

## Skylight Installation Instructions

This document provides instruction and guidelines for installation of both curb mount (CM) and self flashing (SF) unit skylights on flat, pitched (> or equal to 3/12 or 15 to 75 degrees), low pitch (< 3/12 or 5 degrees).

### In all installations:

- Safety must be the top priority when working on a roof.
- OSHA regulations for working more than six feet above a lower level must be followed. A fall of 6 feet can result in death.
- Always comply with all applicable codes.
- Installers should be trained, experienced and supervised.
- Proper preparation of the roof opening and curb is critical prior to skylight installation. The opening must be correctly dimensioned, square and flat (in one plane).
- Roof support structures must be adequate for supporting the curb or skylight with a means for anchoring the curb or skylight.
- If roof structural members require modification for skylight installation the installer should consult with a structural engineer prior to making any modification to ensure that the structural integrity of the roof will remain intact.
- Sealant used in the installation should be in compliance with the manufacturer's recommendation and/or AAMA's recommendation.
- Fasteners used in the installation should be in compliance with the manufacturer's recommendation and/or AAMA's recommendation.

### Safety is the Top Priority

- Know and follow all applicable OSHA standards and regulations.
- Wear proper eye protection.
- Good housekeeping is important in maintaining a safe work area.
- If rain or severe weather occurs work should be suspended until safe weather conditions return.
- Wind represents one of the most serious hazards during skylight installation. When lifted and held vertical to the roof surface a skylight can become a powerful sail in the slightest wind conditions. A 5 mph gust of wind on a 5' x 6' (30 square

foot skylight) is enough to knock a worker off their feet. A 10 mph wind gust on a 5' x 6' skylight develops a wind force of 270 lbs.

## Curb Mount (CM) Skylight Installation

- Curb mounted skylights are installed on either pre-manufactured or site built curbs which are provided separate from the skylight.
- If the skylight is wrapped in a protective film plastic or other material remove the wrapping so that the protective wrapping does not fuse to the skylight glazing under the radiant heat of the sun. If the protective wrapping is allowed to fuse to the glazing it is very difficult to remove without damaging the glazing. This is not covered by the skylight manufacturer's warranty.
- Skylights should never be set flat on the roof prior to installation. They must be set on blocks to provide air circulation. Skylights set directly on the roof surface can develop tremendous temperatures in a short period of time and the glazing may be damaged beyond repair. This is not covered by the skylight manufacturer's warranty.
- Prepare the roof opening per the manufacturer's dimensions. Most of the time the dimensions will be called out as both outside and inside curb dimensions (OCD and ICD) (See Figure 1.0). Remember to take into account the thickness of the curb. Most are 1.5" or 2" but they do vary.
- If any part of the roof structure requires modification to install curbs and or skylights the installer should consult with an engineer to review the proposed modification to ensure the modification will not disrupt the structural integrity of the roof.

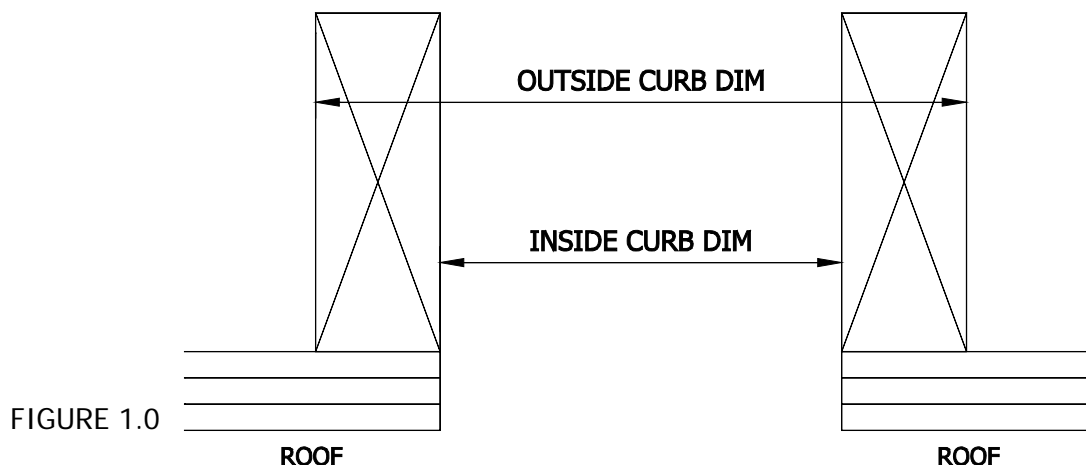


FIGURE 1.0

- Properly attach the curb to the roof deck or roof structure. Make sure the curb is square and provides the correct length, width and height for the skylight per plans, specifications and/or local building codes (height).
- After the curb installation is complete. Terminate the roofing in accordance with the roof manufacturer's instructions taking into consideration any special instructions by the curb or skylight manufacturer.
- Running the roof material up the side of the curb is common. Running or lapping the roof material over the top of the curb is not recommended (See Figure 2.0). This practice often creates an uneven surface for mounting the skylight resulting in a poor seal even with the application of a sealant bead on the top of the lapped roofing before installing the skylight. The result is often air and/or water leakage between the skylight and lapped roofing and curb to the interior of the building.

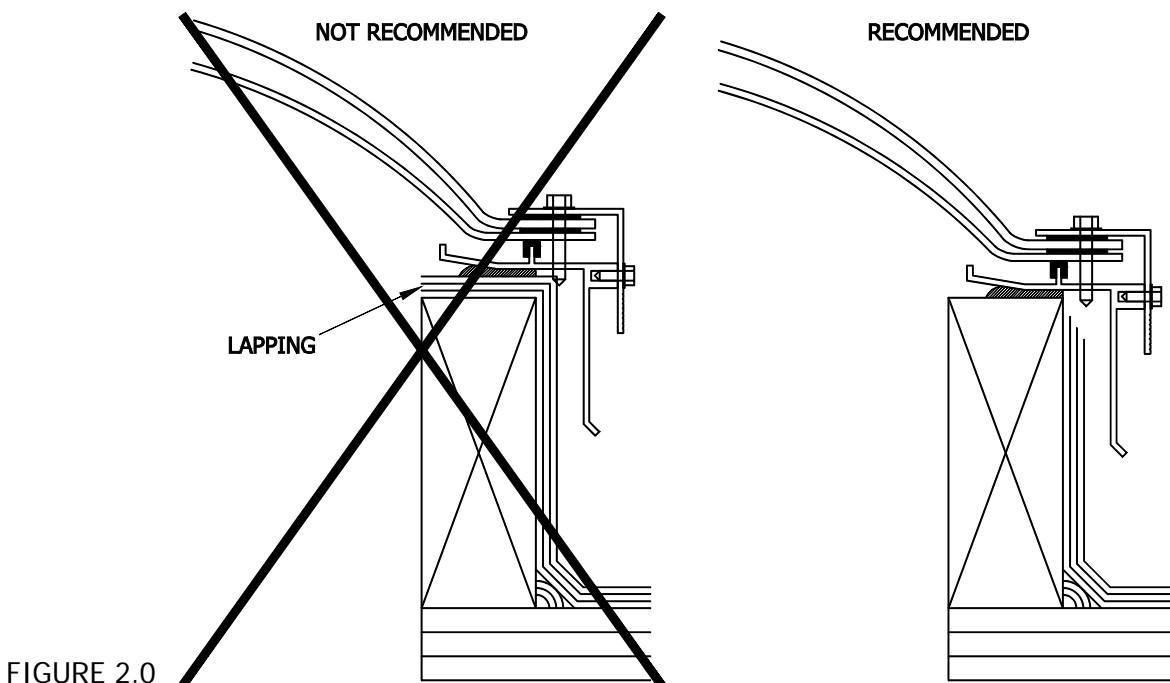


FIGURE 2.0

- Before setting the skylight on the curb run a minimal 3/8" sealant bead around the entire perimeter of the curb. It's advisable to keep the sealant about 1/2" away from both the inside and outside of the curb (See Figure 3.0). If the skylight has a factory installed curb mount seal tape on the underside of the frame (the surface that's mates with the top face of the curb) a sealant bead is unnecessary. Most curb seal tapes are closed cell urethanes measuring 1 1/2" x 1/4".

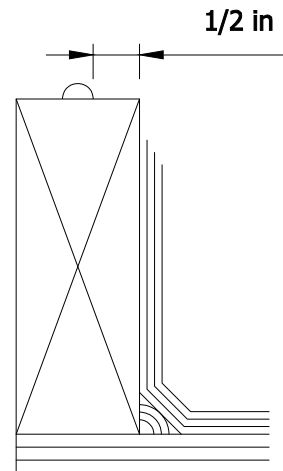


FIGURE 3.0

- Set the skylight on the curb. The skylight should have a loose fit over the curb. Most skylight manufacturers build their skylights to have a 1/2" to 3/4" clearance between the outside face of the curb and the inside of the skylight frame to provide for roof material termination between the outside curb face and inside of the skylight curb under the protection of the vertical leg of the skylight frame (See Figure 4.0).

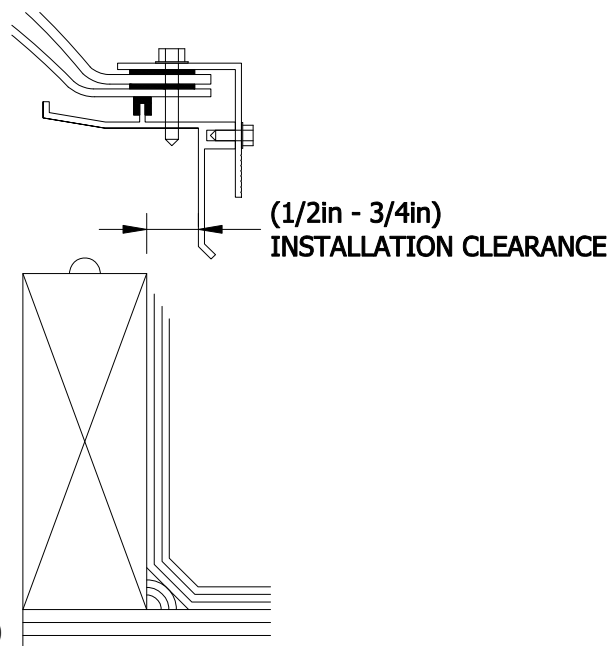


FIGURE 4.0

- Check to make sure the roofing material is not blocking the weep holes around the perimeter of the skylight. These weep holes are located under the skylight frame.
- Fasten to the skylight to the curb using appropriate type of fasteners for the curb material. Use all of the skylight manufacturer's predrilled holes for fastening the skylight to the curb. Failure to use all fastening holes may cause the skylight to be pulled off of the curb in high winds.
- Fasteners should be one of the following.
  - Cadmium Plated ASTM B 766, Class 8. Type II or Type III.
  - Zinc Plated ASTM B 633
  - Nickel & Chrome Plated ASTM B 456, Type SC
  - Austenitic Stainless Steel ASTM B 593 & B 594
- If optional roofing material termination bars supplied by the skylight manufacturer are used follow the manufacturer's directions and use all of the skylight manufacturer's predrilled holes for fastening the termination bars to the curb (See Figure 5.0).

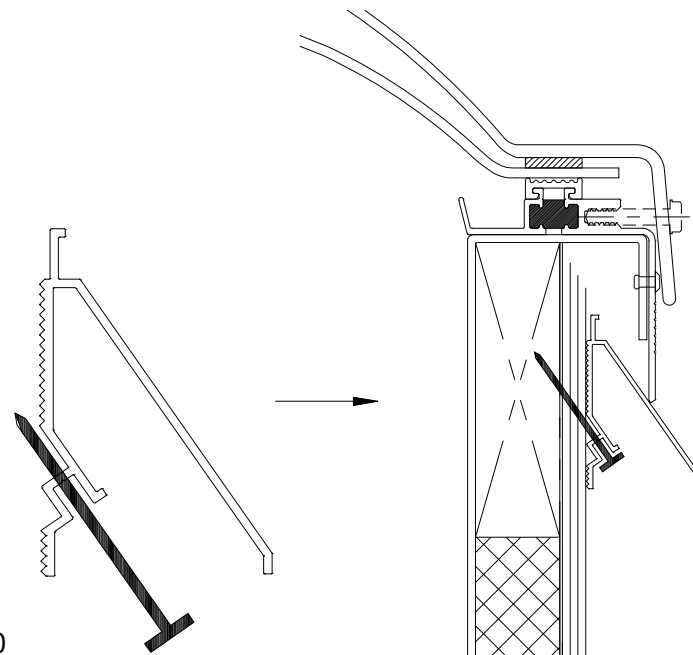


FIGURE 5.0

TERMINATION BAR

### **Sloped Roof Installations**

- If mounting on a sloped roof look for markings on the skylight that indicate which side of the unit should be positioned down slope.
- Rain and slush buildup is an important issue for skylights on sloped roofs. Most building codes require skylights to be a minimum of 4" above the roof.
- On low slope roofs at least 6" is recommended.
- On steep slope roofs a minimum 12" height above the roof is recommended and diverters should be used.
- On rectangular units and when possible it is recommended to install the curb and skylight with the short side of the unit running perpendicular to the roof slope. This decreases the linear area exposed to rain and slush build up.

### **Self Flashing (SF) Skylight Installation**

- Self Flashing skylights are skylights built with an integral curb. The skylight and curb is one unit manufactured by the skylight manufacturer. Their appearance varies as there are numerous options for curbs. Options include varying heights although 4", 9" and 12" are most common, single wall or double wall, insulated and non-insulated and roof flange widths although 2 3/4" is most common.
- If the skylight is wrapped in a protective film plastic or other material remove the wrapping so that the protective wrapping does not fuse to the skylight glazing under the radiant heat of the sun. If the protective wrapping is allowed to fuse to the glazing it is very difficult to remove without damaging the glazing. This is not covered by the skylight manufacturer's warranty.
- Skylights should never be set flat on the roof prior to installation. They must be set on blocks to provide air circulation. Skylights set directly on the roof surface can develop tremendous temperatures in a short period of time and the glazing may be damaged beyond repair. This is not covered by the skylight manufacturer's warranty.
- Prepare the roof opening per the manufacturer's dimensions. Most of the time the dimensions will be called out as both roof opening and inside curb dimensions (ICD) (See Figure 6.0).
- If any part of the roof structure requires modification to install curbs and or skylights the installer should consult with a structural engineer to review the proposed modification to ensure the modification will not disrupt the structural integrity of the roof.

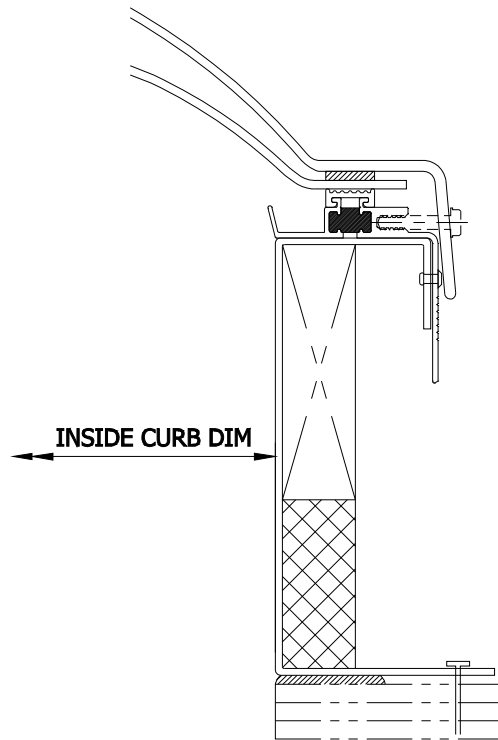


FIGURE 6.0

- Before setting the skylight on the roof deck or framing run a minimal 3/8" sealant bead around the perimeter of the roof opening. Keep the sealant about 1/2" away from the inside of the opening.
- Properly attach the unit to the roof deck or roof structure per plans, specifications and/or local building codes. When fastening the roof flange to the roof structure use the appropriate fasteners for the roof substrate (wood, aluminum, steel, concrete, etc.)
- Use all of the pre-drilled roof flange attachment holes to ensure the unit is sufficiently fastened to resist wind uplift loads. If the unit does not have pre-drilled holes in the roof flange you should refer to ICC standard recommendations or match the roof flange fastener spacing to the spacing used by the skylight manufacturer on the above skylight frame and cap assembly.
- Fasteners should be one of the following.
  - Cadmium Plated ASTM B 766, Class 8. Type II or Type III.
  - Zinc Plated ASTM B 633
  - Nickel & Chrome Plated ASTM B 456, Type SC

- Austenitic Stainless Steel ASTM B 593 & B 594
- After the self flashing unit installation is complete terminate the roofing in accordance with the roof manufacturer's instructions taking into consideration any special instructions by the skylight manufacturer. Most skylight manufacturers build their self flashing skylights with a 1/2" to 3/4" clearance between the outside face of the curb and the inside of the skylight frame to provide for roof material termination between the outside curb face and inside of the skylight curb under the protection of the vertical leg of the skylight frame.
- After terminating the roofing material check to make sure the roofing material is not blocking the weep holes around the perimeter of the self flashing skylight. These weep holes are located under the skylight frame.
- If optional roofing material termination bars supplied by the skylight manufacturer are used follow the manufacturer's directions and use all of the skylight manufacturer's predrilled holes for fastening the termination bars to the curb.

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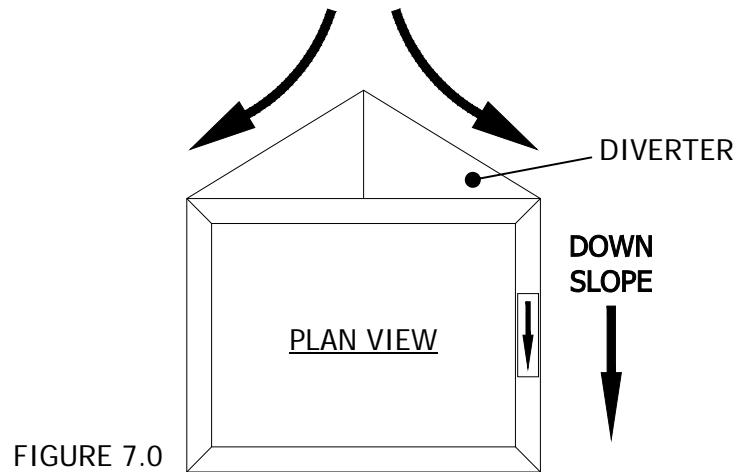


FIGURE 7.0

### Smoke Vent Installation Instructions

- Some vent installation instructions are the same as Curb Mount and Self Flashing skylights with two special issues that need attention.
  - Most manufacturers attach temporary shipping straps to the smoke vent doors which prevent them from inadvertently opening during shipping. These must be removed after installation of the smoke vent. Failure to remove these shipping straps will prevent the smoke vent from functioning as designed should it be needed.
  - **Safety Caution:** Do not stand over the smoke vent doors when the shipping straps are removed or during subsequent testing. Smoke vents are pre-loaded with high tension coil springs (See Figure 8.0). If an installer were to get struck in the upper torso or head by an opening smoke vent door the result could be serious injury or death.

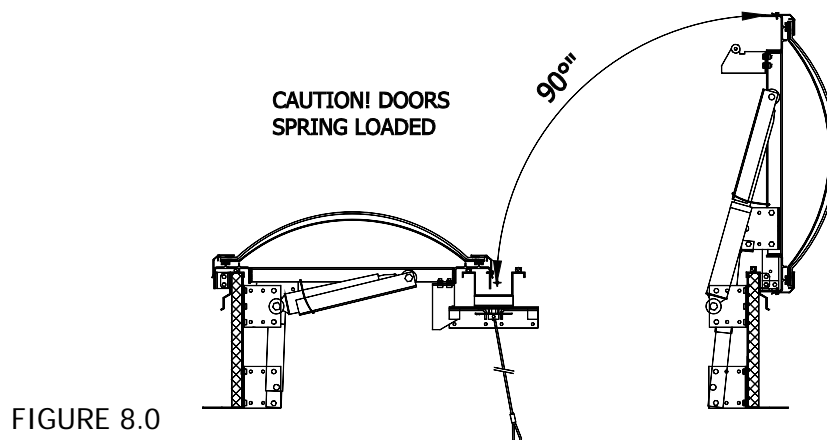
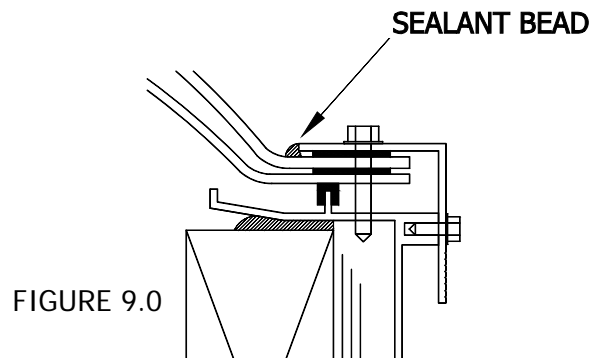


FIGURE 8.0

## Troubleshooting

### Leakage

- 1) Find the location of the leak.
- 2) If a CM skylight and leakage is below the skylight frame then the leak is likely in the roof and/or installation of the curb. If the leakage is in or around the skylight condensation gutter then the skylight frame and glazing should be checked.
- 3) If a SF skylight the procedure is the same as a CM skylight.
- 4) Skylight leakage is most commonly due to a) damaged glazing b) failure of the seal between the frame cap and glazing c) blocked or plugged weep holes. If the glazing is damaged contact the skylight manufacturer for replacement glazing. Most skylights can be re-glazed on the roof with the proper OEM parts and materials. If the weep holes are blocked or plugged correct the situation. If the problem appears to be the frame cap and glazing seal this can often be corrected by running a bead of all weather sealant around the perimeter of the joint where the frame cap and glazing meet (See Figure 9.0).

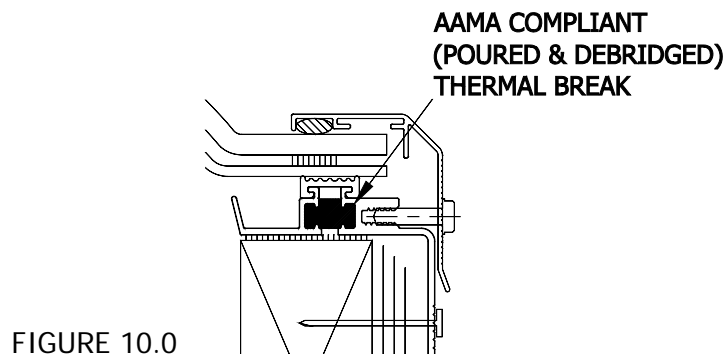


### Water Testing

- When water testing a skylight installation start at the roof level. Flood the roof area around the installation for 15 minutes or so. Roof leaks generally take time to show up. Always have a person inside the building that you can communicate with so you can determine when and where the leakage, if any, occurs. If there is no leakage from flooding the roof gradually work your way up the curb and eventually to the skylight.

## Condensation

- If the skylight was properly designed, built, specified and purchased for the site's ASHRAE (climate conditions) condensation should not be an issue. Most skylights installed on buildings with heated and/or air conditioned interiors will be double glazed which in itself reduces the potential for condensation. Additionally, well designed skylights will utilize an AAMA compliant (poured and debridged) thermal break which completely separates the exterior skylight frame from the interior skylight frame (See Figure 10.0). Some skylight manufacturers utilize thermal barriers designs that are not AAMA compliant and usually identify their designs as "insulated thermal break" or "thermalized". These designs may not be as effective in preventing condensation.
- If condensation occurs there are a number of things you can do to eliminate or reduce the condensation.
  - Make sure the skylight is properly sealed to the curb.
  - Reduce the interior building humidity.
  - Increase interior building air movement.
  - Insulate the interior skylight frame.



## Skylight Maintenance

- A well designed and built skylight will provide many years of useful service with nothing more than periodic cleaning. Periodic cleaning will help maintain the optical performance and extend the life of the glazing. Clean plastic and glass glazed skylights with mild dish soap and water only and a soft cloth or sponge. Take care not to use any material with abrasives or stiff bristles that could scratch the glazing. **NEVER** use chemicals of any type. Most cleaning chemicals

will attack the plastic and cause immediate and irreversible damage. This is not covered by the skylight manufacturer's warranty.