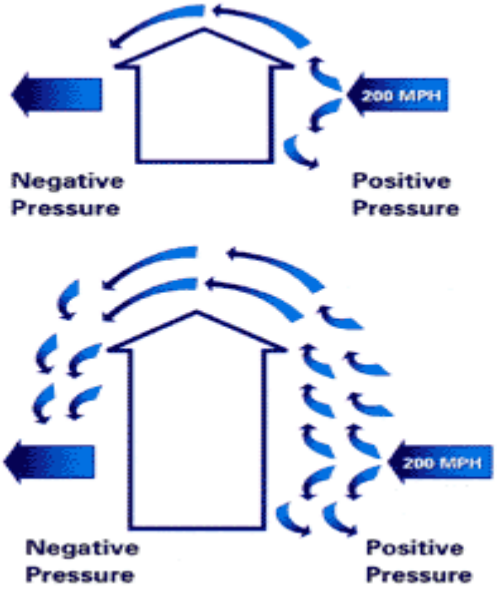
Storm Catcher Installation

1. Job Site Design

As the first and most important step in the process, the design of a shutter or screen system for each opening will lay the foundation for a proper installation. It is important to understand the concept of using the determined design pressure requirements for a particular opening and designing a system to meet the required positive and negative loads. Then the system for that opening must be designed and installed per the engineering certified for that type of system meeting the calculated design pressure or (load). These calculations must be performed for each opening and this information must be included in the permit application for each permit applied for. A sophisticated software engineering program is used to perform the calculations as there are a number of determining factors that are considered in determining the design pressure for a particular opening. The pertinent factors that have influence in determining the design pressure include: the wind speed designation as determined by the project location relative to the state of Florida Wind-Borne Debris Region, the height of the building, the "category" area of the location which is determined by the terrain and proximity to tidal waters, whether the opening is considered an end zone or an interior zone on the project building and other relevant factors. Make sure that the system that is to be installed on that particular opening meets or exceeds the design pressure calculated for that opening relative to the span of the particular product.

General Wind Load Concepts and Terms

- Positive windload pressure - the direct impact of the wind on a stucture.
- Negative windload pressure - the vacuum created on the structure due to the movement of wind.
- Buildings that are taller are subjected to greater windload pressures.
- Corners of the buildings are subjected to greater pressures.



Upon receipt of the job folder call to schedule with the customer to perform the final measure for material procurement and production planning to be returned within the time frame established by the operations department Whenever possible try arrange the final measure when the customer will be available in case of any possible concerns that may arise. If you are not able to have the customer present for the final measure you must perform a comprehensive review pertaining to the details of the contract. If a direct mount screen is on the contract, examples of detail clarification may include; installed on or off of stucco bands, removable floor track, or in the case of a rolling screen verify whether the system is to be installed on the inside of the tie beam or on the outside of the beam etc. Remember it is very important to have a means of egress as it is almost always required by code as well as the home owner may possibly need it in an emergency situation. One egress is required and if at all possible attempt to provide two ways to escape if needed. If at all possible design the systems to allow one egress in the rear of the home and one egress in the front.

Remember that if the home is in a development that may require association approval of the style and type of system allowed that you verify what is on the contract is allowable within the community. The contract should state whether or not approval is required. It is not your responsibility to obtain this approval, yet if approval is required, only the proper color and style system will be allowed to be installed. Before you begin the measuring, take a walk around the subject site to familiarize yourself with the other installations in the area. Verifying this information at the final measure may prevent the wrong style or color system from being manufactured as well as possibly preventing the installation from being postponed or cancelled the day of the intended installation. If for example you notice that all of the other units in the development have roll down shutters and the contract calls for accordions you need to verify this discrepancy. The sales representative should be made aware of the situation and is responsible for executing a change order if one is required. Additionally, if you see that all the other shutters are white in the development and the contract calls for beige, you may want to verify the color to avoid the installation from not happening as scheduled. You should also check to see if there are any time restrictions for working hours in the development.

Make sure that you have a copy of the product engineering to reference the correct way to design the system and fasten it according to the engineering.
Read the contract thoroughly to see if you will need a specific ladder or other means to perform the measure. When on the site you should determine if any special equipment such as scaffolding, man lift, window jacks or any other apparatus will be required to perform the installation. As you perform the initial site inspection, check to see if there are any sprinkler concerns or other impediments to the planned installation.

Notify your supervisor or Operations of any conditions that need clarification. If ANY change order is required, notify Operations so they can notify the Sales Representative to execute the necessary change.

2. Measuring

Please **measure very carefully** to ensure that the product you will be installing is measured correctly. Once the screen has been produced and delivered to you it will waste time and money if the screen is not the size and shapes it needs to be.

Always have the proper forms to measure for screens

1. Grommet Only Form (simple) up to 12 openings
2. Special Screen Design Form
3. Angled screen
4. Angled screen with inside corner
5. Angled screen with outside corner
6. Screen End Cap Rolldown

Verify color to match that on the contract to ensure that the correct screen color will be ordered.

All openings should be measured in inches and fractions thereof for each side of screen to be manufactured. All measurements must be submitted on the appropriate Storm Catcher field measurement form. The cost of the screen is determined by the square footage of the actual finished screen dimensions.

Determine what type of construction is the system to be applied on; concrete block, poured concrete, wood frame, brick, vinyl or wood siding, stucco finish, etc. This will help determine the fastening type and other pertinent information.

Survey each opening to determine if proper style/type of screen has been contracted for; strap & buckle, grommet, angled, etc

Strap & Buckle Style

There are four different ways that the strap and buckle screens are measured and made.

A. **Trapped openings**. Loops are in 4” from the top edge of the screen to accommodate for eyebolt length. Straps and buckles are 10” in from bottom to accommodate for buckle, eyebolt and tensioning.
B. **Anchor to slab**. Top of loops are even with top edge of screen (eyebolt installed in face of header). Straps and buckles are 10” in from bottom.
C. **Header to Slab**. Loops are sewn to fabric edge and protrude 4” from top of screen. Straps and buckles are sewn in 10” from bottom.
D. **Outside mount-not trapped**. All hardware is sewn to the fabric edge and protrudes from the edge of the screen.

Strap and Buckle screens can be made as a “Straight Screen” or as an (Angled or Tented screen) to allow for deflection. The Angled method attaches directly to the building over the top of the opening and comes out away from the building at the bottom with sides that

return to the building at the bottom. The distance between the bottom of the screen and the building will depend on the height of the screen.

Track and Non-Track Direct Mount Screens

"Direct Mount" screens are mounted directly to the surface of the building around the perimeter of the opening. This style of attachment is extremely versatile.
There are a number of ways to mount this style of screen including, but not limited to:

1. F-track with studs and wing nuts.
2. Machine thread anchors and screws
3. Panel Mates) male or female)
4. Threaded rod hangers and screws

The preferred method pf attachment is F-track for its simplicity for both the installer, and the end user. It is necessary to know and understand the type of construction and material into which you will be fastening, it is company policy to install the fastening system outside of any stucco banding to reduce the visibility of the fasteners and prevent any cracking or chipping of the stucco banding. There is a standard overlap to add to the opening measurements to allow for anchoring:

For Wood Frame: The fasteners must anchor solidly into the wood. Add 3" per side to the opening dimension. For example, if your window is 3' wide x 4' tall, the finished screen size will be 3'6" x 4'6"

For Masonry: Add 6" per side to the opening dimension. For example, if your window is 3' wide x 4' tall, the finished screen size will be 4' x 5'.

Arched openings in masonry construction will generally have plywood above the opening for some distance, Because of this, the screen will need to be fastened either on the sides or/and top and bottom beyond the plywood arch.

When measuring openings with a sill, add 1½" below the sill instead of the standard 6". You will need to use the appropriate "build out" track. The proper size of the build out track is determined by the protrusion of the sill.

Stucco Banding Installation

In instances where there is a stucco banding around the perimeter of an opening you should install the screen fastening system outside of the bands. The reason for this is that the stucco banding cracks and chips easily and is difficult to patch in a manner that matches the surrounding banding. If you are measuring the dimensions using the TTT system you should add 3" to each side of the perimeter edge of the banding. For example, if the width of the opening from the outside edge of the banding to the other outside edge of the banding on the opposite side is 120", then the TTT measurement should be 126".

Measuring and Ordering for Storm Catcher Roll Screen

The following information may be helpful in filling out the "Screen Endcap Rolldown Form".

1. Screen Color Selection: Verify customer requested color selection for screen and select that color on the order form**.**

2. Measure/Order Width Dimension: There are two methods (A. & B.) to measure the width for ordering purposes

A. Outside of side track to outside of side track: This method is most used when the opening is "trapped" or "recessed". Be sure to measure at three different positions of the vertical plane; near the top, middle and lower area of the opening. The shortest dimension needs to be used for ordering purposes. The side track often needs to have some additional build out to compensate for a wall that is out of plumb or for structural fastening purposes. If you are measuring in this manner it is important to understand that the track is 3.25"

B. Inside of side track to inside of side track: This method is most used when the system is to be fastened in a "surface Mount" application. Once again, be sure to measure at three different positions of the vertical plane; near the top, middle and lower area of the opening. The shortest dimension needs to be used for ordering purposes. The side track may need to have some additional build out in cases where a door handle or some other obstacle is in the way. It is necessary to have a minimum of 3" of clear space to fasten the track on each side of the opening.

3. Measure/Order Height Dimension. There are two methods (C. & D.) to measure the height for ordering purposes. Be sure to look at the area above the opening to see if there is adequate space for the shutter housing. The size of the shutter housing, often referred to as the "box' is determined by the height of the opening. A 6 ½" box will be used for openings up to 96" in height. An 8 "box will be used for opening up to 129" in height and a 10" box will be used if the height exceeds 168".

C. Top of the shutter housing "box" to the bottom of the side track: This method is most used when the opening is "trapped" or "recessed". This method will provide the complete finished height coverage area for the system including the box

D. Track length requested method: Using this measure method, the system will be built using the "D." dimension to make/cut the track. It is very important to understand that the bottom screen bar will rest a minimum of 3" below the top of the track. As an example, if the daylight opening height is 96" and you do not want the bottom screen bar to be visible from the inside, then the (D.) dimension should be a minimum of 99".

4. Box & Track Color: Verify customer requested color selection for box and track and select that color on the order form**.**

5. Drive Operation: Verify customer requested drive operator and choose either gear, motor, motor w/Override, remote motor or remote motor w/override.

6. Drive Location: As you would be looking at the box, determine if the position of the operator is on the left or right side of the system.

7. Crank Position: This determines where the actuator exits the hood. You do not need to identify a location only if it the drive option selected is a motor without a manual override. Make sure to determine the path for the manually controlled universal operator to ensure that any interior fixtures will not interfere with the installation and operation of the drive for the system.

8. Handle Length: One standard 4 ft. handle is included at no additional charge per five openings. For example; if you order 10 roll screens you will receive 2 standard 4 ft. handles at no additional charge. For custom handles other than 4ft. in length add an additional $50.00 per handle per five openings. For example; if you order 10 roll screens you may upgrade to two custom length handles for an additional $100.00. Any additional standard 4 ft. handless may be ordered at $50.00 per handle and a custom length handle at $75.00 per handle.

Comments: In this section put in any other pertinent information need for the correct and proper building of the system.

3. Ordering the Screen

Once the final measure has been accurately completed and the color verified, compile all paperwork including all materials required for the job. Review the applicable engineering and fill out the appropriate order form and submit.

4. Installation

Tools required

The required tools for Storm Catcher installations include many of the standard tools used in typical shutter system installations including the following

1. Drills; standard, hammer or battery operated
2. Specialty drill bits
3. Levels
4. ladders
5. Extension cords
6. Hand tools; screw drivers, pliers, wrenches, cutter, field grommeter, etc
7. Power saws; chop, skill, etc
8. Setting tool for drop in anchors
9. Caulking Gun and Caulk of appropriate color
10. Stud finder

It is recommended that you maintain an adequate supply of standard installation hardware for occasional on-site adjustments to the original installation design.
Before leaving the staging area and heading to the job site for installation, make sure that ALL components required for installation of the job have been accounted for and sign off on the bill of materials for the job

Direct Mount Screen

Start with the most difficult opening first and install the easy one last
When installing direct mount screens using machine thread anchors, it is imperative that the fasteners are installed in a straight line, achieving a straight line can be accomplished by using the following method.

First, hold the screen over the opening so that the overlap is equal on all sides.
Second, mark the upper left and right corners.
Third, install anchors at the marks
Fourth, once the corner fasteners have been installed, make a straight line between the anchors
Fifth, hang the screen on the corner anchors and make a mark where each grommet intersects the line and install the remaining anchors in each intersection
Sixth, repeat this process as needed for remaining sides per the engineering

If one product is to be installed above the other install the one above so the lower installation does not get damage from working on the higher one
If exploratory holes have been drilled and not used as anchor points they should be cleanly patched.

Storm Catcher Rolling Screen Installation

Section 1.0 Prepare the Opening

1. Verify that the opening is square and level. If it not, you may need to make some adjustments.
2. Check and prepare the wall where the tracks and shutter box are to be attached to the wall. Make sure that the bottom of the opening for the shutter is able to receive the material in the manner in which you have designed it. Additional build out may be required to achieve a level surface for the system assembly. Make sure that the build out is designed and installed allowing the shutter to clear any protrusions such as handles, hinges, doorknobs etc.

Note: Ensure the all of your drill bits are sharp to prevent the drill from binding and possible damaging the shutter material or the wall of the building before you start drilling. It is recommended that you use drop clothes, cardboard or some other material to lay the system down on to prevent and damage to the material

Section 1.1 Hood Assembly/Track Mounting

There are three ways to perform the initial mounting of the system: “The Track First Method”, “The Hood Assembly First Method” and the “The Combined Hood Assembly and Track Method”. When possible, it is recommended to use the “The Track First Method”. “The Track First Method” is recommended because it is a safer method of installation.

1. “The Track First Method”: The first step in this method is to measure the finished ‘Box” assembly to determine the outside of box to outside of box measurement. This dimension should then be compared to the cut-sheet. This is the dimension to be used to determine the outside of track to outside of track for installation purposes. Please note that if build out is required that this is also the dimension to fasten the outside of build out to outside of build to. Remember that the top of the track or build out should be a minimum of 3” above where you want the bottom bar to reside. You should measure and mark where the outside of the tracks should be at the top of the opening. Once you have marked where the outside edge of the track or build should be, the next step is to plumb the side track up and fasten the track to one side. At this point it is not necessary to install all of the fasteners. The rest of the fastening can be done once you are sure that the tracks are in the proper position. Note that if you are installing with build out, the build out must be plumb and fastened securely before you fasten the track to the build out. Now that one of the tracks is in position you can fasten the other track in the same manner. It is critical that both of the side tracks are perfectly vertical (plumb) or the system may not work properly. When you are satisfied that the tracks are in the correct position, place the hood assembly pins into the tracks and fasten the hood assembly to the wall. The hood assembly should then be fastened to wall in the uppermost corners of the system. If the hood assembly is over 48”, fasten a minimum of 2 additional fasteners to secure the hood assembly to the wall. Wider spans should receive additional fasteners to anchor the hood assembly securely to the wall. Drill and drive fasteners in any of the still available pre-drilled holes in the track to securely anchor the system to the wall.

2. "The Hood Assembly First Method" Like the previous method**, t**he first step in this method is to measure the finished 'Box" assembly to determine the outside of box to outside of box measurement. This dimension should then be compared to the cut-sheet. Please note that if build out is required that this is also the dimension to fasten the outside of build out to outside of build to. Mark the center of the assembly and the center of the opening a minimum 3" above the opening and fasten the hood assembly to the wall. If you are installing with build out you can mark where the box is to go and then install the build out as needed. Next you should fasten the hood assembly to the wall in the uppermost corners of the system making sure that the assembly is level. Once the hood assembly has been secured to the wall, insert one of the tracks into the pins on the hood assembly and then fasten the other track. Again, make sure that the tracks are perfectly vertical (plumb). If the hood assembly is over 48", fasten a minimum of 2 additional fasteners to secure the hood assembly to the wall. Wider spans should receive additional fasteners to anchor the hood assembly securely to the wall. Drill and drive fasteners in any of the still available pre-drilled holes in the track to securely anchor the system to the wall.

3. "The Combined Hood Assembly and Track Method": Like the previous two methods**, t**he first step in this method is to measure the finished 'Box" assembly to determine the outside of box to outside of box measurement. This dimension should then be compared to the cut-sheet. Layout the system on protective material and insert the tracks into the pins of the shutter box side frame. Do not place the shutter material directly on concrete or lawn or garden material. Mark the center of the assembly and then the center of the opening a minimum 3" above the opening and attach the system through the pre-drilled holes in the top of each side track. Again, make sure that the tracks are perfectly vertical (plumb) and install the remaining fasteners securing the track to the wall. If the hood assembly is over 48", fasten a minimum of 2 additional fasteners to secure the hood assembly to the wall. Wider spans should receive additional fasteners to anchor the hood assembly securely to the wall. If build out is required, temporarily attach the system through the two pre-drilled holes in the top of each guide rail and mark the location of the side tracks. Remove the system and install the build out against the marked lines. Once the build out has been securely fastened, attach the combined hood assembly and tracks to the build out. Drill and drive fasteners in any of the still available pre-drilled holes in the track to securely anchor the system to the wall.

Section 2.0 Operator Installation

During the measuring process you will have determined the type of drive operator, the drive location and the crank position. Verify that what you ordered is what you now have. Drilling the operator holes (if the operator is a manual or with the override option and operated from the inside) is one of the most important steps to a quality installation and once you have drilled through the wall it is challenging to make any changes.

Section 2.1 Gear with Universal Operator Inside Installation

With this design, the system will be operable from the inside and a hole must be drilled through the wall. The front of the housing needs to be off of the assembly to determine

the correct position to drill the hole for the drive rod. Make sure the gear is oriented so the universal arm will be square to the wall. Then, using a ¼" drill bit, insert the bit through the opening in the gear and drill a hole through the wall. You should provide drop cloths on the inside to catch any resulting debris. Be aware of inside wall conditions such as any drapes, valances, cabinets and any other interior obstructions. Note that if there is tile on the inside wall you must be very careful to prevent the tile from breaking. It is recommended that a hammer-drill not be used when tile is on the inside wall. After you have drilled the ¼" pilot hole in the correct location, go inside and using the ¼" pilot hole as a guide, use a ½" drill bit to enlarge the hole. To prevent dust and debris from making a mess, use a vacuum held close to the drill. Clear the hole of any obstructions and insert the drive rod through the wall and into the gear. The drive rod may need to be cut to the appropriate length. Make sure that the drive rod can operate the system freely without touching the wall. If needed, run the drill through again, this reduces or eliminates unwanted friction that can make the operation of the system difficult and/or noisy. Now you can secure the universal assembly with the appropriate fasteners.

Section 2.2 Motorized Operator Installations

Verify that the power location is what was ordered. Most local building codes require an electrical contractor to install the wiring required for a motorized operator. The wire that connects the motor to the junction box can exit the housing in several ways. The wire can exit through the back or top of the housing or down the opening in the track. Once you have determined where the path of the wire is to go, feed the wire through the hole you have provided and connect the wires to the motor" pig tail". Remember to caulk where applicable to seal the area around the wire. If the operator selected is a motor w/override with an inside operator, follow the procedures for the wall drill through in the previous section. Once the power to the system is turned back on, it is time to set the lower and upper limits on the motor. Please refer to the appropriate motor operations manual for instructions on how to set the limits.

Section 3.0 Installation Completion

To complete the installation in a craftsman like manner, it is important to caulk around the hood assembly and tracks. If there are large gaps between the track and or build out, a backer rod made be used to fill the gap before applying the caulking. A bead of caulk should be placed on both sides of the tracks and around the perimeter of the hood assembly. Make sure to clean up the job site and take special care to remove any dust, debris or metal filings. Carefully remove any drop cloths to be shaken out back at the shop. Double check the opening before performing the walk around with the customer Take pictures of screens in deployment position. Walk the customer around the job and review each opening and go over instructions for customer deployment.
Have customer sign completion form as to completion of job and receipt of all materials.

DEFINITIONS

GTG = grommet to grommet: the distance from the center of grommet on top, bottom, left and right. If GTG is selected, the finish size of the screen will be 2.5” more in both width and height.
TTT = tip to tip: the distance from the outer edge of one side to the outer edge of the opposite side.

If a screen needs to be GTG in width and TTT in height, then you must specify on width and height the type used for each.

ARCHES must have three dimensions: width, height and, from the bottom up, the beginning point for the arch.

NOTCHES must have the location on the screen and width and height for the notch.

STRAP & BUCKLE: the strap and buckle on the edge of the screen with no flap. The standard length for straps are 32” and buckles are 3” from the edge of the screen to the tip of the buckle.

TAB: length of webbing sewn into edge of screen with a grommet in the end

HIDDEN STRAP & BUCKLE: The strap & buckle are sewn 10” from the edge of the screen. Please note that the flap created by sewing the strap and buckle inset are included in the overall size of the screen.

LOOP indicates a seat belt sewn into the edge of a screen that extends 4” beyond the finished edge.

HIDDEN LOOP: the loop is sewn so that the top of the loop is even with the edge of the screen.

LOOP 2” BELOW: the loop is sewn so that the top of the loop is 2” inside the fabric edge. This is done so that there is room to accommodate a standard eye bolt in a trapped opening.

FRONT: the front of the screen is the finished side which is indicated by the label in the bottom right corner. If a measurement is taken outside looking in, the front of the screen will face outside. If the measurement is taken inside looking out, the front of the screen will face inside.

BACK: Opposite of front.

WALL MOUNT RETURN: This indicates that on a return for an angled screen, the eye bolt will be mounted into the wall or vertical surface.