



Editorial Statement



Over the last several years, one of my main goals has been to educate potential clients by providing them with as much knowledge about stained glass as possible. I have spent hours on the telephone and in person, disseminating information to individuals as well as small groups in charge of stained glass projects. I have also written pages of factual information to assist clients in making informed decisions with regards to their stained glass needs. The limitation that I constantly encounter using the above methods is that I am not always able to motivate everyone involved in the decision-making process to read this material or to make themselves available for a meeting. I believe this often results from some clients not being avid readers, or simply feeling that they are going to become the subject of a sales presentation. This is unfortunate, for client involvement and education is of prime importance when undertaking an historic and expensive project.

I have found that a Studio Tour complements both verbal and written information by presenting a myriad of visual aids. When I conduct a tour of my Studio, there are always several in-house projects at various stages of the restoration and/or new fabrication process. I am able to use these as teaching tools to demonstrate how stained glass windows are made, how they deteriorate, and how they are restored. Also I am able to show that a stained glass window is a structural object and that it is comprised of various materials and components. This assists the client in fully realizing the concept of a stained glass window.

The Studio Tour provides a relaxed educational environment for the client. Tour participants are able to observe and freely gather information. This allows them ample time to think and question all things presented to them. I believe this is the best possible atmosphere for intelligent investigation and learning.

Discussions take place regarding the various periods and styles of stained glass, the types of glass that were used, as well as current methods and materials used in new

fabrication and restoration. In addition, there is an in-depth examination and viewing of these various materials. For most clients, this visual experience enables them, for the first time, to correlate all of the information that they have been given, into a complete concept of what makes up a stained glass window. Repeatedly, I have heard people say after their tour, "now that I've seen it, I really understand it".

Once this level of perception has been attained, the ability to discern specifications and facts from sales rhetoric becomes a natural progression. The client is now able to understand the basic needs and requirements involved in a proper restoration or new fabrication. Elements such as structure, materials, and assembly techniques are clearly understood and become valuable tools of reason in the decision-making process. This is why the tour is of such value; it presents the final link necessary for the client to fully comprehend all the factual information that is put forth both in the verbal and written presentations.

Touring a stained glass studio also allows the client to draw some basic conclusions with regards to quality in the areas of:

- ❖ Organization and Efficiency
- ❖ Level of Employee Experience
- ❖ Employee Safety
- ❖ Quality Control
- ❖ Studio Security
- ❖ Handling Procedures
- ❖ Equipment
- ❖ Storage Facilities
- ❖ Transportation Methods
- ❖ Size of Studio

Quality should be the ultimate goal in any stained glass project. The tour provides a total picture of the Studio's operations, and therefore, its level of commitment to quality. This is why a Studio Tour is an essential step in any intelligent decision-making process with regards to a stained glass project.

Frederick B. Shea
President Stained Glass Resources, Inc.

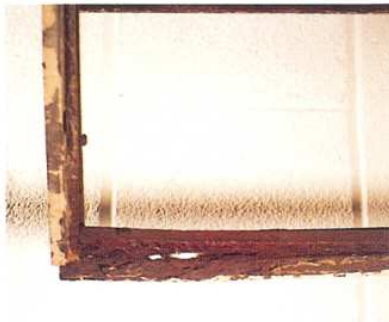


The process of painting and staining is explained during a recent Studio Tour.

Restoration Department



An important part of any stained glass restoration project should be the thorough restoration of the vent frame. The vent is the part of a stained glass window which is designed to allow a portion of the window to be opened and closed, thus allowing for ventilation. Unfortunately, the vent is often ignored or not properly addressed in the restoration specifications. To better understand proper vent restoration, it is necessary to examine the problems that occur, their causes, and then, the proper solutions.



Detail of bottom left corner of inner vent frame prior to restoration.

Problem: Paint Build-up. Years of painting frames causes the layer of paint on the vent to become so thick that it inhibits the smooth operation of the vent.

Solution: Strip the paint from the vent, and apply a light, even coat of a rust-inhibiting primer and paint designed for use on metal. A vent frame should never have more than one coat of paint. When repainting is required, the old layer should be completely removed first.

Problem: Bottom rail of outer vent frame pinching inner vent frame. This is usually caused by problems with the wood sill, located under the vent. Often, as the result of poor maintenance, lack of paint, and general deterioration, the sill becomes subject

to water intrusion. Once wet, the wood sill swells and distorts the bottom vent rail out of square.

Solution: The vent should be removed, and the bottom rail straightened. In some extreme cases, if the bottom vent rail is badly rusted, it may have to be removed, and a new one fabricated and welded into place. The wood sill should be repaired or replaced and properly painted or sealed to prevent water intrusion. When the restored and freshly painted vent is reinstalled, there should be a bead of caulk applied to the area where the vent meets the sill and vertical wooden frame members.

Problem: Rusted and distorted inner vent frame bottom rail. This is usually caused by breakage in the exterior protective glass, which allows water intrusion and retention in the space between the exterior protective glazing and the stained glass. The resulting rust and rot usually blisters and distorts the bottom rail of the inner vent frame, thus causing it to bind against the outer vent frame.

Solution: The inner vent frame must be removed. The exterior glazing and stained glass are then removed from the inner vent frame. The bottom rail is cut out and a new one is fabricated and welded into place. The frame is then painted and the exterior glazing and stained glass are reinstalled.

Problem: The outer vent frame top rail sags downward and pinches the inner vent frame, thus making the vent inoperative. This is usually caused by structural failure in the stained glass window above the vent. As the window ages, and its structural support system weakens, the weight of the window bears down on the top outer vent frame rail, which is usually not designed to support the entire weight of the window.

Solution: Unfortunately, the solution to this problem is not always simple. If the stained glass window above the vent is in need of restoration, then the vent should be removed and straightened prior to the reinstallation of the restored stained glass window. If the window above the vent is not to the point of requiring restoration, then one should consider if a new vent should be fabricated using a heavier gauge steel which would be capable of supporting this weight. As an alternative, in some unusual circumstances, it may be possible to lower the

mounting location of the vent in the sill, and use the space gained at the top of the vent to install an additional horizontal steel support member to help bear the load.

Problem: Worn, broken, or missing hardware; i.e. hinge pins, latches and keepers.

Solution: Replace with new hardware.



Overall view of frame after complete restoration.

There are a variety of non-acceptable solutions to the afore-mentioned problems; some of them are:

- Any procedure that involves grinding away any part of the original metal of the frame.
- Prying any section of the vent frame with a pry bar, in an attempt to straighten the vent in place.
- Cutting away and deleting any of the original stained glass to provide additional space for straightening.
- Applying grease or lubricant to any part of the frame other than the hinge pins or latch.

It's important to keep in mind that the vent is both a structural and mechanical part of the stained glass window, and should not be overlooked in a thorough stained glass restoration project. A project that does not include proper vent restoration is not complete, and will lead to additional expenditures in the near future when difficulties in vent operation lead to damage of recently restored stained glass.

In conclusion, when a vent does not operate properly, it should be restored immediately to avoid unnecessary damage to the stained glass window.

Studio Project



The employees of Stained Glass Resources will never forget St. John's Church in Bangor, Maine. For many reasons, the restoration project we performed for St. John's was an extremely chal-

lenging and sometimes grueling experience. Some of the many challenges we faced at the administrative level were scheduling the site work, making travel and accommodation arrangements, coordinating with riggers, procuring rental trucks for the transportation of extra equipment and tools necessary for performing a job of this size, and most importantly, processing the work as efficiently as possible through the Studio, (in coordination with other on-going projects).

The twenty windows in the Nave and Transepts, the three behind the Altar, and the one in the Sacristy, totalled approximately 1700 square feet of stained glass. The specifications for the restoration of the above windows consisted of:

- Restore all windows, by complete releading
- Completely restore and return to excellent working condition, 21 double-glazed steel ventilators
- Remove and replace existing protective glazing, with 1/4" thick, cell-cast, "mil-spec", acrylic sheet

We were not given the go-ahead on this project until mid-June. This allowed us only four months to perform a job of considerable magnitude.

History: The windows at St. John's Church in Bangor, Maine are without a doubt some of the largest ornate windows that we have restored. They are uniquely ornate due to the fact that extremely fine painting and staining techniques were used, in addition to very fine leading, to further delineate the details of the design. They are from a period of realism in stained glass history most commonly referred to as "The Munich Style". They were designed by Franz Xaver Pernlochner between 1885 and 1888. Born in North Tyrol, Austria in 1847, Pernlochner was a student of F. Plattner,



Detail of typical triple canopy - St. John's Church, Bangor, Maine

who was one of the first artists to bring the "Nazarene School" to Austria. After additional training in Munich, Pernlochner returned to Austria where he designed several hundred windows for Tyroler Glasmalerei, a major stained glass studio at Innsbruck. This was the studio that executed the windows at St. John's Church in Bangor.

Site Removal: The existing overglaze and the stained glass windows had to be removed from outside. Since the sills of most of the windows were twenty feet off the ground, and the windows extended twenty-one feet to the peak, we had to erect a tower of scaffold in front of each window. We first had to remove the protective overglaze, which consisted of an outer layer of 1/4" thick Lexan sheet, as well as an inner glazing of 1/4" plate glass. We were then able to remove the stained glass windows, which were divided into six individual panels, separated by a horizontal steel T-Bar, in addition to a bottom vent panel. Access of the Altar windows was somewhat more difficult, since the peak of the center window was approximately sixty feet from the ground. Also, the condition of the Altar windows was so bad, that it was difficult to keep the panels in one piece, in order to get them back to our Studio. Luckily, out of the two weeks that we scheduled for window removal, we had only one half day of rain. It was critical that we had relatively good weather, since 99% of the site work was performed outside.

In-Studio Work: Initially, the client, as a result of discussions with other studios, had assumed that the project would have to be dealt with in phases over a period of a year or two. We decided that the most efficient approach with regards to project management, and therefore pricing, would be to deal with the project as one continuous job from start to finish. The resulting problem was extremely tight time constraints. The project would have to be dealt with in

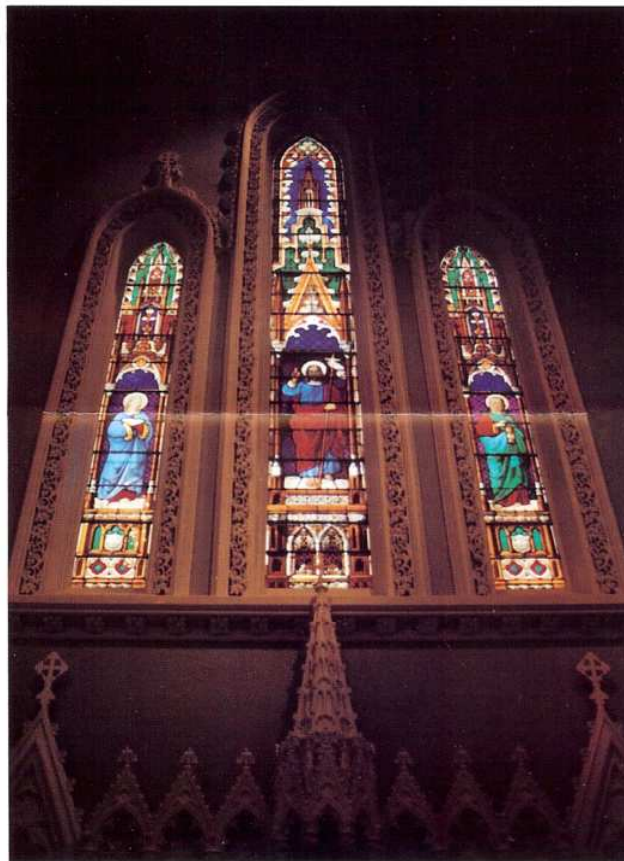
the most efficient, and expedient way possible, without any loss in the area of quality. Most of the stained glass panels were comprised of hundreds of pieces of glass, thus making the project extremely labor-intensive, in each and every phase of the restoration process. The lead was so deteriorated in these windows that the disassembly process was relatively routine. However, removing the old cement from the edges of the glass was extremely time consuming. Before the window panels could be relead, the issue of broken glass had to be dealt with. Every damaged piece was examined, and a determination had to be made as to whether it would be repaired or replaced. Replacement was chosen when breakage was extreme in the form of multiple cracks, or when there was not a complete piece available to work with. Resulting cosmetic appearance, as well

as structural integrity, were the prime considerations when making these decisions. The next step in the process was to relead the window panels. The areas of the window containing subject matter were quite simple to relead; however, the vent panels, and the canopy areas were extremely intricate, and therefore, more difficult and labor-intensive. This combined with the quantity of windows to be processed within the set time constraints was remarkable and required extraordinary effort on the part of each employee.

Site Installation: Re-installation of the stained glass and installation of the new protective overglaze was a relatively smooth process, with one exception...THE WEATHER! We became painfully aware of just how early winter arrives in northern Maine. Most mornings we arrived at the site in the dark (6:30 a.m.), with the temperature approaching 20 degrees. The wind was consistently 15 to 25 mph, with occasional, and surprisingly, higher gusts. This made safe handling of the window panels challenging, to say the least. Warm clothing, proper nutrition, and a good night's rest, became more than essential.

Upon completion of the installation, our site crew of eight was understandably proud of the challenges that they met and overcame. As we left Bangor, heading south for home, fittingly, it began to snow. The ride home, although a long one, was much anticipated and appreciated.

Comments: In looking back on the project it is quite apparent to us that the trials that we underwent were actually beneficial in their effects. They helped us become an even more efficient, cohesive, and productive organization. New project management techniques were implemented that have since become standard, and we have reached a new level of ability with regards to processing large projects, in a short period of time without sacrificing quality.



Altar windows - St. John's Church, Bangor, Maine

New Design

By Scott McDaniel



This space will be devoted to information about the design, production and installation of new stained glass windows. Future articles will deal with items such as the development of subject, the artist/client relationship and production techniques.

The Sketch

It is the function of the stained glass artist to make the design or "sketch". This is typically a one inch to one foot scale color rendering of the proposed new window. Through it, the artist conveys to the client his or her design concepts. After approval, the sketch becomes the model from which the full size drawings or "cartoons" are made. From these are made the glazing drawings on which the windows will be built. The artist is involved through all phases of this work.

Before the sketch is drawn, certain preliminary work is done. Site visits are made. The architectural setting and the style of other windows, if any, need to be observed. In addition, the quality of light, including outside obstructions, must be taken into account. Visits with the client or the window committee result in decisions about subject matter, budget and other considerations. These factors along with the artist's knowledge, taste, and imagination come into play before the sketch is begun on paper.

As the sketch takes form, the artist must be aware of two major concerns: art and structure. It is essential that both be considered from the outset. Structural support should not be considered an after thought, to be added to a design. The linking of art and structure is typified by the lead lines in a stained glass window. Aesthetically, they can function as pencil lines do in a drawing, describing forms, creating patterns, dividing areas of color. At the same time, lead lines are functional, holding the pieces of glass together, providing the structural skeleton for a window.

The sketch must include the division of the window into individually supported

panels. Within these sections horizontal bars are added for support. The pattern of lead lines is drawn with consideration for stress within the section. Our experience with restoration of older windows teaches us a lot about bowing and buckling of windows, often the result of sections built too large, with insufficient support bars or with poor placement of lead lines.

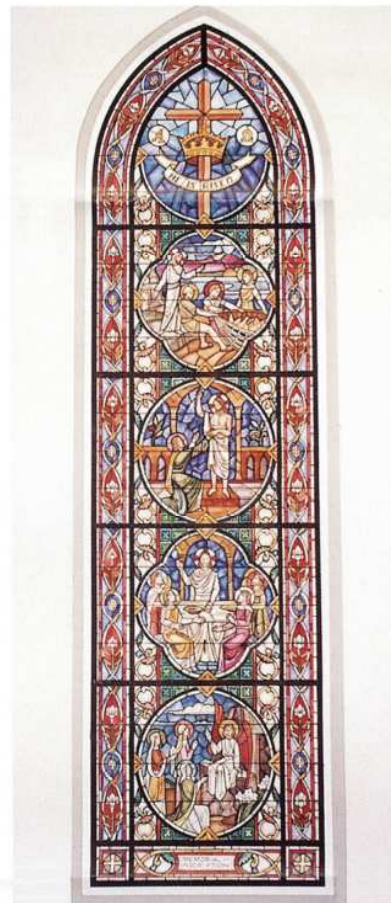
The artist should be familiar with traditions in stained glass and architectural design. He or she should know how to organize space, to develop subject matter into strong readable images, and to use symbols and ornaments.



Structural Layout – Beginning of sketch

To be able to exploit the unique artistic qualities of the medium, the artist must be familiar with its techniques and materials. Knowledge of the variety of types, texture and colors of glass is basic. Needed too,

is the knowledge of techniques which alter the effect of light passing through glass: glass painting, enameling, staining and etching. A working understanding of glass cutting, leading and installation is also necessary.



A completed sketch

The challenge for a stained glass artist is to bring together many factors into a sketch that creates an effect that is beautiful and meaningful. It must also be a plan for making a structurally sound window. Only then can work begin with glass and lead.

Editorial Note: Scott McDaniel is a graduate of Syracuse University School of Art. He has been employed as an Artist/Designer in the stained glass field since 1974. Mr. McDaniel was Art Director at the historic Wilbur H. Burnham Studio from 1983 to 1990, where he designed scores of stained glass windows for churches throughout the Northeast. He has also restored LaFarge windows for the Museum of Fine Arts in Boston. Scott is now the Art Director for Stained Glass Resources, Inc.

Studio Tours

We regularly conduct tours of our studio facility on an appointment basis, for both clergy and prospective clients. The tour consists of a short lecture, a physical tour of the studio, and a question/answer session with refreshments. We are able to accommodate groups of up to 25 people per tour. If you are interested in scheduling a tour, please contact us for additional information.

Resources Newsletter is published by:
Stained Glass Resources, Inc.
486 Main Street
P.O. Box 495
Hampden, Massachusetts 01036
Telephone: (413) 566-5053
Fax: (413) 566-2935

Editor: Frederick B. Shea
Assistant Editor: Susan M. Phillips
Art Director: Scott McDaniel
Graphics Consultant: Letendre Graphics
Photographers: Carl Paulson
J. Normand Martin

All material contained herein is the property of Stained Glass Resources, Inc. and may not be reproduced without the explicit written consent of the Publisher.

Feedback

Please send any questions you may have pertaining to stained glass to:

FEEDBACK
c/o Stained Glass Resources, Inc.
486 Main Street
P.O. Box 495
Hampden, MA 01036



Windows - St. John's Church, Bangor, Maine

Please direct this correspondence to Chairman of Buildings and Grounds

BULK RATE
U.S. POSTAGE
PAID
Springfield, MA
Permit #842

Stained Glass Resources, Inc.
486 Main Street
P.O. Box 495
Hampden, MA 01036