



THRESHOLD ATTEMPTED

Points Attempted: 1

INTERIOR LIGHTING

Select one of the following:

- Option 1. Reduced Input Power.** For all nonemergency interior luminaires with a direct line of sight to any openings in the building envelope, input power is reduced by at least 50% between 11pm and 5am via automatic device(s).
- Option 2. Shielding.** All openings in the building envelope with direct line of sight to any nonemergency interior luminaires are shielded between 11pm and 5am, for a resultant transmittance of less than 10%.
- No non-emergency interior luminaires have a direct line of sight to openings in the building envelope.
- Project is a hospital and is exempt from the Interior Lighting requirements.

A Licensed Professional Exemption (LPE) is available for Licensed Engineers in lieu of the following:

- 1) Drawings illustrating the location of automatic controls
- 2) Sequence of operation for interior lighting

Select one of the following:

- Streamlined Path: LPE (PE)
- Full Documentation.



Upload SSc8-1. Provide documentation (such as plans or drawings) showing the location of automatic controls.

Upload

Files: 1

Upload SSc8-2. Provide documentation detailing the sequence of operation for interior lighting at the project building.

Upload

Files: 1

EXTERIOR LIGHTING

Select one of the following:

- There are no exterior lighting devices within the LEED project boundary.
- Exterior lighting devices are present within the LEED project boundary.

Classify the project under one of the following zones:

- LZ1: Dark.** Developed areas within national parks, state parks, forest land and rural areas.
- LZ2: Low.** Areas predominantly consisting of residential zoning, neighborhood business districts, light industrial with limited nighttime use, and residential mixed use areas.
- LZ3: Medium.** All other areas not included in LZ1, LZ2 or LZ4 such as Commercial/Industrial, High-Density Residential.
- LZ4: High.** High activity commercial districts in major metropolitan areas.
Note: To be LZ4, the area must be so designated by the local jurisdiction such as the local zoning authority.

ASHRAE Base Site Allowance available for this project, based on lighting zone:

750

 Watts

Note: The Base Site Allowance may be used in tradable or non-tradable surfaces in Tables SSc8-1 and SSc8-2. The sum of the Base Site Allowances used in Tables SSc8-1 and SSc8-2 may not exceed the values listed above. Refer to ASHRAE 90.1-2007, Addendum I for additional information.

For each tradable lighting surface, list the actual lighting power density (LPD) and the ASHRAE/IESNA Standard 90.1-2007 allowable LPD. Total actual exterior site lighting must not exceed the total ASHRAE allowable site lighting. Include only surfaces that are provided with lighting. Unlit surfaces cannot be claimed for additional lighting power allowance.

Table SSc8-1. Lighting Power Density For Building Exteriors: Tradable Surfaces

| Lighting Location Description | ASHRAE 90.1-2007 Surface Type | Area or Length | Actual Lighting Power (Watts) | Actual LPD | LPD Units | ASHRAE Allowable LPD | | | |
|---|--|----------------|-------------------------------|------------|-------------|----------------------|---------|---|--|
| Plaza 1 | Plaza areas | 1,577 | 252 | 0.16 | W/ft2 | 0.16 | + | - | |
| Plaza 2 | Plaza areas | 3,696 | 480 | 0.13 | W/ft2 | 0.16 | + | - | |
| Walkway 1 | Walkways less than 10 feet wide | 1,711 | 6 | 0 | W/linear ft | 0.8 | + | - | |
| Walkway 2 | Walkways less than 10 feet wide | 541 | 66 | 0.12 | W/linear ft | 0.8 | + | - | |
| Walkway West | Walkways 10 feet wide or greater | 2,547 | 143 | 0.06 | W/ft2 | 0.16 | + | - | |
| Tradable Surfaces (Watts) | Total actual exterior lighting power | | | | | | 947 | | |
| | Total ASHRAE allowable exterior lighting power per Table 9.4.6 | | | | | | 3,052.8 | | |
| | ASHRAE Base Site Allowance used (Optional) | | | | | | 750 | | |
| | Total allowable exterior lighting power, including Base Site Allowance | | | | | | 3,802.8 | | |
| Total actual exterior lighting power less than or equal to total allowable for tradable surfaces? | | | | | | | Yes | | |

Complete the table below. Include only surfaces that are provided with lighting. Unlit surfaces cannot be claimed for additional lighting power allowance.

Table SSc8-2. Lighting Power Density For Building Exterior: Nontradable Surfaces

Save Form

| Lighting Location Description | ASHRAE 90.1-2007 Surface Type | Area, Length, or # of units | Actual Lighting Power (Watts) | Actual LPD | LPD Units | ASHRAE Allowable LPD | ASHRAE Base Site Allowance (Watts) (Optional) | Total Allowable LPD |
|--|----------------------------------|-----------------------------|-------------------------------|------------|-----------|----------------------|---|---------------------|
| None | Building facades (measured area) | 1 | 0 | 0 | W/ft2 | 0.15 | 0 | 0.15 |
| Actual LPD less than or equal to allowable for each nontradable surface? | | | | | | | | Yes |

Table SSc8-3. Base Site Allowance

| | | |
|---|---|-----|
| ASHRAE Base Site Allowance (Watts) | Total available ¹ | 750 |
| | Used for tradable surfaces (from Table SSc8-1) | 750 |
| | Used for nontradable surfaces (from Table SSc8-2) | 0 |
| | Total used | 750 |
| Base Site Allowance used is less than or equal to allowance available? ² | | Yes |

¹ Should correspond with the exterior lighting power reported in EAp2 Minimum Energy Performance Table EAp2-5

² Projects that wish to apply the 5% adder to the tradable or non tradable surface allowances must document their approach in the special circumstances section of the form

Table SSc8-4. Site Lumen Calculation

| Fixture Type | Quantity of Installed Luminaires | Initial Fixture Lumens per Luminaire | Initial Fixture Lumens Above 90 Degrees from Nadir | Total Fixture Lumens | Total Fixture Lumens Above 90 Degrees from Nadir |
|--|---|--------------------------------------|--|----------------------|--|
| G3 | 10 | 253 | 0 | 2,530 | 0 |
| G4 | 1 | 1,900 | 950 | 1,900 | 950 |
| G5 | 53 | 91 | 0 | 4,823 | 0 |
| G6 | 28 | 382 | 0 | 10,696 | 0 |
| G7 | 4 | 253 | 0 | 1,012 | 0 |
| R18 | 3 | 95 | 0 | 285 | 0 |
| Site Fixture Lumens | Totals | | | 21,246 | 950 |
| | Percentage above 90 degrees from nadir | | | | 4.47 |
| | LZ allowable percentage above 90 degrees from nadir | | | | 5 |
| % of site fixture lumens above 90 degrees from nadir less than or equal to LZ allowable? | | | | | Yes |

| | |
|---|---|
| + | - |
| + | - |
| + | - |
| + | - |
| + | - |
| + | - |

Upload SSc8-6. Provide an exterior photometric site plan showing the LEED project boundary and point-by-point foot candle levels 10 feet beyond the boundary for LZ2 and 15 feet beyond the boundary for LZ3 and LZ4.

Files: 1

Light trespass requirements are met relative to the curb line instead of the site boundary, as the site boundary abuts a public right-of-way. (Optional)

- For the illuminance generated from a single luminaire placed at the intersection of a vehicular driveway and public roadway accessing the site, the centerline of the public roadway is used as the site boundary for no more than a length of 2 times the driveway width centered at the centerline of the driveway. (Optional)

ADDITIONAL DETAILS

- Special circumstances preclude documentation of credit compliance with the submittal requirements outlined in this form.
- The project team is using an alternative compliance approach in lieu of standard submittal paths.
- The project team is pursuing exemplary performance of SS Credit 8.

SUMMARY

SS Credit 8: Light Pollution Reduction Points Documented:

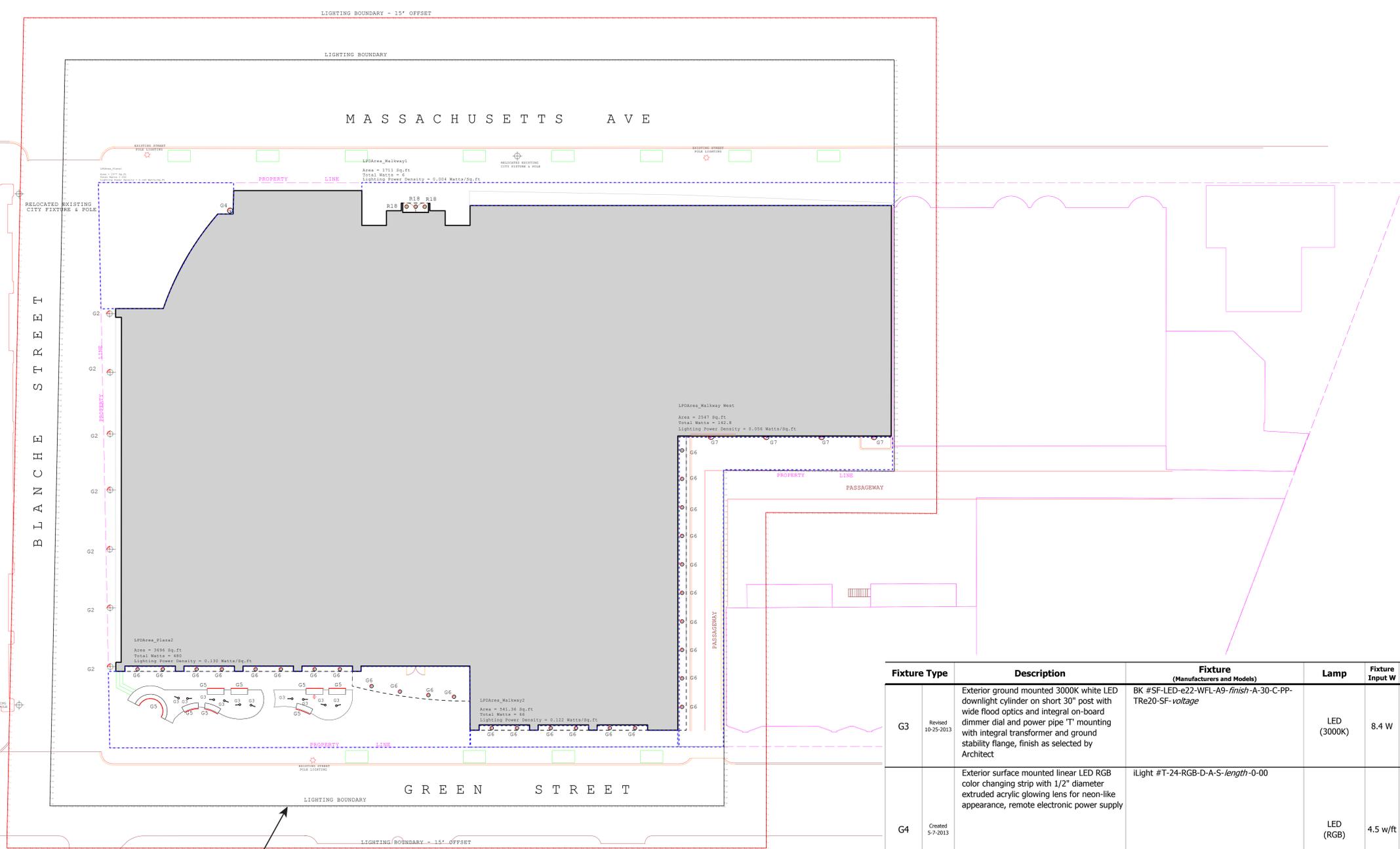
0

Check Compliance

SS Credit 8: Light Pollution Reduction Exemplary Performance Documented:

N

- The project team reserves one point in the Innovation in Design credit category for exemplary performance in SS Credit 8.



CalcPts_Lighting Boundary Illuminance (Fc)
 Average=0.00 Maximum=0.1 Minimum=0.0 Avg/Min=N.A.
 Max/Min=N.A.

CalcPts_Lighting Boundary Horiz Illuminance (Fc)
 Average=0.01 Maximum=0.16 Minimum=0.00 Avg/Min=N.A.
 Max/Min=N.A.

CalcPts_15' Offset Illuminance (Fc)
 Average=0.00 Maximum=0.0 Minimum=0.0 Avg/Min=N.A. Max/Min=N.A.

- Notes:**
- For the Light Trespass calculations we are using the Lighting Boundary as defined in LEED Interpretation #10236.
 - Fixtures type G2 that are mounted on the building along Blanche Street are not included in any of the calculations. Per agreement with the City of Cambridge there will be no City provided street lighting on Blanche Street and the developer will be providing the street lighting with building mounted fixtures. Therefore the G2 fixtures are exempt as, "Street Lighting that is required by governmental authorities to be installed within the LEED project ..." per LEED Interpretation #10236.

| Fixture Type | Description | Fixture (Manufacturers and Models) | Lamp | Fixture Input W | Location | Notes |
|---------------------------|--|---|-------------|-----------------|-------------------------------|--|
| G3 Revised 10-25-2013 | Exterior ground mounted 3000K white LED downlight cylinder on short 30" post with wide flood optics and integral on-board dimmer dial and power pipe 'T' mounting with integral transformer and ground stability flange, finish as selected by Architect | BK #SF-LED-e22-WFL-A9-finish-A-30-C-PP-TRe20-SF-voltage | LED (3000K) | 8.4 W | Planter Beds | Finish as selected by Architect. Engineer to verify voltage. |
| G4 Created 5-7-2013 | Exterior surface mounted linear LED RGB color changing strip with 1/2" diameter extruded acrylic glowing lens for neon-like appearance, remote electronic power supply | Light #T-24-RGB-D-A-S-length-0-00 | LED (RGB) | 4.5 w/ft | Facade Channel Detail | Installed vertically in architectural detail on building facade, per drawings. Provide in overall lengths as indicated on drawings. Provide all connector cables, mounting clips, remote power supplies, control hardware, etc. for a complete color changing installation. Engineer to verify voltage and compatibility with color changing control system. |
| G5 Revised 10-25-2013 | Exterior linear 3000K LED small profile strip, field bendable in plan orientation to min 10' radius, mounted in bench edge detail per Architect, remote power supply, IP68 rating | LED Linear #VARIO LED FLEX VENUS W IP68 3000K | LED (3000K) | 5 w/ft | Green Street Plaza Benches | Installed in bench niche detail, per architectural drawings. Provide in overall lengths as indicated on drawings. Provide all connector cables, mounting clips, remote power supplies, control hardware, etc. for a complete operational installation. Engineer to verify voltage. |
| G6 Revised 10-25-2013 | Exterior 3000K LED wet location listed ceiling recessed 1.75" diameter open downlight with 25 degree beam spread, ~400 lumen output | Lightolier #C2L-04-DL-30K-25-R-UZ10V-C2L-DL-CCD-P | LED (3000K) | 11 W | Exterior Soffits and Canopies | |
| G7 Revised 10-25-2013 | Exterior wall mounted 3000K LED full-cutoff surface cylinder downlight wall sconce with 25° distribution, 2.25" diameter x 5" tall housing, paint finish to match facade material (per Architect) | BK #EC-LED-e22-MFL-A9-premium finish-12-E-voltage | LED (3000K) | 8.4 W | Alley | Premium paint finish to match exterior facade, per Architect. Engineer to verify voltage. |
| R18 Created 11-13-2013 | Ceiling Recessed 2 Watt 3000K LED Recessed Downlight Suitable For Wet Location, 1.4" Overall Height, Remote Power Supply | Moda #BEK-SILVER-3000K-30"-extension cable-power supply | LED 3000K | 2 W | Mass Ave Entry Canopy | Provide low-voltage extension cable lengths necessary to homerun back to remote power supply location, per drawings. Engineer to verify voltage. |