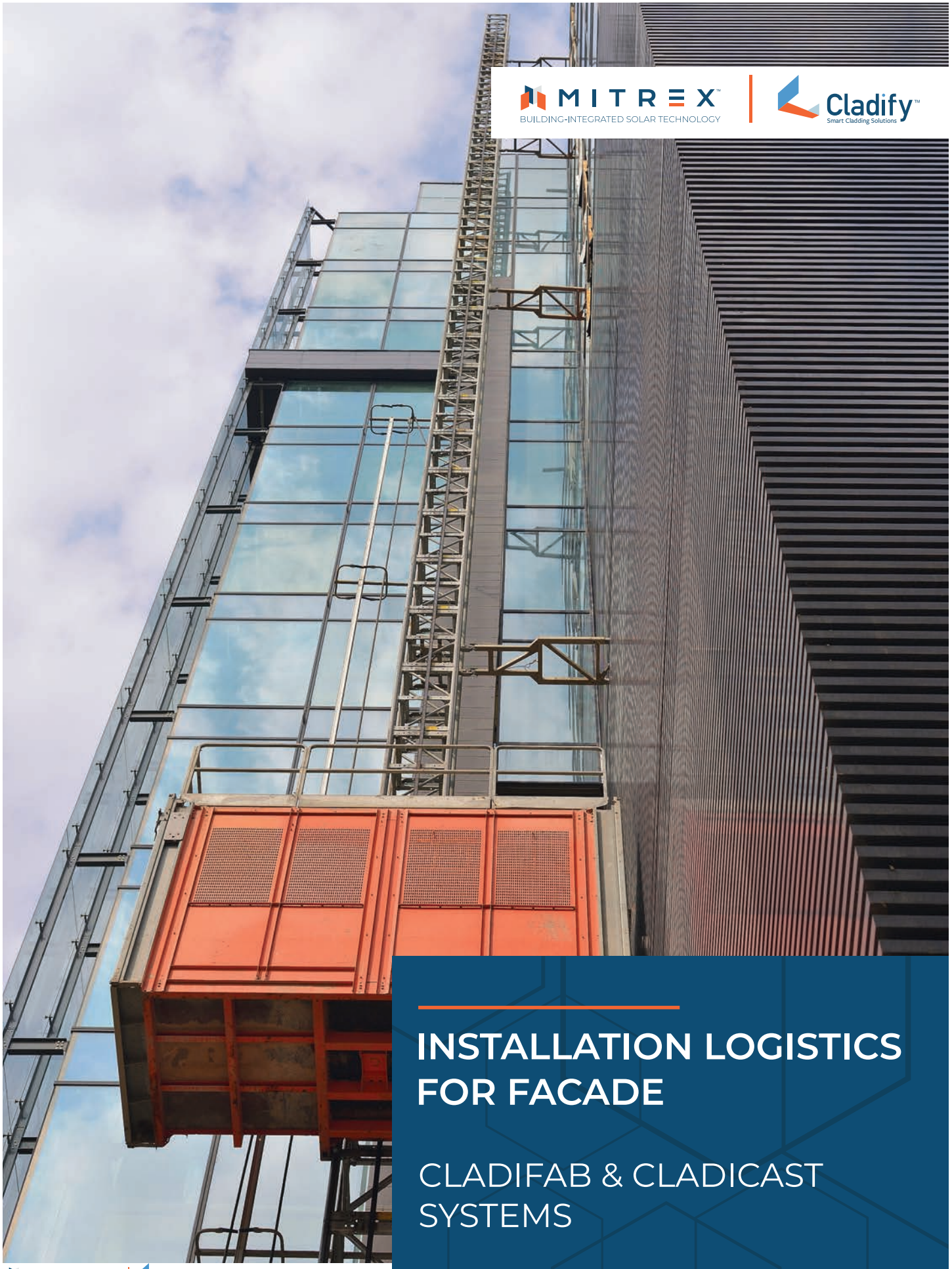


MITREX™
BUILDING-INTEGRATED SOLAR TECHNOLOGY

Cladify™
Smart Cladding Solutions

INSTALLATION LOGISTICS FOR FACADE

CLADIFAB & CLADICAST SYSTEMS

MITREX | Cladify

PROJECT JOURNEY SUMMARY

PREPARATION & LOGISTICS

1. Customer Agreement & Contract

Signing contract and agreement with customer, and distribution of scope of work.

2. Samples Approval By Customer

The samples are shared with the client to confirm design, colour, texture and final shape.

3. Project Design

- Panel layout / Shop DWG / Electrical Design (If Applicable)
- Layout / DWG Approval

4. Application For Electrical Connection & Engineering Design (If BIPV)

CIA, ESA plan review, IFC, system design.

5. Preparation Of Bill Of Material & Procurement

According to the system and electrical design, the procurement team prepares and procures the project's bill of material which include materials for fabrication, installation and electrical connection.

6. Material Fabrication

Each material that is part of the final modules is fabricated to the approved project design and layout.

- Assembly of Material
  - Materials are assembled according to the approved project design and layout.
- Panels Packaging

7. Installation Plan & Scheduling

The installation plan is prepared by the project management team, including the number of installers, timeline, required area, etc.

- Pre-Mobilization Meeting
  - A. Project accessibility
  - B. Required services
  - C. Panels mobilization plan
  - D. Site storage
  - E. Site visit
- Mobilization
  - Lowrise / Midrise Building
    - A. Bottom up system
  - Highrise Building
    - A. Bottom up system
    - B. Top down system

INSTALLATION

8. On-Site Wall Preparation By Installer

The material required for the project is transported to the job site and the preliminary wall preparation is set.

- Shipping of Material

9. Insulation & Blue Skin (If Needed)

If the project requires it, insulation and blue skin will be installed.

10. Connection / Pre-Install Work

Depending on the system and the building conditions, material like L-bars and brackets are installed. This is to make sure there is an even surface to install the panels.

11. ⚠ ESA Inspection (If BIPV)

The Electrical Safety Authority entity will inspect the job site to make sure all the electrical code requirements are being met.

- Mobilization / Storage of Material on Site

12. Panel Installation

The installers will proceed with the installation and connection of the panels.

13. DC Connection Between Panels & Home Run Wiring (If BIPV)

The entire system will be connected to the inverter.

14. Electrical Connections To The Building (If BIPV)

The final electrical connections to the main building electrical panel is made.

- Setting the inverters
- Rapid shutdown
- Monitoring system
- Meter installation
- Transformer connection
- Installation and connection of electrical panel.

15. Flashing & Caulking (If BIPV)

The flashing and caulking is installed to get an aesthetically pleasing look on the unions and edges of the wall.

16. Commissioning By Hydro Provider (If BIPV)

The commissioning by a local electrical supplier is done.

DELIVERY TO CUSTOMER

17. Sustainable Building Ready

The building is now green and ready to generate clean energy.

2 MONTHS | **3 MONTHS** | **1-9 MONTHS - DEPENDING ON PROJECT SIZE** | **2 - 4 WEEKS**

Lowrise Cladishield System: 250SQFT/Day/Crew
Highrise Cladishield System: 200SQFT/Day/Crew
Highrise Cladifab - Cladicast System: 500SQFT/Day/Crew

MITREX BUILDING-INTEGRATED SOLAR TECHNOLOGY | Cladify Smart Cladding Solutions

CLADIFAB & CLADICAST WALL INSTALLATION LOGISTICS

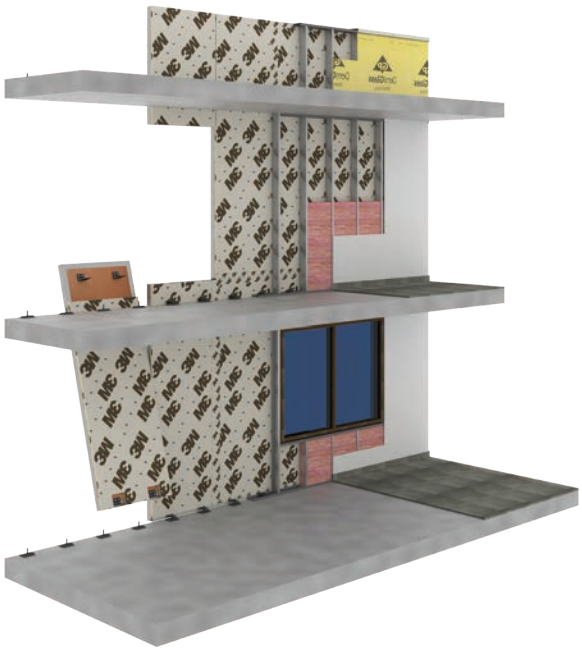
As the global demand for renewable energy and sustainable materials continues to rise, sustainable facades stands at the forefront of green solutions.

The buildings and it's vertical surfaces, offer an excellent opportunity to harness the power of the sun efficiently. The successful integration of Mitrex & Cladify materials in such structures requires a meticulous approach to their on-site unloading, on-site transportation and installation.

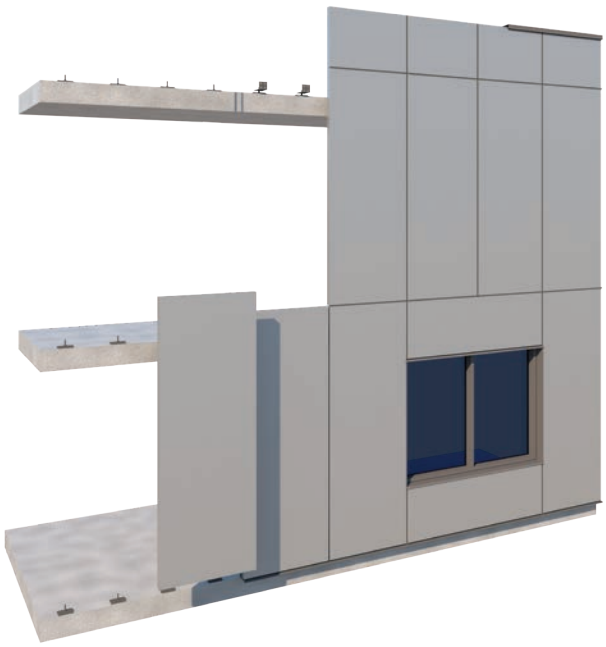
This document aims to outline a comprehensive strategy for the smooth and effective on-site unloading, on-site transportation, and installation of Mitrex & Cladify sustainable facade modules in midrise and high-rise buildings for Cladifab and Cladicast Wall System.

By addressing key considerations and best practices in each stage of the process, we aim to ensure a seamless and safe deployment of systems that maximize energy generation and conservation contributing to the sustainable future of urban landscapes.

CLADIFAB WALL SYSTEM



CLADICAST WALL SYSTEM



Highrise Cladifab - Cladicast System: 500SQFT/Day/Crew

1. INSTALLATION PLAN & SCHEDULING

The installation plan is prepared in the Pre-Mobilization Meeting and it covers the following information:

A. Project accessibility: ensuring smooth entry and movement within the high-rise building during material installation.
B. Required services: such as electrical connections and utility elevators, essential for supporting the project's successful implementation
C. Panels mobilization plan: detailing efficient movement routes and handling procedures within the building premises.
D. Site storage: to protect materials from damage and adverse weather conditions.
E. Site visit: inspections are highlighted as crucial steps to assess building conditions, identify risks, and foster effective collaboration among stakeholders.

2. ON-SITE MOBILIZATION OPTIONS

On-site mobilization strategies are pivotal in ensuring the seamless and timely progression of construction activities while upholding the highest standards of safety and efficiency.

A. Floor By Floor (Install From Inside)
The floor by floor is a well-established on-site mobilization technique that involves commencing construction activities from the lower levels of the building and gradually progressing upwards.

By adopting this well-established on-site mobilization technique, Mitrex & Cladify ensures a seamless and efficient construction process for their Cladifab and Cladicast installation system. The Floor By Floor system allows Mitrex & Cladify to optimize the foundation on lower floors before moving on to higher levels.

FLOOR BY FLOOR SYSTEM STEPS:

1. Transportation to site on skid or A-Frame depending on warehouse packaging (Please note that Mitrex & Cladify's truck size is 30-50 Ft).

2. Off-loading to storage by using forklift or crane depending on the project needs (Preferably direct access from truck to hoist).

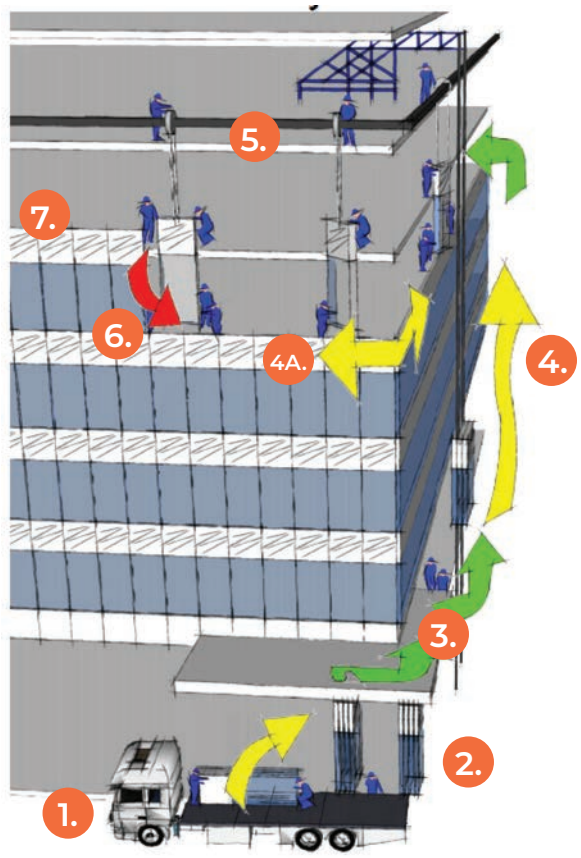
3. Horizontal transportation to hoist (For Cladifab system and Cladicast system) by using pump truck or forklift depending on the project needs.

4. Vertical transportation to floor
   4A. Lateral Transportation (For Cladicast and Cladicast system)

5. Slab prepararion.

6. Installation.

7. Finishing.



PACKAGING & TRANSPORTATION

BOX PACKAGING

A-FRAME PACKAGING

TRUCK SIZE IS 30-50 FT

TRUCK TRANSPORTATION

3. INSTALLATION PROCEDURE FOR MITREX & CLADIFY CLADICAST AND CLADIFAB SYSTEMS:

A. Detail Set out (Anchorages)

The Mitrex & Cladify Cladicast and Cladifab systems are uniquely anchored to the building at floor lines. The mode of attachment varies by project and depends on the spans, wind or seismic loading, and temperature. The panels can be supported by extruded aluminum anchors, steel plate anchors, or steel angles (in either case with separator pads between dissimilar metals, i.e., aluminum and steel) and steel bolts (through bolts or tapping bolts). The anchorage attached to the building may be steel-embedded plates, steel channel anchors, welds, expansion bolts, and epoxy anchors. These connection elements are generally in the spandrel areas and hidden from normal view.

Because perimeter conditions and wind loading vary from project to project, anchorage schemes should be evaluated on a project-specific basis. In fact, the wind loads on various parts of the building can be quite different, and the attachment design may vary even on the same building project. In the following description of the installation, the procedure channel anchorages are considered. Installation nominal tolerances are about +/- 1" horizontal and ½" vertical (by adjustment screws), corresponding to general design tolerances of panels and anchors.

B. Bracket installation

Generally, during the construction of the main structure of the building, and with reference to its grid lines, the contractor embeds a set of channel anchors into each floor slab to agreed tolerances. For each floor, the contractor defines and marks a set of points in correspondence to each change of direction along the floor perimeter and at a fixed distance from the finished face of the panels. The contactor checks the level datum and transports a minimum of 2 points per level. In this way, the contractor defines all the required fixing points and planes.

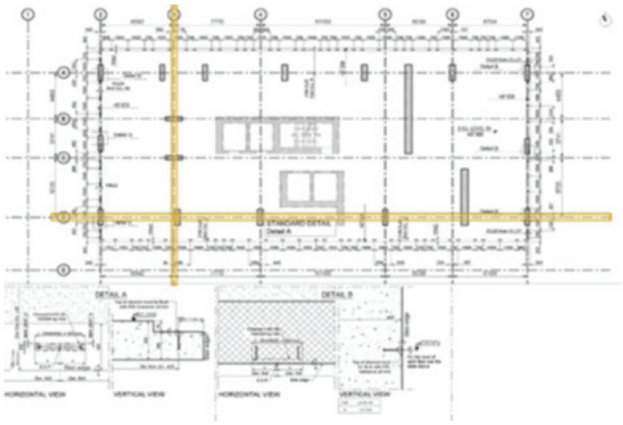


Figure 1: Example of construction drawings showing the location of the cast-in channels in reference to grid lines;

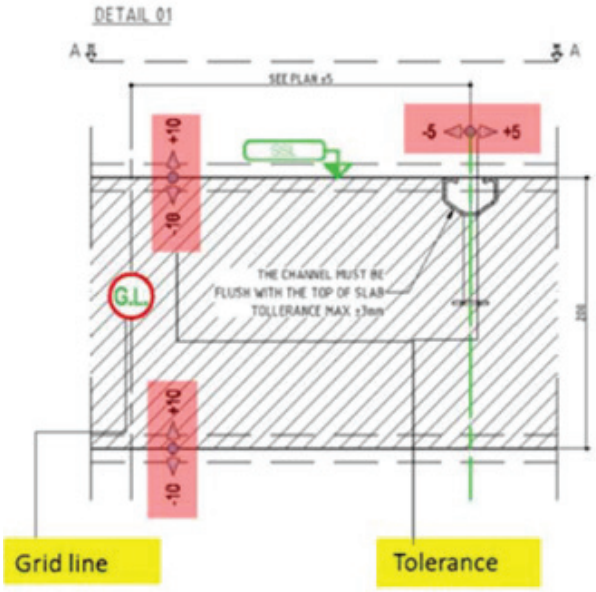


Figure 2: Cast-in channels and structure tolerances.

A bracket is then secured to each channel anchorage through a couple of hand tightened fasteners. Once the position of the bracket has been adjusted, the fasteners are tightened with the help of a calibrated torque wrench (see Figure 3).

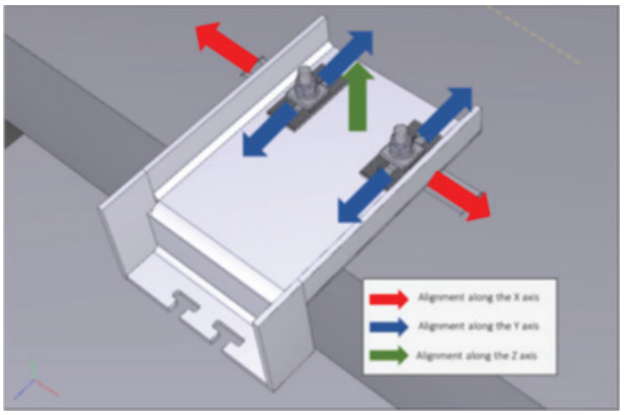


Figure 3: Bracket set

C. Module transport and installation

Once the units are assembled in the factory, they are packed in appropriate crates or stillages following a predetermined sequence and transported directly to the site, ready for installation (see Figure 4). The units are transported as close as possible to the site hoist by truck, lowered onto wheeled trolleys, and moved inside the hoist (Figure 5).

Figure 4: Crates

Figure 5: Trolley.

Stillages/crates are generally moved to the building floor where the units stored in them are going to be installed. The units are removed from the transport stillage using slings and a lifting device. As an example, the following drawings illustrate the proposed staging areas for multiple floors.

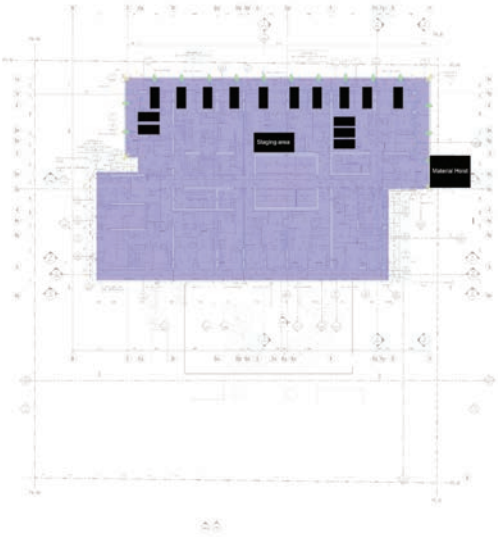


Figure 6: Storage Space

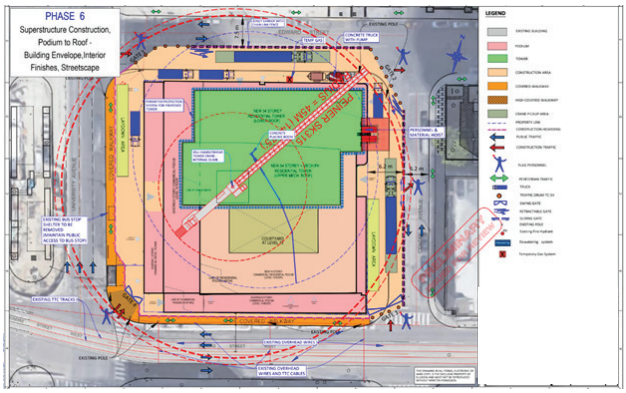


Figure 7: Storage Space

The units are then placed onto a launching table and prepared for their installation. The launching table is moved close to the edge of the building floor slab at the desired launching position.

Slings are then connected through shackles to the designed lifting points of the unit and to the hook of a spider mini crane positioned on one of the floors above the one where the launching table is located.

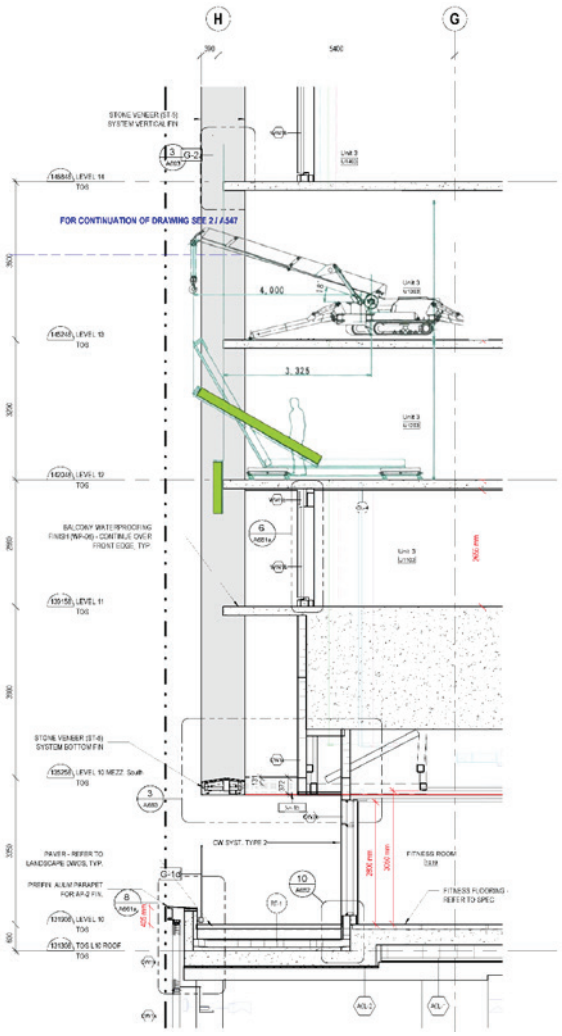


Figure 8: Launching table to launching position

Once the module has been secured to the supporting brackets, lifting accessories are disconnected from the module, whose position is finely adjusted with respect to level, plumb, and grid.

D. Assembly tolerances
The assembly tolerances vary by project and must be agreed upon among the construction team. General tolerances are as follow:

1. Maximum deviation of theoretical assembly position (between floors): ½".

2. Maximum deviation in vertical elements (4 floors): 1".

3. Maximum deviation in horizontal elements (in 9 m): ¾".

4. Maximum misalignment between two adjacent elements: ½".

5. Maximum misalignment between two separated elements: ½".

E. Manpower
A typical site installation team is composed of 4-6 workers:

1. 2 workers for positioning and fastening the brackets.

2. 4-6 workers involved in the facade installation.

3. 2 workers for finishing and accessories.

4. 2 workers for the site logistics.

5. 1 assigned supervisor.

6. 1 site engineer (During inspection)

On average, a team can install 2-5 modules per day. This number can oscillate depending on the complexity of the project and panels to be installed.

F. Machinery
1. Lifting platform.

2. Elements for lifting and transporting panels.

3. Drills.

4. Screws.

5. Grinders.

6.Radial saw.

7. Riveting machine.

8. Mini spider crane / Valla crane

9. Site tower crane (if available) to hoist materials in place / Material hoist. Topical example of Spider Crane: SPYDERCRANE URW295

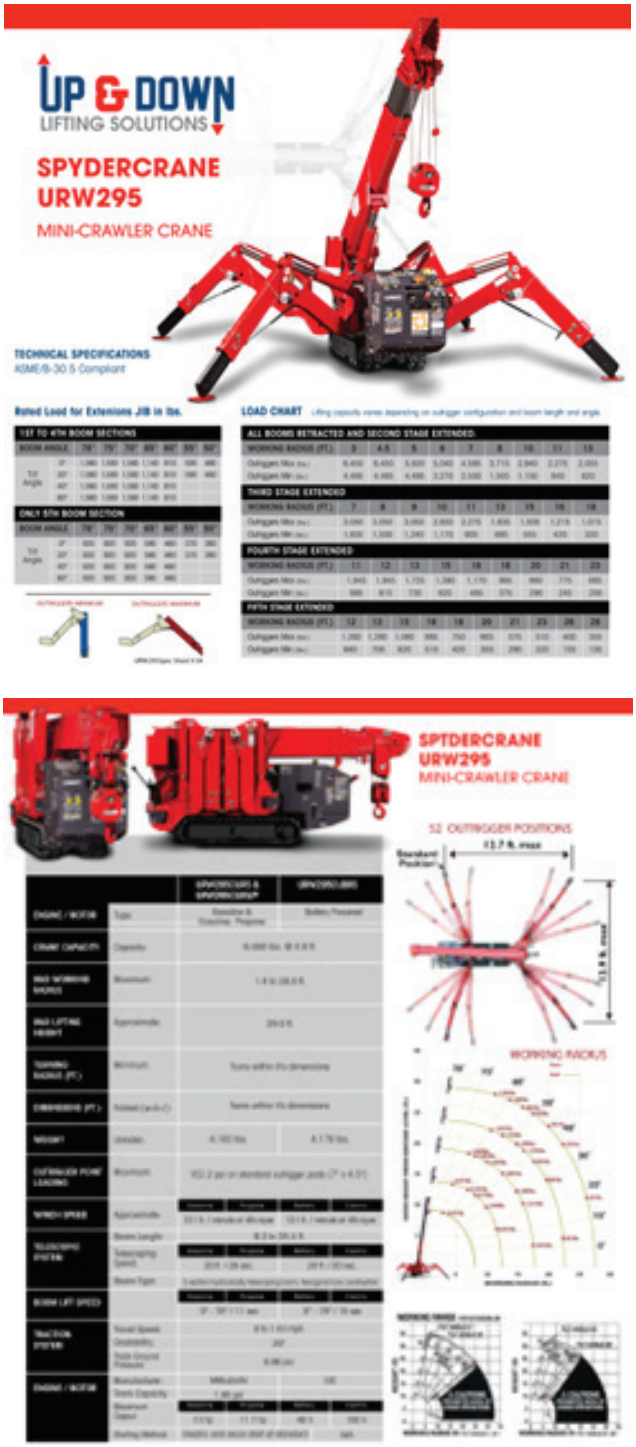


Figure 9: Machinery datasheet sample

MITREX™ | Cladify™

LEARN MORE:

MITREX.COM | CLADIFY.COM

info@mitrex.com
info@cladify.com

+1-855-254-0214 (Toll Free)

Headquarters:

41 Racine Rd., Toronto,
ON M9W 2Z4, Canada

+1 (416) 497 7120

USA:

10880 Wilshire Blvd Suite 1101,
Los Angeles, CA 90024, USA

+1 (323) 301 7978

1 Rockefeller Plaza Fl 11,
New York, NY 10020, USA

+1 (646) 583 4486