



Effectiveness of AviProtek® Bird Friendly Glass

Principles of Bird Deterrence

Bird collisions against building glass facades are a major cause of bird mortality, claiming the lives of up to a billion birds each year. The magnitude of the problem is such that an important trend has emerged across North America to make buildings safer for birds.

Municipalities, states and provinces are proactively adopting bird deterrence legislations. San Francisco's *Standards for Bird-Safe Buildings* and the *California Coastal Commission* lead the way in bird deterrence regulations on the West Coast. Further east, Toronto's *Green Standard* and New York City's *Local Law 15* stand out as influential voices in bird friendly building legislation.

Thought leaders including The National Glass Association (NGA), the Canadian Standard Association, and ornithologists like Dr. Daniel Klem agree that visual markers on the first surface of a glazing unit provide the best protection against bird collisions. The CSA A460 standard requires first-surface treatment, while the NGA's updated Bird Friendly Glazing Design Guide recommends first-surface markers as the most reliable method for all weather conditions.

Bird Deterrent Buildings

One of the most asked questions is: Does it really work? Yes, it does.

The following examples provide information on real projects with a variety of performance requirements. Read on to see how effective AviProtek® acid-etched bird deterrent patterns on surface 1 can be.



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Collaborative Science Research Building, University of Saskatchewan

Saskatoon, SK

Date of construction: 2018

Collision(s) since installation: 0 (as of February 2022)

This research facility's curtain walls and walkways use bird friendly AviProtek® glass with Solarban® 70 coating. These high-performance glass products deter bird strikes and contributed toward this building's Two Green Globes certification for sustainable design and energy efficiency.

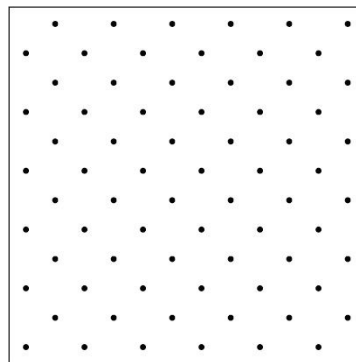


"As the building we were constructing was to focus primarily on research aimed to life and natural sciences, we wanted to provide a facility that would not only support the work they do, but the principles that their research is dedicated to which involves the **conservation, preservation and prevention of harm to the natural environment and those living in it.**"

- *Dr. Christy Morrissey, Associate Professor at U of Sask, specialty in health of wild bird populations.*

Glass Specs:

- AviProtek® E
 - 6mm Clear Glass
 - Pattern 217 (5mm dots, 2" x 2") on surface 1
- Bird Deterrence:
 - Meets CSA A460-19 standard (2x2 rule)
 - ABC Threat Factor: 25
- Energy / Performance:
 - Vitro Solarban® 70 on position 2
 - SHGC: 0.27
 - VLT: 64%



Pattern 217

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Education Center, Oregon Zoo

Portland, OR

Date of construction: 2017

Collision(s) since installation: 0 (as of February 2022)

The Oregon Zoo's Education Center punches above its weight in sustainability, performance and use of daylighting. Throughout the Center, Opsis Architecture used AviProtek® E bird friendly glass in pattern 211. A low-e coating on the second surface of the glass minimizes energy waste and helped the project achieve LEED® Platinum status.



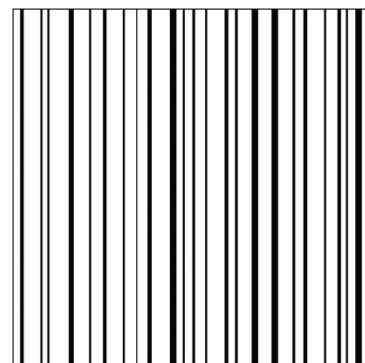
"There were some places where we didn't need the pattern at all, by percentages, so initially we left it out. The zoo came back and asked, 'Why wouldn't we put it everywhere? The staff in the admin offices feel like they've been left out because they don't have that in their area.'

"For them, this was a value that was so important, and they said, 'We want it everywhere.'"

- *Heather DeGrella, Sustainable Design Director, Opsis Architectures*

Glass Specs:

- AviProtek® E
 - 6mm Clear Glass
 - Pattern 211 (vertical stripes) on surface 1
- Bird Deterrence:
 - Meets CSA A460-19 standard (2x2 rule)
 - ABC Threat Factor: 23
- Energy / Performance:
 - Vitro Solarban® 70 on position 2
 - SHGC: 0.27
 - VLT: 64%



Pattern 211

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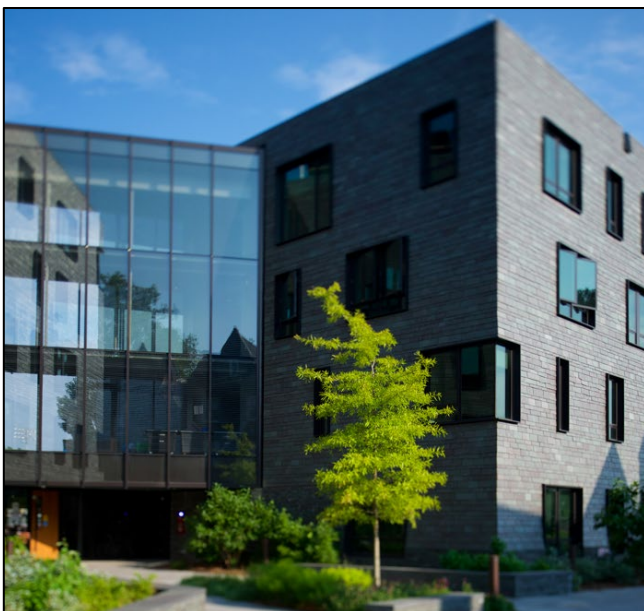
PPR Apartments, Swarthmore College

Swarthmore, PA

Date of construction: 2017

Collision(s) since installation: 1 (as of February 2022)

Swarthmore College's PPR Apartments are linked by glass walkways, a notoriously dangerous feature for birds. To prevent strikes against these high-risk elements, the walkways are glazed with AviProtek® E bird friendly glass. Along with the complex's other green components, like geothermal energy, this choice of bird safe glazing reflects the college's commitment to ecological responsibility.



"The patterned Walker glass on the PPR Apartments and Whittier buildings at Swarthmore is far **more effective at preventing bird strikes than other glass patterns on campus**. Over several years, there has been fewer than one documented bird collision per year on the patterned glass."

- *Professor E. Carr Everbach, Chair, Swarthmore College Environmental Studies*

Glass Specs:

- AviProtek® E
 - 6mm Clear Glass
 - Pattern 213 (horizontal stripes) on surface 1
- Bird Deterrence:
 - Meets CSA A460-19 standard (2x2 rule)
 - ABC Threat Factor: 30
- Energy / Performance:
 - Vitro Solarban® 67 on position 2
 - SHGC: 0.29
 - VLT: 54%



Pattern 213

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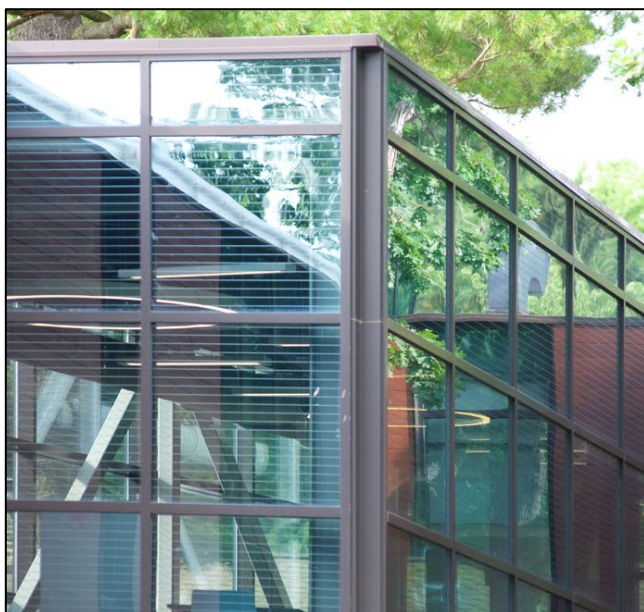
Whittier Hall, Swarthmore College

Swarthmore, PA

Date of construction: 2018

Collision(s) since installation: 1 (as of February 2022)

The Whittier Hall pavilion at Swarthmore College is one of the institution's first projects to be built under their new sustainability plan, equivalent to LEED® Platinum criteria. Green features include a photovoltaic array for solar energy, geothermal heating, and energy-efficient bird-friendly glazing.



"At Swarthmore, staff have been able to reduce birds strikes dramatically at the PPR Apartments and Whittier Hall by installing AviProtek® bird deterrent glass. Imagine what a difference it would make if all university and college campuses adopted this kind of approach!"

- *Dr. Daniel Klem Jr., Professor of Biology; Sarkis Acopian Professor of Ornithology & Conservation Biology, Muhlenberg College*

Glass Specs:

- AviProtek® E
 - 6mm Clear Glass
 - Pattern 213 (horizontal stripes) on surface 1
- Bird Deterrence:
 - Meets CSA A460-19 standard (2x2 rule)
 - ABC Threat Factor: 30
- Energy / Performance:
 - Vitro Solarban® 60 on position 2
 - SHGC: 0.39
 - VLT: 70%

Pattern 213

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The Garden Room, National Aviary

Pennsylvania, PA

Date of construction: 2020

Collision(s) since installation: 0 (as of February 2022)

The Garden Room of The National Aviary features stunning views of the historic Rose Garden and Lake Elizabeth through AviProtek® bird-friendly glass. The Aviary achieved LEED® Gold certification for this project, aided significantly by the glazing's energy-efficient and bird friendly qualities.



"[Having] tons and tons of glass, regularly monitoring that space and not having any bird strikes since construction ... I think **it is a testament to the treatment of the glass, and to the intentionality with which that space was built.**"

- *Sam Moore, Director of Guest Operations, National Aviary*

Glass Specs:

- AviProtek®
 - 6mm Acuity Glass
 - Pattern 213 (horizontal stripes) on surface 1
- Bird Deterrence:
 - Meets CSA A460-19 standard (2x2 rule)
 - ABC Threat Factor: 30
- Energy / Performance:
 - Vitro Solarban® 72 on position 3
 - SHGC: 0.36
 - VLT: 67%

Pattern 213

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Tropical Rainforest, National Aviary

Pennsylvania, PA

Date of renovation: 2018

Collision(s) since installation: 0 (as of February 2022)

The National Aviary's Tropical Rainforest habitat uses Starphire® Ultra-clear™ glass with a Velour finish to prevent bird strikes and optimize natural daylighting. The result is a stunning, airy habitat. It's the perfect space for plants, visitors, and birds.



"Everything is really, really lush. It lends itself well to the birds that are in there, that sun themselves high up in the canopy. We got a tremendous amount of growth ... I'm frankly impressed and amazed at the amount of growth we have in there."

- *Conor McGarvey, Director of Buildings and Grounds, National Aviary*

Glass Specs:

- Walker Textures®
 - 3mm Starphire Ultra-Clear® Glass
 - Velour finish on surface 1
- Bird Deterrence:
 - Meets CSA A460-19 standard (2x2 rule)
 - ABC Threat Factor: 25
- Performance:
 - VLT: 92%



Velour

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Cap Tourmente National Wildlife Area

Saint-Joachim, QC



Date of retrofit: 2014

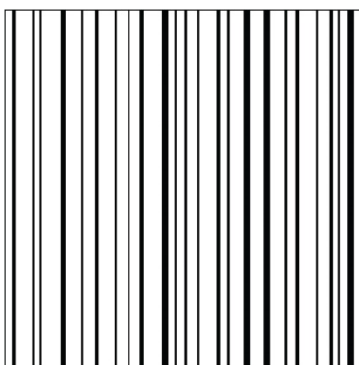
Collisions since installation: 3 against AviProtek® windows (<0.4 per year)

Prior to the retrofit, this building had a minimum of 24 bird strikes per year.

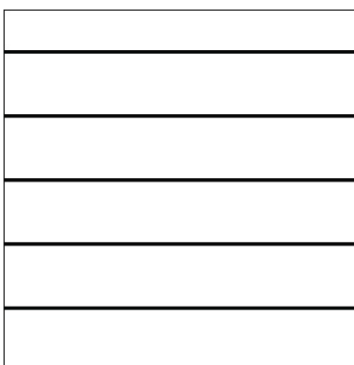
The Cap Tourmente National Wildlife Area interpretation centre is an access point to over 180 species of Quebec wildlife, including more than 30 warbler species. Natural vegetation all around the building increased the potential for bird strikes, so it was essential that the glazing be bird deterrent. AviProtek® pattern 214 fits the bill perfectly.

Glass Specs:

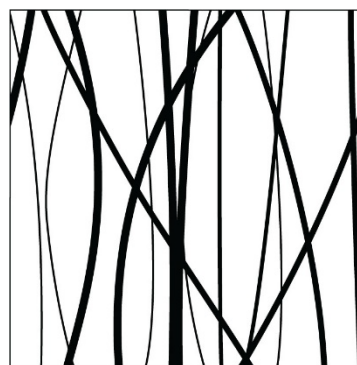
- AviProtek®
 - 6mm Clear Glass
 - Patterns 211, 213 and 214 on surface 1
- Bird Deterrence:
 - Meets CSA A460-19 standard (2x2 rule)
 - ABC Threat Factors: 23-30



Pattern 211



Pattern 213



Pattern 214

Walker Glass Company Ltd.

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Shashi Hotel

Mountain View, CA

Date of construction: 2021

Collision(s) since installation: 0 (as of July 2023)

The Shashi Hotel is an upscale urban resort in the middle of Silicon Valley that caters to a fast-moving tech clientele. The hotel's blue-tinted glass and sleek profile fit perfectly among neighbouring buildings like the Google and Microsoft campuses and NASA's Ames Research Center. AviProtek® bird-friendly markers on surface one make the façade safer for birds, while a Solarban® 70 low-e coating on surface three reduces the building's cooling loads.

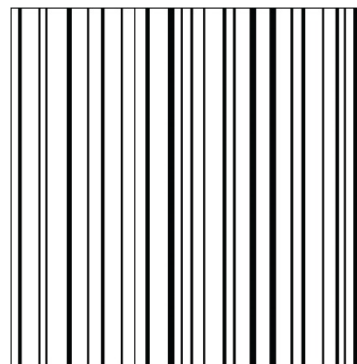


"I'm happy to report zero bird strikes. I think it's safe to say the bird-safe pattern works!"

- *Agustin Sanchez, Director of Engineering, Shashi Hotel*

Glass Specs:

- AviProtek®
 - 6mm Solarblue® Glass
 - Pattern 211 (vertical stripes) on surface 1
- Bird Deterrence:
 - Meets CSA A460-19 standard (2x2 rule)
 - ABC Threat Factor: 23
- Energy / Performance:
 - Vitro Solarban® 70 on position 3
 - SHGC: 0.26
 - VLT: 41%



Pattern 211

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City of Seattle's Cedar River Municipal Watershed

North Bend, WA

Date of construction: 2018

Collision(s) since installation: 1 per year (average, as of July 2023)

The City of Seattle's Cedar River Municipal Watershed Headquarters supports the work of Seattle Public Utilities to protect the ecological health of the region's water supply.

AviProtek® bird-friendly glass with low-e coating on surface 3 contributed to this building's LEED® Gold certification.

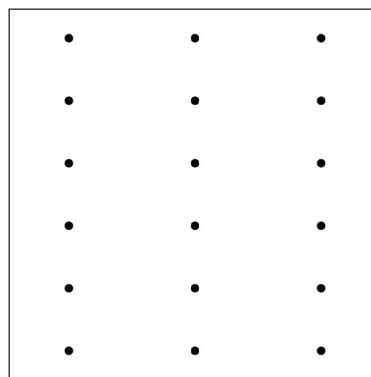


This building is located in a densely wooded area heavily populated with wild birds, which increases the likelihood of bird-glass collisions.

The pattern used for the glazing is AviProtek® 221, a 2" x 4" dot pattern with 0.7% etched surface. While this pattern reduces bird strikes significantly compared to regular glass, a 2" x 2" or linear pattern can be even more effective.

Glass Specs:

- AviProtek®
 - 6mm Clear Glass
 - Pattern 221 (5mm dots, 2" x 4") on surface 1
- Bird Deterrence:
 - ABC Threat Factor: 25
- Performance:
 - Vitro Solarban® 70 on position 3
 - SHGC: 0.36
 - VLT: 64%



Pattern 221

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Pikes Peak Summit Visitor Center

Colorado Springs, CO

Date of construction: 2021

Collision(s) since installation: 0 (as of July 2023)

Known as “America’s Mountain”, Pikes Peak has inspired visitors’ imaginations for centuries. Built at over 14,000’ elevation, it is one of the highest buildings in America, and a beacon for sustainable development in challenging environments. Green strategies such as bird-friendly glazing, greywater reclamation, and energy-efficient windows helped the building meet the rigorous standards of the Living Breathing Challenge.



Awards include:

- **2021 CSI Environmental Stewardship Award**, presented by the Construction Specifications Institute (CSI)
- **2022 PCI Design Awards, Special Award: Sustainable Design**, presented by Precast/Prestressed Concrete Institute

See the full list of awards [here](#).

Glass Specs:

- AviProtek® E
 - 6mm Clear Glass
 - Pattern 213 (horizontal stripes) on surface 1
- Bird Deterrence:
 - ABC Threat Factor: 30
- Performance:
 - Vitro Solarban® 70 on position 2
 - SHGC: 0.27
 - VLT: 64%

Pattern 213

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