BIRD-SAFE DESIGN STANDARDS

April 2024

The Richmond Hill Bird-Safe Design Standards (Design Standards) shall be applied to all glazing to help mitigate the potential for bird-window collisions. Glazing is defined as an infill material, such as glass or plastic, vision and/or non-vision, at any orientation (horizontal, vertical, or angled) (CSA, 2020). The Design Standards are required for all lands that are subject to Site Plan approval, e.g. where low-rise, mid-rise, high-rise built form (as defined by the City's Official Plan), and Industrial, Commercial and Institutional are being proposed.

REQUIREMENTS

The following items shall be submitted by the Applicant and prepared, stamped, and signed by a licensed Architect (OAA) member or qualified designer:

- Stand-alone sheet of elevation drawings titled "Bird-Safe Elevations" which clearly identify the location, area, type and details of design treatments; and
- Complete *Bird-Safe Specifications Checklist* (Appendix 1).

DESIGN STANDARDS

The Design Standards identified below employ the guidance from the Canadian Standards Association (CSA) first edition of CSA A460, Bird-friendly design standard. For additional guidance on treatments to mitigate threats to birds through design, see Appendix 2: Lighting; Appendix 3: Design Considerations and Ineffective Treatments; and Appendix 4: Landscape Treatments.

1.0 Treated Areas

The following areas of a building shall be treated:

- 100% of the glazing within the first 16 metres (as measured from finished grade), including glazing fronting atriums and courtyards
- Where there is a mature tree canopy abutting the development, extend the treatment on the glazing to the height of the canopy if greater than 16 metres
- Any glazing that frames the edges of green roofs, rooftop gardens, outdoor terraces or fly-through conditions vertically to a height of 4 metres from the surface of the roof or terrace or the height of the adjacent mature vegetation (whichever is greater)
- Glazing used in balconies or parapets, glass walls located in parallel, including bridges and enclosed elevated walkways
- Glazing located at building corners spanning 5 metres in each direction (laterally), to a height of 16 metres or adjacent mature tree canopy, whichever is greater

Any non-glass material that has greater than 15% reflectivity should be avoided for exterior facades (e.g. polished steel, polished granite).

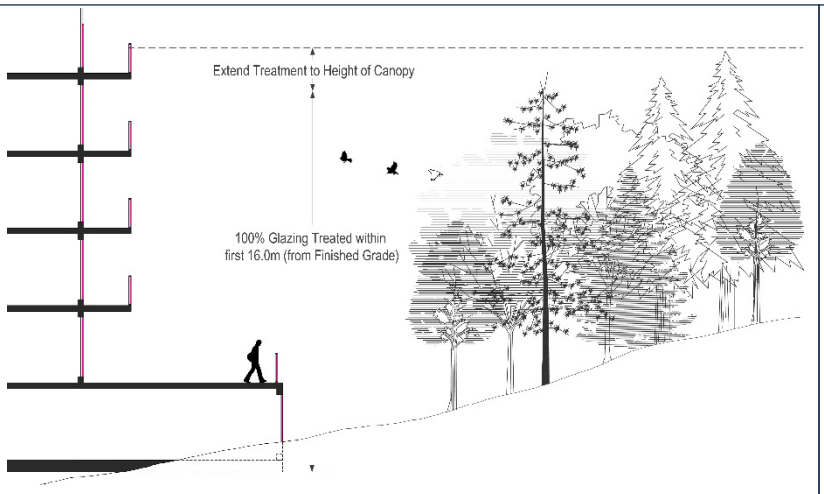

Diagram 1: Treatment within first 16m from grade or height of mature canopy

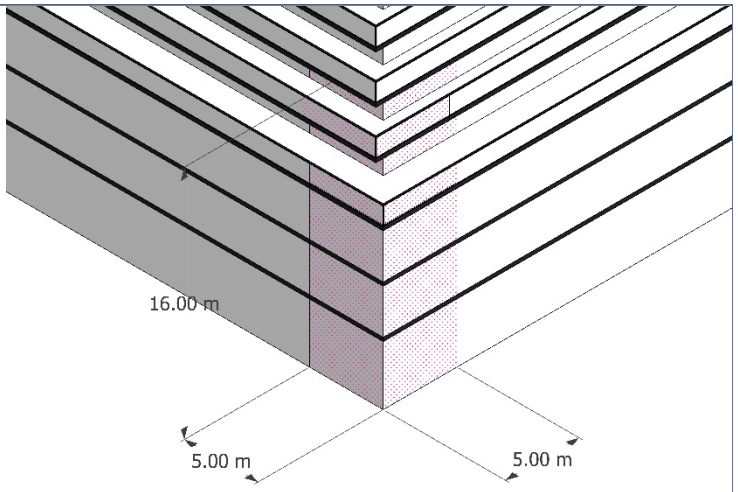

Diagram 2: Treat corners, 5m each direction

2.0 Treatment Types

Exterior treatments shall include one or more of the following types:

- Dots or stripes, or an approved equivalent
- Low reflectance solid frit, silicone, or opaque coatings
- Patterns created by acid etching, silk screening or ceramic frit

3.0 Visual Markers

Visual makers shall:

- be high contrast to the glazing material;
- be applied on the first surface (exterior) of the glazing;
- include individual marker elements with a minimum of 4mm diameter; or 2mm wide by 8mm long for linear elements; and
- include any pattern of visual markers (i.e., lines, dots etc.) that are spaced to a maximum 50mm horizontally and/or 50mm vertically.

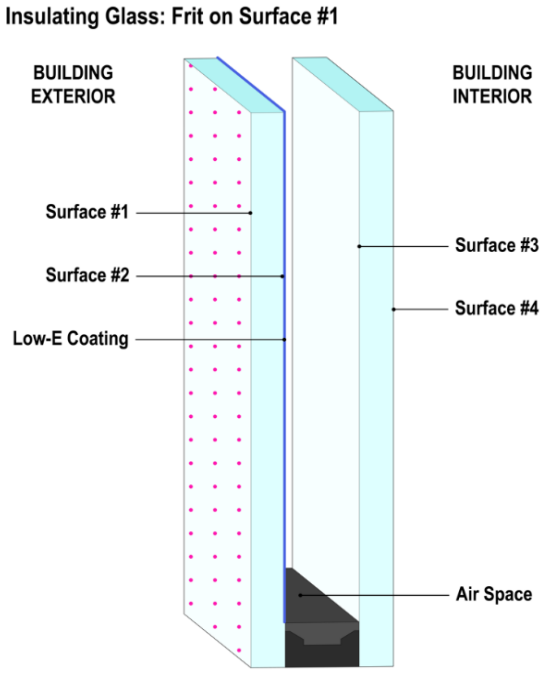

Diagram 3: Treatment required on first surface of glass

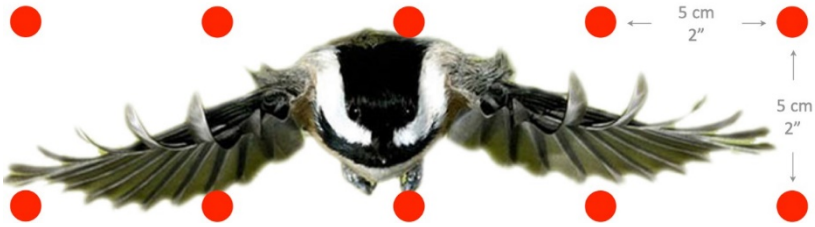

Diagram 4: Treatment spacing (Image: Safe Wings Ottawa)

CITY RESOURCES

In addition to the attached Appendices, refer to the City of Richmond Hill's existing resources for guidance on landscaping, lighting and urban design best practices.

- Urban Forest Planting Guidelines
- Lighting Pollution Reduction Sustainability Metric and Light Pollution By-law
- Urban Design Guidelines

EXTERNAL RESOURCES

- Fatal Light Awareness Program Canada
- CSA Bird Friendly Building Design (2020)
- City of Ottawa Bird-Safe Design Guidelines (2020)
- City of Markham's Bird Friendly Guidelines (2014)
- Toronto Green Standard v4 Tier I: Ecology & Biodiversity; Bird Collision Deterrence: TIER 1
- Illuminating Engineering Society (IES) Recommended Best Practices

Appendix 1: Bird-Safe Specifications Checklist

BIRD-SAFE SPECIFICATIONS CHECKLIST

Applicant to include completed checklist on Bird-Safe Elevation Drawing(s) signed by OAA.

At Grade Condition (check to confirm the below is applied)

- ☐ Treatment is applied to 100% of proposed glazing within 16m from finished grade or to the height of the adjacent mature tree canopy, whichever is greater
- ☐ Treatment is applied to all glazing areas that create fly-through conditions
- ☐ Treatment is applied to glazing located at building corners at successive floors spanning 5m in each direction (laterally)
- ☐ Development contains no non-glass material that has a greater than 15% reflectivity within 16m from finished grade or to the height of the adjacent mature tree canopy, whichever is greater

Roof Landscape Condition (check to confirm one of the below is applied)

- ☐ Treatment is applied to 100% of glazing area within 4m from any roof level finished grade or to the height of the adjacent mature vegetation, whichever is greater
- ☐ All glazing used in balconies or parapets are treated
- ☐ Development contains no glazing within 16m above roof level

Specifications (check to confirm one of the below is applied)

- ☐ Dot size is a minimum of 4mm in diameter, and spacing is no more than 50mm x 50mm
- ☐ Linear elements are a minimum of 2mm wide x 8mm long
- ☐ Pattern is applied as fritting or etching of glass and pattern colours are high contrast in relation to the background
- ☐ Pattern is applied as film on exterior surface of glass and pattern colours are high contrast in relation to the background

Appendix 2: Lighting

The strategies defined below are in accordance with the Cities Sustainability Metric criteria IB-17 and Light Pollution By-Law requirements in addition to the Design Standards above.

a) **Height:** Where possible, limit exterior architectural lighting to activities and amenities at ground level. When proposing architectural lighting above grade for rooftop amenity areas and façade/signage, limit proposed illuminance levels and ensure proposed lighting levels, types, and hours of use comply with Light Pollution By-Law requirements.

b) **Illumination Levels:** Limit exterior light fixtures to areas occupied at night. Limit lighting to facilitate site circulation, navigation and wayfinding and to support safety and security. Avoid unnecessary lighting or excessive lighting. Use timers and/or controls to turn off or reduce illumination levels late at night and when outdoor spaces aren't occupied. Limit illuminance levels in accordance with the City's Light Pollution By-Law and Illuminating Engineering Society (IES) Recommended Best Practices. To reduce light spill from building interiors, reduce interior illuminance level using timers, controls, or reduce the amount of windows/glazing/glass facades proposed.

c) **Lighting Direction:** Avoid up-lighting, floodlighting and adverse impacts associated with exterior lighting where possible. Direct light downwards or ensure that fixtures with up-lighting components are externally shielded (e.g., beneath a building canopy). Specify dark sky compliant, or full-cutoff/fully shielded exterior luminaires.

d) **Automated Lighting Systems:** Consider using automatic lighting controls, timers, and/or sensors (e.g., motion sensors/detectors) to reduce non-essential lighting after-hours, particularly in office and industrial buildings. Also consider automated window coverings/screenings to take advantage of daylight harvesting during the day and reduce light emitted from building interior building at night when the building is occupied.

e) **Light Dimming:** Utilize dimmers if possible, in highly glazed buildings or rooms with publicly visible spaces such as entrances, lobbies, and exposed interior corridors during evening hours.

f) **Required Lighting Systems:** Developments that are mandated or required to install specialized lighting systems should consider those that mitigate the potential for bird collisions and injury.

g) **Interior Illumination Strategies:** Design internal illumination with lighting control zones rather than broadscale illumination of entire floorplates. Incorporate task lighting into proposed interior illumination to reduce overall lighting by enabling light to be directed to occupied areas when people are engaged in activities.

Appendix 3: Design Considerations and Ineffective Treatments

Applicants are encouraged to consider the following design guidance, in addition to the above noted Design Standards.

Design Considerations:

a) **Design Traps**: Consider innovative design features in buildings that reduce potential 'traps' or confusion for birds; traps may include glass passageways, corners, fly-through areas, and courtyards that are invisible to or can entrap birds.
b) **Architectural Design:** Limit the amount of glazing proposed within the first 16 metres of the building from finished grade. Consider building designs with a total window surface area of no more than 25% to 40% relative to the entire façade (low window to wall ratio) to reduce fatal bird collisions.
c) **Minimal Disruption of Habitat:** Organize buildings on the site to ensure minimal disruption of adjacent habitat areas where there might be a greater concentration of birds.

Ineffective Treatments:

The following treatments are considered ineffective and are not acceptable:

a) mirrored glass
b) transparent glass utilizing see through effects and objects placed behind glass
c) angled glass
d) window blinds
e) tinted glass
f) interior screens behind glass
g) silhouettes depicting birds of prey

Appendix 4: Landscape Treatments

Applicants are encouraged to consider the following landscape design guidance, in addition to the above noted Design Standards.

a) **Plantings:** Consider landscape designs or treatments that reduce linear character, and designs that may otherwise draw birds towards glass doors or façades.
b) **Species Attraction:** Consider limiting use of plant species that attract and/or provide a source of food for birds in locations that could result in harmful collisions. Alternatively, plant low shrubs or groundcover within 1m from the glazing, if spacing allows.
c) **Adjacent Development:** Consider how the proposed design can minimize the reflection from any existing and adjacent rooftop gardens, terraces and elevated landscapes.
d) **Indoor Views:** Minimize the visibility of components within the interior of the development (such as vegetation, green walls or water features) from the exterior perspective looking into the development to reduce their attractiveness to birds.
e) **Water Features:** In order to limit bird-window collisions, avoid locating decorative water features, bio-swales or stormwater retention ponds beside glazed facades.