



LEED BD+C: New Construction | v3 - LEED 2009

## Bird collision deterrence

SSpc55 | Possible 1 point

### Intent

Reduce bird injury and mortality from in-flight collisions with buildings.

### Requirements

Comply with the “Building façade and site structures,” “Exterior lighting,” and “Performance monitoring plan” requirements below.

#### **Building façade and site structures**

Develop a building façade and site design strategy to make the building and site structures visible as physical barriers to birds.

If all materials on the building façade have a Threat Factor of 15 or below, the project is exempt from the building façade requirements and the following Bird Collision Threat Rating calculations are not required. If any material on the building façade has a Threat Factor above 15, then the Bird Collision Threat Factor Rating calculations are required.

All other structures on the site, including, but not limited to handrails, guardrails, windscreens, noise barriers, gazebos, pool safety fencing, bus shelters, band shells, etc. must be constructed entirely of materials with a threat score value of 15 or less.

#### *Steps for calculating the Bird Collision Threat Rating (BCTR)*

First separate each building facade into Façade Zone 1 and Façade Zone 2.

Façade Zone 1 includes the first 36 feet above grade, measured from grade at all points, as well as 12 feet above any green roof. Façade Zone 2 includes all façade areas above 36 feet. Establish total areas for Façade Zone 1, Façade Zone 2 and for the Adjusted Building Façade Area. Then identify the Material Types present

on each façade, the corresponding Threat Factor of each material (for detailed types and associated threat factors, see the Bird Collision Deterrence Material Threat Factors developed by the American Bird Conservancy), and the total area of each Material Type. Lastly, establish the Factored Area for each Zone.

No more than 15% of the facade area in Façade Zone 1 can have a Threat Factor higher than 75. This area is quantified separately as the Hazardous Glazing Factor (HGF) in the calculator. However, more than 15% of the glazed area in Zone 2 may have a Factor higher than 75. All glazed corners or fly-through conditions must have a Threat Factor less than or equal to 25.

Table 1: General material types: threat potential

	Material Type
Greatest Threat Potential	Glass: Highly reflective and/ or completely transparent surface
	Glass: Reflective or transparent surface interrupted by a visible pattern based on the 2 x 4 Rule*.
	Glass: Reflective or transparent surface shielded by screens, shutters, or louvers where the resultant exposed glass satisfies the 2 x 4 Rule*.
	Glass: Translucent with matte or textured surface
Least Threat Potential	Opaque surface

\*The 2 x 4 Rule is defined as a collision deterrence module based upon the physical profile of a bird in flight. Current research has established maximum module dimensions of 2" high x 4" wide.

Using the formulas below, achieve a maximum total building Bird Collision Threat Rating (BCTR) of 15 or less. The [Bird Collision Threat Rating Calculation Spreadsheet](#) can also be used.

For each Façade Zone, calculate the Factored Area:

$$[(\text{Material Type 1 Threat Factor}) \times (\text{Material Type Area})] + [(\text{Material Type 2 Threat Factor}) \times (\text{Material Type Area})] \dots = \text{Façade Zone Factored Area}$$

Determine the Adjusted Building Façade Area:

$$[(2 \times \text{Zone 1 Area}) + \text{Zone 2 Area}] = \text{Adjusted Building Façade Area}$$

Calculate the total building Bird Collision Threat Rating by dividing the sum of Zone 1 and Zone 2 Factored Areas by the Adjusted Building Façade Area:

$$(\text{Zone 1 Factored Area} + \text{Zone 2 Factored Area}) / \text{Adjusted Building Façade Area} = \text{Total Building BCTR}$$

## AND

### Exterior lighting

Exterior building fixtures that are not necessary for safety, building entrances, and circulation shall be automatically shut off from midnight until 6 a.m. Manual override capability may be provided for occasional after-hours use.

In addition, meet these requirements for all exterior luminaires located inside the project boundary (except those listed under “Exemptions”), based on the following:

The photometric characteristics of each luminaire when mounted in the same orientation and tilt as specified in the project design; and

The lighting zone of the project property (at the time construction begins). Classify the project under one lighting zone using the lighting zones definitions provided in the Illuminating Engineering Society and International Dark Sky Association (IES/IDA) Model Lighting Ordinance (MLO) User Guide.

Do not exceed the following luminaire uplight ratings, based on the specific light source installed in the luminaire, as defined in IES TM-15-11, Addendum A.

Table 2. Maximum uplight ratings for luminaires

MLO lighting zone	Luminaire uplight rating
LZ0	U0
LZ1	U1
LZ2	U2
LZ3	U3
LZ4	U4

### *Exemptions from the exterior lighting requirements*

The following exterior lighting is exempt from the requirements, provided it is controlled separately from the nonexempt lighting:

- specialized signal, directional, and marker lighting for transportation;
- government-mandated roadway lighting;
- hospital emergency departments, including associated helipads; and
- lighting for the national flag in MLO lighting zones 2, 3, or 4.

### **AND**

#### **Performance monitoring plan**

Develop a three-year post-construction monitoring plan to routinely monitor the effectiveness of the building and site design in preventing bird collisions. Include methods to identify and document locations where repeated bird strikes occur, the number of collisions, the date, the approximate time, and features that may be contributing to collisions. List potential design solutions and provide a process for voluntary corrective action.

### General Pilot Documentation Requirements

[REGISTER FOR THE PILOT CREDIT](#)

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Complete the feedback survey:

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[CREDITS 28-42](#)

[CREDITS 43-56](#)

[CREDITS 57-67](#)

[CREDITS 68-82](#)

[CREDITS 83--96](#)

**Credit Specific: BD+C**

**Building façade and site features**

For materials on the building and site with a Threat Factor of 15 or below, submit a narrative describing why the materials, and building in general, are “bird-friendly.” Include a material list and supporting data.

A completed [Bird Collision Threat Rating spreadsheet](#)

Plan(s) and/or elevation(s) depicting the location of all materials and shading/screening devices used to comply with this credit

Applicable specification details on all materials and shading/screening devices used to comply with this credit. If a chosen material does not have a Threat Factor value, provide an estimated value with justification.

A narrative or statement acknowledging that both surface reflection and visibility of any surface 3 frit patterns have been taken into account.

### **Exterior lighting**

Site lighting plan with boundaries, elements, location of fixtures, lighting zone, and applicable measurements

Luminaire schedule showing uplight ratings, nighttime off-time durations for a typical day, and manual override capability

### **Performance monitoring plan**

A copy of the post-construction monitoring plan

### **Changes:**

11/22/2016:

Edited the Credit Specific: BD+C submittals.

10/16/2015:

Expanded the applicability to all rating systems

Added site features (site structures with glass) to the credit

Adjusted and simplified the “Bird Collision Threat Rating” calculation

Simplified the lighting requirements

Adjusted the documentation based on the above changes to

Requirements

Miscellaneous edits to the background information, for reference

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**Fly-through conditions** - situations in which glass elements provide any clear line of sight to birds, creating the illusion of a void leading to the other side; parallel glass elements or a convergence of glass sides creating a perpendicular, acute, or obtuse horizontal corner. Examples include glass bridges and walkways, outdoor railings, free-standing glass architectural elements and building corners where glass walls or windows converge.