



INSTALLATION GUIDELINES

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.

INSPECTION:

Customers 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 submitted in writing within 5 business days of receipt to: info@willamettewindows.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.
- Close and lock all sashes opened during inspection prior to installation.
- Check for proper size and location prior to the start of installation.

STORAGE AND HANDLING:

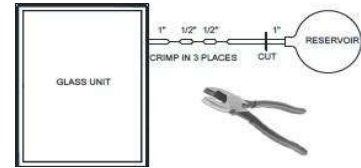
Windows should be properly stored when installation will not take place immediately. The following recommendations will help you store and protect the products until installation can begin:

- Windows shall be transported in an upright position with all manufacturers' packaging in place.
- Installers should wear clean gloves when handling new 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 glass cups 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 sunlight, extreme temperatures and temperature changes. Do not leave wrapped windows exposed to sunlight or heat.

EQUALIZATION PROCESS AND RESERVOIR REMOVAL INSTRUCTIONS:

- 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.
- Once acclimated, 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.
- Crimp (hard enough to collapse or flatten the tube) the capillary tube 1" from the edge of the glass/glazing bead, again at 1/2", and again at another 1/2" flat jaws of a pair of side cutting pliers as shown in the image.

- Cut the tube 1" from the end to remove the reservoir and then dip the cut end in Glazing Sealant that adheres to steel.
- Tuck the capillary tube under the glazing bead using a putty knife and flat blade screwdriver or tape to the edge of the IGU for glass only products.



PREPARE WINDOW OPENING:

Verify the opening is level and square. Verify the window will fit the opening. Allow $\frac{1}{4}$ " (+/- 6mm) space between window frame and rough opening at the jambs for shimming and adjustment ($\frac{1}{2}$ " overall in width). Standard R.O. allowance is $\frac{1}{2}$ " overall in height. This allows for shim space at the bottom of the window (use enough shims to fully support the window and insure sill remains straight) and the remaining space at the top of the window to allow for movement of the header above the window. Shim space may be larger depending on project-specific installation requirements. Measure width and height at several points along span to ensure dimensions are uniform and no bowing or warping exists. (Shim window at the sill and jambs, not at the head.)

Perimeter Blocking:

- Stud walls: No additional blocking is required in wood-framed/stud wall openings.
- 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.

SILL FLASHING & DRAINAGE:

Ensure window opening is flashed and sloped to allow for water to drain to the 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.

- Sloped Sill – many brick and CMU wall constructions utilize a sloped masonry sill to drain water away from the window; in this case, the window typically rests on top of shims, on flashing, on the masonry sill and is sealed with a continuous bead of sealant on interior on the flashing back dam and discontinuous sealant on exterior to allow for moisture migration. (Sill flashing at the sill is always the best practice.)
- Sill Pan or sill flashing – in cases where a masonry veneer or other exterior finishes are applied to a wall assembly, the drainage plane is typically located in a "through-wall" cavity behind the veneer. In this application, window sill flashing (flexible, self-adhesive or preformed sill pans) must be integrated into the existing drainage plane.

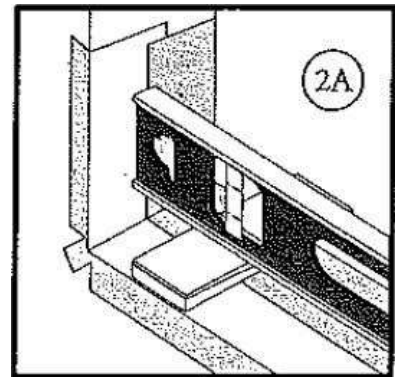
****Please refer to Installation Masters for information regarding back dam heights, side jamb heights for flashing, redundant lines of sealant, and flashing in weatherboard fashion.**

SET SHIMS:

Use $\frac{1}{8}$ " thick minimum non-compressible, impervious shims. Thicker shims may be required depending on window rough opening but should not exceed $\frac{1}{4}$ ". Shims should be at least 1- $\frac{1}{2}$ " wide and long enough to fully support the window frame.

Place shims every 6-8" along the window sill and within 1" of corners, sides, and mull joints. Ensure adequate and level support of the window frame is achieved.

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



ANCHORING METHODS

Window frames should be set plumb, level, square and secured to surrounding structure. Window anchorage must be sufficient to meet structural requirements of local building codes.

NAIL FIN

- Ensure that the window opening is level and plumb and wrap extends all the way to the opening. Also be sure the sill pan flashing is installed.
- When installing a window with integral nail fins, apply a bead of caulk to the back of each fin before setting the window into the opening.
- Lift window and install sill (bottom of window) first, then tilt the window into place.
- Install wood or horseshoe shims under the sill to level the window in the opening horizontally.
- When the window is level horizontally, use a level to ensure that the jambs are also straight and not bowing. You may need to install shims where the sash meets the jambs in the middle of the window.
- When the window is plumb, level, and square, you may begin securing the window to the opening by nailing through the pre-punched holes in the nail fins.
- Place fasteners in every hole of the nail flange along the jamb and sill beginning 4"-8" from welded corners.
- When the window is installed and secured, check for functionality by opening and closing and ensure that the sash and locks function properly.

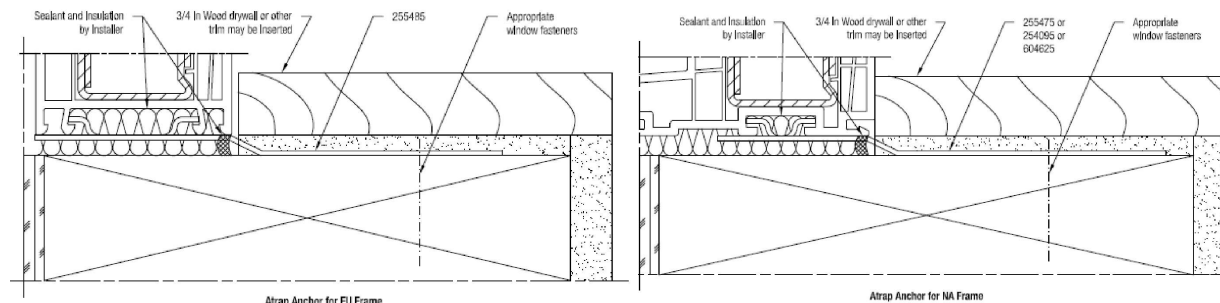
ANCHOR STRAP

- Snap-on Strap Anchor – Attach strap anchors on window(s). (Location and spacing below) Shim at anchor strap locations at jambs. Secure with at least 2 fasteners per anchor strap.

Anchor Spacing (in) for 35 psf							
H / W	24	26	28	30	32	34	36
48	24 Max	24 Max	23	21	20	19	18
52	24 Max	24	22	21	20	19	18
56	24 Max	24	22	21	20	19	18
60	24 Max	24	22	21	20	18	18
64	24 Max	24	22	21	19	18	17
68	24 Max	24	22	21	19	18	17
72	24 Max	24	22	21	19	18	17
76	24 Max	24	22	21	19	18	17
80	24 Max	24	22	21	19	18	17
84	24 Max	24	22	21	19	18	17
88	24 Max	24	22	21	19	18	17
92	24 Max	24	22	21	19	18	17
96	24 Max	24	22	21	19	18	17

Anchor Spacing (in) for 45 psf							
H / W	24	26	28	30	32	34	36
48	20	19	18	17	16	15	14
52	20	19	17	16	15	15	14
56	20	19	17	16	15	14	14
60	20	19	17	16	15	14	14
64	20	19	17	16	15	14	14
68	20	19	17	16	15	14	13
72	20	19	17	16	15	14	13
76	20	19	17	16	15	14	13
80	20	19	17	16	15	14	13
84	20	19	17	16	15	14	13
88	20	19	17	16	15	14	13
92	20	19	17	16	15	14	13
96	20	19	17	16	15	14	13

Anchor Spacing (in) for 55 psf							
H / W	24	26	28	30	32	34	36
48	17	15	14	14	13	12	12
52	16	15	14	13	13	12	11
56	16	15	14	13	12	12	11
60	16	15	14	13	12	12	11
64	16	15	14	13	12	12	11
68	16	15	14	13	12	12	11
72	16	15	14	13	12	12	11
76	16	15	14	13	12	12	11
80	16	15	14	13	12	12	11
84	16	15	14	13	12	12	11
88	16	15	14	13	12	12	11
92	16	15	14	13	12	12	11
96	16	15	14	13	12	12	11



Recommended anchor locations:

- Strap anchors – (a) Secure within 4" from the corners.
- Mullion Strap Anchors points– (c) Always anchor within 4" from mullion. For wind zone areas, you can increase to two straps on each side of the mullion.
- Approved anchors include sheet metal screw and wood screw.
- Maximum shim thickness of 1/4 in (6.35 mm) permitted at each fastener location. Shims shall be load bearing non-compressible type.
- Above drawings depict the details necessary to meet structural load requirements. They do not address the air infiltration, water penetration, intrusion or thermal performance requirements of the installation.
- Design pressure rating of installed windows shall meet or exceed project

SETTING THE WINDOW

Carefully lift the window into place. Insure 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. Secure to the surrounding structure using the Strap Anchor method described above.

- Anchor Straps - Set window/door onto shims so that the frame is fully supported and secure by fastening through straps placed at locations/spacing noted in “Strap Anchor Locations” above. Straps may be cut to size or bent around framing to fit jamb/sill/head depth.
- When used in combination with sill flashing:
 - o Notch flashing back dam where it interferes with anchor straps prior to installation.
- Seal window to back-dam and secure using anchor straps.
- Apply continuous bead of sealant beneath and over anchor straps crossing notches in the pan flashing to provide a complete air & water barrier along the entire interior edge of the frameInstall.
- Sills and trim – sill trim may need to be carved out where crossing anchor strap locations to allow trim to sit flush to rough opening, or wood spacers may be set between straps to create level surface for trim or interior sill installation.

Option to anchor straps at sill.

Pretreated 1-1/2” x 4” x 1/2” wood blocks sized to slide into the open back of the sill pultrusion can be fastened at the sill prior to setting the window. Care should be taken to place the blocks for correct placement in the opening. Seal between the block and sill flashing and also to seal and tool the head of the fastener. After setting the window, follow anchor strap installation on the head and jambs.

Discontinuous sealant at the front of the window and backer rod and sealant or back dam at the interior.

DRIP CAP

Integrate window with existing drainage plane at head and jambs. Ensure drip cap at the window head is in place and effectively sheds water beyond the window frame. Water should not be drained down the exterior surface of window frames or glass. Failure to provide adequate head flashing/drip cap may void warranty.

SEAL EXTERIOR PERIMETER

Use backer rod and sealant to create a seal at head and jambs to ensure tight water & air resistance. (Insulate cavity between exterior and interior seals described below.) Apply discontinuous caulking at sill on exterior to promote water migration to exterior.

INSULATE JAMB AND HEAD CAVITIES

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

SEAL INTERIOR PERIMETER

Use backer rod and sealant to create an interior seal that will promote continuity of vapor barrier to reduce risk of condensation within the cavity. Well-sealed window perimeter will ensure windows will meet advertised water & air resistance. (It is important to have exterior and interior sealant for the best performance.)

ALTERATIONS

Windows should never be load bearing after installation. Window should not be modified to accommodate air conditioners, exhaust fans, etc.

END OF SECTION

Recommended resource for effective water management building details per climate type: “Builder’s Guide” Series by The Building Science Corporation (Building Science Press, 2006 & 2009)