Mitrex & Cladify Design Assist Services

MITREX™ | Cladify™

mitrex.com - cladify.com

Introduction

Mitrex and Cladify partner with architects and engineering teams from the earliest stages of design to co-develop integrated building envelope systems that satisfy both performance objectives and aesthetic goals. Through a structured Design Assist process, we offer façade system modeling, engineering validation, energy simulations, mock-up testing, and prefabrication strategies to streamline construction and reduce life cycle costs. With facade systems ranging from building-integrated photovoltaics (BIPV) and prefabricated architectural wall panel systems, our involvement helps bridge the gap between design intent and constructibility, ensuring high-performance façades that are code-compliant, sustainable, and architecturally expressive.

Design Assist Process Summary

1.

Initial Consultation

Technical Deliverables:

- Site analysis summary
- Design brief

2.

Solution Exploration

Technical Deliverables:

- System recommendation matrix
- Solar energy potential analysis

3.

Collaborative Design Development

Technical Deliverables:

- CAD/Revit details
- Connection drawings
- Integrated facade layouts

4.

Engineering & Energy Analysis

Technical Deliverables:

- Structural calculations
- Energy modeling reports
- Code compliance checklists

5.

Prototyping & Testing

Technical Deliverables:

- Performance test reports
- QA reviews

6.

Prefabrication & Logistics Planning

Technical Deliverables:

- Factory QC documentation
- Logistics plan
- Panel maps

7.

Implementation Support

Technical Deliverables:

- Site installation guide
- QA checklist
- Commissioning certificate

Design Assist Process

1. **Initial Consultation:** Engage with architects and stakeholders to define project goals, challenges, and design vision.

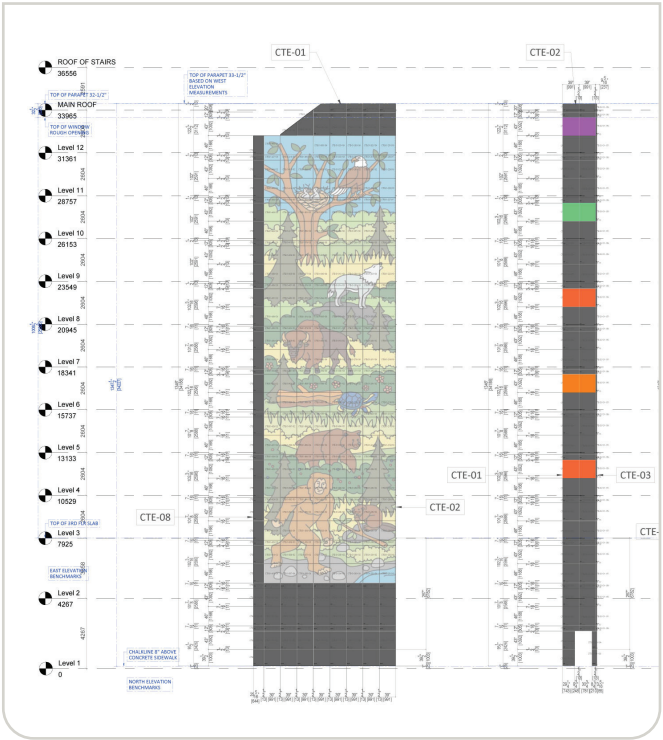
- Stakeholder Engagement
  - Meet with architects, developers, general contractors (GCs), and owners to discuss project requirements.
  - Identify aesthetic preferences, performance targets, regulatory constraints, and sustainability objectives.
- Site & Building Assessment
  - Assess existing building conditions (if applicable) and site-specific challenges such as structural limitations, environmental factors, and budget constraints.
  - Clearly document regulatory constraints and sustainability objectives.
- Project Goals Definition
  - Define high-level goals, including thermal bridging minimization, material choices, and project timeline alignment.
  - Determine potential integration points for Mitrex BIPV and Cladify systems.

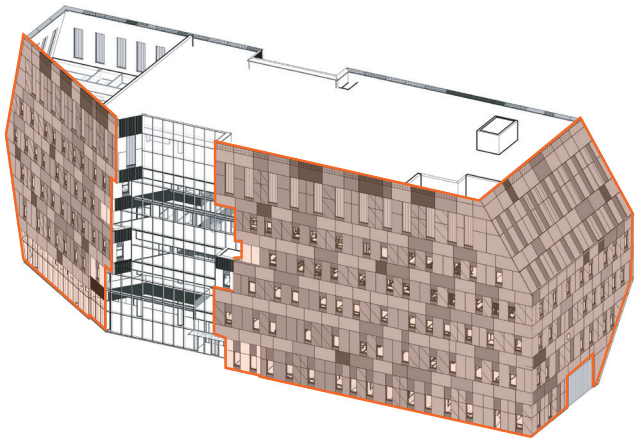
Technical Deliverables:
- Site analysis summary
- Design brief

2. **Solution Exploration:** Integrate Mitrex BIPV or Cladify cladding systems early in schematic design to align building envelope solutions with performance targets and architectural vision.

- Material & Design Evaluation
  - Propose Mitrex and Cladify materials including BIPV panelization systems and prefabricated wall systems tailored to the project's aesthetic and performance requirements.
  - Evaluate various cladding types, surface textures, and custom material options to align with the architectural vision.
  - Provide conceptual renderings and material samples for stakeholder feedback.
- Energy Demands
  - Assess the project's potential for solar energy generation based on building orientation, available surface area, and local solar exposure.
- System Analysis
  - Analyze the suitability of Mitrex and Cladify systems—from rainscreen cladding to prefabricated wall panels—to ensure maximum project profitability while preserving the design intent.
- Cost & Budget Analysis
  - Conduct cost-benefit analysis of proposed materials and their impact on installation efficiency, labor costs, and long-term maintenance.

Technical Deliverables:
- System recommendation matrix
- Solar energy potential analysis





3. **Collaborative Design Development:** Work with the team to create concepts integrating our products into the building envelope.

- Team Collaboration
  - Work closely with architects, structural engineers, and consultants to ensure smooth integration into the building envelope.
  - Address connection details, implementation strategies, and compatibility with adjacent systems.
- Design Execution
  - Develop detailed CAD and Revit models, including layout and assemblies.
  - Conduct design iterations based on client and engineering feedback to ensure a balance of performance, safety, and aesthetics.
  - Identify potential design and constructibility challenges early to prevent costly rework.

Technical Deliverables:
- CAD/Revit details
- Connection drawings
- Integrated facade layouts

4. **Engineering & Energy Analysis:** Perform structural, energy, and compliance assessments to validate envelope systems.

- Structural & Code Compliance
  - Conduct structural load calculations to confirm system feasibility and building impact.
  - Assess fire resistance, wind load compliance, seismic impact, and waterproofing.
  - Coordinate with local regulatory bodies and consultants to address building code compliance for both BIPV and cladding envelope systems.
- Energy Modeling & Performance
  - Perform energy modeling simulations to estimate BIPV power generation and verify compliance with sustainability targets (e.g., LEED, net-zero goals).
  - Make necessary adjustments based on engineering findings and stakeholder feedback.

Technical Deliverables:
- Structural calculations
- Energy modeling reports
- Code compliance checklists

5.

Prototyping & Testing: Develop mock-ups, conduct performance tests (e.g., fire, wind, thermal performance), and refine designs.

- Mock-Up Development
  - Create full-scale prototypes or mock ups for stakeholder review and approval.
- Performance Testing
  - Conduct performance testing, such as:
    - Fire testing including CAN/ULC S135, NFPA 285, EN 13501-1, etc.
    - Wind load compliance and structural load testing for high-rise applications.
    - UV resistance and durability assessments for long-term exposure.
    - Thermal performance evaluations to minimize thermal bridging.
- Refinement
  - Use results to refine design details and improve constructibility.
  - Provide clients with an opportunity to visualize the final product and make last-minute adjustments.

Technical Deliverables:
- Performance test reports
- QA reviews

6.

Prefabrication & Logistics Planning: Design preassembled systems to simplify installation and reduce costs.

- Prefabrication
  - Utilize factory prefabrication to produce modular BIPV panels or Cladify panels with precise quality control.
  - Preassemble components to reduce on-site labor and installation time.
- Installation & Delivery Planning
  - Develop a logistics and installation plan or work with existing plans to tailor to the site constraints (e.g., urban settings, restricted access).
  - Coordinate with construction teams to ensure just-in-time delivery.
  - Optimize packaging and transportation to minimize material damage and site waste.

Technical Deliverables:
- Factory QC documentation
- Logistics plan
- Panel maps

Implementation Support Provide detailed documentation, on-site assistance, and final adjustments.

- Installation Resources
  - Provide detailed installation manuals, technical documentation, and construction drawings.
  - Deliver on-site training for contractors and installers to ensure correct handling and placement.
- Quality Assurance
  - Perform QA inspections to verify alignment and performance.
  - Assist with final system commissioning, including electrical connections and energy performance validation.
  - Address any last-minute adjustments or refinements needed for full project completion.

Technical Deliverables:
- Site installation guide
- QA checklist
- Commissioning certificate

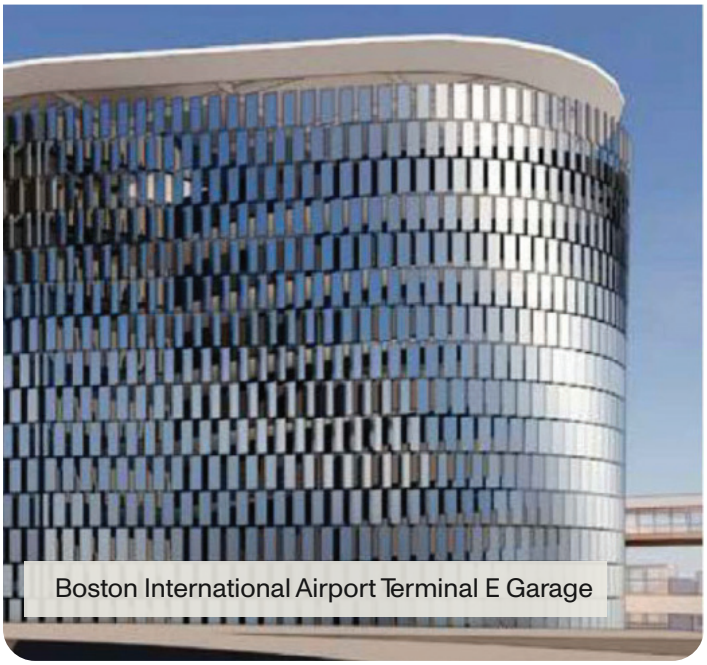
7.

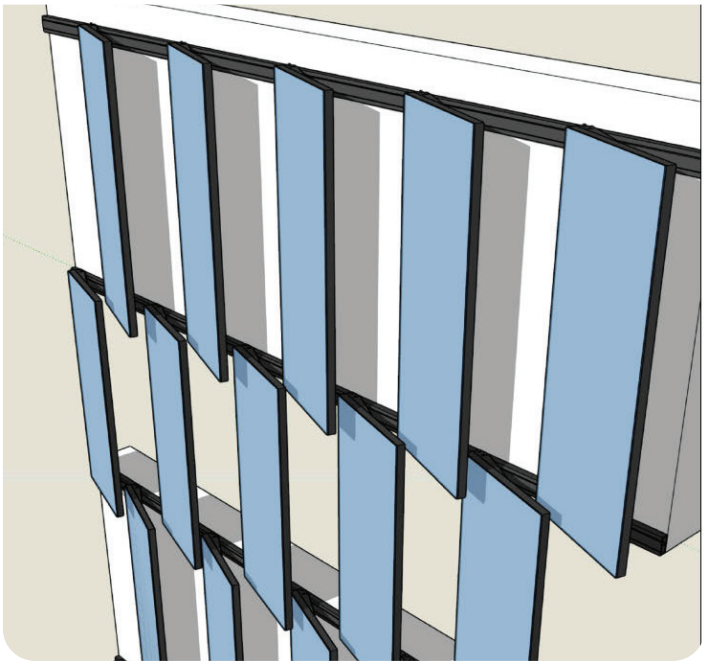
Design Assist Summary

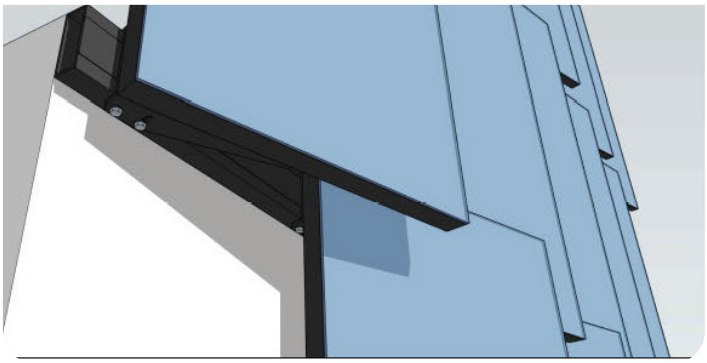
1. **Initial Consultation**
   Engage with stakeholders (architects, developers, contractors) to define the project's goals, site constraints, aesthetic preferences, regulatory requirements, and sustainability objectives.
2. **Solution Exploration**
   Evaluate material options, explore design possibilities, and analyze energy generation potential (especially solar). Conduct cost-benefit analysis to align with budget and performance targets.
3. **Collaborative Design Development**
   Work closely with design and engineering teams to integrate cladding systems into the building envelope. Create detailed CAD/Revit models and address constructibility early.
4. **Engineering & Energy Analysis**
   Validate system feasibility through structural analysis, building code compliance, and energy modeling. Ensure designs meet performance and sustainability standards (e.g., LEED, net-zero).
5. **Prototyping & Testing**
   Develop full-scale mock-ups and conduct performance testing (e.g., fire, wind, UV, thermal). Use results to refine designs and confirm system reliability
6. **Prefabrication & Logistics Planning**
   Utilize factory-prefabricated systems to ensure quality and simplify installation. Coordinate delivery and site logistics to reduce labor costs and construction time.
7. **Implementation Support**
   Provide installation manuals, on-site training, QA inspections, and commissioning support to ensure proper system execution and performance validation.

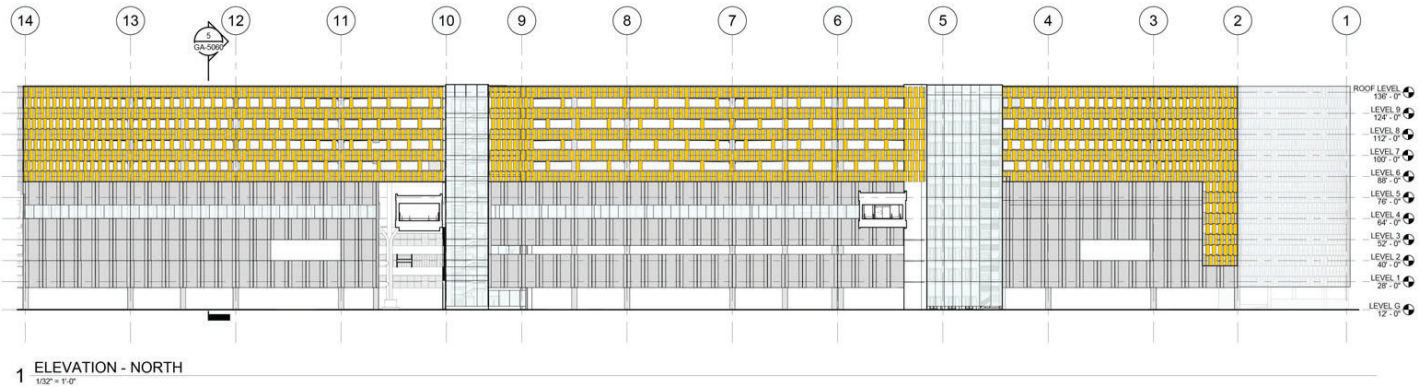
Design Assist Project Sample

Mitrex Solar Facade Design Integration – **Mitrex Design Assist Service**





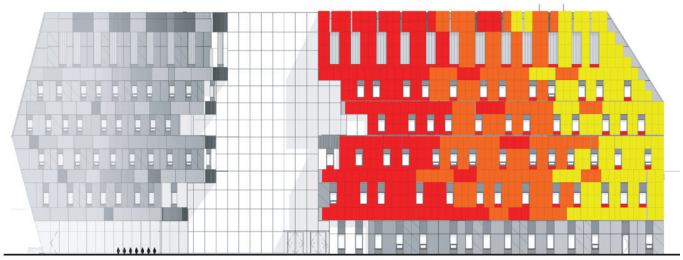




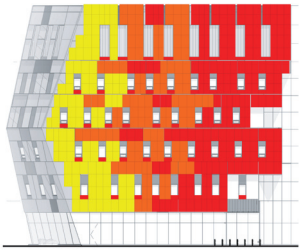
Design Assist Project Sample

Solar Module Optimization and Elevation Design – **Mitrex Design Assist Service**

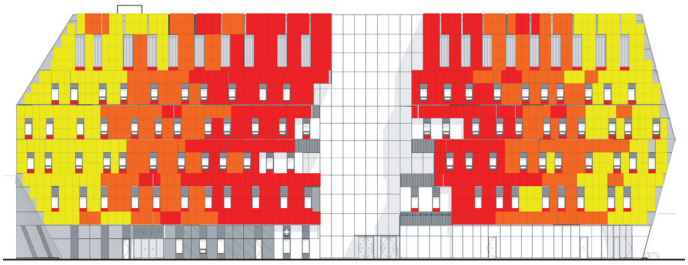
South Elevation Panelization



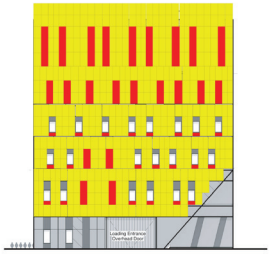
Southwest Elevation Panelization



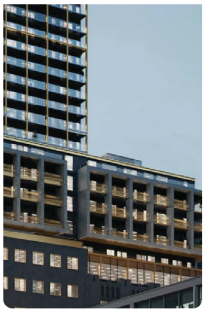
North Elevation Panelization

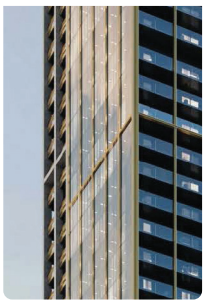


West Elevation Panelization



Mitrex and Cladify Projects





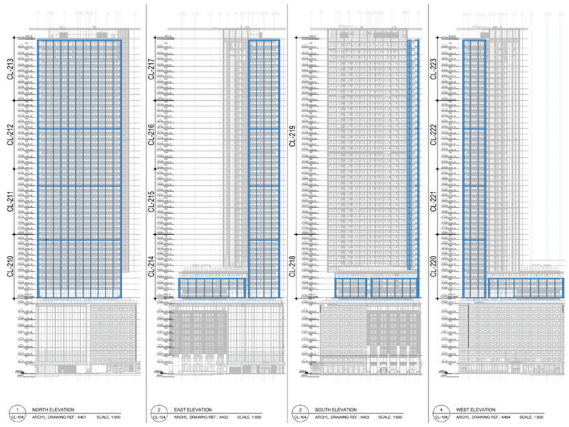
481 University - Residential High-Rise

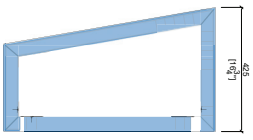
ARCHITECT:
B+H Architects
DEVELOPER:
Davpart Inc.

ENGAGEMENT STEP:
Design Development

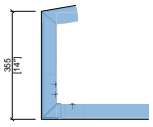
Cladify was engaged during Design Development to propose value-engineered alternatives in both materiality and installation methodology. The design assist included replacing traditional rainscreen with boxed framing off slab edges with a slab-to-slab connection system, eliminating unnecessary framing and delivering major cost and time savings.

The horizontal bands were pre-panelized, enabling a 5-day cycle per floor during installation. The original stone material was substituted with customized porcelain panels featuring 10 unique vein patterns to avoid visual repetition. Each slab-to-slab module weighed under 200 lbs, facilitating safer and faster handling on site. The podium soffits were clad using pre-assembled Cladify soffit modules, each weighing approximately 180 lbs, enabling single-lift installations and reducing labor intensity.

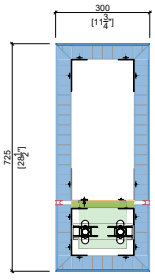




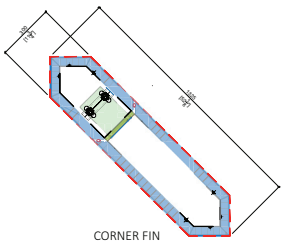
HORIZONTAL BAND 1



HOR. BAND 2



INNER FIN



CORNER FIN

Project Challenge

- Traditional rainscreen systems required extensive framing off slab edges, increasing cost and complexity.
- Extended installation timelines due to on-site assembly of horizontal bands.
- Original stone material posed visual repetition risks and added weight.
- Labor-intensive and complex installation of podium soffits.
- Concerns over weight of stone on high-rise, connections, and installation logistics.

Cladify Solution

- Cladify proposed a slab-to-slab connection system that eliminated unnecessary framing, resulting in significant cost and time savings.
- Cladify pre-panelized the horizontal bands, enabling a fast 5-day installation cycle per floor.
- Replaced stone with customized porcelain panels featuring 10 unique vein patterns, ensuring visual variety while keeping modules under 200 lbs for easier handling.
- Used pre-assembled Cladify soffit modules (approx. 180 lbs each), allowing single-lift installations and reducing labor demands.
- Panels installed from inside using a standard spider crane.
- Client saved **$7–8 million** with this system.

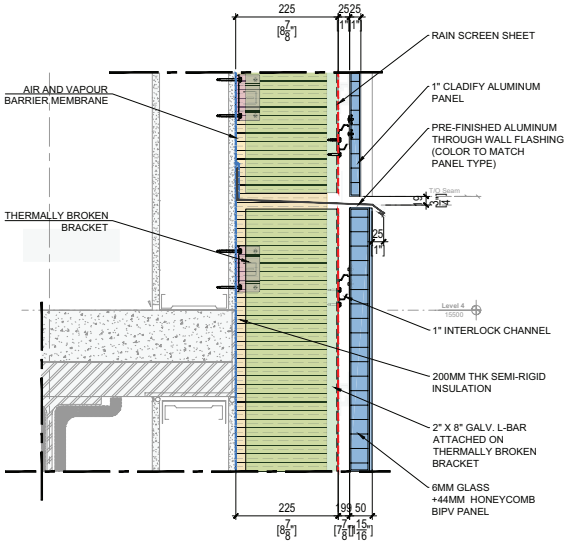
SAMIH Scarborough Academy of Medicine and Integrated Health - Educational Building

ARCHITECT:
Diamond Schmitt Architects/MVRDV
DEVELOPER:
University of Toronto

ENGAGEMENT STEP:
Schematic Design Stage

Design assist began at the Schematic Design stage, focusing on material selection, connection details, and most critically, energy generation objectives. The building was designed to meet specific on-site energy generation targets.

Cladify collaborated closely with Mitrex to optimize panel size, finish, color, and solar power equipment integration. All decisions balanced aesthetic requirements with photovoltaic performance goals, enabling the solar-active façade to meet energy benchmarks without compromising architectural intent.



6 MT-003 Exterior Section Detail - EW1E and EW1F Hor. Seam - Typ
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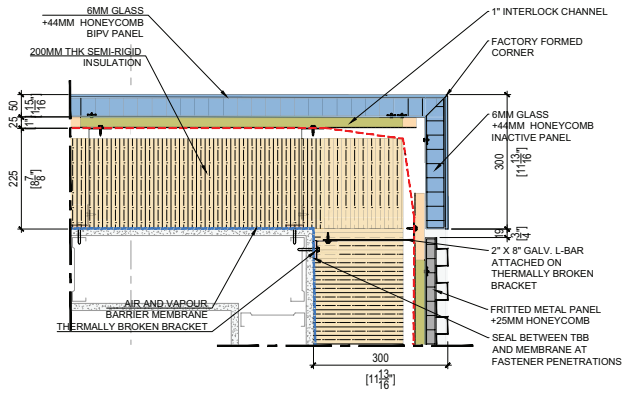


Project Challenge

- Target of **20% on-site renewables.**
- Architect required **specific colors, patterns, and panel layouts.**

Mitrex Solution

- A system size of 632 kW, producing about 420,000 kWh per year, meeting the 20% renewable energy generation requirement for the building.
- Worked with the team for over a year to finalize **color and panel layouts.**
- Engineered **solar-integrated roofing and cladding** to meet energy goals.
- Ensured alignment with **EllisDon's construction schedule and budget.**

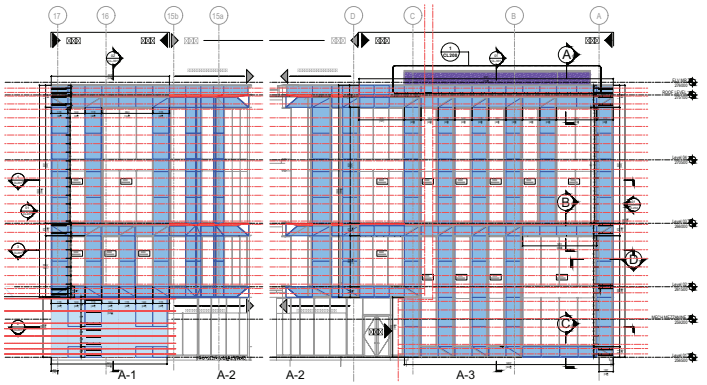
Western University Entrepreneurship & Innovation Centre - Educational Building

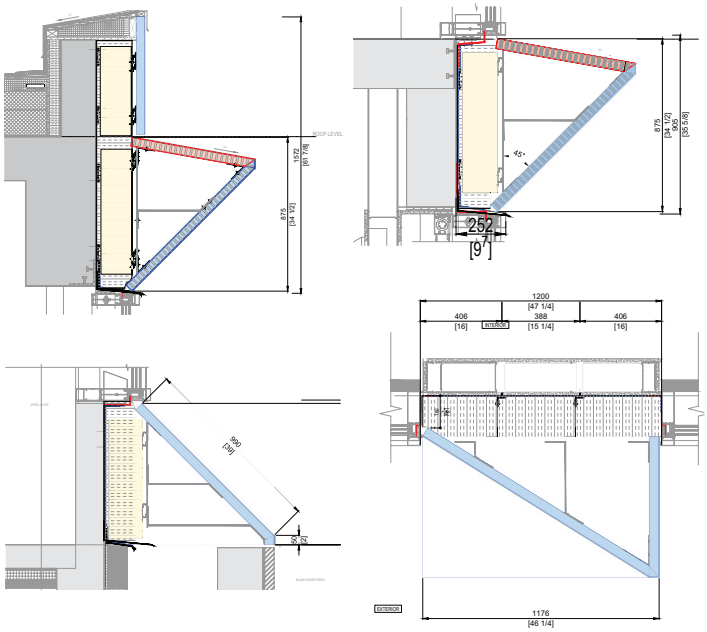
ARCHITECT:
Perkins & Will
DEVELOPER:
Hayman Construction

ENGAGEMENT STEP:
Design Development

Cladify was brought on board during the Design Development (DD) phase to introduce an innovative pre-assembled cladding solution. Custom modules integrated an internal chassis and flat-plane mounting clips, eliminating the need for bulky boxed-out structural framing.

The lightweight nature of the system enabled 23" deep triangular fins unsupported, anchored only by two 16-gauge studs. The envelope achieved its targeted effective R-value through an 8" outboard insulation layer, thermally broken brackets, and a continuous thermal control plane aligned with the IGUs, ensuring installation precision and eliminating site-based fabrication errors.



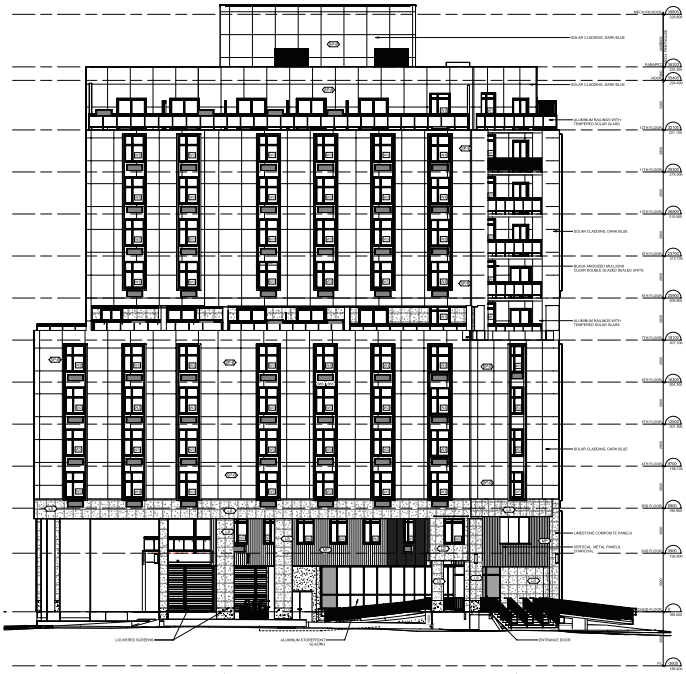


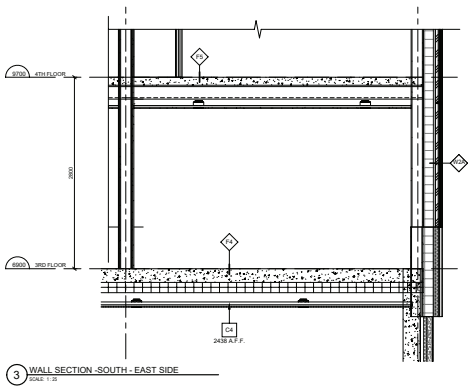
Project Challenge

- Large limestone fins projecting **3–4 feet** from the façade.
- Concerns over weight of stone on high-rise, connections, and installation logistics.
- Meeting the targeted R-value.
- Tight project timeline.
- Avoid excessive structural weight.

Cladify Solution

- **Preassembled lightweight panel systems** reduced weight concerns and sped up installation.
- Custom modules integrated an internal chassis and flat-plane mounting clips, **eliminating the need for bulky boxed-out structural framing.**
- The lightweight nature of the system enabled 23" deep triangular fins unsupported
- The envelope achieved its **targeted effective R-value** through an 8" outboard insulation layer, thermally broken brackets, and a continuous thermal control plane aligned with the IGUs.
- **Client saved $3–4 million** on wall assemblies no longer needed due to the new system.





3 WALL SECTION -SOUTH - EAST SIDE
SCALE: 1 : 25

591 Finch West - Residential Rental Mid-Rise

ARCHITECT:
Paradigm Architecture + Design
DEVELOPER:
Sionito Group

ENGAGEMENT STEP:
Schematic Design Stage

To meet the ambitious goal of generating 30% of the building's electricity from on-site renewables, the project faced several key challenges: limited roof space, no excess land for ground-mounted systems, and the need to preserve the building's architectural aesthetics. Traditional solar panels would have created a visually intrusive "black box" effect. Mitrex addressed these challenges by introducing Building-Integrated Photovoltaic (BIPV) technology in customizable colors and textures, seamlessly blending energy generation with design. Through a collaborative design-assist process, multiple color and texture options were proposed for client selection.

Project Challenge

- Goal: Achieve **30% of the building's electricity consumption** from on-site renewables.
- Urban site with limited roof space and no excess land.
- Aesthetics: Traditional solar panels on the exterior facade would create a "black box" effect, negatively impacting the design.

Mitrex Solution

- Mitrex introduced **BIPV technology** in customizable colors and textures.
- Energy goals were met while maintaining design integrity. During the design assist process we proposed multiple variation of colours and textures for the client to decide.
- Mitrex collaborated with Cladify to complete other exterior elements (e.g., aluminum flashing).
- Having a **single contractor for the entire building envelope** streamlined logistics and coordination.

Aquabella - Dual-Tower Residential, on Lake Ontario

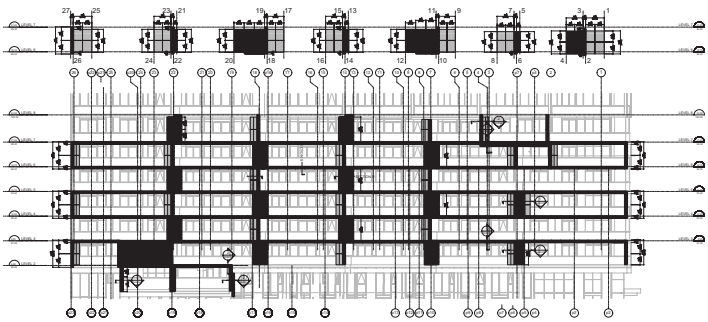
ARCHITECT:
3XN, Kirkor Architects and Planners
DEVELOPER:
Tridel, Hines

ENGAGEMENT STEP:
Schematic Design Stage

Cladify was engaged during the Schematic Design (SD) phase to assist with both material selection and system detailing. The project features four custom-colored, non-reflective textured porcelain panels, developed to meet the architect's intent of minimizing solar glare from Lake Ontario. The textured "corduroy" finish was selected to ensure uniform light reflection across the façade due to the building's high exposure to sunlight and water reflection.

To enhance construction efficiency, a pre-panelized system was adopted:

- Balcony fins and slab covers were delivered as pre-assembled units, eliminating the need for conventional structural stud substrate backing.
- For the building's intricate nine-color slat panel arrangement, the Cladify system reduced over 8,500 individual slats to just 944 pre-assembled panels, significantly accelerating installation and improving finish consistency.

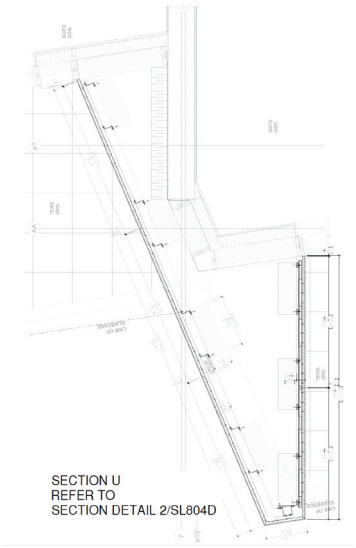


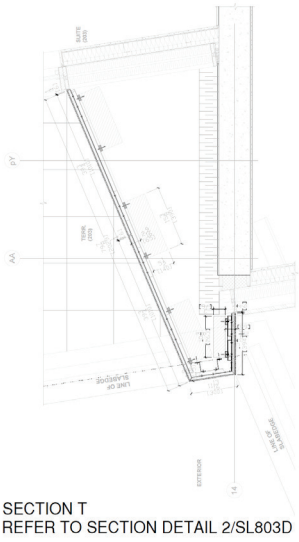
Project Challenge

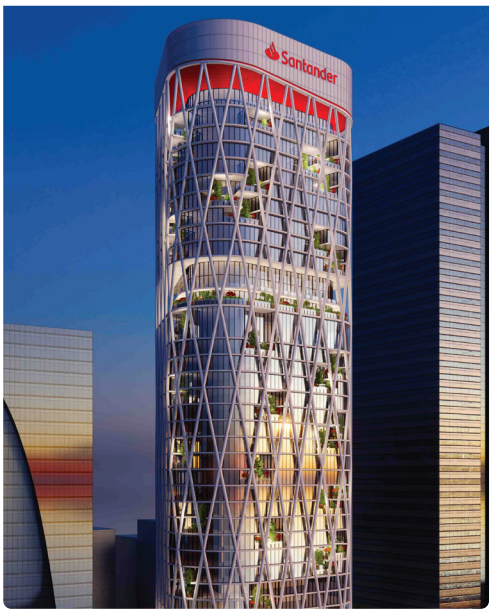
- Owner sought to incorporate **four different porcelain colors** into the façade with minimal glare.
- Initial installation plan involved **cutting and placing each of the 8,500 pieces individually,** leading to a **$5–6 million budget overrun.**

Cladify Solution

- Cladify proposed a **preassembled panel system** to **reduce installation time and material costs.**
- This reduced the 8,500 individual slats to **just 944 pre-assembled panels.**
- Fins and preassembled panels were **laminated and prefabricated in the factory.**
- Client saved **$4–5 million** through reduced installation time and cost efficiencies.







Santander Tower - Residential High-Rise

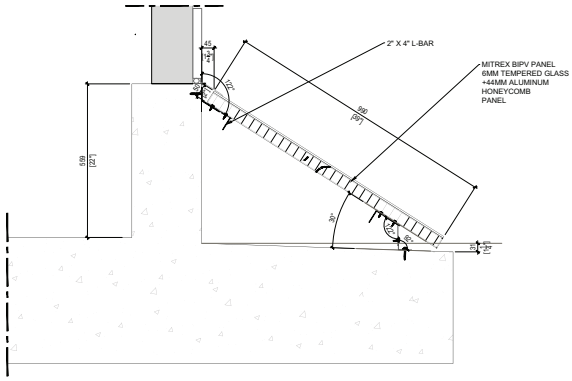
ARCHITECT:
Handel Architects
GENERAL CONTRACTOR:
Coastal Construction

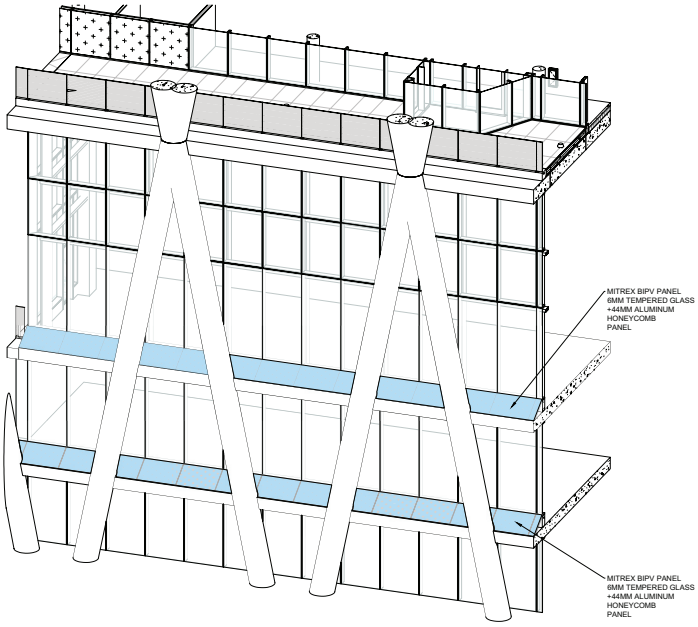
ENGAGEMENT STEP:
Design Development

Mitrex was engaged during the Construction Drawing phase to provide technical design assistance, with a focus on simplifying connection details and assemblies related to the integration of BIPV (Building-Integrated Photovoltaics).

The crown detail was streamlined, and the Cladify system was integrated to support large-format panel modules and enable a one-step installation process. Connections were developed in compliance with NOA (Notice of Acceptance) requirements, and panel sizing and layout were optimized to maximize solar energy generation. The installation approach was also designed to be accessible from the building interior, providing greater flexibility to meet construction schedules.

Slab edge cover details were simplified to facilitate smooth installation using climbers. Mounting brackets were prefabricated on-site, and the module connection system was designed for quick and simple on-site assembly, minimizing potential detailing issues.
The color and pattern of the panels were carefully selected to enhance energy generation while simplifying electrical connections.



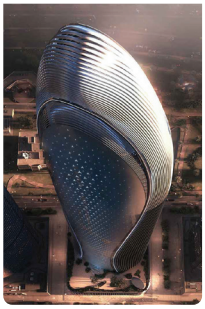


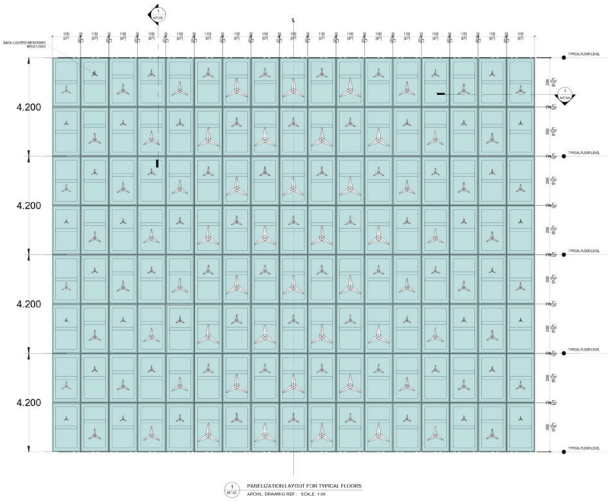
Project Challenge

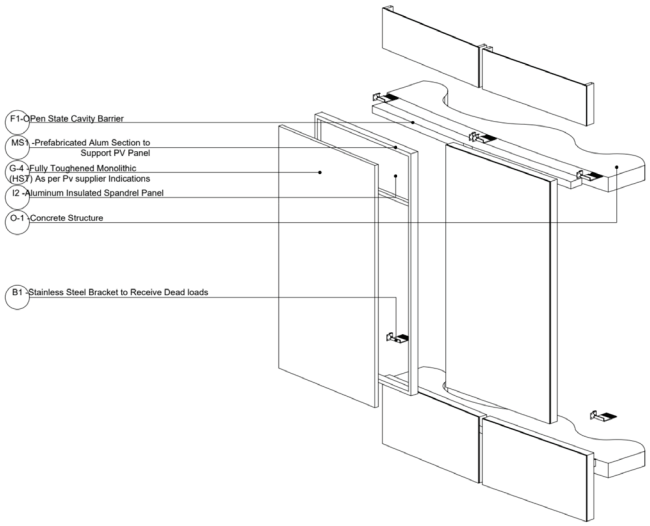
- Goal: Incorporate **on-site renewable energy** using rooftop solar panels.
- Traditional solar solutions **did not meet fire testing and wind load compliance** under NOA regulations.
- Customer reached out to us to use our honeycomb panels, and then realized they can do a lot more than just traditional rooftop solar.
- Difficulties in supporting large-format panel modules and ensuring efficient installation.
- Exterior-only installation access posed scheduling and logistical constraints.
- Slab edge details complicated installation using climbers.

Mitrex Solution

- Mitrex introduced **honeycomb solar panels** and later BIPV cladding as an alternative.
- Engaged in **design assist** to develop connections and implementation strategies, ensuring successful **BIPV integration.**
- Connection details were designed to meet NOA standards, while panel sizing and layout were optimized to enhance solar energy generation.
- Crown details were streamlined and the Cladify system was integrated, allowing for a one-step installation process and support for large-format panels.
- Slab edge covers were simplified, and prefabricated mounting brackets enabled easier and faster installation.







Binghatti Mercedes Benz Residences - Dubai - High-End Residential

ARCHITECT:
Silverstone
DEVELOPER:
Binghatti Developers In Partnership With Mercedes-Benz

ENGAGEMENT STEP:
Design Development

Mitrex was engaged during the Product Development and Schematic Design phases, with a focus on panel system design and securing regulatory compliance, including NFPA 285 and other local building codes and certifications.

The cladding system was engineered to integrate directly with a unitized curtain wall system, while maintaining the flexibility to support stick-built assemblies for a hybrid installation approach. This provided the architect and façade consultant with multiple construction options, depending on site logistics and sequencing.

Key design highlights include:

- Optimized panelization to ensure a uniform layout across the entire tower, enhancing visual continuity and reducing complexity.
- The iconic Mercedes-Benz logo was carefully incorporated into the façade design by replicating the proportional geometry of its hexagonal form, achieving brand alignment with architectural precision.
- Dynamic light panel integration was engineered to allow even light diffusion through BIPV panels, ensuring both performance and visual consistency across the illuminated façade surfaces.

Project Challenge

- Create an **iconic, electrified** building aligned with Mercedes' **EQS electric vehicle brand.**
- Required **fire-rated solar solutions (CAN/ULC S135, NFPA 285)** compliant with high-rise regulations. All while maintaining the Mercedes branding and image in the building design.
- Integration of **LED lighting into the EQS logo on the BIPV façade** to match their branding.

Mitrex Solution

- Mitrex worked with the **architect, Mercedes marketing team, and GC** to develop a **BIPV-integrated cladding envelope system** incorporating LED lighting and their brand colors.
- Dynamic light panel integration was engineered to allow even light diffusion through BIPV panels.
- Provided full support: **initial design, connection details, local rep for installation.**
- After initial design, we arranged **factory tours, performance mock-ups, and fire testing** to meet project requirements. We also modified our fire test reports to comply with product modifications for the project.

Conclusion

The Mitrex and Cladify Design Assist Service offers an end-to-end collaborative approach that supports architects, engineers, and project stakeholders in designing and implementing sustainable high-performance, visually striking building envelopes. From the early stages of consultation and solution exploration through to prototyping, engineering analysis, prefabrication, and on-site implementation support, the service ensures that every project benefits from deep technical expertise, aesthetic flexibility, and streamlined logistics.

By integrating innovative technologies like Building-Integrated Photovoltaics (BIPV) and lightweight cladding systems, Mitrex and Cladify not only enhance energy efficiency and reduce structural load concerns but also enable significant cost savings and construction efficiencies. The use of prefabricated systems, performance testing, and tailored installation planning helps mitigate risks, minimize delays, and simplify construction on complex sites.

The real-world project case studies included in this document demonstrate the tangible value of the Design Assist process. Clients have achieved millions in cost savings, met sustainability goals, and maintained architectural integrity, even under challenging constraints. Ultimately, the Mitrex and Cladify Design Assist Service empowers design teams to push boundaries—transforming architectural vision into durable, functional, and sustainable building solutions.

Resources

- FAQ
  - https://www.mitrex.com/faq
- Mitrex Energy Simulator
  - https://www.mitrex.com/simulator
- Installation Systems
  - https://www.dropbox.com/scl/fo/d9vwlq6ux85×40g17fbi6/AOme5dYpjFixDMmbkR5-xgM?rlkey=4s2jh8sqejgggiau76wxg2b1l&dl=0

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