

016010 BIRD-FRIENDLY DESIGN FOR NEW CONSTRUCTION

Cornell’s Design and Construction Standards provide mandatory design constraints and acceptable or required products for all construction at Cornell University. These standards are provided to aid the design professional in the development of contract documents and are not intended to be used verbatim as a contract specification nor replace the work and best judgement of the design professional. Any deviation from the Design and Construction standards shall only be permitted with approval of the University Engineer.

PART 1: GENERAL

1.01 REFERENCES

- A. **Bird Collisions with Glass: An Annotated Bibliography** by American Bird Conservancy (ABC) last updated July 2021
- B. **Bird-friendly Building Design** by American Bird Conservancy. For updates and new information see collisions@abcbirds.org
- C. **Bird Collision Deterrence: Threat Factors** by American Bird Conservancy 2010
- D. **American Bird Conservancy Prescriptive Rating Guidelines for Bird-friendly Materials** May 2021
- E. **U.S. Green Building Council: LEED BD+C New Construction, Innovation Credit: Bird Collision Deterrence**

1.02 DEFINITIONS

- A. Bird-friendly glass: Materials that incorporate markers visible to birds at 2” x 2”, 2” x 4” spacing, or 2” spaced 1/8” fritted vertical lines, or a design with similar spacing and dimensions; Materials that do not produce strong reflections (Gloss<=9) or materials obscured by external screens, sunshades, and other external structures. ABC definition: Threat Factor <=30.
- B. Threat Factor: A score that measures a bird’s ability to see and avoid glass and other materials. The lower the threat factor the more effective the material will be at reducing collisions.

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- C. Bird Collision Rating (BCR): A calculation tool within the LEED Bird Collision Deterrence Innovation Credit that separates a building into Façade Zone 1 (the first 40 feet above grade, as well as 12 feet above any green roof) and Façade Zone 2 (all façade areas between 40-100 feet above grade). For each zone, material types and threat factors are calculated. No more than 5% of façade area in Façade Zone 1 can have a Threat Factor higher than 30. All glazed corners or fly-through conditions must have a Threat Factor less than or equal to 30.
- D. Channeling: Landscape or building features that tend to move birds towards glass doors/wall.
- E. Glass Corners: Areas where two glass facades intersect (birds can see through)
- F. Building Connectors: Generally, structures with parallel glass walls, placed between two wings of a building or two adjacent buildings for pedestrian access in all weathers. Can be ground level or elevated. Birds can often see-through parallel panes of glass and building connectors are often associated with high rates of collisions.
- G. Frit Patterns: Permanent patterns applied to glass with ceramic frit—the frit can be silk-screened on the glass, so that virtually any design can be incorporated. Although frit glass is usually installed to afford privacy or increase energy efficiency (by decreasing solar heat gain), frit can also make glass more visible to birds.
- H. Bird-Friendly Adhesive Film: Film with bird friendly pattern applied to exterior side of glazing.
- I. Acopian Birdsaivers: An array of vertical parachute nylon cords mounted in front of glazing.
- J. UV Coating: Patterned UV reflective coating makes glass more visible to some birds while remaining virtually transparent to the human eye. UV coating is not readily visible to raptors and pigeons and is therefore not considered a bird-friendly design option.

1.03 GENERAL PRINCIPLES

- A. This standard is intended to encourage design strategies that are mindful of the local and migratory bird populations to reduce the risk of bird collisions with glass in new buildings. The mitigation of bird strikes at existing buildings is not addressed in this standard.

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- B. Minimize situations that cause reflection, transparency, black hole or passage effect, fly through conditions and channeling determined by orientation and siting of a building.
- C. Prioritize areas of a building – glass corners, building connectors, glass adjacent to green roofs and/or vegetation – for bird-friendly glass. Aim for glass with threat factors less than 30.
- D. Review areas of building that are most useful to apply bird-friendly glass, such as near the ground plane, near trees, and adjacent to green roofs during the early design phases with Cornell Facilities team.
- E. Exterior lighting/internal lighting: minimize the use of exterior lighting which attracts birds. Utilize sustainable design principles such as dark sky compliant lighting, down shielded lights, and motion sensors to shut off lights.
- F. Provide a cost estimate of the bird-friendly design materials to inform University decision making at each design phase.

1.04 DESIGN STRATEGIES

- A. Avoid façade indents, open courtyards and other features that can trap birds.
- B. Use bird-friendly materials that also support strategies for minimizing energy consumption.
- C. Avoid fruit trees and fruit bearing shrubs in plantings adjacent to glass.
- D. Consider a frit pattern on glass with 1/8” vertical lines at a 2” spacing and/or explore equivalent strategies coherent with the building design. Provide a minimum diameter of 1/4” if the visual markers are dots.

END OF STANDARD 016010

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