Oldcastle BuildingEnvelope®

SIGNATURE SERIES UNIT WALL
INSTALLATION MANUAL

NOTE:

The installation details found in this package are generic and are for representation only with the intent of giving the installation team a visual representation as to how the assemblies typically install. The shop drawings and details are the governing documents and as such this package is to be used only as a resource.

Follow sealant manufacturers recommendations for use and application of structural silicone sealant and weather seal silicone sealant.

Note: Customer / Project quality assurance procedures are separate dociments and are to be followed in conjunction with this manual.

June 2024

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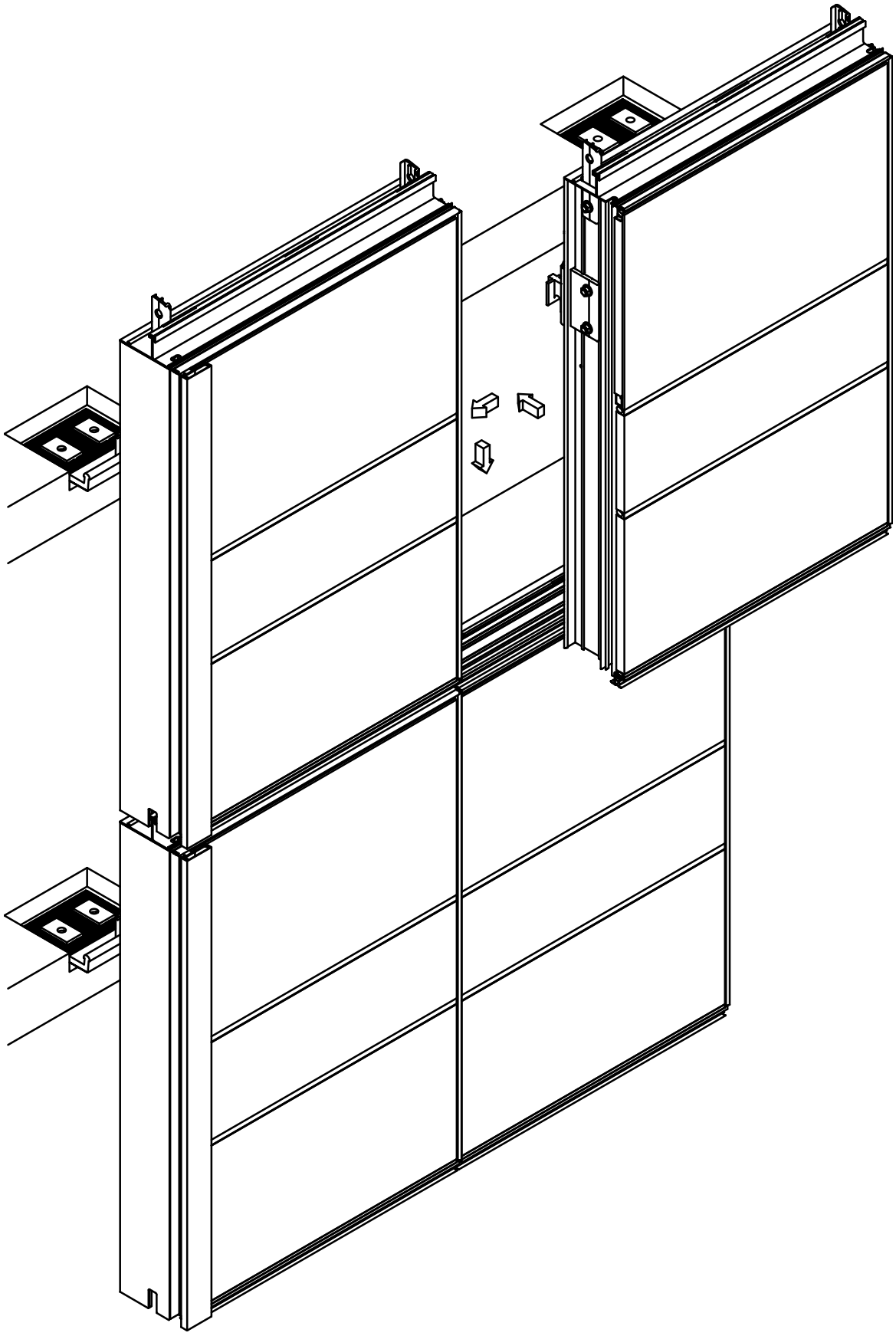

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SIGNATURE SERIES UNIT WALL INSTALLATION MANUAL

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GENERAL INFORMATION

PRODUCT USE

The **Signature Series Unit Wall** system is intended for fabrication, assembly, sealing, installation and glazing by professionals with appropriate knowledge and experience of the system(s) and their incorporation into various building conditions.

Consult sealant manufacturer for review and recommendation of sealant application. Follow sealant manufacturer's recommendations and literature for proper installation.

The fabrication and installation of a structural silicone-glazed (SSG) or wet glazed system requires more technical knowledge and experience than is required for a conventional pressure-glazed or dry glazed system. The glazing contractor should take all steps as outlined and required by the structural silicone sealant manufacturer, glass fabricator, framing manufacturer, and the project professional engineer of record as well as follow local building code requirements and industry best practices to ensure the proper installation and safe performance of the SSG system.

The glazing contractor for each project needs to ensure compliance with each step, including, but not limited to, design reviews, formal adhesion testing, formal compatibility testing, project specification compliance, validating procedures, field testing, and quality control validation of installed product and surrounding conditions.

Testing of component materials for use in a SSG or wet glazed system is mandatory to fulfill project specifications and warranty requirements and must be submitted by the glazing contractor to the structural silicone manufacturer. All materials that comprise the structural silicone joint, such as the framing system (with the job-specific finish) and job-specific glass must be tested by the structural silicone manufacturer for compatibility and adhesion. All other accessory materials in contact with the structural silicone, such as setting blocks, spacers, gaskets, sweeps, air seals and expansion joints, must also be submitted to the silicone sealant manufacturer for compatibility testing.

To ensure that nothing has changed in formulation or chemistry since the initial tests, subsequent testing during periodic time frames of the project is to be conducted to confirm continued acceptance of the material for use on the project. To ensure the structural performance and integrity of the insulating glass unit (IGU), the glazing contractor must submit the project shop drawings to the glass fabricator to obtain approval for use of their product(s) in any 2, 3 or 4-sided SSG applications.

Quality control procedures for field glazing are to be increased beyond those required for shop glazing. Job conditions will normally have dust, dirt, and other construction debris on the surfaces where structural silicone is to be applied. Great care should be exercised in cleaning and preparing these surfaces for silicone application. The recommendations of the silicone sealant manufacturer are to be strictly enforced and followed. The fabrication and installation of the SSG system and its components, whether shop or field glazed, should be governed by a quality control program, and all steps, procedures, and test reports should be documented throughout the project.

Prior to installation of any SSG system, refer to industry documents (e.g., AAMA Curtain Wall Design Guide Manual, ASTM C1401-14, and AAMA SSGDG-17) for detailed instructions and recommendations.

THE GLAZING CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ENSURING COMPLIANCE WITH THE ABOVE AND ASSUMES FULL LIABILITY FOR ANY ISSUES ARISING FROM NONCOMPLIANCE.

GLAZING PRACTICES

The air and water performance of the **Signature Series Unit Wall** system is directly related to the completeness and integrity of the installation process, including but not limited to the assembly seals of the framing joinery, the installed glazing gaskets, and the alignment of the framing joinery glazing plane. Before glazing, verify the glazing pocket width and glazing infill thickness, as both must be in tolerance to assure adequate edge pressure and to achieve the desired air and water performance levels. (In general, framing systems utilizing 1" insulating glass are designed to accommodate a thickness variance of +/- 1/32"). Note: Excessive pressure can cause glass breakage and/or IGU failure. Consult the glass manufacturer for their recommended edge pressure per lineal inch. To achieve the designed and tested air and water performance, best practices include:

1. Surfaces to be sealed should be cleaned with isopropyl alcohol or solvent and dried as recommended by sealant manufacturer to remove all dirt and cutting oils. Sealant at shear blocks should be a minimum 3/16" diameter nominal placed completely around the top, face and bottom of the shear block without gaps in the sealant. Exposed surfaces should be cleaned after installing the horizontal. Inspect joint for complete sealant contact, especially where the horizontal meets the face of the vertical member. Repair joint as required.
2. Glazing gaskets should be cut ¼" longer per foot, and lay flat, preferably for 24 hours.
3. Gaskets should be cut as single monolithic pieces and "crowded" during their installation to avoid corner gaps caused by post-installation relaxation.
4. The interior glazing gasket should be installed so as to avoid stretching, buckles, or tears.
5. Corners must be cut square, and at a slight angle when required to conform to the bevel on the intersecting gasket; sealed and butted together.
6. Gasket corner joinery must also be crowded, and sealant applied onto the gasket contact frame surface and into gasket reglet raceway where applicable.
7. Gasket corner seals are to be done just prior to installing glass, while the sealant is still wet and uncured, and ensure exterior gaskets are installed so as to place the glass into it's final in-service condition and allow the sealant to conform to optimum configuration. Note: If the sealant cures prior to glazing, the cured sealant could create excessive edge pressure onto the glass and has the potential to cause glass breakage.
8. The glass must be checked for squareness, size dimension, and thickness along the edges paying attention to any variances from center edge to corner edge.
9. Check the placement of the installed glass and verify there is proper edge bite into the pocket, and proper edge clearance from framing elements.
10. After sealant has set and a representative amount of the wall has been installed and glazed (250 square feet or more) run a water hose test in accordance with AAMA 501.2 specifications to check installation. On large projects the hose test should be repeated during the glazing operation. Consult and follow NGA's GANA Manual and FGMA Glazing Manual for proper glazing technique and procedure.

Vertical movement of mullion at intermediate floors requires special expansion joints and glazing materials. The system permit maximum +/-3/4" movement. For designs and applications that may require greater movement or special considerations, please contact your local Oldcastle BuildingEnvelope facility.

Variations on the details shown are inevitable and are not the responsibility of Oldcastle BuildingEnvelope when drawn by others. Oldcastle BuildingEnvelope strongly encourages its customers to utilize Oldcastle BuildingEnvelope® supplied calculations and shop drawings.

For Structural Silicone Glazing applications, the stress on the silicone should not exceed 20 PSI. Consult sealant manufacturer for specific applications to ensure proper loading on silicone joint. Alternate spacer gaskets are available to accommodate larger sealant contact widths. Consult your nearest Oldcastle BuildingEnvelope facility for assistance.

Consult glass manufacturer for correct setting block location and length for glass sizes in excess of 40 sq.ft.

BUILDING CODES

Oldcastle BuildingEnvelope® does not control the application nor selection of its product configurations, sealant, or glazing materials, and assumes no responsibility thereof. It is the responsibility of the owner, architect, and installer to make these selections in strict compliance with applicable laws and building codes.

PROTECTION AND STORAGE

Handle all material carefully. Do not drop from the truck. Stack with adequate separation so the material will not rub together. Store material off the ground, protecting against the elements and other construction hazards by using a well-ventilated covering. Remove material from package if wet or located in a damp area. For further guidelines consult AAMA publication CW-10 “Care and Handling of Architectural Aluminum From Shop to Site.”

CHECK MATERIAL

Check glass dimensions for overall size as well as thickness. Oldcastle BuildingEnvelope cannot be held responsible for gaskets that are not watertight due to extreme glass tolerances.

Check all material upon arrival at job site for quality and to determine any shipping damage.

Using the contract documents, completely check the surrounding conditions that will receive your materials. Notify the general contractor by letter of any discrepancies before proceeding with the work. Failure to do so constitutes acceptance of work by other trades.

Check shop drawings, installation instructions, architectural drawings and shipping lists to become familiar with the project. The shop drawings take precedence and include specific details for the project. The installation instructions are of a general nature and cover the most common conditions. Due to varying job conditions all sealant used must be approved by the sealant manufacturer to ensure it will perform per the conditions shown on the instructions and shop drawings. The sealant must be compatible with all surfaces in which adhesion is required, including other sealant surfaces. Use primers where directed by sealant manufacturer. Properly store sealant at the recommended temperatures and check sealant for remainder of shelf life before using.

FIELD CONDITIONS

All material to be installed must be plumb, level and true. Aluminum to be placed in direct contact with masonry or incompatible material should be isolated with a heavy coat of zinc chromate, bituminous paint or non-metallic material unless otherwise specified. After sealant is set and a representative amount of the wall has been glazed (250 sq. ft. or more), perform a water hose test in accordance with AAMA 501.2 "Field Check of Metal Storefront, Curtain Walls and Slope Glazing Systems for Water Leakage".

On large projects the hose test must be repeated during the glazing operation. Review anchors or embeds in structure as early as possible to confirm that 'as built' building structure can accommodate anticipated anchor tolerances.

CLEANING MATERIALS

Cement, plaster terrazzo, alkaline and acid-based materials used to clean masonry are very harmful to finishes. Any residue should be removed with water and mild soap immediately or permanent staining will occur. A spot test is recommended before any cleaning agent is used. Refer to the Architectural Finish Guide in the Detail Catalog.

EXPANSION JOINTS

Expansion joints and perimeter joints shown in these instructions and in the shop drawings are shown at nominal size. Actual dimensions may vary due to perimeter conditions and/or differences in metal temperature between the time of fabrication and the time of assembly/installation. For example, a 12-foot unrestrained length of aluminum can expand or contract 3/32" over a temperature change of 50 degrees F. Any movement potential should be accounted for at the time of the assembly and installation.

LAYOUT MULLION AND ANCHOR CENTERLINES

GENERAL NOTE:

FRAMES ARE INTENDED TO BE INSTALLED FROM LEFT TO RIGHT WHEN VIEWED FROM EXTERIOR.

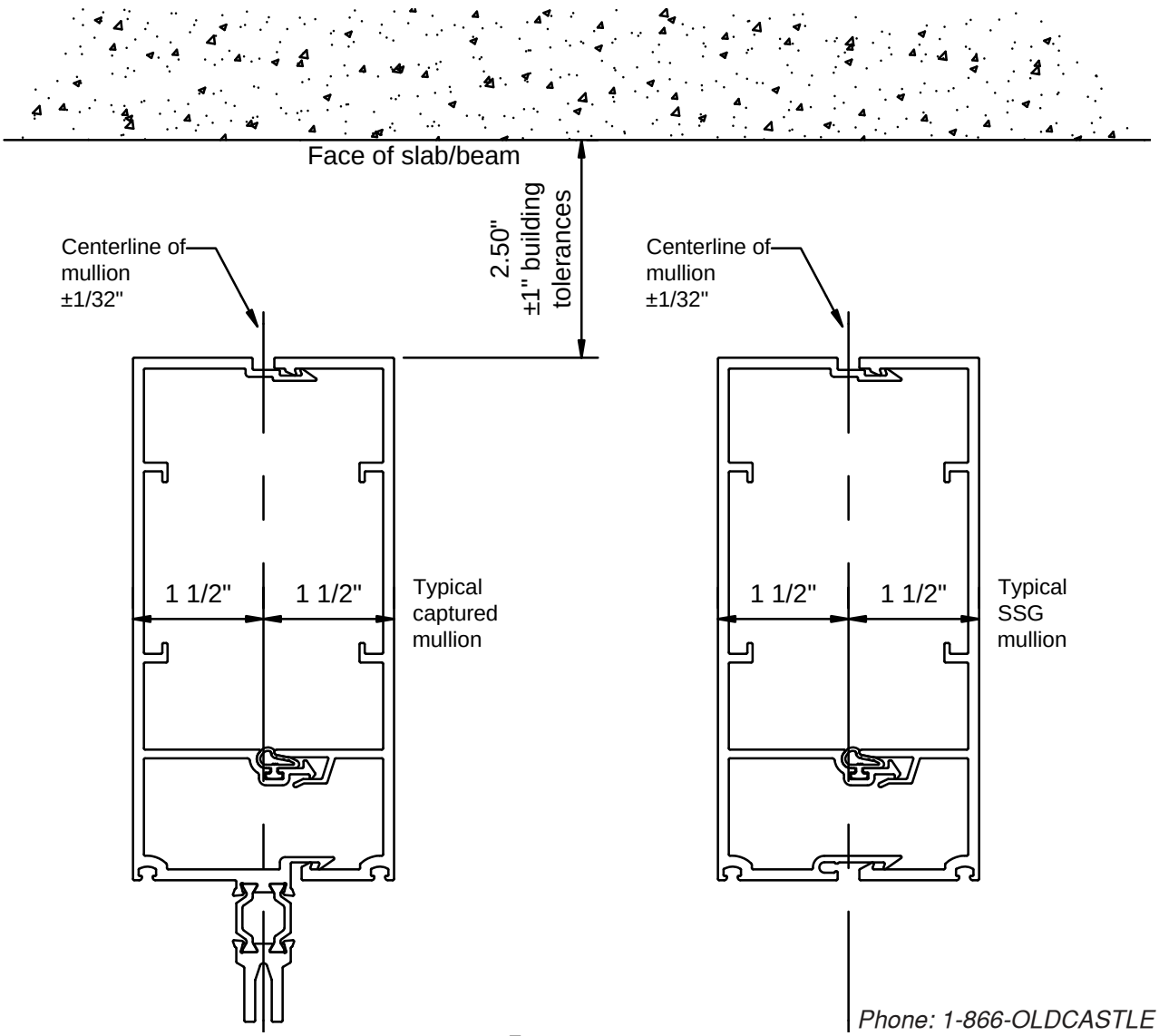
DETAILING IN THIS INSTALLATION MANUAL MAY VARY FOR SPECIFIC PROJECTS.

1. CHECK STRUCTURAL OPENING

Slab or beam elevation must be within adjustment of anchoring system.

Structural surfaces to receive anchoring system must be level and plumb within the adjustment limits at head, sill and jamb. See approved shop drawings for allowable adjustment.

2. LAYOUT MULLION AND ANCHOR CENTERLINES



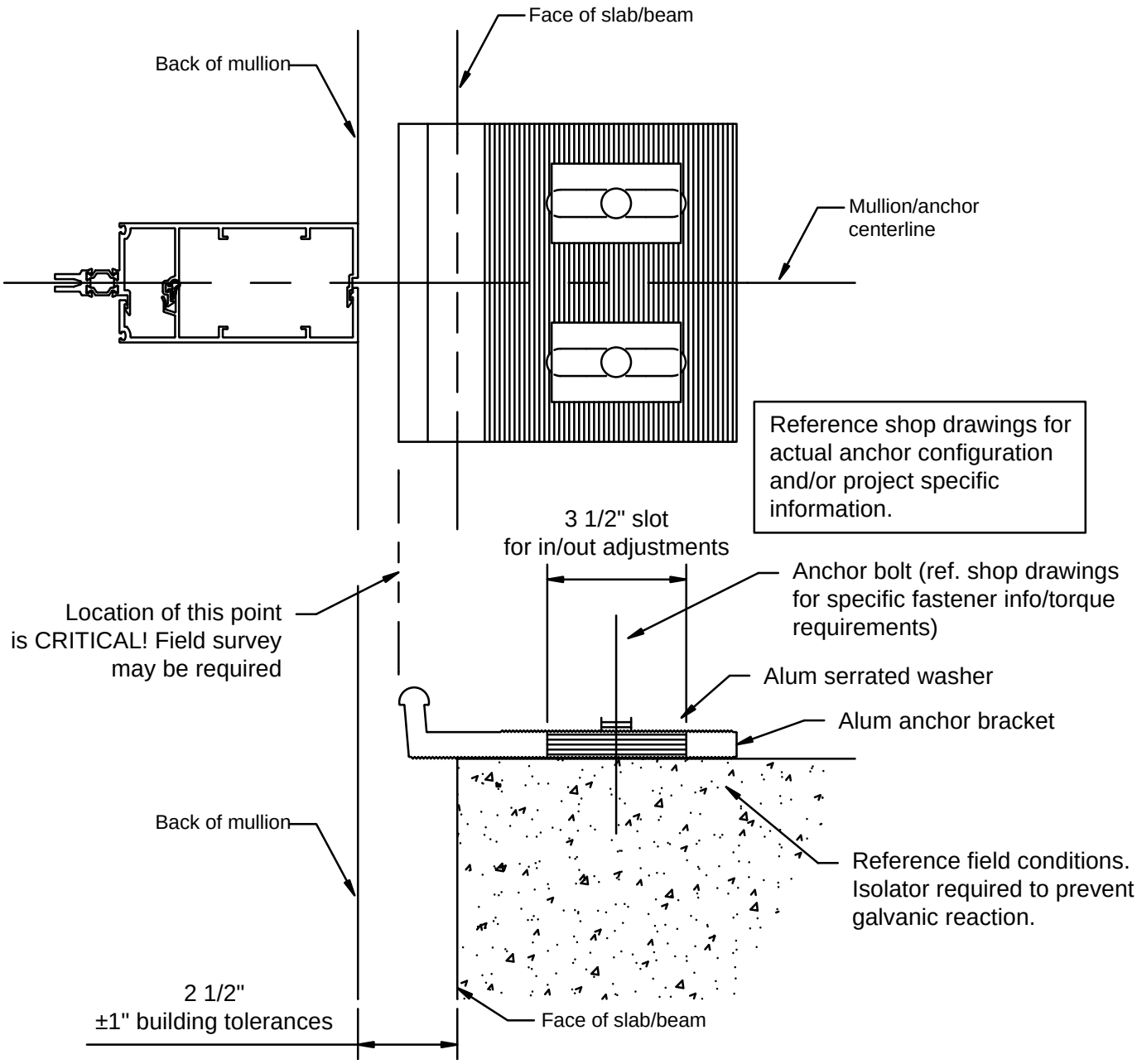
LOCATE AND INSTALL ANCHORS

1. LOCATE AND INSTALL ANCHORS

See approved shop drawings for anchor types and locations.

Locate centerline of aluminum anchor at the mark for centerline of mullion.

Adjust alum anchor bracket for in and out. Apply aluminum serrated washers. Make final in and out adjustment prior to tightening the anchor bolt in place.

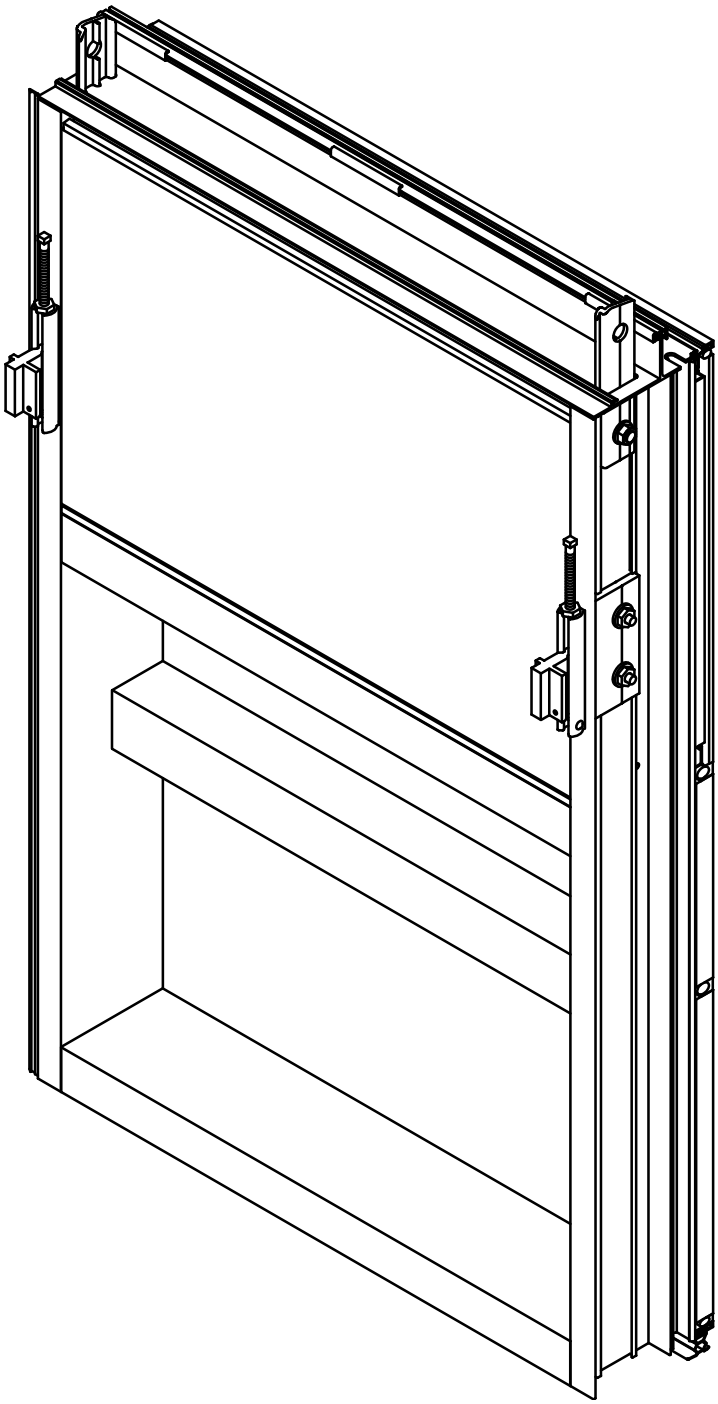


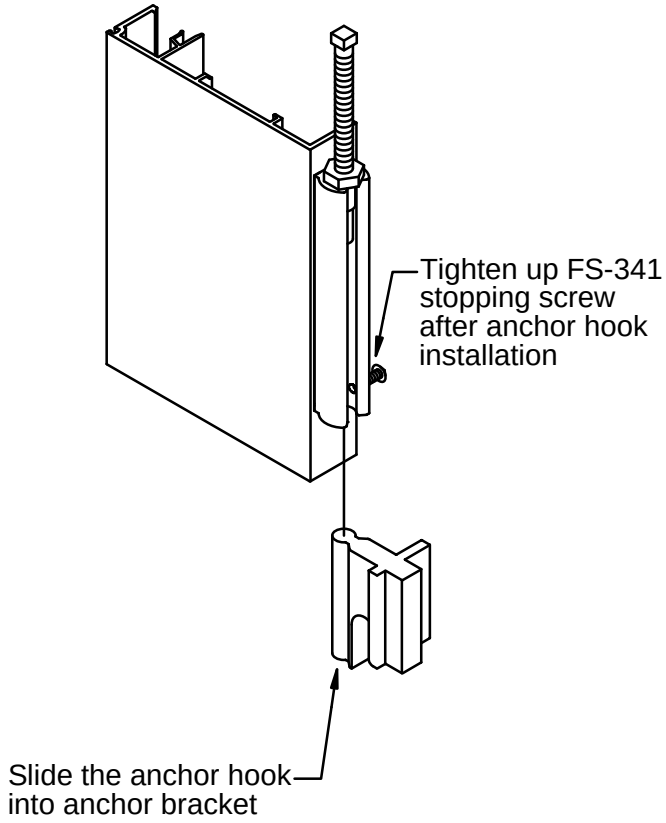
INSTALL ANCHOR HOOKS

1. INSTALL ANCHOR HOOKS

Back off FS-341 stopping screw at the bottom of the anchor bracket, slide in the anchor hook.

Tighten up FS-341, the screw is to prevent anchor hook from sliding out of the anchor bracket during frame installation.





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HOISTING FRAMES

SAFETY PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE INSTALLER. OLDCASTLE BUILDINGENVELOPE® ASSUMES NO RESPONSIBILITY FOR PROJECT SAFETY PROCEDURES.

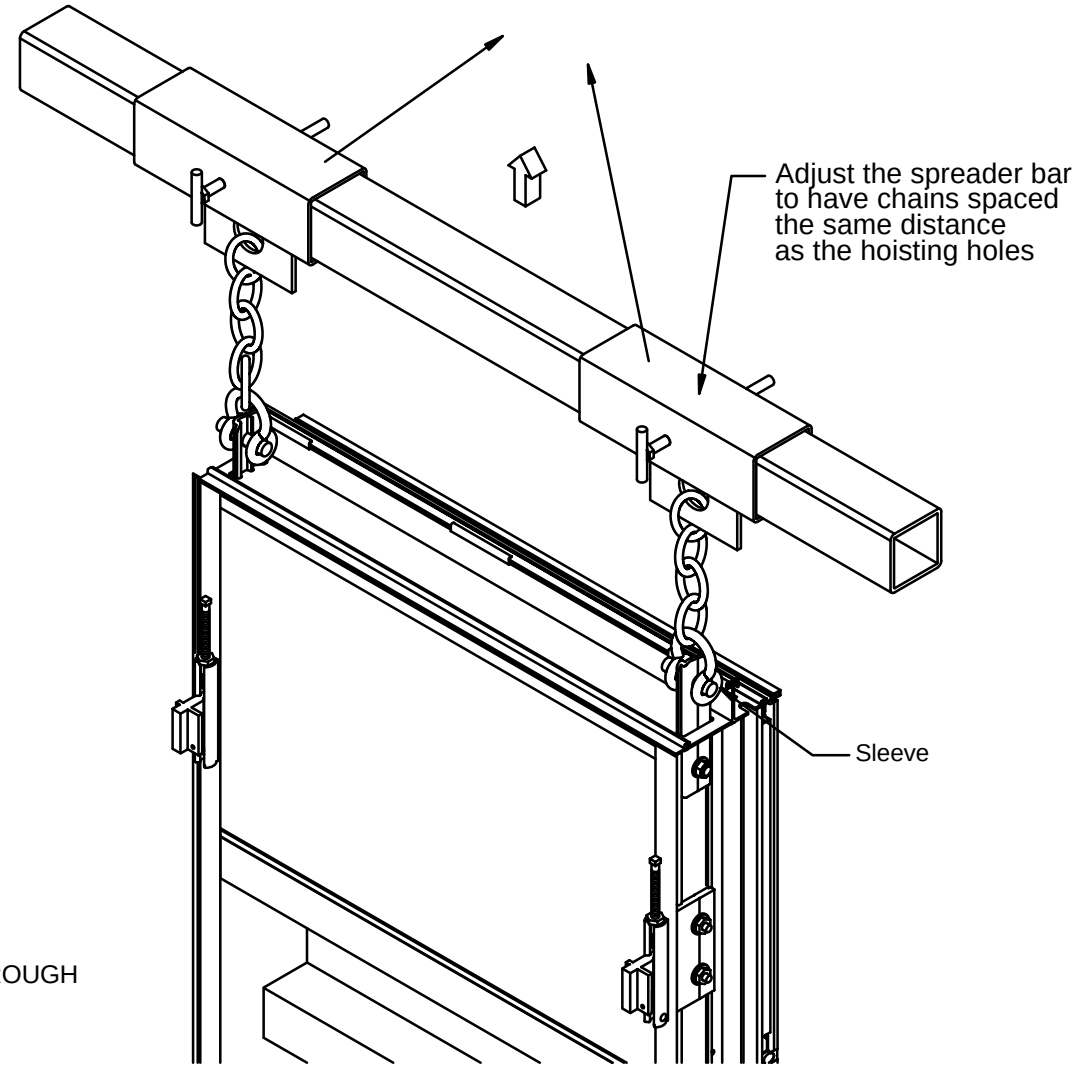
1. HOISTING FRAMES

Frames can be hoisted either through anchor lugs (shear angle) installed in frame head horizontals or through sleeves attached to the mullion halves.

Inspect frames prior to hoisting. For illustration purposes only, a spreader bar is shown as a hoisting device. Other lifting devices can be used. Means & methods are the sole responsibility of the installler. The spreader bar chains should be spaced the same distance as the distance between hoisting holes in head horizontal or hoisting holes on sleeves. Maximum frame weight to be less than 1500 pounds.

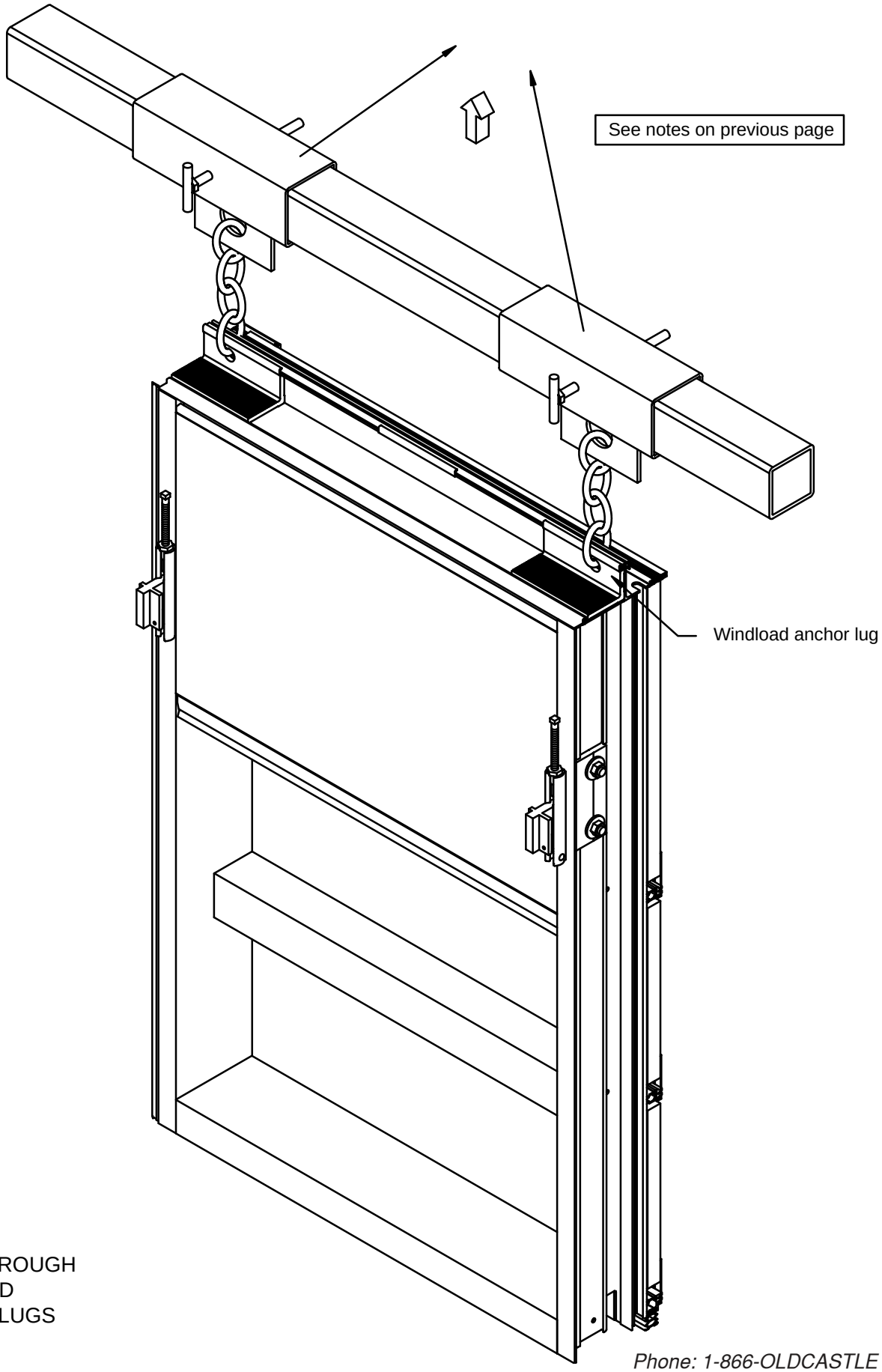
Handle frame to hoist smoothly and in a controlled manner, no swinging or spinning allowed during hoisting. Avoid shock loads.

Spreader bar should indicate hoisting configuration depending on frame weight. Ensure hoisting bar is rated for frame weight configuration as required.



HOIST THROUGH SLEEVES

HOISTING FRAMES



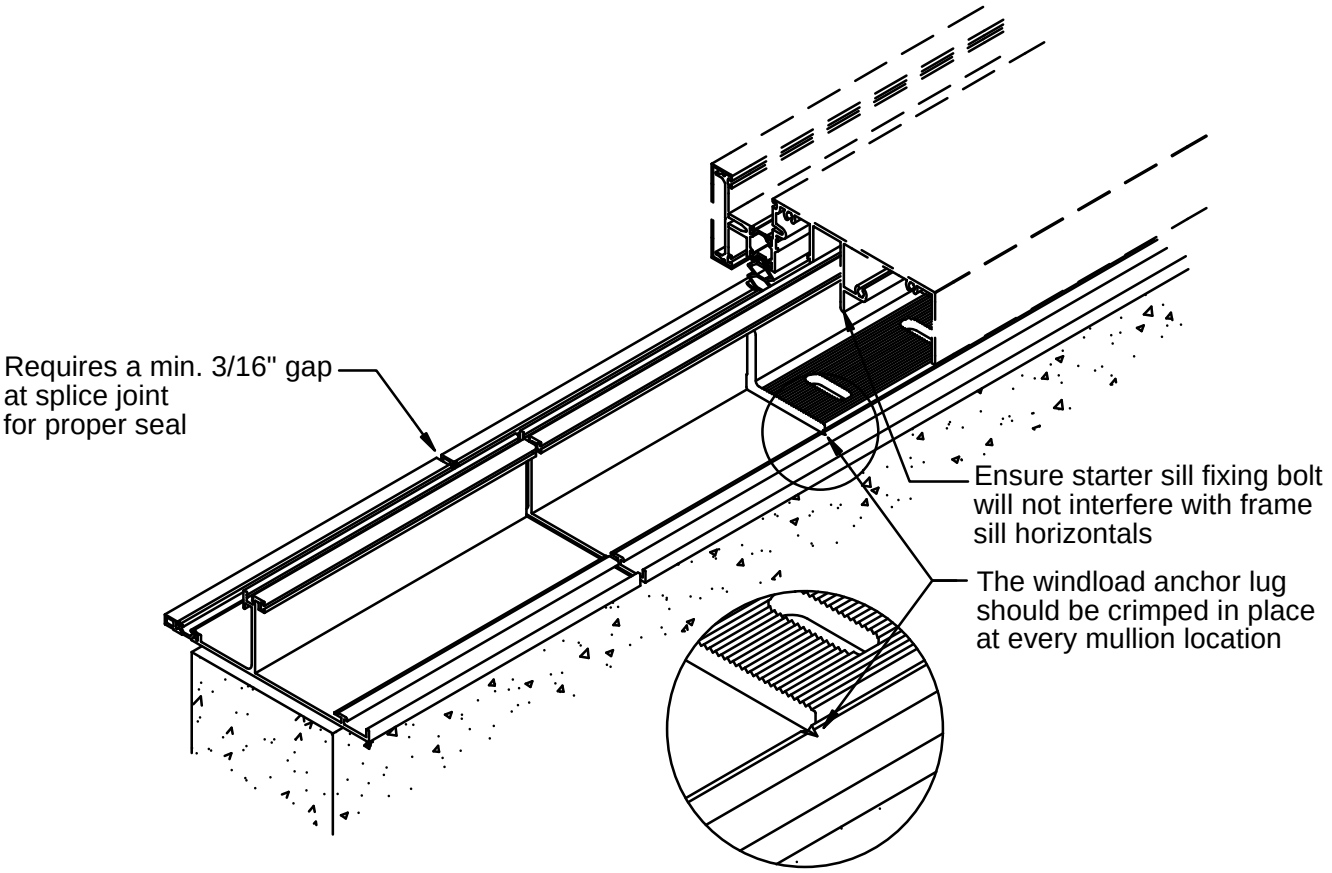
HOIST THROUGH
WINDLOAD
ANCHOR LUGS

STARTER SILL CONDITION

1. INSTALL STARTER SILL

Locate starter sill per approved shop drawings. The starter sill must be level and straight. The starter sill should run continuously across elevation, whenever the splicing is necessary, a min. 3/16" gap should be left for proper seal in-between starter sills.

Install windload anchor lug at each mullion location, crimp the windload anchor lug in place on starter sill. Install starter sill fasteners. Ensure fastener heads will not interfere with frame sill horizontals. Seal over all fastener heads and tool sealant.



2. CHECK AND PROPERLY LOCATE PVC SPACERS

The 4" long V927 rigid PVC spacers should be pre-assembled on each starter sill. Three pieces of PVC spacers are required per module. One should be located at center of the module, two other pieces should be located at each mullion location.

3. PROPER SEAL AT STARTER SILL

Clean and prepare substrates for sealing per sealant manufacturer's recommendations. Apply backer rod and perimeter seals under starter sill. Tool sealant. Apply sealant at splice joints. All splice joints should be sealed from the drainage hole on the starter sill to the top of the upturned leg. Connect sealant at underside of starter sill with sealant at splice joint. See illustration on p.11.

Apply sealant at outer surface for approximately 1" on each side of the joint as shown; set 1-1/2" wide by 3" long silicone sheet on top of the silicone sealant.

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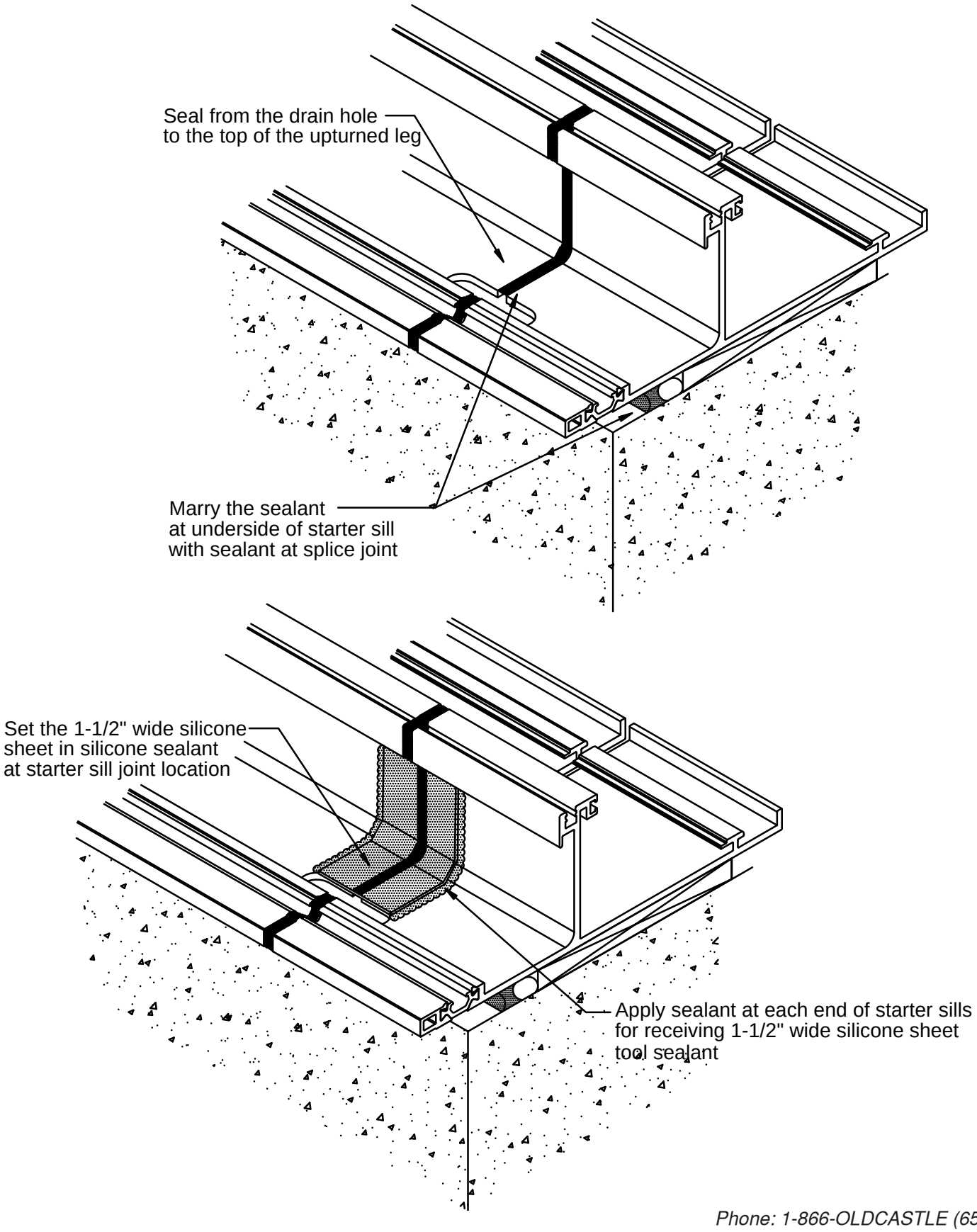
STARTER SILL CONDITION

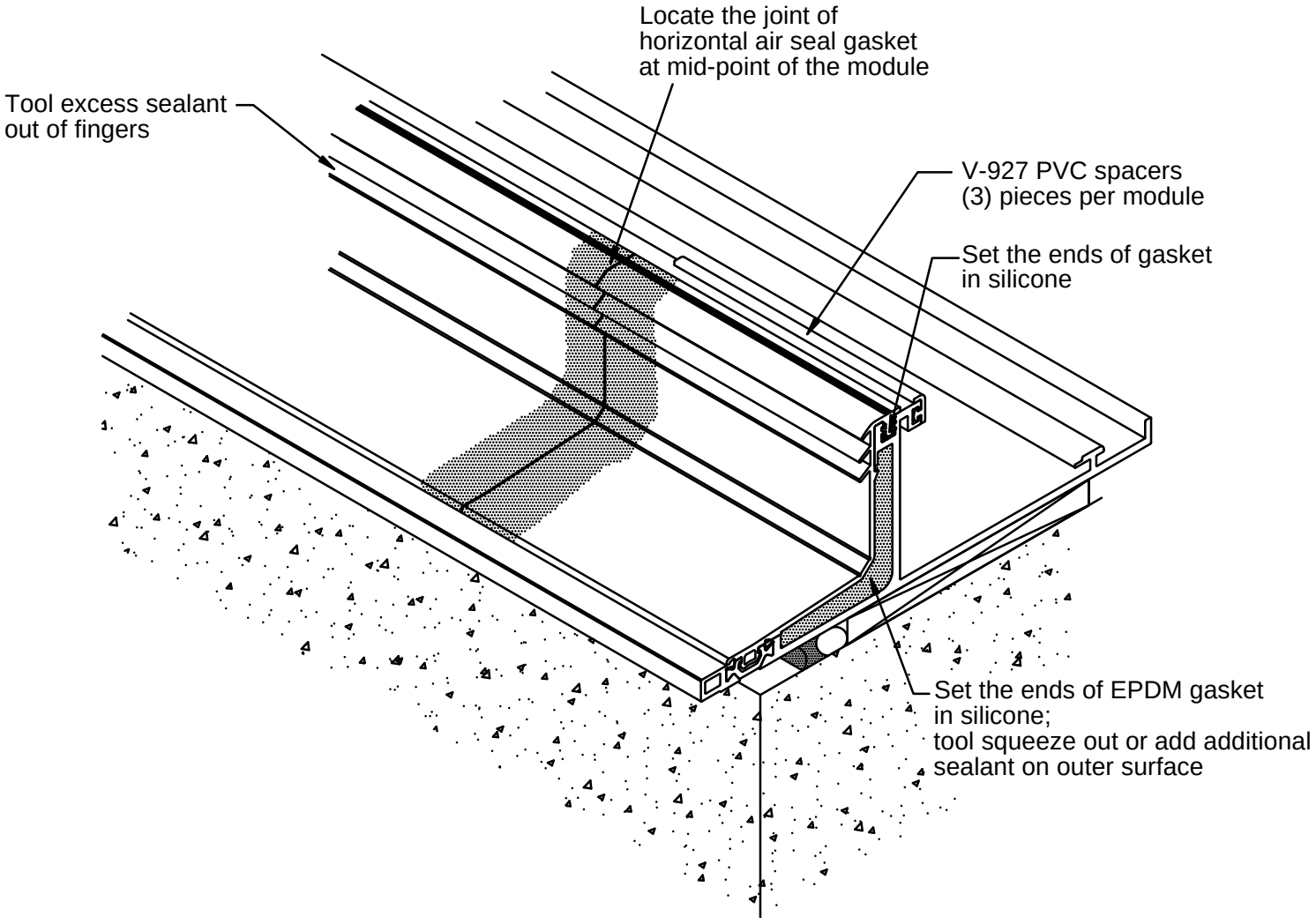


STARTER SILL CONDITION

4. INSTALL HORIZONTAL AIR SEAL GASKET

Clean areas to receive sealant as per sealant manufacturer's recommendations. Install horizontal air seal gasket GP-50041 into starter sills continuously across elevation. Where splicing is necessary, locate the joint at mid-point of the module, apply bead of sealant to set the ends of gasket in place. Tool squeeze out sealant.

Note silicone must adhere to EPDM gasket e.g. Dow 756 silicone sealant. Ensure fingers of horizontal air seal gaskets are not filled with silicone as this will hamper frame installation.



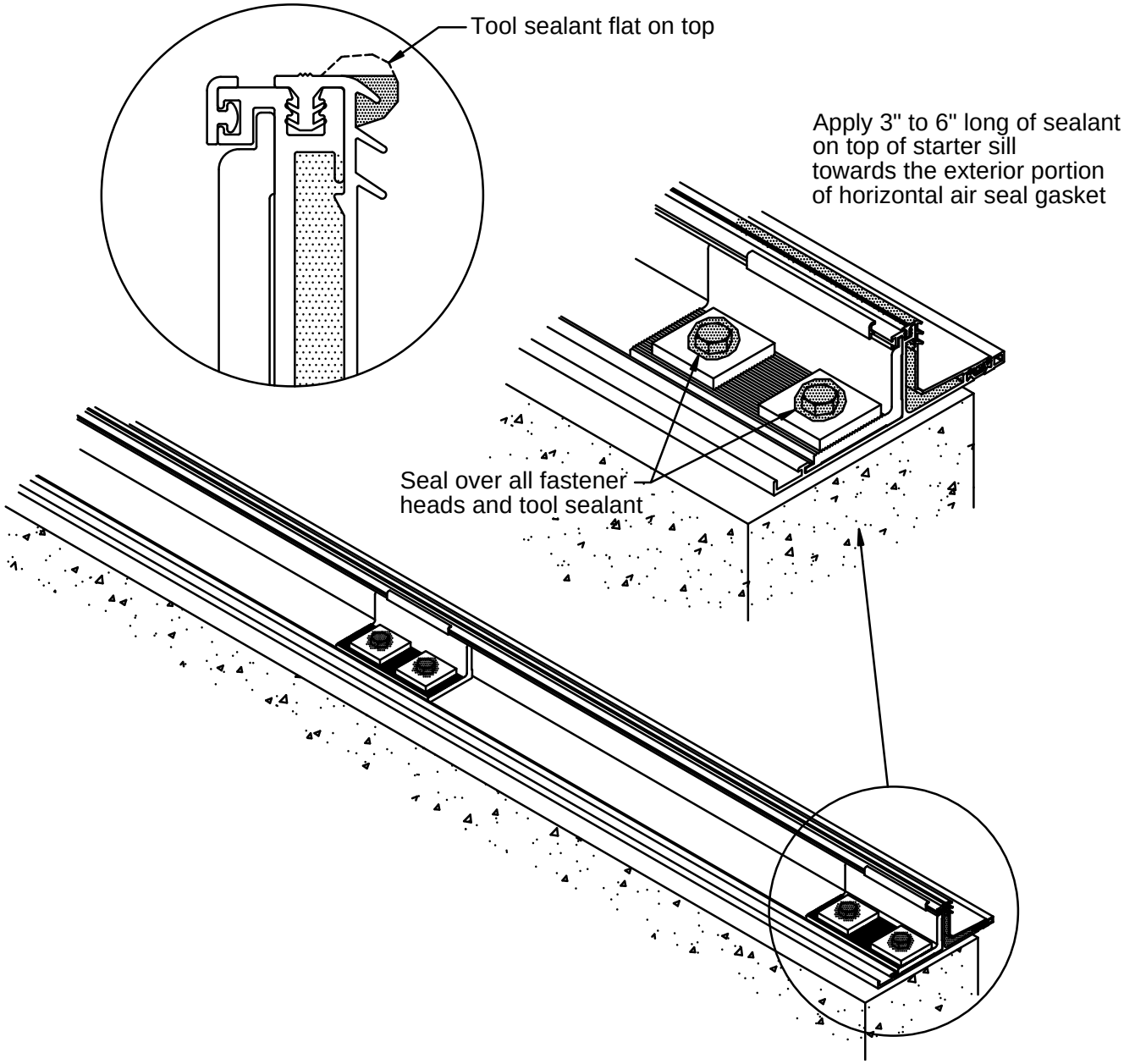
INSTALL GROUND FLOOR FRAMES

1. INSTALL THE FIRST FRAME

Frames are installed from left to right and from bottom to top.

Before proceeding to installing first frame, check all starter sill joints to make sure they are properly sealed and horizontal air seal gaskets have been applied.

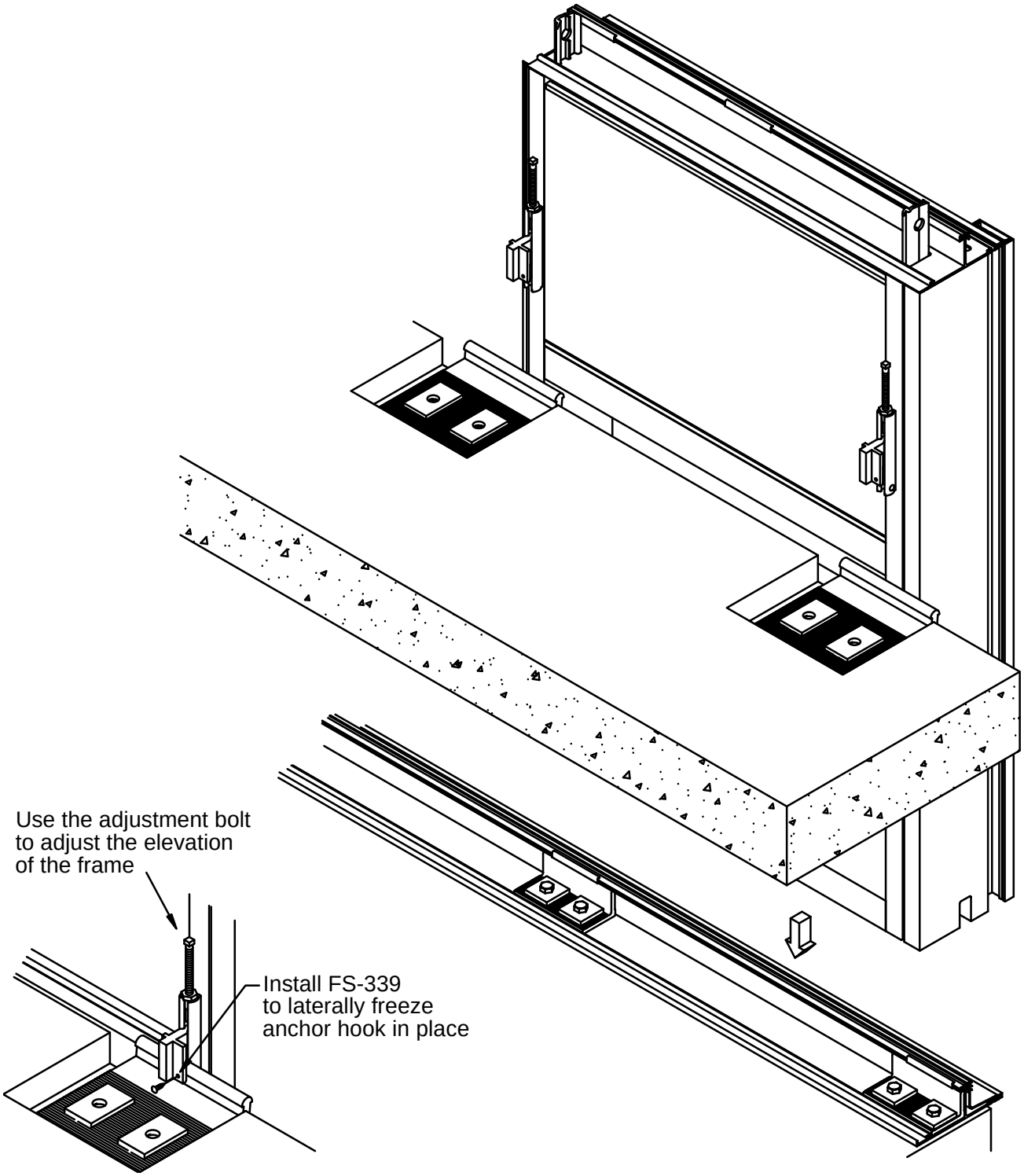
Apply 3" to 6" long silicone sealant towards exterior portion of the horizontal air seal gasket on top of starter sill at each end, flatten the sealant at top. Do not allow sealant to skin before installing frame.



INSTALL GROUND FLOOR FRAMES

Install the first frame by lifting the frame over starter sill and lower the frame down and rest the anchor hook on pre-set alum anchor at slab/beam.

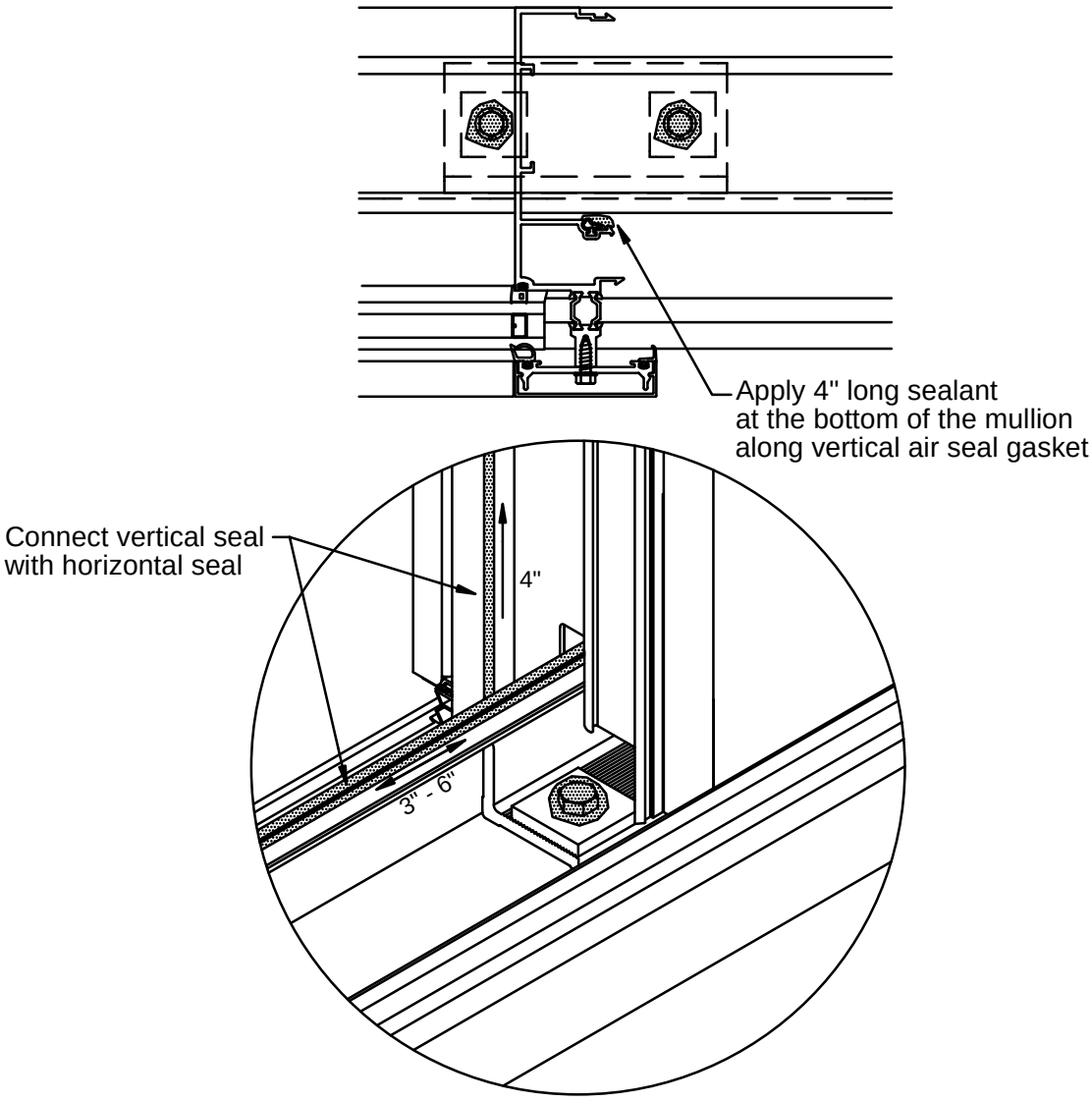
Use the adjustment bolt on anchor bracket to adjust the elevation of the frame. Adjust the elevation of the frame to make sure the frame is level, plumb and at the correct height. After adjustment, freeze the anchor hook for lateral movement by installing FS-339 #10 by 1/2" hex head screw. Use metal shims if necessary to maintain the nominal distance between bottom of the mullion and top of the starter sill. Remove shims after adjustment for slip anchor condition at ground floor.



INSTALL GROUND FLOOR FRAMES

2. INSTALL ADJACENT FRAMES AT GROUND FLOOR

Just prior to installing the next frame, apply sealant at the bottom of the first frame up vertical air seal gasket GP-50001 for approximately 4" long above horizontal air seal gasket. Connect the vertical seal with the horizontal seal which was previously applied on top of the starter sill. Do not allow sealant to skin before installing next frame.



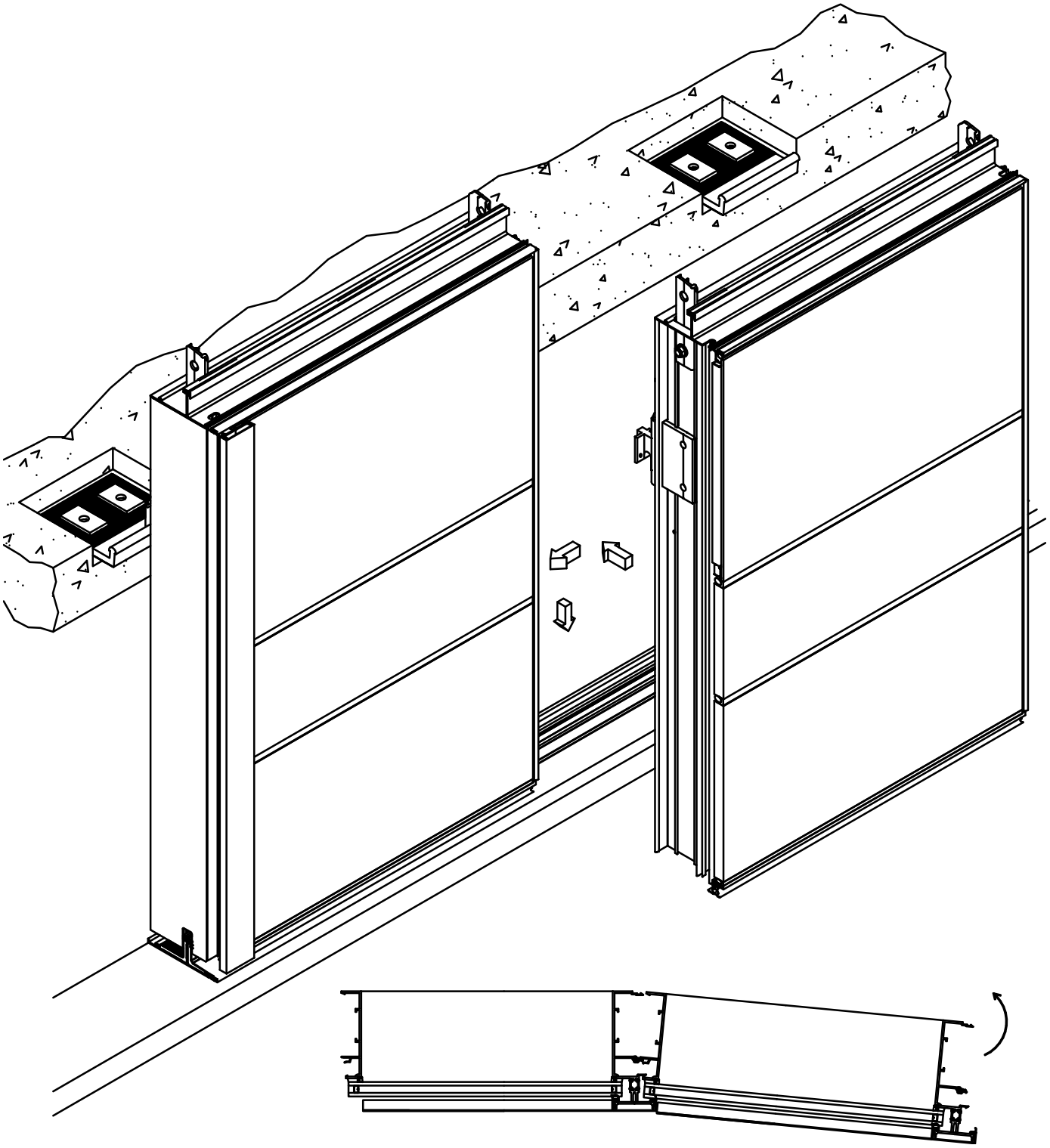
Install the next frame by lifting the frame up to clear the starter sill. Move the next frame to the left to engage the outer mullion hooks; then rotate the next frame towards building to snap inner hooks; once snapped, slide the next frame down to engage horizontal air seal at stack joint.

Again use the adjustment bolt to level the frame. Check and ensure vertical air seal gasket GP-50001 has not slid down in the gasket raceway in mullion.

Repeat in the same method for installing the rest of the frames at ground floor.

INSTALL GROUND FLOOR FRAMES

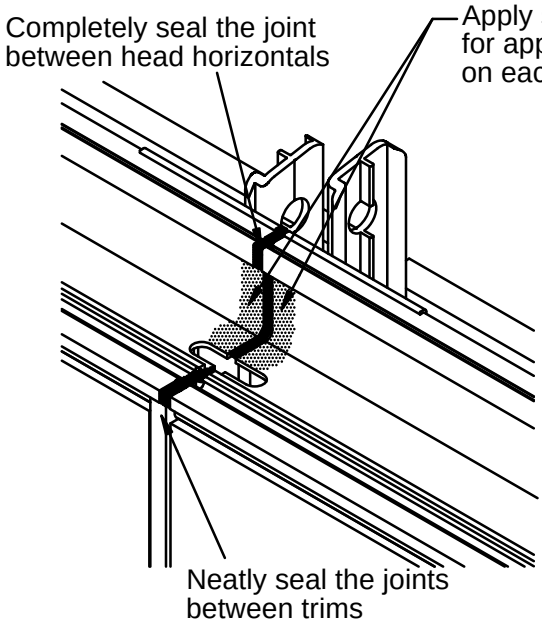
1. Lift the next frame up to clear the starter sill
2. Move to the left to engage the outer hook
3. Rotate the frame towards the building
4. Engage the inner hook
5. Slide the next frame down to engage horizontal air seal

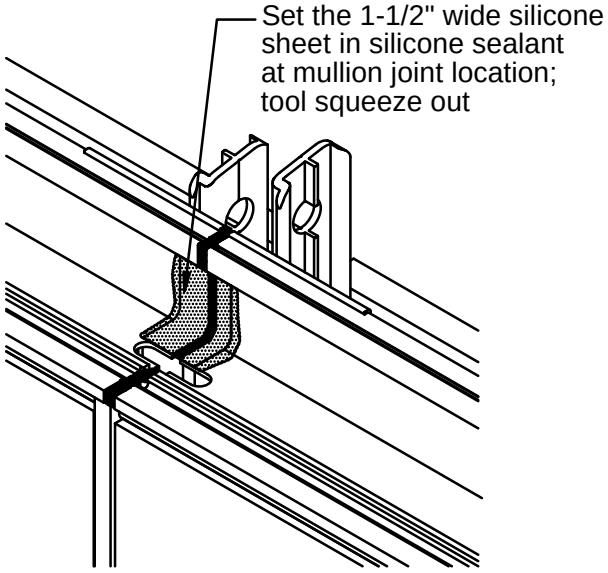


INSTALL UPPER LEVEL FRAMES

1. SEAL THE JOINTS

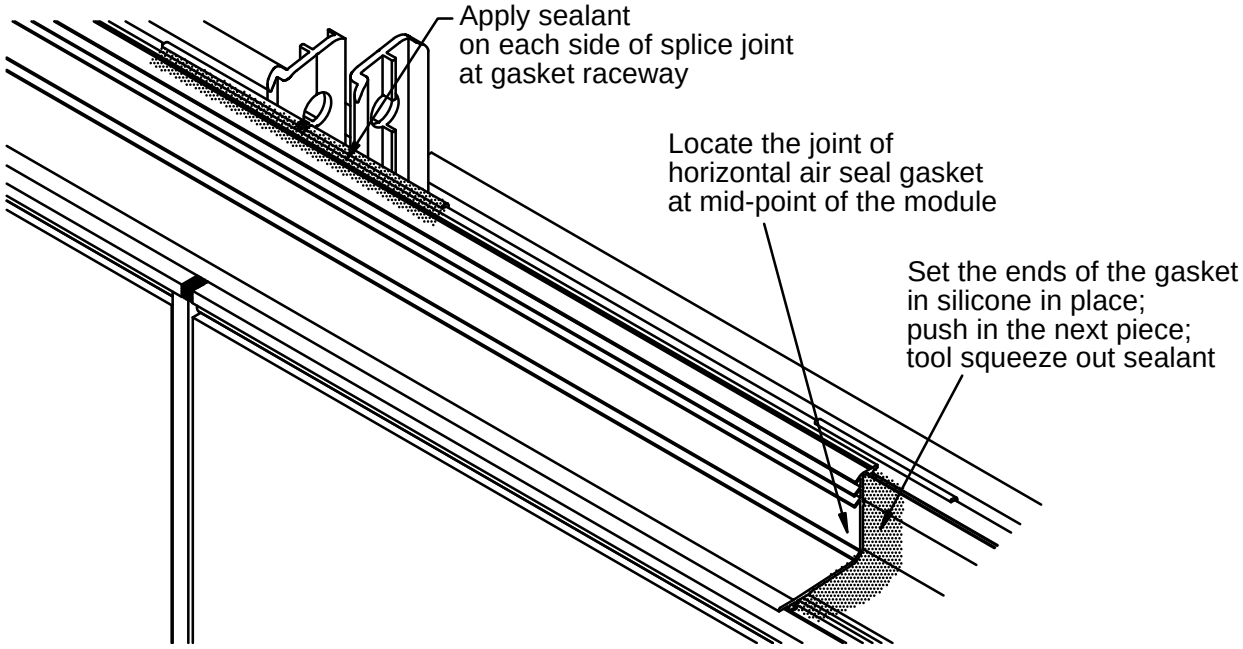
Clean and prepare the surfaces of the head horizontal at mullion joints per sealant manufacturer's commendations. Apply sealant completely along the entire joint between head horizontals; also apply sealant at front face for approximately 1" on each side of the joint as shown; set 1-1/2" wide by 2-5/8" long silicone sheet on top of the silicone sealant.





2. INSTALL HORIZONTAL AIR SEAL GASKET

Install horizontal air seal gasket GP-50041 into head horizontals continuously across elevation. Apply sealant for approximately 3" long on each side of the splice joint, push gasket into raceway, tool squeeze out sealant. Where splicing is necessary, locate the joint at mid-point of the module and apply bead of sealant to set the ends of gasket in place. Push in the next piece of gasket, tool squeeze out sealant and remove excess sealant from outer face.



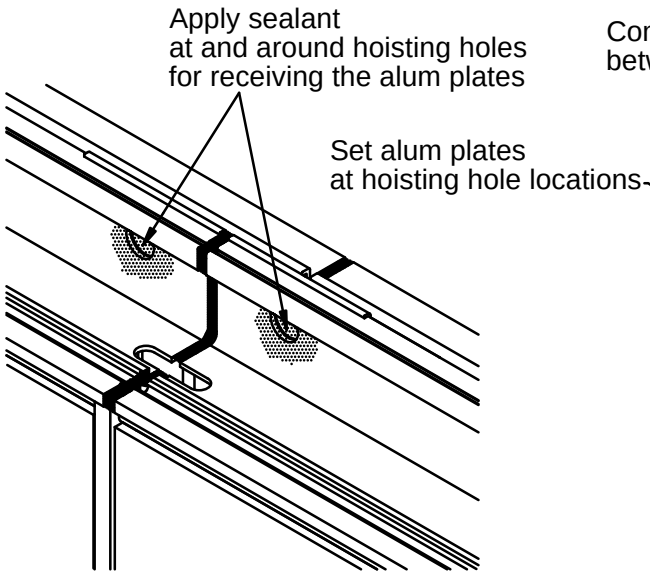
INSTALL UPPER LEVEL FRAMES

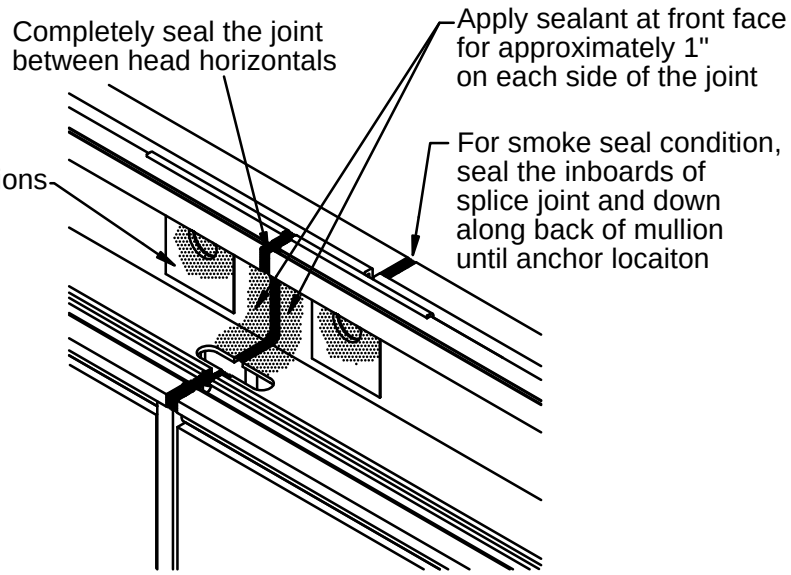
3. SEAL THE HOISTING HOLES FOR WINDLOAD ANCHOR LUG OPTION

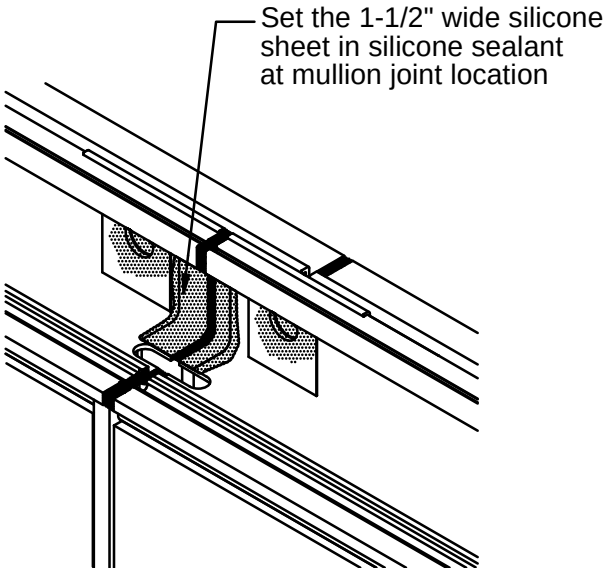
For frames with windload anchor lug (shear angle) option, clean and prepare the surfaces of the head horizontal at mullion joints; apply sealant completely along the entire joint between head horizontals; also apply sealant at and around hoisting hole, set 2" by 2" alum plate at hoisting hole location.

Similar to frames with sleeve option, apply sealant to outer face for approximately 1" on each side of the joint as shown; set 1-1/2" wide by 2-5/8" long silicone sheet on top of the silicone sealant.

Then install horizontal air seal gasket GP-50041 into head horizontals continuously across elevation. Where splicing is necessary, to locate the joint at mid-point of the module and apply bead of sealant and set the ends of gasket in place. Tool squeeze out sealant.







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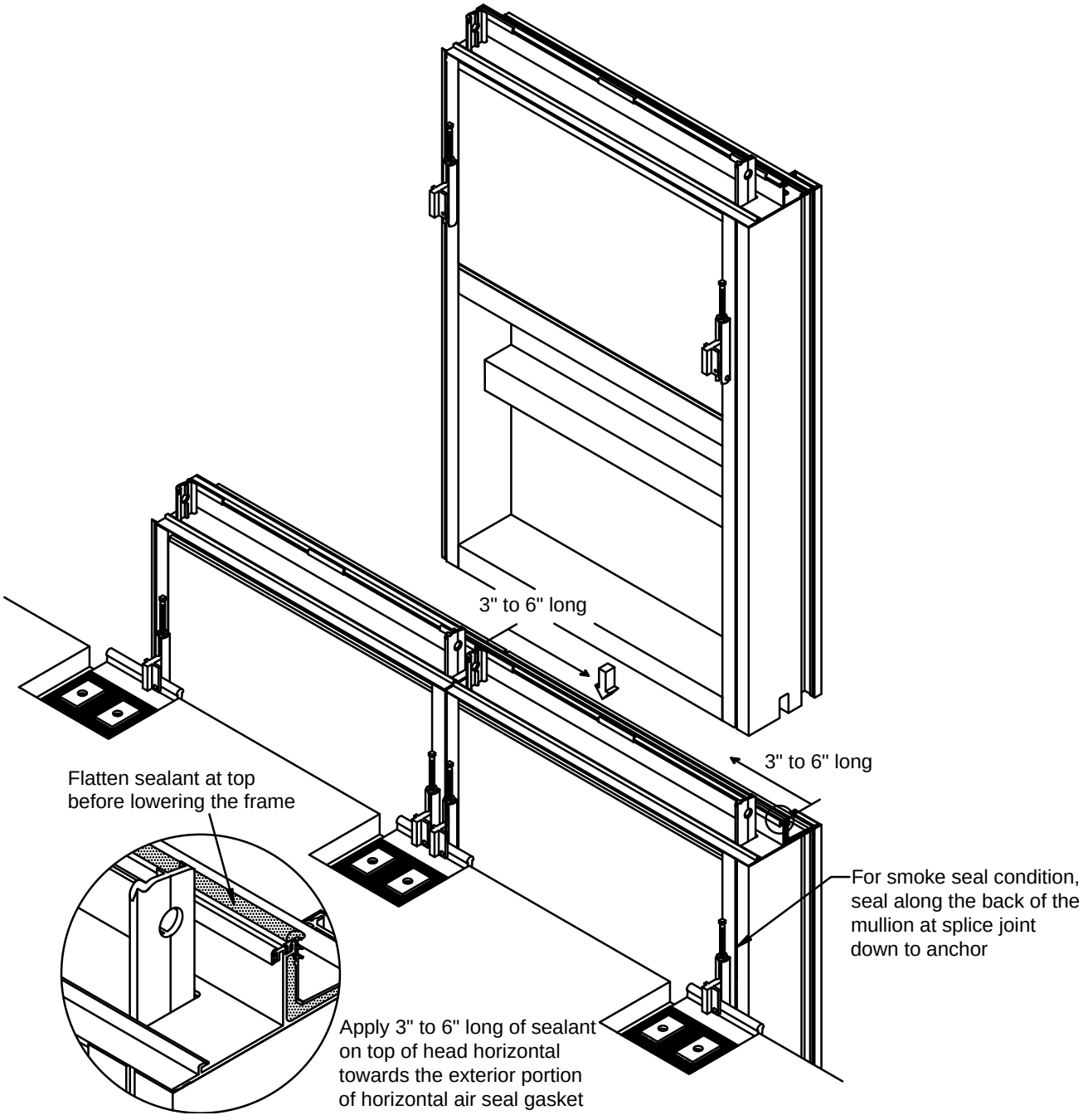
INSTALL UPPER LEVEL FRAMES

4. INSTALL FIRST FRAME AT UPPER LEVEL

Before proceeding to upper level, check all horizontal joints at lower level to make sure they are properly sealed and horizontal air seal gaskets have been applied.

Apply a 3" to 6" long bead of silicone sealant towards exterior portion of the horizontal air seal gasket on top of head horizontal at each end at the frame below, flatten the sealant at top; Install the first frame at upper level by lifting the frame over head horizontal and lower the frame down.

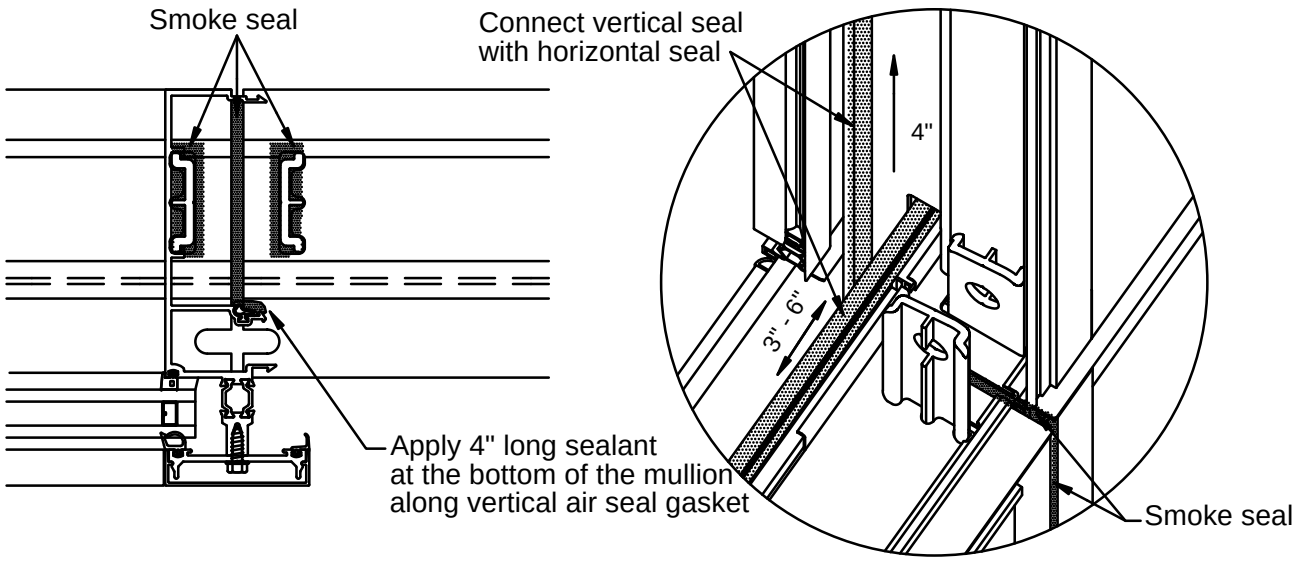
Use the adjustment bolt on anchor bracket to adjust the elevation of the frame. Use shims if necessary to maintain the nominal distance between bottom of the mullion and top of the head horizontal. Remove shims after adjustment.



INSTALL UPPER LEVEL FRAMES

5. INSTALL ADJACENT FRAMES AT UPPER LEVEL

Just prior to installing the next frame, apply sealant at the bottom of the first frame up vertical air seal gasket GP-50001 for approximately 4" long above horizontal air seal gasket. Connect the vertical seal with the horizontal seal which was previously applied on top of the head horizontal.



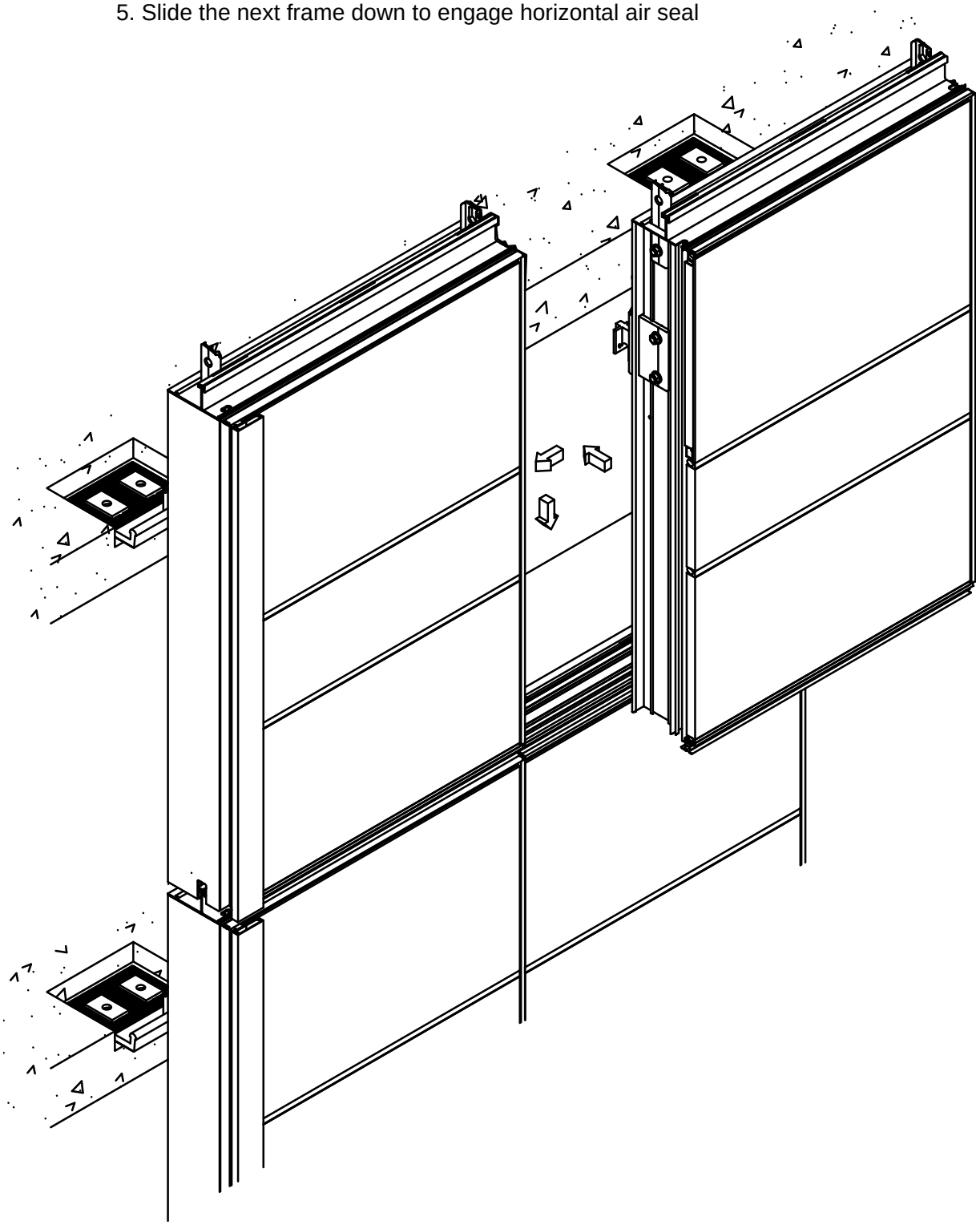
Install the next frame by lifting the frame 4" to 6" above previous frame to clear the sleeves and head horizontals. Move the next frame to the left to engage the outer mullion hooks; then rotate the next frame towards building to snap inner hooks; once snapped, slide the next frame down to engage horizontal air seal at stack joint.

Again use adjustment bolt on anchor bracket to adjust the elevation of the frame, then freeze the lateral movement by installing FS-339 screw on anchor hook.

Repeat in the same method for installing the rest of the frames.

INSTALL UPPER FLOOR FRAMES

1. Lift the next frame up to clear the sleeve
2. Move to the left to engage the outer hook
3. Rotate the frame towards the building
4. Engage the inner hook
5. Slide the next frame down to engage horizontal air seal



JAMB FRAME CONDITION

1. SEAL AT THE NOTCH ON JAMB MULLION

For jamb frames at expansion joints or starter sills, apply sealant at the notch on mullion above and below the expansion joint. Set 4" wide by 6" long silicone sheet in place.