

Trinity Episcopal Cathedral Bicentennial Restoration Project
Submitted to the City of Columbia's Design Development Review Commission
April 3, 2007

INTRODUCTION

Trinity Episcopal Cathedral located at 1100 Sumter Street directly east of the Statehouse was established in 1812. The current Cathedral building was constructed about 1846. While the building appears to be in relatively good condition, several issues are a concern and must be addressed if the Cathedral is to last another 200 years. The Cathedral wishes to remedy these concerns in time for her bicentennial and preserve the church for future generations. A complete facilities review and report has been conducted and copies are available upon request.

OVERVIEW

Specific concerns to be addressed in the proposed restoration include the arrest of water infiltration, structural integrity of the Cathedral, preservation of stained glass windows and renovation of the interior finishes. The interior plaster of the church is in dire need of repair as a result of the water infiltration and finding and fixing the sources has become the number one priority. The current HVAC system is many years beyond its expected life and is being replaced.

WATER INFILTRATION

The main roof of the Cathedral is copper with a built-up roof over the clerestory, sacristy, chapel and flat-roofed areas. The copper roof was replaced approximately eight years ago and is in good condition as is the built-up roof. One of the major causes of water infiltration and resulting finish damage has been due to clogged collector heads and downspouts. These have been cleaned and repaired.

The dismal condition of the metal spire caps on the Cathedral has been determined to be a source of water infiltration and the caps need to be replaced. Previously one of the spire caps was replaced with a new copper cap as a model for future replacement caps. More recently eight completely dilapidated caps have been replaced with new copper caps. The remaining spire caps are to be replaced as funds allow.

Leaks in the north and south towers of the Narthex have been attributed to scupper and collector head problems as well as to the condition and poor weather resistance of the tower louvers. The existing trim and louvers will be removed. New anodized bronze aluminum louvers matching the existing wooden louvers will be installed.

Existing trim will be scraped, filled and sanded, repainted and reinstalled. Should we discover in performing the work that the trim is beyond repair we will have to make new trim to match the original trim.

A detailed examination of the condition of the exterior stucco revealed that water is and has been infiltrating through the walls. Cracks and deteriorated stucco is found universally over the entire exterior surface. The original stucco is historic lime stucco. Portland cement was not used in stucco until the early twentieth century. Over the years repairs to the lime stucco walls necessary due to the natural aging of the stucco were made using portland cement stucco. The two materials are not

compatible and the result is a further deterioration of the original stucco and a separation between the wall and the portland cement stucco allowing water to pass.

The entire surface of exterior stucco will be sounded and portland cement stucco patches will be removed and replaced with historic lime stucco. At completion, the entire exterior stucco will have been returned to historic lime stucco. Research is currently being conducted to determine the original color of the stucco and when subsequent revisions to the color might have occurred. This research includes consultation with paint conservators, existing documents and interviews with parishioners and is not yet complete. Once the stucco is repaired and water infiltration has been arrested, the masonry walls must be allowed to dry out at the rate of one month per inch of wall thickness before performing interior plaster repairs.

STRUCTURAL INTEGRITY

Separation between the roof trusses and clerestory wall and some deflection and resulting damage to tile flooring in the nave have been discovered as a result of investigation. An inspection of the flooring system was conducted from the crawl space. Termite infestation and damage was observed in the floor. Trinity was notified and arranged for an immediate termite inspection. It was reported that the observed damage was old and termites were inactive. Some minor structural repair to floor members is required. The cause and potential impact of the separation between the trusses and clerestory wall dictate that tie-rods be added to the roofing system through the nave to arrest the separation. The addition of tie-rods will help to stabilize the structure however, it is important to note that adding the tie rods will not bring the Cathedral up to current seismic code standards.

STAINED GLASS WINDOWS

A great deal of research and investigation has been performed with respect to the stained glass windows at Trinity. On-site research with representatives of several stained glass studios was conducted. From this research it was discovered that the windows behind the altar are rare Belcher windows and not Tiffany or Lefarge as previously believed and published. These are the windows of particular concern as they are deflecting and deteriorating.

Recommendations and proposals for addressing the problems with the windows vary. One studio proposes to completely disassemble the windows and put them back together using the copper foil method. Another proposes to stabilize the window by adding brass reinforcing fins on the back side of the window. A third studio suggests stabilizing the mosaic panels and restoring the leaded glass panel by disassembling and replacing lead carnes.

Some studios are reluctant to work on the window due to its age and construction. Most agree that the age of the carnes in the leaded glass portion makes it likely that the lead has reached the end of its life expectancy and, although it doesn't appear to be corroded and fatigued at this time, if the window is to survive for future generations, the lead will need to be replaced in the not-too-distant future. Estimates vary between 10 and 30 years.

Likewise most agree that there really is no way to duplicate the construction of the mosaic panels given the use of mercury and asbestos in the process. Disassembling the mosaic panels and rebuilding them with modern methods (i.e. copperfoil) while preserving the art, will destroy the historic fabric of the windows and should only be done when the mosaic windows are in dire

condition. The danger of destroying a window during restoration is too great a risk to take at this time and restoration should only be attempted when the windows are in worse condition than they are in now.

The windows will be inspected every two to three years and changes in their condition noted and documented until they are in greater need of restoration. During this restoration we propose to replace the clouded, un-vented protective covers over the stained glass with new, vented, laminated glass covers. The existing covers are set on the face of the wood trim. The new glass covers will be set into the original wood trim as much as possible to allow the beauty of the trim to be visible once again.

HEATING VENTILATION AND AIR CONDITIONING (HVAC)

The condition of the existing HVAC system in the Cathedral is unreliable and inefficient. The Cathedral was without air conditioning at times this past summer. The system is over 45 years old and long past its expected life. The existing equipment will be removed. New air-cooled chillers will be located on the roof of the parish house adjacent to existing equipment. A new boiler and air handler will replace the existing in their current locations and pipe between the two will generally trace the route of existing piping. Existing ductwork and supplies will be reused to the maximum extent possible.

REPAIR OF INTERIOR FINISHES

When the water infiltration has been stopped and the walls have had time to dry, interior plaster will be repaired. During this process we hope to replace and consolidate as much of the wiring added over the centuries as much as possible by trenching the plaster and otherwise concealing the wire. Fire protection, sound systems and security systems will be reviewed and updated to the maximum practicable extent. Interior tile floors will be thoroughly cleaned and existing pews will be repaired and touched up without destroying the patina of the wood. Heart pine floors under the pews will be refinished and the entire interior of the church will be repainted.

MISCELLANEOUS

The original stone front steps of the Cathedral were covered with new concrete steps around 1934. These are steep and provide little surface area at the top landing. The safety of elderly and infirm is a concern. These steps will be removed and new steps matching the original stone to the degree possible will be added with greater top landing and less-severe incline. The handrails will be revised and match the current original design.

The wheelchair ramp will be renovated with new topical coating, stucco, steps and handrail matching the intricately detailed handrails and a new cover between buttresses at the top landing will be provided.

This report was written by Larry Woodrum, AIA, presented to and approved by the City of Columbia's Design Review Committee on April 3, 2007.