

Window Film Installation Guidelines

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Window Film Installation Guidelines

Section 1: Reviewing project scope with customer

Remember you only have one chance to make a good impression.

1. Reviewing the installation

- a. The installer should know:
 - i. What time the customer expects them;
 - ii. Directions and ample time to arrive punctually;
 - iii. Approximately how long the job may take;
 - iv. Any special obstacles that may require help or additional equipment;
 - v. Review notes taken from the initial site assessment and job estimates.
Consider any possible obstacles you may face such as moving furniture or needing a ladder for a tough window.

Reviewing the installation with the customer

When you arrive at the job site, introduce yourself to the customer with a smile and friendly greeting. Review the job with the customer by going over the windows to be tinted and looking for any issues that may have arisen since the estimate was prepared. Find out where your customer would like you to start. Begin by carefully moving furniture away from the windows you will be working on.

By doing the review with the customer you can make sure that the order and the work you will be doing meets their expectations.

If your company uses photos for various reasons, notify the customer that you will be taking them. If they are to be used for marketing purposes, have the necessary forms ready for the customer to approve and sign.

Section 2: Site Assessment

One of the most important elements to a successful window film application occurs before you touch your first tool. Performing an efficient and thorough site assessment can help avoid many potential problems and conflicts not to mention limiting your liability as a service provider. It is your responsibility as the professional to identify any issues or concerns before beginning the work and report your findings to your supervisor, building contact, or property owner. It is recommended you take photos of any concerning conditions with the glass itself or within the installation work area, especially if you are unable to report any findings prior to beginning the work.

INSPECTING THE GLAZING UNITS – Full evaluation of the glazing system including glass panes, seals, window frames, casings, all surrounding trim, moldings, and sill plates. It is important to determine if there are any pre-existing conditions that could impact your liability as an installer and the overall integrity of the finished window film installation.

1. Existing Window Film – Confirm there is no pre-existing window film on the glass before considering any new film installation. Check both interior and exterior surfaces.
2. Confirm Glass Construction - Window glazing units can be built in many different configurations and with various glass types. This is critical information to know as there is Film to Glass compatibility concerns when choosing film for a specific glass configuration. There are many inspection meters available to determine glass construction as per the attached videos. **(Check the window film manufacturer's recommendations before any installations are made)**
 - a. Single pane – A single monolithic pane of glass
 - b. Dual-pane – Two single panes of glass incorporated into the window unit with a 'spacer bar' in between creating an insulated air space
 - c. Low-e coatings – The presence of a Low-e coating and its location within the glass construction will directly impact the performance of the window as well as what film will be compatible to safely install on the glass. Check all recommended options with your window film manufacturer.
 - d. Tinted or clear – Determine if the glass is clear or has some level of color designed for glare control
 - e. Annealed or heat-strengthened – The most heat-strengthened or tempered glass will have a visible 'stamp' in one corner of the windowpane identifying the glass type. Tempered glass is required by code in most areas for entry doors and glass panes close to the ground floor. This is important to know as heat-treated glass will tolerate more absorption and expand the compatible and recommended window film options.
 - f. Laminated Glass – Two pieces of glass bonded together by a PVB layer creating safety glass that is held together should an impact occur. Laminated glass is used when there is a possibility of human impact or where overhead glass could fall if shattered
 - g. Wired Glass – Windows with embedded fine wire mesh used primarily for fire-resistant glass applications. Contrary to belief wired glass is not used for security purposes and can be very dangerous when impacted
3. Glass Integrity – Carefully inspecting the surface and construction of the glass for damage or imperfections is a critical step that should be confirmed prior to any window film application
 - a. Loose glass panes – If a glass pane is loose or can be moved in the frame it may be dangerous to the installer and pose a leaky environment that could negatively impact the film installation.



FREEZE SPRAY is great for testing windows for seal failure. Simply spray near the corner of a double pane or triple pane window. Wipe away the frozen layer from the first surface, and check to see if there is a buildup of frost on the other side of the glass that is facing the air space. A layer of frost facing the inside air space confirms the presence of moisture inside the "sealed" window. Moisture inside the air space of the window is a good indicator that the seal has been jeopardized.

- b. Visible cracks, chips, surface scratches, and gouges – Physical damage to a pane of glass could present both a safety installation concern as well as unstable glass that may not be a good candidate for window film.
- c. Seal failure – Aging dual pane windows may visually demonstrate moisture condensing in the air space between the two panes of glass. It is always best to detect this issue prior to the application of film to help avoid future liability for windows already showing failure. A simple ‘freeze spray’ test can help identify pre-failed windows by cooling the glass and creating any internal moisture to condensate
- d. Low-e coating failure - As windows age, the Low-e coating on the inside surface of the glass may also start to deteriorate. It will often look as though there are moldy dark spots on the inside of the glass. This should be noted and brought to the customer’s attention to avoid any future liability concerns for the installer.

INSPECTING THE WORK AREA – A thorough assessment of the workspace is a critical step to ensure you are aware of any pre-existing environmental conditions where your work is being performed.

1. Frame and Window Casings

- a. Loose or leaky window frames – Identify and catalog any questionable framing as there is a risk this condition could affect the long-term integrity of the window film.
- b. Rotted or damaged window casings and sills – This condition usually indicates the presence of moisture and should be cataloged and reported.
- c. Dried out or missing gaskets – Missing or unstable rubber window gaskets due to aging should be reported as this could be detrimental to the film installation and potentially void the window film manufacturer’s warranty.
- d. Removable grids – If you are working with windows that are divided into small panes, many times there may be a removable grid that would allow the application of one large piece of the film rather than many small French panes. Verify the window construction as this could save a great deal of time and wasted material.

2. Surrounding workspace

- a. Paint defects -Inspect the painted surfaces surrounding your work area. Catalog and report any damage or issues beyond normal wear and tear. .
- b. Wall or surface damage – Be sure to recognize and catalog any wall damage where you may be staging ladders or scaffolding to help avoid any blame after the installation
- c. Carpet or floor damage – Inspect all floor areas you will be occupying or traveling through to identify and catalog any noticeable scratching, gouges or staining.
- d. Furniture or window coverings – Closely inspect any furniture or window coverings directly within the install space for damage or wear. Be especially conscious of drawstrings on blinds that historically experience sun damage and report any concerns before beginning your install.

Section 3: Customer Reviews

Review with the customer any issues found. (if none, proceed to step 5)

Review all issues with the customer and determine who will be responsible for making the necessary corrections.

- a. Will a second trip have to be made to tint the window?
- b. Will there be additional costs incurred?
- c. Will a window need to be replaced?
- d. Will repair of the window frame be necessary before the film is applied?
- e. Is it possible that the job can't be started until the issues are corrected?

These items need to be covered before work starts to avoid any issues that may arise after the work is performed.

Section 4: Work Area Preparation

Preparing the Work Area

A small amount of work and preparation upfront can go a long way with contributing to an overall successful window film installation. Many problems can be avoided through some simple steps that can save you both time and unwanted expenses. Equally as important – you will be establishing core principles of ethics, conduct, and professionalism for your company that will not go unnoticed by your customers.

REMOVAL OF VULNERABLE ITEMS -Remove customers' personal effects from the immediate installation areas to avoid accidental damage. You may request that the property owner do this during the initial site visit, but in most cases it will be the installer's responsibility to move and protect personal belongings. Personal or delicate items – When installing around or over office desks in the commercial environment it is important to remove and replace items as they were. A quick photo can be of help if there are many articles to deal with.

1. Smaller furnishings or window coverings – Movable furniture should be taken away from the immediate workspace. Many blinds or roller shades need to be removed to fully access the glass for installation purposes. Be conscious of the removal process and bracket applications to help with the proper reinstallation.

PROPERTY PROTECTION – Protect all surfaces and items that may be susceptible to damage.

1. Wear Booties or installation shoes – Wear removable shoe coverings or alternative footwear when working inside a home or carpeted environment.
2. Drop clothes – Cover all floor areas near the immediate workspace where mounting solution overspray could occur. Protect all floor areas where equipment such as ladders, scaffolding, film cutting equipment, etc. will be used.
3. Furniture and Draperies – Cover all immovable furniture such as pianos or dining room tables if near overspray areas. Cloth draperies and furnishing can usually be pulled

back away from the window area to allow for access. Silk or natural fiber draperies within the immediate install area should be covered and protected. Note: Be cautious with your cleaning/mounting solutions not to overspray any furnishings that may be vulnerable and susceptible to water staining.

STAGING EQUIPMENT – Once all furnishings have been moved and drop cloths in place any needed equipment can be staged for the installation process.

1. Ladders and scaffolding – Be sure ladders and other access equipment complies with all OSHA and safety standards and are appropriate for the specific task at hand. It is advised to have rubber feet and protective end caps for all access equipment that will be in contact with the floor, walls or other surfaces to avoid any damage or scarring. Follow all equipment manufacturer guidelines for safe and proper use of each piece of equipment.
2. Film cutting machines – Be sure your film cutting equipment is properly and securely mounted to the stand or ladder with sufficient drop cloths protecting any vulnerable flooring before loading the film roll. Depending on the roll size and pull lengths, ensure you have planned for ample workspace on all sides of the cutting equipment to avoid tripping or damage to the surrounding furnishings.

Section 5: Film Removal

Tools Needed:

4" scraper

6" triumph blade

Soapy water solution

Paper towels

Pop point knife

Nylon Scrub Pad

Safety Note: One of the more dangerous tools used is the 4" scraper. Make sure to use two hands at all times when using this tool and **ALWAYS** have a cover for the blade or remove the blade when not using it. Discard all blades in an enclosed blade disposal box or empty sealable plastic container to avoid injury.

Step 1 - Using two hands create a "T" pattern and remove the film (insert video of removing film in a "T" pattern and show using both hands on the tool)

Step 2 - Beginning at the top of your "T" move left to right or right to left (whichever is more comfortable) stopping about 1" away from the frame edge to avoid damaging the frame with the 4" scraper (insert video of removing and stopping short)

Step 3 - Continue this process until all the film has been removed

Step 4 - Wet the window with your soapy water solution and let the solution sit for 1-2 minutes.

Step 5 - Using the 6" triumph blade remove the adhesive with the same process as step 2. Repeat this step until all the adhesive has been removed.

Safety Note: **Always** place the cap over the triumph blade to avoid accidental injuries.

Section 6: Cutting Film

Typical films come in 36, 48, 60, and 72 inch wide rolls.

Step 1 - measure glass pane and add 1 inch to the width and length to determine film cut size

Step 2 - cutting from the box, using a film handler or other cutting device, cut film to the desired size.

Part 1 - Lay a drop cloth down in the desired cutting area

Part 2 - place the film on film handler or lay box in the cutting area

Part 3 - Set the cutting knife in the desired area (insert video of the cutting process, 1 video for the film handler, and 1 video for cutting from the box)

Step 3 - Roll the film up and check the overall size to match the window opening.

Safety Note: When your pop point knife is no longer being used **ALWAYS** make sure to retract the blade to avoid accidental injury or damage to the glazing system.

Section 7: Cleaning of Glazing System

Tools Needed

Typical 6" stainless steel blades (**photo of tool**)

Window Squeegee (**photo of tool**)

Lint-free paper towels (**photo of tool**)

Nylon Scrub pad (**photo of tool**)

Soapy water solution (**photo of tool**)

Creating Soapy Water Solution

Confer with manufacturer recommendations. Common soaps to use are dishwashing soaps like Joy, Dawn, Seventh Generation, or Johnson's Baby Shampoo. (**photo of examples**)

Steps for cleaning glazing system:

Step 1 - Remove any dust from the window ledge and frames (**photo of motion**)

Step 2 - Verify if windows are tempered or annealed. (**NOTE:** use extreme caution when using a razor blade on tempered glass; this may cause damage to the glass. If tempered marks exist, use a nylon scrub pad to clean the glass using a swirling motion).

Step 3 - Spray window with a soapy water solution (**photo of motion**)

Step 4 - Clean glass using stainless steel razor blade creating a "T" pattern (**video of motion**)

1. Begin at the top of the window, angle blade parallel with window frame moving from the center to left edge and then moving down overlapping each pass with half of the blade width (Insert video/photo of "T" pattern and motion)
2. Repeat #1. Moving from the center to the right edge

Step 5 - Re-wet the window with soapy water solution and use the window squeegee moving from left to right or right to left (whichever is more comfortable).

During this phase, if the presence of seal failure, glass breakage, or any type of frame damage is noticed, notify the customer of the issue to determine if the installation will proceed. If the customer requests to proceed with damage, get written approval signed by the customer.

Note: It is **NOT** recommended to install window film on glazing that shows signs of seal failure or glass breakage.

Section 8: Installing film to glazing

Step 1 - Reverse Rolling or peeling of film liner

- a. Your film should be rolled into a tight tube, a liner to the inside of the wrap. **(insert photo of film rolled)**
- b. Unroll the tube a few inches, and with the piece of tape used to hold the roll together, pull away from the liner at a corner. Spray the tube lightly with your application solution and continue to pull away from the liner, wrapping it tightly around the main body of the tube. The moisture will cause the liner to adhere well to the film tube during the unrolling process. **(insert video of the process)**

Step 2 - Spray window with mounting solution

- c. Uniformly spray the entire window surface, but avoid heavily spraying the top edge of the pane to prevent any contamination from flowing down from the border. Spray the exposed portion of the film with your application solution and grasp the film tube in preparation for the layup. Lay up the film to the wet glass.

Step 3 - Position film on glass

- d. Here, let's assume we've cut the film squarely and that the top of the pane is square and level, too, so we can actually place the top edge of the film on the glass and slide it up into the final position. Place one hand onto the film surface at the top of the window pane and use the other to carefully unroll the film tube. This allows the liner to be stripped off immediately and transferred it to the backside of the film. As the unrolling progresses, double-check its alignment in regards to positioning onto the glass. Also, ensure the exposed glass surface remains saturated as you unroll the tube. Once arriving at the bottom end of your film tube, grasp the liner; hold the film firmly to the glass while pulling the remaining attached liner material downward and away. **(Insert Picture of positioning film)**

2. Mount film with "T" pattern

- a. Spray the film surface with your application solution to lubricate the squeegee. Next, use an application squeegee specifically designed for window film and the extraction of the solution to extract solution in a "T" pattern in order to lock the film down and prepare for the next step. **(insert video of "T" pattern)**

3. Initial squeegee process
 - a. For the edges that will be trimmed, squeegee within 3 inches of the edge. Maintaining space from the edge prevents dirt at the edge of the frame from being sucked under the film. **(Insert video of squeegee process)**
 - b. Repeat this process down the center of the window until the film sticks to the glass.
4. The trimming film process
 - a. Trim the borders with an edge tool, leaving a clean 1/16" gap around all the edges. **(insert video of trimming process)**
 - b. Start in the upper right-hand corner. (Without a factory edge on top) With the film overlapped into the corner slice the film 45 degrees away from the corner on each side. This allows the film to lay down into the corner flat on the glass and prevents the film corners from creasing. This provides a starting point. **(insert picture of cut corner)** Hold the trim guide at a firm right angle at the edge of the film/frame. Run the guide down the window edge. This temporarily sets the film against the glass and frame. This provides a crease that prevents snagging the film with the knife.
 - c. Trim the film starting from the upper right-hand corner with a very sharp blade. Hold the knife to the inside of the trim guide and with smooth motion cut vertically down the window. **(possible video of cutting edge and how the knife angle affects light gap sizes?)**
 - d. Move trim guide and knife in a smooth motion down the window frame. Stop about six (6) inches from the bottom. Repeat the same corner slice used at the top and finish cutting to the corner.
 - e. Repeat on all edges
5. Final squeegee process
 - a. Finally, use an application squeegee specifically designed for window film and the extraction of solution aggressively squeegee application solution and air from beneath the film beginning from top center squeezing to one side or the other. Use ONE squeegee pass only, not multiple strokes over the same area. Squeegee passes must be uniform, very firm strokes. Using minimal overlaps, including the center, work any solution toward one side systematically from top to bottom. **(insert video showing squeegee overlap and angle of blade)**
6. Bumping process
 - a. Next, wrap a 5-way tool (or another hard card of choice) with a soft cotton cloth or soft paper towel. With light pressure, about 2-3 inches from the film edge (or frame), wick any remaining moisture from the film's edge. This procedure is called 'bumping,' 'wicking,' 'drying,' or 'finishing out.' As the cloth or paper towel absorbs moisture, continually reposition it for best results and to prevent sand or grit from scratching the surface of the film. **(Insert Picture)**

7. Final clean process
 - a. After window film has been installed, polish the windows using a light spray of application solution (or approved window film cleaner) and a soft cotton cloth.
8. Inspect the installation
 - a. Always double-check all windows for any water at the top, bottom, and edges, and view from outside if able, as you may catch an issue before leaving and causing a return trip.
1. Site Clean up
 - a. Removal of waste
 - b. Take final photo of the completed project

Section 9: Site Clean Up

Complete the install process with a thorough clean-up of the entire job site.

REMOVAL OF WASTE – Remove any waste you have created and all materials brought to the job site. *Never leave any waste materials for the customer to dispose of unless previous arrangements have been made with full permission to do so.*

- 1) Film waste – Use the larger pieces of the liner as a ‘tarp’ for film scraps and roll them up into tight bundles, and then dispose into larger garbage bags for removal from site.
- 2) Boxes, cores, and end plugs – Remove and recycle as per local municipal codes. **Note: Window film is a ‘green’ material with sustainable qualities for the environment and it is our responsibility to recycle whenever applicable.**

RESTORE REMOVED ITEMS – Restore any items or furnishings that you were responsible for moving to its original position.

TAKING FINAL PHOTOS – Be sure and photograph your excellent work! Take any close-ups of areas of the installation process that are warranted to be cataloged. Try and capture final photos of the finished product that could be used for promotional purposes or sent back to the owner for them to share with friends and associates.

Section 10: Final Site Assessment -

Review with the customer and check the estimate to make sure no windows on the contract are missing film.

Perform an official final walk-through with the customer (re-check for finger and water pockets) making sure the customer is happy with the work and there are no issues present.

Section 11: Approval/Sign-off

With the customer, review warranty, drying times, and cleaning/care instructions, etc

Have your paperwork ready – every job includes some type of paperwork, so make sure to gather pertinent documents needed for the job. Have the film warranty filled out and have the invoice printed.

Review warranty terms and glass breakage warranty if applicable. Who should the customer contact if they find issues after you leave the job site?

Make sure the customer understands the drying times for the film applied so they know the water will dissipate as it is exposed to the sun.

Does the customer understand how the window with the applied film is to be cleaned? Inform them if you use certain products in the cleaning and what a window cleaner needs to know if they are cleaning the windows.

Thank the customer and remember to ask for referrals. Give them a few business cards before you leave