



Report to: Development Services Committee

Date: February 4, 2014

SUBJECT: **Bird Friendly Guidelines Recommendation Report**

PREPARED BY: Ruth Rendon, M.C.I.P., R.P.P., Senior Planner, Natural Heritage,
Extension 6922
Lilli Duoba, M.C.I.P., R.P.P., Manager Natural Heritage,
Extension 7925

REVIEWED BY: Marg Wouters, M.C.I.P., R.P.P., Senior Manager, Policy and
Research Extension 2909

RECOMMENDATION:

- 1) That the staff report entitled “Bird Friendly Guidelines Recommendation Report” dated February 4, 2014, be received;
- 2) And that the report entitled “Bird Friendly Guidelines (January 2014)” prepared by North-South Environmental Inc. be endorsed and used in the City’s site plan approval process;
- 3) And that Staff be directed to implement the Bird Friendly Guidelines in the following manner:
 - i. ensure access and availability of Bird Friendly Guidelines to all parties involved in the development approval processes;
 - ii. incorporate bird friendly treatments into the City’s Site Plan Approval process through use of a Bird Friendly Specification Checklist that identifies requirements;
 - iii. continue to be proactive in both the retrofit of existing municipal buildings and the design of new municipal buildings with bird friendly treatments; where needed and appropriate; and where budgets permit; while taking into consideration the function and design of building;
 - iv. prepare an education and outreach program to encourage bird friendly treatments of existing private buildings and residential properties; and,
 - v. review and update the Bird Friendly Guidelines periodically (eg. every five years) to address any new best management practices.
- 4) And further that staff be authorized and directed to do all things necessary to give effect to this resolution.

EXECUTIVE SUMMARY:

The purpose of this report is to request endorsement of Markham’s Bird Friendly Guidelines (January 2014) prepared by North-South Environmental Inc., and provide recommendations on implementation.

The Bird Friendly Guidelines (Guidelines) study was undertaken by the City to assess background conditions on documented bird strikes in Markham, bird migration

implications and the development of window treatments and site plan considerations for the reduction of bird-window collisions. The Guidelines are prepared to address future buildings, but also provide direction on addressing bird friendly retrofits of existing buildings. Chapter 4 of the Guidelines provides the technical specifications of best management practices which can be used to reduce bird-window collisions. These Guidelines are intended to be made available to builders and developers and to be incorporated in the City's site plan approval processes.

The Guidelines provide a number of implementation recommendations which include the incorporation of bird friendly treatments into the site plan approval process, through the use of a Bird Friendly Guidelines Specification Checklist, and the development of an education and outreach program to guide the development industry, businesses and residents.

PURPOSE:

The purpose of this report is to request endorsement of Markham's Bird Friendly Guidelines as prepared by North-South Environmental Inc., and to provide recommendations on implementation.

BACKGROUND:

There has been growing awareness amongst Markham Council and staff regarding the issue of bird-window collisions. The Bird Friendly Guidelines study identifies bird strikes on buildings as the second largest cause of bird fatalities and injury, exceeded only by cats. Markham has been active in encouraging bird friendly treatments on buildings across the municipality with the assistance of the Fatal Light Awareness Program (FLAP) organization. This has been achieved by retrofitting existing municipal buildings (e.g., Markham Civic Centre, Fred Varley Art Gallery, 8100 Warden Avenue); incorporating bird friendly design measures in new municipal buildings (e.g., Cornell Community Centre and the future South-East Community Centre); and encouraging best practices in private sector developments.

The development of Bird Friendly Guidelines for Markham is identified as a priority in the Greenprint - Markham's Sustainability Plan and Markham's new Official Plan (adopted, 2013). With a large portion of Markham's future growth anticipated to be in more dense urban centres, it is timely to develop more comprehensive guidelines to address and manage bird-window collisions over the long term. The preparation of Markham's Bird Friendly Guidelines addresses these priorities providing strategies and treatments to reduce bird-window collisions in Markham. In addition, recent court decisions with regards to bird-window collisions have established that building owners have a responsibility under the *Ontario Environmental Protection Act* and *Federal Species at Risk Act* to undertake reasonable measures to protect birds from harm.

In 2013, Markham's Bird Friendly Guidelines study was awarded to a multi-disciplinary consulting team led by North-South Environmental Inc., The team was also comprised of Wallman Architects, the Landplan Collaborative Ltd., Dr. Daniel Klem, Professor of Ornithology and Conservation Biology at Muhlenberg College and Mr. Michael Measure,

Executive Director of FLAP Canada. A link to the Bird Friendly Guidelines (January 2014) can be found in Appendix 'A'.

The Bird Friendly Guidelines study includes the review of background conditions relating to documented bird strikes in Markham, bird migration implications and the development of technical specifications which provides guidance on the types of treatments and techniques that should be implemented in site design, building design and the retrofit of buildings. The study also provides an implementation strategy on actions that the municipality could employ to manage and reduce bird-window collisions.

The study process included consultation with staff and industry professionals. Planning staff have also worked closely with staff in Asset Management, given the implications of the Guidelines to city owned buildings.

DISCUSSION:

The Bird Friendly Guidelines include the review of migratory bird patterns and documentation of existing breeding and resident bird locations. The study concludes that there is a high concentration of migratory and resident birds in Markham susceptible to bird-window collisions. Further, the study concludes that bird strikes are likely to occur in all areas of the City including areas removed from significant natural heritage areas. As such, the study recommends the application of bird friendly treatments City-wide.

The review of scientific research and best management practices has identified the following as the leading factors that contribute to bird-window collisions:

reflectivity of glass	birds cannot distinguish the difference between habitat reflected in glass and real habitat
transparency of glass/passage effect	<ul style="list-style-type: none"> birds fly into glass if they can see through it to habitat on the other side birds perceive dark glass in an otherwise opaque façade as a “gap” and try to fly through it
overall design/size of glass	buildings with contiguous glass exceeding 2m ² are most likely to experience bird strikes
building height	<ul style="list-style-type: none"> buildings up to 16m from ground level, or buildings 16m above an adjacent roof garden can attract birds (collisions generally occur up to approximately 16m, the height to which urban vegetation generally grows) collisions may occur at higher levels if the vegetation is taller, or is on a slope
proximity to natural features	proximity of development and the relationship to the surrounding landscape (along with the area of glass)
design traps	vegetated courtyards or atria where birds can become trapped by the surrounding glass, and the amount of glass (larger panels of glass are associated with higher numbers of collisions)
orientation and siting /reflective vegetation	generally if vegetation is reflected in the glass birds will hit it, but if vegetation is within 3m, birds may not be able to achieve the momentum to injure themselves on the glass
lighting	may attract birds to find places to rest within cities during stopovers or be confused by city lights and fly blindly, particularly during bad or foggy weather

The study included a national and international review of bird friendly treatments and practices. Chapter 4 of Markham's Guidelines provides a compendium of technical specifications for window treatments which were proven effective in other jurisdictions. The Guidelines provide options for window treatments in order to provide builders and architects with as much flexibility as possible, including options for applications of both primary and secondary treatments.

The most effective documented solutions to prevent bird-window collisions are to make the glass visible to birds by reducing reflection and transparency. It has been determined that contiguous unbroken glass surfaces present hazards to birds if larger than 2m² in area.

The following list identifies the technical specifications being recommended for bird friendly window treatments:

- treat 85% of contiguous glass larger than 2m² in area from finished grade to 16m with a primary treatment. Primary treatments include applying external blinds, shades, netting or external semi-transparent stripes, dots or other patterns. The minimum standard for visual marker spacing should not exceed 5cm horizontally or 10cm vertically.
- for the 15% remaining glass surface without primary treatment, a secondary treatment is recommended for all areas of contiguous glass greater than 2m². Secondary treatments can include closer-spaced window mullions, internal blinds and shades, ultraviolet patterns with greater than 20-40% reflectivity, tinting and angling of glass, and judicious placement of vegetation so that it does not reflect in the glass.
- exterior lighting should be mitigated by shielding, so that light projects downward rather than skyward. Interior light should be mitigated by turning lights off from 11:00 p.m. to 6:00 a.m. especially during migration season.

Comments received throughout the study process have been considered in the Bird Friendly Guidelines recommendations including those provided by Building Industry and Land Development Association (BILD) and Ontario Association of Architects (OAA) (see attached Appendix 'B'). Generally, the comments are positive and support the Guidelines. Some minor modifications made to the Guidelines in response to the comments received include the rationale for the 16m height requirement and inclusion of etched pattern option.

Managing bird strikes in Markham requires a multi-faceted approach and therefore a number of actions have been recommended in the study as follows:

1. ensure access and availability of Bird Friendly Guidelines to all parties involved in the development approval processes;
2. incorporate bird friendly treatments into the City's Site Plan Approval process through use of a Bird Friendly Specification Checklist that identifies requirements;
3. encourage the completion of a voluntary monitoring program to applicants during the site plan application process, where appropriate;
4. continue to show leadership by including bird friendly treatments on all municipal buildings where needed, appropriate and where budgets permit; while taking into consideration the function and design of building;

5. develop an education and outreach program, including a lights out program, to promote bird friendly treatments on existing private buildings and residential properties; and,
6. review the Guidelines periodically to reflect new best management practices (every 5 years).

Section 41 of the *Planning Act* provides for the consideration of matters relating to exterior design of buildings through site plan approval, including the character, scale, appearance and design features of buildings and their sustainable design. Markham's new Official Plan contains policies requiring the application of sustainable design practices in site planning and building design, including window applications to reduce bird-window collisions, and minimizing the impact of building lighting on the night sky.

To assist staff and applicants with implementation of the Bird Friendly Guidelines in the site plan approval process, a Specifications Checklist is being developed which identifies: applicant and City responsibilities at each stage of the site plan approval process, submission requirements, and acceptable treatments options. A draft of the Specifications Checklist is attached as Appendix 'C'.

Markham staff support a voluntary monitoring program to be administered by a third party (such as FLAP Canada) on behalf of the applicant, at the time of development. A requirement for monitoring may be recommended by staff, where high risk buildings have been identified. The applicant would be responsible for the management of the monitoring program and any associated costs.

In terms of Markham's own assets, it is recommended that staff in Community Services continue their practice of including bird friendly treatments in municipal buildings while taking into consideration the function and design of buildings, as was done for the Cornell Community Centre, and continue to investigate, where budgets permit and where needed and appropriate, bird friendly retrofits for existing buildings.

Staff support the preparation of an education and outreach program to guide the development industry, businesses and residents on bird friendly implementation matters. For instance, a Lights Out Program similar to the City of Toronto's education and awareness program on bird protection and energy conservation could be considered. For the development community, an education brochure can encourage the need for retrofit of buildings and provide information on available treatments.

FINANCIAL CONSIDERATIONS AND TEMPLATE: (external link)

There are no direct financial implications for the City related to endorsement of Markham's Bird Friendly Guidelines. No additional staff are proposed to administer this program, as it would be implemented within the existing site plan approval process. There are costs associated with retrofitting of municipal buildings. Asset Management will continue to prioritize the retrofit of municipal buildings, and funding to support the treatments will be built into yearly capital costs. New municipal buildings would include bird friendly treatments as part of the overall budget. The Sustainability Office would

lead the preparation of an education and outreach program as part of implementation of the Greenprint- Markham's Sustainability Plan.

ALIGNMENT WITH STRATEGIC PRIORITIES:

Markham's Bird Friendly Guidelines align with Markham's strategic focus specifically the Growth Management and Environment priorities.

BUSINESS UNITS CONSULTED AND AFFECTED:

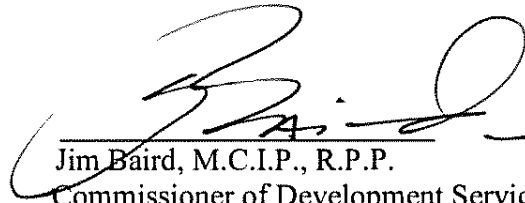
The Bird Friendly Guidelines were circulated to Planning, Community Services (Asset Management), Legal Services and Sustainability Office for comments. Where comments have been received they have been incorporated into the Guidelines.

CONCLUSION:

The Bird Friendly Guidelines respond to a Council priority identified in the Greenprint-Markham's Sustainability Plan and the new Official Plan (adopted 2013). The Bird Friendly Guidelines are a progressive urban design tool that can be used by Markham to reduce bird-window collisions, which not only supports the City's environmental planning initiatives, but also supports sustainable design practices. The Bird Friendly Guidelines provide Markham with a strong tool to reduce bird-window collisions as the City continues to intensify.

RECOMMENDED BY:

Rino Mostacci, M.C.I.P., R.P.P.
Director of Planning and Urban Design



Jim Baird, M.C.I.P., R.P.P.
Commissioner of Development Services

ATTACHMENTS:

- Appendix 'A': Markham Bird Friendly Guidelines (January 2014).
Available on-line.
- Appendix 'B': Correspondence to City of Markham from BILD and OAA.
- Appendix 'C': Draft Bird Friendly Guidelines Specifications Checklist

November 27, 2013

Ruth Rendon, MES, MCIP, RPP
Senior Planner, Natural Heritage
Planning and Urban Design Department
City of Markham, Anthony Roman Centre
101 Town Centre Boulevard
Markham, ON L3R 9W3

Dear Ms. Rendon,

RE: City of Markham – Bird Friendly Guidelines (October 2013 Draft)

On behalf of the members of the BILD York Chapter, thank you for hosting a consultation workshop on November 6th for the City of Markham's Bird Friendly Guidelines, dated October 2013 Draft. As interested and affected stakeholders, we are pleased to have the opportunity to respond to this draft with any pertinent feedback. As such, in advance of the December 6th deadline for comment, we have had the opportunity to review the document, and would like to put forward our comments for your consideration.

We acknowledge that the intent of this document is to reduce the number of bird fatalities caused by bird strikes on buildings through the implementation of a set of guidelines. In principle, BILD supports the protection of migratory birds against unnecessary collisions with buildings.

We understand that the City of Markham is proposing a 16 metre requirement to provide primary treatments to the glass on building facades and that this direction is to protect the flight path of the birds within the limits of the tree canopy. We seek further clarification for the rationale of this direction, as in our consultation workshop, the City of Markham referenced reliance on the studies produced by the City of Toronto and *Toronto's Bird-Friendly Development Guidelines* indicates (on page 9) that the typical city tree heights do not exceed 12 metres. This information is supported by the 2010 Toronto Study entitled *Every Tree Counts*; whereby, Toronto is noted as having a mature tree canopy due to the multitude of trees planted in the early 1900s now nearing the end of their life cycle.

BILD believes that the City of Markham's current recommendation to provide treatment to glass facades up to 16 metres is unnecessarily onerous for the applicant and a rationale has not been given to apply these recommendations beyond 12 metres. As a result, we feel that the City of Markham should provide additional background information to verify that its tree canopy is greater than 12 metres, if "16 metres" is used in the final recommendations of City of Markham Staff.

In addition, we understand that currently applicants are being asked to include the recommendations set out in this draft as part of their application, despite the fact that this document has not yet been endorsed or adopted by Markham City Council. As a matter of protocol, staff should not be applying draft guidelines towards current applications until they have received the endorsement of City Council.

Again, we thank you for the opportunity to submit comments. We trust that you will take these comments into consideration and as partners in building complete communities; we look forward to our continued consultation. If you have any questions or concerns, please don't hesitate to contact the undersigned.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Danielle Chin', with a stylized flourish at the end.

Danielle Chin, MCIP RPP
Senior Planner, Policy & Government Relations

CC: *Michael Pozzebon, BILD York Chapter Chair*
Paula Tenuita, Vice President, Policy & Government Relations, BILD
BILD Chapter members

Rendon, Ruth

From: Kristiana Schuhmann [KristianaS@oaa.on.ca]
Sent: December-18-13 10:08 AM
To: Rendon, Ruth
Cc: Borooah, Ronji; Kristi Doyle; Adam Tracey
Subject: OAA Member Responses to Markham Bird Friendly Guidelines
Attachments: Responses from OAA Members Re Bird Friendly Guidelines_Dec 17 2013.pdf

Categories: Orange Category

Hi Ruth,

Thank you for considering the OAA, and the views of our members, when developing Markham's Bird Friendly Guidelines. Attached is a consolidated version of all the comments we received; sorry they are a bit late. Please don't hesitate to contact us should you have any future regulatory or planning initiatives that would benefit from the professional opinion of Ontario architects.

Happy holidays
Kristiana Schuhmann

Kristiana Schuhmann
B.A.S., M.Arch, MRAIC
Ontario Association of Architects
111 Moatfield Drive
Toronto, ON M3B 3L6
t: 416-449-6898 ext.228
e: kristianas@oaa.on.ca

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Dec 17, 2013

Responses from OAA Members Re: City of Markham Bird Friendly Guidelines

General Comments

- Overall support of the guidelines and their implementation to reduce unnecessary bird collisions
- The recommendations for both primary treatments and secondary treatments seems fair, reasonable and in-line with current thinking.
- The passage of these Guidelines would place Markham at the forefront of bird-friendly measures.
- The Guidelines will assist architects to lead design solutions which incorporate bird-friendly features, while still maintaining aesthetics.

Regulation Concerns

- Concern that when municipalities develop their own Bird Friendly Guidelines, they will become an additional set of requirements to be dealt with at the Site Plan Approval (SPA) process.
- Suggestion that these Guidelines be incorporated province wide instead of by municipality in order to eliminate the duplication of efforts should other municipalities chose to follow suit.
- Incorporating Bird Friendly Guidelines in provincial regulations would put the compliance effort during the detailed design stage of a project, and also catch those projects which are not subject to SPA.

Practice Recommendations

- Question the proposed use of patterns applied to glass; Are different patterns (organic vs. rectilinear) more effective than others? Also, how can the implementation of UV strategies strengthen the concept?
- Learn from Toronto: Current Green Building Standard does not specify which side the frit is applied to (surface 1 recommend by FLAP and although a viable option, surface 3 is not mentioned).
- Learn from Toronto: There is a lack of performance standards (i.e. required percent of collisions to be avoided) and prescriptive standards (i.e. not sufficiently complete to specify a double pane sealed unit).
- Recommend that a cost report be done to examine the financial implications of additional fritted glazing, as it is significantly more expensive.

Current Practice

- The use of smaller pane sizes and shading patterns on glass (by a projected brise-soleil above windows) is currently being implemented and tested.
- Option to substitute fritting with an etched solution that has a lower surface profile.
- How can the material/product industry contribute to developing bird-friendly solutions?

BY EMAIL AND MAIL

12 December 2013

Ontario Association of Architects
111 Moatfield Drive
Toronto, Ontario
M3B 3L6

Attn: Kristiana Schuhmann

Bird Friendly Guidelines
October 2013 Draft
City of Markham

Dear Ms. Schuhmann,

In response to the OAA email of Thursday December 5th, I am pleased to place the following comments before you.

Wholeheartedly, and without reservation, I support these Bird Friendly Guidelines. We look forward to their implementation and to the subsequent mitigation and reduction of bird collision events in the City of Markham.

The recommendations for both primary treatments and secondary treatments seem fair, reasonable, and in-line with current thinking on this issue. The recommendations made to Council also seem fair and reasonable.

The passage of these Guidelines, as constituted in the Draft form, would place Markham at the forefront of bird-friendly measures.

Personally, I have devoted a great deal of time over the last 6 years to bird-friendly issues. I was the only architect volunteer participant on the Bird Friendly Development Working Group formed by the City of Toronto to advise and create the Bird Friendly Development Guidelines 2007. Continuing on from that, I have assisted FLAP in a minor capacity, and most recently, have been engaged by the City of Toronto to work with them to produce a Best Practices. Glass document: all with the goal of expanding the building industry's knowledge regarding measures to mitigate and avoid bird strikes at buildings.

Bird Friendly Guidelines
October 2013 Draft
City Of Markham
12 December 2013

Page 2

The City of Markham is to be commended for bringing forward these Guidelines and pursuing this course of action. I strongly feel that whatever support our profession can lend will only strengthen the City of Markham's policies and results. Our profession should not appear negative about these guidelines, lest we be seen as self-serving and disinterested in ecology and the environment.

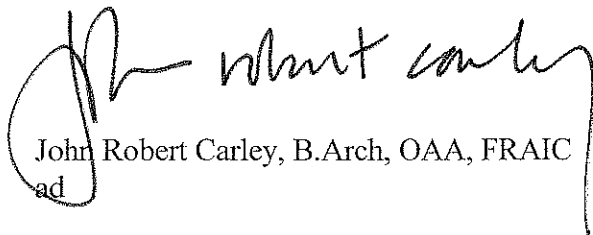
The treatments identified in the report will push all architects into thinking differently about their buildings, and may indeed result in different design solutions: solutions that are aesthetic yet incorporate the bird-friendly features. Our profession is well equipped intellectually to deal with this; and uniquely positioned to take on the challenge of making all buildings bird-friendly.

Thank you for the opportunity to comment on these guidelines to my colleagues.

Yours sincerely,

JOHN ROBERT CARLEY, ARCHITECT INCORPORATED

per:



John Robert Carley, B.Arch, OAA, FRAIC
ad

APPENDIX 'C'
BIRD FRIENDLY GUIDELINES SPECIFICATIONS CHECKLIST

Bird Friendly Review Procedures in Site Plan Application Review		
	Applicant Responsibilities	City Staff Responsibilities
At pre-consultation	To inquire about Bird Friendly requirement.	Planning and Urban Design to: a) provide <i>Bird Friendly Checklist</i> , to be filled in by applicant's architectural consultant, in Elevation drawing(s) stamped by OAA member; b) provide <i>Bird Friendly Lighting Criteria</i> , to be filled in by applicant's electrical consultant, in drawing(s) stamped by Professional Engineer; encourage development to exceed the minimum bird friendly requirements.
At submission	a) Provide Elevation drawing(s) that include a completed <i>Bird Friendly Checklist</i> (see <i>Building Elevation Submission requirement</i>). b) Provide Floor plans that show the functional layout of the building.	Development Services counter to: a) verify Elevation drawing(s) include a completed <i>Bird Friendly Checklist</i> that indicates treatment(s) meet mandatory requirements; b) verify Floor Plans are submitted; and c) advise Planning of a) and b) prior deeming submission complete.
At endorsement	a) Provide Elevation drawing(s) that include a completed <i>Bird Friendly Checklist</i> that meets all criteria for Urban Design and Planning stamp and signature.	Urban Design to: a) stamp and sign <i>Elevation Drawings</i> Planning to: a) address bird friendly in <i>DSC Report</i>
At post endorsement site plan review and Approval	a) Provide Lighting Photometric drawing that shows 0 level lighting at property line; b) Provide Electrical engineering drawing(s) that include a completed <i>Bird Friendly Lighting Criteria</i> and Light fixture Specifications from catalogue; c) Provide Cost Estimate of exterior light fixtures for collecting letter of credit.	Engineering to: a) verify that <i>Lighting Photometric</i> shows 0 lighting level at property line; b) verify that <i>Electrical Engineering Drawing(s)</i> include a completed <i>Bird Friendly Lighting Criteria</i> that indicates lighting treatments meet mandatory requirements.
At site plan agreement	Work with City staff to ensure development meet Bird Friendly Lighting requirements.	Engineering to: a) stamp and sign <i>Electrical Engineering Drawing(s)</i> , and cost estimate. Planning to: a) provide <i>Bird Friendly conditions</i> to be included in the Site Plan Agreement.

APPENDIX 'C'

BIRD FRIENDLY GUIDELINES SPECIFICATIONS CHECKLIST

Mandatory Primary Treatments

AT GRADE CONDITION

- ☐ Bird friendly treatment is applied on minimum 85% of contiguous glass panel area, if each panel area is greater than 2m² and within 16m from finished grade.

TREATMENTS (confirm one or more of the below treatments are applied)

☐ **Stripes**

horizontal strip spacing is less than 5cm on centre
vertical strip spacing is less than 10cm on centre
horizontal strips widths are greater than 3.1mm
vertical strips widths are greater than 6.1mm

☐ **Dots**

dot size is larger than 5mm
horizontal strip spacing is less than 5cm on centre
vertical strip spacing is less than 10cm on centre

Application of fritting or etching of glass is preferred as a permanent treatment, but other treatments are also acceptable. Treatment should be on exterior surface of glass. Pattern colour should be of high contrast in relation to the background.

ROOF LANDSCAPE CONDITION

- ☐ Bird friendly treatment is applied on minimum 85% of contiguous glass panel area, if each panel area is greater than 2m² and within 16m from finished grade.

TREATMENTS (confirm one or more of the below treatments are applied)

☐ **Stripes**

horizontal strip spacing is less than 5cm on centre
vertical strip spacing is less than 10cm on centre
horizontal strips widths are greater than 3.1mm
vertical strips widths are greater than 6.1mm

☐ **Dots**

dot size is larger than 5mm
horizontal strip spacing is less than 5cm on centre
vertical strip spacing is less than 10cm on centre

Application of fritting or etching of glass is preferred as a permanent treatment, but other treatments are also acceptable. Treatment should be on exterior surface of glass. Pattern colour should be of high contrast in relation to the background.

Mandatory Lighting Criteria

- ☐ the use of exterior up lighting is eliminated
- ☐ there is no exterior light spill outside of property line
- ☐ interior lights are out between 11pm – 6am during spring (March-June) and fall (August-October) migration period