BOMA Chicago
March 19, 2024

How to Enhance Your Building's Façade

Presented by:
SOCOTEC Engineering, Inc.
Building Envelope Consultants

SOCOTEC

SOCOTEC USA OVERVIEW

We are ***technical consultants*** that specialize in building envelope.

We help our Clients optimize the integrity and sustainability of their assets in the built environment.

450+ people

10,000+ clients

7 SERVICE LINES

- **Building Envelope**
- **Energy & Sustainability**
- **Code & Planning**
- **Life Safety**
- **Dispute Resolution**
- **Project Advisory**
- **Specialty Engineering**

20+ offices across 12 states

SOCOTEC SERVICE LINES

BUILDING ENVELOPE

- Envelope Optimization
- Envelope Inspection
- Design & Constructability Review
- Architectural/Engineering Design Consulting
- Constructability Procurement
- Quality Control
- Historic Preservation
- Roofing & Waterproofing
- Failure Analysis
- Repair & Restoration
- Repositioning
- Value Engineering
- Due Diligence
- FISP
- Parapet Observations

ENERGY & SUSTAINABILITY

- ESG (Environmental, Social, and Governance)
- Energy Code Analysis
- Energy Efficiency Measures
- Inspection
- Carbon Reduction
- Financial Incentives
- Analyses to Avoid Moisture Condensation
- CFD Analyses
- Daylight & Glare Analyses
- Sustainability/Green Building Certifications
- Renewable Energy Solutions
- Net Zero
- Building Life Cycle Assessments
- Viral – Safety Design & Operation Measures

CODE & PLANNING

- Plan Review, Interpretation & Variances
- Zoning Feasibility, Approvals & Permitting
- Flood Compliance/ Mitigation/Resiliency
- Violation Resolution
- Municipal Approvals/Entitlements
- Variances Expediting

LIFE SAFETY

- Accessibility Consulting
- Building and Fire Code Consulting
- Fire Protection
- Life Safety Narrative and Master Planning
- Due Diligence
- Smoke Control Design and Analysis
- Fire & Smoke Modeling
- Structural Fire Engineering, Construction and Engineering Methods
- Risk Analysis
- Hazardous Materials Analysis & Management Plan
- Special Inspections

SPECIALTY ENGINEERING

- Root Cause Failure & Materials Analyses
- Advanced Analysis/ Fitness-For-Service
- Nondestructive Engineering & Testing
- Commissioning/ Retro-Commissioning
- Geotechnical Engineering
- Parking Structure Inspections

PROJECT ADVISORY

- Schedule & Contract Management
- Cost & Cash Flow Budgeting & Monitoring
- Project Risk Analysis
- Contract Audit Services
- Change Order Analysis, Preparation & Negotiation
- Independent Monitoring Reporting & Forecasting
- Project Close-Out Assistance
- Troubled Project Evaluation & Turnaround
- Planning & Scheduling Services
- Project Cost Review & Analysis
- Project Controls
- Owner's Project Management

DISPUTE RESOLUTION

- CPM Schedule Delay Analysis
- Delay Causation Analysis
- Labor Productivity Analysis
- Quantification of Damages
- Litigation Support
- Expert Witness Trial Testimony
- Forensic Accounting

TODAY'S AGENDA

Existing Building Challenges

- Energy and Sustainability
- New Building Competition
- Work / Live Environments

Existing Building Solutions

- Thermal Upgrades at Windows
- Re-Cladding and Over-Cladding
- Additions
- Lobby Modernization
- Amenity Terraces
- Program Retrofits

CHICAGO CLIMATE ACTION PLAN

OUR CITY. OUR FUTURE.

3 Bryant Park, New York: Before & After

LEE FINK

AIA, LEED AP BD+C
Senior Associate – Midwest
SOCOTEC Engineering, Inc.

PROFESSIONAL EXPERIENCE

SOCOTEC ENGINEERING, INC.
Principal, Regional Director, Midwest, from 2020

THORNTON TOMASETTI, INC.
Associate, 2015-2020

LOEBL SCHLOSSMAN & HACKL
Project Architect, 2014-2015

HOLABIRD & ROOT
Architect, 2011-2014

QUALIFICATIONS

EDUCATION
- Bachelor of Architecture – Illinois Institute of Technology – 2011

REGISTRATIONS
- Registered Architect in: AZ, IL

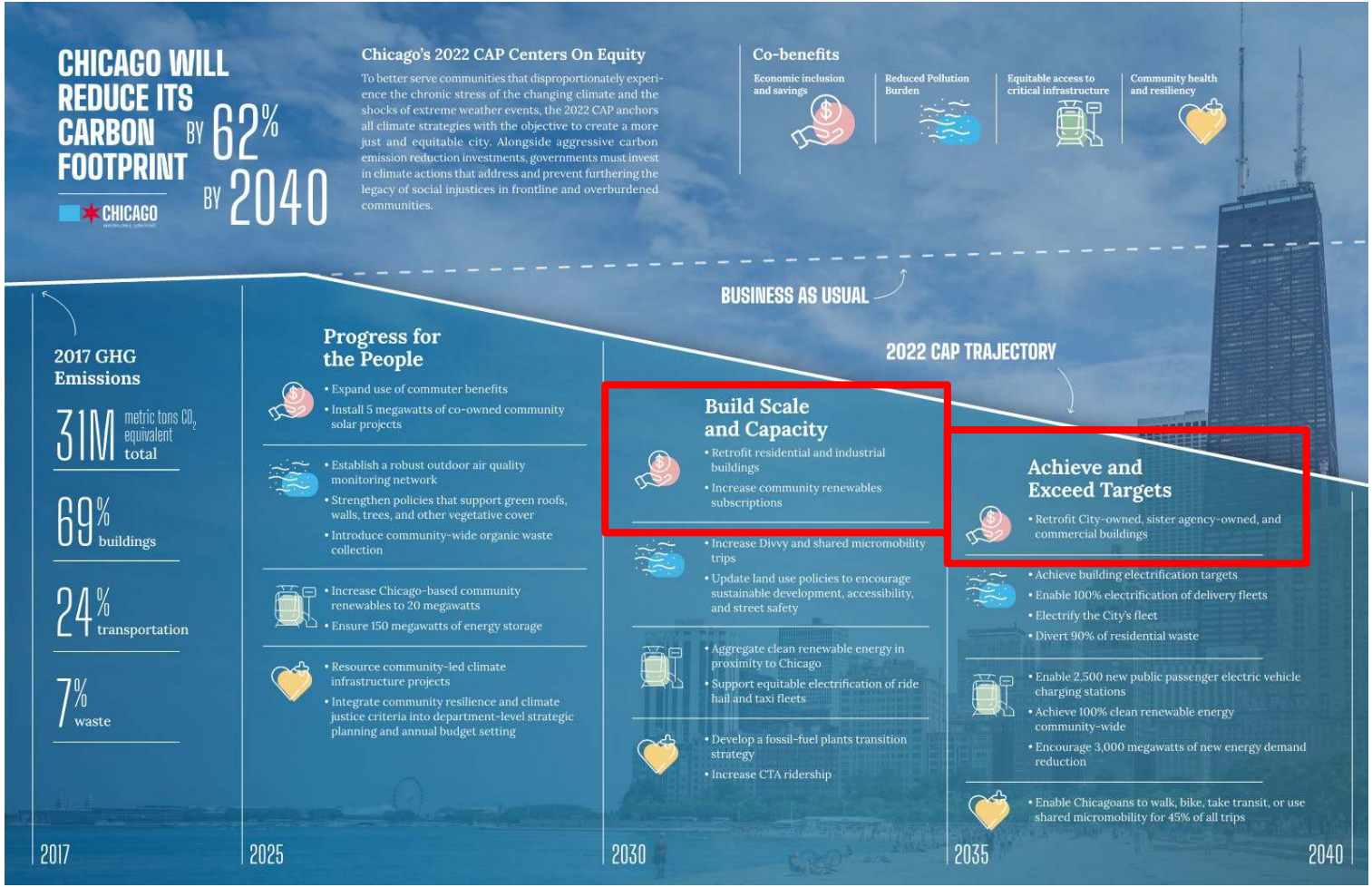
CERTIFICATIONS
- LEED AP BD+C
- City of Chicago / OSHA Scaffold

PROFESSIONAL AFFILIATIONS

- American Institute of Architects (AIA)

EXISTING BUILDING CHALLENGES

CHICAGO CLIMATE ACTION PLAN



CHICAGO ENERGY BENCHMARKING

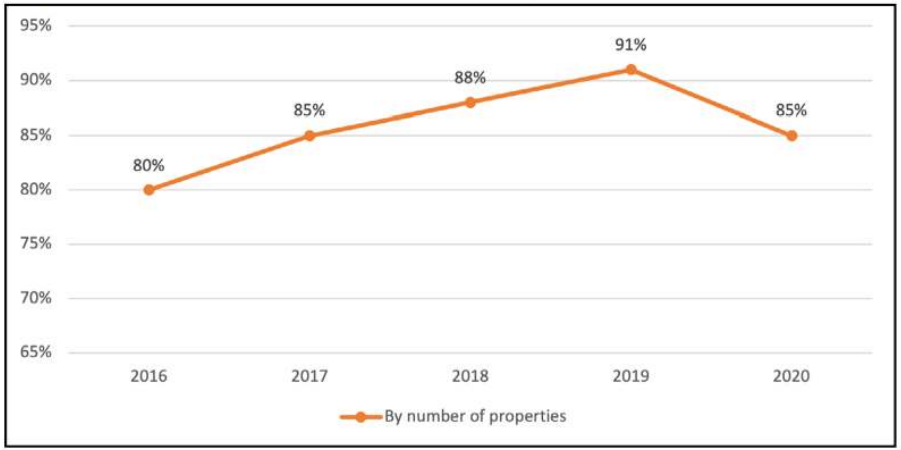
OVERVIEW

The goal of the Chicago Energy Benchmarking Ordinance (2014) and Energy Rating System updates (2019) are to increase awareness of energy performance through visibility and transparency of information. Approximately 3,600 buildings that are 50,000 sq. ft. or greater are required to measure and report energy use annually, post updated placard ratings, and complete additional data verification every three years.

2020 Reporting, by the Numbers:

- **2,841 total reporting properties**
- **85% reporting rate, when measured by number of properties**

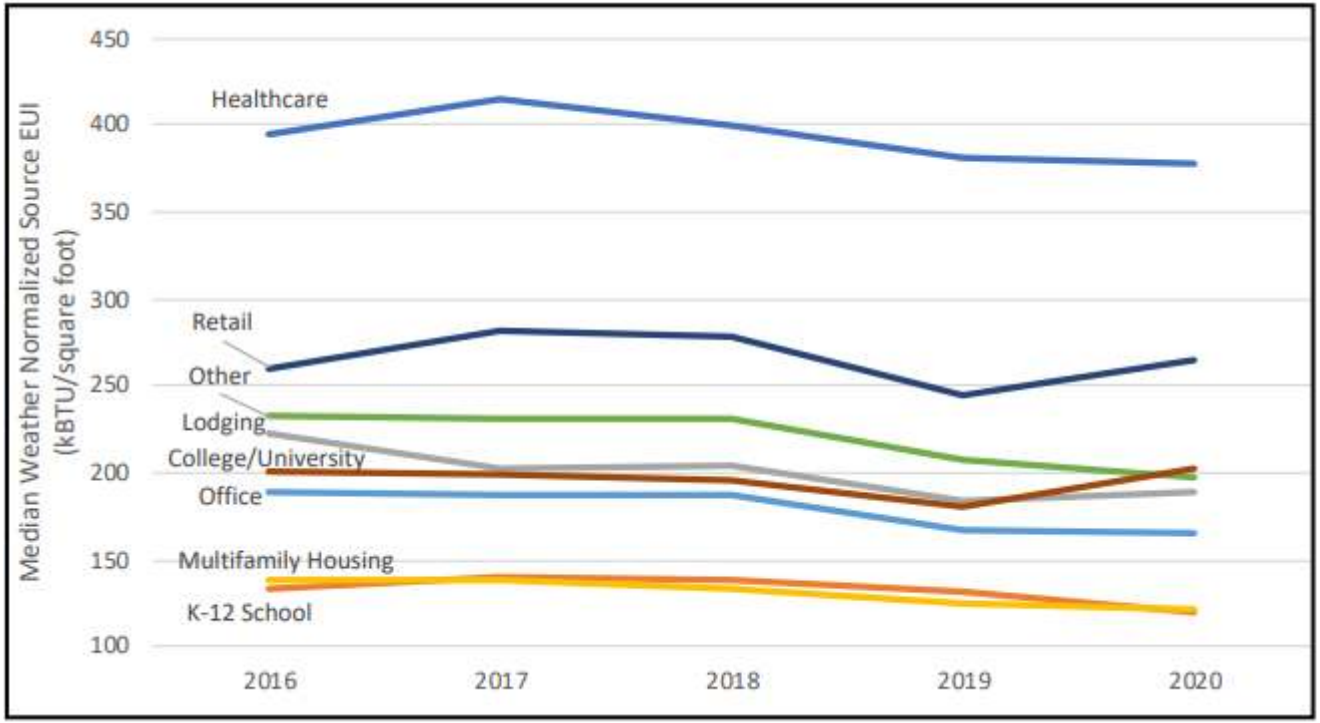
Figure 1: Energy Benchmarking Reporting Rate, 2016 to 2019



CHICAGO ENERGY BENCHMARKING

TREND ANALYSIS

Median Source EUI 2016-2020



CHICAGO BIRD FRIENDLY GLASS ORDINANCE

City of Chicago

Office of the City Clerk

Document Tracking Sheet

O2019-320

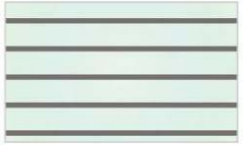
Meeting Date:	1/23/2019
Sponsor(s):	Hopkins (2)
Type:	Ordinance
Title:	Amendment of Municipal Code Title 13 by adding new Chapter 13-150 entitled "Bird Friendly Design Ordinance"
Committee(s) Assignment:	Committee on Health and Environmental Protection

13-150-050 Applicability.

(a) The Bird Friendly Design Ordinance applies to new construction and those buildings renovated or rehabilitated that require permits.

(b) This Ordinance does not apply to detached homes, townhouses, two-flats or residential buildings of six units or less.

(c) Provided that the exemptions in this chapter are inapplicable if glazing on at least one façade exceeds thirty percent of the façade.



Threat Factor 6

Color: V958 Dark Gray Viraspan
Pattern: 1/8" horizontal lines alternating with 1/2" spaces (screen 2256); 20% coverage

Threat Factor 10

Color: V953 Medium Gray Viraspan
Pattern: 1/8" vertical lines alternating with 1/2" spaces (screen 2256); 20% coverage

Threat Factor 41

Color: V951 White
Pattern: 1/8" dots, 1/4" on center (screen 5065); 20% coverage

Threat Factor 24

Color: V951 White
Pattern: 1/8" dots (screen 5006); 40% coverage

Threat Factor 17

Color: Digital White and Digital Etch (every other line switches between the colors)
Pattern: 1/8" horizontal lines 2" on center (screen 2824); 6% coverage

Threat Factor 29

Color: Digital White and Digital Etch (1/8" etch lines and 1/16" white white)
Pattern: alternating 1/8" and 1/16" horizontal lines all 2" on center; 5% coverage

CHICAGO BIRD FRIENDLY GLASS ORDINANCE

AMERICAN BIRD CONSERVANCY

Birds are placed into the tunnel and videotaped as well as watched as they fly towards the end. Photo by Chris Sheppard

The tunnel is dark inside. At the left of the side is the door where birds exit after their flight. Photo by Chris Sheppard

Bird's eye view of the way out! Photo by Chris Sheppard

CHICAGO CONSTRUCTION MARKET

CRAIN'S CHICAGO BUSINESS

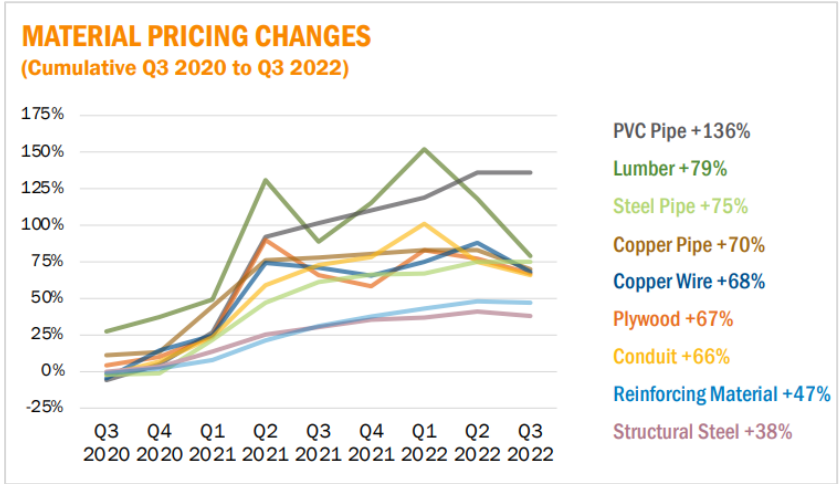
February 08, 2023 05:40 AM | 5 HOURS AGO

Higher interest rates, fewer groundbreakings in the pipeline for Chicago's construction industry

ALBY GALLUN

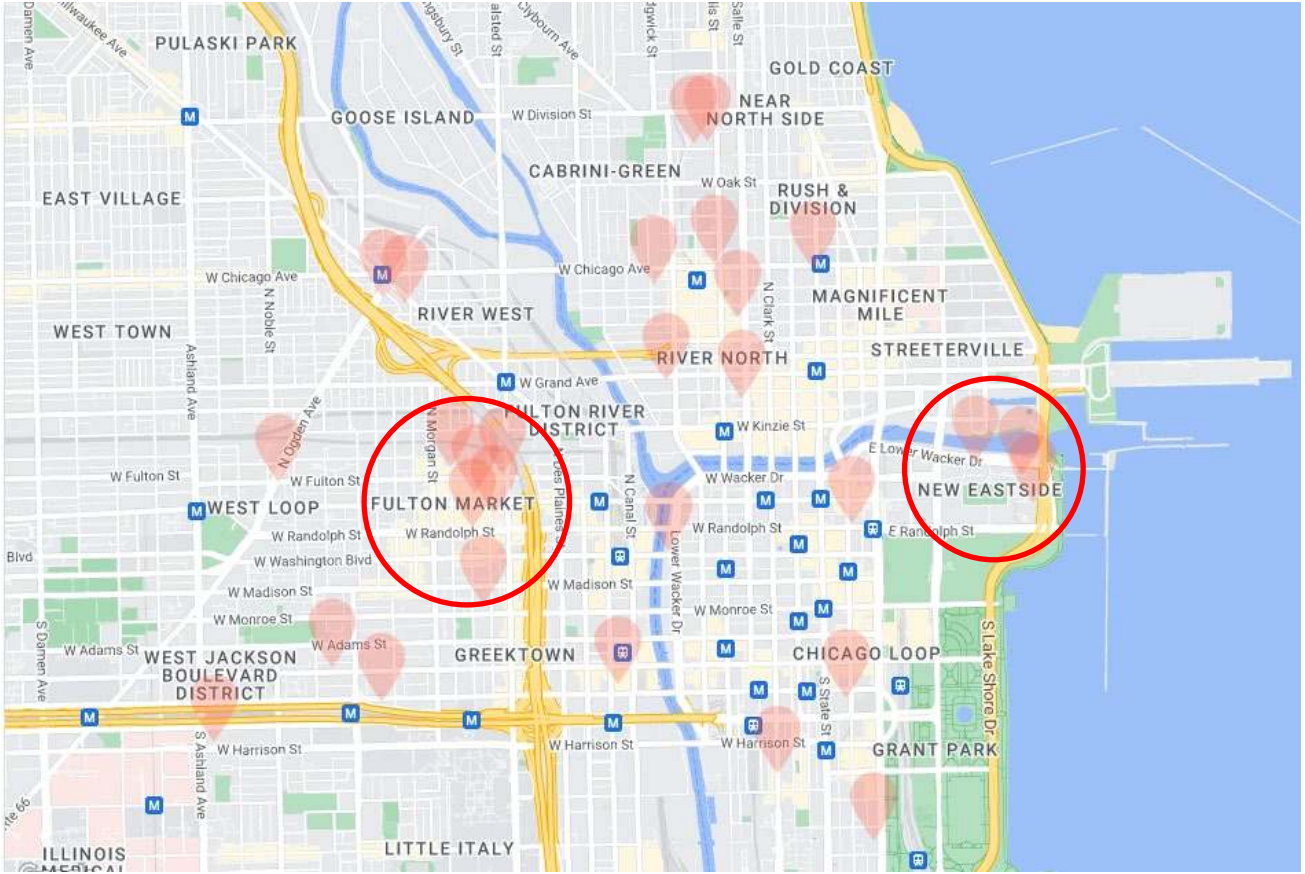
- Rising interest rates and cautious lenders
- Planning/design work completed, but have not broken ground
- Sparse Labor Market
- Material Supply Chain Issues

Reference: Cumming – "Chicago, IL Market Snapshot Q4 – 2022"



Reference: Mortensen – "Cost Index Q3 2022"

CHICAGO NEIGHBORHOODS – NEW BUILDINGS AND DEVELOPMENTS



Reference: Curbed Chicago – “Mapping the 34 high-rises under construction in Chicago” – 3/2/2020

CHICAGO NEIGHBORHOODS – NEW BUILDINGS AND DEVELOPMENTS

167 N Green St, Chicago, IL 60607

Gensler

820 W Fulton Market, Chicago, IL 60607

Skidmore, Owings & Merrill

330 N Green St, Chicago, IL 60607

SOM

310 N Morgan St, Chicago, IL 60607

SCB

345 N Morgan St, Chicago, IL 60607

Eckenhoff Saunders Architects

215 N Peoria St, Chicago, IL 60607

Lamar Johnson Collaborative

References: Curbed Chicago – “Mapping the 34 high-rises under construction in Chicago” – 3/2/2020

CHICAGO NEIGHBORHOODS – NEW BUILDINGS AND DEVELOPMENTS

345 North Morgan - Fulton Market

CHICAGO NEIGHBORHOODS – NEW BUILDINGS AND DEVELOPMENTS

400 N Lake Shore Drive – Lake Shore East

Reference: https://www.relatedmidwest.com/our-company/properties/400-lake-shore

HUMAN COMFORT

EXISTING BUILDING SOLUTIONS

STANFORD CHAN

AIA, RA
Senior Principal – Existing Buildings, Roofing & Waterproofing
SOCOTEC, Inc.

PROFESSIONAL EXPERIENCE

SOCOTEC, INC.
Senior Principal, New York, from 1997

JAMES R GAINFORT, AIA CONSULTING ARCHITECTS
Project Manager, 1995-1997

QUALIFICATIONS

EDUCATION
- Cooper Union School of Architecture – 1993

REGISTRATIONS
- Registered Architect in NY

PROFESSIONAL AFFILIATIONS

- DOB Special Inspections Advisory Committee Member, 2017-2018

EXISTING BUILDING - RECLAD

390 Madison Avenue, NY

Video by Neoscape
https://vimeo.com/117386308

EXISTING BUILDING - RECLAD

390 Madison Avenue, NY

FIRST RE-CLAD
(1980's)

CONSTRUCTION
(2013-2018)

SECOND RE-CLAD
(2018)

EXISTING BUILDING - RECLAD

3 Bryant Park, NY

BEFORE
(1974)

RE-CLAD
(2005-2008)

AFTER
(2009)

EXISTING BUILDING - RECLAD

3 Bryant Park, NY

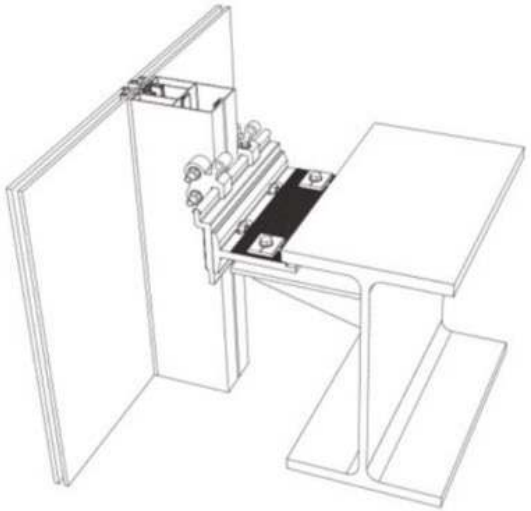
Old Curtain Wall at Slab

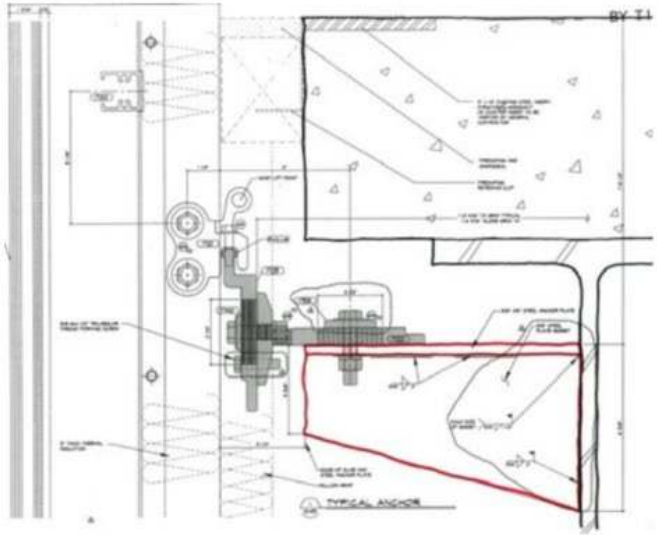
Testing Setup at Slab

Wind Tunnel Study

EXISTING BUILDING - RECLAD

3 Bryant Park, NY





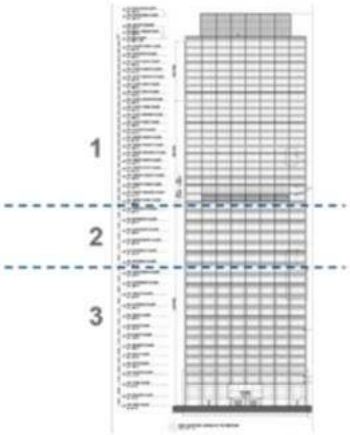
Redesigned Anchors

EXISTING BUILDING - RECLAD

3 Bryant Park, NY

LABORATORY MOCK UP TESTING

SITE DEMO AND INSTALL



EXISTING BUILDING – VALUE ANALYSIS

Building Address	Stories / Floor Area	Scope of Work	Project Costs	Bldg Value– Before Project	Bldg Value– After Project	Value Increase
3 Bryant Park	41-Stories / 1.2M sq. ft.	Façade Re-Cladding	$300M	-	$2.2B *Sold in 2015*	-

BEFORE (1974)

AFTER (2009)

EXISTING BUILDING - OVERCLAD

3 Columbus Circle, NY

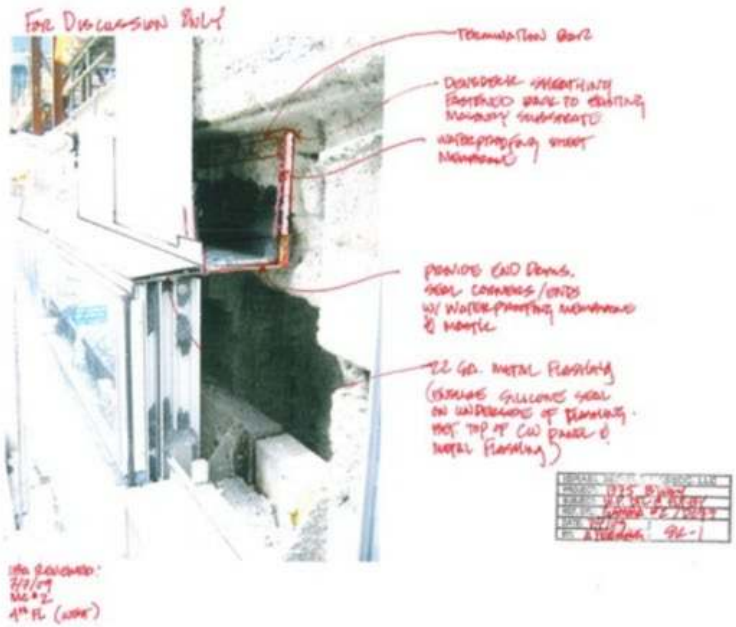
BEFORE
(1923)

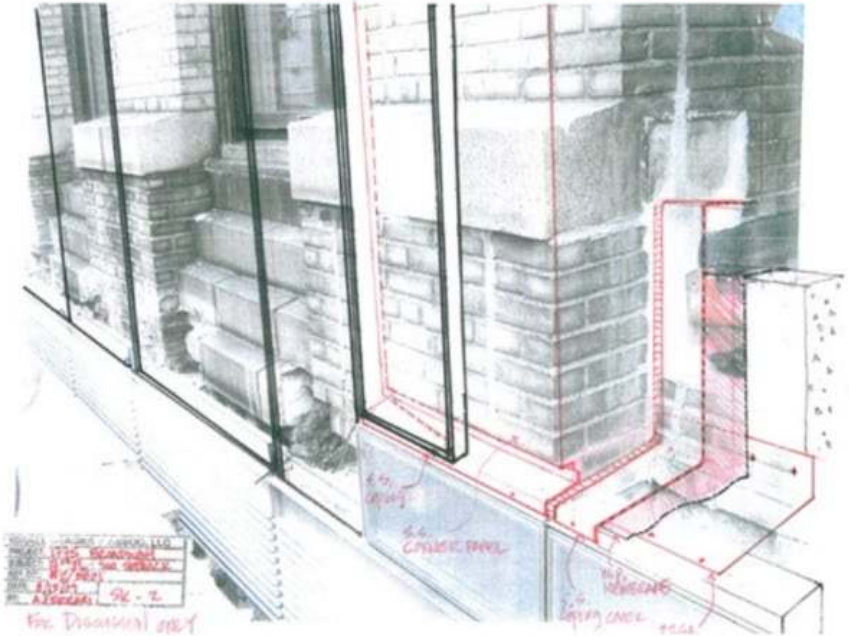
RE-CLAD
(2008-2011)

AFTER
(2012)

EXISTING BUILDING - RECLAD

3 Columbus Circle, NY

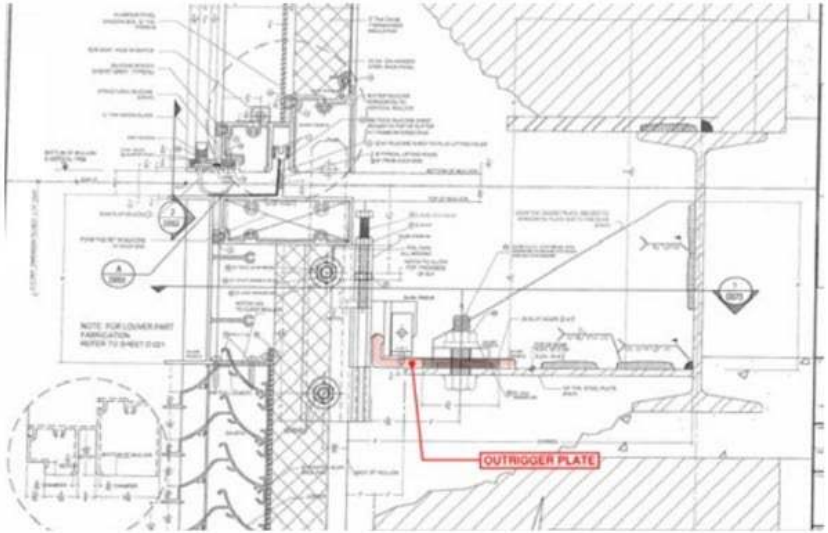




EXISTING BUILDING - RECLAD

3 Columbus Circle, NY

CURTAIN WALL ANCHOR AND OUTRIGGER PLATE



EXISTING BUILDING - WINDOW REPLACEMENT

1345 Sixth Avenue, NY

BEFORE (1969)

AFTER (2016)

EXISTING BUILDING - WINDOW REPLACEMENT

1345 Sixth Avenue, NY

EXISTING BUILDING – VALUE ANALYSIS

Building Address	Stories / Floor Area	Scope of Work	Project Costs	Rent Cost – Before Project	Rent Cost – After Project	Rent Increase	Rent Increase x Building SF
1345 Sixth Avenue	50 stories / 1,998,994 sq ft.	Window Replacement (2017)	**$100M***	$91/SF	$145/SF**	+$54/SF (59%)	**$108M**

*Project included other improvements including site and terrace upgrades.
**Rent cost – after project reflects the highest rental price following the project. The rental price of commercial spaces varied greatly in recent years due to the pandemic environment.

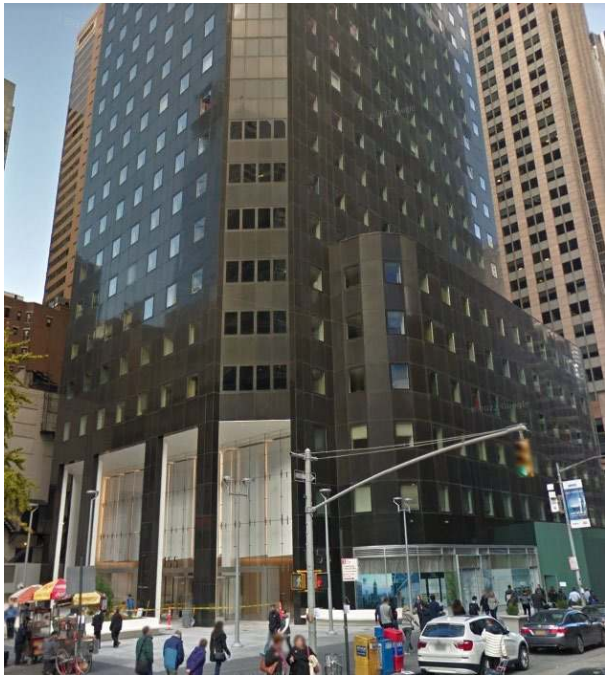
BEFORE (1969)

AFTER (2016)

EXISTING BUILDING – MODERNIZATION AND ENHANCEMENTS

1155 Sixth Avenue, NY

BEFORE
(1984)



LOBBY MODERNIZATION
(2015-2016)

CORNER ENHANCEMENT
(2016-2017)

EXISTING BUILDING – MODERNIZATION AND ENHANCEMENTS

1155 Sixth Avenue, NY

BEFORE
(1984)

LOBBY MODERNIZATION
(2016-2017)

EXISTING BUILDING – MODERNIZATION AND ENHANCEMENTS

1155 Sixth Avenue, NY

BEFORE
(1984)

CORNER ENHANCEMENT
(2016-2017)

EXISTING BUILDING – TERRACE UPGRADES

1155 Sixth Avenue, NY

TERRACE UPGRADES
(2018)

EXISTING BUILDING – VALUE ANALYSIS

Building Address	Stories / Floor Area	Scope of Work	Project Costs	Rent Cost – Before Project	Rent Cost – After Project	Rent Increase	Rent Increase x Building SF
1155 Sixth Avenue	40 stories / 734,668 sq. ft.	Lobby Upgrade Corner Enlargement Penthouse & Terrace Addition (2018)	**$130M**	$74/SF	$112/SF**	+$38/SF (51%)	**$28M**

**Rent cost – after project reflects the highest rental price following the project. The rental price of commercial spaces varied greatly in recent years due to the pandemic environment.

EXISTING BUILDING – ADDITIONS

40 Water Street, Boston

BEFORE
(1923)

ADDITION
(2017-2018)

AFTER
(2019)

EXISTING BUILDING – ADDITIONS

40 Water Street, Boston

EXISTING BUILDING – WINDOW REPLACEMENT & MASONRY RECLAD

200 East 71st Street, NY

EXISTING BUILDING – WINDOW REPLACEMENT & MASONRY RECLAD

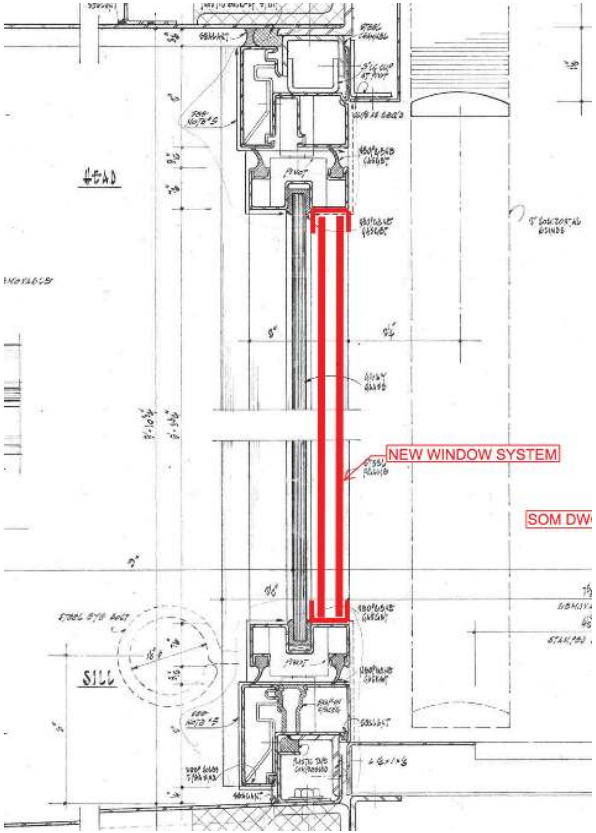
200 East 71st Street, NY

EXISTING BUILDING - WINDOW REPLACEMENT

Project Address	Project Type	Value of Project	# Units	Installation Duration	Window Contractor	Project Year
Empire House 200 East 71st Street New York, NY	Residential	$1,500,000	Windows: 1,622 Doors: 28 Total Units: 1,650	5 months	Skyline Windows	2010
Plaza East 340 East 34th Street New York, NY	Residential	$476,000 - Material $300,000 - Install	Windows: 368 punched openings Doors: 11 Total Units: 379	10 months	Yaro Windows & Doors *Manufacturer: Shuco*	2017-2018
Avalon Long Beach 10 West Broadway Long Beach, NY	Residential	$3,500,000	Windows: 400 punched openings & 44 bay windows Doors: 120 sliding doors Total Units: 564	24 months	Skyline Windows	2016-2019
Carnegie Mews 211 West 56th Street New York, NY	Residential	$3,280,000	Windows: 1,152 Doors: 0 Total Units: 1,152	24 Months	Skyline Windows	2019-2021

EXISTING BUILDING - WINDOW THERMAL UPGRADES

Downtown NY



BUILDING ENHANCEMENT – WINDOW RETROFIT

Downtown NY

BUILDING REPOSITIONING APPROACH

APPROACH

Phase 1 – Feasibility Study

- Existing Building Analysis and Investigation
- “Payback” study
- Energy and Code compliance
- Design options with pros/cons
- Rough-Order-of-Magnitude Costs.

Phase 2 – Design Pricing Sets

- Concept, Schematic Design and/or Design Development Packages
- Construction procurement options (Design assist, CMR, etc.)
- Mockups and testing
- Itemized costs

Phase 3 – Construction Documents

- Drawings and specifications
- Bid documents

Phase 4 – Bidding and Construction

- Contractor engagement
- Construction administration

SOCOTEC

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