

# Stained Glass 101

*hands-on info for the hobbyist*

by Brian McMillan

## Preparing For and Executing a Custom Stained Glass Installation—Part 1

This four-part series of articles will give you an insider's look into how our family's glass studio goes about preparing for a stained glass installation. We

will be using a project that we did for a local residence's front entryway. In this issue, we'll look at deciding where and how to mount the stained glass panels into a wooden window opening.

We'll also address how to mount the stained glass to the face of a set of exterior wood entry doors. I will give you information on sizing the windows properly to fit the opening, ensuring that they will stand the test of time. Finally, I will touch on how we gather information from our clients. We learn what type of design styles they would like to see in their custom window,

light conditions, privacy issues and overall design considerations that will make the windows work with their existing architecture.

## On-site Measurements and Determining The Best Mounting Options

When we have a custom commission, the first thing we schedule is an on-site meeting that will allow us to figure out how to install the windows, what size the windows need to be, and, of course, what the clients want to achieve with their new custom piece of art glass.

First, let's look at how to decide on the size of the windows that will be made. This sounds straight forward, but there are key issues that will dictate how we

decide on the size of the window. The only way to figure out the desired size is to take on-site measurements of the window opening. For our project, there are two window panels and two door panels that we will have to measure.

For any installation that will involve filling the entire opening of the window frame, we will need to plan for at least a 1" air space between the existing exterior glass window or door units. This air space is **critical**. If you install the stained glass touching or too close to the sealed units, there will be a build up of heat or condensation. This can cause the exterior units to prematurely fail due to broken seals. In extreme cases, heat build up can cause the



exterior glass, or your stained glass, to crack due to thermal shock. By situating the stained glass 1" away, or more, from these units, you will alleviate this issue.

In the case of the window openings, we will be setting our stained glass into the opening using the existing wood stop (see arrow in photo) as a back stop. This stop is what will support the stained glass window to prevent it from falling backwards into the exterior glass. In our case, it happens to be 1" away from the exterior glass, thus creating a perfect solution to the air gap issue. If there is no existing stop available, we will add a ¾" x 1" wood back stop to the frame. This is done when we come back to do the final installation of the windows and door inserts.



Next, we need to figure out what the overall size of the stained glass window will be. Based on using the existing back stop, we will measure the opening, making sure to double check all sizes to be sure that we have measured accurately. Once we have the opening size, we will need to figure out what size to make the stained glass. This is calculated simply by removing ⅛" from all four sides of the window opening size. Our window measured 24" x 72", so the final stained glass size would be 23¾" x 71¾".

This ⅛" gap is necessary for two reasons. First, this allows the window to expand and contract. The glass has to expand somewhere as it gets warm. If the window is too tight in the opening, the stained glass has no room to expand. The window will bind, causing it to start bowing very shortly after installation. The bowing will put pressure on the glass pieces and can cause them to crack.

Second, by sizing the window down, the stained glass should slide right into place on installation day with no forcing of the glass required. Forcing stained glass into the opening equals broken glass and an unhappy client. Long story short, there is no advantage to having the windows tight in the opening.

The next thing to consider for this installation are the two door panels. In this installation, we do not have the luxury of the wood ledge that will allow our door panel to be mounted within the door's exterior window frame. The exterior glass unit is taking up most of the thickness of the door, which is about 1¾" thick. This only leaves us with about a ¾" ledge to mount the stained glass into, which is not big enough. Remember, we need to have the 1" air space between the door glass unit and our stained



glass. We will have to have a set of ¾" steel angle iron frames made. Metal tabs that are welded onto the angle iron frame will be mounted to the surface of the door with wood screws.

We make the stained glass bigger than the visual opening of the door, because it is to be mounted on the surface of the door panels. We use the outside edge of the wood trim that is holding the exterior glass units in the door as the spot for our measurements (see arrow in photo). Once we established this size, we have the metal frames made ¼" of an inch bigger than this size. The stained glass is made the actual opening size of the measurements, minus ⅛" all the way around for fit. The metal frames and screws will be painted in a complementary color.



## Site Survey and Design Considerations

The next step of our on-site visit is to sit down with the clients and talk about why they want stained glass in their home. In this case, the windows and doors are for their front entry and they are looking for privacy from the outside. They are also looking to enhance their Craftsmen style home with an art glass addition that has an Arts and Crafts feel to it. Another issue is controlling the light, as this entryway is facing southwest and has too much light for the clients' liking. For this initial meeting, we also bring a portfolio of photos featuring recent commissions we have completed. This portfolio shows our potential customers what we are capable of, and also will provide some design ideas that can be used in their stained glass designs. While on site, we also do a general survey of the area where the stained glass will be installed. We look for design elements that can be referenced in the stained glass. We also look for any potential obstructions, such as roof overhangs or objects behind or in front of the stained glass that can intrude on the incoming light and, in turn, change the look of certain glass, in either good or bad ways.

Now we have a general idea from the clients on design ideas. We take all of these ideas and measurements back to our studio to come up with a custom design that will give the clients' entryway a new look of sophistication and privacy.

Next time, we'll show you how the fun begins!

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