

Drained Rear Ventilated  
Rainscreen

# SYSTEM & i4

# INSTALLATION MANUAL

# IFAB

PREMIER FABRICATOR OF ARCHITECTURAL FACADES

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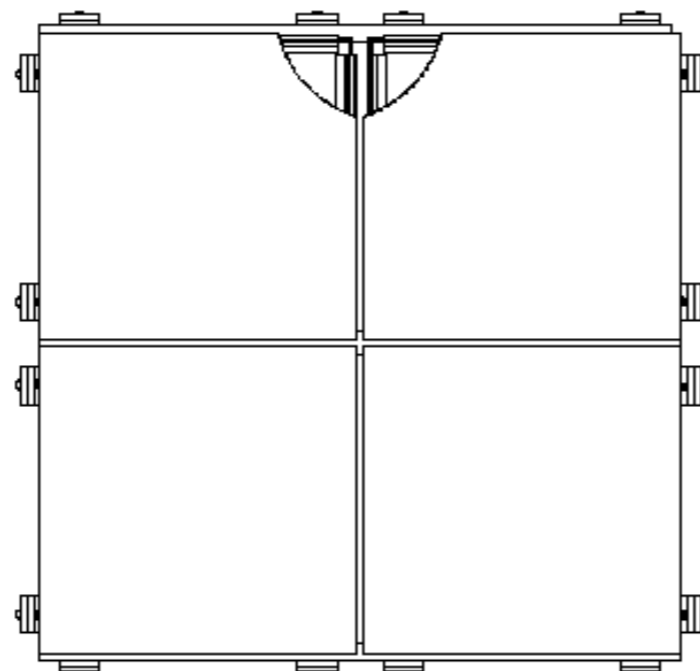
# i4 | Drained Rear Ventilated Rainscreen

Carefully-designed and tested, iFab's i4 Drained Rear Ventilated systems can stop over 90% of the water that could potentially reach the air and vapor barrier of the building. The remaining water is gradually dissipated through the combined action of gravity or drainage and air circulation and evaporation.

The design of this system consists of two main parts, which are often described as the outer leaf and inner leaf. The outer leaf, also known as the exterior cladding is the first layer of protection, and between this layer and the inner leaf is an air space known as the drainage plane or ventilation cavity. The inner leaf consists of an air and water resistive barrier and the building structure. In some cases, the inner leaf also consists of insulation.

## Key Highlights

- // Joint width of 1/2 & 3/4"
- // Independent spline joint
- // Most economical rainscreen system
- // Low maintenance
- // Allows wall breathability
- // Available with MCM or aluminum plate



## System Tested for Code Compliance

iFab's installation systems meet and exceed all project-specific performance requirements, adhering to local and international Building and Safety Codes and standards.

The i4 Drained Rear Ventilated Rainscreen System has passed the following testing:

### ASTM E 283 | Static Air Infiltration

This test method covers a standard laboratory procedure for determining the air leakage rates of exterior windows, skylights, curtain walls, and doors under specified differential pressure conditions across the specimen. The test method described is for tests with constant temperature and humidity across the specimen.

### ASTM E 331 | Static Water Infiltration

This test method describes the procedures to determine the water penetration resistance of windows, curtain walls, skylights, and doors when water is applied using a calibrated spray apparatus while simultaneously applying uniform static pressure to opposite sides of the test specimen.

### AAMA 509 - Drained Rear Ventilated Rainscreen

This testing method establishes the requirements for test specimens, apparatus, test procedures, test reports and performance data that may be used in the evaluation of drained and back ventilated rain screen wall cladding systems. The primary purpose(s) of this test method is to quantify the volume of rain water contacting an imperfect AWB and the system's ability to allow for ventilation/drying as measured by air flow through the cladding.

### ASTM E 330 | Structural Design Loads

This test method describes the determination of the structural performance of exterior windows, doors, skylights, and curtain walls under uniform static air pressure differences, using a test chamber. This test method is applicable to curtain wall assemblies including, but not limited to, metal, glass, masonry, and stone components.

### AAMA 501.1 | Dynamic Water Infiltration

This test is utilized to provide quality assurance for evaluating the structural adequacy of exterior wall systems and their ability to resist water penetration and air leakage.







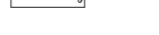





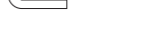
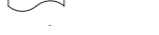







### NFPA 285 | Multi-Story Flame Spread

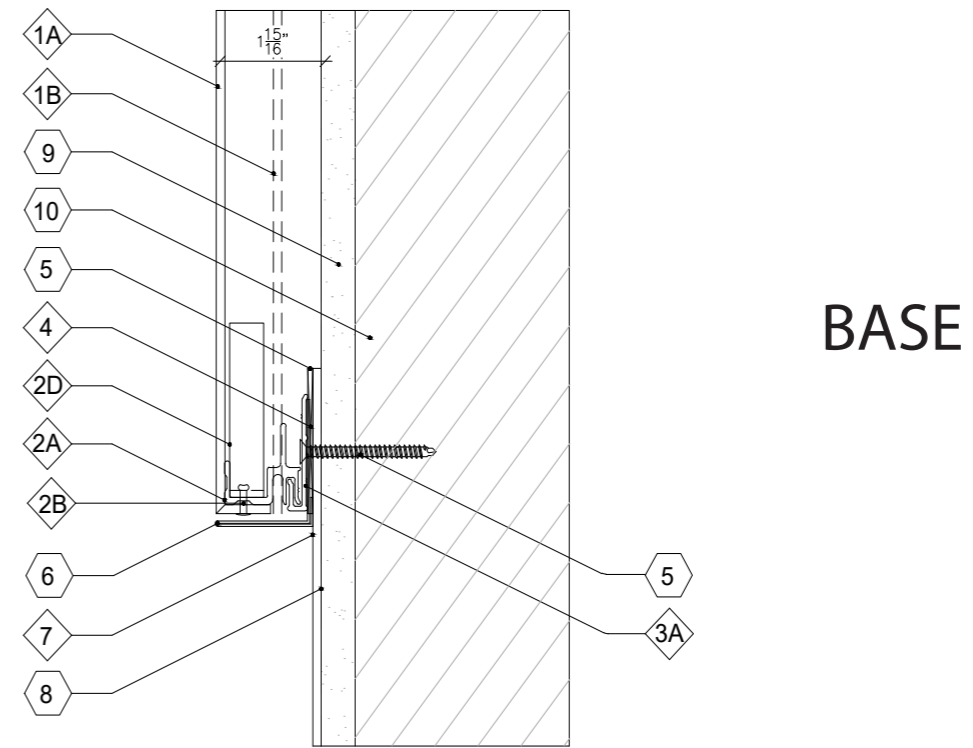
This test method evaluates the fire propagation characteristics of exterior non-load bearing wall assemblies with combustible components.

### Florida Product Approval

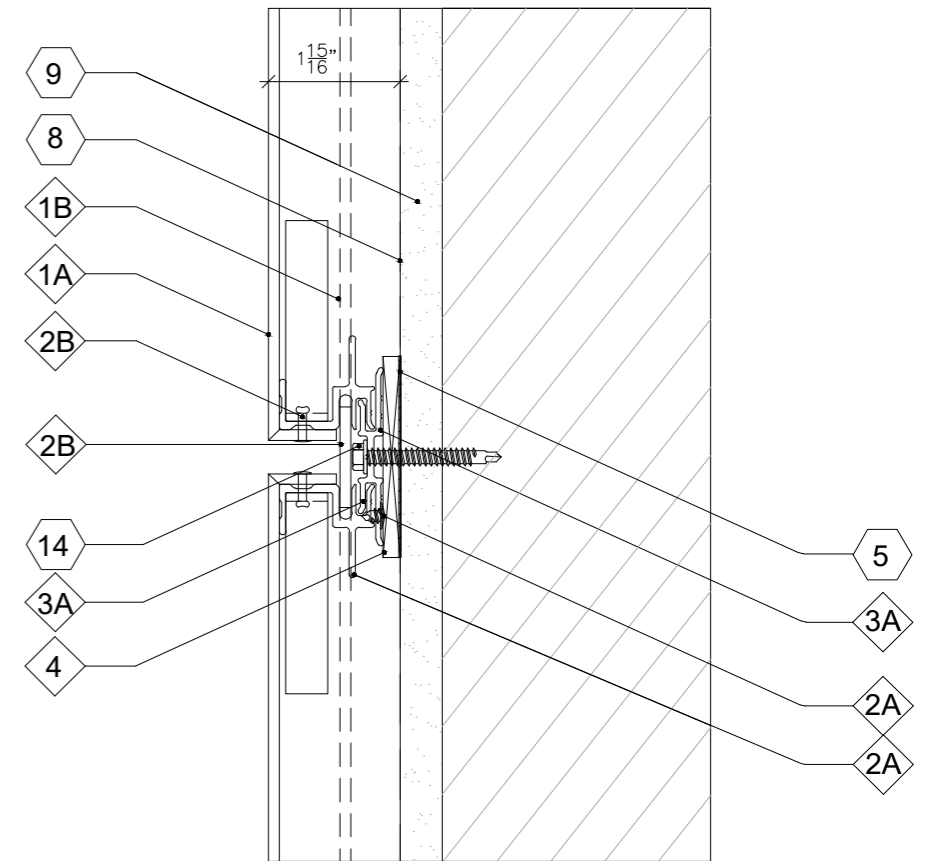
The Florida Product Approval Number is for all construction trades, by the state as a measurement to determine if the product meets state requirements including high velocity hurricane zones, HVHZ.

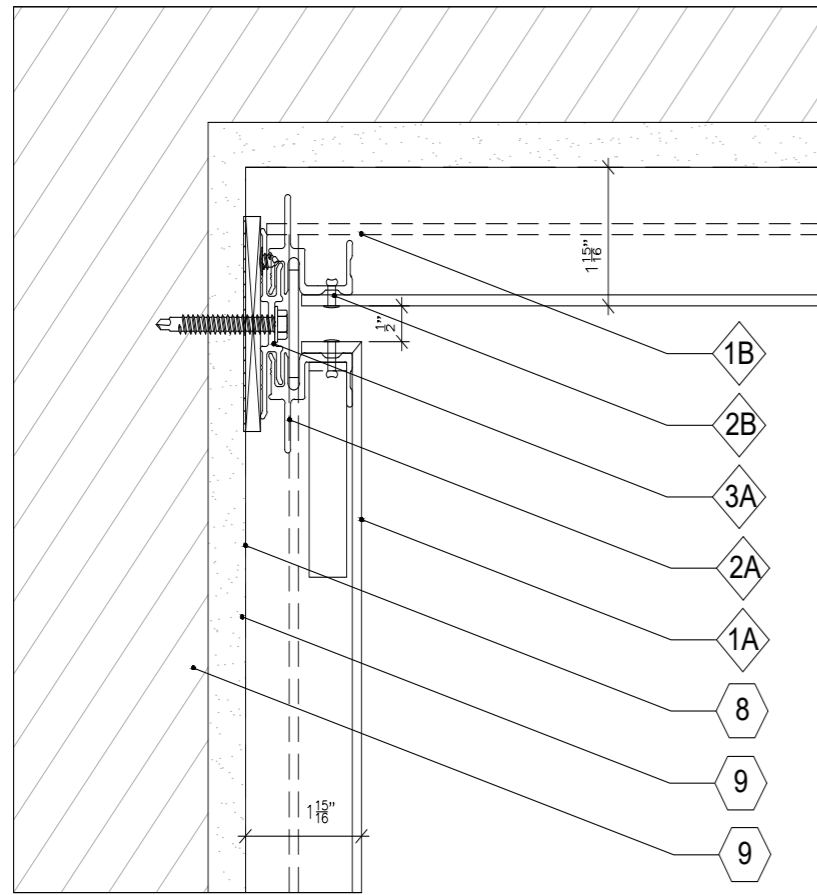
# DRAWING REFERENCE

1A	4mm MCM PANEL	
1B	4mm MCM SPLINE	
2A	i4 ALUM. FRAME	
2B	3/16" ALUM. POP RIVET @ 16"-24" O.C. (TYP)	
2C	ALUM. POP RIVET @ 16"-24" O.C. (TYP)	
2D	3/4" X 3/4" ALUM. ANGLE REINFORCEMENT, F.I.	
3A	ALUM. WALL CLIP	
3B	ALUM. HALF CLIP	
3C	TERMINATION CLIP	
4	1/4" SHIM REQ'D	
5	SELF SEALING TAPE	
6	METAL TRIM	
7	4MM MCM KICKPLATE SECURED TO SUBSTRATE W/STRUCTURAL ADHESIVE	
8	WEATHER RESISTANT BARRIER	
9	SUBSTRATE	
10	WALL CONSTRUCTION:	
11	WEEP @ 20" O.C.	
12	BACKER ROD & SEALANT	
13	TERM. CLIP #10-16X2 1/2" PFH TEK-3 @16" O.C.	
14	ALUM. WALL CLIP W/ #12-14X2" HWH TEK-3 @16" O.C	
15	#6-3/8" WFH TEK-3 @16" O.C.	

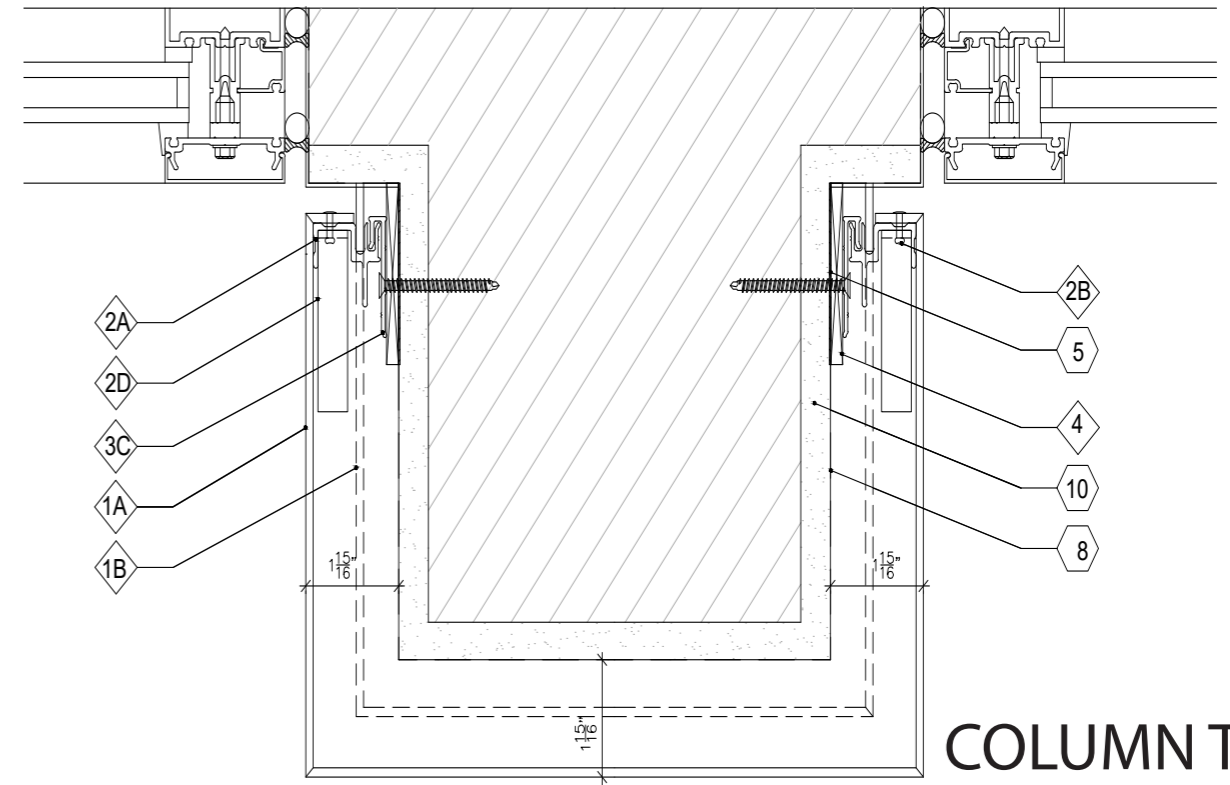


## TYPICAL JOINT



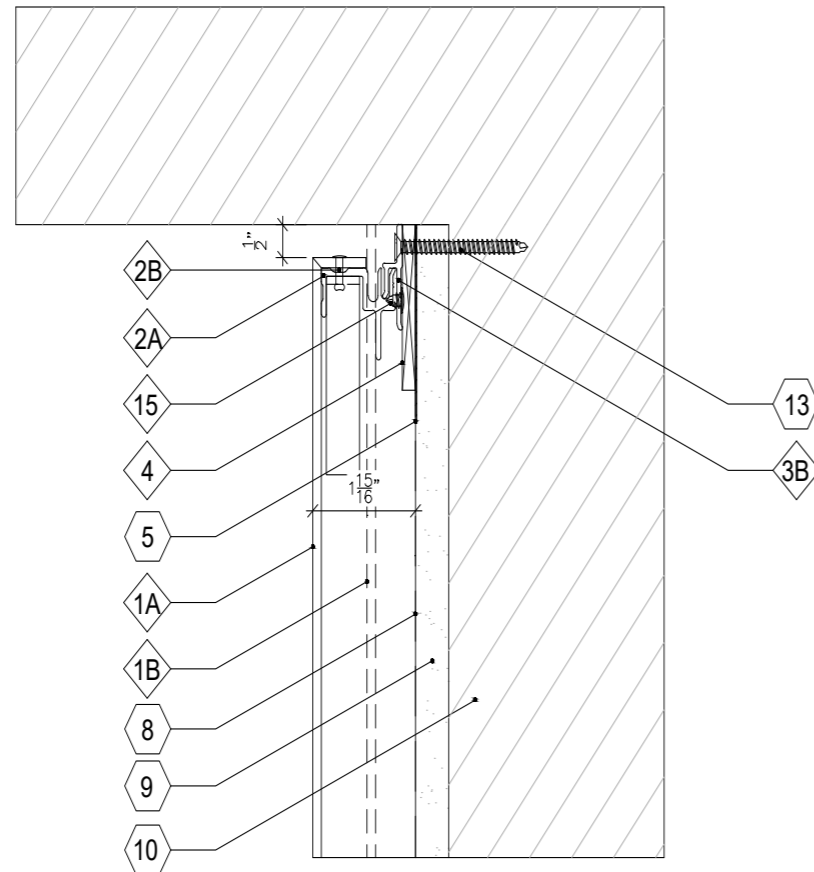


**INSIDE  
CORNER**

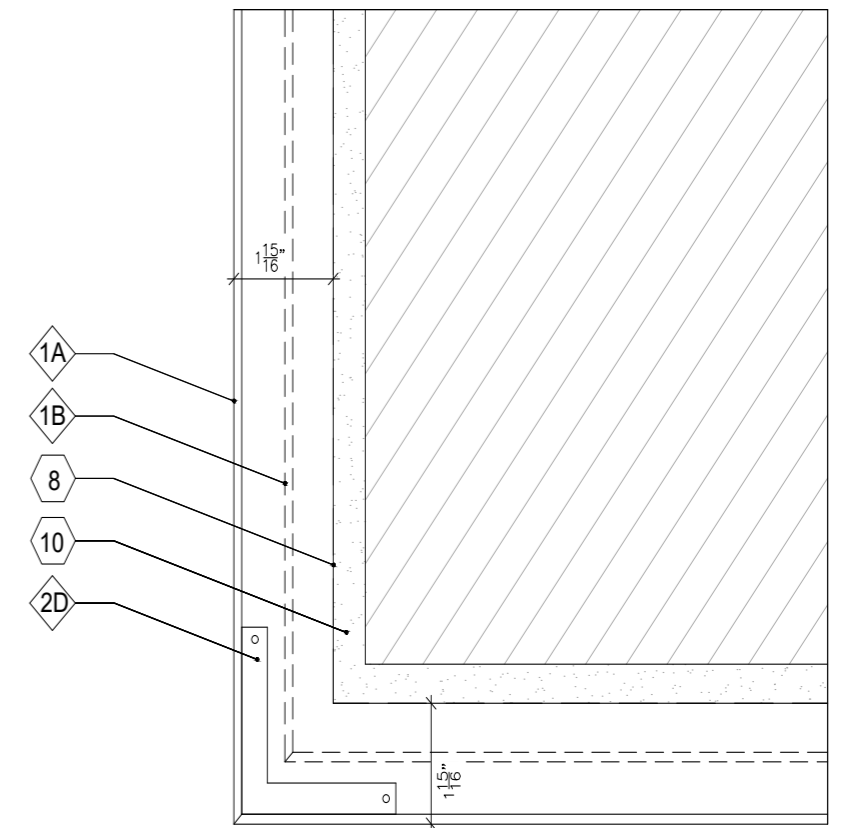


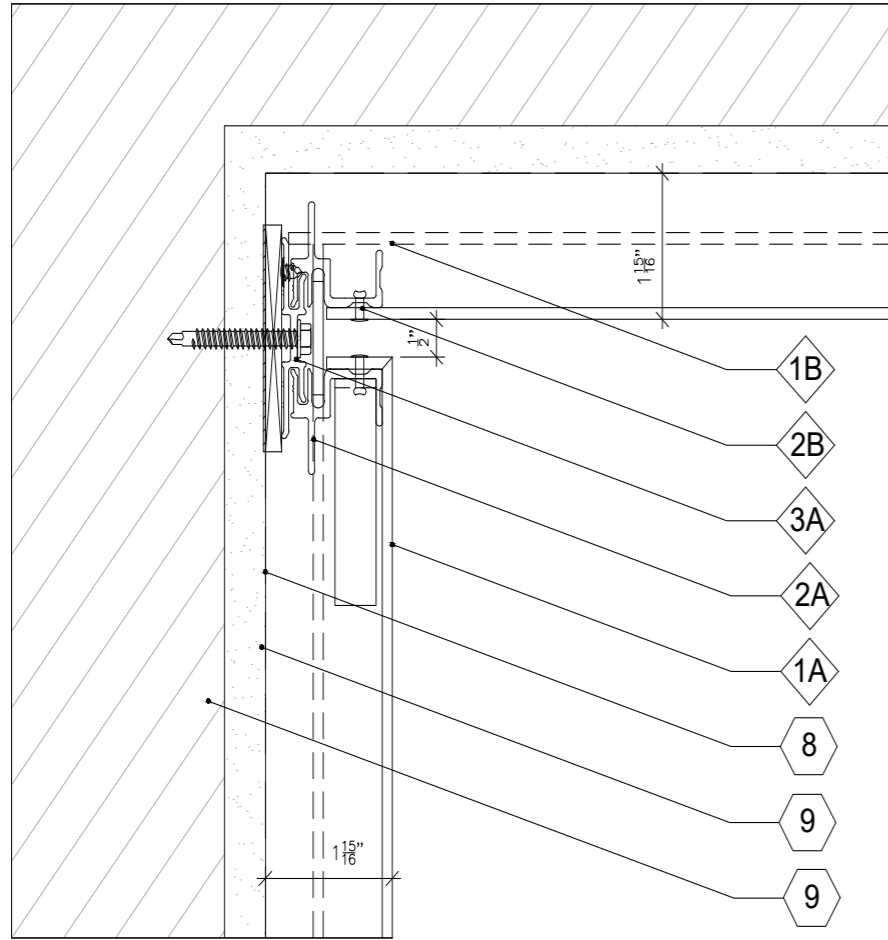
**COLUMN TO  
TERMINATION**

**TERMINATION**



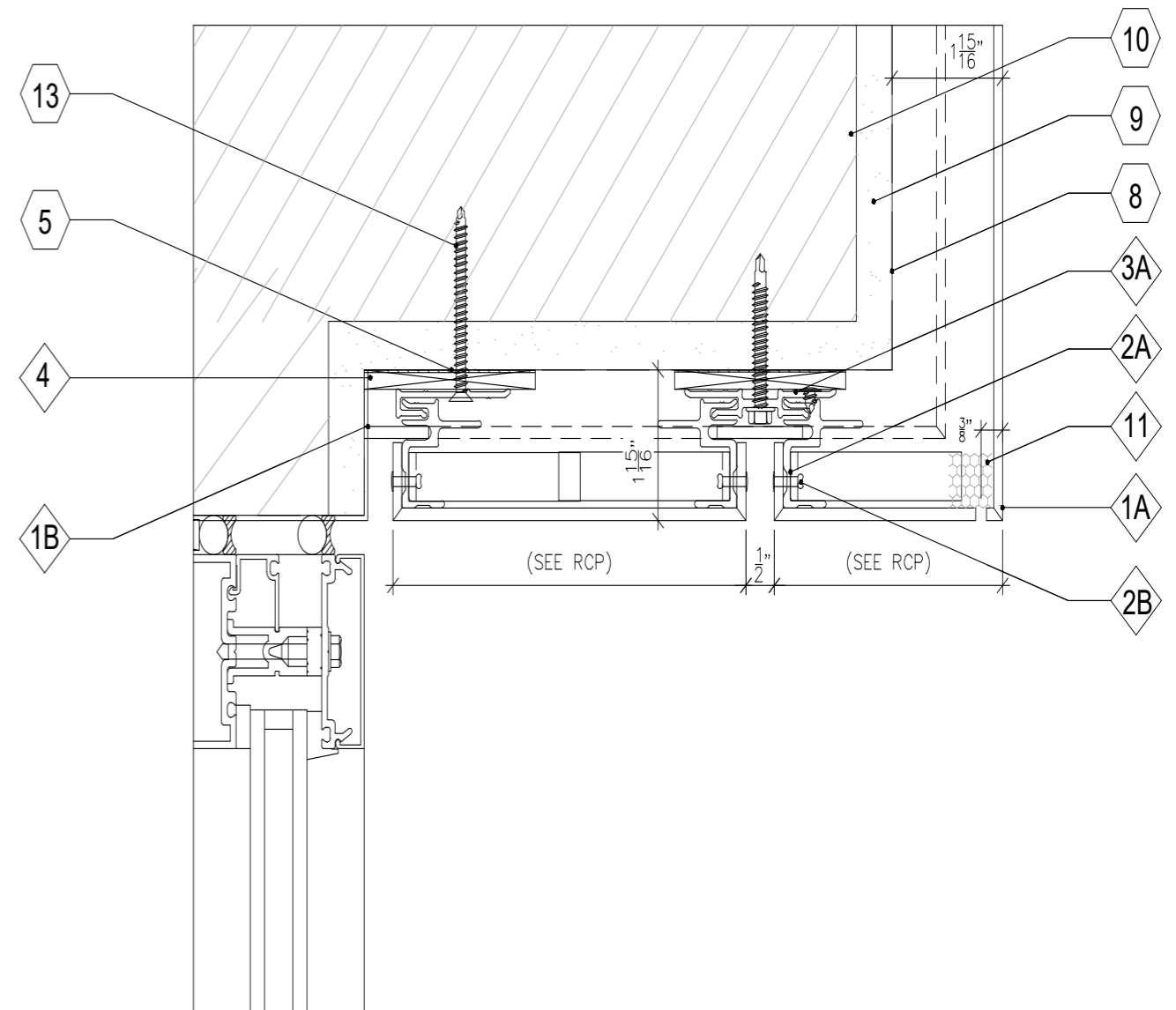
**CORNER  
DETAIL**





SOFFIT

INSIDE  
CORNER



# INSTALLING

## iFab's i4 Drained Rear Ventilated Rainscreen System



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## 01 | BEFORE THE DELIVERY

To get your panels delivered in a timely manner, work with your iFab Project Manager to coordinate a date for delivery. Take the following conditions into consideration when identifying a date for delivery:

- Allocate enough space for the safe and secure storage of your panels. Once received, the panels become the liability of the installer, so ensure that you do not leave the panels unprotected or in situations where they can obtain damages.
- Ensure that you have the appropriate equipment on-ground to safely unload materials in crates and pallets.

Once a delivery date has been agreed-upon, your fabricated and pre-crated panels will arrive at the construction site. Upon arrival, the crates will need to be unloaded with a forklift.

## 02 | UNLOADING CRATED PANELS

For the installer's convenience, all crates will arrive at the project site all-reinforced and protected with styrofoam. Use a forklift to lift from the end of the pallet. Some crates can be moved using a pallet jack, assuming they're of appropriate sizes.

Note: At times, some crates will be as long as 16 feet, depending on the size of the panels required for a specific project. In this case, these crates should be lifted with two forklifts; one from the back, and the second should aid from the side. Alternatively, these crates can be delivered on a flatbed truck, in which case, the crates can be lifted from the side with one forklift. iFab will coordinate with the client to ensure the most cost-effective and safe delivery of panels.

## 01 | TAKING INVENTORY

All panels are transported on pallets, and you'll typically receive an accessory crate that contains an installation packet with the following:

- A spreadsheet that identifies all panels and their location in the crates. Treat this as your master document where you will be able to mark off panels and take inventory as they are removed from the crates.
- An inventory list of all accessories required for installation
- A packet showing all trim profiles
- Tags are typically placed on the side of the panel to identify the panel number for easier and more guided installation. In the case that these tags become loose and fall off, the tagged numbers can also be found on the inside of the panel. Remove these tags during installation.

## 02 | QUALITY ASSURANCE

- Upon unloading your crated panels, take inventory and inspect all crates, panels, and necessary accessories and tools.
- Take note of any damaged panels, packaging, or accessories. If any damages are identified, immediately note it on the Bill of Lading and send a list of the damaged materials to your iFab Project Manager for further direction.

## 03 | STORAGE &amp; HANDLING

After unloading your pallets from the truck, allow enough clearance on all four sides of the pallet and do not block access at any time. This will ensure that you have access to all crates from all sides when disassembling them, ultimately helping you complete the task damage-free.

Once you receive all items, pull the panels from the crates individually and carefully not to damage them. Store loose panels vertically on flat surfaces free of debris or dirt. Store crated panels in a safe and secure location.

**Wind Advisory:** Panels leaning against walls or structures that are unsecured are often knocked over by the wind, which causes damage to the face of the panels, requiring replacement. It is highly recommended to secure all panels at all times.

When removing panels from certain crates, secure all remaining panels so they don't move or fall.

When you have no more panels left in your crates, disassemble and dispose of them.

## 01 | BUILDING INSPECTION

Prior to installing iFab's i4 Drained Rear Ventilated Rainscreen System, verify that the following building conditions are met:

- Before installing air vapor barrier, inspect the substrate to ensure that it's securely fastened to the structure, leaving no areas of deflection.
- Ensure that the building is properly protected with the air vapor barrier in accordance with the manufacturer's recommendations.
- Inspect all penetrations, including flashings, windows, doors, scuppers, and electrical boxes for proper seal to meet the respective manufacturers' recommended maintenance standards.

## 02 | EQUIPMENT, TOOLS, &amp; ACCESSORIES

Whether it's for offloading or installation, providing all appropriate equipment is the direct responsibility of the installer. Here are some tools generally needed for offloading and installation of panels:

- Forklift
- Rigging gear
- Traffic safety cones and signs
- Tools: drills, circular saws with Carbide blade teeth
- Router bits
- Personal protective equipment like hard hats, gloves, goggles, etc.

iFab will provide the following accessories needed for installation:

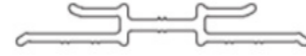
- Shims: 1/16th, 1/8th and 1/4th thickness shims will be provided. Use them as needed to reach a desired leveling of panels.
- Fasteners



## 01 | TYPES OF CLIPS & WHEN TO USE THEM

For accurate installation and use of the right clips, refer to the guide below:

- Wall Clips are used for adjoining panels and are always attached to the frame of the panel. The panel that carries the attached clips serves as the male. The adjoining panel serves as the female and should not have clips attached to the parallel side of the male.



Tip: In certain scenarios, should the installer feel that more strength is required on the female panel, Wall Clip may be attached in a staggered pattern to not interfere with the male.

- A Half Clip or Starting Clip is used at terminations which have a minimum of half-inch gap to allow penetration later to be covered with spline or caulking. It is always attached to the frame of the panel and is pre-drilled with 1/4th inch bit.



Tip: In certain scenarios when using the Half Clip, where shimming is not possible, drill a new hole with a 3/16th drill bit instead of the 1/4th inch. The threads of the fasteners will be forced against the hole, stopping the panels from free-floating.

- Termination Clips are used at the termination or bottom of a panel and is always pre-set on the wall, which means that it ends flush with the panel.



### NOTES

1. Be careful to calculate the amount of shimming required when pre-setting a Termination Clip because once you set the panel, you can no longer re-adjust the shimming, unless you remove the panel and reinstall it.

2. The Termination and Half Clips can be used at terminations, the only difference is that the Termination Clip is pre-set, and the Half Clip is always attached to the frame.

## 02 | TYPES OF FASTENERS & WHEN TO USE THEM

Installation with iFab's Pressure Equalized Rainscreen System requires the use of the following three fasteners:

- #12 2-inch (#3 head) pan Phillips zinc fasteners used to drill into wood substrate



- Self-drilling or self-tapping fastener for encountering metal studs



- #6 3/8th inch (#2 head) Philips zinc used to fasten the clips to the frame of the panel



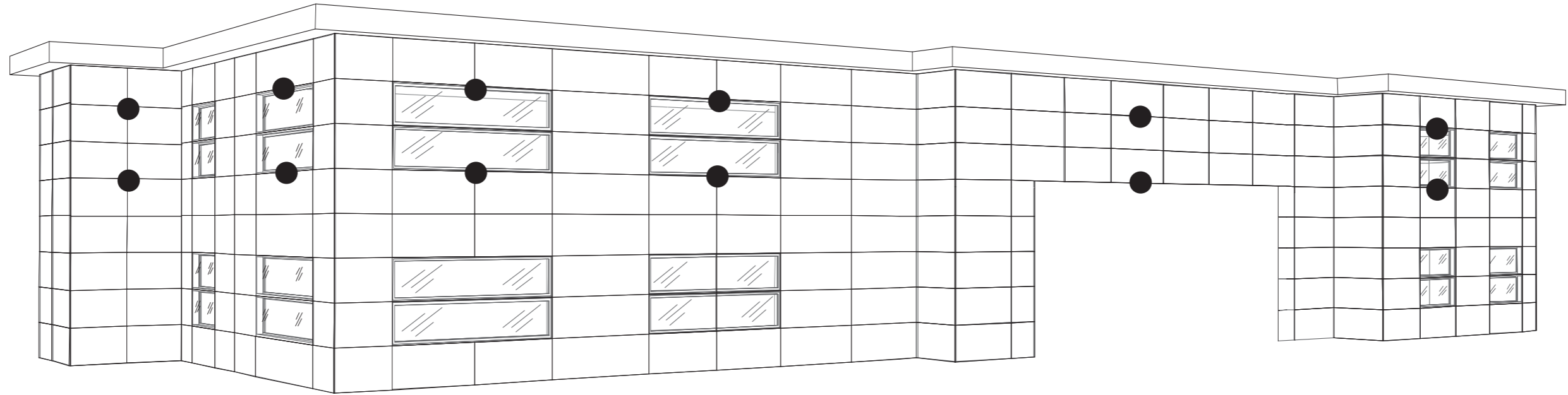


Figure A

● = Key Element Point

While control lines are established at the base, several control lines can be considered and added to ensure consistency at key elements as the same panel height carries throughout all the elevations.

## 01 | DIRECTIONAL PAINT APPLICATION

Most ACM materials are directional, which means that during the manufacturing process, paint and finishes are applied to in one direction to maintain consistency across panels.

What this means for the installer:

Each panel must be installed in the same direction, with the exception that when the sheet size limits or affects the design. To help with this effort, you'll find directional arrows on the masking of your panels, which may also be identified on the installation drawings.

## 02 | ENSURING APPROPRIATE INSTALLATION

To prepare your panels for installation, refer to the shop drawings and indicate a starting point after you have consulted with your iFab Project Manager, discussing all framing inaccuracies before starting installation.

- Ensure that your reference lines are based on critical design intent locations. [Figure A]
- Establish reference lines with a high-quality laser level.
- Lay out your panel dimensions to confirm the accuracy of your starting point.
- Get your XYZ coordinates from your iFab Project Manager and make sure that the first panel is positioned correctly in reference to those coordinates.

Prepare your panels and begin installing them.

## 01 | GROUND VS. HIGHER STARTING POINT

Since panels interlock with each other to support the weight of installed pieces, it's typically a good idea to start installing from the ground (or your lowest level) and moving upwards. In some cases, you may need to start installation from a higher position, which means that the weight of the panels must be supported while installing downwards.

Adequate L-brackets can be installed facing downwards, parallel to the bottom of the panel you're trying to install, serving as a resting position.

Remove the L-bracket after the panel has been secured.

## STARTING FROM THE GROUND UP

When starting installation at the ground level, be sure to start with a toe kick plate. Since there is typically clearance from the ground to the panel, without a toe kick, the very base of the building will be left unprotected and exposed to weather. It will also expose the weather barrier, ultimately hindering the life of the building.

Be sure to seal the top of the toe kick with a weather barrier to avoid trapping water behind it.

Install an L-flashing right against the toe kick to enclose the bottom of the panel.

Pre-set a Termination Clip and set the panel inside the clips.

[Refer to Figure B (a) for additional details.]

## STARTING INSTALLATION AT HIGHER ELEVATIONS

Some projects require starting installation at a higher elevation and in rare instances, you may be asked to start installing at different sections and tie the sections together. These needs may arise when teams are in a rush to complete installation in a specific section under a critical path, or if you need to spread manpower across the project for faster installation or project completion.

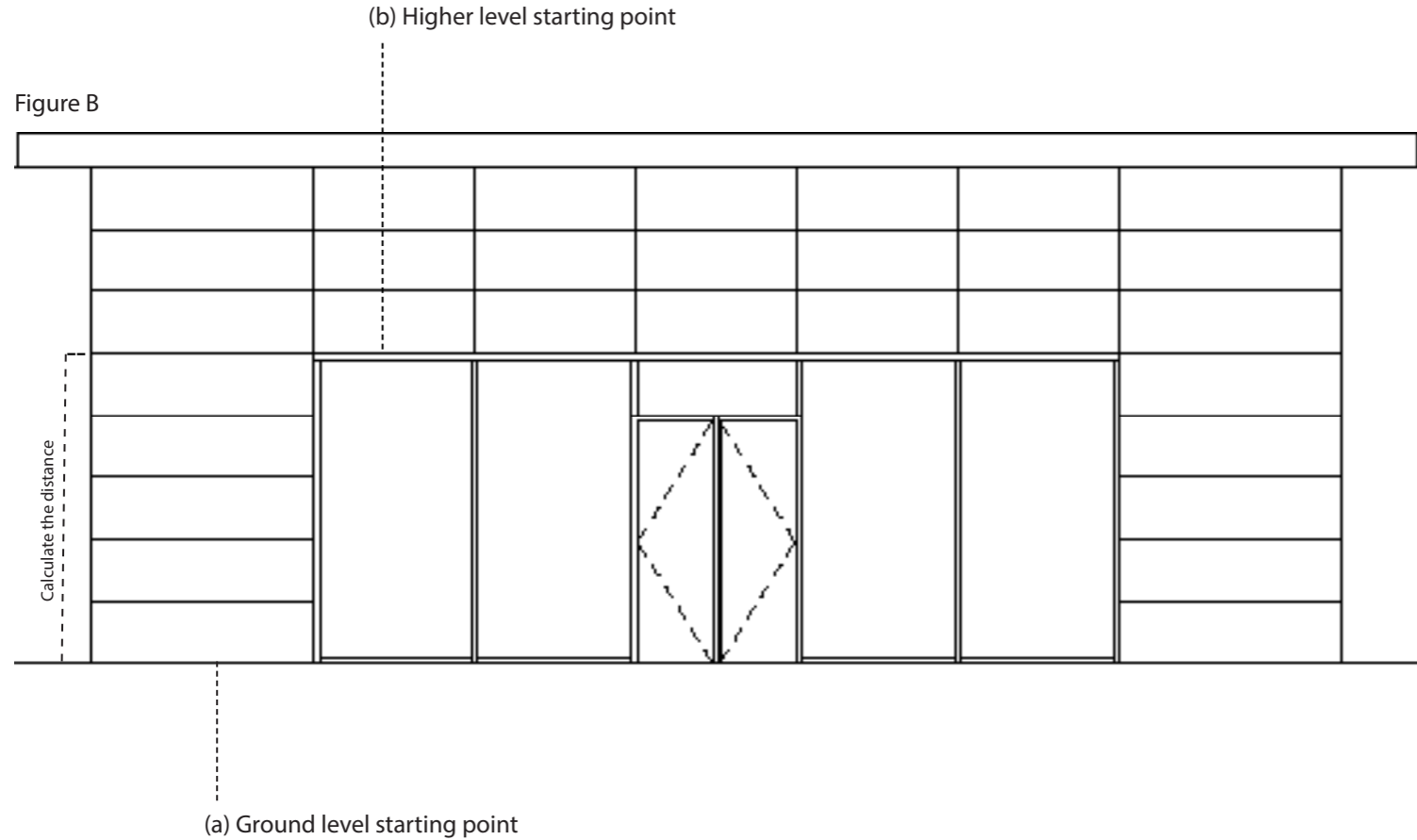
While these scenarios are beneficial, they require lots of cross-referencing to avoid discrepancies throughout the installation process, which can affect the final outcome of the project. iFab's i4, i7, and i9 systems allow you to start installation from multiple locations, but careful calculations must be made to ensure that all pieces will fit and come together.

[Refer to Figure B (b) for additional details.]

To avoid discrepancies, make sure:

- Pick an elevation to set numerous control lines to help continuously monitor the proper placement of panels.
- Use a String Line as a guide to indicate where the face of the panel will end.

If you need further guidance on how you can accurately install your panels from multiple points, get in touch with your iFab Project Manager.



Note: When starting installation from a higher level, be sure to calculate the distance between the higher level base panel and the ground level panel as they will need to align once the ground level panels are installed.

## 01 | SETTING THE CLIPS

- Take the wall clips included in your accessory crate and position them along the frame 16" to 24" on center. Whichever side the clips are set on, will become the male. Do not place any clips to the side of the next panel that will be locked into the male side. [Figure C]

Note: On a building with a Gypsum substrate, all wall clips along the horizontal panel edge will need to align with the structural member within the wall.

Note: If the substrate is made of Plywood, the clips do not have to be coordinated with the framing studs and can be laid out every 16" to 24" on center.

- Fasten the wall clips firmly to the panel frame tightening no more than a half turn beyond snug. Over-torqued fasteners may result in shearing or stripping. [Figure D]

Note: Do not over-tighten the fasteners into the wall. Always make sure that the fastener type and spacing are in accordance with the installation drawings.

Figure C

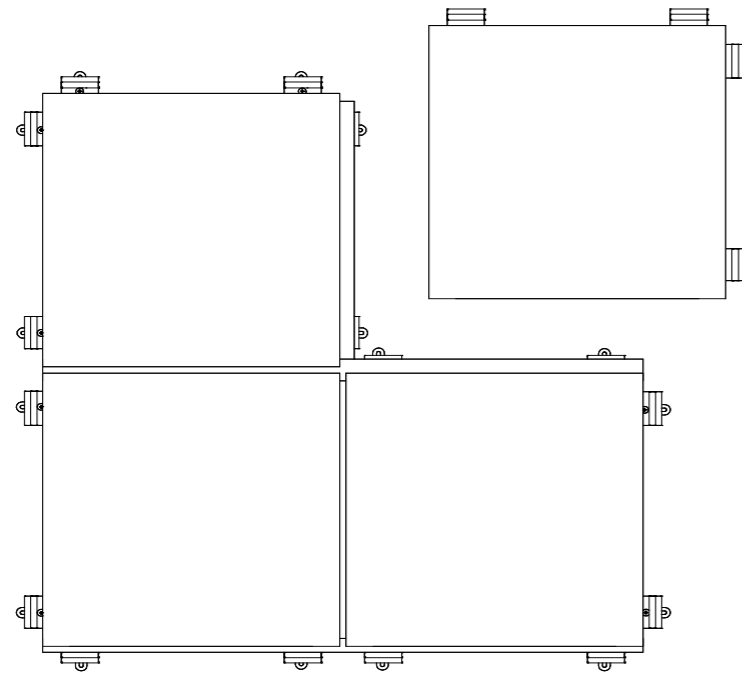


Figure D



## 02 | SPLINE ORIENTATION

While installing panels, it is critical not to forget to insert the spline between the panels. The purpose of a spline is to hide the fasteners and the inner frame of the panel. [Figure E]

- Allow the vertical splines to pass through the horizontals. To maintain the clean appearance of the panels, give special attention to ensuring that cut ends are in square shape.
- Use the outer slot of your panel frame to insert the spline into place
- Insert vertical splines first, but before doing so, cut them half an inch shorter than the panel height to allow for the horizontal spline directly above the panel to freely slide across
- All corner panels will require a routed spline. Route them using a trim router.

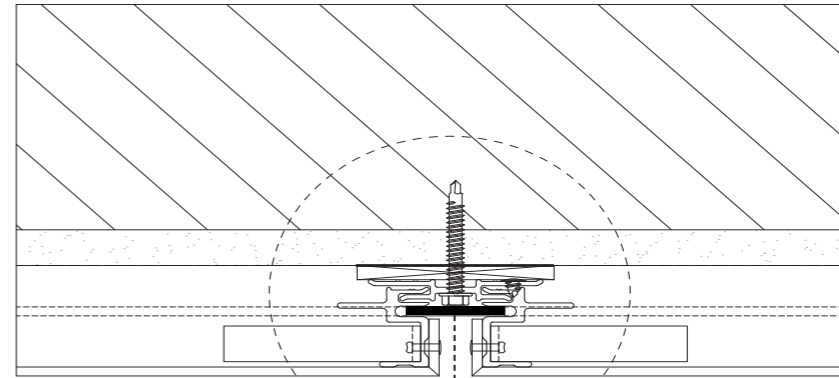


Figure E

Plan view: slide the spline into the designated slot to cover the fasteners and inner frame of the panel.

### TIPS

1. Use a 12" speed square to route multiple pieces at once
2. Notch the edges of your spline in the frame when terminating
3. To give your splines a clean joint appearance, always route their outer corners. [Figure F] When doing this, consider that the face of a spline sits 1" behind the face of the panel, so when routing a spline for a three-sided panel, you can take the face dimension and reduce it by 2" for width.

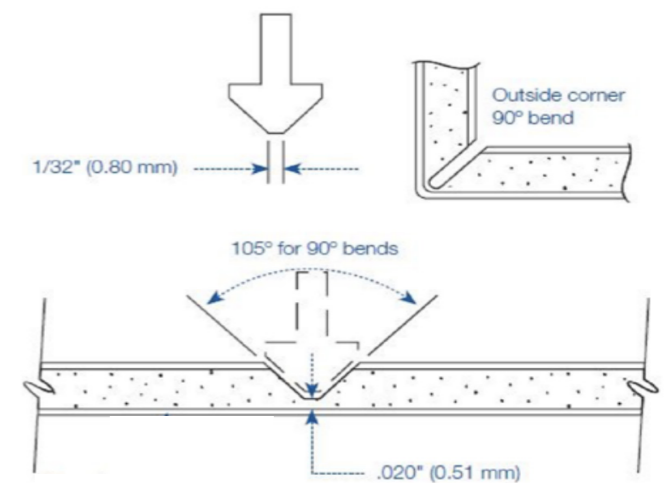


Figure F

### 03 | PARAPET CAPS & COPING ATTACHMENTS

When installing coping or parapet caps, it is critical to get positive attachment on the coping panel. This is gradually installed, then the spline is slid in to cover the attachment. [Figure G (a)]

- Seal the skyward joints with backer rod and caulk

(a) In rare cases, where positive tension is not sufficient above the Parapet panel, use staggered clips to secure the panel.

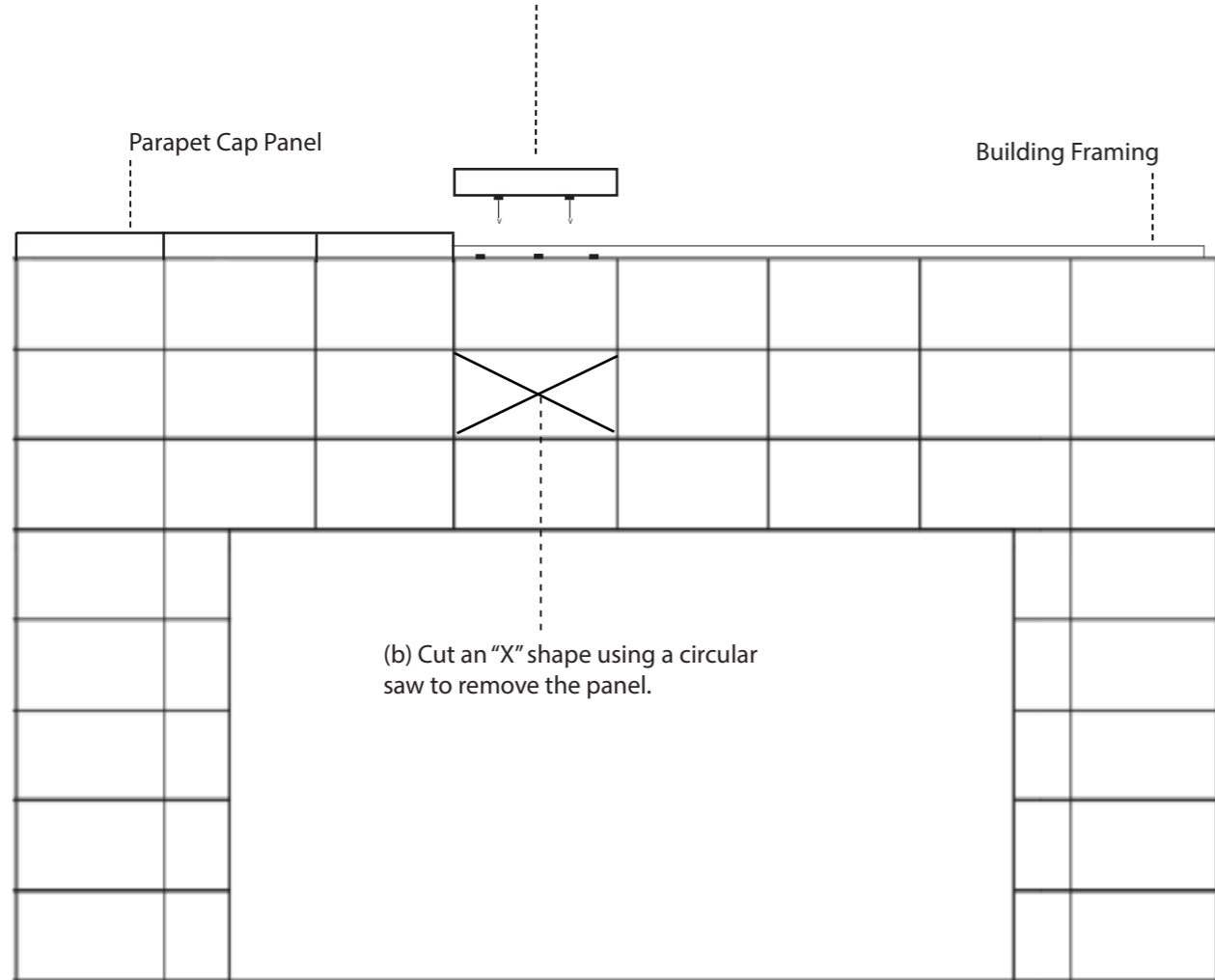


Figure G

### 01 | CLEANING UP

Should you need to make any adjustments to the panels while on the project site, DO NOT cut, trim, weld, or braze components or parts in a way that can damage the finish, compromise strength and performance, or result in visual imperfection.

- Remove protective film immediately after installation of ACM and immediately prior to completion of the ACM system work.
- Make sure weep holes and drainage channels are unobstructed and free of dirt and sealants.

### 02 | REMOVING DAMAGED PANELS

In the case that a panel is damaged post-installation, here's how you can replace it without disassembling the entire elevation:

- Cut the panel diagonally taking care not to damage the adjacent panels. [Figure G (b)]
- Score back or return with a razor knife to remove the face of the panel.
- Drill out existing rivets and remove return legs leaving the frame and spline in place.
- Any frame that is not secure will need Half Clips attached and fastened to the substrate considering the overall size of panel when placed.
- Utilize factory weld product and a special gun for adhesive weld.
- Use shims to put a wedge between the panel and its adjacent panels, then remove it.

# iFAB

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Installation Guide

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