



First Congregational Church

Essex Junction, VT

A Window Report

prepared by

Sally Fishburn



S·A·fISHBURN INC.

399 Old Stagecoach Rd.

Danville, VT 05828

(802) 684-2524

This report is was partially funded by a grant from the Preservation Trust of Vermont



History

The First Congregational Church of Essex Junction, located at 39 Main St, was built in 1867 as a Union Church with the Methodists and Baptists. The original building was wood framed with clapboard siding. The 1869 Beers Atlas shows the footprint of the recently completed church with the building proportioned closer to a square with a bump out on both the front and rear of the church the size of the bell tower. An early picture of the church shows a three bay building.

By 1897 both the Baptist and Methodist congregations had left the Union Association to build their own churches. In 1913/14 the church was “bricked over”, the vestibule and a parish house added.

In the subsequent 104 years several more changes and additions have occurred most notably in 1927, 1948, and 1961. This window report was requested as the church embarks on a capitol campaign for renovations to the church.

Windows



This report concerns nineteen of the twenty windows in the church proper. The window unit on the south side located over the side entrance is not included given that proposed changes to the church will involve removing this particular window.

The eighteen radial head, double-hung windows are identical in profile and design leading to the assumption that are all original to the construction date of 1867.

The two remaining windows, the tilting circular windows placed high in the front façade bracketing the bell tower would have been added in the 1913 renovations. Although the profiles are the same ogee style as found on the double-hung windows the proportions of the muntins are slightly different, a bit wider and shallower than the 1867 windows. Indeed a quick look at the pre-1900 photo of the church confirms that the round windows did not exist in the original building.



In the early photo there are six of the large window units on the sides and two on the front elevation, one to each side of the bell tower. It is presumed that the two front units were moved to the extension at the back of the building creating the four windows per side on the 1913 version of the church. The two slightly smaller windows on the sides of the original entry door were moved into the new vestibule. There are four window units in the vestibule. Given that the four units are identical there is good reason to postulate that the third and fourth units in the vestibule were moved from the back of the church. However there is no documentation to prove this.



The windows are four over four lights. All of the windows are trimmed on the exterior with a semi-circular head shape. Except for the vestibule windows, all are trimmed to a squared opening on the interior. The four windows in the vestibule are trimmed to the radial head shape.

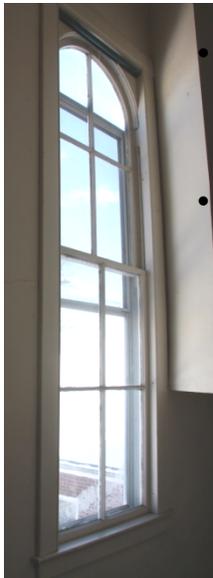
The other variation found in the double-hung windows is the depth of frame. The windows located in the sanctuary and bell tower (all windows that remained in place from the original structure) have a deeper frame depth of approximately 2 ½ - 3 inches than the four windows located in the vestibule and the two in the 1913 extension at the back of the church. These windows, all assumed moved during the 1913 renovations are in areas of “new” construction.

A final note that will be addressed a later in the report, the six large windows in the sanctuary have sliding blinds.

Inventory of windows

Double-hung, four over four with a weight and pulley counterbalance system:

- 4 units, radial interior and exterior trim, 1 ¾” x 28 ¼” x 100 ½”, located in the vestibule
- 6 units, rectilinear interior trim, radial exterior trim, 1 ¾” x 36” x 9’-91/2”, with sliding blinds in the Sanctuary
- 2 units, same size as above, no sliding blind system, plain interior casings and stops, behind the choir loft
- 3 double window units, 6 windows, rectilinear interior trim, radial exterior trim, each window measures 1 ¾” x 24 ½” x 78 ½”, located on three sides of the bell tower. The units on the sides are divided on the interior by the wall between the bell tower and the sanctuary. The windows in the sanctuary are finished with interior trim. The windows located within the bell tower are unfinished lacking the interior trim. All six windows include the tracks and hardware for sliding blinds.



- Two circular windows, located to either side of the bell tower in the front façade with a 33” diameter. The windows are mounted on pivots on the horizontal axis that allow the sashes to tilt in for ventilation.

The circular windows have wide, flat interior casings. The only other windows that have a flat casing are the two in the areas flanking the choir loft behind the sanctuary. Given that they are located in circulation areas the simple casings are logical. All of the other windows have a decorative casing created by adding trim to the flat casings. The interior edge is dressed up with an astragal and a larger torus located in the middle of the flat face of the casing.



Window Condition



Overall the windows are in fairly good condition. There were no indications of deterioration in the sashes. A metal strap was noted securing a break in the wood at the top of a sash in the sanctuary. The wood in the semi-circular top rail often ends up with a short grain section. It is at this point that the wood cracked and the

strap was added to hold the sash together. This is a common fix. Otherwise there is no obvious structural damage to the sashes.

The sashes on the south side of the building show more deterioration in the exterior finishes, paint and glazing than the north side. This is normal given the south side's increased exposure to the sun. The top sashes are painted in place. It is assumed that they are attached to counter weights. The bottom sashes do open and those that were observed were functional with sound ropes attached to the weight and pulley counterbalance system. One top sash has dropped leaving a 1/2" gap between the top of the sash and the frame.



The windows located inside the bell tower were left unfinished on the interior. The bell tower is an unfinished, unheated space so there was no reason to spend extra expense to trim these windows. These windows do include the tracks and hardware for the sliding blinds although there is no indication that blinds were ever installed. This is clear evidence that the original windows were built to include the sliding blinds.

With the exception of the sills, the frames appear to be in sound condition. All of the window sills in the sanctuary have been covered with sheet metal. Either the sheet metal was installed as a lead paint remediation measure or they are a quick fix to cover deteriorated sills. It is more likely that they are covering deteriorated sills.

The assumption is that removing the sheet metal will reveal heavy weather checks and/or sills with rotten sections.

Window Recommendations

Restoration of these windows will maintain the historic fabric of the church while increasing the energy efficiency of the windows. These original sashes are an important architectural feature of the building and can continue to be so for the long-term future.

Removing the sashes and installing replacement window units will change the appearance of the building. Replacement windows have a 25 year lifetime but often become damaged and unusable in less time. The historic windows, with some regular maintenance will last another 100 years and can be tuned up as necessary to remain functional.

These existing windows were constructed from old growth trees. Old growth wood, trees that grew for hundreds of years in America's forests pre-colonization is dense and highly rot resistant wood. Old growth wood has not been available since the 1940s. There is no comparable modern native wood available today.



The sashes should be completely stripped, repaired as necessary, re-glazed and re-hung in the frames with the inclusion of weather stripping. S.A. Fishburn, Inc.'s restoration specifications are included at the end of this report providing a detailed description of the window restoration process.

Storm Windows

Storm windows figure into any discussion of single glazed window restoration. Having weather stripped primary windows with a good, sealed storm window creates a double glazed opening as energy efficient if not a little more energy efficient than a modern double-glazed replacement window unit.

There are exterior storm windows on all of the radial head windows, the majority of which are triple track aluminum storm windows. Triple

track storm windows are only made in rectilinear forms. In order to accommodate the radial head windows the triple track storm windows run to the spring line and then a piece of plexi-glass was installed to cover the radial top of the window. These triple track storm windows have a middle horizontal bar that is lower than the meeting rail. The top of the triple track storm also create a horizontal divider at the spring line of the window that does not exist on the sashes.

The middle windows on the sides of the church have a slightly different storm window. In these units the middle rail of the storm window does line up with the meeting rail on the sashes but there is a dividing rail at the spring line of the window with a separate full arched storm panel at the top.

The horizontal rails that do not correlate between the storm windows and the primary sashes create a cluttered look that masks the original windows.

The two tower windows in the sanctuary have a plexi-glass sheet interior storm window. The round windows have a plexi-glass and plywood storm panel screwed into the interior casings.

The aluminum storm windows are older models that are showing their wear and are no longer providing a good sealed opening. All of the plexi-glass panels are cloudy and cracked showing their age and negating their functionality.

New exterior storm windows would greatly enhance the appearance and energy efficiency of the windows.

The storm windows should be replaced with new units that fit the openings and replicate the same glazing pattern as the primary sashes. Allied low-profile storm windows, style HOL-OP are a good option for windows of this size. They are very sturdy and have good weather seals. The HOL-OP are a double-track storm window that fit inside the edges of the exterior casings. The storm is usually set flush with the face of the exterior casings. There is a fixed screen in the bottom portion with a bottom storm panel that is raised on an interior track for ventilation. This model is self-storing but it would produce a horizontal divider in the top sash when the window is open for ventilation in the warmer months.

Allied also has a HOL-B version that is a single track storm window that mounts the same way as the HOL-OP. With this unit the bottom storm panel has to be removed and replaced with a screen panel for ventilation. Therefore space is required to store the storm or screen panels when they are not in use. This style does provide for a cleaner appearance year round.

Allied's AOL-A is similar to the HOL-B except that the storm panels are removable to the exterior rather than the interior. They are specified for windows that do not open. Pricing is included for AOL-A units installed on the circular windows. A separate price will be provided for an AOL-A storm panel for the fan light over the door in case that is desired.

Sliding Blinds

As noted earlier all of the window units in the sanctuary and the bell tower have the structure for sliding blinds built into the window frames. The three double window units located in the bell tower do not have blinds. The six large sanctuary windows have blinds.

Interior sliding blinds were quite popular towards the end of the 19th C. Many companies across the nation were manufacturing Venetian and sliding blinds including the Burlington Venetian Blind Co. which incorporated in 1884 and remained in business until 1953. A cross section of ads from various companies extol the virtues of sliding blinds because “The sliding blind is inside the casings, and while requiring no furring out or boxing, make it an impossibility to tear curtains, interfere with plants, or window ornaments, or become broken by contact with chairs or other moveable articles.” They go on to note “The light can be admitted and sunlight excluded from any part of the window: can be instantly removed and taken to any part of the house to clean. They require no hinges – all trimmings furnished with blinds – are made of all woods, finished and unfinished.”

These ads are for after market blinds fitted to existing windows. Literature found on-line and in construction manuals note several general specifications about the sliding blind. In windows from 5’ – 7’ tall three sections are recommended and for taller windows, four sections. Each blind is divided into panels ideally between 6 and 10 inches wide including the structure, to be filled with either panels or slats. The “usual thickness” is 5/8”. On smaller windows the blinds are held in place by springs, but for windows over 36 inches wide weights are recommended for counter balancing the blinds.

The sliding blinds in the church fit none of these specifications except that they do have a weight and pulley counter balance. The blinds are built in two sections only allowing only half of the window to be uncovered. The advantage, according to the literature of three sections is that 2/3rds of the window can be uncovered. The blinds are three panels wide, making each panel 12 inches wide. The blinds are 1 inch thick. The 1 inch thickness allows for a stronger frame with true mortise and tenon construction.

Owing to the fact that the tracks and weights are in place on the unfinished windows in the bell tower it appears that the sliding blinds are part of the original window construction. A close look at the pre-1900 picture of the church shows part of an interior blind on the left half of the front elevation window. Only half of the blind is visible as the right side of the window is in shadow. The proportions in the visible section of blind appear the same.

On the unfinished bell tower frames it appears that the side jambs were built of one wide piece of stock with four tracks, two for the sashes and two for the blinds, with parting beads separating the four tracks plus the interior stops. In the aftermarket variety the tracks for the blinds replace the interior



stops.

The sliding blinds are removable from the frame in the same manner as the sashes. The interior stop will need to be removed, the first blind can be detached from the ropes and removed, the parting bead removed, the second blind and following the same steps two more times to remove the sashes.

The sliding blinds should be considered part of the window unit and should be restored along with the sashes following similar specifications. The blinds appear to be in sound structural condition with cosmetic damage that can be repaired during restoration if desired.

The exterior side of the blinds was not available for inspections. Although the paint build-up on the blinds is not as heavy as on the sashes the blinds would benefit from being completely stripped and refinished. The exterior sides, especially those on the south may be fairly weathered.

Costs Estimates

Sashes restoration and weatherization – for 19 windows	\$36,650.00
Blind restoration	\$19,200.00
Storm Windows –	
HOL-B, single track with removable storm/screen panels, for 17 double-hung windows, plus two AOL-A for the circular windows	\$21,467.50
To upgrade the HOL-B to the HOL-OP, the double track, self-storing version	
Add -	\$ 2,082.50
AOL-A for the fan light	\$ 980.00

Plaster Restoration

The sanctuary, vestibule, and choir loft retain the original plaster and lathe. The plaster system and composition may vary between the original building and the 1913 additions. Although the plaster has cracked in many areas it is still predominantly tight to the lathe and



structurally sound.

A traditional plaster wall is considered superior to modern walls built with sheet goods. The plaster once cured creates a monolithic wall system which is a better insulator and fire stop than sheet good with seams between each sheet. Historic plaster is also revered for its warmth and slightly undulating surface. The lath and structure telegraphing through the plaster creates the slightly undulating appearance.

Dark cracks, which often run diagonally, are the result of movement or settlement creating stress in the building. Dark cracks have developed in areas around the church with the highest concentration and most severe cracks around the bell tower. This is understandable given the 1913 construction work. Generally the area of plaster adjacent to cracks has delaminated from the lath. In order to effectively repair the cracks for the long term the lath should be reattached to the plaster prior to filling the voids left by the cracks. This is achieved through plaster re-adhesion. During the repair of the cracks any other areas of delamination found should also be re-adhered.

In all areas where the plaster has separated from the lath it will be re-adhered to the lath with acrylic adhesives. 3/16" holes are drilled through the face of the plaster to provide injection ports for the adhesives. The holes are vacuumed out, a pre-wet solution sprayed in to the hole and then the adhesives are injected through the hole into the space between the lath and plaster. Large square washers are screwed through the plaster into the lath to pull the plaster tight to the lath while the adhesives cure. Once the adhesives have cured, generally overnight, the washers are removed and the holes and cracks are filled with an appropriate plaster patching material. The voids are filled flush with the surface. The original plaster surface is left intact.

The repaired plaster will be paint ready. The cure period between the completion of the plaster and painting will depend on the plaster patching material used. The scope of work does not include preparation for painting. The painting contractor will have to use his or her own discretion in determining the appropriate procedure for surface preparation before repainting the plaster walls and ceiling.

With a smaller company the majority of the work may be performed off of scaffolding that is moved around the sanctuary with each area being completed before moving to the next. With a larger company the whole sanctuary may be scaffolded out at once with a full working deck standing height under the ceiling. In this scenario the scaffolding could be utilized by both the plaster crew and painting crew if well coordinated.

Care should be taken to protect the walls, windows, furniture, and floor during the work process. Church services can continue in the sanctuary during the work process. The work area and materials would be broken down and stored as directed for Sunday services or the work area can be sectioned off for the service. The other option is to move the services to another area during the plaster restoration work.

Cost Estimate –

The cost for plaster restoration can vary greatly depending on the set up/scaffolding costs and the extent of plaster damage. Measurements were not taken to determine the square footage of plaster to repair. A price range per square foot is supplied that does include provisions for staging in sections.

\$8.00 - \$13.00/sq. ft.

