on the previous page.

Luminaire ID: Enter a code number or identification number that is consistent with the lighting schedule on the plans and specifications. This ID should enable a plan checker to identify the location of luminaires of this type on the plans. This ID is also entered on the Additional Interior Lighting Power Allowance section of this form.

Luminaire Description: Provide a description of the luminaire, including information such as the number of lamps, watts per lamp, and type of fixture.

Type: Select one column to indicate the type of lighting source used for this luminaire. The choices are incandescent, fluorescent, LED, high-intensity discharge (HID), line-voltage track, low-voltage track, and other.

Number of Luminaires: Enter the number of luminaires of this type that are used for the special purpose.

Watts/Luminaire: Enter the total watts of power per luminaire. Be sure to include consideration of the driver or power supply and any other factors that affect input power.

Total Watts: Calculate the total watts of power for this luminaire by multiplying the power per luminaire times the number of luminaires. This column should be summed and the total entered at the bottom of this form.

Exterior Building Lighting Power Allowance (Tradable Lighting Applications)

Use this table to calculate the lighting power allowance for exterior lighting in tradable applications. For each of the tradable lighting applications listed in either Table 9.3.2 (when using the Simplified Building Method) or Table 9.4..2-2 that occur in the project, enter the application type (e.g., building entrance with canopy), enter the allowance from Table 9.4.2-2, enter the length (ft. or m) or area (ft^2 or m^2) as appropriate, multiply the allowance times the length or area, and enter that result in the Tradable Power Allowance column.

Exterior Building Lighting Power Allowance (Nontradable Lighting Applications)

This table is identical to the previous table except that the nontradable lighting applications, as listed in either Table 9.3.2 (when using the Simplified Building Method) or Table 9.4.2-2, are to be entered here.

Exterior Connected Lighting Power (Tradable Applications)

Use this table to list exterior lighting equipment used for tradable applications as identified in either Table 9.3.2 (when using the Simplified Building Method) or Table 9.4.2-2.

ID: Enter a code number or identification number that is consistent with the lighting schedule on the plans and specifications. This ID should enable a plan checker to identify the location of luminaires of this type on the plans.

Luminaire Description: Provide a description of the luminaire, including information such as the number of lamps, watts per lamp, type of ballast and type of fixture.

Number of Luminaires: Enter the number of luminaires of this type that are used for the allowances listed above. For example, if the same type of luminaire is used for pathway lighting and entrance lighting, count only the luminaires that are used for entrance lighting in this table.

Watts/Luminaire: Enter the total watts of power per luminaire. Be sure to include consideration of the driver or power supply and any other factors that affect input power.

Total Watts: Calculate the total watts of power for this luminaire by multiplying the power per luminaire times the number of luminaires.

Exterior Connected Lighting Power (Nontradable Applications)

This table is similar to the preceding table except that the lighting application needs to be identified along with its corresponding luminaires because each of the nontradable applications must comply individually.

Exterior Lighting Compliance Test

Each of the conditions in this table must be met for exterior lighting systems to comply with the Standard. The tradable exterior lighting applications comply if the connected lighting power is no greater than the total allowance. All or a portion (or none) of the base site allowance can be used to achieve compliance.

Connected lighting power for each of the nontradable applications must be no greater than their corresponding allowances. Here additional base site allowance can be applied to achieve compliance. The total of the base site allocations used for both the tradable and nontradable applications must be no greater than the base site allowance taken from Table 9.4.2-2 for the applicable exterior lighting zone.