

Javits Center: A Case Study in Urban & Environmental Revitalization

TH405

Thursday June 21st, 9:45 AM - 11:15 AM

1.50 Learning Units: HSW, GBCI, RIBA

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Acknowledgements/Credits

Team:



NEW YORK CITY AUDUBON
Protecting Wildlife and Habitat for Over 35 Years

Speakers List

- **Barbara Lampen** AECOM Tishman
(formerly New York Convention Center Development Corporation)
- **Bruce Fowle** FXCollaborative
- **Susan Elbin** New York City Audubon
- **Franco Montalto** Drexel University

Course / Learning Objectives

- Hear how designers salvaged an aging public facility and transformed it into an asset that improves the quality of human and avian life, and the economy of the surrounding neighborhood and city.
- Learn what resources, skills, disciplines, and methodologies were necessary to achieve success for a project of this magnitude.
- Find out how you can engage governing authorities with the confidence and know-how to revitalize a large urban project.
- Explore guidelines for reducing bird mortality and be better prepared to meet trending legislation requiring all buildings to be bird-friendly.

THE JAVITS CENTER — 1986



THE JAVITS CENTER — 2014



"IT WAS IMMEDIATELY BESET BY PROBLEMS...THAT SERVED TO PERPETUATE NEW YORK'S REPUTATION FOR INEFFICIENCY AND EXORBITANT BUSINESS COSTS."

-NEW YORK TIMES, APRIL 4, 1988

"THE BLACK GLASS EXTERIOR GIVES IT THE AIR OF A GIGANTIC MAUSOLEUM."

-NEW YORK TIMES, SEPTEMBER 26, 2008

"THE RESULT IS A CENTER THAT, WHATEVER ITS LIMITATIONS, IS NOTABLY RICH IN ECO-FRIENDLY INNOVATIONS THAT DESERVE EMULATION AS THE CITY BUILDS AND REBUILDS ITSELF INTO THE FUTURE."

-NEW YORK TIMES, JANUARY 7, 2015

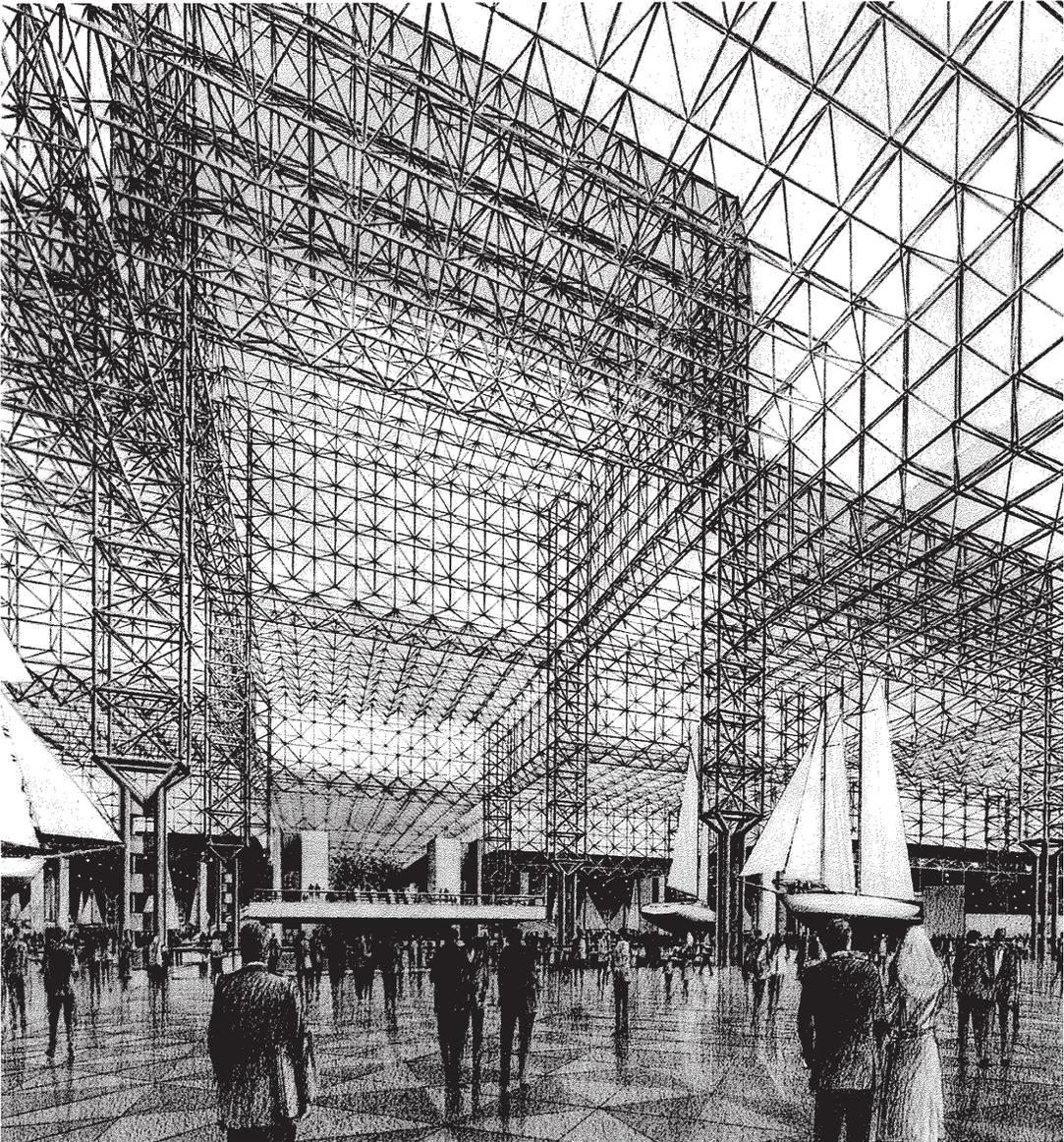
FURTHER EXPANSION



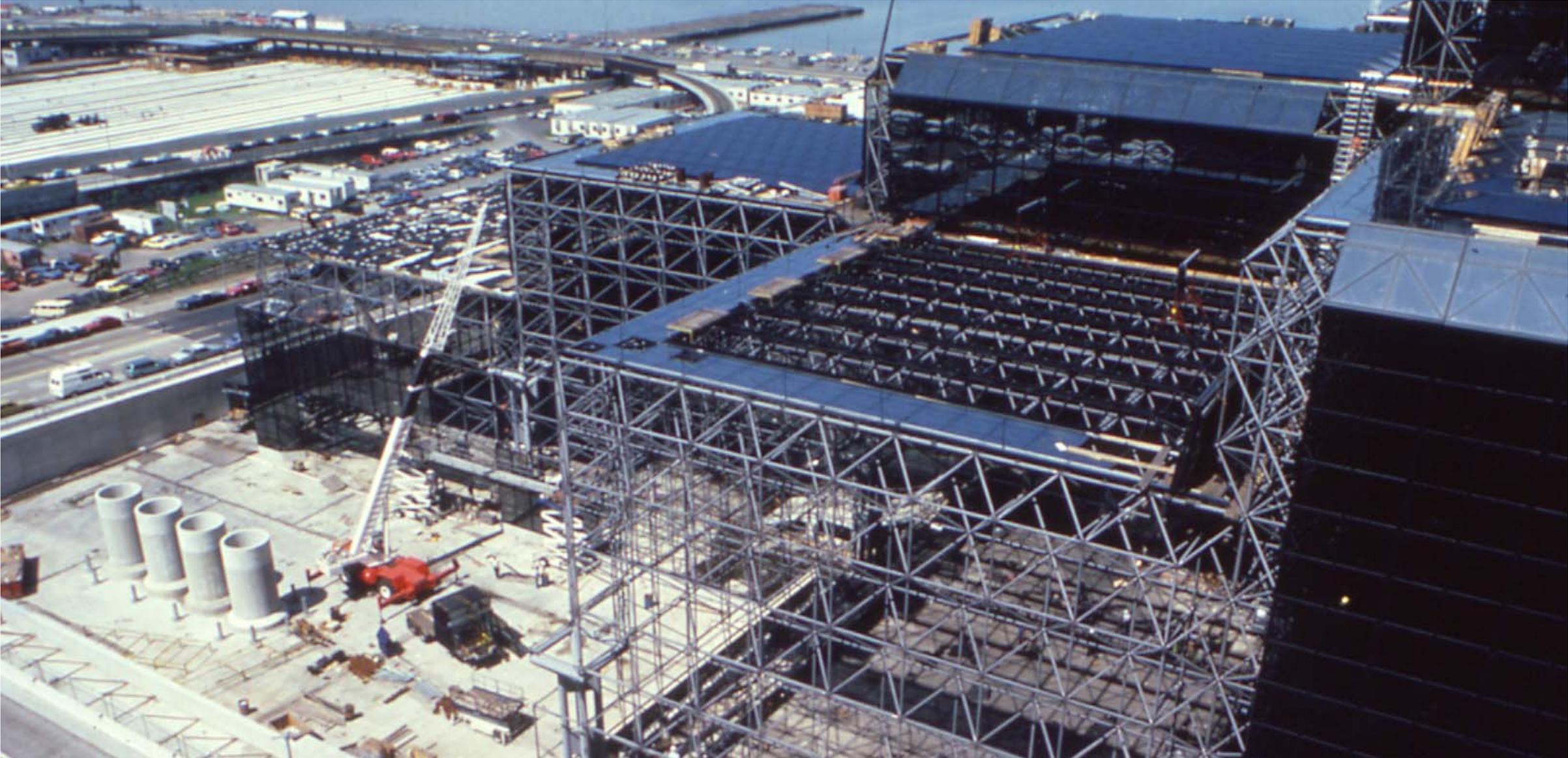


PRE-RENOVATION CONDITIONS

ORIGINAL DESIGN - CRYSTAL PALACE



VALUE ENGINEERING



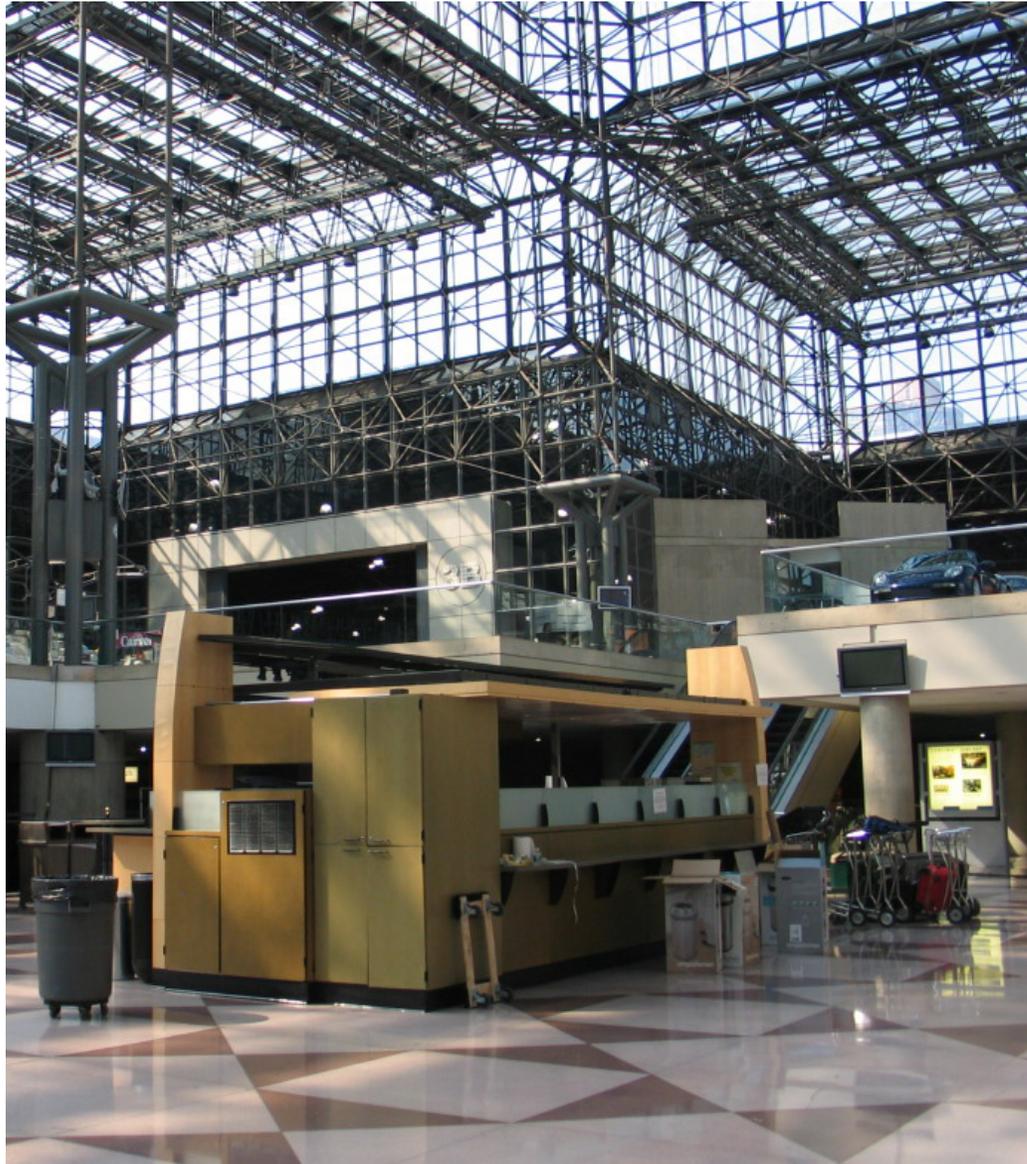
RESULT



DEFERRED MAINTENANCE



UNAPPEALING INTERIOR



INSUFFICIENT SERVICES FOR EXHIBITORS



URBAN DESIGN PROBLEMS

Subway Extension
Delayed 30 Years

Neighborhood Zoning
Upgrade Delayed 20 Years

Vehicles-Only
Inner Roadway

Blocked View Corridors

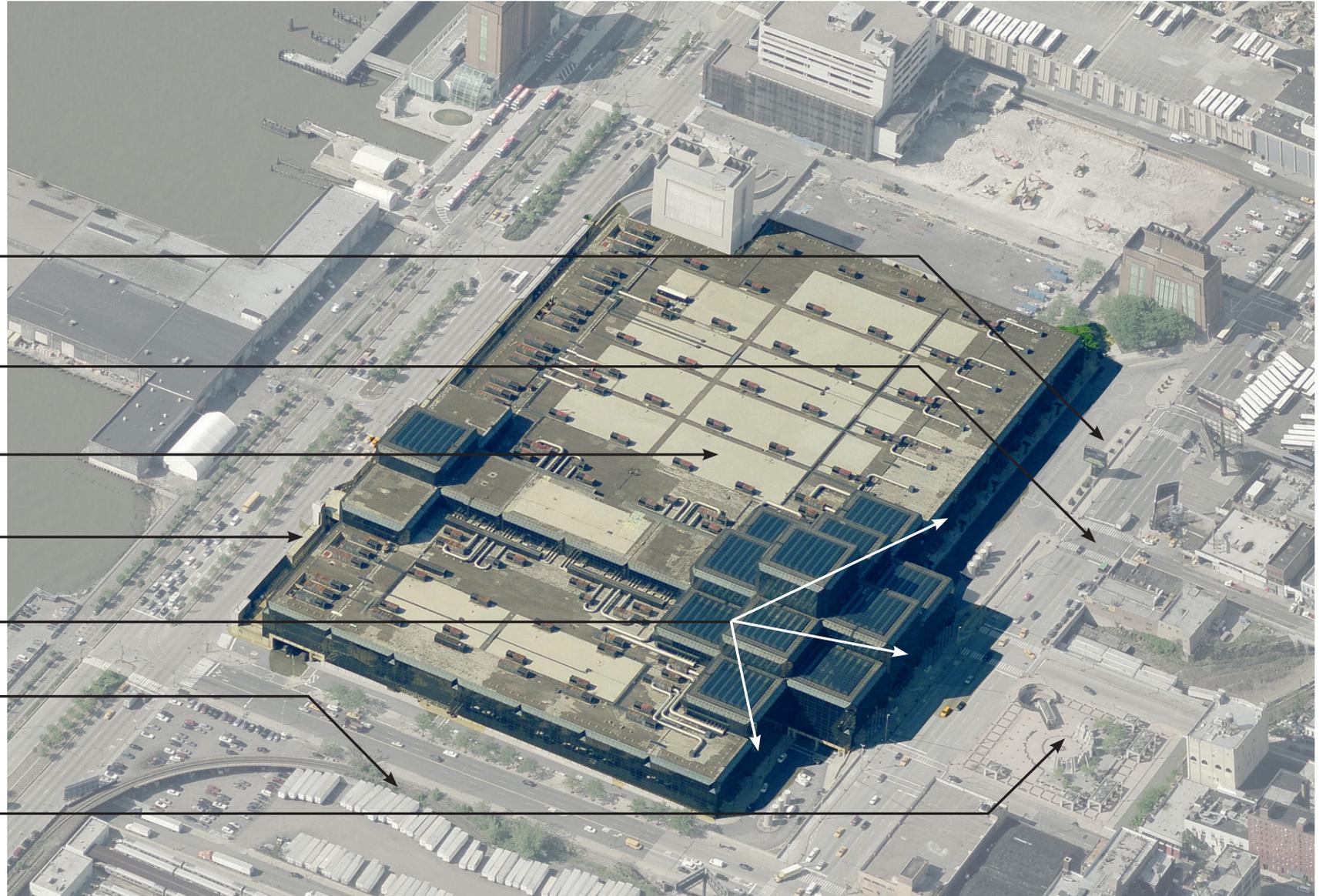
Unattractive Roofscape

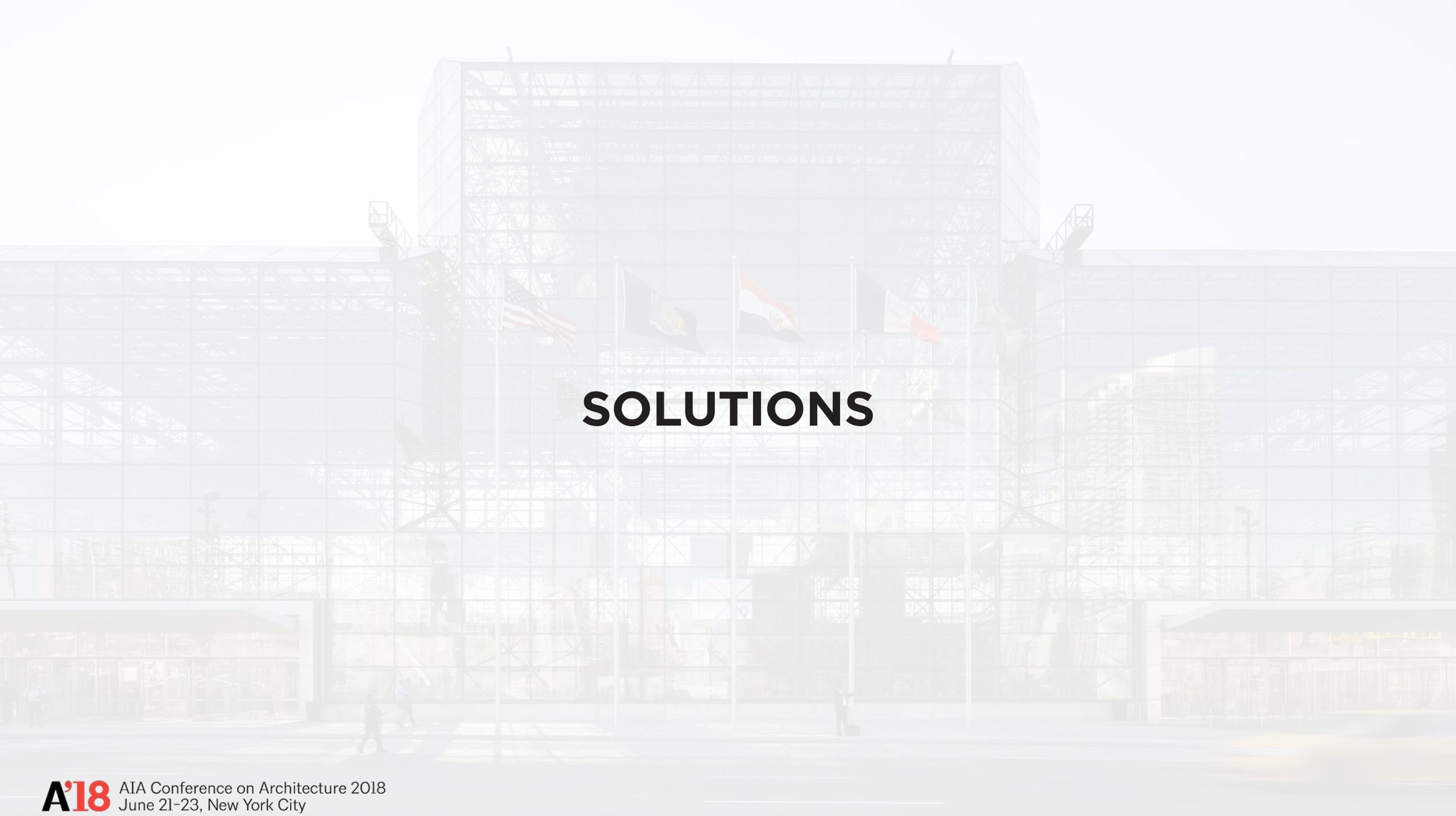
Turns Back on Waterfront

Dark Monolithic Entrances

No Connection to
Subsequent HighLine Park

Abandoned Bus Drop-Off
w/Underground Connection



A large, modern glass and steel building with a prominent central tower. In front of the building, several flags are flying on tall poles. The word "SOLUTIONS" is overlaid in the center of the image.

SOLUTIONS

URBAN DESIGN SOLUTIONS

Transparent Curtainwall
Improves View Corridors

New Landscaped
Pedestrian-Centric Plaza

Highly Visible Green
Roofscape Reduces Runoff

Skylights Increase Daylight

Proposed Greenwall Facing
Revamped Waterfront

Consolidated Entries Into
Pedestrian-Friendly Portals

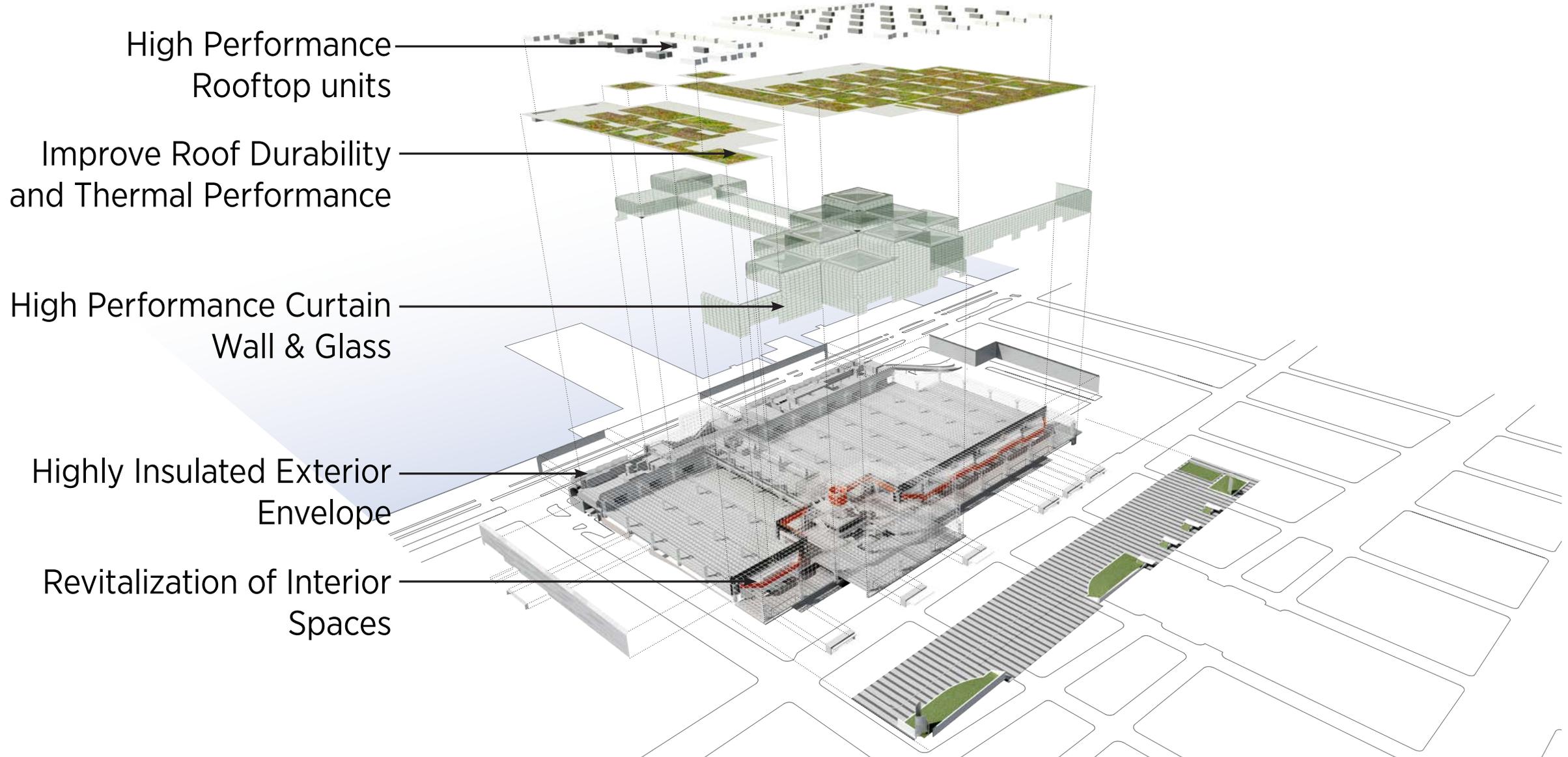
Decorative Facade at
HighLine Terminus

New Subway Connection
(Opened 2015)

Rezoning Spurred Adjacent
Developments



BUILDING INTERVENTIONS



PEDESTRIAN-FRIENDLY ENTRANCES

Before



After



FACADE RECONFIGURATION



GLASS MOCK-UPS

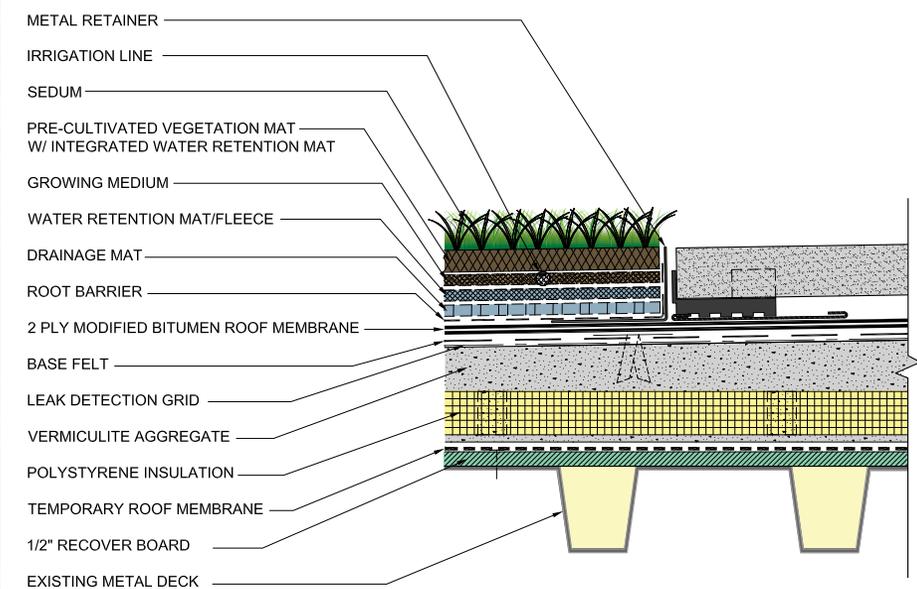
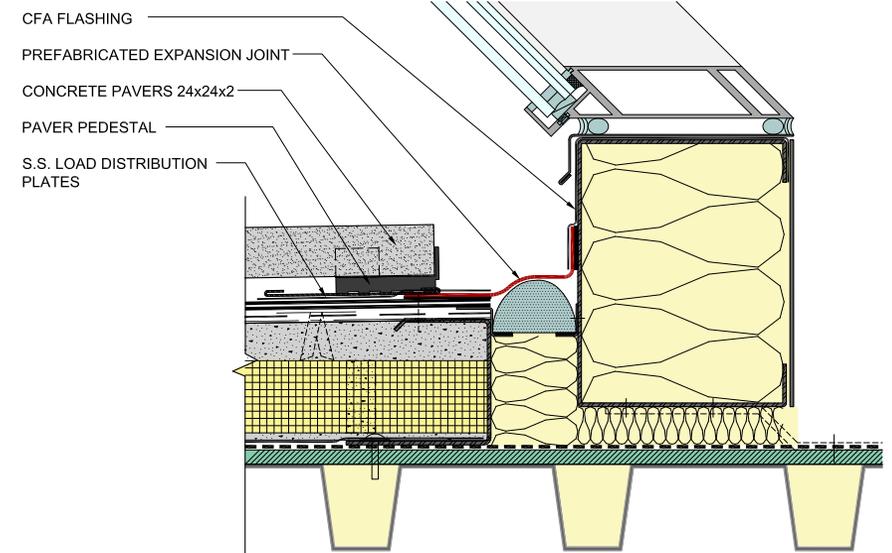


Selected Glass:
8% Reflective
28% Opacity (from Frit Pattern)

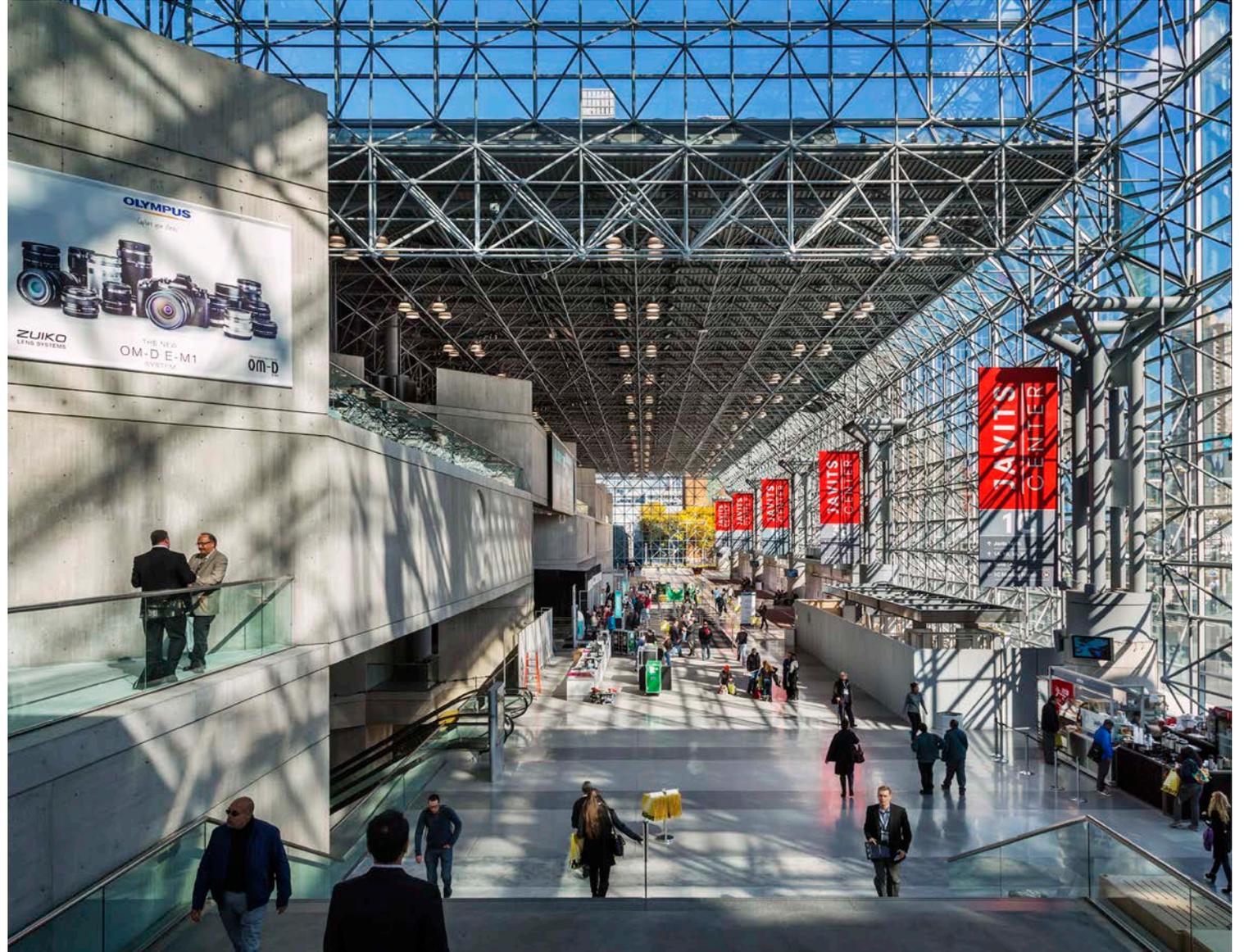
TRANSPARENCY



ROOF AS FIFTH FACADE



PUBLIC SPACES

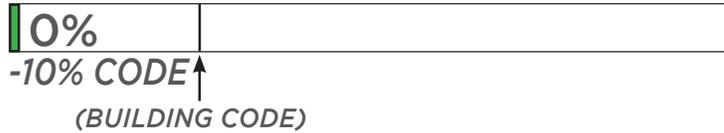


EXPO SPACES

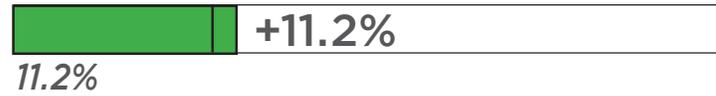


ENERGY PERFORMANCE

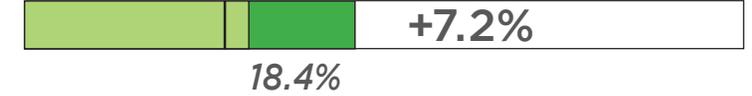
Existing building performance



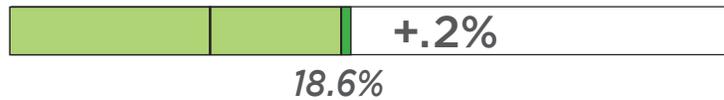
Efficient Mechanical Systems



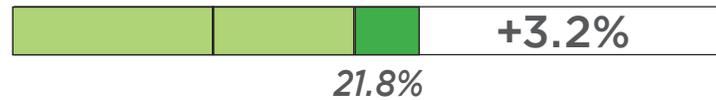
CO2 Sensors at HVAC



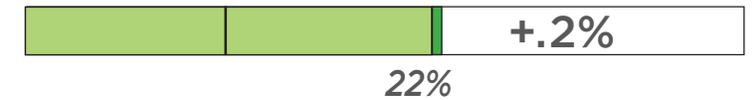
Occupancy Sensors



Daylight Controls



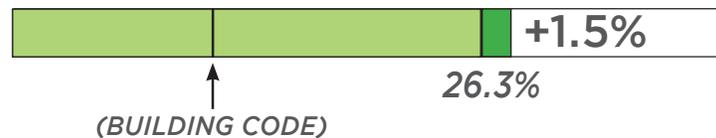
Thermal Perf. of Roof



Thermal Perf. of Walls



Thermal Perf. of Skylights

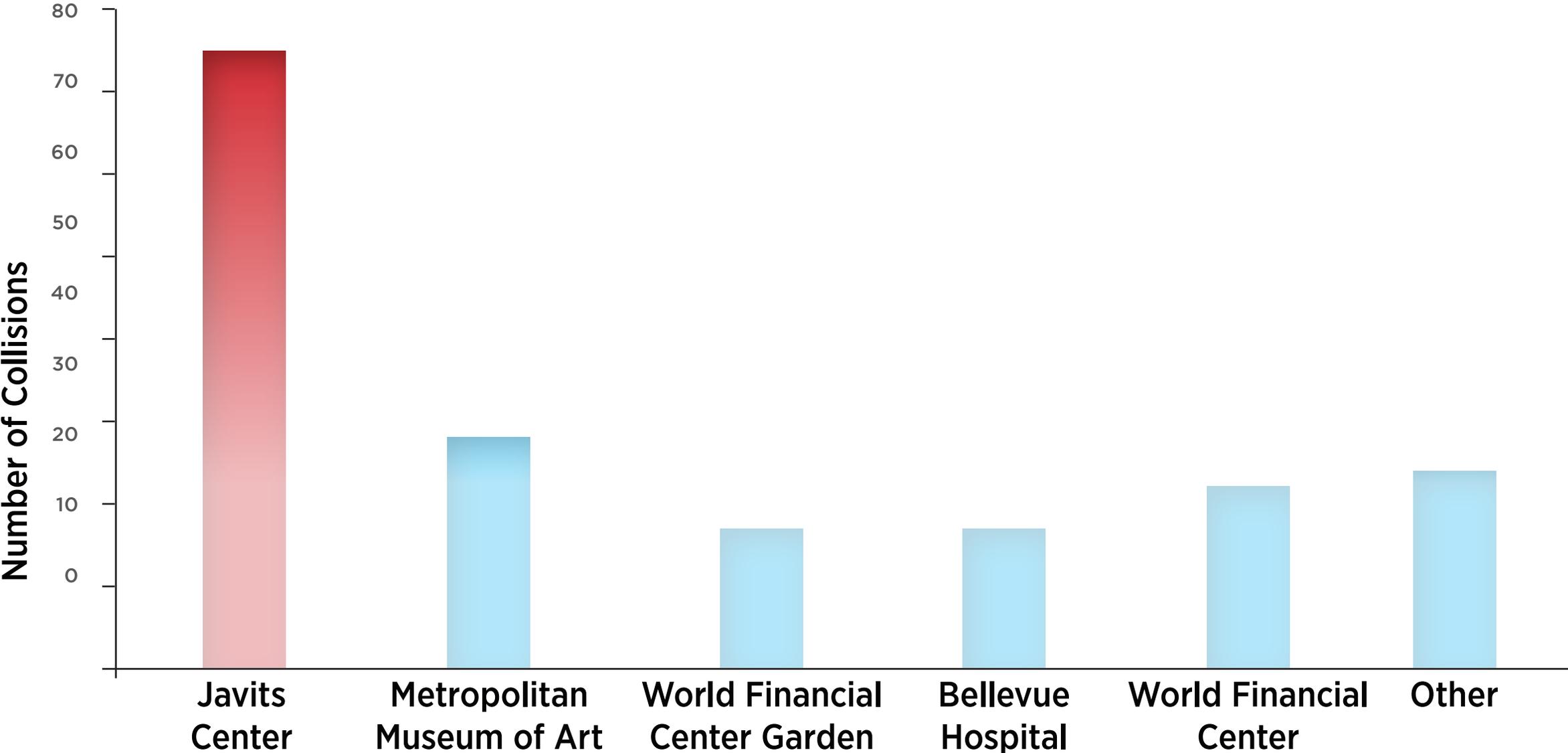


- 26.3% total energy savings
- LEED Silver Certification

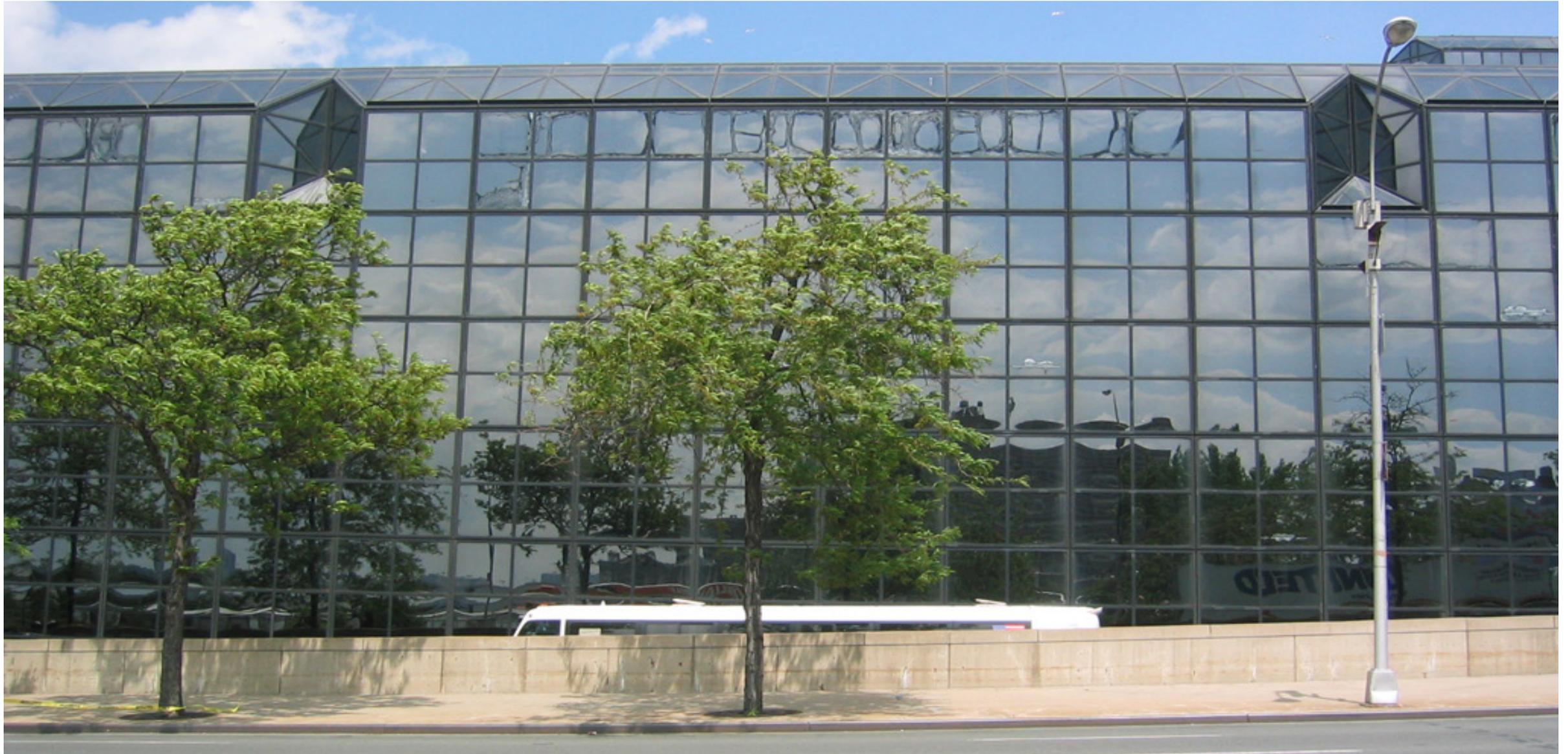


BIRD-SAFE GLASS

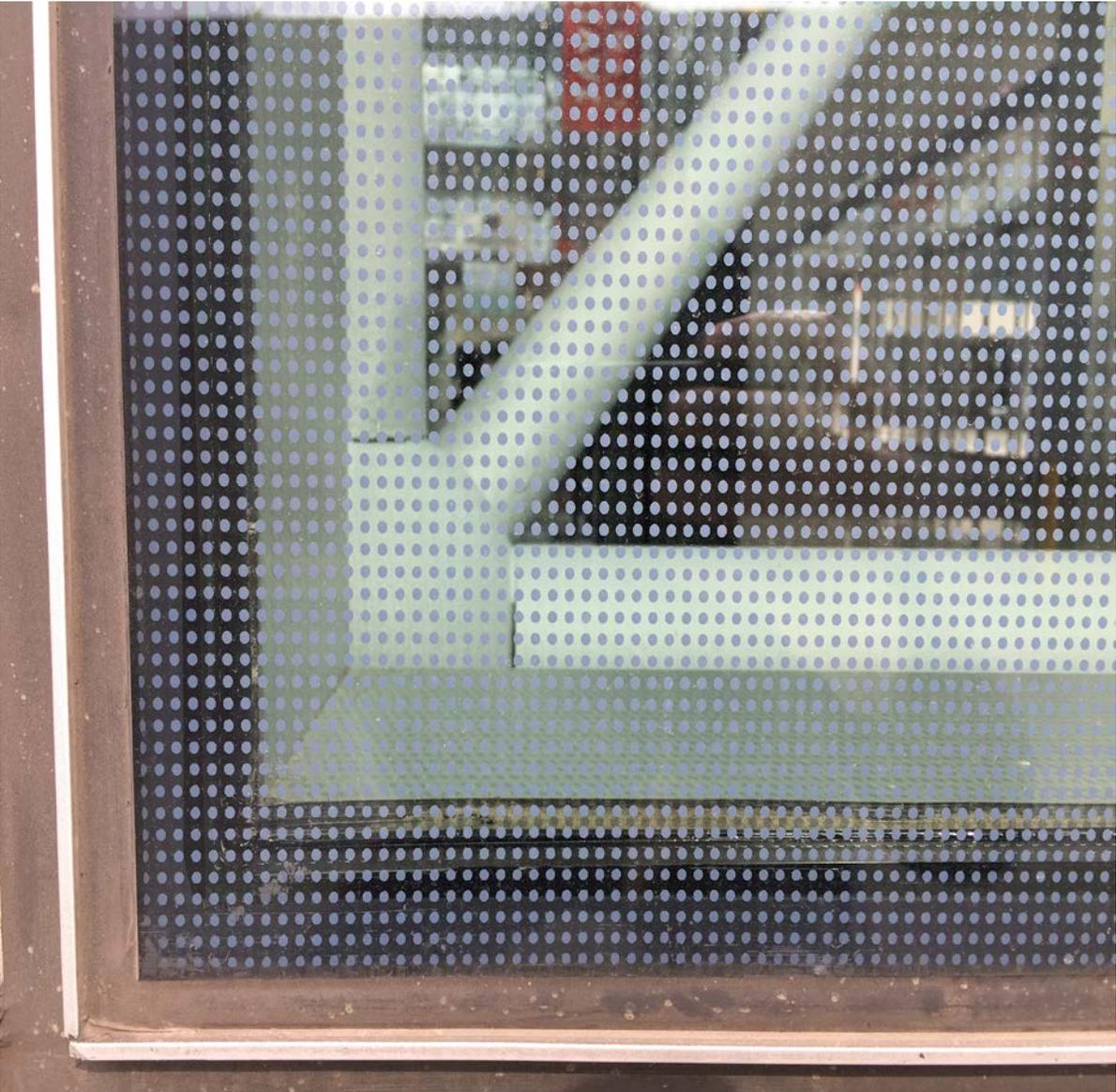
BIRD COLLISIONS IN NYC (2007)



JAVITS REFLECTIVITY



GLASS PATTERN



INCREASED OPACITY/REDUCED REFLECTIVITY



WHY IS THIS IMPORTANT?

- **Pest control: consume destructive insects**
- **Sanitation: consume roadkill and other carcasses**
- **Distribute seeds, assist with germination, pollinate plants**
- **Help maintain balance of predators and prey**
- **Ecotourism: birdwatching stimulates economy**
- **Environmental sensitivity: indicate ecological hazards**

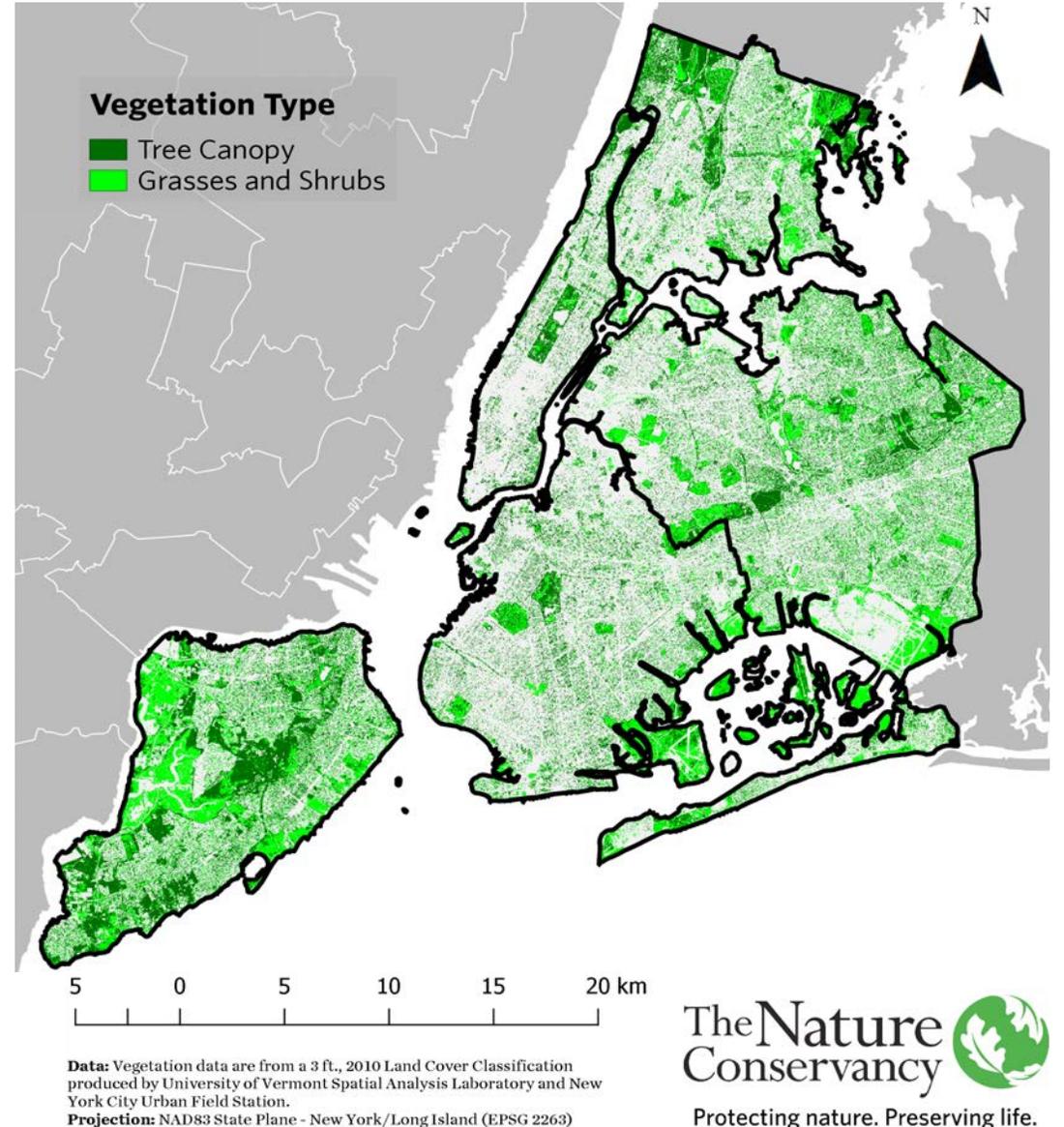


Photo: Peter Post

WHY IS THIS HAPPENING?



Source: FLAP



URBAN BIRD ISSUES

Night-time Light



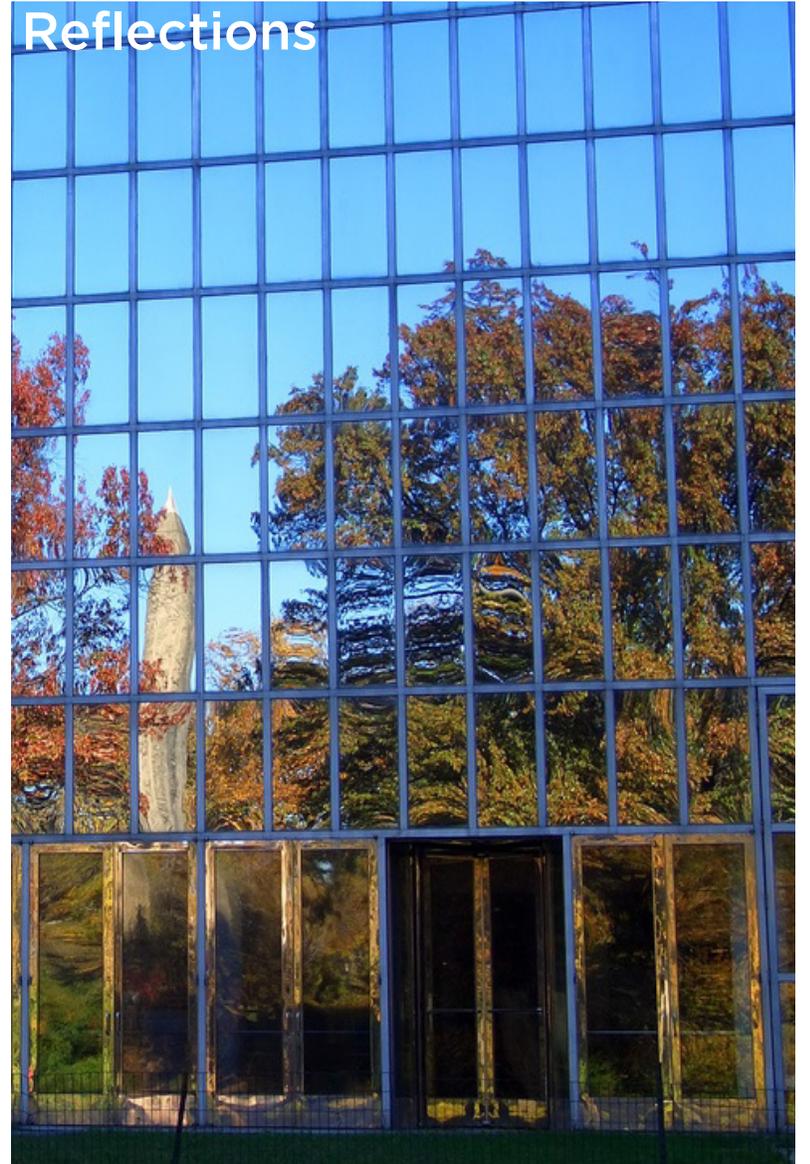
Photo: John DeGuzman

Transparency



Photo: Christine Sheppard

Reflections



IMPRINT OF BIRDS ON GLASS

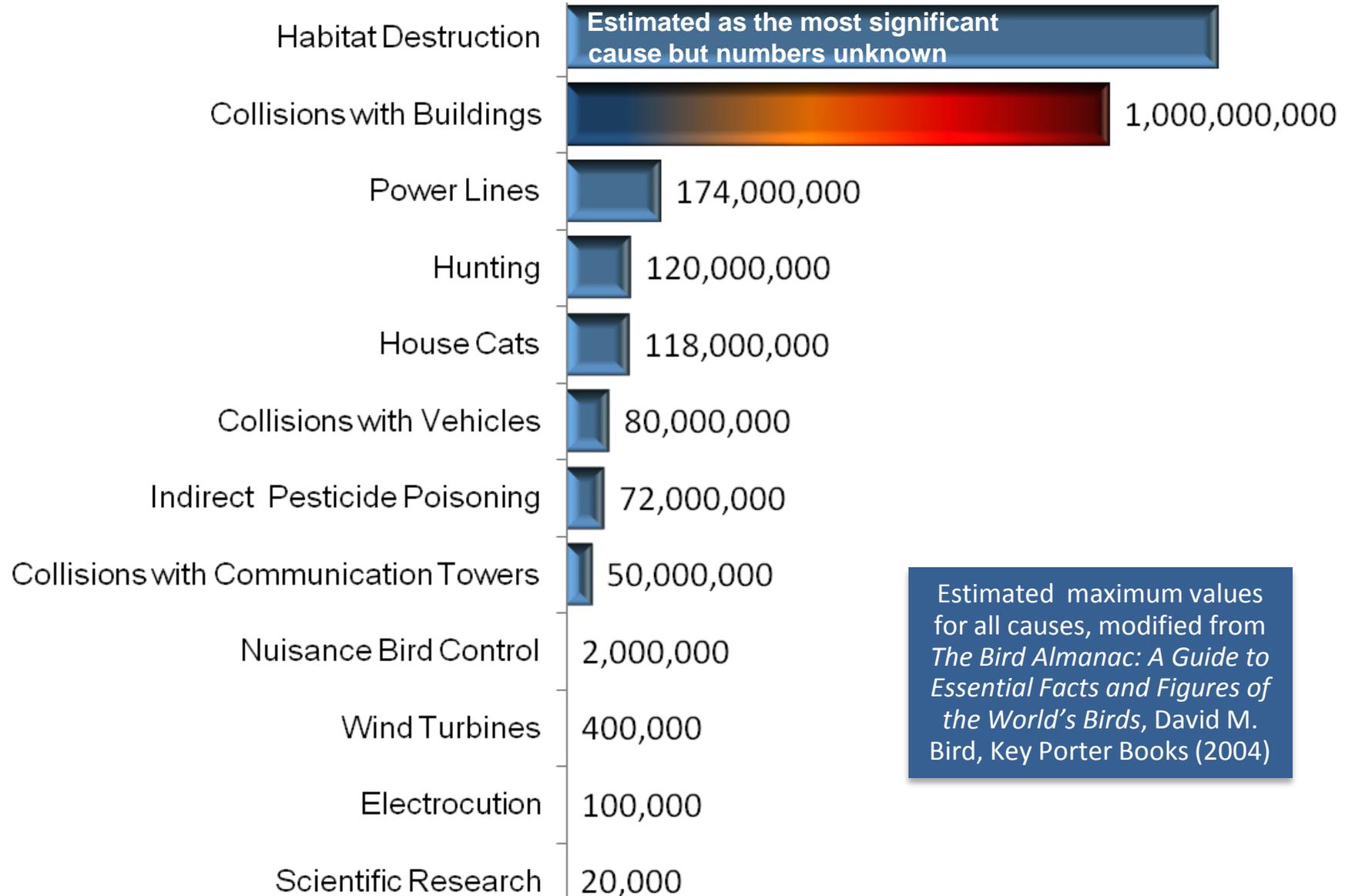


Source: National Audubon Society

COLLISIONS



HUMAN CAUSES OF BIRD DEATH



LEGISLATION, ORDINANCES, CODES, GUIDELINES

Mandatory

- Minnesota
- San Francisco
- Oakland, CA
- Highland Park, IL
- Cook County, IL
- Toronto, Canada
- Ontario, Canada

Voluntary

- Calgary, Canada
- Sunnyvale, CA
- Palo Alto, CA
- California Green Building Code
- Barrington, IL

In Progress

- Portland, OR
- The Federal Bird-Safe Buildings Act H.R. 2280
- Washington DC

SEVEN ACRE WILDLIFE HABITAT

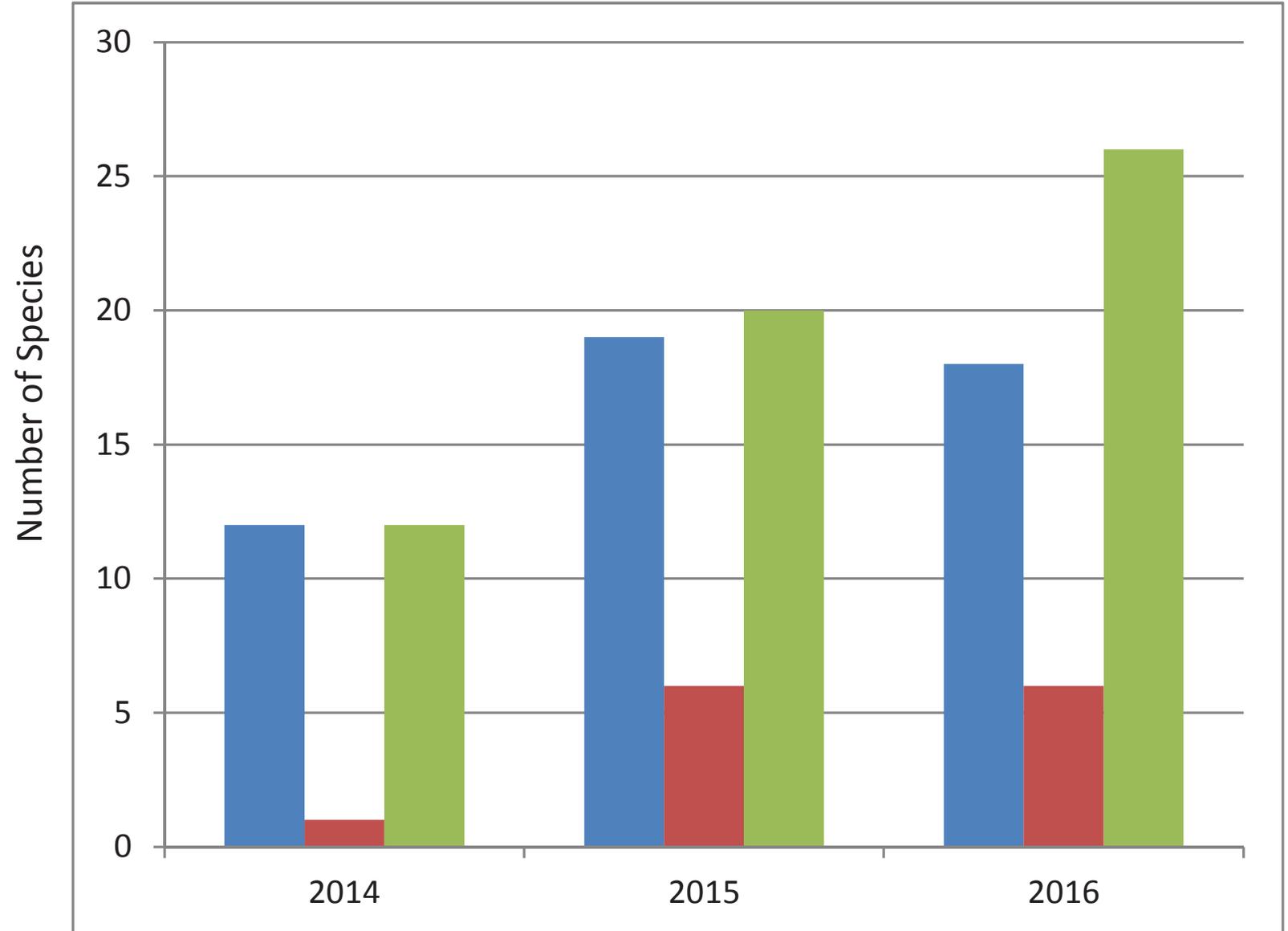
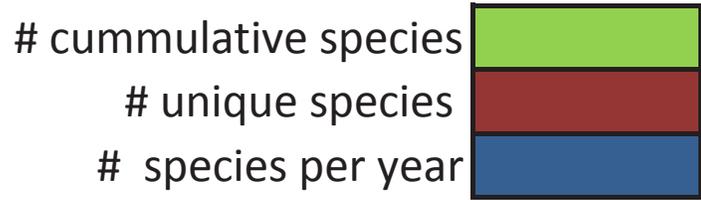


RESEARCH AND FINDINGS



Source: NYC Audubon

BIRDS ON JAVITS ROOF





MONITORING RESULTS

MONITORING



IMPORTANCE OF URBAN ROOFS

- 20-25% of total impervious cover in US cities
- 40,000 acres of unused roof space in NYC

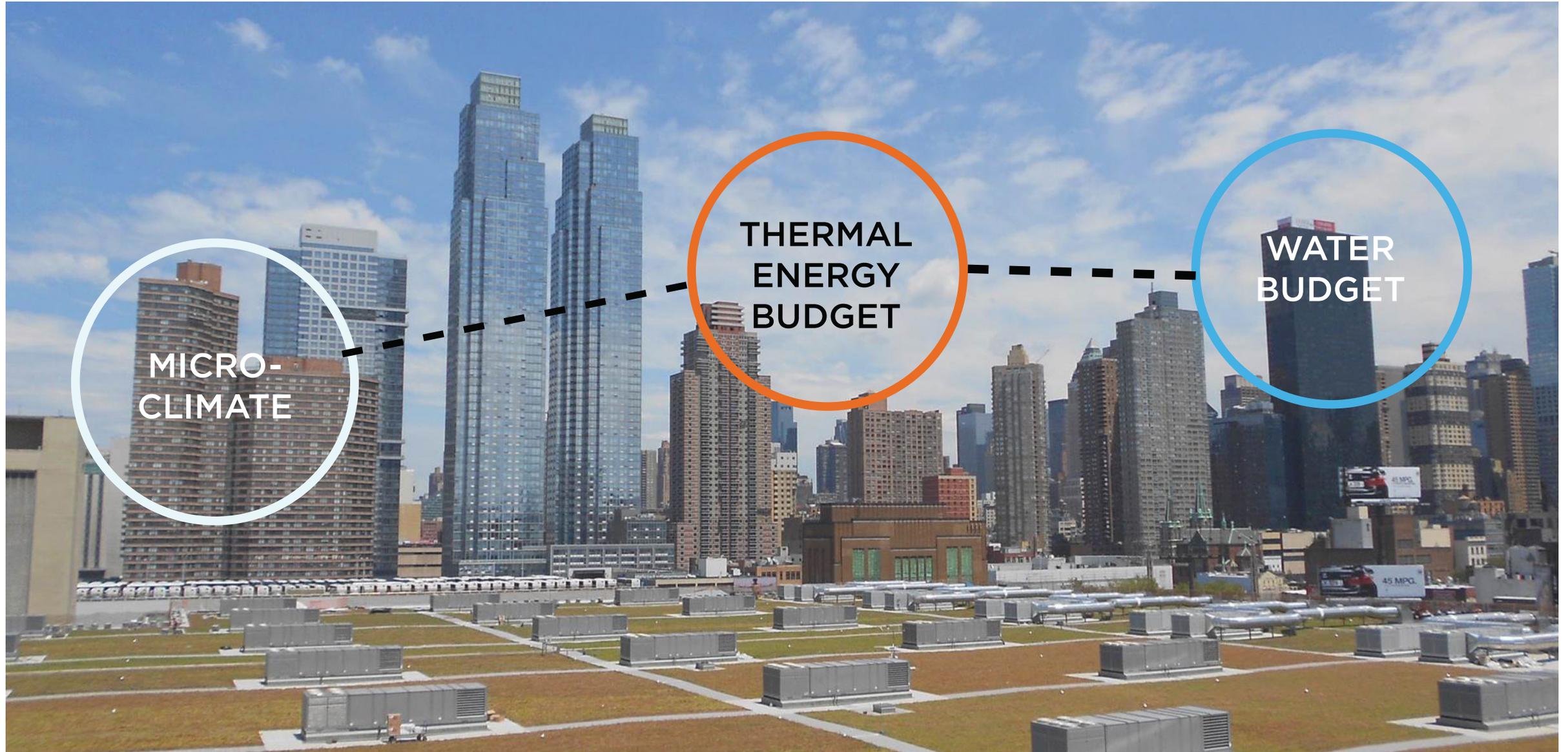


ECOSYSTEM SERVICES PROVIDED BY GREEN ROOFS

ECOSYSTEM SERVICE TYPE	EXAMPLE
Regulating Services	Water Regulation Climate Regulation Carbon Sequestration
Provisioning Services	Food Production
Cultural Services	Aesthetics Education
Supporting Services	Habitat Biodiversity



RESEARCH OBJECTIVES AND GOALS



FOUR CLIMATE STATIONS



1. Metal Roof



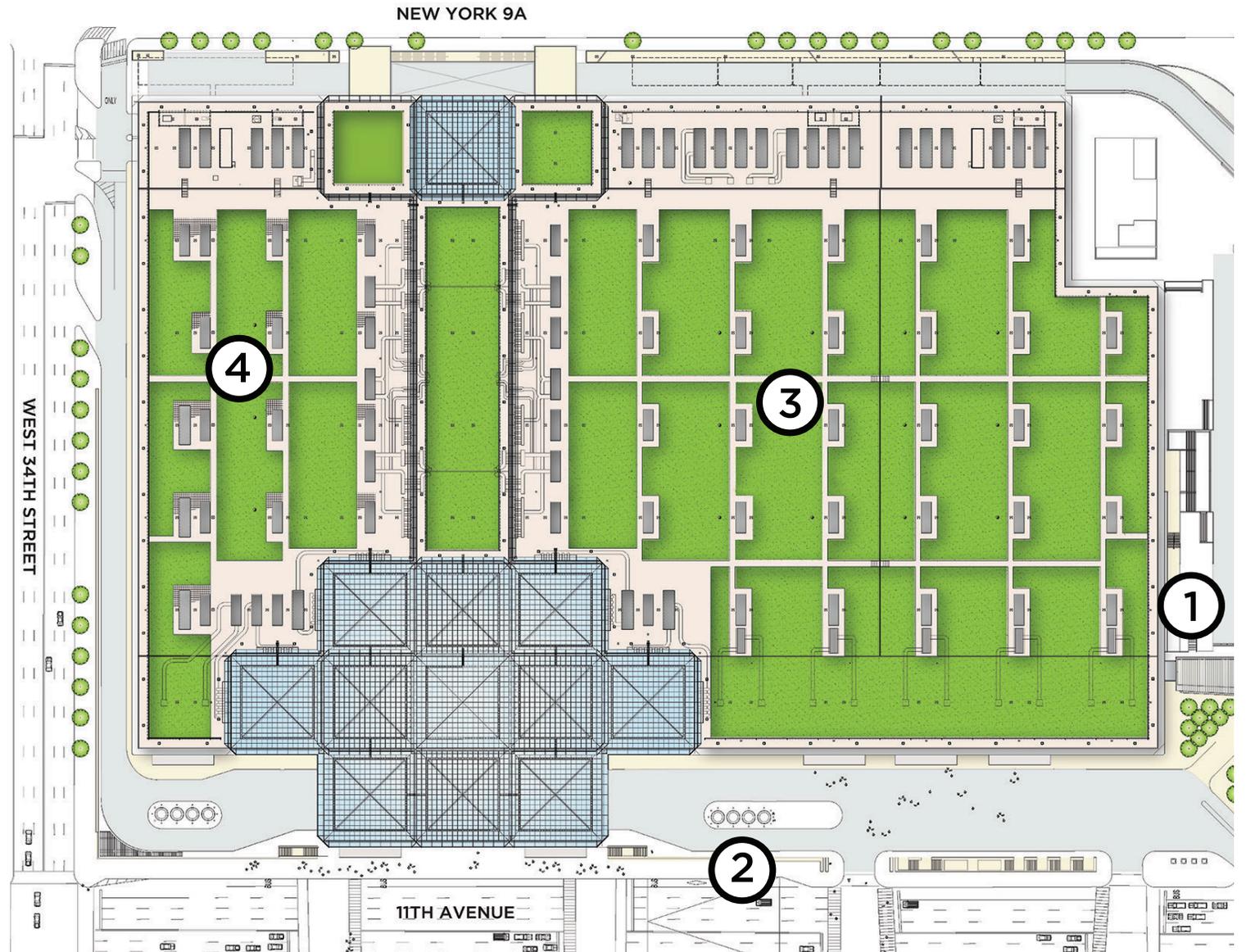
2. Street Level



3. Green Roof



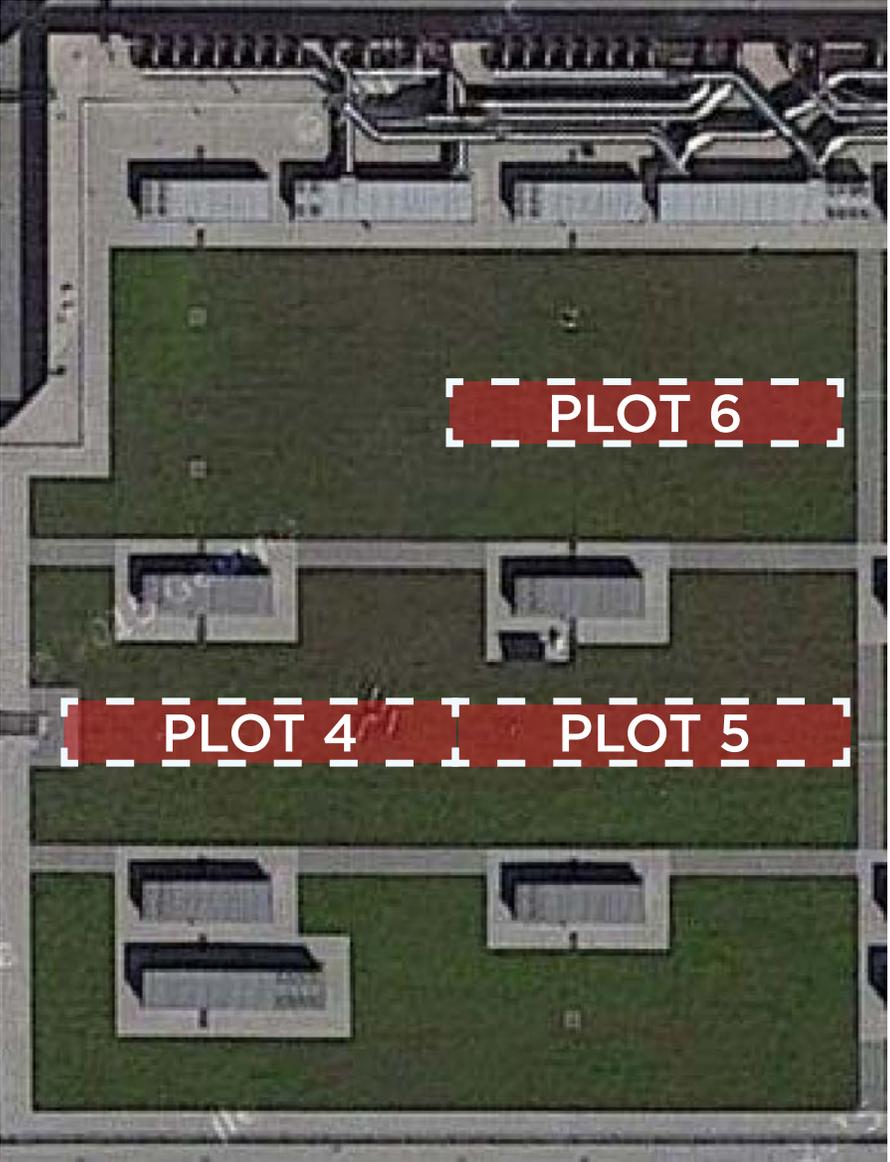
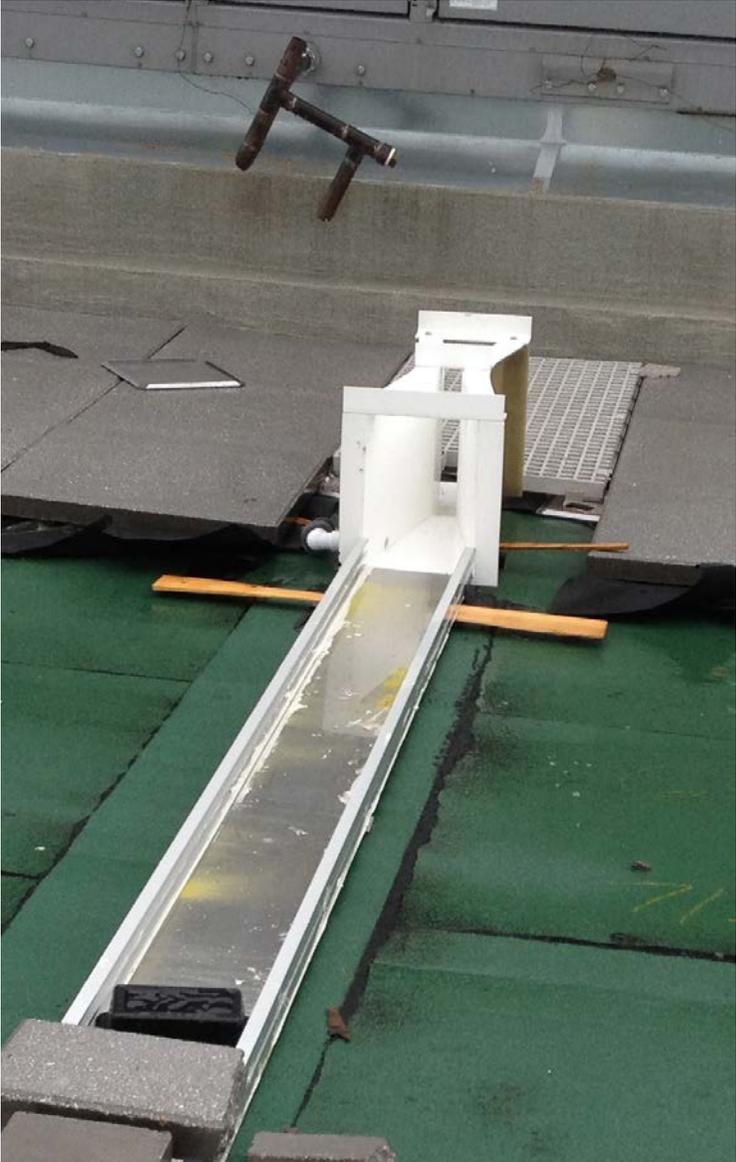
4. Black Roof



THREE WEIGHING LYSIMETERS



RUNOFF MEASUREMENTS WITH FLUMES



INFRARED IMAGING



WATER REGULATION

- 77% average of all rainfall events retained

Table 1: Observed and Predicted annual JGR performance

Year	Number of Events	Total Precip. (mm)	Precip. Volume (m ³)	Total Observed Runoff (m ³)	Average Event % Retention
2014	31	317.4	59.4	14.2	76.0%
2015	32	268.2	49.9	12.3	75.4%
2016	24	290.1	53.9	11.4	78.9%
2017	31	293.8	54.7	11.3	79.3%

Table 2: Observed and Predicted JGR storm retention

Type of Event	Number of Events	Precip. Volume (m ³)	Total Observed Runoff (m ³)	Average Event % Retention
Light (<6.35 mm)	53	32.0	1.1	96.4%
Medium (6.35 – 12.7 mm)	27	42.7	8.0	81.2%
Heavy (>12.7 mm)	38	167.0	122.6	27.0%

WATER AND THERMAL REGULATION

- 42-50% percent incoming radiation used to evapotranspire water
- Average energy to evaporanspire water from Javits green roof enough to cool 210 NYC studio apartments

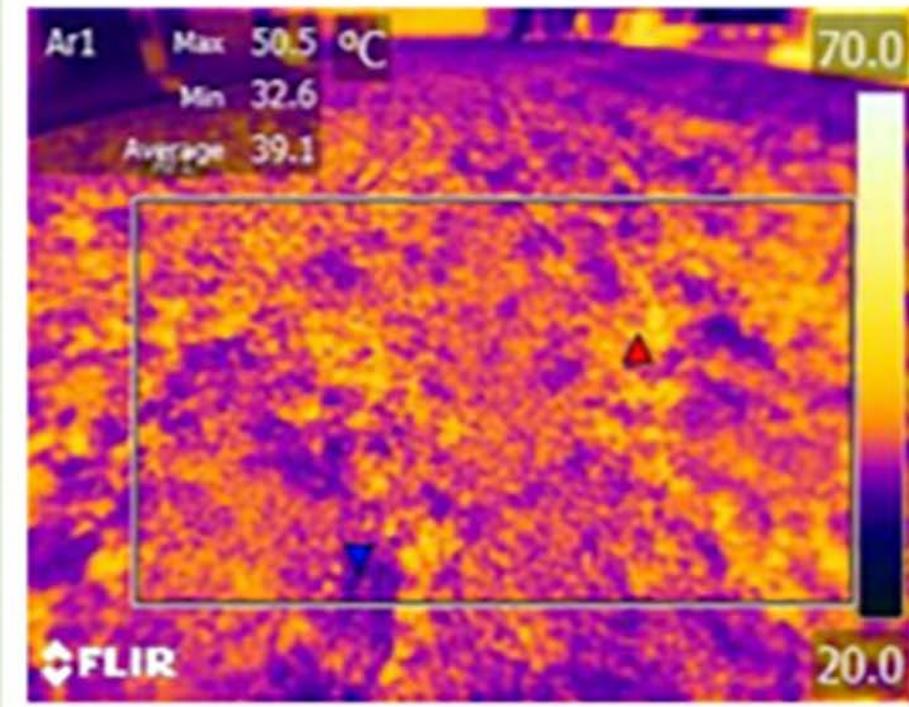


31% REDUCTION IN EXTERIOR SURFACE TEMP*

North Green Roof

South Black Roof

Exterior Surface



*observed:
8/29/13

48.9°C

Max. exterior
surface temp.

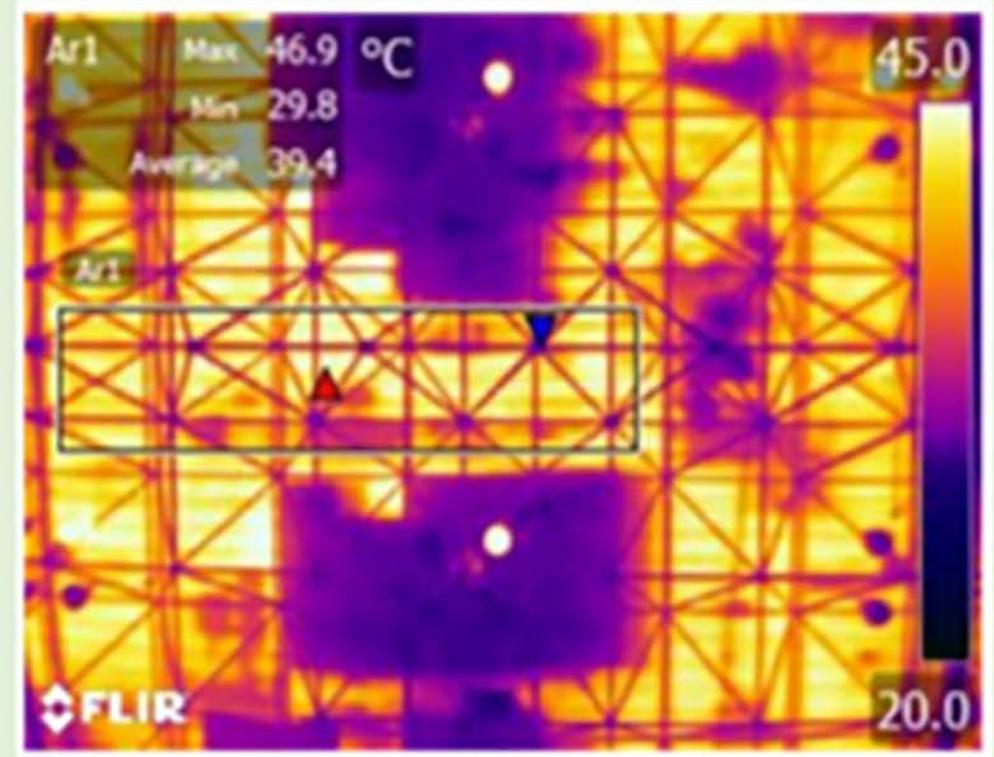
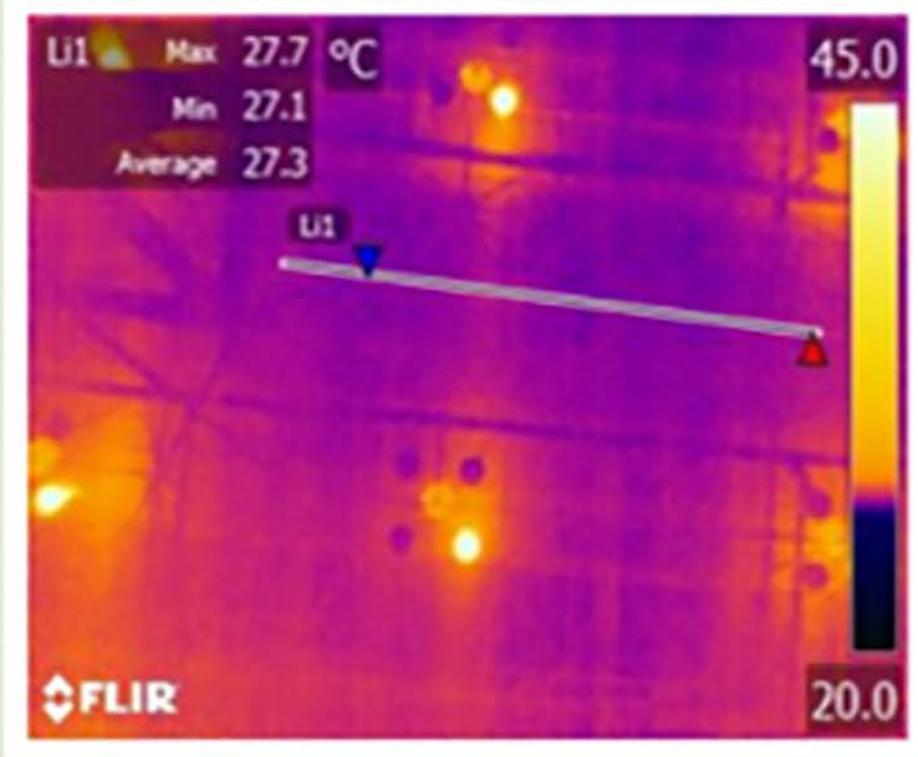
58.8°C

46% REDUCTION IN HEAT FLUX*

North Green Roof

South Black Roof

Interior Surface



*observed:
8/29/13

20.4°C

$$\text{Avg } \Delta T_{\text{max}} = T_{\text{ext}} - T_{\text{int}}$$

14°C

THERMAL REGULATION - RESEARCH FINDINGS

Urban 1:
Javits North Green Roof



Maximum observed reduction in heat island intensity = **1.9 Degrees Fahrenheit**

Urban 2:
Javits Street Level



Rural Reference:
Alley Pond Park
Queens, NY



Thank you!