UNIVERSITY OF WISCONSIN-MADISON
BIRD COLLISSION CORPS + MITIGATION

City of Madison
Plan Commission Work Session
0220 | 2020

Aaron Williams, PLA, ASLA
UW-Madison Facilities Planning & Management
Campus Planning & Landscape Architecture


LEE HAYS FOOTBALL

Bird Collisions & Architecture

A Panel Discussion on the Economics, Ecology, and Design Methods to Reduce Bird Strike Incidence

Friday, April 7, 2017

Signe Skott Cooper Hall Auditorium
University of Wisconsin-Madison
701 Highland Avenue

Facilities Planning & Management
UNIVERSITY OF WISCONSIN-MADISON

continuing education credits available through:

AIA Continuing Education

U.S. Green Building Council WISCONSIN

Wisconsin Chapter ASLA

Presentation & Discussion Panelists:

Stanley Temple - moderator
Professor Emeritus, UW-Madison Forest & Wildlife Ecology
Senior Fellow, Aldo Leopold Foundation

Matt Reetz
Executive Director, Madison Audubon
www.madisonaudubon.org

Anna Pidgeon
Faculty, UW-Madison Forest & Wildlife Ecology
www.forestandwildlifeecology.wisc.edu

Stefan Knust
Director of Sustainability, Ennead Architects
www.ennead.com

Sponsored by:

UW-Madison Facilities Planning & Management
Campus Planning & Landscape Architecture (CPLA)
Capital Planning & Development (CPD)

AIA Wisconsin - Southwest Chapter
U.S. Green Building Council - Wisconsin
Wisconsin Chapter - American Society of Landscape Architects

BIRD COLLISION CORPS

Bird Collision Corps began in Spring 2018 in response to community interest. UW-Madison (Facilities + Academic), Madison Audubon, and Dane County Wildlife Center created a program to examine which buildings on the UW-Madison campus posed greatest risk for bird-window collisions, what landscaping or building factors are associated with those sites, and move to remedy those problem areas, thereby creating a safer environment for birds.

WHY?

- Second Nature Resilience Commitment
- UW-Madison STARS Rating
- Campus Design Guidelines & Standards
- UW-Madison Strategic Framework 2020-2025
- Schools, Colleges, Divisions

ORGANIZATION

#1A

Facilities Planning & Management
UNIVERSITY OF WISCONSIN–MADISON

madison AUDUBON

#1B

Forest and Wildlife Ecology
UNIVERSITY OF WISCONSIN–MADISON

+ Student Club

#2

GREEN FUND
UW–MADISON OFFICE OF SUSTAINABILITY

DANE COUNTY HUMANE SOCIETY'S
WILDLIFE CENTER

AMERICAN BIRD CONSERVANCY

ennead architects

#3

Joint Campus Area Committee
Public Information Meetings
Design Review Board

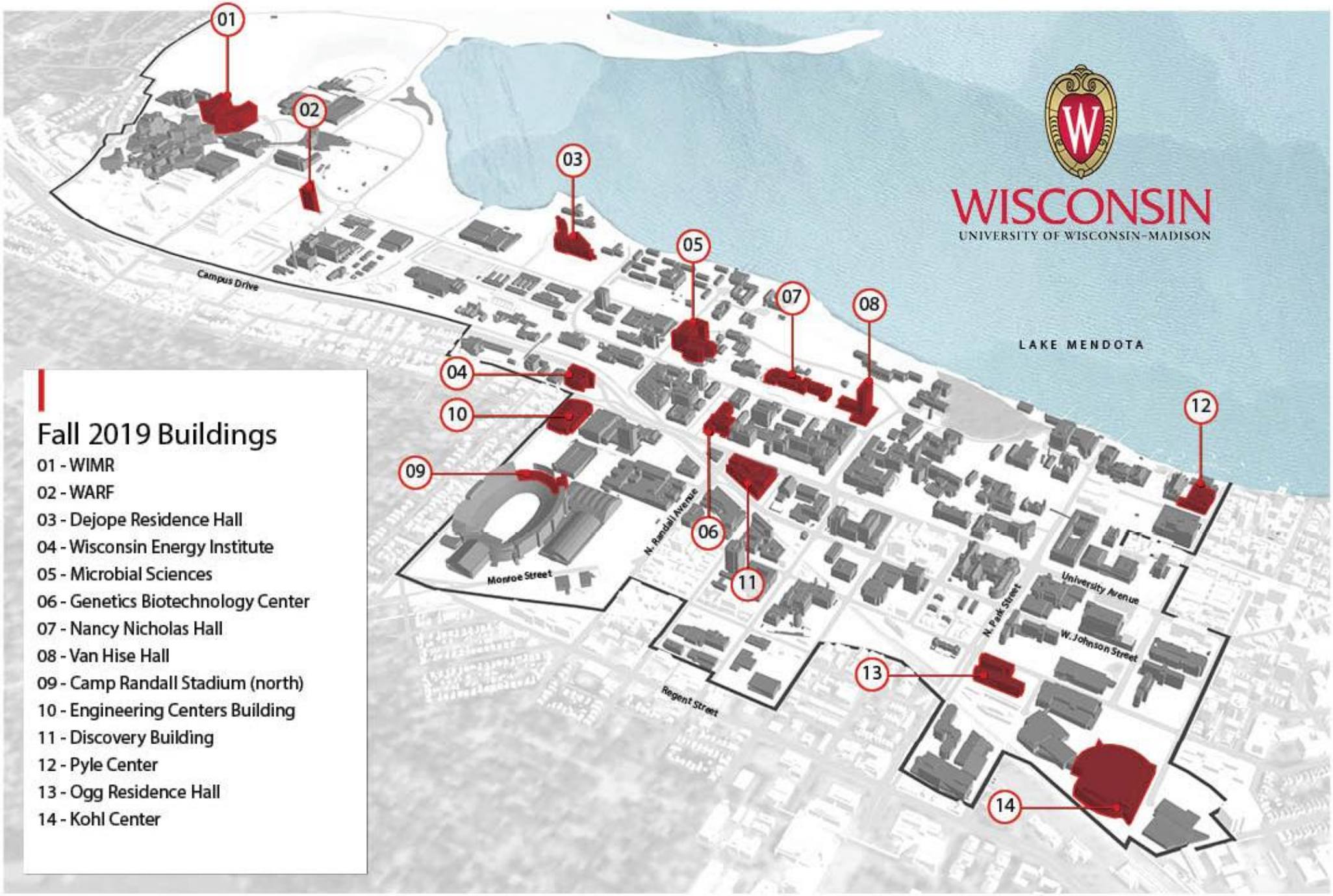
BIRD COLLISION CORPS

- 12-15 Buildings studied each survey period.
  - Spring Migration Period (April 15 - June 1)
  - Fall Migration Period (Sept. 16 - Nov. 1)
- Each building monitored 5+ days/week.
- Monitor between dawn and 11AM.
- 12’ out from each building, accessible roof terraces.
- Volunteer base of approximately 30 individuals.
- Handling protocols & waiver signature.
- Data collated in iNaturalist – cross-checked by coordinator.

BIRD COLLISION CORPS

CAMPUS NOTIFICATION

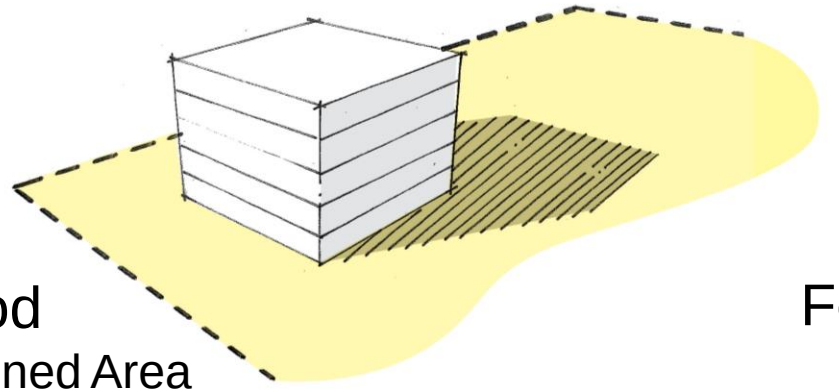
UW Forest & Wildlife Ecology Department
UW Facilities Planning & Management
UW Environmental, Health, & Safety
UW Risk Management
UW University Health Services
UW Grounds
UW Pest Control
UW Police Department
UW Communications
UW Building Managers for each building



Fall 2019 Buildings

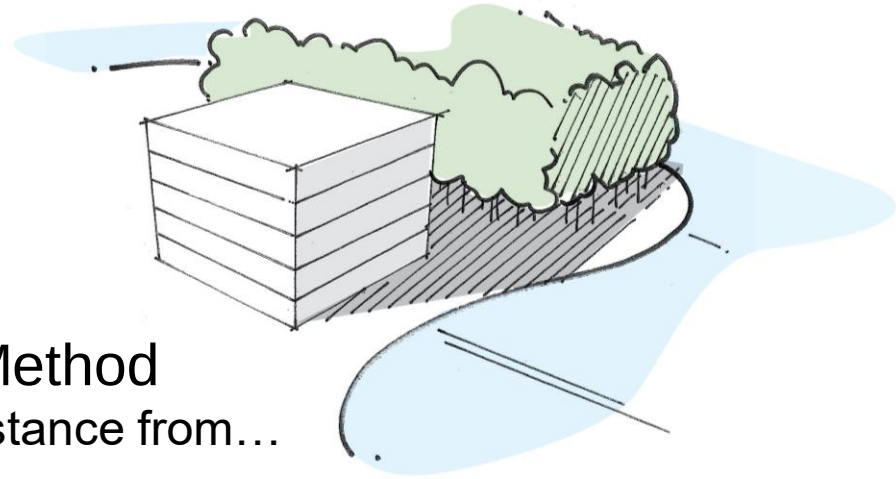
01 - WIMR
02 - WARF
03 - Dejope Residence Hall
04 - Wisconsin Energy Institute
05 - Microbial Sciences
06 - Genetics Biotechnology Center
07 - Nancy Nicholas Hall
08 - Van Hise Hall
09 - Camp Randall Stadium (north)
10 - Engineering Centers Building
11 - Discovery Building
12 - Pyle Center
13 - Ogg Residence Hall
14 - Kohl Center

ORDINANCE METHODS



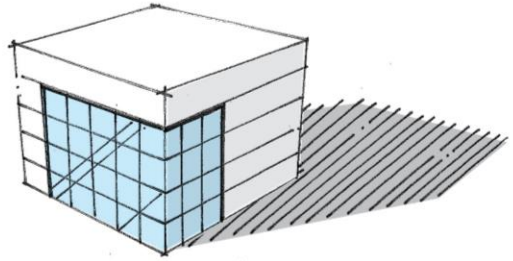
Locational Method

- Zoning/Defined Area

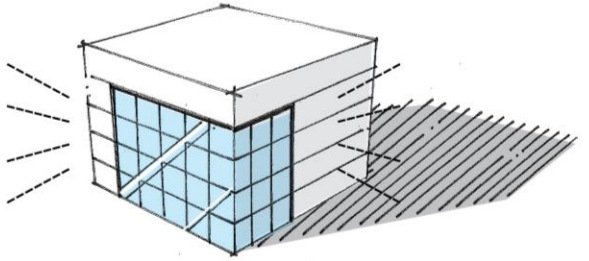


Feature Method

- Distance from…



Percent Glass Method



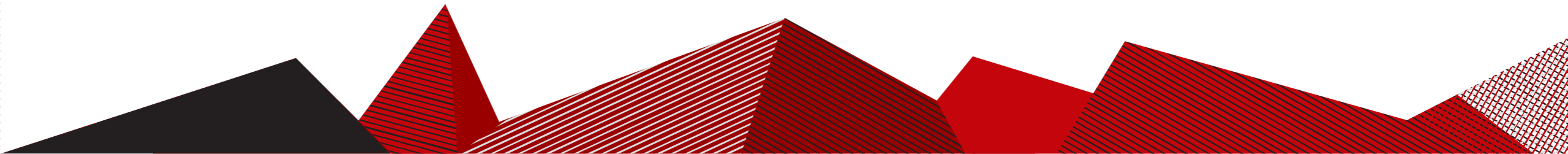
Reflectivity and/or
Transparency Method


THREAT
ZONES?

UW DRAFT RECOMMENDATIONS

NYC 1482B

- 90% of glass up to 75’ from ground = threat factor (TF) less than 25.
- Applies to facades adjacent to green roofs.
  (14’ height from green roof)
- All glass awnings and windscreens must also meet TF.
- Reference LEED PC 55 for TF chart.
  (few materials under TF 15 currently exist)
- Prohibit glass areas of non-friendly glass greater than 10’x10’.
  (so 10% isn’t loaded in one area).
- Applies to all new construction regardless of size, location, % glass.
  Remodels with façade component over $3M.
- 1/4” x 1/4” white dot spaced 2” x 2” continuous Surface 1 = TF 15.



THREAT FACTOR - MATERIALS

FAÇADE MATERIAL TYPE	THREAT FACTOR	NOTES
Brick/Wood/Stone	0	Opaque
Clear Glass	100	Single pane or IGU
UV reflective lines/patterns	27	Surface 2
¼” x ¼” Frit, 2” O.C.	25	Surface 2
¼” x ¼” Etch, 2” O.C.	15	Surface 1
¼” dia. Adhesive Dots, 2” O.C.	15	Surface 1 – 10 yr. life
Translucent channel glass	10	Surface 1 - Orange peel texture
¼” thick white stripes at 4”	8	Horizontal or Vertical
Matte 50% perf. white vinyl film	2	Surface 1
Window screens	2	Exterior 2” outboard of glass

REFLECTIVITY

TRANSPARENCY

LIGHTING

ESTIMATE OF PROBABLE COSTS

MITIGATION vs. NEW CONSTRUCTION

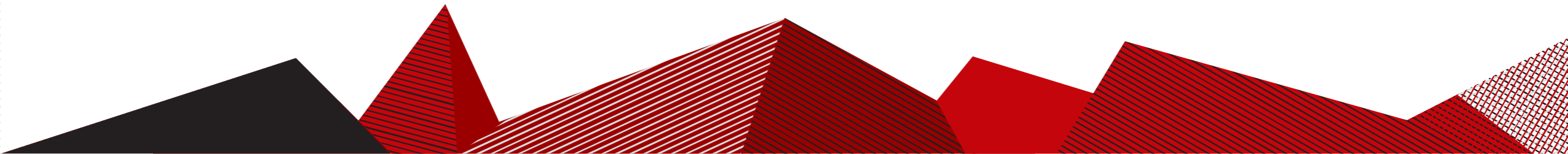
~~ESTIMATE OF PROBABLE COSTS~~

BIRD ‘VALUE’

- Seed Dispersal, Pollination, Water Purification,
- Food Source, Clothing, Medicines
- Control Pests, Nutrient Cycling
- Recreational Opportunity
- Inspirational/Spiritual Quality (Wellbeing)
- Messengers – widespread and respond quickly to change
- Intrinsic Value

ESTIMATE OF PROBABLE COSTS – SORT OF…

- Cannot think of glass independently of building envelope.
- Costs of building glass are very project specific.
- Variables that determine price:
  - Quantity
  - Performance (U-Factor, Heat Gain, Transmittance, Reflectance)
  - Size
  - Location of project, surface of treatment
  - Schedule
  - Color
  - ‘Industry’
- Frit, etch, and films will cost more than ‘standard’ glass (Solarban 70) without those features.
- Frit, etch, and films have a corresponding energy performance benefit.
- Frit, etch, and films will cost less than UV products, in general.
- If starting with a high-end glazing system, bird-friendly glass might be less expensive.
- Considering issue up front might reduce glazing – cost comparing facade materials.



ESTIMATE OF PROBABLE COSTS

MITIGATION vs. NEW CONSTRUCTION

Ogg Residence Hall
2”x2” by 1/4” White Dots
Varies by Supplier $6-12/SF
Low Bidder $6.30/SF
TF = 15

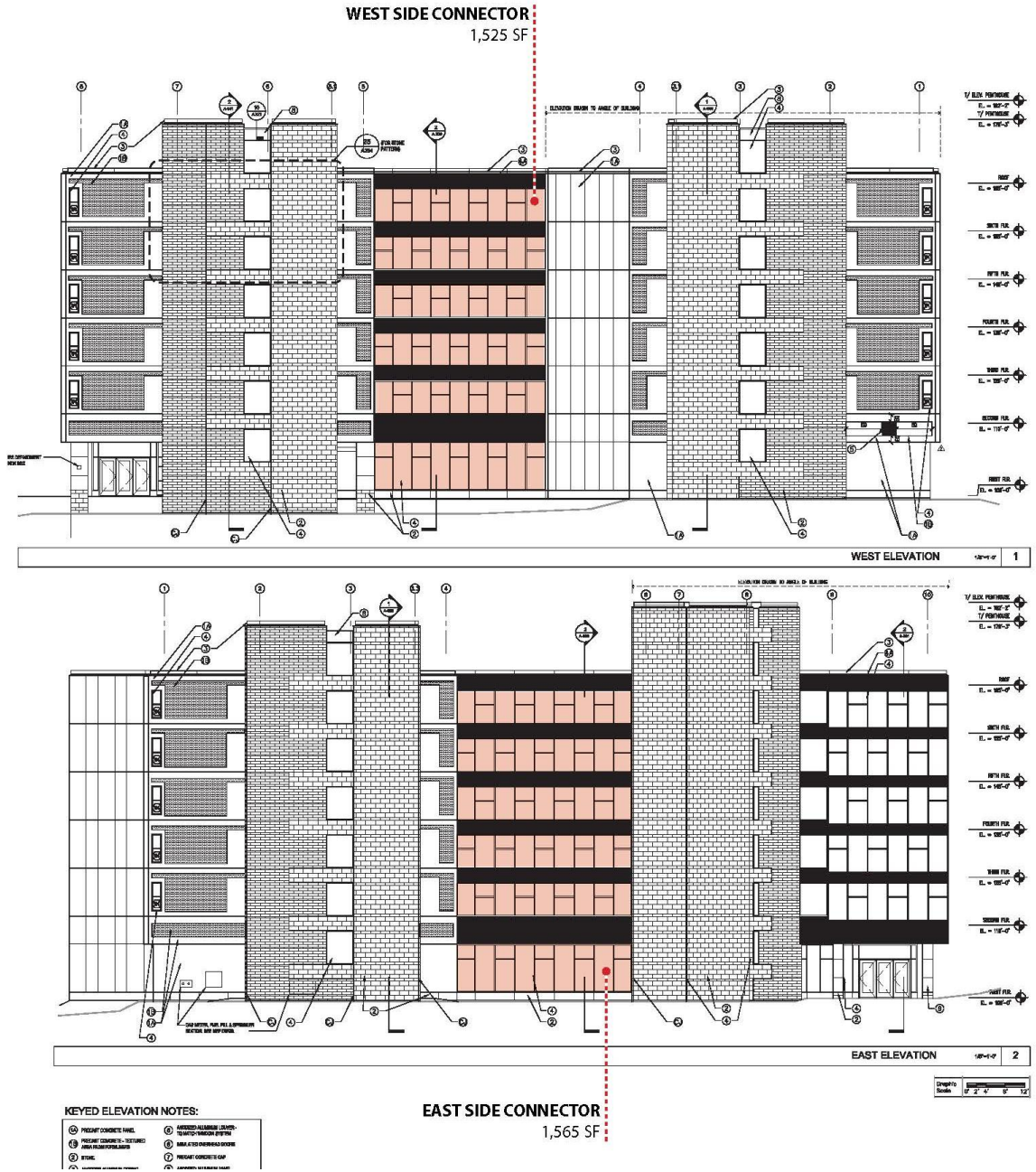
If considered initially…hypothetically speaking

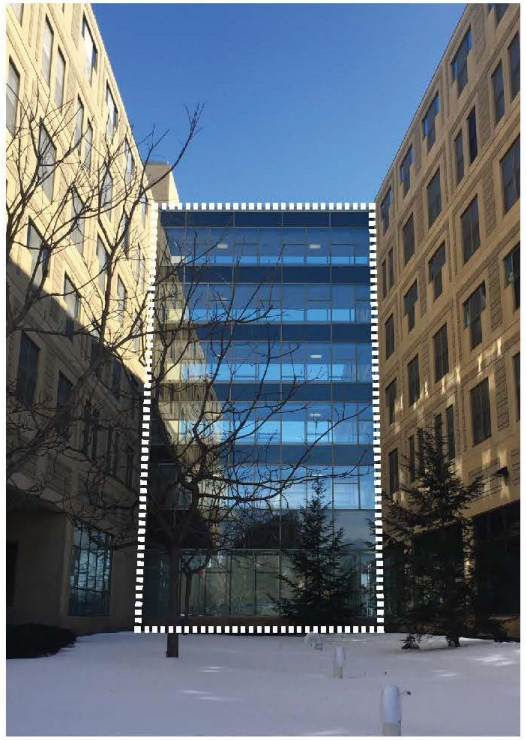
- $1,000,000 for all glass in Ogg Residence Hall
- 3,000 SF of ‘connector glass’ – most offending
- An additional $9/SF to mitigate from day 1
- $27,000 upcharge = ~3% of glass budget
- $27.9M cost = .001% of total budget

Linden Drive Parking Garage
2”x2” by 1/4” Ceramic Frit S2
Base Glass $20/SF: $432,000 – 2.2%
Frit Glass $28/SF: $604,800 – 3.0%
$20M Total Construction Cost
TF = 25

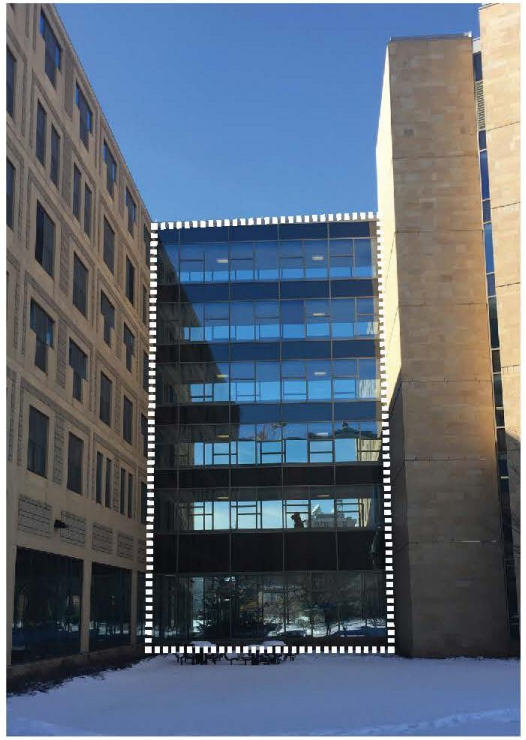
What additional benefits is frit providing?

- Energy costs
- Occupant comfort - glare
- Building narrative – brand
- Aesthetic effect





View East



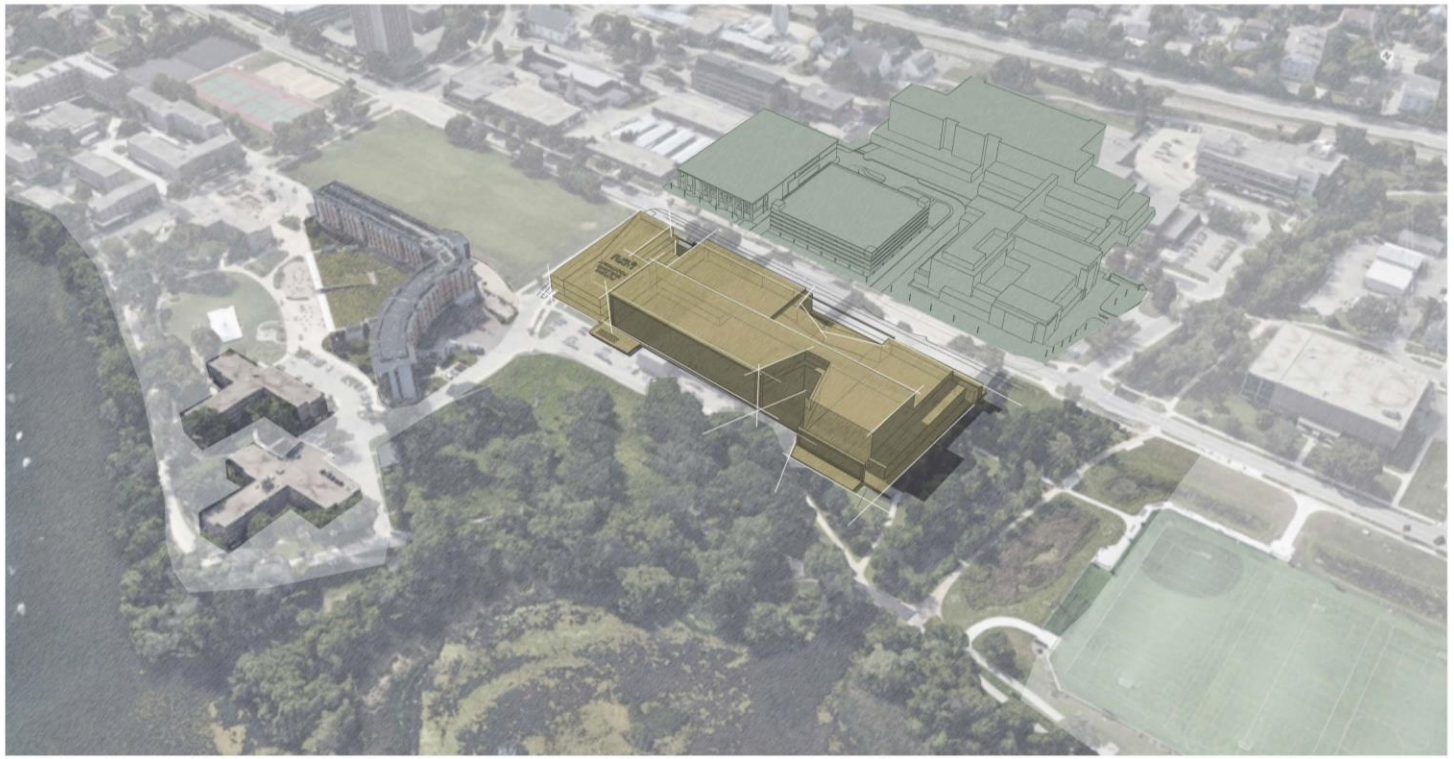
View West

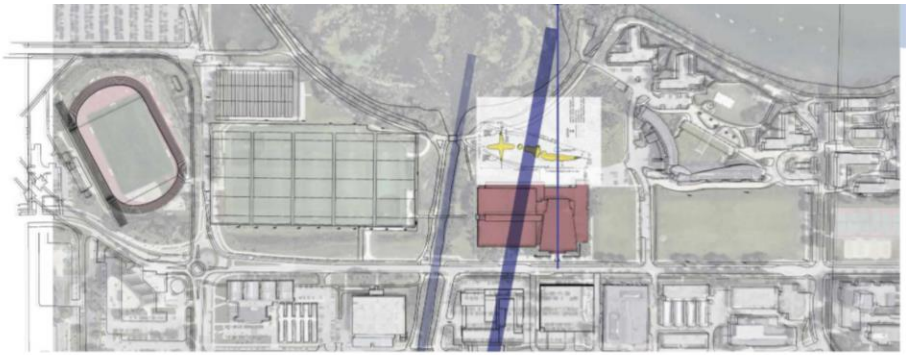
Floor Connector/Box Canyon

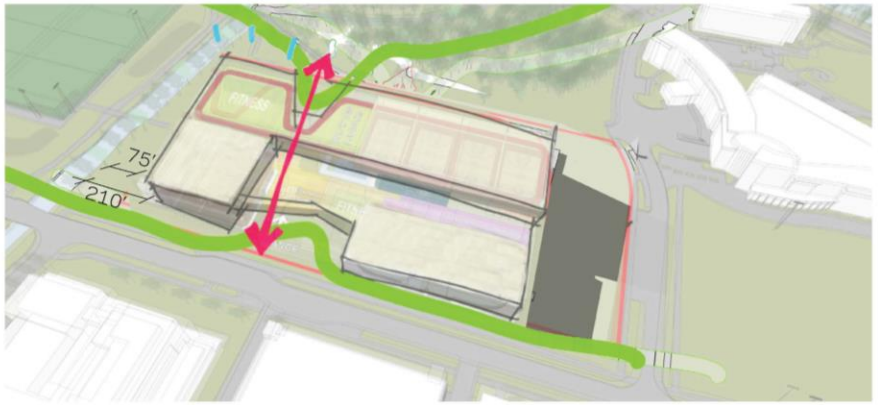
Existing Condition

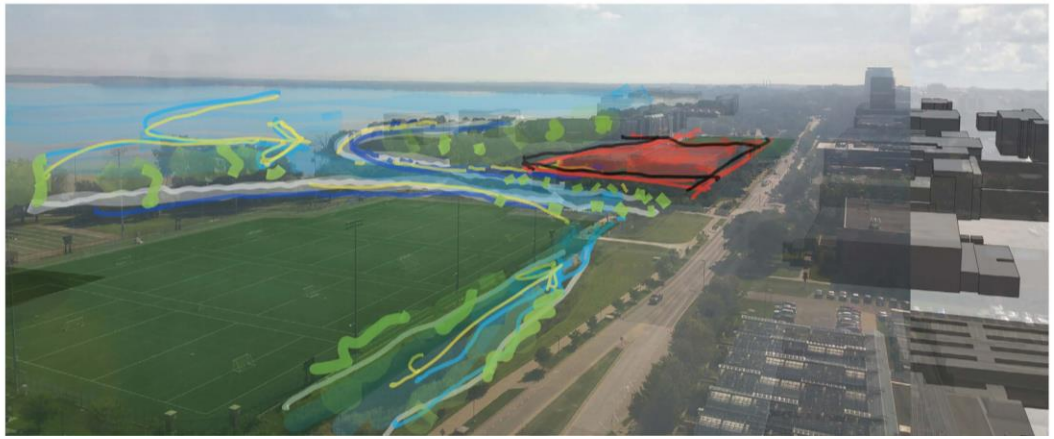
Proposed Mitigation

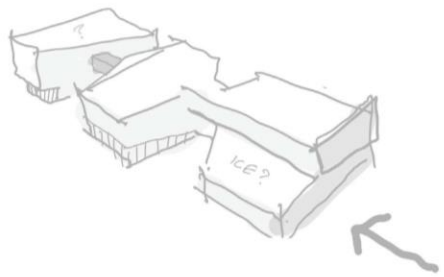
2"x2" gridded dot pattern (1/4" white dot diameter)
Window face #1 as shown (outside)
Window face #4 optional (inside)






75'
210'




ICE?


THE HOWARD TEMIN LAKESHORE PATH.
SERVICE DRIVE.
SERVICE.
DEJOPE RESIDENCE HALL.
PEDESTRIAN PLAZA
RECREATION.
DROP-OFF
DROP-OFF
RECREATION
EXISTING BIOSWALE.
BIKE PLAZA.
BUS DROP-OFF ZONE
OBSERVATORY DRIVE.
OBSERVATORY DRIVE.
VETERINARY MEDICINE ADDITION
PROPOSED PARKING STRUCTURE.
MEAT SCIENCES BUILDING.