

# INSTALLATION GUIDELINES

## FIBERGLASS RIBBON WINDOW (400 SERIES)

### OVERVIEW

Wall systems designed to manage water or that have been upgraded to manage water are important for a trouble free installation. Site conditions, building designs, building materials and construction methods vary from project to project. Determining the proper installation is the responsibility of you, your architect or construction professional. Installation will require a minimum of two (2) or more people depending on the size/weight of the windows, size of the project and schedule.

### I. RECEIVING & HANDLING

#### INSPECTION:

Customer should conduct a thorough inspection of the window products after receiving them. Windows should be inspected for proper type, operability, shipping damage, and size. All damages or freight claims must be reported within 48 hours of receipt and submitted in writing within 5 business days of receipt to; [service@thinkalpen.com](mailto:service@thinkalpen.com). Follow these steps when inspecting new window products:

- Thoroughly inspect the windows, note that some products contain items that are not to be removed until after the windows are installed properly..
- Lock any sashes opened during inspection prior to installation.
- Check for proper size and location prior to the start of installation.

#### STORAGE AND HANDLING:

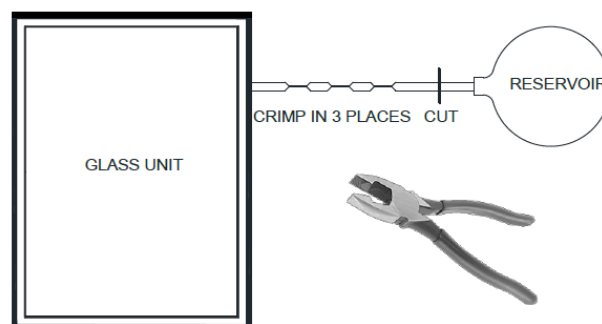
Alpen HPP does not recommend storing windows prior to installation, but if necessary windows should be properly stored when installation will not take place immediately. The following recommendations will help you store and protect the products until installation can begin:

- Windows shall be transported in an upright position with all manufacturers' packaging in place. Then stored or staged in an upright position, sitting on the sill, as close to 90 degrees as possible. Keep windows away from moisture and off the ground. Do not lay flat, transport flat or carry flat.
- Installers should wear clean gloves when handling products. Do not rack, twist, drag or pull window frames.
- All windows shall be stored in the upright position as close to 90 degrees as possible and placed on their sills. If packaging is removed, store with non-abrasive separators between frames.

- Handle units with shipping handles or glass cups during installation as much as possible. Use appropriate manpower when lifting large units.
- Windows shall be stored out of the weather in a clean, dry, low-traffic area, away from direct sun light, extreme temperatures and temperature changes. Do not leave wrapped windows exposed to weather, sunlight or heat. Do not store windows in containers, trailers, or areas that might undergo dramatic fluctuations in temperature and humidity, or is also used for storage of hazardous or chemical materials. Off-gassing of these materials may degrade the window finish or seals.
- If windows must be stacked so some lean against others, always stack the largest units at the back in a completely upright position and proceed forward with gradually smaller units. Never lean units larger than 40" tall.

### EQUALIZATION PROCESS AND RESERVOIR REMOVAL INSTRUCTIONS:

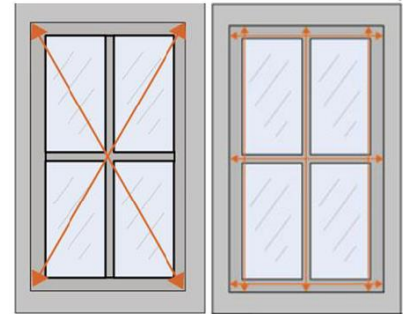
1. Once the units have arrived at the jobsite, allow them to acclimate to local conditions for a minimum of 24 hours. Larger units may take up to 72 hours.
2. Once acclimated and the glass appears flat (not convex or concave) the capillary tube requires crimping and the reservoir removed. This should be completed within 5 days of receiving the windows on the jobsite. Crimping should be performed between 12 and 3 PM or the warmest part of the day.
3. Crimp (hard enough to collapse or flatten the tube) the capillary tube 1" from the edge of glass/glazing bead, again at 1/2", and again at another 1/2". Use flat jaws of a pair of side cutting pliers as show in the image.
4. Cut the tube 1" from the end to remove the reservoir and then dip the cut end in Glazing Sealant that adheres to steel.
5. Tuck the capillary tube under the glazing bead using a thin putty knife or 5-in-1 tool and flat blade screw driver or tape to the edge of the IGU for glass only products.



## II. PREPARE WINDOW OPENING

### A. CHECK ROUGH OPENING DIMENSIONS & CLEARANCES

1. **Verify the opening is level and square.**
2. **Verify the window will fit the opening.** Measure width and height at several points along span to ensure dimensions are uniform and no bowing or warping exists.



- a) **RO Width:** must be at **minimum ½" wider** than exact window frame width.

Ensure there is **¼" (minimum) to ½" (maximum)** space between window frame and rough opening at each jamb to allow for shimming and adjustment, and to ensure caulk bead is correctly sized.

$$\text{RECOMMENDED RO WIDTH} = \text{Frame Width} + \frac{3}{4}"$$

- b) **RO HEIGHT:** must be at **minimum ½" taller** than exact window frame height.

This allows for **minimum 1/8" shims to be installed at the sill**, set in the opening before the window is installed. Shims are mandatory, as they bear the weight of the window unit and allow the window to "float" in the opening. Use enough shims to fully support the window and insure sill remains straight.

The remaining space at the **top of the window** allows for movement of the header above the window without transferring load onto the window. No shims are installed at the window head.

$$\text{RECOMMENDED RO HEIGHT} = \text{Frame Height} + \frac{3}{4}"$$

*\*\*Shim space may be larger depending on project-specific installation requirements and insulation requirements.\*\**

### 3. Perimeter Blocking (OPTIONAL)

- a) Stud walls:

No additional blocking is required in wood-framed/stud wall openings. Make allowance for positive flow for moisture to the exterior at the sill. Cover with sill pan, flashing or self-adhering flexible flashing. (Shims at sill and jambs are recommended.)

- b) Masonry walls:

Pretreated perimeter blocking can be installed or a pretreated or hardy board wedge at the sill can be used for positive water flow to the exterior. Cover sill with sill pan, flashing or self-adhering flexible flashing. (Shims at sill and jambs are recommended.)

## B. SILL FLASHING & DRAINAGE:

### 1. Rough Opening Flashing:

Ensure window opening is flashed and sloped to allow for water to drain to exterior. Review window position in the opening with relation to the water plane of the building.

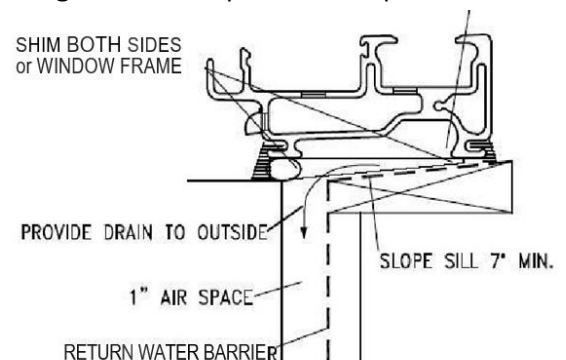
Follow regional best practice guidelines or AAMA Installation Masters guidelines to select and install sill flashing type and installation procedures according to site-specific climate/weather and wall conditions.

### 2. Sill Drainage:

#### a) Sloped Sills:

Following ASTM E2122-07 guidelines, Alpen recommends that **all window sills have sloped sill pans** where the pan portion of the sill pan flashing slope toward the outside in order to promote drainage (Figure B.2-A). In this application, sloped shims must be used to support the window unit.

Figure B.2-A Sloped Sill Example



#### b) Flat Sill Pans:

ASTM E2122-07 allows for an alternate approach where flat sill pans are used to avoid the need for sloped shims. In accordance ASTM guidelines, flat sill pan flashings may be used if (***and only if***):

- i. Wall depth equal to or less than 6"
- ii. Sill pan flashing has an integral backdam that is continuous at interior full length of window and 6" up each jamb.

***\*\* When sill pan depths are greater than 6", flat sills are not acceptable. For wall depths greater than 6", ASTM E2122-07 requires the pan to slope. \*\****

*In either case, the window must be set on top of shims, on flashing, on the masonry or framed sill, and the window must be sealed with a **continuous bead of sealant around entire perimeter interior connection** of window to air/water barrier and over the flashing back dam (critical).*

*Discontinuous sealant is used on exterior sill connection to allow for moisture migration.*

### 3. Backdams:

All installed windows **must** have a continuous back dam that runs continuously across bottom of window sill and 6" up each jamb. Backdams can be integral to flashed or pre-formed sill-pan, or can be field-applied backer rod and sealant.

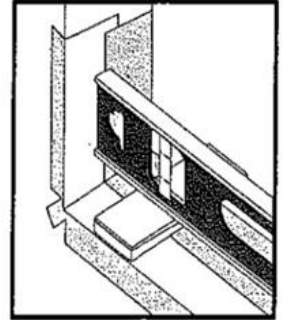
### III. SET SHIMS

#### A. SHIM TYPE:

Use 1/8" thick minimum non-compressible, impervious shims.

Thicker shims may be required depending on window rough opening but should not exceed ¼".

Shims should be wide and long enough to fully support the window frame.



#### B. PLACE SHIMS

1. SILL: Place shims along bottom of flashed rough opening at:
  - a) within 3" of corners, sides, and mull joints and
  - b) 6-8" on center thereafter
  - c) Ensure adequate and level support of window frame is achieved.

***Note: Improper placement or insufficient number of shims may disrupt performance and operating capabilities.***

2. After window is in place, shims will also be required at jambs within 3" of corners, sides, and mull joints. Do not shim at the window head.

### IV. SELECT ANCHORING METHOD

Anchoring method is usually selected during the window ordering process based on project-specific requirements. For assistance in selecting method, or if changing installation method after windows are delivered, please contact your Alpen salesperson.

Alpen typically recommends three installation techniques:

- 1. Thru-Frame Fastening Method**
- 2. Anchor Straps**
- 3. Anchor Plates**

## V. ANCHORING GUIDELINES

### A. GENERAL

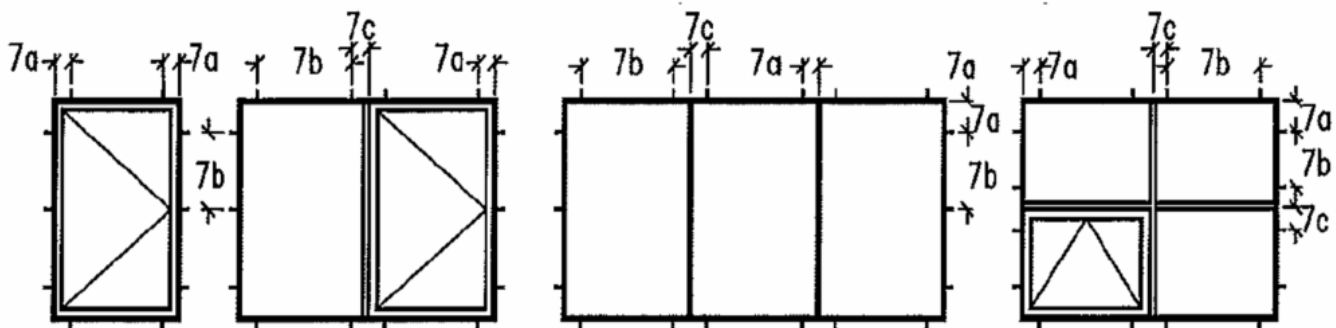
1. Window frames must be set plumb, level, square, fully supported by shims and sill and secured to surrounding structure with fasteners and anchors.
2. Window anchorage must be sufficient to meet structural requirements of the window for project-specific design loads and according to local building codes.

*The following anchor spacing/layouts are representative of layouts for most residential and light commercial applications. Mid- to high-rise applications, buildings in high wind zones and with large window sizes may require additional anchoring or different techniques for additional strength based on structural engineer's review and recommendations. For assistance, please contact your Alpen representative.*

### B. ANCHORING LOCATIONS

Anchors or fasteners must be located in the following critical locations:

1. Corners (7a): locate anchor within 4" of each corner
2. Mullions (7c): locate anchor within 4" on either side of mullion (7c)  
*\*\*For high wind zone areas, you can increase to two straps on each side of the mullion.*
3. Head/Sill/Jambs (7b): between corner and mullion locations, locate anchors:
  - a) **Through-frame fastening method:** 12-14" on center
  - b) **Anchor Strap method:** 12-16" on center
  - c) **Anchor Plate method:** up to 36" on center



**Figure 5.B** Anchoring locations

## VI. SETTING THE WINDOW

***WARNING! To avoid injury, use at least two people to install. Adequately support the window until completely fastened.***

***READ SELECTED ANCHORING METHOD INSTRUCTIONS BEFORE PROCEEDING, MOST METHODS REQUIRE ADDITIONAL FRAME PREPARATION AND/OR APPLICATION OF ANCHOR STRAPS/PLATES BEFORE WINDOW IS INSTALLED***

### A. SETTING AND SHIMMING WINDOW

1. Place window onto the shimming and tilt into the rough opening. The window sill must rest on and be fully supported by the shimming support.
2. Temporarily fasten window with two screws: one at 3"- 7" from one upper left corner and one at 3"- 7" from lower corner.
3. Check that frames are set plumb, level, and square by checking the frame horizontals and verticals with a level, and the diagonal measurements with a tape measure. Adjust with shims as needed.
4. Apply shims at jambs: apply shims at every anchoring location
  - a) **Through-Frame Fastening method:** one shim at each anchoring location
  - b) **Anchor Strap Fastening method (bent straps):** apply one shim on either side of each Anchor Strap
  - c) **Anchor Plate Fastening method:** apply one shim beneath each anchor plate to ensure plate is level with edge of window and rough opening framing
5. Proceed to anchor window following anchoring instructions for method selected (Section VII, Part A, B or C)

### B. USING ANCHOR STRAPS IN COMBINATION WITH SILL FLASHING:

1. Notch flashing back dam where it interferes with Anchor Strap/Anchor Plate prior to installation.
2. Seal window to back dam and secure
3. Apply continuous bead of sealant beneath and over Anchor Straps, crossing notches in pan flashing to provide complete air and water barrier along entire interior edge of frame

## VII. ANCHORING WINDOW

*These techniques are general guidelines only and may not be appropriate for all performance requirements. Please contact your Alpen sales representative before proceeding to determine if this method is suitable for your project. Methods may vary on a project-specific basis.*

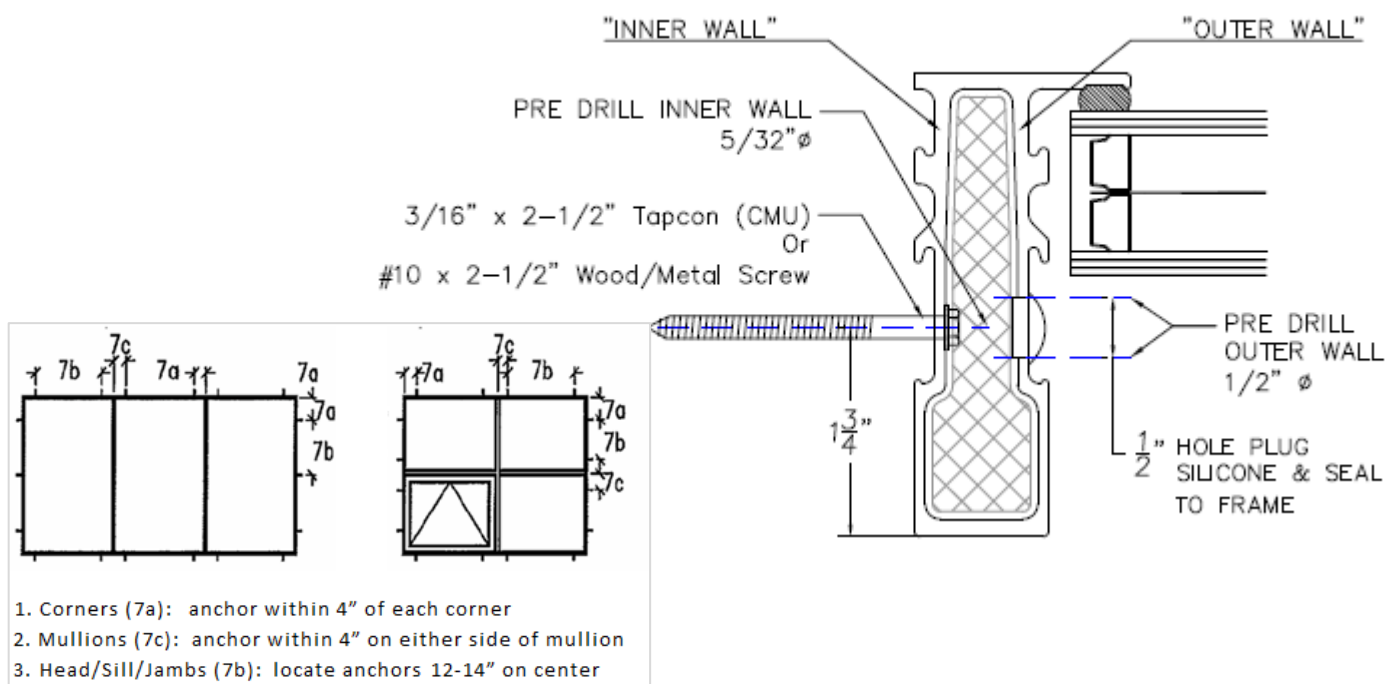
### A. INSTALLATION METHOD 1: THRU-FRAME ANCHORING

1. At every fastener location shown in Step V, Item B (figure above: Pre-drill 9/64" (4mm) pilot holes through the first wall of the fiberglass pultrusion.
2. Shim at all fastener locations to prevent bowing of the frame, and at other locations as needed to ensure window sill is fully supported (6-8" on center at sill is recommended) and that the window is plumb and level.
3. Pre-drill and fasten through the "second" (inner) wall of the fiberglass frame through the jambs, shims and into the rough opening framing.

#### FASTENER TYPES:

- a) CMU/MASONRY: 3/16" x 2-1/2" Tapcon
- b) WOOD OR METAL STUDS: #10 x 2-1/2" Stainless Flat Head wood or sheet metal screws

4. Seal all screw penetrations through fiberglass frame and flashing
5. When all fasteners are installed, insert 3/8" plugs (not supplied) into pilot holes and silicone to seal out water.
6. When complete, skip to Section VIII "Flashing and Sealing" (page 11).

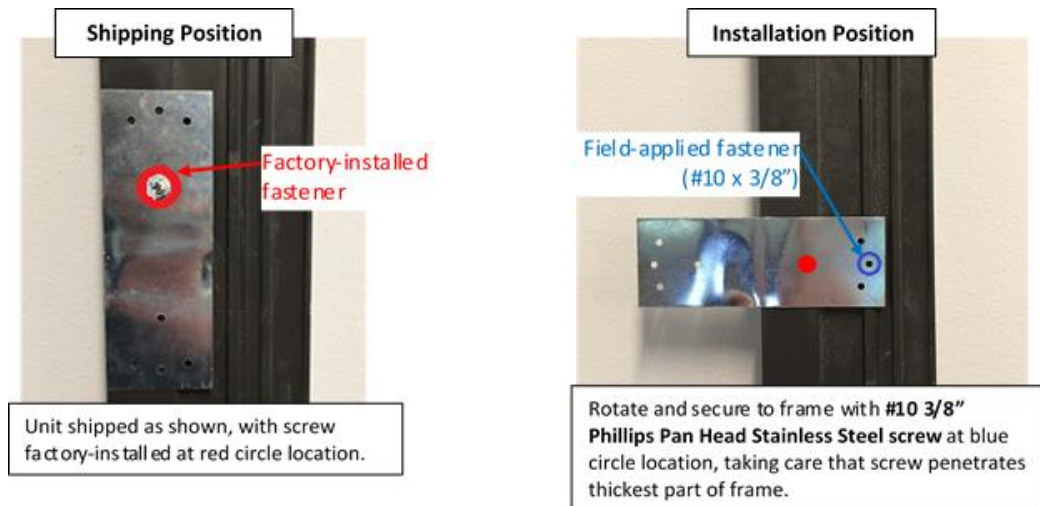




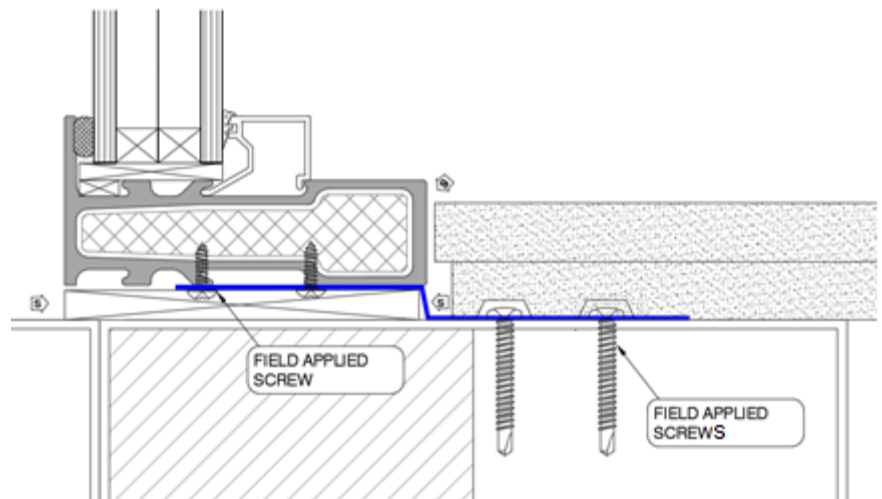
## B. INSTALLATION METHOD 2: ANCHOR STRAP (FIELD- OR FACTORY-APPLIED)

*These techniques are general guidelines only and may not be appropriate for all performance requirements. Please contact your Alpen sales representative before proceeding to determine if this method is suitable for your project. Methods may vary on a project-specific basis.*

1. For Anchor Strap method, brackets typically come pre-fitted to the unit or shipped loose.
  - a) If shipped loose, Anchor Straps must be installed per Step V above, and with same screw locations as shown below.
2. If pre-fitted, rotate and fasten brackets as shown in the following details:



3. **Bend Anchor Strap into “Z” Shape** to bridge gap between frame and rough opening
4. **Fasten Anchor Strap to wall** as shown using stainless steel or other non-corrosive screw. Ensure fastener penetrates rough opening framing minimum 2-1/2”
5. When complete, skip to Section VIII “Flashing and Sealing” (page 11).



### C. INSTALLATION METHOD 3: ANCHOR PLATE

*These techniques are general guidelines only and may not be appropriate for all performance requirements*

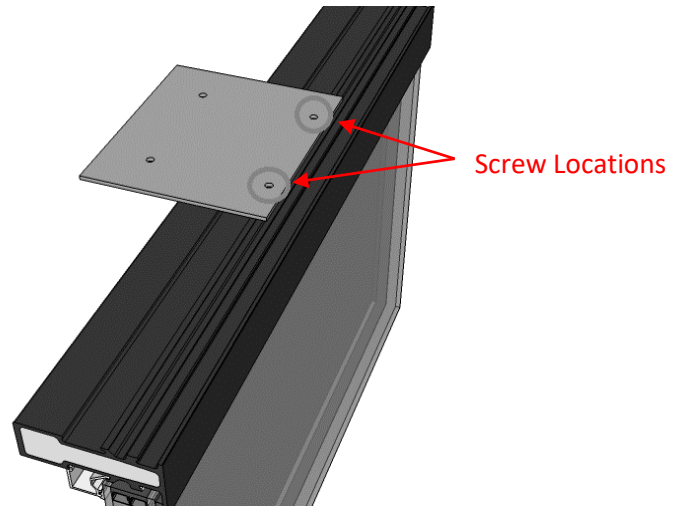
When used, Alpen supplies Anchor Plates shipped loose (separate from frames).

Anchor plate spacing is as shown in **Step 5** within 4" of corners, 3" on either side of mullions, and approximately 36" O.C. thereafter. Additional plates may be required based on window sizes. Alpen will advise and provide additional plates as necessary.

**Before setting window into opening, anchor plates must be attached to window frames.**

1. Fasten anchor plate to frame in locations shown in image to right, using:

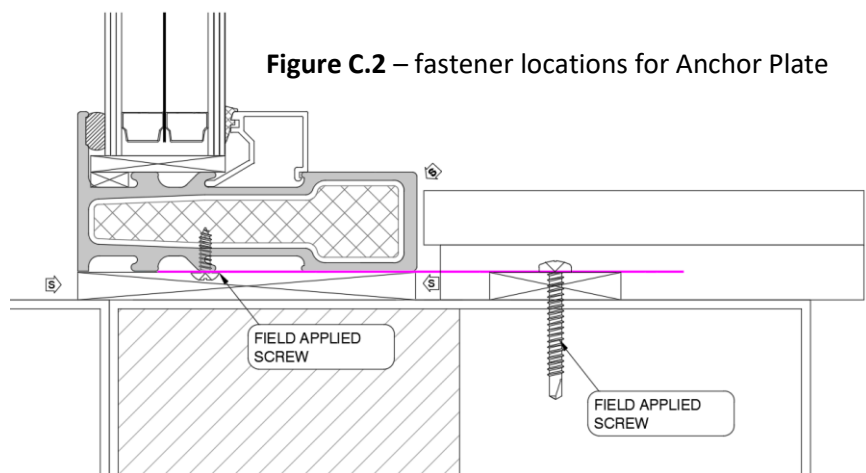
**Two (2) #10 x 3/8" Phillips Pan Head Stainless Steel screws (SUPPLIED BY ALPEN)**



2. Follow **Figure C.2** below for wall connection detail, using stainless steel or other non-corrosive screws. Unless otherwise specified by engineer, use fastener type:

**a) CMU: Two (2) #3/16 x 2-1/2" Tapcon (NOT BY ALPEN)**

**b) Wood/Masonry: Two (2) #10 x 2-1/2" Pan Head Stainless Steel screws (NOT BY ALPEN)**



3. When complete, skip to Section VIII "Flashing and Sealing" (page 11)

## VIII. FLASHING AND SEALING WINDOW CONNECTION:

### A. DRIP CAP **(REQUIRED)**

1. Integrate drip cap (not by Alpen) with existing drainage plane at head and jambs with flashing per AAMA Guidelines
2. Ensure drip cap at window head is in place and effectively sheds water beyond window frame. Water should not be drained down exterior surface of window frame or glass. Failure to provide adequate head flashing/drip cap may void warranty.

### B. SEAL EXTERIOR PERIMETER

1. Leave an expansion/contraction gap of approximately 3/8" between door frame and final exterior wall surface (siding, stucco, etc.). Use backer rod and sealant to create seal this gap at head and jambs to ensure tight water and air resistance. (Insulate cavity between exterior and interior seals described below).
2. If sealant is applied above the drip cap ensure the sealant bead is discontinuous to allow for drainage.
3. Apply discontinuous caulking at sill on exterior to promote water migration to exterior.

### C. INSULATE HEAD & JAMB CAVITIES

1. Fill cavities at the jambs and head between window frames and rough opening. With polyurethane low expansion foam, closed cell foam, or loosely filled with fiberglass batt insulation. Do not distort frame by over packing. A well filled cavity improves thermal performance.

## D. INTERIOR AIR/WATER SEAL – CRITICAL!

***A continuous, 4-sided air- and water-tight interior seal is critical. This sealant promotes continuity of vapor barrier to reduce risk of condensation within the cavity. Well-sealed window perimeter will ensure windows will meet advertised water and air resistance. (It is important to have both exterior and interior sealant for the best performance).***

1. On the interior, apply backer rod and a continuous perimeter bead of sealant, an aerosol foam sealant conforming to AAMA 812, or other window manufacturer approved material, to form a **continuous interior air and water seal**.

The interior seal and back dam assembly shall not be compromised by the placement of attachment brackets or interior trim. Alteration of manufactured sill pans should be avoided. If sill modification is necessary for structural attachment of mullions and/or anchorage, the integrity of the air and water barrier must be restored.

**Note:** *To ensure adequate protection against extreme wind driven rain, it is **critical** that the perimeter interior air and water seal between the window and the sill pan flashing is able to withstand the induced loads. Special care needs to be applied to the interior corners.*

2. In cases where shims cause interference with the application of the backer rod, sealant, or foam trim excess shim material to allow for a continuous air/water seal.
3. Sealant shall be tooled in such a way as to not interfere with the placement of any interior trim on the inside of the window opening.

## E. POST-INSTALLATION PROCEDURES

1. Verify flashing and sealants are installed per AAMA Guidelines.
2. Verify that the interior and exterior perimeter sealant joints are present and continuous.
3. Drainage holes shall be inspected for blockage and freed of any obstructions to allow drainage. Verify that sills retain ability to drain freely to exterior.
4. Verify that the operable sashes move freely within their frames and that weather stripping or compressible seals make full contact with mating surfaces. Verify that operable hardware such as locks, cranks, latches and hinges operate properly.
5. Windows should never be load bearing after installation. Window should not be modified to accommodate air conditioners, exhaust fans, etc.

***IF YOUR RIBBON WINDOW(S) WERE SHIPPED WITH GLASS LOOSE (CRATED SEPARATELY)  
PLEASE REFER TO ALPEN RIBBON WINDOW GLAZING GUIDELINES FOR NEXT STEPS***