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25 Aug '78

Cathedral Church of the Advent  
attn: Bryan Helm

Re-1987 Overview of Restor. needs

Dear Mr. Helm:

Attached is a copy of the 1987 Jones & Herrin Arch. rept. (prepared by me), plus a recent guide of 1989 for the Church of the Nativity in Huntsville, of one example (of 2 we have done) of the successful application of "John's" restoration method in repairing spalled masonry & carving.

The cost of the color photocopies was \$23.76.

I hope this is of help in your restoration efforts.

Harvie P. Jones

# JONES & HERRIN

Architecture/Interior Design

May 5, 1987

Cathedral Church of the Advent  
Building Committee  
20th Street  
Birmingham, Alabama

Attention: Alice M. Bowsher/Kidd, Plosser, Sprague  
P. O. Box 11653  
Birmingham, Alabama 35202

On April 25, 1987, the Building Committee, Ernie Martin and Frank Rowmaniwicz of the church staff and Harvie P. Jones, FAIA, briefly toured the Sanctuary and Clingman Commons, including the roof, exterior, interior, basement and bell tower roof in order to obtain an overview of the types of maintenance, repair, conservation and functional considerations which should be addressed. Some of the items observed were as follows. Others will come to light on further examination.

## A. ROOFS

1. Clingman Commons slate roof is of an apparently lesser quality than that on the Sanctuary. Clingman Commons roof has many cracked, chipped, loose and missing slates, and numerous repairs, some of a temporary nature. While this roof is reportedly watertight at present except for a small area in the NW corner, it seems reasonable to plan for this roof's replacement within a few years at most. A better quality matching slate, or a composition "slate" (cement-fiber board) such as that at Morton Hall might be used. This roof is substantially hidden from view. (Reference: Photo 4-1, 5-1)
2. Many ferrous metal items on all the roofs are rusting and should be properly prepared and painted with a rust-resistant industrial quality oil paint. All ferrous metal should be repainted whether currently rusting or not. (Reference: Photo 4-1, 5-1)
3. Some built-up (asphalt and felts) roofs have bare areas where the gravel weathering surface was not adhered and has washed out of place. Some "bubbles" in the felts were observed. The correction of these minor items can lengthen the life of the roof. (Reference: Photo 4-1, 5-1)

Members of the American Institute of Architects  
104 Jefferson Street Huntsville, Alabama 35801  
Telephone 205/539-0764

4. Water-ponding was on the built-up roof over the kitchen. This is most easily corrected by adding a roof drain, which can connect to an existing drain nearby in the attic space.

5. The gutter (and/or the downspout) on the west eave of Clingman Commons is reportedly undersized, spilling rain water into the narrow area behind the chancel. (Reference: Photo 4-1)

6. Water-stains on the walls below the gutters at several places on the sanctuary indicate either gutter leaks or overflows, or stopped-up leaders. Some open gutter joints could be observed. Gutter and leader sizes should be checked for adequacy per accepted "Architectural Graphic Standards" sizing chart. Joints should be checked and properly repaired without the use of "roofing cement". All leaders should have a "stoppage relief spout". Water stains on walls at roof valleys may indicate that the valley water rushes over the gutter lip. (Reference: Photo 6-2)

7. There is no metal eave-flashing at the Clingman Commons roofs. This allows water in blowing rains to get under the roofing into the wooden eave trim, peeling the paint and rotting the wood. (Reference: Photo 3-2, 5-1)

8. There is no gutter at the narrow east eave of Clingman Commons, allowing water to spill down the exterior wall. (Reference: Photo pg. 20)

9. At the Sanctuary, some gable stone coping joints are smeared with asphaltic roofing cement, indicating that the metal flashing typically under stone copings may be deteriorated or needs repair. It would be desirable to lift one or two stones and try to determine conditions and possible corrections. (Reference: Photo 4-1)

10. The copper roof at the bell tower appeared to be in excellent condition.

11. Some gutters and leaders are bent and should be straightened. (Reference: Photo pg. 10/4)

12. Valley flashings, gable step-flashings and other flashings should be checked and repaired.

## B. STONE

After almost a century, several problems with the gray sandstone walls need attention, including some previous repairs for which better techniques are now known.

1. "Rising damp" (ground-moisture wicking up into the porous sandstone) is causing deterioration of the sandstone to about 2 feet above the ground in numerous locations. This deterioration may be partly due to freeze-spalling and partly due to the constant wetting and drying of the stone. In some cases the ground is low by the walls, trapping rain water runoff at the foundations. This problem should be partially corrected by altering the ground slopes and composition to drain the water quickly away from the foundation. At more expense, horizontal lead flashings can be inserted in the stone bed-joints near the ground level. Some stones may need replacement or other appropriate repair. (Reference: Photo 7-2, 9-4, 10-1, 10-3, 11-2)
2. Many stones at various heights and locations show freeze-spalling due to moisture getting between the stone stratum planes, which appear to be laid in the vertical plane instead of the horizontal plane contrary to the advice of the architect Vitruvius in his books of 2,000 years ago. (Reference: Photo 6-3, 8-2, 9-3, 10-1, 10-3, 11-2)
3. Several spalled stone faces have been covered with a thin colored patching material, perhaps "Thoroseal" compound. This film has released in places, allowing water to be trapped behind it in the stone and accelerating the stone deterioration. (Reference: Photo 7-1, 7-3, 8-2, 9-1, 9-3)
4. Many mortar joints appear to have been re-pointed with gray portland-cement based mortar. Portland cement is much harder and more impervious to moisture than sandstone. This can trap moisture in the stone above the cement, causing stone freeze-spalling. The cement will not "give" in temperature expansion of the wall, as will lime-based mortar, sometimes causing stone cracking and spalling. It would be desirable to remove any portland-cement mortar and tuck-point with a more resilient mortar that is primarily lime-based, which is likely to have been the original mortar composition. (Reference: Photo 6-1, 6-2, 7-1, 8-1, 9-3, 9-4, 10-1, 10-3, 11-2)

5. Numerous broken-off decorative and trim-stone parts appear to have been patched with a portland-cement mixture. See item 4 above for the problems this can cause. (Reference: Photo 8-1, 8-2, 9-3, 11-2)

6. Some replacement stones at the Sanctuary entry arch piers are of a greenish-yellow color which does not match as well as desirable with the original stone (gray, weathered to a yellow-tan). (Reference: Photo 9-1)

7. Some of the limestone steps, whose stratum planes are properly horizontal, are beginning to separate along the stratum planes. It may be quite a few years before these need replacement, however. (Reference: Photo 8-3)

8. See note A-9 re gable coping-stones. (Reference: Photo 4-1)

9. The stone cross above the Sanctuary west front when viewed from the nearby bell tower roof can be seen to be badly split and previously repaired. It appears that the cross is in danger of falling and needs attention as soon as is practicable. Some other gable finish faces have split off and fallen (due to freeze-spalling in the vertical stratum planes) and may be in similar danger. It appears that a neat and inconspicuous copper cap conforming to the tops of the various finials could be fabricated which would prevent or reduce this freeze-spalling by keeping most moisture out of the stratum planes. (Reference: Photo 1-3)

10. While the stone is soiled, the soiling is of a patinated character and it does not seem needed or even desirable to clean it. (Reference: Photo 1-1, 6-2, 6-4)

11. Where the stone steps were removed at the former north entry to Clingman Commons, a crude stucco patch has been made to cover the hole in the stone veneer where the steps were removed. It would be desirable to repair this with matching stone. (Reference: Photo 3-1)

12. The badly stained brick walls due to item A-8 in the walkway east of Clingman Commons would desirably be repaired and repainted after installation of the needed gutters and leaders. (Reference: Photo 20-1)

C. The terra-cotta sculpture in the Memorial Garden is suffering severe freeze-spalling and must be put under a roofed pavilion or moved inside to save it. It currently needs the attention of an art conservator for proper repairs. (Reference: Photo 11-1)

#### D. LANDSCAPING

1. The large oak in the Memorial Garden may be gone in a decade or so. It would be desirable to have other young potentially large trees coming along to take its place elsewhere in the garden, preferably not directly by the buildings. If the oak is not receiving regular attention from an arborist to prolong its life, this should be considered as part of "maintenance", perhaps on an annual basis. (Reference: Photo 1-1)

2. The several young trees north of the Sanctuary and in the Memorial Garden should every fall have their lower limbs properly pruned off so that eventually the lowest limbs of a large tree will be 15 to 20 feet above the sidewalk (like the garden oak) which presents a much better appearance for both the trees and the Sanctuary. This is a simple and attractive landscaping enhancement that can be observed along any 1920's tree-lined street, but it seems to have been forgotten in recent years. Perhaps it is believed that the limbs should rise up with the trunk as the tree grows, but they don't. In any given year of growth, the bare trunk should be 1/4 to 1/5 of the total tree height for the best appearance. Avoid the usual temptation to just plant dogwoods, which are nice but are not "trees" in the sense of a red maple or oak. (Reference: Photo 2-1, 2-2)

#### E. STAINED GLASS

1. The stained glass is protected primarily by a later thick corduroy ribbed glass in steel sashes. Some of the sashes have a clear acrylic glazing, or perhaps clear glass. The glazing is soiled on probably the interior and exterior faces, which together with the ribbed glass and weathered acrylic surfaces presents a cloudy appearance to the stained glass on the exterior. Perhaps the intent of the ribbed glass was to diffuse the daylight over the entire stained glass surface, but it is doubtful that this would be a significant advantage over clear glazing. A side-by-side experiment could be conducted (with clean ribbed glass and clear "safety" glass) to test the idea. If there is no advantage to the present ribbed glass, it might be desirable to replace it with clear "safety" glass (a tough acrylic film sandwiched between two layers of glass) so that the stained glass would be more attractive from the exterior. At the same time the stained glass would be properly (gently) cleaned without the use of any harsh material such as ammonia and per the directions of a stained-glass conservator. (Reference: Photo 6-4)

2. The stained glass pieces (where checked) are loose in the lead comes, as is usual for aged windows. To repair this requires the removal of the windows to lay them flat in a workshop. This entails great expense and some risk to the glass. As long as there is exterior protective glazing it may be best to leave them in place after performing any straightening and reinforcing of the comes that is needed. It is recommended that the advice of a recognized stained-glass conservator be obtained. As one reference see pages 8 and 9 of the APT Bulletin, Vol. XVIII No. 4, 1986, although this referenced project involved the extreme measure of complete replacement of the comes; both historically and economically undesirable if it can be avoided.

3. With the considerable air leakage at the lead comes, there is probably no way to prevent condensation and soiling between the protective outer glazing and the stained glass. For this reason the Building Committee may want to investigate replacement of the outer steel sash with an easily removed sash to facilitate cleaning every several years. Some small vent holes at the top and bottom of the outer sash may help to vent out condensation, but may accelerate soiling. (Reference: Photo 6-4)

4. Some of the present ribbed protective glass is broken and the steel frames, if retained, need scraping, priming and painting per note A-2. (Reference: Photo 6-4, 19-2)

#### F. EXTERIOR WOODWORK

1. The Bell Tower north entry woodwork and finish is heavily weathered and patched due to its exposure to rain and sun, whereas the more protected front entry woodwork and finish presently appears to be in good condition. The north entry rotted and patched bottom edges at the paneled oak jambs should be repaired, except the wood jambs should be kept clear of the masonry floor by about 3/8 inch, and the bottom edges of the wood should be sealed. This is to avoid capillary action which draws moisture off the masonry floor up into the wood, causing rot. The open bottom joint should not be caulked, for this would re-connect the floor water with the wood grain. (Reference: Photo 8-1, 8-2)

2. The present weathered varnish can be stripped and replaced but will typically not last for more than a year or two in exposed locations such as this. Coatings which cannot be easily "stripped" should not be used (such as hard urethane). They will have to be removed every few years and the wood profile and moldings would likely be damaged each time in the process of scraping, etc. A "polyurethane varnish" may last somewhat longer than "spar varnish" (still not more than a few years) and is said to be easily stripped. This question needs additional study. (Reference Photo 8-1, 8-2)

3. The masonry floor (appears to be concrete at the top step) of the Bell Tower north entry may not drain well. Flood-test to verify and correct if needed by modifying or replacing the floor for a better slope, without creating a dangerous low top step. Perhaps drainage channels by the wood jambs can be cut. (Reference: Photo 8-2, 9-2)

#### G. SANCTUARY INTERIOR

1. The large roof trusses should be checked as to the condition of the wood, particularly at the anchorage points for the iron tension-rods. If some internal decay or insect damage is suspected, the internal condition of the wood can be sampled with an "incremental borer", a Forester's hollow bit which can extract a 3/16 inch dowel of internal wood from a 3/8 inch diameter hole.

2. Spot-check all wood structural and finish members for rot or insect damage, particularly wood which adjoins masonry, roof eaves and flashings, and the ground. Since some past wall and coping leak evidence is present, some decay may be found.

3. Wall plaster water-spots at the northwest corner of the north transept together with wall-wash marks on the exterior of this roof valley confirm that this gutter corner spills over in heavy rains. An external "dam" appears to be needed at this and probably other such corners.

4. The south transept top windows have some cracked plaster by them, indicating some minor wall movement. This should be investigated and similar conditions searched out.

5. The wood sub-flooring under the area in front of the chancel has moved enough to open a line of joints in the small hexagonal ceramic floor tiles. Some tiles have settled and some have been previously replaced in a slightly off-shade tile. If the wood flooring is secure, this does not appear to be a significant defect. (Reference: Photo 15-1)

6. Messrs. Martin J. Romaniwicz and Ernie Martin pointed out that modifications to the oak paneling at the Chancel area had used rotary-out (flat grain) oak plywood panels instead of the original rift-sawn solid oak wide boards. They also mentioned there were several different shades and sheens of stain and varnish in this area due to various modifications. The Committee would have to decide where on the priority list this item should be placed. (Reference: Photo 15-2)



Some elaborate "Gothic" chancel fittings have recently been done by Craft-Woodworkers, Rt. 1, Box 228, Sawanee, TN 37375, Attn: Ray Benoit, John Bratton (615-518-0208), at the Vestavia Church of the Ascension at 1912 Canyon Rd., based on a photograph sent to us by the company some weeks ago. The Committee may want to view this to get an idea of this company's work (the writer has not seen it). In a telephone conversation of 4 May, the architect, Mr. Wilson of Henry Sprott Long, felt they had done a good job.

7. Possible functional modifications were discussed to ease traffic flow in the chancel area during Communion. Also a better flow is needed before and after services between the Sanctuary and Clingman Commons. Accurate as-built drawings are needed of this area for planning purposes. (Reference: Photo 16-2, 16-4)

8. The south organ chamber opening needs enlargement for acoustical purposes. Accurate vertical and horizontal as-built plans and elevations of this area are needed to plan this change. (Reference: Photo 16-2, 16-4)

9. The painted pine Sanctuary floors were discussed. It is important not to power-sand old tongue-and-groove floors for when the wood is ground down close to the grooves, the thin wood flanges splinter and the original wood floors are thus lost and must be replaced, at great expense. The worn floors have character, will be somewhat protected from wear by the paint, and historically should be retained.

#### H. CLINGMAN COMMONS INTERIOR

1. Some small water spots were noted by Mr. Martin at the NW corner, high (see roof notes above).

2. The floor is somewhat out of level. Structural framing and supports should be checked. If they are sound this would be considered a minor cosmetic item.

#### I. MECHANICAL, PLUMBING AND ELECTRICAL SYSTEMS

1. These systems should be checked by engineers in these specialties with regard to function, efficiency, age, condition and probable future dates of needed replacement so that the replacement costs can be budgeted several years in advance.

2. Inactive wiring, plumbing and mechanical devices in crawl spaces should be removed where it is easy to do so unless it is desired to keep some examples for technological history.

J. The structural system has partially been observed by Lowell Christy. She can recommend if additional observation or analysis is advisable. See items G1, 2, 4, 5 above for some of these items. Some makeshift floor supports seen in the Sanctuary crawl space should be improved, as recommended by Ms. Christy.

K. THE SUGGESTED PROCEDURE FOR THIS PROJECT IS AS FOLLOWS:

1. Field survey and notes on all desirable repair/restorations/remodeling items.
2. As-built measurements, plans and elevations of the Chancel and south organ chamber areas including the passage south of the Chancel to Clingman Commons and the adjacent small rooms.
3. Research on possible materials, techniques, suppliers, craftsmen and contractors needed for the various special conditions.
4. Approximate cost of each work item (these will necessarily be rough-estimate costs due to the difficulty of estimating small, scattered items involving many time and technical unknowns.)
5. Sort the list of near-future work items into a priority list.

First priority - Safety

Second - Protection from further deterioration

Third - Functional improvements and cosmetic repairs as selected.

6. Add up the estimated costs of the K-5 items cumulatively and decide how far down the list the available funds will go. This may bring about some re-sorting of the third priority list.
7. Before a final decision on item K-6, consider the schedule of items likely to need replacement in 0 to 7 years (roofs, mechanical systems, painting, etc.) and see if this alters the K-6 priority order or extent.

8. Once a budget is established, prepare necessary bid, negotiation and execution documents to perform the work. Many items will not reasonably be of a nature that can be competitively bid without the bidders "guessing high" to try to protect themselves. In some cases "bidders" can instead quote their flat fee above the cost of time and materials. Other items, such as the Clingman Commons reroofing, can easily be bid, with any hidden damage qualifying as a change order.

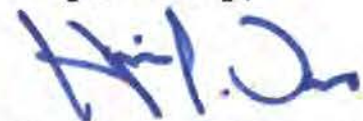
9. It would be helpful that the restoration architects be assisted by a Birmingham architect experienced in restoration in order to reduce the number of 4 hour journeys to the site. It is characteristic of restoration work that the architect needs to do fewer drawings but desirably will visit the site much more frequently than in new construction. Consequently, the Committee should be aware that we would be unable to visit the site as many times as desirable, and would still need to charge for travel time between 8:00 am and 5:00 pm. A maximum charge of 8 hours per day would be involved on trips no matter how many hours were expended. The charges would be:

Restoration Architect - \$75/hour  
Project Manager - \$50/hour  
Technical - \$40/hour  
Administrative - \$30/hour

plus travel time at \$0.20 per mile, printing, film and such similar costs. If the project proceeds, a formal contract will be drawn up. If consultants are needed and approved by the owner (on stone repairs, electrical and mechanical systems for example) they would be billed at 1.15 times cost.

We would be delighted to assist the Cathedral Church of the Advent. Please let us know if we can furnish further information.

Respectfully,



Harvie P. Jones, FAIA  
HPJ/dlc

copy: file



# CATHEDRAL CHURCH OF THE ADVENT

Birmingham Green at Sixth Avenue North  
Offices: 2017 Sixth Avenue North • Birmingham, AL 35203-2701 • 205/251-2324

BRYAN F. HELM  
ADMINISTRATOR

Mr. Harvie P. Jones, FAIA  
420 Eustis Avenue, SE  
Huntsville, AL 35801

August 31, 1998

Dear Mr. Jones:

Thank you very much for sending me the notebook. I am looking forward to making a thorough study of the information it contains.

I wanted to get you a check as soon as possible to reimburse you for photocopying and postage. Enclosed is a check for \$26.39.

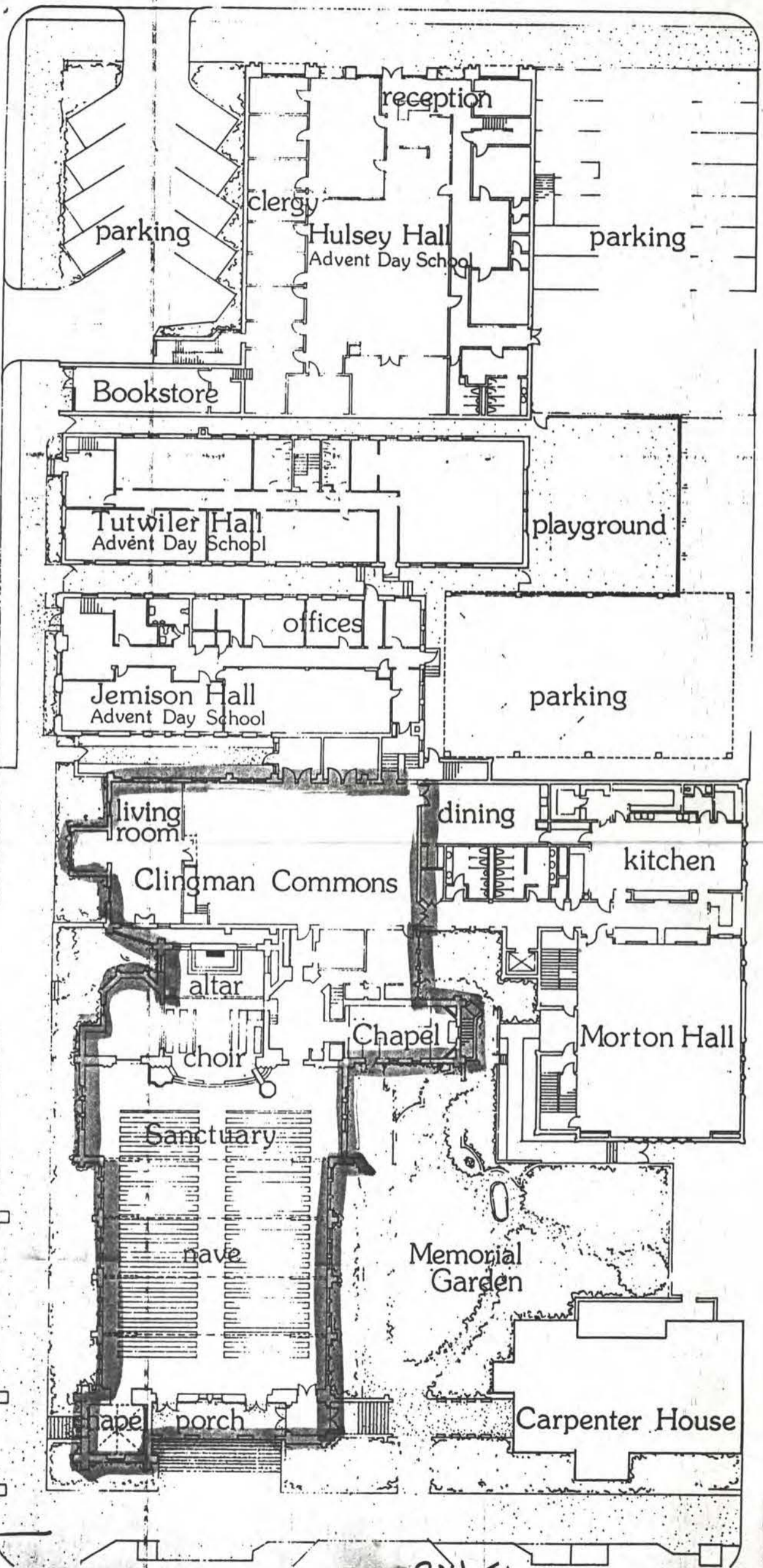
Thanks again for your help. Please call me the next time you plan a trip to Birmingham. I would enjoy meeting you.

Regards,

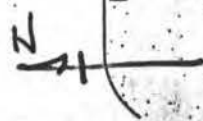
  
Bryan F. Helm  
Administrator

BFH/ms

6th Avenue North



Alley



20th St.

Cathedral Church of The Advent  
Overview of Restoration and  
Remodeling Needs

1987

Shenandoah Studios  
Of Stained Glass Inc.

KENNETH J. PUGH  
Consultant  
Southern Region

Report " " " "  
re: Cathedral of the Advent

Sh. Studios  
S. Studios

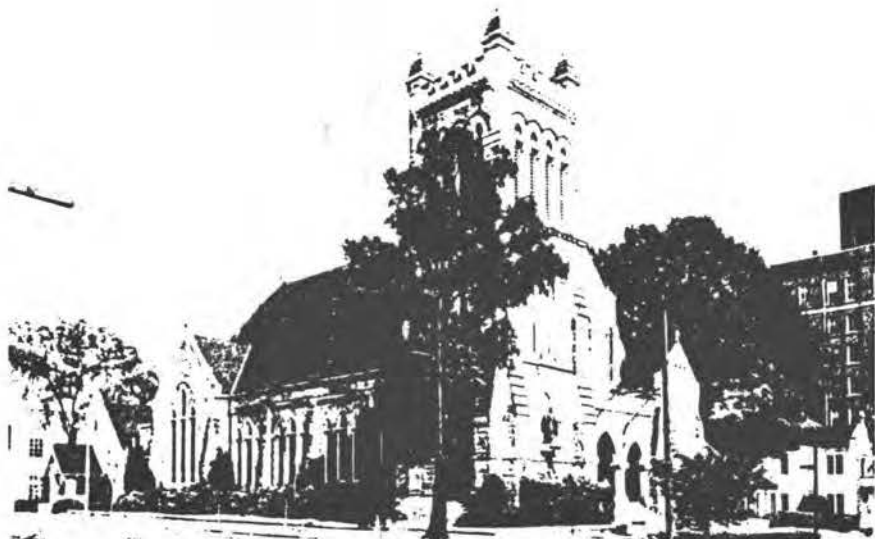
Front Royal, Virginia 22630-1468  
1-800-368-3079 1-800-523-8882 (VA)  
703-636-2937

Specialists in Stained Glass Restoration, Protection & Design

PS - sent copy to Mr.  
25 Aug '98 on request  
of facil. mgr.  
(Bryan Helm)

Apparently no action since  
rept. prepared in 1987

HJ



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10 Church of the Advent. 1893. 1962. 1977-78.  
Sixth and 20th (SE corner)

Architects: Charles Wheelock, 1893.  
Contractors: Birmingham Stone Company,  
1893.

Carpenter House. 1950  
Architect: Jack B. Smith

*- MLW: "no evidence  
designed. Wheelock  
was contracting  
architect."*

In the heart of the early Northside residential area, Birmingham's first Episcopal congregation began construction of the present Church of the Advent in 1887. The gray sandstone, English Gothic style design is characterized by its square crenelated bell tower, stone buttresses, pointed arches, and Celtic crosses crowning the front gables.

Broad steps lead up to the recessed porch arcade and oak doors carved with biblical scenes grace the entrance way. Distinctive features of the interior include the stained glass windows and the immense ceiling, suggesting an inverted ship's hull and symbolizing the church as the ship of Christ. The Advent was designed by a local vestry man for strength and beauty, but also for practicality. Hot water is piped beneath the pews and every member of the parish should have an unobstructed view, due to the incline of the floor.

The interior is open for visitation, along with the Rector's garden. Located on 20th Street between the church and Carpenter House, the garden features a cloister walk among seasonal flowers and statues. Three live oaks create an atmosphere of seclusion, an oasis of peace within the bustling city.



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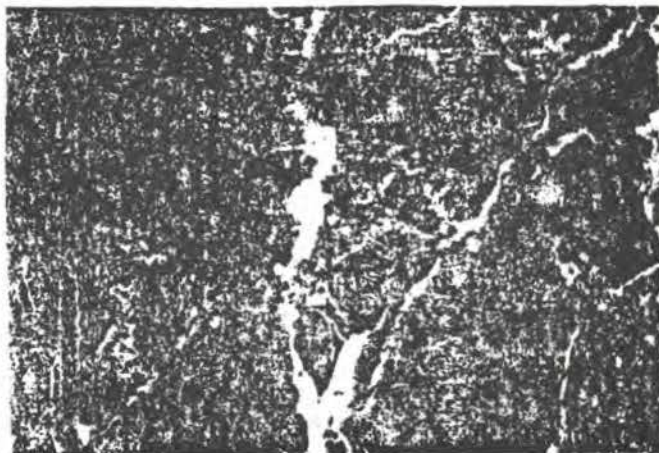
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# Care Of Marble

Marble is a rare and beautiful material which Nature has made both practical and functional. It does, however, require a reasonable amount of care to protect it against staining, discoloration and marring.

Many people think marble is almost impervious. It is actually a form of intensely compacted limestone, and thus is more porous than it looks. This makes it susceptible to staining by many foods, spilled liquids and other household materials, especially if they are left standing on the surface for some time.

Liquids and other substances with even a mildly acidic contact can etch, discolor or otherwise damage the marble. It is advisable to use coasters under glasses when placing them on marble tops.



The best way to maintain the appearance of any Marble/Travertine surface is:

1. Apply Paste Wax and Polish whenever necessary. The wax will give the marble surface protection.
2. If you should spill any liquid or other material onto surface, wipe off immediately, rinse and re-wax. (Always use coasters under glasses).





# Proper care keeps marble sparkling

By Judy Moore  
Chicago Sun-Times

**THE PROJECT:** Cleaning and repairing marble. In the home, marble is most commonly found in fireplace mantles and facings, windowsills, floors, tabletops and counters.

Marble is a semiprecious stone found on every continent, said a representative for the Marble Institute of America, an international organization of producers, importers, exporters, distributors, fabricators, finishers and installers of the stone.

Given the proper care, marble, with its varied textures and colors, will keep its beauty and durability for centuries.

**THE DIRECTIONS:** For general upkeep, marble objects should be regularly dusted and washed with a clean, soft cloth and fresh warm water to remove dust that obscures the sheen.

Twice a year, remove any ingrained residue by washing with warm water and a mild detergent. A coat of non-yellowing wax may be applied to protect the surface.

Many drinks and foods contain acid (alcoholic beverages, citrus fruits, etc.). Since marble is an alkaline material, acid will etch the stone, so wipe up spills immediately. To prevent staining and scratching, slip coasters beneath beverage glasses and place mats or a piece of felt under china, ceramics, silver and ornamental articles. Store cosmetics on a felt-bottom tray.

The Marble Institute of America passed along these tips for keeping marble lovely:

Gather supplies from hardware stores, marble dealers or lapidary shops. You will need rubber gloves, some form of eye protection, a wooden or plastic spatula, a bucket, a cloth or a natural-bristle brush, plastic sheeting, masking tape and the specified cleaning components. Work in a well-ventilated room.

To remove a stain, first try scrubbing it off with a commercial marble polish according to the manufacturer's directions. If you are not sure what caused the stain, use the general poultice method of stain removal, which draws the stain out of the marble and into the poultice.

To make a general poultice, which also removes deep-seated grime and dirt, mix an absorbent material (such as moulding plaster, untreated white flour, white tissue or paper towels, white powdered chalk, talcum powder, etc.) with enough common laundry bleach or a 6 percent solution of hydrogen peroxide to form a thick paste.

First, moisten the surface of the marble with the same liquid that made the paste, wetting the marble beyond the area of the stain to prevent the problem from expanding into the clean stone.

Use a wooden or plastic spatula to apply the paste to the marble in a uniform half-inch thickness. Tape plastic sheeting with masking tape over the poulticed area and allow it to set for 48 hours. After it has set, dampen the poultice with clean, cool water to control the dust. Remove the poultice with the spatula and rinse the cleaned area thoroughly with water. Blot or wipe off excess water and let dry. A second poultice may be necessary.

If you know what caused the stain, try one of these corrective measures.

## Corrective measures.

■ **Oil stains:** An oil stain usually is caused by butter, milk, cream, salad oils, cosmetics, mustard, etc. An acetone poultice must be used to remove an oil stain, which darkens marble. Mix a poultice as described above, using acetone instead of bleach or hydrogen peroxide. As a safety precaution, keep the acetone away from flames or sparks, don't smoke and use in a well-ventilated room. Apply the poultice as described above. If you are leery about using this product, contact a professional because this method could be dangerous.

■ **Rust stains:** Superficial rust stains can be removed with an energetic scrubbing.

Tougher stains will respond to the application of a commercial rust remover, following the manufacturer's directions. If this fails, try a non-abrasive scouring powder followed by a second application of the remover. If this doesn't work, apply a poultice for not more than half an hour using sodium hydrosulfate as the liquid base. Never combine a bleach cleaner with an ammonia cleaner because such a mixture produces toxic fumes.

■ **Paint stains** should be removed only with a heavy liquid commercial paint stripper, used on a small area at a time, following the manufacturer's directions. Flush profusely with clean water after use.

"You can use a (natural-bristle) toothbrush to get into the crevices," said Bernie Van Etten Jr., president of Murphy Marble Co., a Chicago firm that fabricates and installs marble and does custom work.

■ **Smoke or fire stains:** Use a commercial smoke remover available at marble dealers or remove surface dirt by scrubbing with a non-toxic detergent and a fiber brush. If that doesn't work, make a poultice as described above, using an alkaline cleaner and water as the liquid base. Use a wood or plastic spatula to spread a half an inch thickness over the marble. Tape a plastic sheet over the area for 24 hours, then remove the plastic sheeting to allow the poultice to dry for another 24 hours. Then wet the poultice with clear water and wipe it off with a spatula. Another application may be needed if marble is badly stained.

When stains are removed, wet the surface with clean water, apply a marble polishing powder, and buff.

■ **Etch marks:** To remove an etch mark caused by acids from wine, beer, vinegar, tomato products, mustard, carbonated beverages, ink and salad dressing, wash the surface with clear water. If stain persists, try a general poultice or the method recommended for the specific stain.

When stain is gone, buff the surface with marble polishing powder. If etch mark persists, consult a marble dealer.

Some stains never respond to treatment. Learn to live with them.

For a copy of the "How to Keep Your Marble Lovely," send your name, address and request, plus a check or money order for \$1.35, to the Marble Institute of America, 33505 State St., Farmington, Mich. 48024. ■

## HOW TO KEEP YOUR MARBLE BEAUTIFUL

Marble is a rare and appealing material which nature has made both beautiful and durable. It is because of these qualities that you use marble in your home on tables, counter tops, windowsills, floors, walls and fireplaces.

Polished marble furniture tops, however, should be treated with care just like any other valuable piece of furniture. Food and beverages that will mar the finish of fine wood also may mar polished marble. Moisture rings may result from sweating glasses; beverages containing acid fruit juices may etch the finish. It is, there, recommended that coasters be used under glasses and that spilled liquids or foods be immediately wiped up and the areas washed.

Polished marble may also, through use, lose some of its beautiful lustre and acquire an occasional scratch. Fine scratches may be buffed away and the entire surface repolished whenever necessary with polishing powder applied on a damp cloth.

For further protection use a non-yellowing wax.

The cleaning methods described in this booklet are perfectly safe for genuine marble but may damage other materials. If you are not sure the item you want to clean is genuine marble, check with a marble dealer.

ETCH MARKS are caused by the action of certain acids on the finish of polished marble. Among these are wines, beer, fruit juices, vinegar, tomato products, mustard, carbonated beverages, ink and salad dressing.

Some materials will etch the finish of the marble, but not leave a stain. Others both etch and stain the marble.

Wash the surface with clear water. If a stain remains, poultice it (see "Stain Removal") according to the treatment for oil or organic stains, whichever is proper.

Once the stain has been removed, wet the surface with clear water and sprinkle on polishing powder (tin oxide, available from hardware stores or local marble shops). Rub the powder onto the marble with a damp cloth or using a buffing pad with a power drill. Continue buffing until etch mark disappears and the marble surface shines. If the etch mark persists consult your local marble dealer. (Check your Yellow Pages under "marble").

### STAIN REMOVAL

Most stains will require the use of a poultice. This poultice can be made of white blotting paper, white paper napkins, white cleansing tissue, commercial whiting, or powdered household cleaner. The poultice should be soaked in the proper solution (depending upon stain--see below) and kept from drying out while it is on the marble. It can be covered with a piece of glass or a sheet of plastic (a vegetable bag would do) which will keep the moisture from evaporating while the stain is being drawn out of the marble, a process which may take from one to forty-eight hours, depending upon the stain.

Once the stain has been removed, the area may require repolishing. Follow the procedure as shown under "Etch Marks" on the opposite page.

ORGANIC STAINS are caused by such substances as tea, coffee, wet bark, flowers and leached colors from paper or textiles. These usually take the shape of the staining object and will often disappear without treatment after the staining substance has been moved. To facilitate removal of the stains, wash the surface with clean water and apply a poultice soaked with Hydrogen Peroxide (20 volume) or Household Ammonia (full commercial strength.)

OIL STAINS are caused by butter, milk, cream, salad oils, peanut butter, mustard, handcream, etc. Use a poultice soaked in Amyl Acetate or Acetone.

RUST STAINS are orange to brown in color, and follow the shape of the staining object. These are caused by steel wool, flowerpots, some soils, nails, bolts, screws, cans, etc. Use a poultice soaked in commercial iron rust remover.

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## Stained Glass Restoration

Michael F. Lynch, P.E.

In this high-tech quarter of the twentieth century, stained glass still retains the mystique of a medieval craft. Unfortunately, there are no industry-wide standards for repair or restoration; no active accreditation program for craftspeople. Therefore, when preparing specifications for stained glass work, the architect, engineer or conservator (A/E/C) must rely entirely on the contractor for direction. This makes selection by competitive or negotiated bidding difficult, since contractor proposals often are significantly different and meaningful comparison impossible.

For large scale projects, or for particularly significant stained glass, it is advisable to secure the services of a stained glass conservator or skilled crafts-person to evaluate the windows' condition, determine the nature and extent of required work, and provide specific technical information on materials and methods. From this information a specification can be prepared that all bidders will use in submitting prices, and against which the work can be evaluated. A sample specification follows:

### Sample Specification for Stained Glass

#### *Description/Scope of Work*

Stained glass restoration required for this work includes, but is not necessarily limited to restoration, replacement, releading, re-framing, reinstallation and cleaning of the existing leaded glass window units.

#### *Quality Assurance/Minimum Qualifications*

Stained glass restoration shall be performed only by an established stained glass studio with demonstrated experience in the repair and restoration of historic stained glass windows. Contractor shall submit with the bid a complete list of all craftspeople who will work on the windows, along with their train-

ing and relevant experience. For purposes of this contract, a minimum of three years training or experience in stained glass restoration shall be deemed acceptable. Contractor shall also submit with the bid a list of equivalent restoration projects that have been completed, including dates of contract completion and names of current studio staff involved.

#### *Definitions*

For work specified on the Window Repair Schedule, as shown on the drawings and specified herein, terms and work required are defined as follows:

- A. Cleaning (window in place or in studio)
  1. Wash window, both sides, with warm (maximum 120° F.) soft or distilled water, non-ionic (Ph neutral) surfactant, and soft natural bristle brushes.
  2. Glass fiber brushes (fiberglass erasers) may scratch the glass surface and shall not be used without the written permission of the A/E/C.
  3. Painted glass shall not be cleaned with solvents or ammonia. It may be cleaned as described in A.1. above only after test samples have been executed and evaluated by the A/E/C to determine if paint is removed or damaged by cleaning.
  4. Harsh chemicals such as acids, lye, or oven cleaner may damage the window and shall not be used.
- B. Releading (window removed to studio)
  1. Document window throughout process. (See D. below.)
  2. Carefully remove window, crate and transport to studio.
  3. Completely disassemble window, removing all lead.
  4. Repair cracked glass using edge-gluing or copper-foil techniques. No grozing or trimming of glass shall be allowed, nor shall existing glass be altered in any way.
  5. Reassemble window with new lead comes. Waterproofing cement shall
- be thoroughly forced into all leads, both sides. All excess shall be removed so that none remains on the glass surface nor around the edges of leads.
6. Reinstall window in original, repaired, or new sash or frame as noted on Repair Schedule. (See E. below.)
- C. Restoration (window removed to studio) [As in Releading, B.1,2,3,&4 above.]
  5. Replace missing or badly damaged colored glass with new glass that matches the existing in all visual qualities.
  6. Repair damaged painted glass using edge gluing or copper-foil techniques. If painted glass is badly damaged, DO NOT DISCARD: sandwich old glass between two pieces of new clear glass. Missing or lost painted elements may be painted and fired on the new glass only. Do not repaint, overpaint or refire existing painted glass.
  7. As in Releading, B.5, & 6 above.
- D. Documentation
  1. Prior to the start of work the windows shall be photographed in-situ, both sides, with reflected and transmitted light, using both black-and-white and color transparency film. The overall window, each section (removable unit) and damaged areas shall be photographed. The photos shall be keyed to a schematic drawing of each window.
  2. Prior to the start of work, prepare a rubbing on paper of each section. The rubbing shall show all lead lines and be labeled to identify the section. The rubbings shall be annotated to identify missing, damaged and previously repaired or replaced glass.
  3. All damaged glass pieces to be repaired (edge-glued, copper foil, or plated) shall be photographed in the studio before and after repair, in reflected and transmitted

light, using black-and-white and color transparency film.

4. One complete and labeled set of all before-and-after prints and transparencies shall be provided to the owner upon completion of the contract.

#### E. Reinstallation

1. Reinstallation of restored/relined windows shall not begin until the finished glazing work has been inspected and approved by the A/E/C, and until the work of all other contractors has been completed.
2. Window sections shall be reinstalled in their original locations, with original orientation (e.g. painted side in) as keyed to the numbered schematic drawing.
3. Copper tie wires shall be soldered in at all original locations. Additional ties as required shall be installed only at lead joints. Ties shall be twisted tightly to reinforcing bars, excessive wire clipped off, and the twisted coils bent tight to the reinforcing bars.
4. Upon completion of the reinstallation the windows shall be inspected and all surfaces carefully cleaned as per A. Cleaning above. Clear coatings, varnish, or sealers shall not be applied over any cleaned, restored or untouched stained glass window.

#### Products

##### A. Glass

1. Stained or colored glass shall be selected to match exactly the hues, color densities, thickness, texture, light transmission and all other visual qualities of the existing.
2. Contractor shall submit samples of all proposed replacement glass to the A/E/C for approval before reassembly.

##### B. Lead Cames

1. Unless otherwise directed by the A/E/C, new lead cames shall match the existing in shape, size, depth, heart thickness and cross-section.

2. Lead cames shall be of alloy with either of the following compositions:

- a. 99.965% lead, 0.035% tellurium
- b. 99% lead, 0.75% antimony and 0.25% tin

3. Contractor shall obtain, from an independent lab, an emission spectrograph test of random samples of the new lead cames to determine their composition. Contractor shall provide to the A/E/C a copy of the testing lab's report. Batches of lead came that do not comply with B.2. above shall be rejected in their entirety.

##### C. Waterproofing Cement

1. Shall be mixed according to the following formula and worked until thoroughly homogeneous.  
3 quarts organic oil putty (such as "SuperGlaze"® by Atlas Putty Co.)  
3 cups Pfizer Vicron 15.15 whiting  
1/2 cup thinner  
1/2 cup boiled linseed oil  
2 Tablespoons lampblack
2. No Portland, masonry or hydraulic cement shall be added to or used with waterproofing cement.

##### D. Reinforcing Bars

1. All existing reinforcing bars shall be retained and reused.
2. New reinforcing bars shall match the existing in shape, size, material and finish.

##### E. Solder and Flux

1. Solder shall be manufacturer's top quality, of either 60/40 or 50/50 composition.
2. Flux shall be mild acid type, such as oleic acid. Acids of lower Ph than oleic acid shall not be used. Chloride fluxes such as zinc chloride also shall not be used.

##### F. Non-ionic Surfactant

The following products shall be deemed acceptable:

1. Igepal by GAF
2. Tergitol by Union Carbide
3. Triton by Rohm & Haas
4. Poly-tergent, B-series by Olin

##### G. Other Materials

Other accessories as required for a complete job are to be selected by the contractor subject to approval by the A/E/C.

When a stained glass project also includes repair of the window frame, it is advisable to include that work in the same contract. This facilitates scheduling of the work and assures that the repaired windows will fit into the repaired frame.

In selecting a stained glass studio for repair work, it is important to assure they have the necessary related experience. Their work must have been on projects of similar scope, scale and complexity. It is essential not only to check references, but to inspect in person several completed projects. Unfortunately, it usually is not possible to judge a studio's work from references and letters of recommendation.

A visit to the studio, if at all possible, can be very instructive as well. The quality of craftsmanship you may expect on a project is evident only upon close inspection of previous jobs and of the staff at work. Likewise, if hiring a craftsman or conservator as a consultant on the preparation of scope of work and specifications, be certain that the person has the requisite relevant experience. A conservator of glass objects for museum display may not be qualified to advise on a large-scale window project where the glass will be exposed to the elements.

The editor wishes to acknowledge the following people and organizations for information they contributed to the preparation of the article:

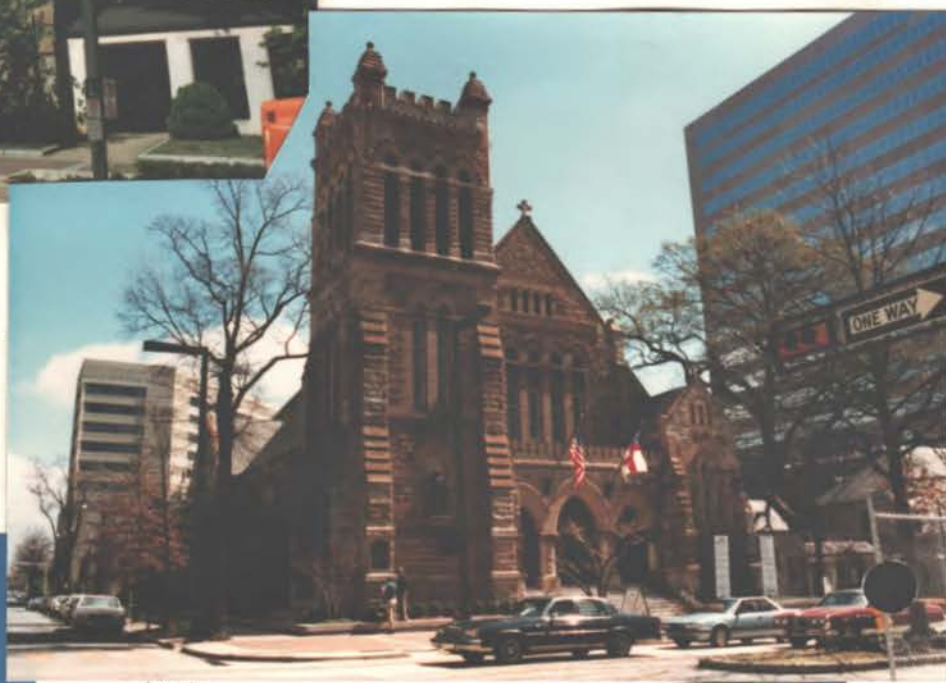
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Census of Stained Glass Windows in America

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Cathedral Church of the Advent  
(Episcopal)  
20th St. & 6th Ave  
Birmingham, AL  
built 1893  
photos Jones & Herrin,  
Architects, Huntsville  
Harvie P. Jones, FAIA  
May 1987



1 N → 24th St



2 N →



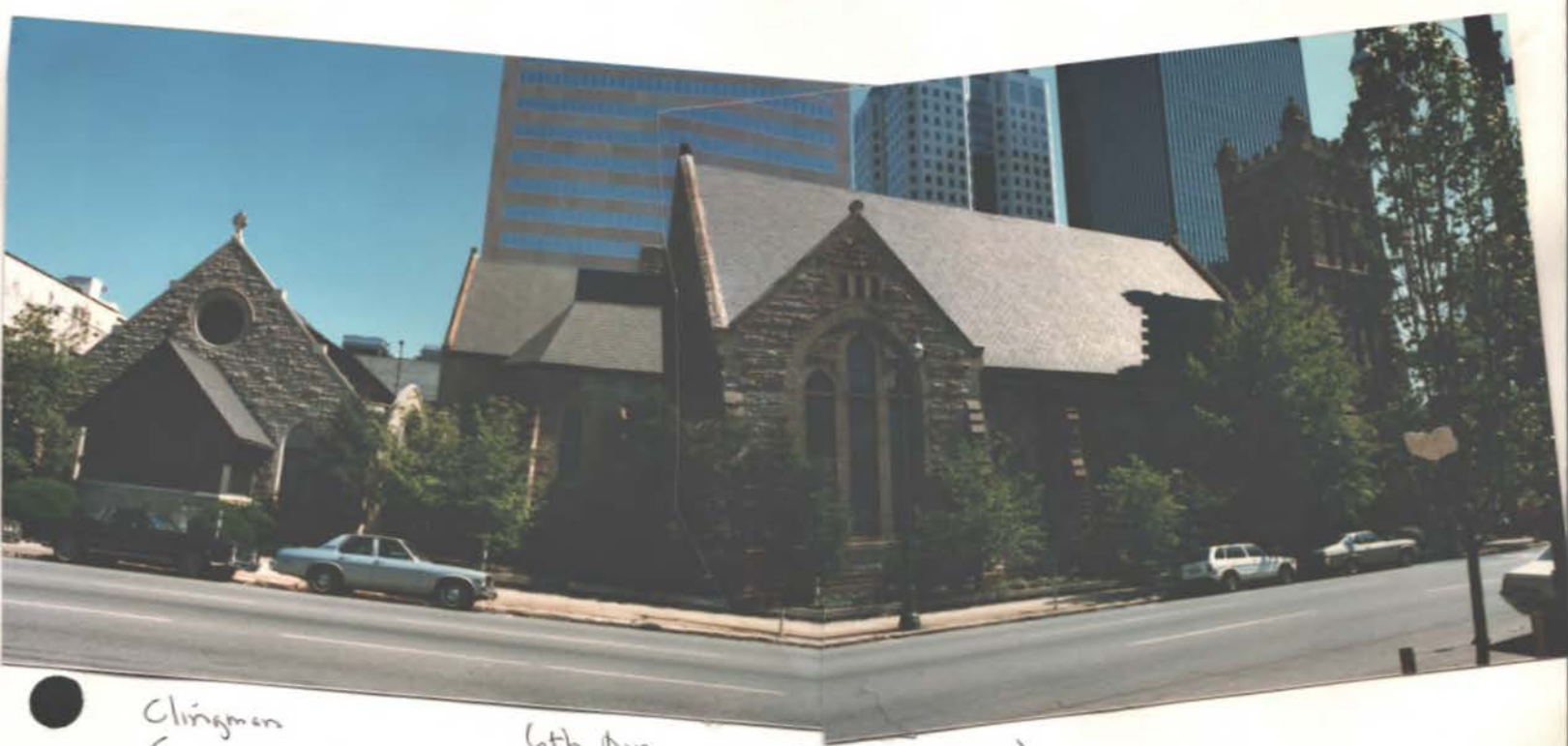
3 N → 20th St.



N at 6th Ave

20th St.

1



Clingman Commons

6th Ave.

N. Transept

2

XAN



N

1



no metal eave-flashing.  
Water goes into eave-ward  
↓

Clingman Commons

2

N



3

Drain at S.E. corner  
of N.E. "Chapel" (organ chamber)  
No stoppage-relief opening

3



roof cement at  
rake coping jts

slates - generally  
good cond.

20th St  
↔

6th  
Ave.  
↔

Chapel

various  
gutter leaks  
(upon jts)  
copper

exposed felts at  
lower built-up roof

water ponds on kit. b.v. roof

slates  
(poor cond.)

Clingman  
Commons





6th Ave

N ← Clingman Commons 1

Narther



Clingman Commons

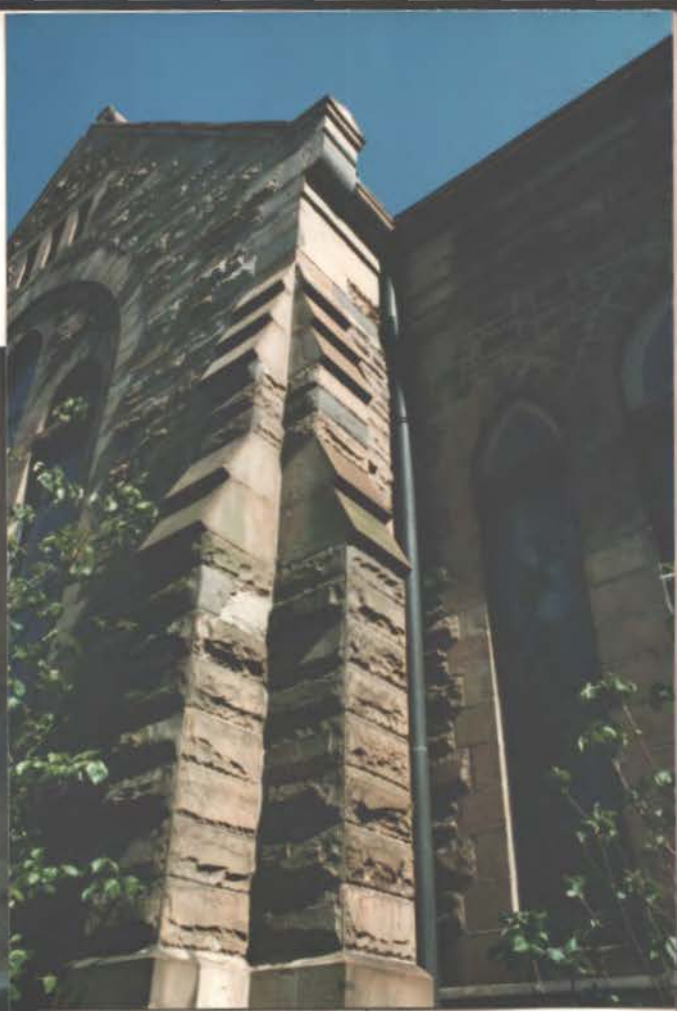
← to 6th Ave

2

2



apparent portland cem. re-pointing 1  $\frac{1}{2}$  N



2 N → overflow spill from valley



3 Spalled & coated sandstone  $\frac{1}{2}$  N

Ribbed & soiled protective glass in steel sash



4 N → 6 4



← white patches

A  
Re-coated stone  
B



↑  
Rising damp  
deterioration  
↓  
Re-coated (stucco?)  
↓

N

1

N

2

North Sanctuary Wall

↓ spall



Loose film coating ("Thoroseal?")  
- traps water inside stone

3



→ White  
 → cem.  
 → patches

↗ N

1



→ white  
 → patches  
 → at stone

→ Rotted  
 → bottoms of oak  
 → + patches

↗ N

2

Belltower  
 North  
 Entry  
 (photo 1, 2, 3)



→ limestone  
 → strata  
 → lines  
 → separating

↗ N

3

68



→ Main (west) entry  
Coating on stone deteriorated 1

Belltower North Entry 2  
Patched stone & oak.

↖



↖ Cement "rebuilding"  
of stone parts  
+ spalls  
3 — West front

↑ Rising damp  
spalls



Not ↑ West front, S. part. Low grade traps water against stone.  
 ↓ Spalls & rising damp deterioration



Not 2 Main (west) entry



Not 3



SW. Steps - bent copper gutter Not 4 10



N ←

1 Garden Sculpture  
(terra-cotta)  
weather-spalls

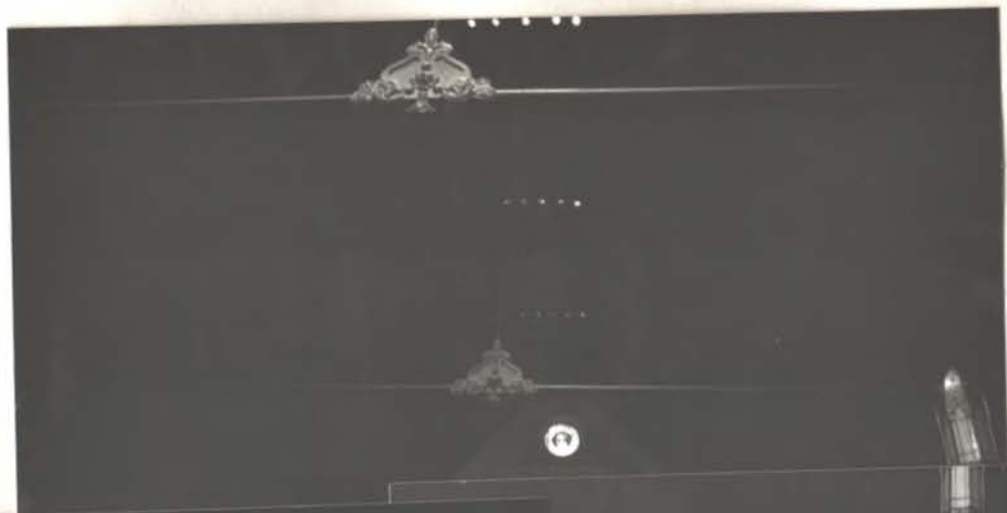


N  
↑

2

Spalled & patched stone  
South wall of Sanct.  
Portland cement re-point

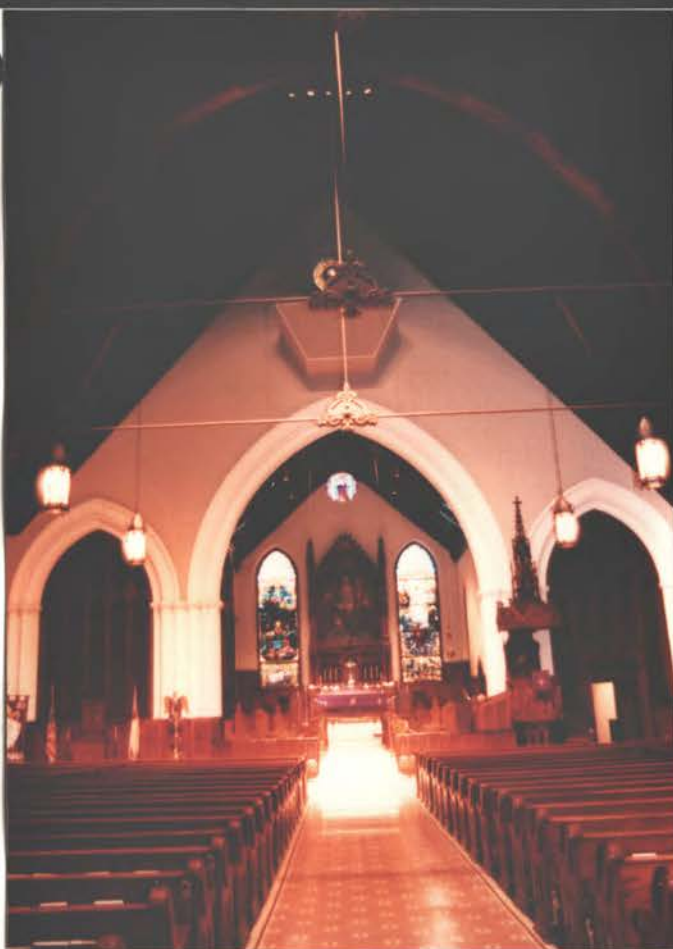




West

1

Nave



N →

11 13

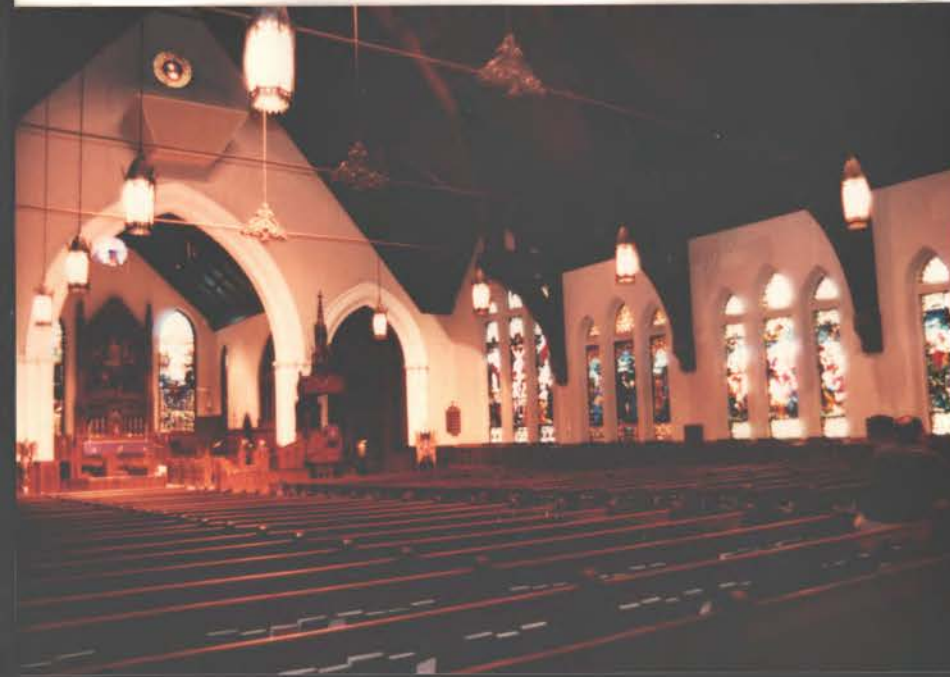


1

2

N4+

Nave



3

4

N4+

N4+

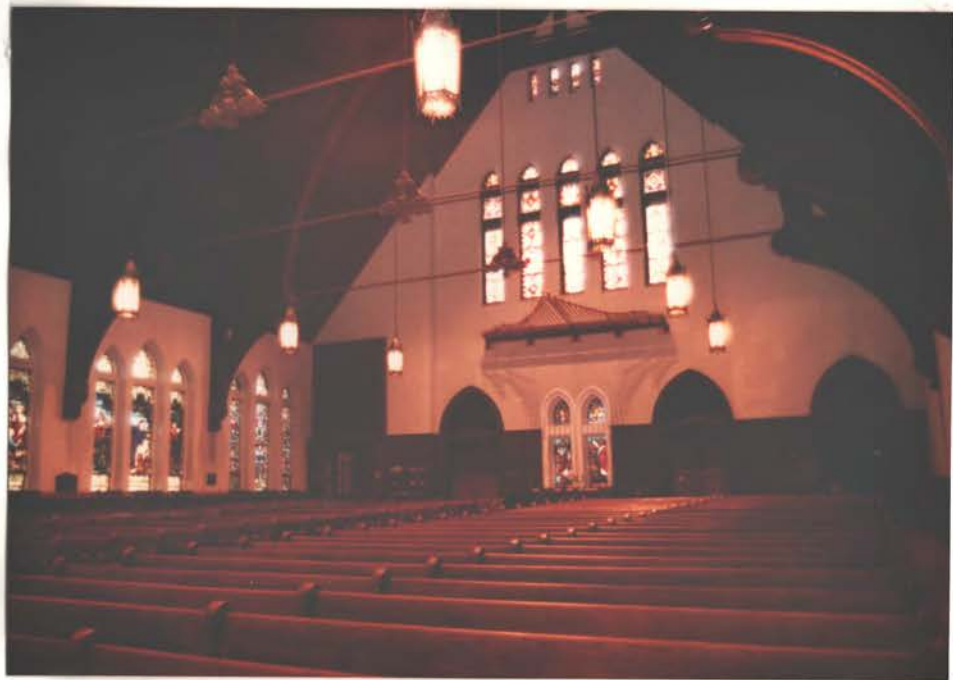




1

← N

Nave



2

← N

12  
14



⌘N

1

Cer. tile fl. at Nave  
(some patches)



⌘original  
rift-sawn  
dense oak panels

2

⌘ later rotary-cut  
oak ply. panels



⌘N

3

Clingman Commons



Chancel  
& Choir

⌘N

4

15



Organ Screen

1

N →



2

N →

Organ screen

Chancel & Choir



3

N →

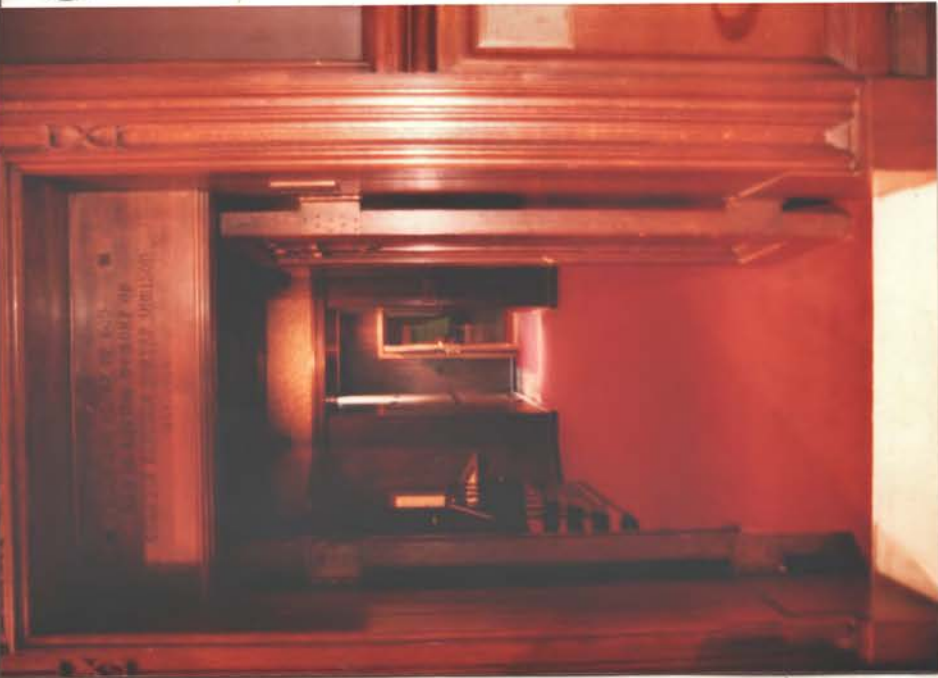


4

Al. marble

↓ N

Door to south passage, dn. 3 steps



11.9

1

S. Passage  
from  
Sand. to  
Commons



3

11.11



2 up to Choir

11.11

up to Choir



Bell tower N.W. Corner 1 N+  
Rising damp deterioration



#N 2 S. Wall at Garden



N+  
+



S. Wall at Garden 4 N+  
3



1  
Stone spalls & patches,  
Rising damp deterring.



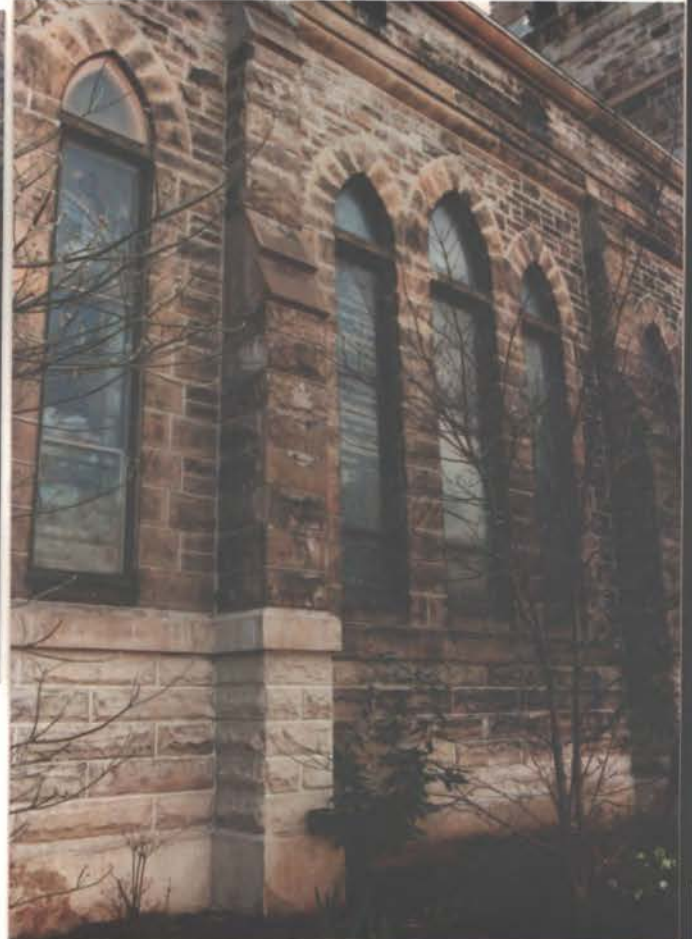
S. Wall at Garden  
Ribbed protective glass  
(in steel sash set in  
orig. wood frames)

2  
Patches



3  
Portland cement re-pointing

coating &  
patches



North Wall

4





1  
→ N  
East Wall of Clingman Commons  
(no gutter: runoff soiling + damage)