20/28-99A 11701 Clopper Road
(MP #20/28) St. Rose's Church

M-NCPPC

MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING

THE MARYLAND-NATIONAL CAPITAL
PARK AND PLANNING COMMISSION

8787 Georgia Avenue
Silver Spring, Maryland 20910-3760

Date: May 14, 1999

TO: Robert Hubbard, Director
Department of Permitting Services

20/28-99A

FROM: Gwen Wright, Coordinator GW
Historic Preservation

SUBJECT: Historic Area Work Permit

The Montgomery County Historic Preservation Commission has reviewed the attached application for a Historic Area Work Permit. This application was:

_____ Approved _____ Denied **X Approved with Conditions:**

1. All original siding in areas which have not been insulated will be retained on the building, and repaired and repainted in place (approximately 40% of building: rear cross-gable section and siding under the front porch hood).

2. The applicant may replace original siding only in the areas that have been insulated (60% of the siding). The new siding will exactly match the original novelty siding, in profile and all dimensions.

3. Non-original siding may be replaced in the rear addition with new siding milled to exactly match the original novelty siding.

4. All replacement siding will be installed in the same plane as the original siding, nailed directly to the studs.

5. An air space behind the new siding will be effected by pushing back the insulation rather than by furring out the new siding.

6. The original porch hood and the decorative Gothic panels in the rear cross-gable will be repaired and repainted in place.

and subject to the general condition that, after issuance of the Montgomery County Department of Permitting Services (DPS) permit, the applicant arrange for a field inspection by calling the DPS Field Services Office at (301) 217-6240 prior to commencement of work and not more than two weeks following completion of work.

THE BUILDING PERMIT FOR THIS PROJECT SHALL BE ISSUED CONDITIONAL UPON ADHERENCE TO THE APPROVED HISTORIC AREA WORK PERMIT (HAWP).

Applicant: St. Rose of Lima Parish, Don Dibble (Agent)
Address: 11701 Clopper road, Gaithersburg, MD 20878

DEPARTMENT OF PERMITTING SERVICES
250 HUNGERFORD DRIVE, 2nd FLOOR ROCKVILLE, MD 20850
301/217-6370

DPS - #8

HISTORIC PRESERVATION COMMISSION
301/563-3400

APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Person: Donald R. Dibble

Daytime Phone No.: (301) 948-7545, ext.222

Tax Account No.: 00776195

Name of Property Owner: St. Rose of Lima Parish Daytime Phone No.: (301) 948-7545

Address: 11701 Clopper Rd., Gaithersburg, MD 20878
Street Number *City* *Steet* *Zip Code*

Contractor: N/A Phone No.:

Contractor Registration No.:

Agent for Owner: Don Dibble Daytime Phone No.: (301) 948-7545, ext. 222

LOCATION OF BUILDING/PREMISE

House Number: 11715 Street: Clopper Road

Town/City: Gaithersburg, MD Nearest Cross Street: Game Preserve Road

Lot: Block: Subdivision: Dist. 1 Sub 1

Liber: STS-3F.188 Folio: F253 Parcel: Parcel A

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CHECK ALL APPLICABLE:

☐ Construct ☐ Extend ☒ Alter/Renovate ☐ Move ☐ Install ☐ Wreck/Raze ☐ Revision ☐ Repair ☐ Revocable

CHECK ALL APPLICABLE:

☐ A/C ☐ Slab ☐ Room Addition ☐ Porch ☐ Deck ☐ Shed ☐ Solar ☐ Fireplace ☐ Woodburning Stove ☐ Single Family ☐ Fence/Wall (complete Section 4) ☐ Other:

1B. Construction cost estimate: $ 75,000.00

1C. If this is a revision of a previously approved active permit, see Permit #

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 ☐ WSSC 02 ☐ Septic 03 ☐ Other:

2B. Type of water supply: 01 ☐ WSSC 02 ☐ Well 03 ☐ Other:

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height feet inches

3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:

☐ On party line/property line ☐ Entirely on land of owner ☐ On public right of way/easement

I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

Signature of owner or authorized agent — Date: 3/23/99

Approved: X w/ conditions For Commission Historic Preservation Commission

Disapproved: Signature: Date: 5/12/99

Application/Permit No.: 990323007 Date Filed: 3/23/99 Date Issued:

SEE REVERSE SIDE FOR INSTRUCTIONS

THE FOLLOWING ITEMS MUST BE COMPLETED AND THE REQUIRED DOCUMENTS MUST ACCOMPANY THIS APPLICATION.

1. **WRITTEN DESCRIPTION OF PROJECT**

   a. Description of existing structure(s) and environmental setting, including their historical features and significance:

   The St. Rose of Lima Parish Historic Chapel is in a park-like setting. It is surrounded by a 200 year old cemetery. The parish community is committed to maintaining the building, in addition to continuing to use it for community worship. An extensive restoration was completed in 1988. We received a citation from the Governor's office for the work completed.

   b. General description of project and its effect on the historic resource(s), the environmental setting, and, where applicable, the historic district:

   See attached project plan.

2. **SITE PLAN**

   Site and environmental setting, drawn to scale. You may use your plat. Your site plan must include:

   a. the scale, north arrow, and date;

   b. dimensions of all existing and proposed structures; and

   c. site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

3. **PLANS AND ELEVATIONS**

   You must submit 2 copies of plans and elevations in a format no larger than 11" x 17". Plans on 8 1/2" x 11" paper are preferred.

   a. ***Schematic construction plans***, with marked dimensions, indicating location, size and general type of walls, window and door openings, and other fixed features of both the existing resource(s) and the proposed work.

   b. Elevations (facades), with marked dimensions, clearly indicating proposed work in relation to existing construction and, when appropriate, context. All materials and fixtures proposed for the exterior must be noted on the elevations drawings. An existing and a proposed elevation drawing of each facade affected by the proposed work is required.

4. **MATERIALS SPECIFICATIONS**

   General description of materials and manufactured items proposed for incorporation in the work of the project. This information may be included on your design drawings.

   See attached project plan.

5. **PHOTOGRAPHS**

   a. Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.

   b. Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

6. **TREE SURVEY**

   If you are proposing construction adjacent to or within the dripline of any tree 6" or larger in diameter (at approximately 4 feet above the ground), you must file an accurate tree survey identifying the size, location, and species of each tree of at least that dimension.

   No change to trees.

7. **ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

   For **ALL** projects, provide an accurate list of adjacent and confronting property owners (not tenants), including names, addresses, and zip codes. This list should include the owners of all lots or parcels which adjoin the parcel in question, as well as the owner(s) of lot(s) or parcel(s) which lie directly across the street/highway from the parcel in question. You can obtain this information from the Department of Assessments and Taxation, 51 Monroe Street, Rockville, (301/279-1355).

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PLEASE STAY WITHIN THE GUIDES OF THE TEMPLATE, AS THIS WILL BE PHOTOCOPIED DIRECTLY ONTO MAILING LABELS.

M-NCPPC

MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING

THE MARYLAND-NATIONAL CAPITAL
PARK AND PLANNING COMMISSION

8787 Georgia Avenue
Silver Spring, Maryland 20910-3760

Date: 5/12/99

MEMORANDUM

TO: Historic Area Work Permit Applicants

FROM: Gwen Wright, Coordinator
Historic Preservation Section

SUBJECT: Historic Area Work Permit Application - Approval of Application/Release of Other Required Permits

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Enclosed is a copy of your Historic Area Work Permit application, approved by the Historic Preservation Commission at its recent meeting, and a transmittal memorandum stating conditions (if any) of approval.

You may now apply for a county building permit from the Department of Permitting Services (DPS) at 250 Hungerford Drive, second floor, in Rockville. Please note that although your work has been approved by the Historic Preservation Commission, it must also be approved by DPS before work can begin.

When you file for your building permit at DPS, you must take with you the enclosed forms, as well as the Historic Area Work Permit that will be mailed to you directly from DPS. These forms are proof that the Historic Preservation Commission has reviewed your project. For further information about filing procedures or materials for your county building permit review, please call DPS at 301-217-6370.

If your project changes in any way from the approved plans, either before you apply for your building permit or even after the work has begun, please contact the Historic Preservation Commission staff at 301-563-3400.

Please also note that you must arrange for a field inspection for conformance with your approved HAWP plans. Please inform DPS/Field Services at 301-217-6240 of your anticipated work schedule.

Thank you very much for your patience and good luck with your project!

HISTORIC PRESERVATION COMMISSION STAFF REPORT

Address: 11701 Clopper Road, Gaithersburg

Meeting Date: 4/28/99

Resource: **St. Rose's Church**
Master Plan Site #20/28

Review: HAWP

Case Number: 20/28-99A

Tax Credit: N/A

Public Notice: 4/14/99

Report Date: 4/14/99

Applicant: St. Rose of Lima Parish
(Don Dibble, Agent)

Staff: Robin D. Ziek

PROPOSAL: Siding replacement

RECOMMENDATIONS: DENY

PROJECT DESCRIPTION

RESOURCE: St. Rose's Church, *Master Plan* Site #20/28
STYLE: Gothic Revival
DATE: 1883

St. Rose's Church and Cemetery was designated in 1985 as an "Excellent example of 19th century rural church incorporating significant Gothic Revival architectural elements; and as "one of the earliest Catholic parishes in the northern part of the County." The church is a wooden, gable-roofed structure with five pointed-arch windows on either side wall and a bracketed canopy hood over the front door. In the gable is a round (rose) window with a multi-foil motif. The church has a polygonal apse with gable-roof wings. There are decorative pointed arch panels over the side-facing windows in the rear cross-gable.

This is the second church on the site. The original St. Rose's Church was constructed in 1838 and dedicated in 1846. That church was remodeled in 1880 and re-dedicated in 1882. On April 22, 1983, the church was destroyed by a fire. The cornerstone for the new (existing) church was laid on July 4, 1883 and construction was completed later in the year.

Following in this tradition, the 1883 church was extensively renovated in the mid-1980s, with a 1988 date set in the paving at the front steps. Alterations include the removal of the roof structure and installation of an entirely new roof structure, with new metal roofing shingles. An attic fan was added to vent at the rear but no intake was provided, causing problems. The window trim on the side windows was replaced. The interior was entirely gutted (wall and ceiling finishes) to facilitate the installation of insulation in the walls and for the chapel ceiling, new electrical wiring and a new HVAC system. The exterior of the building was scraped and repainted, with some new wood being installed on the east side where the exterior HVAC equipment was installed. When the building was repainted, all of the clapboard was caulked to prevent air infiltration. Basement steps were added to provide entry to a small basement area for HVAC equipment.

Subsequently, the rose window was actually removed from the building to be reconstructed, repaired and then re-installed. Vents have been added at the eaves to provide the necessary air circulation in the attic area.

Steve Br: motion
Approved – true replacement in kind
in place of original siding
Only area that's been affected be replaced (where insulation is)
and where non-original siding has been used.

. Replacing on sides + front (not under entry hood)

2nd . Lynn

(1)

Currently, the building needs painting again. Approximately 5-10% of the siding is in very poor condition and would have to be replaced. The Parish has been studying this problem for awhile, and now comes to the HPC with a proposal.

PROJECT PROPOSAL

The applicant propose to remove all of the existing siding, and replace it with German siding milled to match the existing. They have identified the existing siding as "Sugar Pine" and propose to use "North East Pine" (a white pine?) as the substitute material.

In addition, they propose to remove all of the remaining original window trim (on the front of the building), the ornate window panels in the rear cross-gable, and the front porch with its large brackets, and dip-strip all of the paint before reinstalling the wood material.

STAFF DISCUSSION

The applicant proposes drastic measures to "restore the exterior to a suitable condition". After a site visit and discussion with the applicant, staff notes that only 5-10% of the siding is damaged at this point. Further, the new wood which was installed approximately 10 years ago shows marked paint failure and is part of the problem for the applicant. The potential that the same issues may arise in 10 years due to either faulty installation or poor quality materials (as is probably the cause for the failure of the 1988 wood siding) is high, and therefore the proposal merits investigation and discussion.

The Secretary of the Interior Standard #2 notes: "The historic character of a property shall be retained and preserved. The replacement of intact or repairable historic materials...shall be avoided."

The applicant affirms that the proposed North East Pine is similar to the original Pine. However, one of the problems which has been identified in maintaining historic properties is that the new woods are not comparable to the old growth woods in terms of durability. While new wood preservatives and paint are valuable in protecting wood siding today, they only help to bring the new woods closer to the range of durability that the old woods provided.

The applicant notes that one of the problems is that the painters caulked each clapboard in the 1988 work, drastically reducing the ventilation of the siding. This situation is not unique, although it is unfortunate. There are several factors to be considered. 1) Is there still an air space behind the siding, since insulation has been installed on the interior? 2) Is the clapboard installed on top of sheathing or is it nailed directly to the studs?

If there is an air space in the wall cavity, ventilation can be increased through at least two different methods. One way is to provide for air intake at the bottom of the wall, with ventilation provided at the eaves or to the attic. This method treats the wall as a solid, which is essentially how it is performing at this point. The second way is to tap thin wedges underneath the clapboard periodically to increase the ventilation incrementally. This method would provide an exit for moisture/condensation at the back of the boards. The presence of sheathing and the absence of an air space would have to be taken into consideration.

Staff feels that the most conservative method of addressing the problem of the caulking of the clapboard is to have the painters remove loose caulking as part of their paint preparation. Within a few paint cycles, the caulking will be removed from the building, and the ventilation to the siding should increase with each maintenance cycle.

Staff notes that the repair and maintenance options may seem more labor intensive. However, the applicant has already noted that the paint has lasted its assumed life of 6-8 years. In fact, if the building has been last painted in 1988, then the paint has lasted over 10 years. Wood buildings have to be painted periodically and the new wood siding would also have to be painted on the same paint cycle.

The applicant has also discussed the need to remove **all** of the paint from the building. Yet the paint literature which discusses historic structures notes that paint which is intact and adhering to the wood provides a suitable paintable surface and that all of the paint should **not** be removed from a historic structure. Staff notes that the existing wood surface indicates many layers of paint. Scraping will require sanding to blend in layers. In addition, areas of rotted wood will have to be replaced. This is a good time to replace "improper siding materials from previous repairs". This is the appropriate place to use the new milled siding, even if it will be of a new wood (the North East Pine) rather than the old Sugar Pine. But with this approach, only 5-10% of the wall surface will be new wood. Having it milled specially to match should assist in blending the clapboard for a more uniform appearance.

One of the issues may be that the applicants have devoted a lot of care and attention to this building, and it may be frustrating that the old building still shows its age. This leads into the issue of removing all of the remaining decorative trim and dip-stripping it off-site. This is not a recommended treatment for historic materials because there will be damage to the materials during the removal and installation processes. In addition, the handiwork or craftmanship of the original installation will be disturbed and lost. Such a treatment should be undertaken as a last resort, and there are other options. In this case, the paint preparation can be undertaken on site, with care taken for lead paint removal and safe disposal.

The applicant has proposed, as "Option A, power sanding the siding down to bare wood." As discussed above, it is not recommended to take all of the paint off of a building. In addition, power sanding is "vehemently not recommended" in the *Preservation Brief #10,* which discusses "Exterior Paint Problems on Historic Woodwork" (see Circle 20-31). This is not a large or complex building in the main. In sections which do not sufficiently respond to hand scraping and sanding, heat methods (the heat plate or heat gun) are recommended for effective paint removal. These methods are also effective in terms of dealing with lead paint because the temperatures are low enough so that the lead paint is not vaporized which helps to minimize health problems to the painters. In addition, the paint is removed in larger pieces which are relatively easy to collect on tarps which should be spread on the ground.

The chemical strippers are also not a good solution in that they soak into the wood, and have to be then cleaned with water before painting. This introduces more moisture into the building, which is a major concern for any building but certainly one for this building.

Finally, staff notes that the primer and top coat form one paint system and it is generally advised that they should be prepared by the same manufacturer. The final choice of paint should depend to some degree on what paint was used in the past. In general, the oil based primer is recommended when painting over an oil paint, but if the latest top coat is latex, then either a latex primer or oil would work.

STAFF RECOMMENDATION

Staff recommends that the Commission deny this proposal as inconsistent with the purposes of Chapter 24A-8(b)2:

> The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site, or the historic district in which an historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter;

and with Secretary of the Interior's Standards for Rehabilitation #2:

> The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

and subject to the general condition that, after issuance of the Montgomery County Department of Permitting Services (DPS) permit, the applicant arrange for a field inspection by calling the DPS Field Services Office at (301) 217-6240 prior to commencement of work and not more than two weeks following completion of work.

DPS - #8

HISTORIC PRESERVATION COMMISSION
301/563-3400

APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Person: Donald R. Dibble

Daytime Phone No.: (301) 948-7545, ext.222

Tax Account No.: 00776195

Name of Property Owner: St. Rose of Lima Parish Daytime Phone No.: (301) 948-7545

Address: 11701 Clopper Rd., Gaithersburg, MD 20878
Street Number City Steet Zip Code

Contractor: N/A Phone No.:

Contractor Registration No.:

Agent for Owner: Don Dibble Daytime Phone No.: (301) 948-7545, ext. 222

LOCATION OF BUILDING/PREMISE

House Number: 11715 Street: Clopper Road

Town/City: Gaithersburg, MD Nearest Cross Street: Came Preserve Road

Lot: Block: Subdivision: Dist. 1 Sub 1

Liber: STS-3F.188 Folio: F253 Parcel: Parcel A

PART ONE: TYPE OF PERMIT ACTION AND USE

1A. CHECK ALL APPLICABLE:

☐ Construct ☐ Extend ☒ Alter/Renovate

☐ Move ☐ Install ☐ Wreck/Raze

☐ Revision ☐ Repair ☐ Revocable

CHECK ALL APPLICABLE:

☐ A/C ☐ Slab ☐ Room Addition ☐ Porch ☐ Deck ☐ Shed

☐ Solar ☐ Fireplace ☐ Woodburning Stove ☐ Single Family

☐ Fence/Wall (complete Section 4) ☐ Other:

1B. Construction cost estimate: $ 75,000.00

1C. If this is a revision of a previously approved active permit, see Permit #

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 ☐ WSSC 02 ☐ Septic 03 ☐ Other:

2B. Type of water supply: 01 ☐ WSSC 02 ☐ Well 03 ☐ Other:

PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height feet inches

3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:

☐ On party line/property line ☐ Entirely on land of owner ☐ On public right of way/easement

I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

Signature of owner or authorized agent *Date*

Approved: *For Chairperson, Historic Preservation Commission*

Disapproved: Signature: Date:

Application/Permit No.: Date Filed: Date Issued:

Edit 2/4/98

SEE REVERSE SIDE FOR INSTRUCTIONS

(5)

THE FOLLOWING ITEMS MUST BE COMPLETED AND THE REQUIRED DOCUMENTS MUST ACCOMPANY THIS APPLICATION.

1. **WRITTEN DESCRIPTION OF PROJECT**

   a. Description of existing structure(s) and environmental setting, including their historical features and significance:

   The St. Rose of Lima Parish Historic Chapel is in a park-like setting. It is surrounded by a 200 year old cemetery. The parish community is committed to maintaining the building, in addition to continuing to use it for community worship. An extensive restoration was completed in 1988. We received a citation from the Governor's office for the work completed.

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   See attached project plan.

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St. Rose of Lima Parish
11701 Clopper Road
Gaithersburg, MD 20878-1024
Phone: (301) 948-7545
Fax: (301) 869-2170
E-mail: strose@strose.com

APPLICATION FOR HISTORIC

AREA WORK PERMIT

MARCH 1999

CONTACT
Donald R Dibble
Business manager
Phone 301 948 7545 ext 222
Fax 301 869 2170

ST. ROSE OF LIMA PARISH
Historic Chapel Restoration Project
Planned Restoration Schedule - August 1, 1999 to September 3, 1999

PROJECT BACKGROUND

A major renovation of the building was completed in the mid-1980s. A new roof structure was fabricated and installed and a new interior was installed. Also installed were a new HVAC system and new electrical wiring. The exterior of the building was scraped, repaired and painted. A design error was made; provisions for proper attic ventilation were not made.

At present, the exterior of the building has deteriorated to the point where simple painting cannot restore the exterior to a suitable condition. Tests of the existing paint revealed lead content several hundred times greater than the allowable safe level. Some areas of the siding have decayed to the point where simple repair is not feasible. Large areas of the clapboard siding have been sealed with putty at the overlapping joints. Several pieces of siding have been replaced over the years. Most of the replacement boards do not match the original siding in size, shape or wood texture. A lot of the trim wood around the windows was replaced during the major mid-1980s restoration; however, the ornate trim and moulding decorating the main entrance was not restored. During the last 18 months, several approaches to restoration of the building have been investigated. The results of this investigation are outlined below.

A. Power sand the siding to remove all paint, down to bare wood.
Issues:
- Decayed areas would remain, requiring siding replacement.
- The wood grain is deep in some areas and removal of all of the paint would be difficult. Deep sanding would alter siding.
- Problems with putty in overlapping board interfaces would remain.
- Improper siding materials from previous repairs would remain.

B. Chemically strip siding, using a product called Peel-Away. A preliminary test was conducted on a 3' x 5' section of the building. The results were not encouraging.
Issues:
- Peel-Away did not penetrate deeply enough to remove all the old paint.
- The thickness of the paint would require the application of substantial amounts of the product. The product mixed with the lead paint would be chemically very toxic. Large amounts of water would be required to wash the building to neutralize the chemicals. Capturing this water before it is absorbed into the ground would be difficult. The probability of doing environmental damage is high.
- We would still be left with all the other issues to deal with; i.e. putty decaying wood, improper previous repairs, etc.

C. Remove loose paint particles and seal using a lead barrier compound.
Issues:

- This is a 10 - 15 year solution. After that time, we would be back to the same condition, with added an added problem, i.e. dealing with the sealant in addition to the original problems.
- This solution by itself does not address the putty, decaying wood or improper earlier repairs.

D. Chemically break down the paint using Corte - L, thus capturing and bonding the existing paint to the surface. This process breaks down the paint through chemical curing and changes its form to a polyurethane membrane.
Issues:

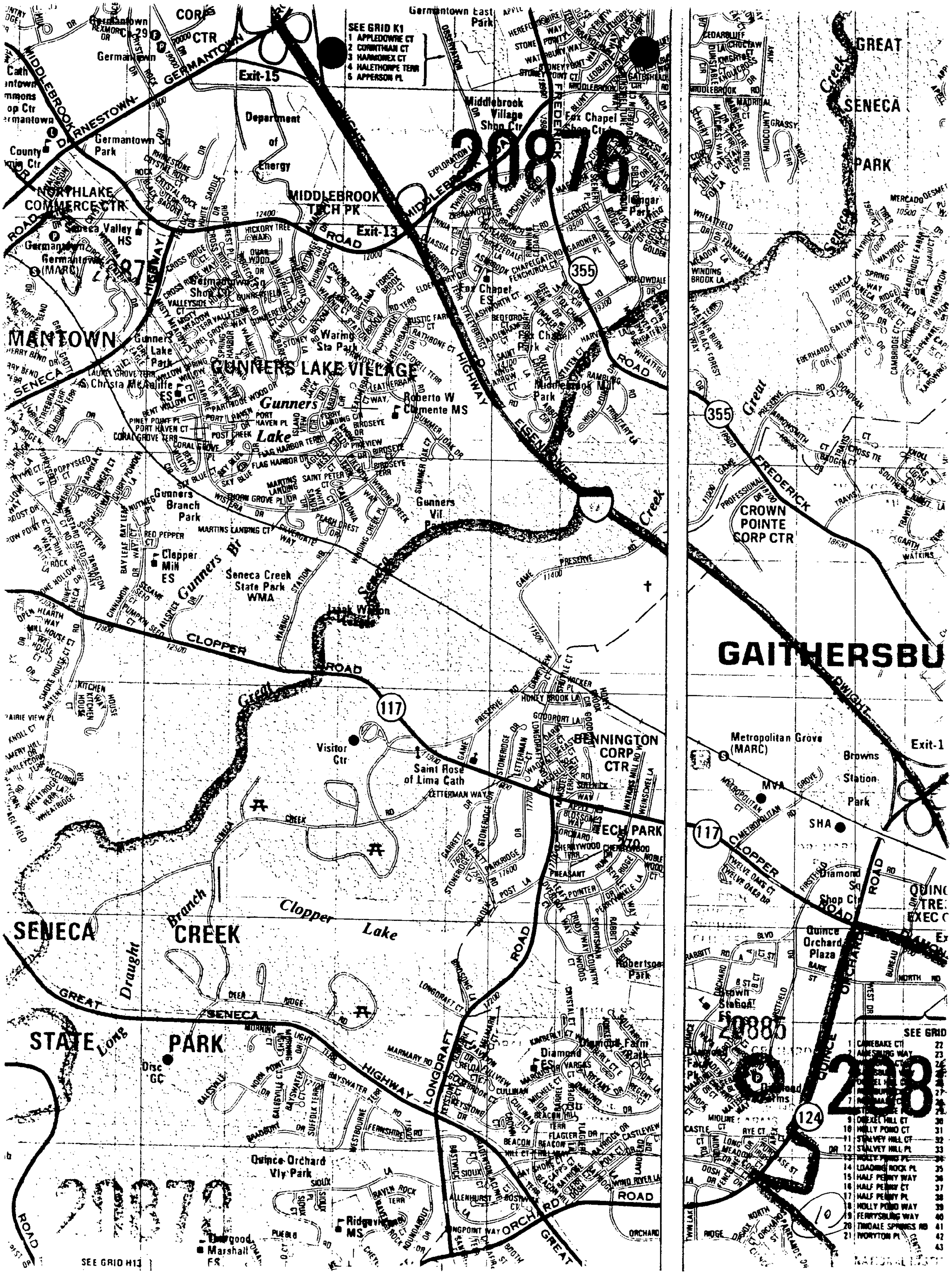
- This is a new process and has not been proven over time. The estimated life of the product is 10 - 20 years. After that, we would need to deal with this product on the structure as well as all the original problems, i.e. putty, decaying wood and previous repairs.

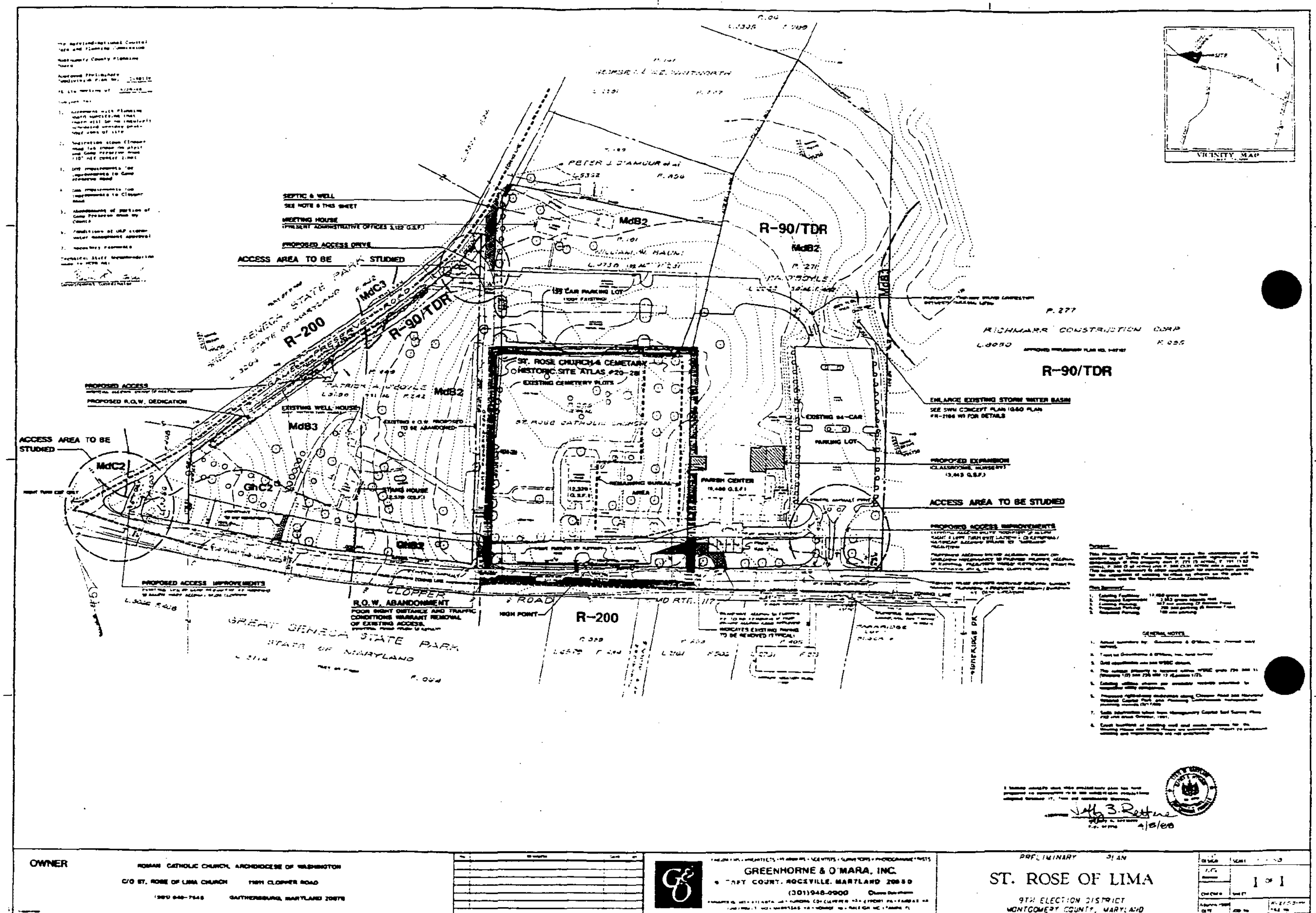
E. Remove and replace the siding with a similar type manufactured to the original specifications. Remove ornate trim and tank strip. Install, prime and paint.

RECOMMENDATION:

Item E above: Remove and replace siding. The exterior restorations include removing all of the old siding, corner boards and window and ornate trim. The old window and ornate trim is to be dipped at a local stripping workshop to remove all the old paint. They will then be reinstalled afer the new siding is installed. All new siding will be milled to match the existing German siding using clear North East Pine. The North East Pine is similar to the Sugar Pine currently on the building. Both are similar hardness with deep grain. The size and thickness will be maintained by a milling process set up specifically for this purpose. No paint removal is to be done on eaves other than scraping and sanding prior to finish coats. All bare wood will receive an oil based primer, followed by 2 coats of Acrylic paint. The under side of the siding will not be primed, as is the current condition.

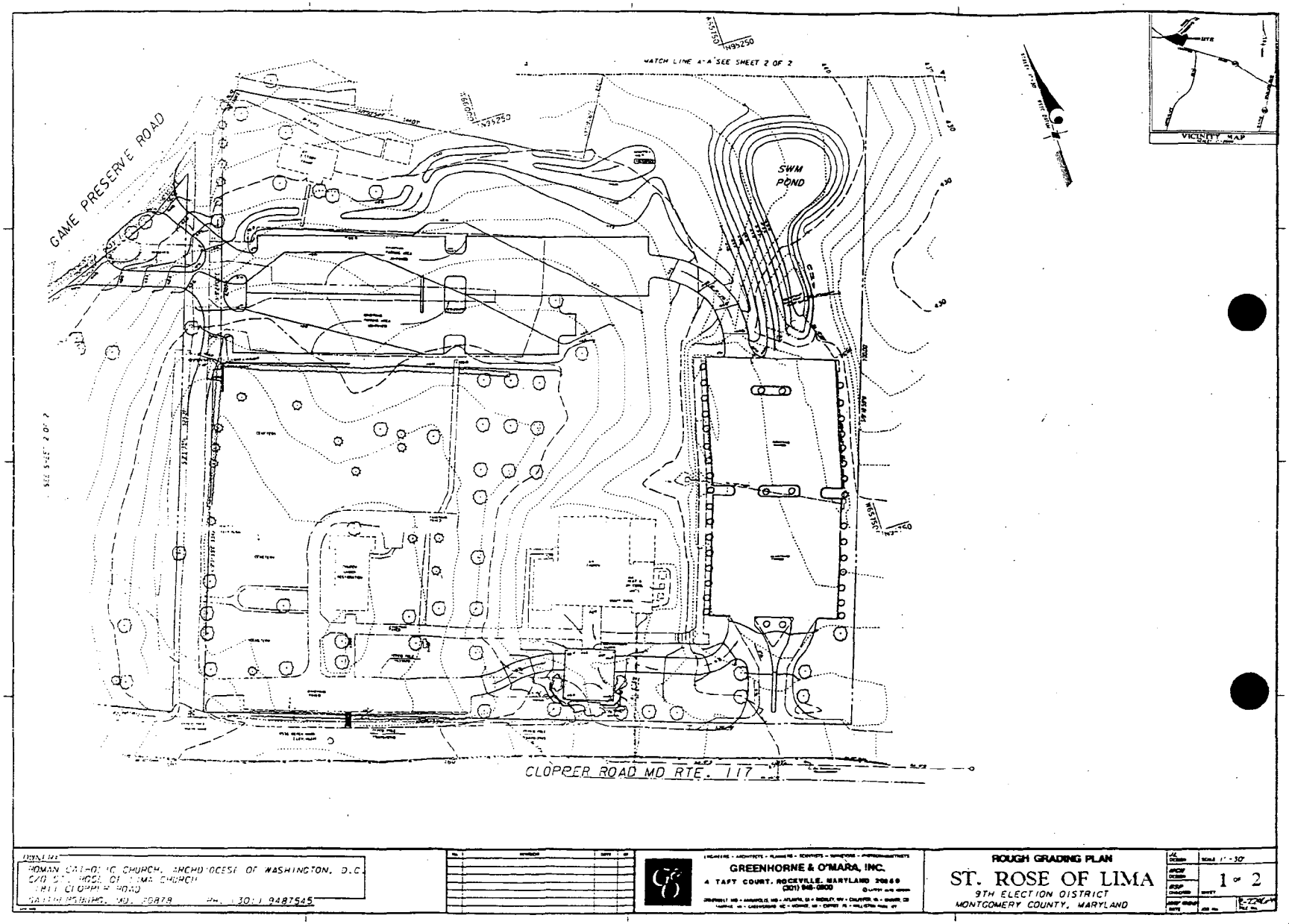
Donald R. Dibble, Business Manager
St. Rose of Lima Parish
11701 Clopper Road, Gaithersburg, MD 20878
Phone: (301) 948-7545, ext. 222
Fax: (301) 869-2170
E-mail: ddibble@strose.com


SEE GRID K1
1 APPLEDOWRE CT
2 CORINTHIAN CT
3 HARMONEX CT
4 HALETHORPE TERR
5 APPERSON PL
Germantown East Park
Germantown
Exit-15
Department of Energy
Middlebrook Village Shop Ctr
Fox Chapel Shop Ctr
20876
Germantown Sq Park
NORTHLAKE COMMERCE CTR
MIDDLEBROOK TECH PK
Seneca Valley HS
Exit-13
Germantown (MARC)
MANTOWN
GUNNERS LAKE VILLAGE
Gunners Lake
Waring Sta Park
Fox Chapel ES
Middlebrook Mill Park
Roberto W Clemente MS
Gunners Branch Park
Gunners Vil Park
Clopper Mill ES
Seneca Creek State Park WMA
CLOPPER ROAD
Visitor Ctr
Saint Rose of Lima Cath
BENNINGTON CORP CTR
TECH PARK
Robertson Park
Clopper Lake
SENECA CREEK
STATE PARK
GREAT SENECA HIGHWAY
Disc GC
Diamond ES
Diamond Farm Park
Quince Orchard Vly Park
Ridgeview MS
Marshall ES
SEE GRID H13
ORCHARD ROAD
GREAT SENECA
SENECA PARK
CROWN POINTE CORP CTR
FREDERICK
GAITHERSBU
Metropolitan Grove (MARC)
Browns Station Park
Exit-1
MVA
SHA
Diamond Sq Shop Ctr
Quince Orchard Plaza
20885
208
SEE GRID
1 CANEBAKE CT
9 DREXEL HILL CT
10 HOLLY POND CT
11 STALVEY HILL CT
12 STALVEY HILL PL
14 LOADING ROCK PL
15 HALF PENNY WAY
16 HALF PENNY CT
17 HALF PENNY PL
18 HOLLY POND WAY
19 FERRYSBURG WAY
20 TINDALE SPRINGS RD
21 IVORYTON PL



VICINITY MAP
SITE
PETER J. D'AMOUR et al
R-90/TDR
MdB2
SEPTIC & WELL
SEE NOTE 6 THIS SHEET
MEETING HOUSE
(PRESENT ADMINISTRATIVE OFFICES 3,122 G.S.F.)
PROPOSED ACCESS DRIVE
ACCESS AREA TO BE STUDIED
GREAT SENECA STATE PARK
STATE OF MARYLAND
R-200
MdC3
GAME PRESERVE ROAD
P. 277
RICHMARR CONSTRUCTION CORP
ST. ROSE CHURCH & CEMETARY
HISTORIC SITE ATLAS #20-28
EXISTING CEMETERY PLOTS
PROPOSED ACCESS
PROPOSED R.O.W. DEDICATION
EXISTING WELL HOUSE
MdB3
EXISTING 94-CAR PARKING LOT
ENLARGE EXISTING STORM WATER BASIN
PROPOSED EXPANSION
PARISH CENTER
ACCESS AREA TO BE STUDIED
MdC2
GhC2
REMAINING BURIAL AREA
PROPOSED ACCESS IMPROVEMENTS
CLOPPER ROAD
MD RTE. 117
R.O.W. ABANDONMENT
POOR SIGHT DISTANCE AND TRAFFIC CONDITIONS WARRANT REMOVAL OF EXISTING ACCESS.
HIGH POINT
INDICATES EXISTING PAVING TO BE REMOVED (TYPICAL)
GENERAL NOTES
OWNER
ROMAN CATHOLIC CHURCH, ARCHDIOCESE OF WASHINGTON
C/O ST. ROSE OF LIMA CHURCH 11701 CLOPPER ROAD
GAITHERSBURG, MARYLAND 20878
GREENHORNE & O'MARA, INC.
ROCKVILLE, MARYLAND 20850
(301)948-0900
PRELIMINARY PLAN
ST. ROSE OF LIMA
9TH ELECTION DISTRICT
MONTGOMERY COUNTY, MARYLAND
1 of 1

(11)



OWNER:
ROMAN CATHOLIC CHURCH, ARCHDIOCESE OF WASHINGTON, D.C.
C/O ST. ROSE OF LIMA CHURCH
18111 CLOPPER ROAD
GAITHERSBURG, MD. 20879 PH. (301) 9487545

GREENHORNE & O'MARA, INC.
4 TAFT COURT, ROCKVILLE, MARYLAND 20850
(301) 948-0800

ROUGH GRADING PLAN

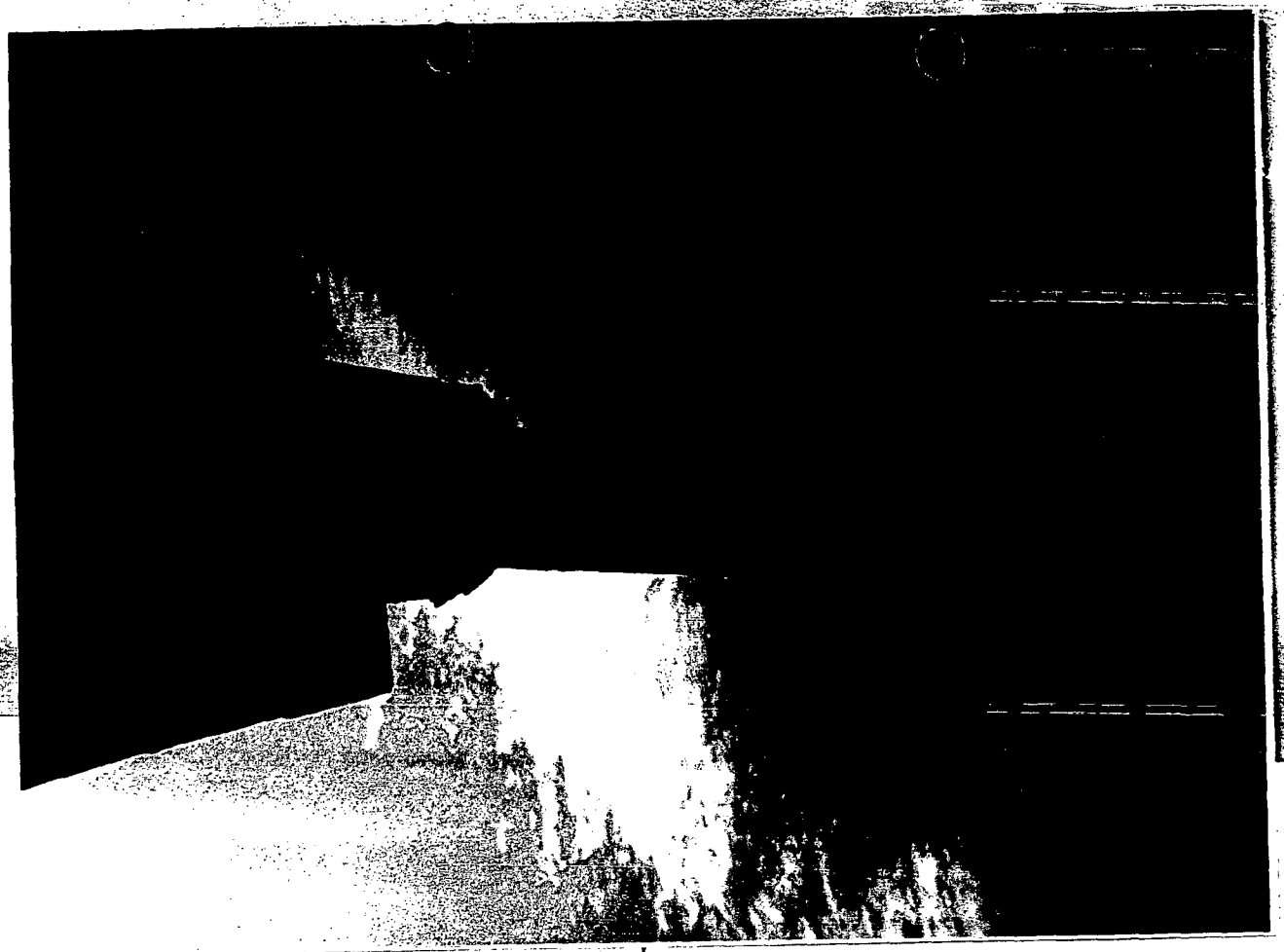
ST. ROSE OF LIMA

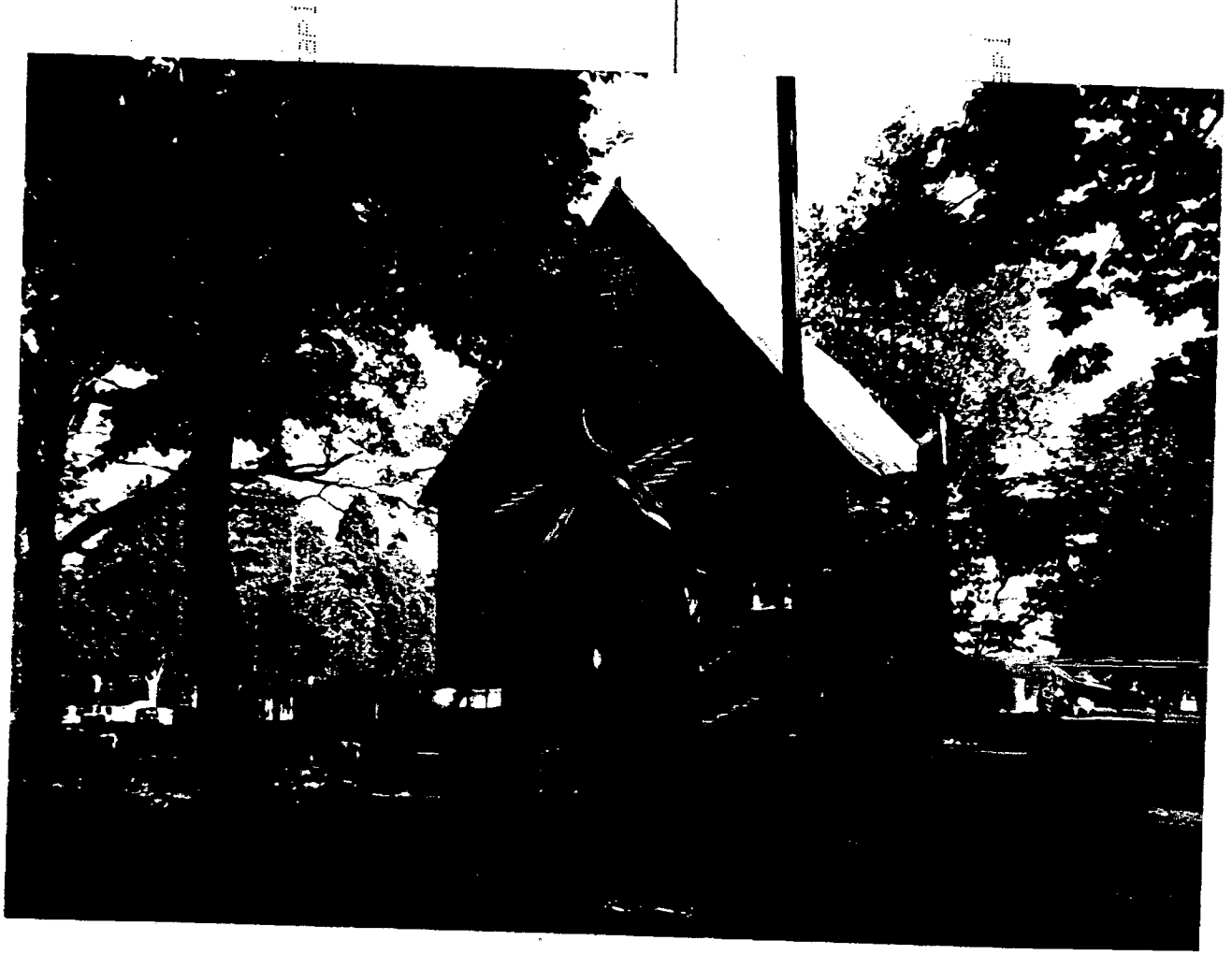
9TH ELECTION DISTRICT
MONTGOMERY COUNTY, MARYLAND

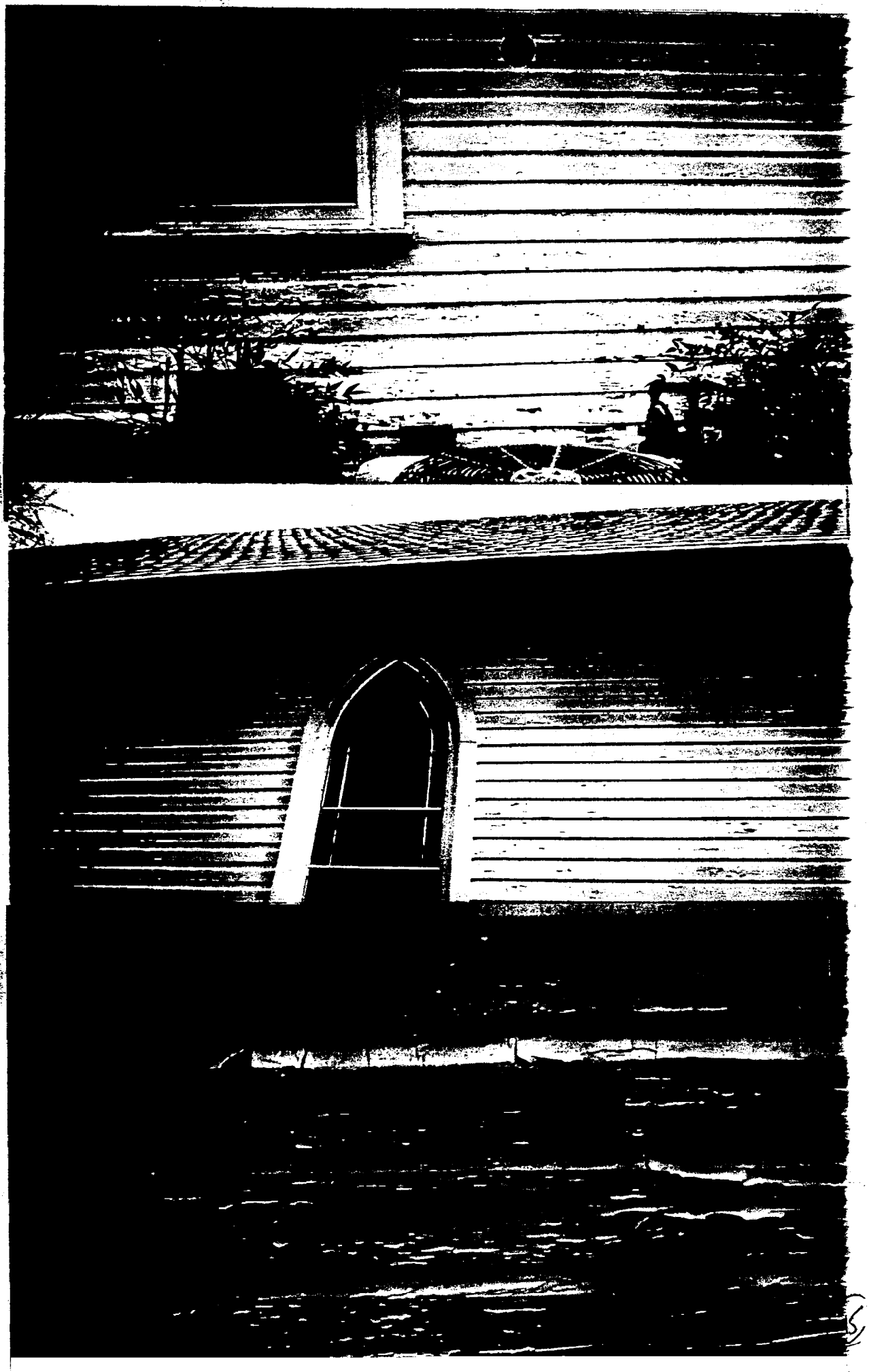
SCALE 1" = 50'

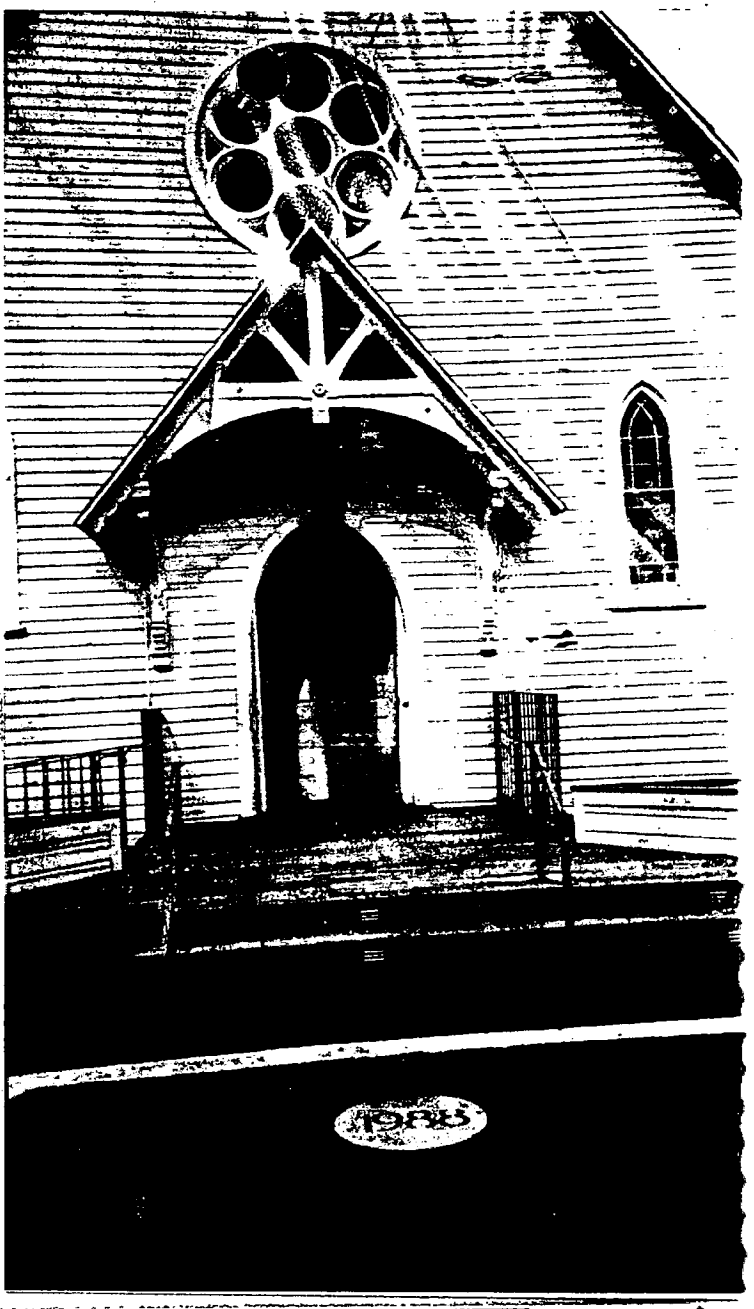
1 of 2

(2)








1983

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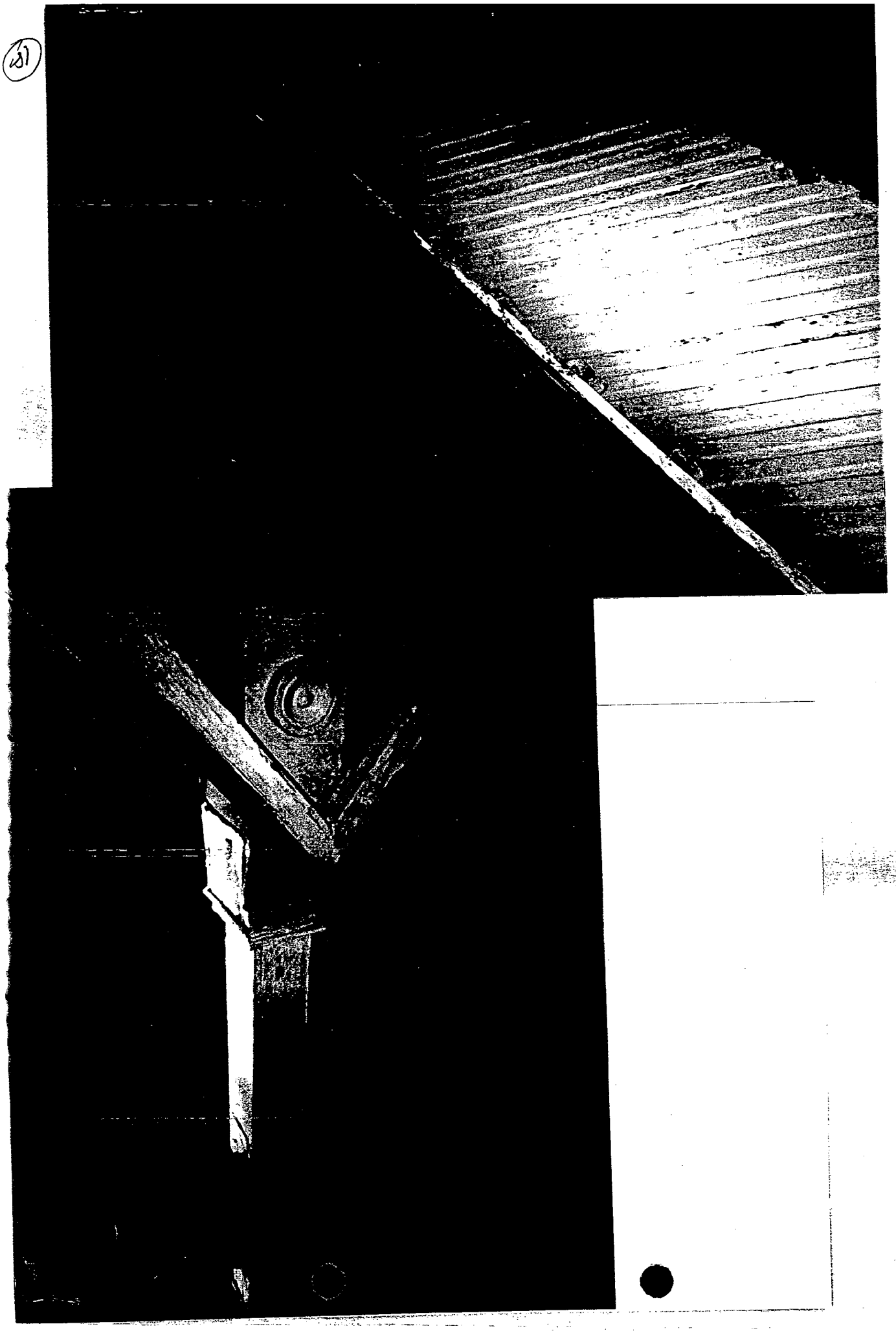

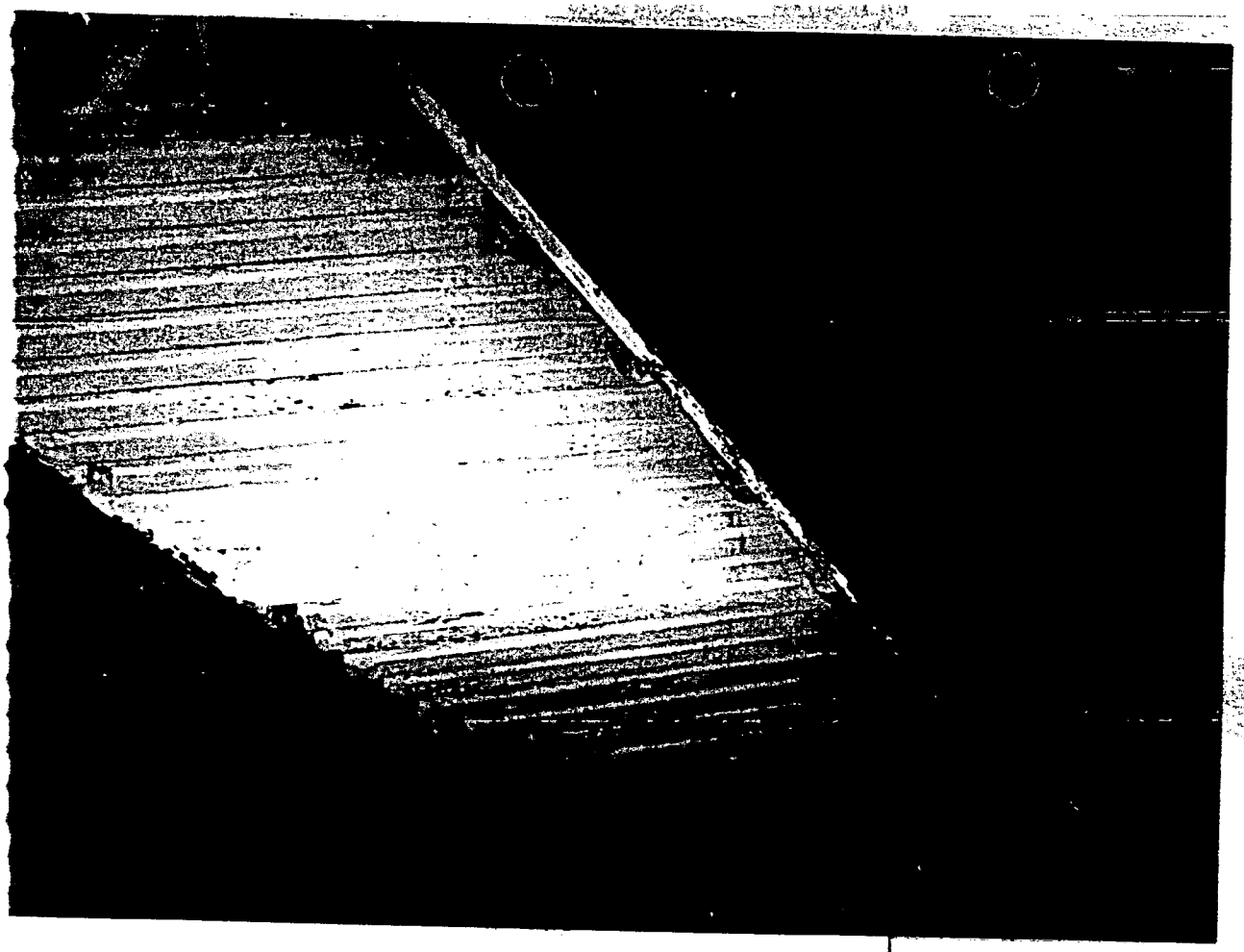

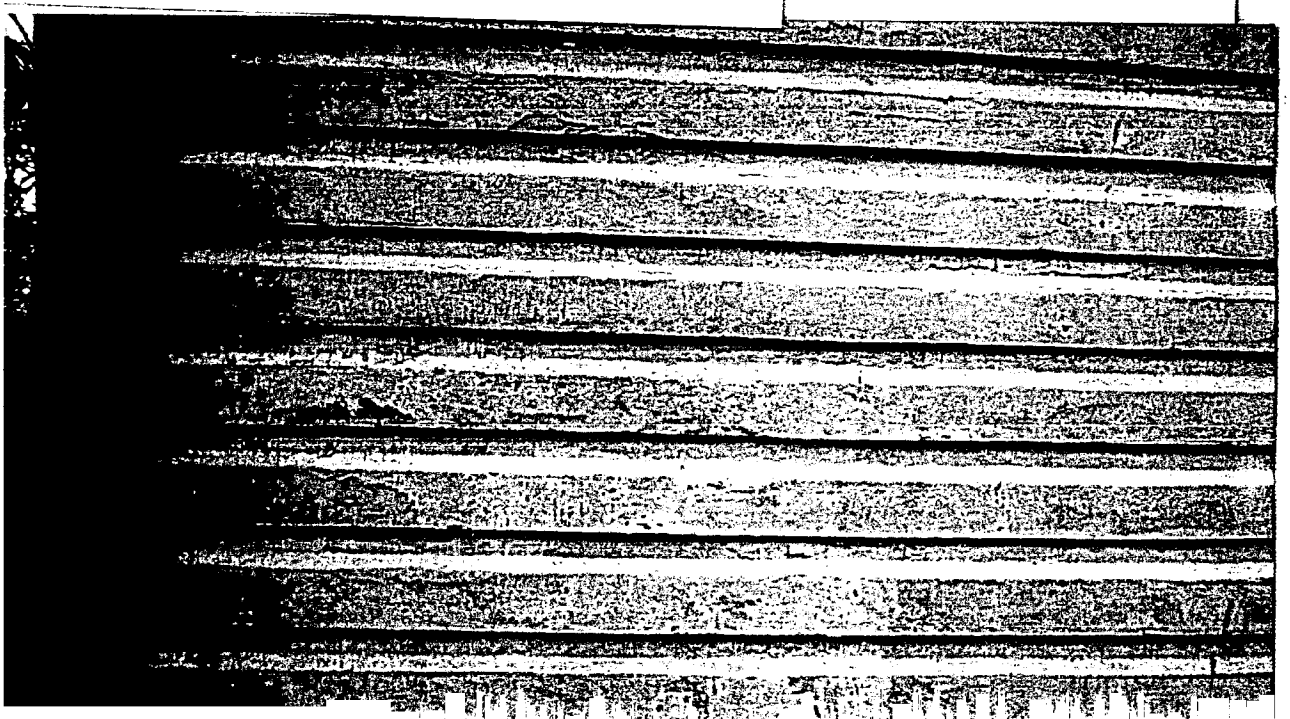

10 PRESERVATION BRIEFS

Exterior Paint Problems on Historic Woodwork

Kay D. Weeks and David W. Look, AIA

U.S. Department of the Interior National Park Service
Preservation Assistance Division Technical Preservation Services

A cautionary approach to paint removal is included in the guidelines to "The Secretary of the Interior Standards for Historic Preservation Projects." Removing paints down to bare wood surfaces using harsh methods can permanently damage those surfaces; therefore such methods are not recommended. Also, total removal obliterates evidence of the historical paints and their sequence and architectural context.

This Brief expands on that advice for the architect, building manager, contractor, or homeowner by identifying and describing common types of paint surface conditions and failures, then recommending appropriate treatments for preparing exterior wood surfaces for repainting[1] to assure the best adhesion and greatest durability of the new paint. Although the Brief focuses on responsible methods of "paint removal," several paint surface conditions will be described which do not require any paint removal, and still others which can be successfully handled by limited paint removal. In all cases, the information is intended to address the concerns related to *exterior wood*. It will also be generally assumed that, because houses built before 1950 involve one or more layers of lead-base paint,[2] the majority of conditions warranting paint removal will mean dealing with this toxic substance along with the dangers of the paint removal tools and chemical strippers themselves.

Purposes of Exterior Paint

Paint[3] applied to exterior wood must withstand yearly extremes of both temperature and humidity. While never expected to be more than a temporary physical shield—requiring re-application every 5-8 years—its importance should not be minimized. Because one of the main causes of wood deterioration is moisture penetration, a primary purpose for painting wood is to exclude such moisture, thereby slowing deterioration not only of a building's exterior siding and decorative features but, ultimately, its underlying structural members. Another important purpose for painting wood is, of course, to define and accent architectural features and to improve appearance.

Treating Paint Problems in Historic Buildings

Exterior paint is constantly deteriorating through the processes of weathering, but in a program of regular maintenance—assuming all other building systems are functioning properly—surfaces can be cleaned, lightly scraped, and hand sanded in preparation for a new finish coat. Unfortunately, these are ideal conditions. More often, complex maintenance problems are inherited by owners of historic buildings, including areas of paint that have failed[4] beyond the point of mere cleaning, scraping, and hand sanding (although much so-called "paint failure" is attributable to interior or exterior moisture problems or surface preparation and application mistakes with previous coats).

Although paint problems are by no means unique to historic buildings, treating multiple layers of hardened, brittle paint on complex, ornamental—and possibly fragile—exterior wood surfaces necessarily requires an extremely cautious approach (see figure 1). In the case of recent construction, this level of concern is not needed because the wood is generally less detailed and, in addition, retention of the sequence of paint layers as a partial record of the building's history is not an issue.

When historic buildings are involved, however, a special set of problems arises—varying in complexity depending upon their age, architectural style, historical importance, and physical soundness of the wood—which must be carefully evaluated so that decisions can be made that are sensitive to the longevity of the resource.

Justification for Paint Removal

At the outset of this Brief, it must be emphasized that removing paint from historic buildings—with the exception of cleaning, light scraping, and hand sanding as part of routine maintenance—should be avoided unless absolutely essential. *Once conditions warranting removal have*

[1] General paint type recommendations will be made, but paint color recommendations are beyond the scope of this Brief.

[2] Douglas R. Shier and William Hall, *Analysis of Housing Data Collected in a Lead-Based Paint Survey in Pittsburgh, Pennsylvania, Part 1*. National Bureau of Standards, Inter-Report 77-1250, May 1977.

[3] Any pigmented liquid, liquefiable, or mastic composition designed for application to a substrate in a thin layer which is converted to an opaque solid film after application. *Paint and Coatings Dictionary*, 1978. Federation of Societies for Coatings and Technology.

[4] For purposes of the Brief, this includes any area of painted exterior woodwork displaying signs of peeling, cracking, or alligatoring to bare wood. See descriptions of these and other paint surface conditions as well as recommended treatments on pp. 5-10.

Fig. 1 *Excessive paint build-up on architectural details such as this ornamental bracket does not in itself justify total paint removal. If paint is cracked and peeling down to bare wood, however, it should be removed using the gentlest means possible. Photo: David W. Look, AIA.*

Fig. 2 *A traditionally painted bay window has been stripped to bare wood, then varnished. In addition to being historically inaccurate, the varnish will break down faster as a result of the sun's ultraviolet rays than would primer and finish coats of paint. Photo: David W. Look, AIA.*

been identified, the general approach should be to remove paint to the next sound layer using the gentlest means possible, then to repaint (see figure 2). Practically speaking as well, paint can adhere just as effectively to existing paint as to bare wood, providing the previous coats of paint are also adhering uniformly and tightly to the wood and the surface is properly prepared for repainting—cleaned of dirt and chalk and dulled by sanding. But, if painted exterior wood surfaces display continuous patterns of deep cracks or if they are extensively blistering and peeling so that bare wood is visible, then the old paint should be completely removed before repainting. The only other justification for removing all previous layers of paint is if doors, shutters, or windows have literally been "painted shut," or if new wood is being pieced-in adjacent to old painted wood and a smooth transition is desired (see figure 3).

Paint Removal Precautions

Because paint removal is a difficult and painstaking process, a number of costly, regrettable experiences have occurred—and continue to occur—for both the historic building and the building owner. Historic buildings have been set on fire with blow torches; wood irreversibly scarred by sandblasting or by harsh mechanical devices such as rotary sanders and rotary wire strippers; and layers of historic paint inadvertently and unnecessarily removed. In addition, property owners, using techniques that substitute speed for safety, have been injured by toxic lead vapors or dust from the paint they were trying to remove or by misuse of the paint removers themselves.

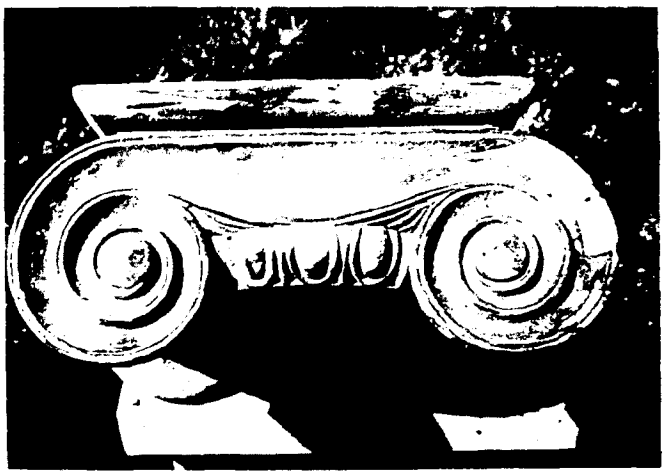

Fig. 3 *If damage to parts of a wooden element is severe, new sections of wood will need to be pieced-in. When such piecing is required, paint on the adjacent woodwork should be removed so that the old and new woods will make a smooth profile when joined. After repainting, the repair should be virtually impossible to detect. Photo: Morgan W. Phillips.*

Owners of historic properties considering paint removal should also be aware of the amount of time and labor involved. While removing damaged layers of paint from a door or porch railing might be readily accomplished within a reasonable period of time by one or two people, removing paint from larger areas of a building can, with-

out professional assistance, easily become unmanageable and produce less than satisfactory results. The amount of work involved in any paint removal project must therefore be analyzed on a case-by-case basis. Hiring qualified professionals will often be a cost-effective decision due to the expense of materials, the special equipment required, and the amount of time involved. Further, paint removal companies experienced in dealing with the inherent health and safety dangers of paint removal should have purchased such protective devices as are needed to mitigate any dangers and should also be aware of State or local environmental and/or health regulations for hazardous waste disposal.

All in all, paint removal is a messy, expensive, and potentially dangerous aspect of rehabilitating or restoring historic buildings and should not be undertaken without careful thought concerning first, its necessity, and second, which of the available recommended methods is the safest and most appropriate for the job at hand.

Repainting Historic Buildings for Cosmetic Reasons

If existing exterior paint on wood siding, eaves, window sills, sash, and shutters, doors, and decorative features shows no evidence of paint deterioration such as chalking, blistering, peeling, or cracking, then there is no *physical reason* to repaint, much less remove paint! Nor is color fading, of itself, sufficient justification to repaint a historic building.

The decision to repaint may not be based altogether on paint failure. Where there is a new owner, or even where ownership has remained constant through the years, taste in colors often changes. Therefore, if repainting is primarily to alter a building's primary and accent colors, a technical factor of paint accumulation should be taken into consideration. When paint builds up to a thickness of approximately 1/16" (approximately 16-30 layers), one or more extra coats of paint may be enough to trigger cracking and peeling in limited or even widespread areas of the building's surface. This results because excessively thick paint is less able to withstand the shrinkage or pull of an additional coat as it dries and is also less able to tolerate thermal stresses. Thick paint invariably fails at the weakest point of adhesion—the oldest layers next to the wood. Cracking and peeling follow. Therefore, if there are no signs of paint failure, it may be somewhat risky to add still another layer of unneeded paint simply for color's sake (extreme changes in color may also require more than one coat to provide proper hiding power and full color). When paint appears to be nearing the critical thickness, a change of accent colors (that is, just to limited portions of the trim) might be an acceptable compromise without chancing cracking and peeling of paint on wooden siding.

If the decision to repaint is nonetheless made, the "new" color or colors should, at a minimum, be appropriate to the style and setting of the building. On the other hand, where the intent is to restore or accurately reproduce the colors originally used or those from a significant period in the building's evolution, they should be based on the results of a paint analysis.[5]

Identification of Exterior Paint Surface Conditions/Recommended Treatments

It is assumed that a preliminary check will already have been made to determine, first, that the painted exterior surfaces are indeed wood—and not stucco, metal, or other wood substitutes—and second, that the wood has not decayed so that repainting would be superfluous. For example, if any area of bare wood such as window sills has been exposed for a long period of time to standing water, wood rot is a strong possibility (see figure 4). Repair or replacement of deteriorated wood should take place before repainting. After these two basic issues have been resolved, the surface condition identification process may commence.

The historic building will undoubtedly exhibit a variety of exterior paint surface conditions. For example, paint on the wooden siding and doors may be adhering firmly; paint on the eaves peeling; and paint on the porch balusters and window sills cracking and alligatoring. The accurate identification of each paint problem is therefore the first step in planning an appropriate overall solution.

Paint surface conditions can be grouped according to their relative severity: CLASS I conditions include minor blemishes or dirt collection and generally require *no* paint removal; CLASS II conditions include failure of the top layer or layers of paint and generally require *limited* paint removal; and CLASS III conditions include substantial or multiple-layer failure and generally require *total* paint removal. It is precisely because conditions will vary at different points on the building that a careful inspection is critical. Each item of painted exterior woodwork (i.e., siding, doors, windows, eaves, shutters, and decorative elements) should be examined early in the planning phase and surface conditions noted.

CLASS I Exterior Surface Conditions Generally Requiring No Paint Removal

- **Dirt, Soot, Pollution, Cobwebs, Insect Cocoons, etc.**

Cause of Condition

Environmental "grime" or organic matter that tends to cling to painted exterior surfaces and, in particular, protected surfaces such as eaves, do not constitute a paint problem unless painted over rather than removed prior to repainting. If not removed, the surface deposits can be a barrier to proper adhesion and cause peeling.

Recommended Treatment

Most surface matter can be loosened by a strong, direct stream of water from the nozzle of a garden hose. Stubborn dirt and soot will need to be scrubbed off using ½ cup of household detergent in a gallon of water with a medium soft bristle brush. The cleaned surface should then be rinsed thoroughly, and permitted to dry before further inspection to determine if repainting is necessary. Quite often, cleaning provides a satisfactory enough result to postpone repainting.

[5] See the Reading List for paint research and documentation information. See also *The Secretary of the Interior's Standards for Historic Preservation Projects with Guidelines for Applying the Standards* for recommended approaches on paints and finishes within various types of project work treatments.

22

• **Mildew**

Cause of Condition

Mildew is caused by fungi feeding on nutrients contained in the paint film or on dirt adhering to any surface. Because moisture is the single most important factor in its growth, mildew tends to thrive in areas where dampness and lack of sunshine are problems such as window sills, under eaves, around gutters and downspouts, on the north side of buildings, or in shaded areas near shrubbery. It may sometimes be difficult to distinguish mildew from dirt, but there is a simple test to differentiate: if a drop of household bleach is placed on the suspected surface, mildew will immediately turn white whereas dirt will continue to look like dirt.

Recommended Treatment

Because mildew can only exist in shady, warm, moist areas, attention should be given to altering the environment that is conducive to fungal growth. The area in question may be shaded by trees which need to be pruned back to allow sunlight to strike the building; or may lack rain gutters or proper drainage at the base of the building. If the shady or moist conditions can be altered, the mildew is less likely to reappear. A recommend solution for removing mildew consists of one cup non-ammoniated detergent, one quart household bleach, and one gallon water. When the surface is scrubbed with this solution using a medium soft brush, the mildew should disappear; however, for particularly stubborn spots, an additional quart of bleach may be added. After the area is mildew-free, it should then be rinsed with a direct stream of water from the nozzle of a garden hose, and permitted to dry thoroughly. When repainting, specially formulated "mildew-resistant" primer and finish coats should be used.

• **Excessive Chalking**

Cause of Condition

Chalking—or powdering of the paint surface—is caused by the gradual disintegration of the resin in the paint film. (The amount of chalking is determined both by the formulation of the paint and the amount of ultraviolet light to which the paint is exposed.) In moderation, chalking is the ideal way for a paint to "age," because the chalk, when rinsed by rainwater, carries discoloration and dirt away with it and thus provides an ideal surface for repainting. In excess, however, it is not desirable because the chalk can wash down onto a surface of a different color beneath the painted area and cause streaking as well as rapid disintegration of the paint film itself. Also, if a paint contains too much pigment for the amount of binder (as the old white lead carbonate/oil paints often did), excessive chalking can result.

Recommended Treatment

The chalk should be cleaned off with a solution of ½ cup household detergent to one gallon water, using a medium soft bristle brush. After scrubbing to remove the chalk, the surface should be rinsed with a direct stream of water from the nozzle of a garden hose, allowed to dry thoroughly, (but not long enough for the chalking process to recur) and repainted, using a non-chalking paint.

• **Staining**

Cause of Condition

Staining of paint coatings usually results from excess moisture reacting with materials within the wood substrate. There are two common types of staining, neither of which requires paint removal. The most prevalent type of stain is due to the oxidation or rusting of iron nails or metal (iron, steel, or copper) anchorage devices. A second type of stain is caused by a chemical reaction between moisture and natural extractives in certain woods (red cedar or redwood) which results in a surface deposit of colored matter. This is most apt to occur in new replacement wood within the first 10-15 years.

Fig. 4 *Paint films wear unevenly depending on exposure and location. Exterior locations which are susceptible to accelerated deterioration are horizontal surfaces such as window sills. These and similar areas will require repainting more often than less vulnerable surfaces. In the case of this window sill where paint has peeled off and adjacent areas have cracked and alligatored, the paint should be totally removed. Prior to repainting, any weathered wood should be rejuvenated using a solution of 3 cups exterior varnish, 1 oz. paraffin wax, and mineral spirits/paint thinner/or turpentine to make 1 gallon. Liberal brush application should be made. This formula was tested over a 20-year period by the U.S. Department of Agriculture's Forest Products Laboratory and proved to be just as effective as water-repellent preservatives containing pentachlorophenol. After the surface has thoroughly dried (2-3 days of warm weather), the treated surface can be painted. A high quality oil-base primer followed by two top coats of a semi-gloss oil-enamel or latex-enamel paint is recommended. Photo: Baird M. Smith, AIA.*

Recommended Treatment

In both cases, the source of the stain should first be located and the moisture problem corrected.

When stains are caused by rusting of the heads of nails used to attach shingles or siding to an exterior wall or by rusting or oxidizing iron, steel, or copper anchorage devices adjacent to a painted surface, the metal objects themselves should be hand sanded and coated with a rust-inhibitive primer followed by two finish coats. (Exposed nail heads should ideally be countersunk, spot primed, and the holes filled with a high quality wood filler except where exposure of the nail head was part of the original construction system or the wood is too fragile to withstand the countersinking procedure.)

Discoloration due to color extractives in replacement wood can usually be cleaned with a solution of equal parts denatured alcohol and water. After the affected area

has been rinsed and permitted to dry, a "stain-blocking primer" especially developed for preventing this type of stain should be applied (two primer coats are recommended for severe cases of bleeding prior to the finish coat). Each primer coat should be allowed to dry at least 48 hours.

CLASS II Exterior Surface Conditions Generally Requiring Limited Paint Removal

- Crazing

Cause of Condition

Crazing—fine, jagged interconnected breaks in the top layer of paint—results when paint that is several layers thick becomes excessively hard and brittle with age and is consequently no longer able to expand and contract with the wood in response to changes in temperature and humidity (see figure 5). As the wood swells, the bond between paint layers is broken and hairline cracks appear. Although somewhat more difficult to detect as opposed to other more obvious paint problems, it is well worth the time to scrutinize all surfaces for crazing. If not corrected, exterior moisture will enter the crazed surface, resulting in further swelling of the wood and, eventually, deep cracking and alligatoring, a Class III condition which requires total paint removal.

Recommended Treatment

Crazing can be treated by hand or mechanically sanding the surface, then repainting. Although the hairline cracks may tend to show through the new paint, the surface will be protected against exterior moisture penetration.

Fig. 5 *Crazing—or surface cracking—is an exterior surface condition which can be successfully treated by sanding and painting. Photo: Courtesy, National Decorating Products Association.*

- Intercoat Peeling

Cause of Condition

Intercoat peeling can be the result of improper surface preparation prior to the last repainting. This most often occurs in protected areas such as eaves and covered porches because these surfaces do not receive a regular rinsing from rainfall, and salts from air-borne pollutants thus accumulate on the surface. If not cleaned off, the new paint coat will not adhere properly and that layer will peel.

Another common cause of intercoat peeling is incompatibility between paint types (see figure 6). For example, if oil paint is applied over latex paint, peeling of the top coat can sometimes result since, upon aging, the oil paint becomes harder and less elastic than the latex paint. If latex paint is applied over old, chalking oil paint, peeling can also occur because the latex paint is unable to penetrate the chalky surface and adhere.

Recommended Treatment

First, where salts or impurities have caused the peeling, the affected area should be washed down thoroughly after scraping, then wiped dry. Finally, the surface should be hand or mechanically sanded, then repainted.

Where peeling was the result of using incompatible paints, the peeling top coat should be scraped and hand or mechanically sanded. Application of a high quality oil type exterior primer will provide a surface over which either an oil or a latex topcoat can be successfully used.

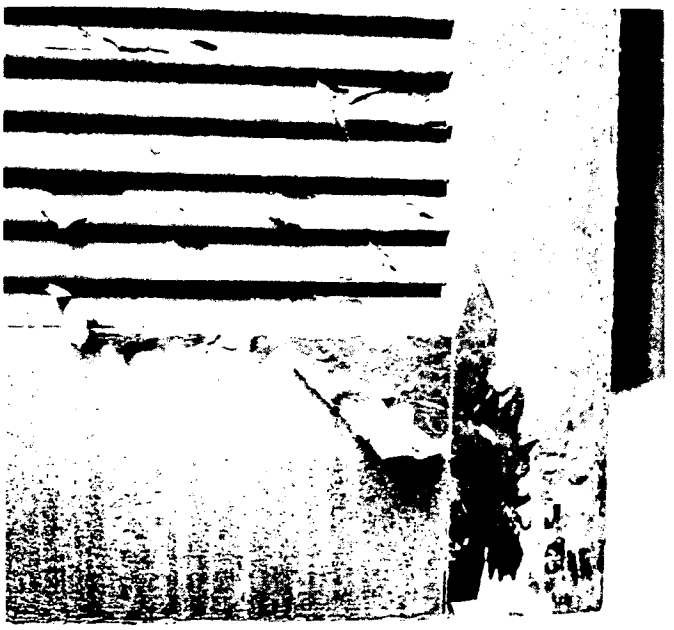

Fig. 6 *This is an example of intercoat peeling. A latex top coat was applied directly over old oil paint and, as a result, the latex paint was unable to adhere. If latex is being used over oil, an oil-base primer should be applied first. Although much of the peeling latex paint can be scraped off, in this case, the best solution may be to chemically dip strip the entire shutter to remove all of the paint down to bare wood, rinse thoroughly, then repaint. Photo: Mary L. Oehrlein, AIA.*

- Solvent Blistering

Cause of Condition

Solvent blistering, the result of a less common application error, is not caused by moisture, but by the action of ambient heat on paint solvent or thinners in the paint film. If solvent-rich paint is applied in direct sunlight, the top surface can dry too quickly and, as a result, solvents become trapped beneath the dried paint film. When the solvent vaporizes, it forces its way through the paint film, resulting in surface blisters. This problem occurs more often with dark colored paints because darker colors absorb more heat than lighter ones. To distinguish between solvent blistering and blistering caused by moisture, a blister should be cut open. If another layer of paint is visible, then solvent blistering is likely the problem whereas if bare wood is revealed, moisture is probably to blame. Solvent blisters are generally small.

Recommended Treatment

Solvent-blistered areas can be scraped, hand or mechanically sanded to the next sound layer, then repainted. In order to prevent blistering of painted surfaces, paint should not be applied in direct sunlight.

- **Wrinkling**

Cause of Condition

Another error in application that can easily be avoided is wrinkling (see figure 7). This occurs when the top layer of paint dries before the layer underneath. The top layer of paint actually moves as the paint underneath (a primer, for example) is drying. Specific causes of wrinkling include: (1) applying paint too thick; (2) applying a second coat before the first one dries; (3) inadequate brushing out; and (4) painting in temperatures higher than recommended by the manufacturer.

Recommended Treatment

The wrinkled layer can be removed by scraping followed by hand or mechanical sanding to provide as even a surface as possible, then repainted following manufacturer's application instructions.

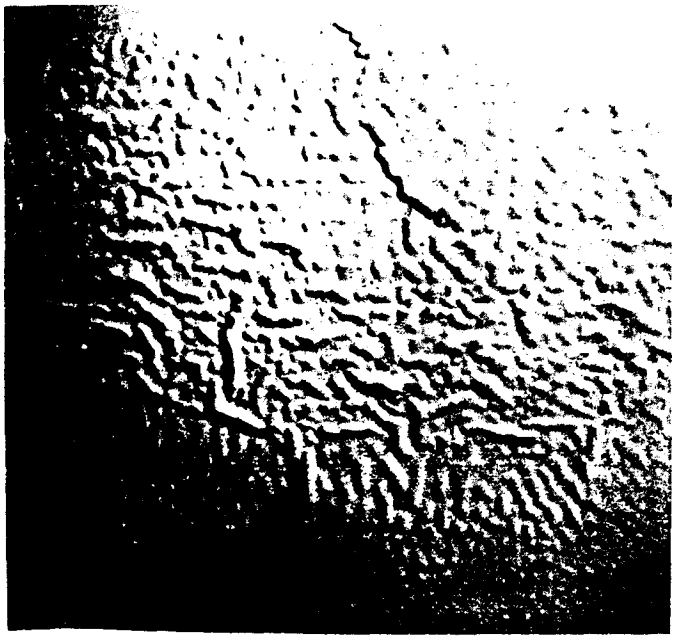

Fig. 7 *Wrinkled layers can generally be removed by scraping and sanding as opposed to total paint removal. Following manufacturers' application instructions is the best way to avoid this surface condition. Photo: Courtesy, National Decorating Products Association.*

CLASS III Exterior Surface Conditions Generally Requiring Total Paint Removal

If surface conditions are such that the majority of paint will have to be removed prior to repainting, it is suggested that a small sample of intact paint be left in an inconspicuous area either by covering the area with a metal plate, or by marking the area and identifying it in some way. (When repainting does take place, the sample should not be painted over). This will enable future investigators to have a record of the building's paint history.

- **Peeling**

Cause of Condition

Peeling to bare wood is most often caused by excess interior or exterior moisture that collects behind the paint film, thus impairing adhesion (see figure 8). Generally beginning as blisters, cracking and peeling occur as moisture causes the wood to swell, breaking the adhesion of the bottom layer.

Recommended Treatment

There is no sense in repainting before dealing with the moisture problems because new paint will simply fail. Therefore, the first step in treating peeling is to locate and remove the source or sources of the moisture, not only because moisture will jeopardize the protective coating of paint but because, if left unattended, it can ultimately cause permanent damage to the wood. Excess interior moisture should be removed from the building through installation of exhaust fans and vents. Exterior moisture should be eliminated by correcting the following conditions prior to repainting: faulty flashing; leaking gutters; defective roof shingles; cracks and holes in siding and trim; deteriorated caulking in joints and seams; and shrubbery growing too close to painted wood. After the moisture problems have been solved, the wood must be permitted to dry out thoroughly. The damaged paint can then be scraped off with a putty knife, hand or mechanically sanded, primed, and repainted.

Fig. 8 *Peeling to bare wood—one of the most common types of paint failure—is usually caused by an interior or exterior moisture problem. Photo: Anne E. Grimmer.*

- Cracking/Alligatoring

Cause of Condition

Cracking and alligatoring are advanced stages of crazing (see figure 9). Once the bond between layers has been broken due to intercoat paint failure, exterior moisture is able to penetrate the surface cracks, causing the wood to swell and deeper cracking to take place. This process continues until cracking, which forms parallel to grain, extends to bare wood. Ultimately, the cracking becomes an overall pattern of horizontal and vertical breaks in the paint layers that looks like reptile skin; hence, "alligatoring." In advanced stages of cracking and alligatoring, the surfaces will also flake badly.

Recommended Treatment

If cracking and alligatoring are present only in the top layers they can probably be scraped, hand or mechanically sanded to the next sound layer, then repainted. However, if cracking and/or alligatoring have progressed to

bare wood and the paint has begun to flake, it will need to be totally removed. Methods include scraping or paint removal with the electric heat plate, electric heat gun, or chemical strippers, depending on the particular area involved. Bare wood should be primed within 48 hours, then repainted.

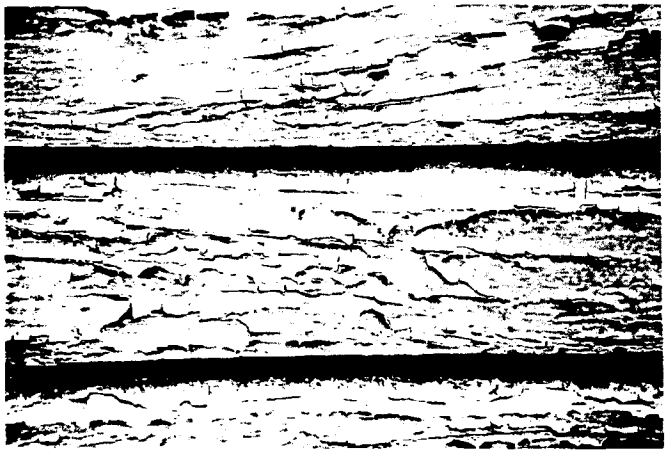

Fig. 9 *Cracking, alligatoring, and flaking are evidence of long-term neglect of painted surfaces. The remaining paint on the clapboard shown here can be removed with an electric heat plate and wide-bladed scraper. In addition, unsound wood should be replaced and moisture problems corrected before primer and top coats of paint are applied. Photo: David W. Look, AIA.*

Selecting the Appropriate/Safest Method to Remove Paint

After having presented the "hierarchy" of exterior paint surface conditions—from a mild condition such as mildewing which simply requires cleaning prior to repainting to serious conditions such as peeling and alligatoring which require total paint removal—one important thought bears repeating: if a paint problem has been identified that warrants either limited or total paint removal, the gentlest method possible for the particular wooden element of the historic building should be selected from the many available methods.

The treatments recommended—based upon field testing as well as onsite monitoring of Department of Interior grant-in-aid and certification of rehabilitation projects—are therefore those which take three over-riding issues into consideration (1) the continued protection and preservation of the historic exterior woodwork; (2) the retention of the sequence of historic paint layers; and (3) the health and safety of those individuals performing the paint removal. By applying these criteria, it will be seen that no paint removal method is without its drawbacks and all recommendations are qualified in varying degrees.

Methods for Removing Paint

After a particular exterior paint surface condition has been identified, the next step in planning for repainting—if paint removal is required—is selecting an appropriate method for such removal.

The method or methods selected should be suitable for the specific paint problem as well as the particular wooden element of the building. Methods for paint removal can be divided into three categories (frequently, however, a combination of the three methods is used).

Each method is defined below, then discussed further and specific recommendations made:

Abrasive—"Abrading" the painted surface by manual and/or mechanical means such as scraping and sanding. Generally used for surface preparation and limited paint removal.

Thermal—Softening and raising the paint layers by applying heat followed by scraping and sanding. Generally used for total paint removal.

Chemical—Softening of the paint layers with chemical strippers followed by scraping and sanding. Generally used for total paint removal.

- **Abrasive Methods (Manual)**

If conditions have been identified that require limited paint removal such as crazing, intercoat peeling, solvent blistering, and wrinkling, scraping and hand sanding should be the first methods employed before using mechanical means. Even in the case of more serious conditions such as peeling—where the damaged paint is weak and already sufficiently loosened from the wood surface—scraping and hand sanding may be all that is needed prior to repainting.

Recommended Abrasive Methods (Manual)

Putty Knife/Paint Scraper: Scraping is usually accomplished with either a putty knife or a paint scraper, or both. Putty knives range in width from one to six inches and have a beveled edge. A putty knife is used in a pushing motion going under the paint and working from an area of loose paint toward the edge where the paint is still firmly adhered and, in effect, "beveling" the remaining layers so that as smooth a transition as possible is made between damaged and undamaged areas (see figure 10).

Paint scrapers are commonly available in 1⅝, 2½, and 3½ inch widths and have replaceable blades. In addition, profiled scrapers can be made specifically for use on moldings. As opposed to the putty knife, the paint scraper is used in a pulling motion and works by raking the damaged areas of paint away.

The obvious goal in using the putty knife or the paint scraper is to selectively remove the affected layer or layers of paint; however, both of these tools, particularly the paint scraper with its hooked edge, must be used with care to properly prepare the surface and to avoid gouging the wood.

Sandpaper/Sanding Block/Sanding sponge: After manually removing the damaged layer or layers by scraping, the uneven surface (due to the almost inevitable removal of varying numbers of paint layers in a given area) will need to be smoothed or "feathered out" prior to repainting. As stated before, hand sanding, as opposed to harsher mechanical sanding, is recommended if the area is relatively limited. A coarse grit, open-coat flint sandpaper—the least expensive kind—is useful for this purpose because, as the sandpaper clogs with paint it must be discarded and this process repeated until all layers adhere uniformly.

Blocks made of wood or hard rubber and covered with sandpaper are useful for handsanding flat surfaces. Sanding sponges—rectangular sponges with an abrasive aggregate on their surfaces—are also available for detail work that requires reaching into grooves because the sponge easily conforms to curves and irregular surfaces. All sanding should be done with the grain.

Summary of Abrasive Methods (Manual)

Recommended: Putty knife, paint scraper, sandpaper, sanding block, sanding sponge.
Applicable areas of building: All areas.
For use on: Class I, Class II, and Class III conditions.
Health/Safety factors: Take precautions against lead dust, eye damage; dispose of lead paint residue properly.

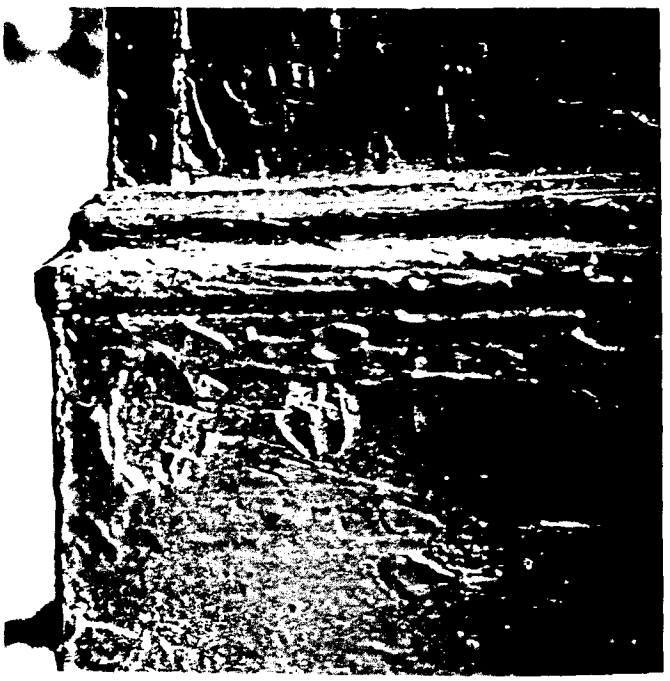

Fig. 10 *An excellent example of inadequate scraping before repainting, the problems here are far more than cosmetic. This improperly prepared surface will permit moisture to get behind the paint film which, in turn, will result in chipping and peeling. Photo: Baird M. Smith, AIA.*

- **Abrasive Methods (Mechanical)**

If hand sanding for purposes of surface preparation has not been productive or if the affected area is too large to consider hand sanding by itself, mechanical abrasive methods, i.e., power-operated tools may need to be employed; however, it should be noted that the majority of tools available for paint removal can cause damage to fragile wood and must be used with great care.

Recommended Abrasive Methods (Mechanical)

Orbital sander: Designed as a finishing or smoothing tool—not for the removal of multiple layers of paint—the oribital sander is thus recommended when limited paint removal is required prior to repainting. Because it sands in a small diameter circular motion (some models can also be switched to a back-and-forth vibrating action), this tool is particularly effective for "feathering" areas where paint has first been scraped (see figure 11). The abrasive surface varies from about 3×7 inches to 4×9 inches and sandpaper is attached either by clamps or sliding clips. A medium grit, open-coat aluminum oxide sandpaper should be used; fine sandpaper clogs up so quickly that it is ineffective for smoothing paint.

Belt sander: A second type of power tool—the belt sander—can also be used for removing limited layers of paint but, in this case, the abrasive surface is a continuous belt of sandpaper that travels at high speeds and consequently offers much less control than the orbital sander. Because of the potential for more damage to the paint or the wood, use of the belt sander (also with a medium grit sandpaper) should be limited to flat surfaces and only skilled operators should be permitted to operate it within a historic preservation project.

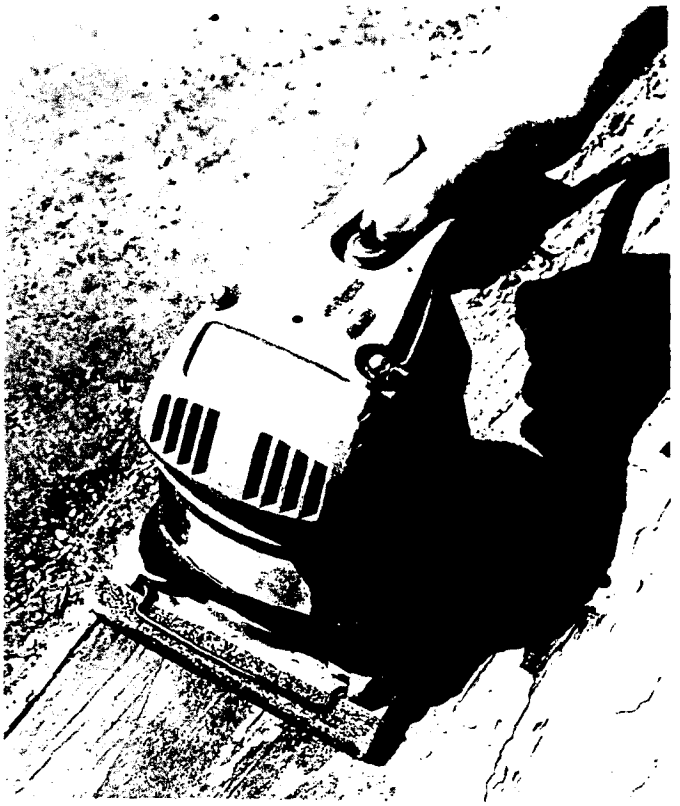

Fig. 11 *The orbital sander can be used for limited paint removal, i.e., for smoothing flat surfaces after the majority of deteriorated paint has already been scraped off. Photo: Charles E. Fisher, III.*

Not Recommended

Rotary Drill Attachments: Rotary drill attachments such as the rotary sanding disc and the rotary wire stripper should be avoided. The disc sander—usually a disc of sandpaper about 5 inches in diameter secured to a rubber based attachment which is in turn connected to an electric drill or other motorized housing—can easily leave visible circular depressions in the wood which are difficult to hide, even with repainting. The rotary wire stripper—clusters of metals wires similarly attached to an electric drill-type unit—can actually shred a wooden surface and is thus to be used exclusively for removing corrosion and paint from metals.

Waterblasting: Waterblasting above 600 p.s.i. to remove paint is not recommended because it can force water into the woodwork rather than cleaning loose paint and grime from the surface; at worst, high pressure waterblasting causes the water to penetrate exterior sheathing and damages interior finishes. A detergent solution, a medium soft bristle brush, and a garden hose for purposes of rinsing, is the gentlest method involving water and is recommended when cleaning exterior surfaces prior to repainting.

Sandblasting: Finally—and undoubtedly most vehemently "not recommended"—sandblasting painted exterior woodwork will indeed remove paint, but at the same time can scar wooden elements beyond recognition. As with rotary wire strippers, sandblasting erodes the soft porous fibers (spring wood) faster than the hard, dense fibers (summer wood), leaving a pitted surface with ridges and valleys. Sandblasting will also erode projecting areas of carvings and moldings before it removes paint from concave areas (see figure 12). Hence, this abrasive method is potentially the most damaging of all possibilities, even if a contractor promises that blast pressure can be controlled so that the paint is removed without harming the historic exterior woodwork. (For Additional Information, See Presevation Briefs 6, "Dangers of Abrasive Cleaning to Historic Buildings".)

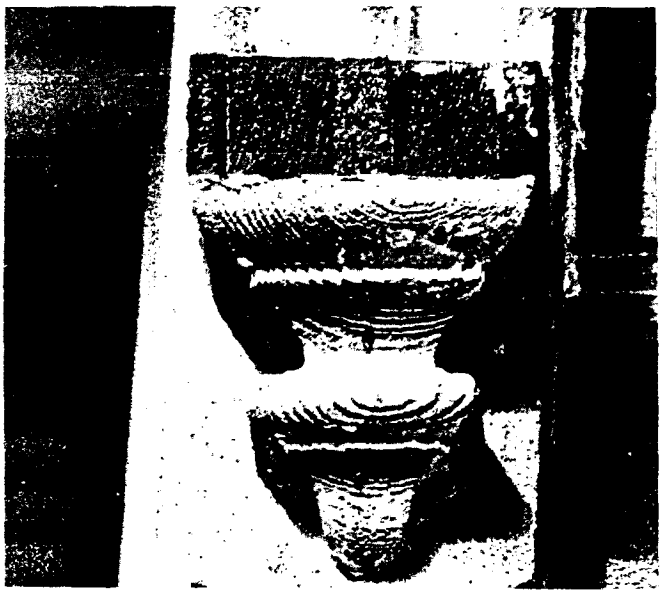

Fig. 12 *Sandblasting has permanently damaged this ornamental bracket. Even paint will not be able to hide the deep erosion of the wood. Photo: David W. Look, AIA.*

Summary of Abrasive Methods (Mechanical)

Recommended: Orbital sander, belt sander (skilled operator only).
Applicable areas of building: Flat surfaces, i.e., siding, eaves, doors, window sills.
For use on: Class II and Class III conditions.
Health/Safety factors: Take precautions against lead dust and eye damage; dispose of lead paint residue properly.
Not Recommended: Rotary drill attachments, high pressure waterblasting, sandblasting.

- Thermal Methods

Where exterior surface conditions have been identified that warrant total paint removal such as peeling, cracking, or alligatoring, two thermal devices—the electric heat plate and the electric heat gun—have proven to be quite successful for use on different wooden elements of the historic building. One thermal method—the blow torch—is not recommended because it can scorch the wood or even burn the building down!

Recommended Thermal Methods

Electric heat plate: The electric heat plate (see figure 13) operates between 500 and 800 degrees Fahrenheit (not hot enough to vaporize lead paint), using about 15 amps of power. The plate is held close to the painted exterior surface until the layers of paint begin to soften and blister, then moved to an adjacent location on the wood while the softened paint is scraped off with a putty knife (it should be noted that the heat plate is most successful when the paint is very thick!). With practice, the operator can successfully move the heat plate evenly across a flat surface such as wooden siding or a window sill or door in a continuous motion, thus lessening the risk of scorching the wood in an attempt to reheat the edge of the paint sufficiently for effective removal. Since the electric heat plate's coil is "red hot," extreme caution should be taken to avoid igniting clothing or burning the skin. If an extension cord is used, it should be a heavy-duty cord (with 3-prong grounded plugs). A heat plate could overload a circuit or, even worse, cause an electrical fire; therefore, it is recommended that this implement be used with a single circuit and that a fire extinguisher always be kept close at hand.

Fig. 13 *The electric heat plate (with paint scraper) is particularly useful for removing paint down to bare wood on flat surfaces such as doors, window frames, and siding. After scraping, some light sanding will probably be necessary to smooth the surface prior to application of primer and top coats. Photo: David W. Look, AIA.*

Electric heat gun: The electric heat gun (electric hot-air gun) looks like a hand-held hairdryer with a heavy-duty metal case (see figure 14). It has an electrical resistance coil that typically heats between 500 and 750 degrees Fahrenheit and, again, uses about 15 amps of power which requires a heavy-duty extension cord. There are some heat guns that operate at higher temperatures but they should not be purchased for removing old paint

because of the danger of lead paint vapors. The temperature is controlled by a vent on the side of the heat gun. When the vent is closed, the heat increases. A fan forces a stream of hot air against the painted woodwork, causing a blister to form. At that point, the softened paint can be peeled back with a putty knife. It can be used to best advantage when a paneled door was originally varnished, then painted a number of times. In this case, the paint will come off quite easily, often leaving an almost pristine varnished surface behind. Like the heat plate, the heat gun works best on a heavy paint build-up. (It is, however, not very successful on only one or two layers of paint or on surfaces that have only been varnished. The varnish simply becomes sticky and the wood scorches.)

Although the heat gun is heavier and more tiring to use than the heat plate, it is particularly effective for removing paint from detail work because the nozzle can be directed at curved and intricate surfaces. Its use is thus more limited than the heat plate, and most successfully used in conjunction *with* the heat plate. For example, it takes about two to three hours to strip a paneled door with a heat gun, but if used in combination with a heat plate for the large, flat area, the time can usually be cut in half. Although a heat gun seldom scorches wood, it can cause fires (like the blow torch) if aimed at the dusty cavity between the exterior sheathing and siding and interior lath and plaster. A fire may smolder for hours before flames break through to the surface. Therefore, this thermal device is best suited for use on solid decorative elements, such as molding, balusters, fretwork, or "gingerbread."

Fig. 14 *The nozzle on the electric heat gun permits hot air to be aimed into cavities on solid decorative elements such as this applied column. After the paint has been sufficiently softened, it can be removed with a profiled scraper. Photo: Charles E. Fisher, III.*

Not Recommended

Blow Torch: Blow torches, such as hand-held propane or butane torches, were widely used in the past for paint removal because other thermal devices were not available. With this technique, the flame is directed toward the paint until it begins to bubble and loosen from the surface. Then the paint is scraped off with a putty knife. Although this is a relatively fast process, at temperatures between 3200 and 3800 degrees Fahrenheit the open flame is not only capable of burning a careless operator and causing severe damage to eyes or skin, it can easily scorch or ignite the wood. The other fire hazard is more insidious. Most frame buildings have an air space between the exterior sheathing and siding and interior lath and plaster. This cavity usually has an accumulation of dust which is also easily ignited by the open flame of a blow torch. Finally, lead-base paints will vaporize at high temperatures, releasing toxic fumes that can be unknowingly inhaled. Therefore, because both the heat plate and the heat gun are generally safer to use—that is, the risks are much more controllable—the blow torch should definitely be avoided!

Summary of Thermal Methods

Recommended: Electric heat plate, electric heat gun.
Applicable areas of building: Electric heat plate—flat surfaces such as siding, eaves, sash, sills, doors. Electric heat gun—solid decorative molding, balusters, fretwork, or "gingerbread."
For use on: Class III conditions.
Health/Safety factors: Take precautions against eye damage and fire. Dispose of lead paint residue properly.
Not Recommended: Blow torch.

- **Chemical Methods**

With the availability of effective thermal methods for total paint removal, the need for chemical methods—in the context of preparing historic exterior woodwork for repainting—becomes quite limited. Solvent-base or caustic strippers may, however, play a supplemental role in a number of situations, including:

- Removing paint residue from intricate decorative features, or in cracks or hard to reach areas if a heat gun has not been completely effective;
- Removing paint on window muntins because heat devices can easily break the glass;
- Removing varnish on exterior doors after all layers of paint have been removed by a heat plate/heat gun if the original varnish finish is being restored;
- Removing paint from detachable wooden elements such as exterior shutters, balusters, columns, and doors by dip-stripping when other methods are too laborious.

Recommended Chemical Methods
(Use With Extreme Caution)

Because all chemical paint removers can involve potential health and safety hazards, no wholehearted recommendations can be made from that standpoint. Commonly known as "paint removers" or "strippers," both solvent-base or caustic products are commercially available that, when poured, brushed, or sprayed on painted exterior woodwork are capable of softening several layers of paint at a time so that the resulting "sludge"—which should be remembered is nothing less than the sequence of historic

29

paint layers—can be removed with a putty knife. Detachable wood elements such as exterior shutters can also be "dip-stripped."

Solvent-base Strippers: The formulas tend to vary, but generally consist of combinations of organic solvents such as methylene chloride, isopropanol, toluol, xylol, and methanol; thickeners such as methyl cellulose; and various additives such as paraffin wax used to prevent the volatile solvents from evaporating before they have time to soak through multiple layers of paint. Thus, while some solvent-base strippers are quite thin and therefore unsuitable for use on vertical surfaces, others, called "semi-paste" strippers, are formulated for use on vertical surfaces or the underside of horizontal surfaces.

However, whether liquid or semi-paste, there are two important points to stress when using any solvent-base stripper: First, the vapors from the organic chemicals can be highly toxic if inhaled; skin contact is equally dangerous because the solvents can be absorbed; second, many solvent-base strippers are flammable. Even though application out-of-doors may somewhat mitigate health and safety hazards, a respirator with special filters for organic solvents is recommended and, of course, solvent-base strippers should never be used around open flames, lighted cigarettes, or with steel wool around electrical outlets.

Although appearing to be the simplest for exterior use, a particular type of solvent-base stripper needs to be mentioned here because it can actually cause the most problems. Known as "water-rinsable," such products have a high proportion of methylene chloride together with emulsifiers. Although the dissolved paint can be rinsed off with water with a minimum of scraping, this ultimately creates more of a problem in cleaning up and properly disposing of the sludge. In addition, these strippers can leave a gummy residue on the wood that requires removal with solvents. Finally, water-rinsable strippers tend to raise the grain of the wood more than regular strippers.

On balance, then, the regular strippers would seem to work just as well for exterior purposes and are perhaps even better from the standpoint of proper lead sludge disposal because they must be hand scraped as opposed to rinsed off (a coffee-can with a wire stretched across the top is one effective way to collect the sludge; when the putty knife is run across the wire, the sludge simply falls into the can. Then, when the can is filled, the wire is removed, the can capped, and the lead paint sludge disposed of according to local health regulations).

Caustic Strippers: Until the advent of solvent-base strippers, caustic strippers were used exclusively when a chemical method was deemed appropriate for total paint removal prior to repainting or refinishing. Now, it is more difficult to find commercially prepared caustic solutions in hardware and paint stores for home-owner use with the exception of lye (caustic soda) because solvent-base strippers packaged in small quantities tend to dominate the market.

Most commercial dip stripping companies, however, continue to use variations of the caustic bath process because it is still the cheapest method available for removing paint. Generally, dip stripping should be left to professional companies because caustic solutions can dissolve skin and permanently damage eyes as well as present serious disposal problems in large quantities.

If exterior shutters or other detachable elements are being sent out[6] for stripping in a caustic solution, it is wise to see samples of the company's finished work. While some companies do a first-rate job, others can leave a residue of paint in carvings and grooves. Wooden elements may also be soaked too long so that the wood grain is raised and roughened, requiring extensive hand sanding later. In addition, assurances should be given by these companies that caustic paint removers will be neutralized with a mild acid solution or at least thoroughly rinsed with water after dipping (a caustic residue makes the wood feel slippery). If this is not done, the lye residue will cause new paint to fail.

Summary of Chemical Methods

Recommended, with extreme caution: Solvent-base strippers, caustic strippers.
Applicable areas of buildings: decorative features, window muntins, doors, exterior shutters, columns, balusters, and railings.
For use on: Class III Conditions.
Health/Safety factors: Take precautions against inhaling toxic vapors; fire; eye damage; and chemical poisoning from skin contact. Dispose of lead residue properly

General Paint Type Recommendations

Based on the assumption that the exterior wood has been painted with oil paint many times in the past and the existing top coat is therefore also an oil paint,* it is recommended that for CLASS I and CLASS II paint surface conditions, a top coat of high quality oil paint be applied when repainting. The reason for recommending oil rather than latex paints is that a coat of latex paint applied directly over old oil paint is more apt to fail. The considerations are twofold. First, because oil paints continue to harden with age, the old surface is sensitive to the added stress of shrinkage which occurs as a new coat of paint dries. Oil paints shrink less upon drying than latex paints and thus do not have as great a tendency to pull the old paint loose. Second, when exterior oil paints age, the binder releases pigment particles, causing a chalky surface. Although for best results, the chalk (or dirt, etc.) should *always* be cleaned off prior to repainting, a coat of new oil paint is more able to penetrate a chalky residue and adhere than is latex paint. Therefore, unless it is possible to thoroughly clean a heavy chalked surface, oil paints—on balance—give better adhesion.

If however, a latex top coat is going to be applied over several layers of old oil paint, an oil primer should be applied first (the oil primer creates a flat, porous surface to which the latex can adhere). After the primer has thoroughly dried, a latex top coat may be applied. In the long run, changing paint types is more time consuming and expensive. An application of a new oil-type top coat on the old oil paint is, thus, the preferred course of action.

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[6] Marking the original location of the shutter by number (either by stamping numbers into the end grain with metal numeral dies or cutting numbers into the end with a pen knife) will minimize difficulties when rehanging them.

* If the top coat is latex paint (when viewed by the naked eye or, preferably, with a magnifying glass, it looks like a series of tiny craters) it may either be repainted with new latex paint or with oil paint. Normal surface preparation should precede any repainting.

30

If **CLASS III** conditions have necessitated total paint removal, there are two options, both of which assure protection of the exterior wood: (1) an oil primer may be applied followed by an oil-type top coat, preferably by the same manufacturer; or (2) an oil primer may be applied followed by a latex top coat, again using the same brand of paint. It should also be noted that primers were never intended to withstand the effects of weathering; therefore, the top coat should be applied as soon as possible after the primer has dried.

Conclusion

The recommendations outlined in this Brief are cautious because at present there is no completely safe and effective method of removing old paint from exterior woodwork. This has necessarily eliminated descriptions of several methods still in a developmental or experimental stage, which can therefore neither be recommended nor precluded from future recommendation. With the ever-increasing number of buildings being rehabilitated, however, paint removal technology should be stimulated and, in consequence, existing methods refined and new methods developed which will respect both the historic wood and the health and safety of the operator.

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This publication has been prepared pursuant to The Economic Recovery Tax Act of 1981, which directs the Secretary of the Interior to certify rehabilitations of historic buildings that are consistent with their historic character; the advice and guidance in this brief will assist property owners in complying with the requirements of this law.

Preservation Briefs 10 has been developed under the technical editorship of Lee H. Nelson, AIA, Chief, Preservation Assistance Division, National Park Service, U.S. Department of the Interior, Washington, D.C. 20240. Comments on the usefulness of this information are welcomed and can be sent to Mr. Nelson at the above address.

September 1982

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The finish line

A Forest Products Laboratory finishing factsheet

Stripping Paint From Exterior Wood Surfaces

Removing paint and other film-forming finishes is a time-consuming and often difficult process. In some cases, finishes need to be removed prior to repainting; for example, if the old surface is covered with severely peeled or blistered paint or if excessive paint buildup has caused cross-grain cracking. You must also remove the finish before applying a penetrating stain or water-repellent finish to a previously painted or stained (solid-color) surface.

This *Finish Line* outlines some factors to consider when stripping exterior wood before painting or staining. Stripping indoor wood is not difficult and the process tolerates mistakes, but stripping exterior wood can be difficult and unforgiving.

The information given here is based on our knowledge of wood. There has been no research at the Forest Products Laboratory to determine the best stripping systems for exterior wood. We do know that the best surface to repaint is one that has been sanded and has no leftover stripper.

Stripping Methods

Finishes can be removed by scraping, sanding, wet or dry sandblasting, spraying with pressurized water (power washing), using electrically heated paint removers and blow torches, or stripping with chemicals. Although wet sandblasting and power washing work well to remove a finish, it is difficult to avoid digging holes in the wood if the paint is firmly adhered. Common dry sandblasting should never be used to strip wood if you plan to apply another finish. Using heat as a stripper works well, but this method is not permitted if the paint contains lead. Lead is also a problem for sanding or power washing.

Chemical Strippers

Chemical strippers, though they can be tedious, may sometimes be the only choice. All chemical strippers we are aware of are reasonably effective on wood that is kept indoors.

There appears to be an inverse correlation between how safe stripping products are and how fast they work. The safer the product, the slower it acts. Strippers that claim to be safe take several hours to be effective and tend to dry out in the process. Evaporation can be prevented by covering the treated wood with plastic wrap and allowing the stripper to work overnight.

The fastest-working strippers contain methylene chloride, a known carcinogen that can burn skin and requires good ventilation. Strippers with methylene chloride can work in as little as 10 minutes. Because of safety concerns with methylene chloride, some formulations are now being made with other strong solvents that are probably safer to use but still hazardous to either the user or the environment.

For all chemical strippers, the process involves applying the stripper, waiting, scraping, and sanding. The wood can then be refinished.

Peel-Away Strippers

Peel-away products, which are based on strong bases (alkali), usually take a day to work. For interior wood with many layers of finish, the peel-away process is very effective. Wood stripped with a peel-away product must be neutralized with an acid because leftover base will degrade paint. Oxalic acid is frequently the acid of choice for neutralization because it brightens wood.

Neutralization is difficult because acids and bases penetrate wood differently. If considerable amounts of acids and bases are used, even if the proportions are correct, much salt will remain in the wood. Since salt is hygroscopic, the wood will be wetter than untreated wood, and too much moisture is always a problem. Washing the wood with water may remove some salt, but some types of wood may warp.

United States Department of Agriculture
Forest Service
Forest Products Laboratory

Failure of the finish on stripped exterior wood is a common problem. Often, the cause is application of too much stripper. Rather than risk failure to remove all the paint with one application, there is a tendency to apply too much stripper. When the neutralizer (acid) is applied, the wood remains alkaline because only the surface has been neutralized. The addition of more acid at this point only aggravates the problem. If all the paint peels away easily, too much stripper was used or too much time elapsed between applying and removing the stripper.

Disposal of Old Paint

No matter what method you use to remove paint, you must be careful in disposing of the old paint. Paint containing lead is considered hazardous waste. In some areas, laws regulate who can handle lead-containing material; be sure to follow local laws pertaining to removal and disposal of lead-based paint. Lead waste can be difficult to contain during power washing or other mechanical methods, and sanding requires high-efficiency vacuum cleaners.

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January 1998

The finish line

A Forest Products Laboratory finishing factsheet

Why House Paint Fails

House paint can fail prematurely—the following identifies some reasons and remedies.

•Wood was wet when it was painted.

If only the surface of the wood is wet, then only 1 sunny day is usually needed for drying prior to painting. If the wood is saturated, several sunny or windy days are necessary for drying prior to painting.

•Unfinished siding was exposed to several weeks of sunlight before painting.

Sunlight degrades the unfinished wood surface, thus it will never hold paint as well as fresh wood. If the unfinished wood was exposed more than 3 to 4 weeks, lightly sand or power wash the surface to remove the thin layer of degraded wood before applying paint.

•Temperature was too cold when the wood was painted.

Oil-based paints should be applied when the temperature is at least 40°F; for latex paints, the temperature should be at least 50°F. Conditions should remain above these temperatures for 24 hours after painting. When pretreating the wood with a paintable water-repellent preservative (a recommended practice), best results are achieved if it is applied when temperatures are greater than 70°F.

•Wood was too hot when it was painted or was heated soon after painting.

Do not paint when the temperature is greater than 90°F. To prevent temperature blisters, avoid painting surfaces that will soon be heated. The best procedure is to "follow the sun around the house." The east side of the building should be painted late in the morning, the south side in the middle of the afternoon, the west side late in the afternoon. The north side can be painted at any time during the day. However, at least 2 hours are needed for the fresh paint to dry before weather conditions cool to the point where dew forms. If blistering on the wood surface does occur, allow the paint to dry for a few days, scrape off the blisters, smooth the edges with sandpaper, and paint the area.

•Weather was too humid when the surface was painted.

When water-based paints cure, the water should evaporate as fast or faster than the solvents. After the water has evaporated, the paint will shrink to nearly its final shape. As the solvents evaporate, the paint chemically reacts to form a hard material. When it is too humid, water cannot evaporate and the solvents may evaporate first, causing the paint to cure while still in a water-filled state. You cannot recover from this type of disaster. Oil-based paints will also fail if conditions are too humid.

•Humidity in the house was too high during the heating season.

A high level of humidity inside the house is probably the cause if paint failure occurs on the outside walls of the bathroom or kitchen, and it can be even more pronounced on the outside of an upper floor. In multistory buildings, there is a chimney effect. Warm moist air is trying to vent upstairs, and eventually this moisture travels out through the siding. Paint failure may be more noticeable near electrical outlets or other breaks in the vapor barrier. Drier air enters the house through cracks on the main level; therefore, paint failure caused by high humidity is usually not a problem on the main level. Condensation on the windows also indicates excessive humidity in the house. Turning down your humidifier or turning on a bathroom exhaust fan will help lower the humidity level inside the house. An energy efficient but somewhat expensive solution to high levels of humidity is to install an air-to-air heat exchanger. Here, warm moist air gives its heat to the incoming fresh, dry air.

•Wood was installed directly over foam or foil-faced insulation board.

Water can travel in behind the siding of the house through various routes but has to travel out through the wood, pushing the paint off. Even if the paint remains

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on the surface, this moisture can cause other problems. Large overhangs, proper caulking, and a 12-inch-minimum ground clearance may decrease the chance of water getting in behind the siding. Additional suggestions to prevent paint failure in this situation include the following:

- Driving small wedges (1/16 inch) under every sixth row of siding may permit water to escape and reduce the moisture problem. However, wind-driven rain may also use this as an access and aggravate the situation.
- Back priming (painting the back of the siding before installation) may help reduce or prevent paint failure.
- Install roofing paper (15- to 30-lb felt) beneath the siding. *Note: The best solution is to attach furring strips to the studs through the insulation board, making air spaces behind the siding.* Furring strips also make a nice home for bugs, if you do not screen the bottom. A new spacer-type webbing called "cedar breather" is sometimes used under wood shingles and may have merit for use under siding.

•House has no interior vapor barrier.

The absence of an interior vapor barrier is related to the problems of high levels of humidity inside the house during the heating season and wood that was installed directly over foam or foil-faced insulation board. Driving wedges (previously noted) under the siding may be the easiest solution. Applying certain interior vapor-retarding paints and installing electrical outlet gaskets may also be effective, especially on the upper floor of a multistory house.

•Wood siding is dirty.

If the siding is dirty, the surface of the siding should be power washed or cleaned with detergent and a stiff bristle or brass brush and rinsed well. Never use steel or iron, which causes iron stain and may glaze the surface.

•Wood has mill glaze.

Mill glaze can be caused by several factors. For example, if during planing to make smooth wood, the planer blades were dull, running too fast, or pressing too hard on the wood surface, the surface of the wood can become hardened or resins may be drawn to the surface causing a glaze. Whatever the cause, the surface appears to be case hardened. If a drop of water beads up on the wood surface but does not on a lightly sanded surface, you may have what is commonly called mill glaze. If you have mill glaze, the smooth surface must be lightly sanded or power washed to remove the hardened surface. Oddly enough, controlled wetting of new siding with a garden hose may promote better adhesion to the redried wood. The water releases the stresses in the wood. You can also create a type of mill glaze by sand blasting or using a wire wheel on the wood surface. Mill glaze is not a problem on rough-sawn siding.

•Brown stains appear on the surface of the paint.

Paint does not have to fall off to fail. Moisture traveling through wood pulls water-based extractives through the paint, leaving brown stains on the surface of the paint. If the wood is kept dry, the water-based extractives in the wood will not bleed through paint. Keeping all moisture out may be difficult. Oil-based primers usually block extractive stains better than latex primers and may be a better choice on redwood and cedar; however, oil paints can increase mildew. Compared with oil-based primers, latex primers produce a more flexible paint film with better durability and can be used when extractive staining is not a problem. Improved stain-blocking latex primers will probably be available in the future.

•Wood has decayed (rotted).

Decayed wood can result if the wood has been wet for extended periods. If the wood is soft and spongy, it is degraded to the point that it will never hold paint and should be replaced.

In summary, note the following to prevent house paint failure (not applicable to semitransparent or solid-color stains):

- Install siding properly.
- Sand or power wash the surface of the wood if it is smooth.
- Apply paint during recommended weather conditions and temperatures.
- Treat the surface of the wood with a paintable water-repellent preservative (especially the end grain).
- Prime the surface of the wood with a stain-blocking primer.
- Properly apply caulking material.
- Apply two latex topcoats over the primer.

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October 1995

The finish line

A Forest Products Laboratory finishing factsheet

Before You Install Exterior Wood-Based Siding

Moisture accumulation and extreme fluctuations in moisture levels can adversely affect the service life of components, such as wood siding and windows. Adverse moisture conditions can induce checking, warping, paint failure, and in severe cases, rotting of the wood.

Proper building design and construction can help prevent moisture accumulation or excessive moisture fluctuation within building components. The following are among the well-known practices to prevent moisture accumulation within exterior siding:

- Use dry materials during construction,
- Provide adequate clearance to grade and drainage at grade,
- Design with adequate roof overhang,
- Install appropriate flashings, and
- Install an interior vapor retarder in cold climates.

An additional less-used technique that can improve performance of wood-base horizontal lap sidings is to install vertical furring strips between the sheathing and siding.

Studies performed at the USDA Forest Service, Forest Products Laboratory (FPL), during the 1930s and early 1950s indicated how rain can wet the back of horizontal wood lap siding. Rain water was shown to reach the space between the siding and the sheathing, which confirmed that it was appropriate to use a water-resistant barrier, such as asphalt felt, over sheathing to prevent further penetration of rain water into the wall. Studies in the 1970s and 1980s suggested siding could be dried by solar heating, with some water moving from the siding into the wall. This may raise moisture levels within the wall, but limited data suggest that this vapor migration does not usually cause serious moisture problems.

During the 1980s, foam sheathing became popular because of its superior insulating properties. Foil-faced sheathing and extruded polystyrene sheathing retard movement of water vapor; their vapor permeability is much lower than sheathing systems such as asphalt felt applied over lumber, wood fiberboard, or plywood. Thus, water that wets the back of horizontal wood siding installed over foam sheathing is expected to stay in the siding for longer periods, particularly if the finish on the face of the siding retards evaporation. Although not conclusive, some experimental evidence shows that in warm, humid climates wood-based siding installed over foam sheathing stays at a higher moisture level and undergoes greater moisture fluctuation than similar wood-based siding installed over wood fiberboard sheathing. We expect that installation of wood-based siding applied over furring strips accelerates drying of rain-wetted siding, particularly when installed over foam sheathing.

During the 1950s, some U.S. builders began installing wood siding over wood furring strips (usually plastering lath). These builders reported improved paint retention when siding was installed in this manner. The practice of installing wood siding over furring strips is a tradition in Scandinavian countries, where the climate is damp and relatively nondecay-resistant woods (e.g., spruce and pine) are used for siding.

A limited amount of experimental data indicates that ventilating the siding results in lower moisture levels in the siding. The *Moisture Control Handbook,* published by Oak Ridge National Laboratory (Oakridge, TN), describes the **rain screen design** (Fig. 1) as a way to reduce the amount of rainwater entering into the walls. In addition to furring strips, a rain screen design with wood siding consists of a relatively airtight sheathing and an airspace between the sheathing and the siding that is open at the bottom and allows unrestricted air exchange with a ventilated soffit or overhang. Adequate airtightness of the sheathing can be attained by a variety of methods. The *Moisture Control Handbook* indicates that careful installation of asphalt felt over plywood or

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oriented strandboard should provide adequate airtightness. Other sealing methods include using foam sheathing and tape or synthetic sheet air barriers, commonly called "housewrap".

Some architects and one lumber trade association advise priming the backside of solid-wood siding with paint or a water-repellent. Research performed at the FPL during the 1950s conclusively indicated that back priming the siding with a water-repellent improved paint retention and overall performance of horizontal wood lap siding. However, the benefits of back priming the siding with paint has not been experimentally verified. If the lower portion of the siding back is primed, it is likely that the siding will absorb less moisture. Note that if the entire siding back is primed with paint, water that has been absorbed by the siding will be retarded from evaporating.

If your siding has already been installed, you can still reduce capillary rise of water between lap siding boards by inserting spaced wedges or shims under each course of siding. This increases the width of the opening, thereby reducing capillary rise and facilitating drying of the back of the siding after rain showers. However, wedges also provide larger openings for wind-driven rain and may not be appropriate for some locations.

In summary, ventilating horizontal lap siding may improve its service life. If the siding is installed using a rain screen design, the rain water will probably not penetrate past the siding. Installing horizontal lap siding using the rain screen method is also reasonably inexpensive and easy to execute.

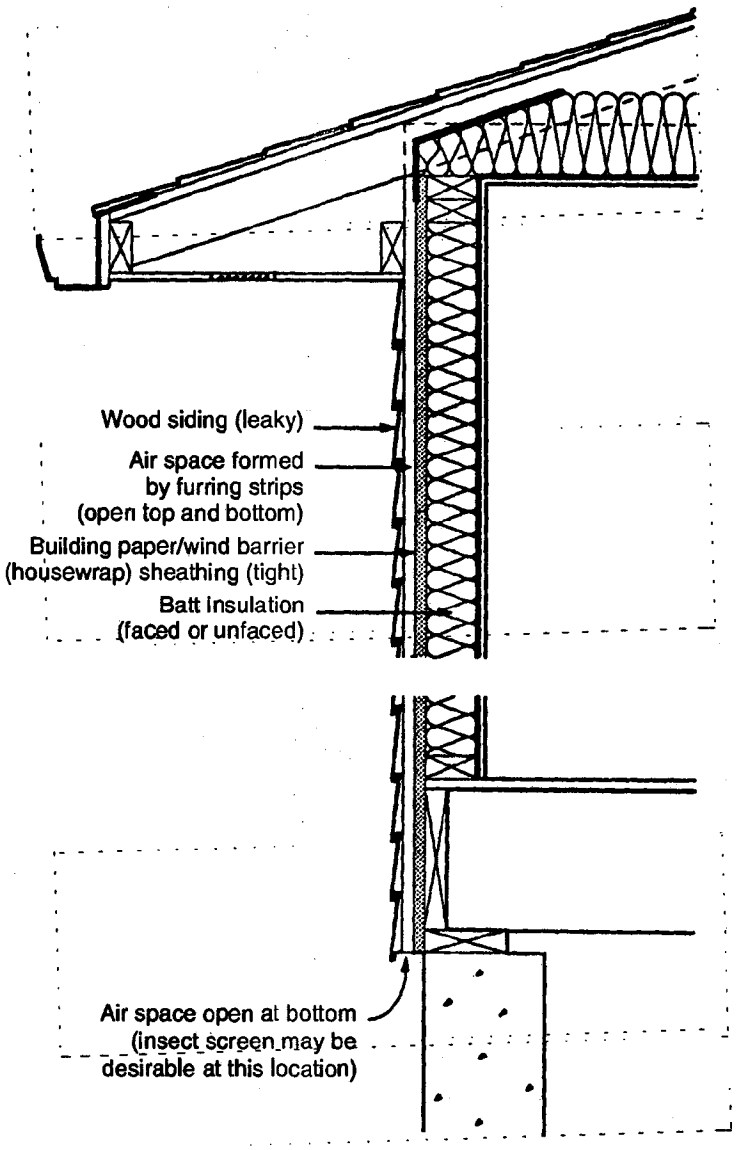

Figure 1—Wood frame wall designed as a rain screen

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PRIOR TO PAINT

Preparing Exterior Wood for a New Coat

BY JOSH GARSKOF

Paint is not just an aesthetic detail, it is the first layer of protection for an old house. Left exposed, exterior wood siding and trim are no match for the ultraviolet light, water, and microscopic organisms that attack them from all around. A well-maintained paint film can shield wood so that it will last virtually forever. However, each paint job is only temporary, and all exterior wood needs routine repainting.

Without question, the most important — and painstaking — task of a paint job is the preparation. It is hard, tedious work, and there are no short cuts worth taking. Unless the surface is sufficiently cleaned, dried, treated, and primed, paint will not stick to it for long. In fact, professionals say preparation is at least 80 percent of a paint job. We've highlighted the paint prep techniques that can extend the life of an old-house paint job and help paint to protect wood.

Assess Any Defects

The first task is to determine whether the house has any on-going conditions that could compromise the new paint film. Generally, paint fails for one of two reasons: the building has a moisture problem, or the surface under the paint is damaged. The house is the culprit when leaky roofing, missing gutter downspouts, or other maintenance or design shortcomings create the high moisture levels that can quickly ruin a new paint film. Peeling and cracking paint mean adhesion problems. (See "Diagnosing Paint Failure," page 37). It only makes sense to correct building problems before moving on to prep work. Problems with the paint will be addressed by the preparation process.

Another common old house paint problem is mildew. From afar it can look like patches of dirt. Up close it looks like little spots. Mildew will quickly regrow through a new paint job if it is not killed and washed off first. Test for mildew by putting a drop of household bleach on the area. If the spot lightens, it is mildew; if not, it is dirt.

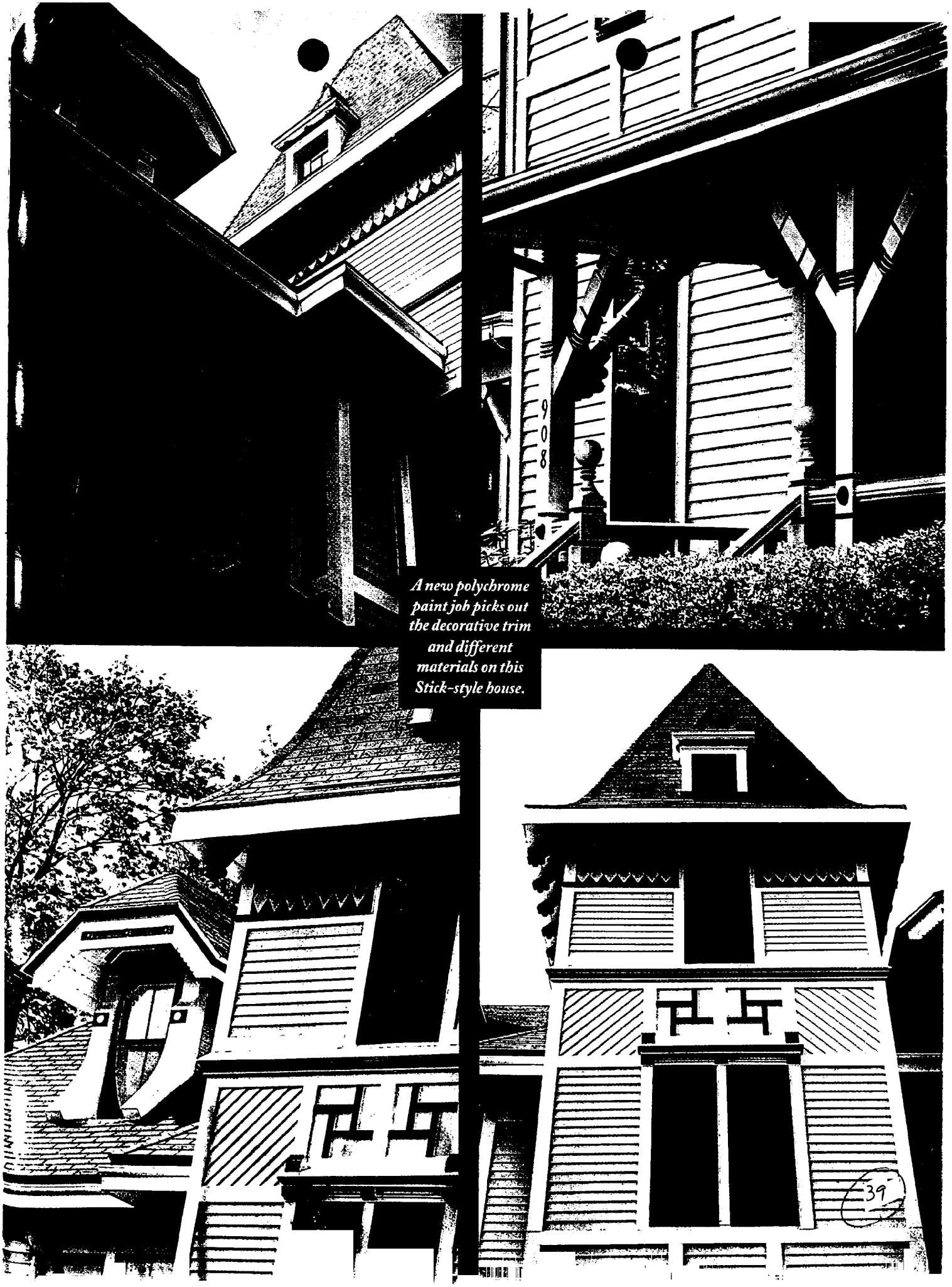
Clean the House

Paint will not stick to a dirty surface. Wash the house's exterior thoroughly before painting. If your mildew test was positive, kill the fungus with a bleach solution: one cup non-ammoniated detergent, one quart household bleach, and one gallon water. When possible, correct the moist conditions that breed mildew. Improve ground drainage, trim back shrubbery, and repair gutters or install drip caps. Also, select a mildew resistant paint or add a mildewcide.

If you do not have a mildew problem, spray from a garden hose will rinse away dirt, flaking paint, and insect cocoons, but most old houses need a good scrubbing with soap and water. Wash grime with trisodium phosphate or house-

Photography by Steve Marsel

30



A new polychrome paint job picks out the decorative trim and different materials on this Stick-style house.

Regular paint maintenance, like spot scraping and painting, has kept this house in good condition for more than 200 years.

hold detergent combined with hot water. Scrubbing with a stiff brush will clean away failing paint, dirt, and grease. It will also remove chalking (powdery pigment that is left on the surface when the paint binder breaks down). Chalking is a normal process for some paints, but excessive chalking can be a sign of paint failure.

Wash from the bottom of the house up, so residue does not streak down the siding. After scrubbing an area, rinse immediately before it has a chance to dry back onto the siding. Once your house is clean and free of mildew, reassess your repainting project. Until the dirt is cleaned off, it can be hard to tell just how much work is required. When your house is not peeling, but the paint seems to have lost its luster, a good washing may be all it needs (See "Power Washing," page 35).

Incidentally, if there is no paint failure, don't repaint an old house solely because you want a different color. Too many layers of paint can become a thick, brittle buildup that cracks and peels. If you hate the color you inherited, or want to design a historically accurate color scheme, wait until it's time to repaint anyway.

Beneath the Surface

TO PREPARE A SOUND AND ACCEPTABLE surface for a new coat of paint, failing paint must be removed. Scrape all peeling, bubbling, or cracking paint and areas where the paint film is weak. Test for poor adhesion by putting a piece of medical tape on the surface and then ripping it off. If the tape pulls paint away, the bond is poor and the paint must be removed. Scrape, or break away, all loose or dried out putty and caulk. Also sand scraped areas to feather edge the paint and to degloss shiny paint.

There's no art to removing failing paint, and no single method that's best for every surface — or completely safe. Putty knives and hand scrapers are convenient and effective for spot work or heavily flaking paint, although slow and manual. Hand sanding offers the most control for smoothing or reducing paint layers. Careful handling to work with the grain and avoid scoring will make power orbital sanders acceptable (disc sanders invariably leave swirl marks). Chemical strippers are probably most cost-effective for removing paint buildup from complex or decorative surfaces; heat tools often produce their best results on flat surfaces.

Remember, any technique that is strong enough to lift a coating is strong enough to affect building fabric or human flesh. Do not use heat tools near thin or easily ignited materials, and never remove paint with an open flame. Chemical strippers require face and body protection, plenty of ventilation, and safe disposal. Mechanical methods (scraping or sanding) can create lead-containing dust, making personal protection important. If the prep work involves removing lead-based paint, wear properly-fitted respiratory protection, such as a fine particulate filter mask approved for use against paint dust (See "Getting Rid of Lead" July/August 1992 *OHJ*). Change filters at least daily. Collect all debris and dispose following state regulations.

Stripping all of the paint from a house is usually unnecessary and should be avoided because it can damage wood and remove a still-functioning film. If the film is peeling in some areas, but holding in others, scrape where it is weak. If major paint failure requires stripping the entire exterior, some restorers leave one location unsanded (say

Paint was left to peel on this house, leading to water damage and an extensive prep and paint job.

Photos by Noelle Lord and Nancy C. Warner (bottom)

40

a 1' x 1' area) to preserve paint layers for later historical analysis. (See "Checking Out Paint Layers," page 49.)

Treat Wood Right

WOOD THAT SHOWS THE EFFECTS OF years of weathering — splitting, splintering, or even decomposing — needs special care. Sand bare, weathered wood to a bright surface (See "Dealing with Weathered Wood," page 36). Then, take the opportunity to treat all exposed wood (even new boards) with materials that will prolong its life. There are three types of under-paint wood treatments that can help protect the wood and improve your paint job, and they offer different levels of protection.

Wood conditioners are natural or synthetic oil products that can enliven old, dried out wood, much like a facial cream. The old-time, easy-to-make mixture that OHJ has recommended for years is a 50-50 mix of boiled linseed oil and turpentine (or mineral spirits). Brush the mix on as long as the wood continues to "drink" it up, and allow to dry 24 hours before priming. Some commercially available conditioners, such as Kyanoil Sealer and Reinforcing Oil (Kyanize Paints, 601 South Haven Street, Baltimore MD 21224; 800-966-7634), can be mixed into the primer and spread on with the paint.

If standing water or high moisture is a concern, treat old wood with a water repellent. These wax-based products soak into the wood and add water repellency to the fibers. Keeping water out limits expansion and contraction of the boards with moisture changes, and reduces the strains on the paint film. Treat all surfaces of replacement wood pieces before installation to prevent wicking of water from behind lapped joints. The repellents also protect when the next coat of paint fails, keeping water out until the film is restored again. Like conditioners, these treatments can be store-bought, or homemade. Our favorite water-repellent recipe was developed by the Forest Products Laboratory: dissolve 1 ounce finely shaved paraffin wax in 3 cups exterior varnish, add enough mineral spirits, paint thinner, or turpentine to make one gallon of repellent. Give butt joints and corners an extra heavy coat to protect the end grain from soaking up water.

In decay-prone areas, there are more concerns than moisture itself. Water-repellent preservatives (commonly called WRPs) are water-repellent products that contain fungicides to inhibit the microscopic organisms that cause wood to rot, as well as the discoloring effects of mold and mildew. These are recommended in extremely wet climes, and where dampness from shady areas or nearby vegetation has caused paint failure. They offer the best under-paint protection for old wood .

When selecting any under-paint product, read manufacturers' labels carefully to insure that they are paintable treatments. Some similar products are specifically designed for wood that will not be painted (especially decks), and paint will not adhere to them.

Water repellents contain a large proportion of solvents that make them volatile and flammable. The pesticides and fungicides in WRPs can be toxic. Use these products carefully, outdoors, and with plenty of ventilation to avoid inhaling or igniting their vapors. Wear protective gloves and wash immediately if they contact skin.

Primary Protection

CONTRARY TO OLD LORE, EXTERIOR primer is not designed for hiding the color of the previous coat. It is an integral part of the paint system. Topcoat paints are made with more pigment, and less skin-making binder, than primers. Priming creates the protective film on the wood. It also creates a good surface for adhesion of the weaker topcoat. Don't make the mistake of skipping the primer coat or using a thinned layer of topcoat as a primer.

As a rule, coat the entire exterior (or, at least, all exposed wood) with a quality primer within 48 hours after scraping. More time may allow the wood to weather, ruining the paintable surface you have created. However, it

POWER WASHING

Q: WE HAVE DIRT AND CHALKING ON OUR LARGE FARMHOUSE. DO WE HAVE TO SCRUB EACH CLAPBOARD BY HAND, OR CAN WE SAFELY USE A POWER WASHER?

A: *When scouring a large exterior seems a daunting task, you can consider power washing. The pressurized water, often with a TSP or mildew-killer solution, will wash grime away and remove some failing paint. (Do not use bleach in pressure washers because it can quickly destroy rubber hoses and gaskets.)*

The main problem with power washing is that it can push water into the wood, under clapboards, and between seams. That can lead to moisture buildup inside walls, and onto interior plaster walls, and can cause poor adhesion of new paint. If you decide to pressure wash, give walls good drying time before repainting and be extremely careful while spraying. It is not wise to spray up at the wall from ground level. From that angle, clapboards and shingles will not keep water out. Power wash from a ladder or scaffolding.

Power washing can also damage the wood. High pressure water can be almost as powerful as sandblasting. Be sure to select a low enough pressure to avoid splitting, checking, or texturizing your siding. When you rent a power washer, remember pressure (try under 1,000 pounds-per-square-inch for starters) is what removes dirt and failing paint; volume (roughly 2 or 3 gallons-per-minute should do) is what washes away mold and loosened debris. Machines that have adjustable nozzles are highly recommended. Hot water machines are more effective, especially if the grime and grease is really baked on, but they cost more. Collect and properly dispose of runoff materials, following local hazardous materials regulations.

does take at least 48 hours for water repellents to dry — much more in some weather conditions or when heavy coats are applied. Make sure they have thoroughly dried before priming or they may bleed through and discolor paint. Knots and stains in old wood can also bleed through. In extreme cases, you can apply a sealer over problem areas. Sealers are commonly shellac-based films that literally create a seal over areas where sap is likely to leach out. As always, wait until residue from rinsing and weather have thoroughly dried. Never paint (either primer or topcoat) in direct sunlight. The best old-house primers are oil-based because they soak in to create an exceptional film, and because they adhere well to old oil-based coats. New oil-based paints offer a breathable film that bonds well with latex topcoats.

Tackle one area at a time and get a coat of primer on it before moving to another section so that bare wood is not left exposed for too long. This is less important when professional painters are working on a project and moving quickly, but it is vital when one or two weekend restorers may require months to finish the project. A uniform, complete primer film will seal the exterior, provide a good base for the topcoat, and distribute the force of wood expansion and contraction with moisture and temperature to avoid stressing the topcoat and causing failure.

To insure that your house has a complete film on it before the topcoat goes on, fill all seams and gaps with a liberal dose of caulk. Use only a caulk that is labeled "paintable." Siliconized acrylic caulks are longlasting and extremely watertight.

A Broad Brush Approach

WHEN IT IS TIME TO PAINT, BRUSH ON a quality exterior paint as soon as the primer is dry (about 48 hours), or within two weeks of priming. Make sure dew, rain, and residue from washing have thoroughly dried. If you wait longer, the primer may no longer provide a good surface for the topcoat.

The biggest decision is whether to use an oil-based or a latex paint. Traditionally, oil-based paints have been viewed as the old-house exterior paint of choice, offering better adhesion to old oil coats and a more weather-resistant film. However, environmental restrictions are making solvent-based paints hard to find (and changing their makeup). Meanwhile, manufacturing improvements are making latex paints better. Many professionals have tried latex paints over the last few years and are reporting good results. The advantages to latex paints are in its availability and its ease of application. (You don't need chemical thinners for cleanup.)

Always select a paint system from a single manufacturer and check with sellers on compatibility of coats. Typically, oil-based paints may be applied when the low temperature is above 40 degrees, and latex paints require a 50 degree low. Be sure morning dew has dried, do not paint in the sun, and stop a good two hours before sunset.

The status of the wood will determine the number of coats needed. Two topcoats will form a thicker, and stronger, paint film, but if significant coverage is already on the building, one may be sufficient. Consider applying a second coat on the south and west facing walls, where sunshine and rain are most concentrated. Under typical conditions, a paint job should last 10 years. And after a project like this, we all want the film to last.

DEALING WITH WEATHERED WOOD

THE CLAPBOARDS AND TRIM ON OUR OLD HOUSE HAVEN'T SEEN A FRESH COAT OF PAINT IN DECADES. MUCH OF THE WOOD IS BARE, WEATHERED, AND GRAY. WHAT SHOULD WE DO TO PREPARE THE WOOD FOR PAINTING?

A: *When wood is left without a protective film, ultraviolet rays and moisture set in motion a series of chemical changes that slowly wear it away, leaching out its lignins and extractives. Some hardwoods, most notably cedar and redwood, can last a long time without a finish if the construction was designed for weathering. But even they are gradually deteriorating. The best protection for exterior wood is a weathertight paint film.*

However, painting wood that has been exposed requires a bit of extra preparation. Damage to the cellular structure on the outer, weathered surface makes a rough strata. Paint cannot adhere to it. (Even new shingles and clapboards should be primed quickly, about 48 hours after they are installed.) Before painting, weathered wood must be sanded down to "bright" wood. Depending on the age of the siding, and other conditions, this can mean removing quite a bit of disintegrating wood (sometimes a full 1/8").

Some restorers turn the weathered surface to their advantage by using a semi-transparent stain instead of paint. The same qualities that can make weathered wood difficult to paint, can make it an excellent surface to stain. The outer surface is extremely porous and will soak up the stain. This does not require major sanding. The translucent coatings offer a slight pigment that can hide defects and some uneven weathering, while still showing an unfinished sort of look. Staining does not, however, create a protective film, and multiple coats of a water-repellent wood preservative should also be applied.

Sand weathered areas until "bright" wood shows.

Photo by Gordon Beck

42

DIAGNOSING PAINT FAILURE

Q: WE REPAINTED OUR EXTERIOR TWO SUMMERS AGO, AND THE WALLS ARE PEELING ALREADY. WE USED TOP-OF-THE-LINE PAINT AND DID A CAREFUL PREP JOB. HOW CAN IT BE FAILING SO SOON?

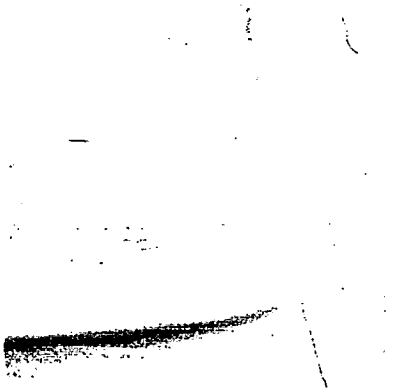
A: *"Paint failure" is a misnomer. It is almost never the paint that fails. When a paint film lets go prematurely, it is usually caused by one of three conditions: moisture, poor preparation, or faulty application. Here's how to identify the source of paint failure.*

If paint is peeling between layers, with upper coats peeling, cracking, or blistering while lower layers stay put, your problem is probably with the recent paint job. Depending on the severity of the failure, these troubles can generally be solved by scraping the failing coat and repainting.

•Insufficient washing before painting can lead to poor paint adhesion. Dirt, grime, grease, and chalking do not allow new paint to bond to lower coats. Use a TSP or household detergent solution.

•If your paint appears to be wrinkling in some areas, it could be a common problem that happens when paint is applied in direct sunlight. Sun can cause the top of the paint to dry first. When the bottom does dry, it shrinks and can cause wrinkles in the upper layer.

•Another inter-coat problem is incompatible paint films. Use primers and topcoats from the same manufacturer and check with the seller to insure proper bonding.



Inter-coat peeling

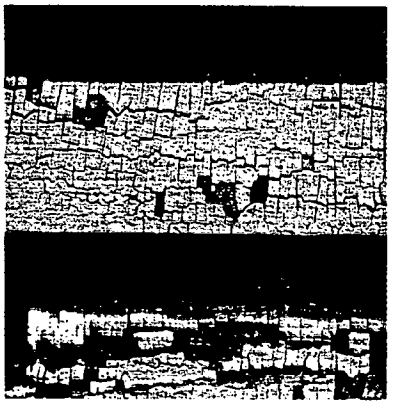
•If there are many layers of old paint (say 1/16", about 15 coats), two peeling problems can result: peeling and cracking. The thick buildup can become impermeable to water. If moisture migrates through the walls from living areas, it cannot pass through the paint and can cause peeling. Also, old paint gets brittle. Contraction of new paint as it dries, and movement of new flexible paint with temperature change can crack the old coat. Often, cross-grain "crazing" means paint buildup is the culprit.

When paint is peeling down to the bare wood, chances are your problem is moisture-related. These failures typically require more treatment before repainting.

Peeling down to bare wood

•Water could be getting into walls from leaky roofing, problem gutters, damaged flashing, or insufficiently caulked seams in the wall. Leaking water means severe localized peeling (although these problems often occur in a number of places at once), and, if left alone for too long, rotting wood.

•Moisture can also attack your paint film from inside the living area. Modern lifestyles (notably appliances such as humidifiers, laundry machines, and showers) put a lot of water vapor into old-house interiors. Good ventilation helps control extreme humidity in houses — bathroom exhaust fans are essential — but the moisture will probably still migrate through walls that do not contain vapor inhibitors. The moisture can push exterior paint (especially old, built-up oil-based paint) right off the wall. Insulations that offer a vapor retarder will help prevent migration, and some specialized interior paints will also inhibit moisture movement. Using a latex exterior paint also helps, because it is more permeable than oil-based paint.



Alligatoring paint

•Peeling can also occur in paint applied over damp wood. Common situations where this happens are when rainwater, or the residue from washing, are not given a chance to completely dry out of the siding. Paint won't adhere to the damp wood.

•Shrubs and vines that are allowed to grow too close to siding can also cause peeling (especially in shady areas), because they can hinder drying of the wall after rainstorms and attract bugs. Trim all vegetation away from the house.

•Insufficient priming can also lead to peeling down to bare wood. All bare wood and wood that is stripped must be given a good coat of primer before painting. Without proper priming, the topcoat binder may be sucked into the porous wood, causing the pigment to chalk or flake off.

•Alligatoring occurs when cracking and crazing is left to attract moisture. As water builds up in the cracks, it can cause major peeling to bare wood.

In all cases, the cause of paint failure must be identified and cured before repainting.

Photography courtesy of Sherwin-Williams and Gordon Bock (center)

HISTORIC PRESERVATION COMMISSION
SPEAKER'S FORM

If you wish to speak on an agenda item, please fill out this form and give it to a Historic Preservation staff person sitting at the left end of the table in the front of the auditorium prior to consideration of that item. The Historic Preservation Commission welcomes public testimony on most agenda items.

Please print using ink, and provide your full name, complete address, and name of person/organization that you officially represent (yourself, an adjacent property owner, citizens association, government agency, etc.). This provides a complete record and assists with future notification on this case. **This meeting is being recorded. For audio identification, please state your name and affiliation for the record the first time you speak on any item.**

DATE: APRIL 28 1999

AGENDA ITEM ON WHICH YOU WISH TO SPEAK: ST ROSE OH SIDING

NAME: DON DIBBLE

COMPLETE MAILING ADDRESS: 11701 CLOPPER RD GAITHERSBURG MD 20878

REPRESENTING (INDIVIDUAL/ORGANIZATION): _____

The Montgomery County Historic Preservation Commission observes the following time guidelines for testimony at regular meetings and hearings:

HAWP applicant's presentation	7 minutes
Comment by affected property owners on Master Plan designation	3 minutes
Comment by adjacent owners/interested parties	3 minutes
Comment by citizens association/interested groups	5 minutes
Comment by elected officials/government representatives	7 minutes

III A

HISTORIC PRESERVATION COMMISSION
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DATE: APRIL 28, 1999

AGENDA ITEM ON WHICH YOU WISH TO SPEAK:
ST. ROSE OF LIMA CATHOLIC CHURCH

NAME: GEORGE MURRAY TUEL

COMPLETE MAILING ADDRESS: 11557 BRANDY HALL LA.
GAITHERSBURG MD 20878

REPRESENTING (INDIVIDUAL/ORGANIZATION):
ST. ROSE OF LIMA CATHOLIC CHURCH

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III A

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DATE: APRIL 28, 1999

AGENDA ITEM ON WHICH YOU WISH TO SPEAK: SIDING REPLACEMENT

ST. ROSE CHURCH, GAITHERSBURG, MD.

NAME: DENNIS MALLEN & ROBERT MCANALLY

COMPLETE MAILING ADDRESS: 20507 Addenbrook Way

REPRESENTING (INDIVIDUAL/ORGANIZATION): MALLEN CO. INC.

The Montgomery County Historic Preservation Commission observes the following time guidelines for testimony at regular meetings and hearings:

HAWP applicant's presentation	7 minutes
Comment by affected property owners on Master Plan designation	3 minutes
Comment by adjacent owners/interested parties	3 minutes
Comment by citizens association/interested groups	5 minutes
Comment by elected officials/government representatives	7 minutes

III - A

HISTORIC PRESERVATION COMMISSION
SPEAKER'S FORM

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DATE: 4/28/97

AGENDA ITEM ON WHICH YOU WISH TO SPEAK: St Rose

NAME: DAVID LENZ

COMPLETE MAILING ADDRESS: 810 Powter Ridge Dr
Gaithersburg MD

REPRESENTING (INDIVIDUAL/ORGANIZATION): _____

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HAWP applicant's presentation	7 minutes
Comment by affected property owners on Master Plan designation	3 minutes
Comment by adjacent owners/interested parties	3 minutes
Comment by citizens association/interested groups	5 minutes
Comment by elected officials/government representatives	7 minutes

[redacted]

LABORATORY: Tracor Analytical Laboratories

SAMPLING LOCATION: Saint Rose of Lima Church
N/A

SAMPLE MATRIX: Paint chips
METHOD: ASTM D3335-85a
DATE COLLECTED: 21 March 1997
DATE REC'D: 21 March 1997

Sample I.D.	TAL Log #	Lead, %
L1	97-804	18.59
L2	97-805	12.08
L3	97-806	20.49
L4	97-807	20.90
L5	97-808	1.84

ACCEPTABLE LIMIT IS 0.5%

BDL = below detection limit(0.01% for a 0.1g paint sample)

LEAD-BASED PAINT ANALYSIS

Job Name: ST. ROSE OF LIMA CHURCH **File #:** N/A

Lab: Tracor Analytical Services
1601 Research Boulevard
Rockville, Maryland 20850

Lab Contact:
Phone #: (301)838-6296

Special Instructions: **Fax Results to** [redacted] **- Fax #: (301) 670-3423**
[redacted] **Contact:** DIRK GRIFFIN

Date of Sampling: 3/21/97

Sample #	Bldg/Unit#	Sample Location	Sample Description (color, texture, material)	Peeling Y/N
L-1	OLD CHURCH	NORTH WALL	WHITE PAINT @ NORTH (CEMETARY SIDE)	Y
L-2	" "	SOUTH WALL	WHITE PAINT @ SOUTH (P.C. SIDE)	Y
L-3	" "	EAST WALL	WHITE PAINT @ EAST (FRONT)	Y
L-4	" "	WEST WALL	WHITE PAINT @ WEST (REAR)	Y
L-5	" "	BSMT DOOR	WHITE PAINT @ BSMT DR (P.C. SIDE)	N

Remarks: FAX RESULTS TO DIRK GRIFFIN [redacted]

CHAIN OF CUSTODY

FROM (Signature)	TO (Signature)	Date/Time
[illegible]	[illegible]	3/21/97 2:40

TO: DON DIBBLE, ST. ROSE
2 PAGES
FROM: DIRK GRIFFIN

St. Rose of Lima Church Restoration Contacts

Company Name Contact Type ID	Address	City	State/Provi	Postal Cod	Notes
Peel Away Paint Removal Products	14027 Sunnybrook Road	Phoenix	MD	21131-	
The Sherwin-Williams Company Materials Consultant	7737 Airpark Road	Gaithersburg	MD	20879-	
H & R Construction Specialists, Inc. Asbestos and Lead Abatement	4200 Pennington Avenue	Baltimore	MD	21226-	
C.L.A. Asbestos and Lead Abatement	202 Wise Avenue	Baltimore	MD	21222-	
ACM Services, Inc. Asbestos and Lead Abatement	1101 Taft Street	Rockville	MD	20850-1311	
Manders Decorating Co. Painting Contractor	9141 Brookville Road	Silver Spring	MD	20910-	
APC Painting, Inc. Painting Contractor	3 Democracy Center 6905 Rockledge Drive, Ste. 600	Bethesda	MD	20817-	
Perfect Painters Painting Contractor	19033 Partridge Drive	Germantown	MD	20874-	
Mulcahy Brothers Painting Contractor	P.O. Box 39122	Washington	D.C.	20016-	
Ionia Painting Company Painting Contractor	5400 Elsrode Avenue	Baltimore	MD	21214-	
Kessinger Bros. Contractors, Inc. Painting Contractor	P.O. Box 62	Ashton	MD	20861-	
ProSoCo, Inc. Environmental Stripping Compounds	111 Snyder Road	S. Plainfield	NJ	07080-	
Hillian Brothers & Sons, Inc. Lead Barrier Compounds	8666 Old Ardmore Road	Landover	MD	20785-	
American Master Builders General Contractor	15020 Dumfries Road	Manassas	VA	22111-	

Company Name Contact Type ID	Address	City	State/Provi	Postal Cod	Notes
Mallen Company, Inc. General Contractor	20809 Apollo Lane	Gaithersburg	MD	20882-	
ADI Technologies Lead Paint Encapsulation	1487 Chain Bridge Road Suite 204-205	McLean	VA	22101-	Cote-L Duraback

From: DONALD DIBBLE 301 869 2170

COVER SHEET

FAX

To: ROBIN ZICK
Fax #: 301-563-3412
Subject: ST HIST. CH.
Date: 5/10/99
Pages: 10 INC. COVER.

COMMENTS:

ROBIN.

PLEASE USE INFO AS YOU SEE FIT.

SEE YOU WEDNESDAY

DON

St. Rose of Lima Parish

DONALD R. DIBBLE
Business Manager

11701 Clopper Road
Gaithersburg, Maryland 20878

301-948-7545
FAX 301-869-2170

Renovating St. Rose: A Personal Perspective

Biography of Author

David Lenz is Senior Estimator and Project Manager for Centennial Contractors at Andrews Air Force Base in Camp Springs, Maryland. He joined CCE, Inc in 1996 and worked at the World Bank for two years before transferring assignments. He has been involved with JOC (Task order) as well as lump sum contracting. He has been an estimator (10 years), construction supervisor (9 years), self employed interior finishing contractor or union carpenter for the past 27 years.

Mr. Lenz earned his degree at American University in 1970, served in the Peace Corps, and has been actively involved in community and scout activities. This assignment started as a commitment to help his church work through the complexities of their second recent restoration.

Problem: ***First-*** **Selecting an effective solution for removing peeling *leaded* paint and caulking from a historical structure**

Second- **Persuading the Historical Commission to respond favorably**

Third- **Developing a thorough construction scoping & estimate of costs**

Introduction and Project History:

The intent of this paper is to give interested readers an opportunity to ponder the complexities of a job where there are conflicting goals. This position paper and accompanying estimate was designed to help the parish council, community and the Montgomery County Historical Commission gain a knowledgeable awareness of their options. As a member of the Buildings and Grounds Committee for my local parish we were tasked 12 years ago to restore a structurally unsafe historical church. This first renovation allowed me to become personally involved in a project that was emotionally sensitive and important to a majority in our community. After the collapsing structure was condemned as unsafe, the church hired an affordable

architectural firm with historic restoration credentials and at their recommendation a construction manager. He provided a construction budget estimate, his own historical restoration experience, knowledgeable contractors, as well as design "solutions." Some of the problems and their solutions have returned to plague us eleven years later.

The church that closed in 1988 was a physical disaster. The archdiocese wanted to replace the structure, but the community's heart and dedication won reluctant converts. The failing beamed roof structure and tie rods were replaced with engineered scissor trusses. The crumbling plaster walls and ceilings were replaced with batt insulation, 3/4" internal plywood sheathing with an overlay of 5/8" drywall. Intricate decorative windows were restored and plaster moldings were repaired to their original beauty. The warped and often neglected D(e)utch siding was scraped, the warped gaps caulked and repainted a 16th coat. The church was rewired and ducted gas heat with electric air conditioning were installed. Though comfortable inside we were unaware of the moisture problems we were going to face. Without proper wall ventilation and moisture relief, the siding paint began to deteriorate more rapidly.

This is the second church at this site. The original had been constructed in 1838, was remodeled in 1880 and mostly destroyed by fire in 1883. The community of then farmers was committed to replace it even though the recent renovation had financially drained them. With local volunteer talent they constructed an "Excellent example of 19th century rural church incorporating significant Gothic Revival architectural elements." [1] It is a wooden gable-roofed structure (11/12 pitch) with traditional "D(e)utch" tin/steel shingles painted with whale oil for durability, five pointed-arch windows five on either side, and a bracketed canopy hood over the front door with a street facing round (rose) window with a multi-foil motif. The church has a polygonal apse with gable-roof wings and there are decorative pointed arch panels over the side facing windows in the rear cross gable. All of the sanctuary windows had special period stained glass manufactured in Baltimore in a process called "browning." However, because of budget constraints, the original siding paint was never removed. Just as the original rural community struggled with renovation and replacement costs, this first modern renovation was also a financial struggle to the now young and often transient families in newly suburban Upper Montgomery County, Maryland. As this community continues to actively worship in the church, they are committed to finding long term solutions to the problems. In 1995 this restoration received the Governors Award for excellence in historical restorations.

Project Description and Options:

The church is "T" shaped and has an overall length of 72 foot long x 32' 5" wide, plus the two wings which measure an additional 8' 7" x 12' 9" (included in 72 foot length). There are 10 primary siding wall panels with heights from 15' 9" (sides) to the ridge line which is 30' above the masonry, approximately 10,000 LF of siding or 4200 SF. There are 16 venting windows plus the Sacred Heart rose window, 120 decorative exterior corbels, over 1000 LF of square 3S trim, 400 LF of molded trim and a unique 5 pointed arch sliding split pocket front door. All of these surfaces except the new door and restored windows have lead paint.

In our responsibility to the community we weighed multiple options to preserve this signature piece of our heritage. Cost was NOT the motivating criteria for our selection. Historical accuracy, Maryland state laws, and environmental impact had to influence our method of repair. In choosing an acceptable course we had to consider several options to treat the entire "peeling paint" issue. With the existing siding there are *inherent moisture problems that can NOT be easily eliminated.* The problems are caused by three conditions. Before the last renovation the siding exhibited severe warpage and shrinkage. In order to remedy the visual problems it was decided that by caulking the gaps (vertically & horizontally), the siding could be best "protected" from moisture invasion. In addition full batt R-19 insulation was installed with a moisture barrier on the internal face. We did not realize that moisture *was now trapped in the wall.* Also the newly installed attic gable ventilator did not have sufficient makeup venting to allow incoming air to remove attic humidity. These actions though well intended have further hastened the cracking and peeling of the paint.

In areas of previous repairs available stock materials were used to replace original siding (15-20% of the lower *most visual* areas) and were dimensionally incorrect. The repair implants were butt joined with square cuts. These ends were never painted or treated thus allowing moisture to attack the siding from inside. Gouges & cracks were routinely filled with putty or caulking. Any surface stripping process that removes the paint will probably remove these "repairs." Currently there are new areas of defective wood (5-10%). These areas are typically window sills, bottom siding pieces, siding behind bushes, flashings, or the chimney and exposed trims that have weathered and blistered at a greater rate than other areas. While removing a sample piece I examined the cut nails. While both cut nails are thoroughly rusted, the most affected nail has less than 25% of its thickness remaining in the first inch. This condition is

indicative of pervasive moisture in the wood (1" thick) siding. The church is structurally sound, however, trapped internal moisture may start to deteriorate the insulation and make the wood susceptible to carpenter ants and mildew. When removing lead paint, Maryland State Lead Paint Abatement Procedures lists nine potential methods to consider for removing lead paint:[2]

1) *Replacement*- easiest and quickest method to remove lead paint. All items in poor condition should be removed and replaced. Removable items can be dipped or individually treated. "Any lead containing substance which has more than .50 percent lead by weight calculated as lead metal in the dried solid, or more than 0.7 milligrams per square centimeter by the X-ray florescence analyzer" (5 parts per million) must be treated as hazardous waste. In discussion with the MD Dept. Of the Environment, Dept. of Hazardous Waste, the church would be allowed a household or recreation area exemption. The entire siding could be removed and treated as ordinary disposal.[C]

2) *Encapsulation* - either with vinyl, aluminum, some other similar material with seams caulked and sealed or a special coating which seals all exposed areas with a durable long lasting material which will not wear, tear, chip or peel. If appearance is not important this often can be a temporary solution. However, the lead is never removed only postponed.

3) *Off site chemical stripping* such as a commercial dip tank. The caustic bath will remove all coatings from removable items such as decorative features, trims, doors and shutters. One has to be particularly careful during removal not to damage the pieces being stripped. We have found that cut nails into oak timbers do not retract easily. In addition this process leaves lye residues which can impact future coverings unless mitigated. Factors such as rate of grain absorption differences can cause raised grain levels (ridging); or neutralizing acid washes which do not penetrate as deeply as the caustic baths can leave an unacceptable substrate that will further blister. Soft spring growth graining allows greater absorption than denser summer growth. Further surface preparation with hand sanding will have to be employed to reduce this effect. Though this is generally the cheapest method, it is not recommended for extensive work or items difficult to remove.

4) *Electric heat guns or plates*- which allow low level heat to melt the old thickened paint buildup. This works best when there are many multiple layers, flat surfaces and

[C] Mr. Ed Hammerberg 410 631-3345 at Md. Dept. of Environment, Hazardous Waste Program, 2500 Broening Hwy., Baltimore, MD 21224

accessibility. The potential for hazardous lead fumes can make this process dangerous. The potential for fires or scorching the wood (excess localized heat) during the restoration process requires vigilance and carefully procedures by trained craftsmen. Fire extinguishers need to be readily accessible. Heat application is a successful method to remove thickened paint buildup. It takes about 3 hours to strip a door.

5) *Caustic or solvent base strippers* - which lend themselves to irregular suffices. It is a messy procedure and the resulting hazardous sludge must be contained and disposed of properly. Any removal that creates over 220 LB. of hazardous waste requires a state permit. Hazardous waste would include the plastic protection and the solvent material which would contain the lead waste (@10SF/gal. it would require 600 gallons).

Peel-away products are strong alkali bases and are temperature-humidity sensitive and must be prevented from drying out. This is accomplished with a "blanket" covering. The key is prevent evaporation and allow it to work slowly. "There appears to be an inverse correlation between how safe stripping products are and how fast they work."[3] Since the best surface to repaint is one that has been sanded and has no lingering stripper, the surface preparation has to include a proper neutralization process. During the stripping the paint is often replaced with a lot of salt. Since salt absorbs a lot of moisture this wood will be wetter than untreated wood. Similar to Peel Away are chemical strippers which contain methylene chloride or a similar formulation. Strippers can work in as little as 10 minutes or can also be protected against evaporation and work slowly. The process is simple: apply the product, wait, scrape and then sand. "Voila' ready for refinishing," so they say. The down sides are the and carcinogenic materials that can burn and injure and allowing the surface to dry out. This remains the most viable option for a large lead paint removal job.

6) *High Efficiency Particulate Air (HEPA) Sanders* - which use a strong negative vacuum that removes lead particulate and contains all dusting material. They can only be used on flat surfaces or they do not work properly. With irregular surfaces, sanders lose the suction and seal that is required to remove the dust. The existing siding was 5-8/16 x 17/16" dimensional. It has shrunk and is now 5-2/16" x 16/16" plus or minus paint and moisture. In some places where the original lead paint has bonded with the wood and has now separated because of wicked moisture, layers of bonded wood fiber have separated off and remained attached to the paint chips. With the irregular facing of the siding: 3" flat,

7/8" bevel, and 1" tapered flat (plus lap), sanding the surfaces would be quite difficult if not impossible. In measuring ranges of exposures, variations from 4-12/16" to 5-1/16" were noted. The ship lap pocket was 8/16" where the sidings overlapped. In some areas the entire pocket was filled with caulking and the wood had shrunk to just minimal lap covering.

7) *Reversal of wood trim*- essentially removing trims, flipping them over, caulking and sealing the surface edges. In a historical renovation with unfinished trim backs this is an unacceptable alternative. The siding can not be flipped due to its unique shape.

8) *Vacuum blasting* with sand or glass beads- Only flat surface areas can be scoured. This process may be acceptable on flooring but is impossible for siding.

9) *Water blasting*- Using pressurized water to remove coatings. All residue and waste including the water must be contained and disposed of properly. Given the dangers of moisture penetration, the potential for scarring and forcing water deep into the wood and damaging the interior finishes, this method is impractical and not advised.[4]

Should We Remove Lead Paint? Logical Analysis:

After seeing paint chipping on 10 to 15% of the surface areas, with extensive cracking and alligatoring our Building Committee recognized that we had a Class III[5] paint failure. Class III conditions are caused by excess interior or exterior moisture that collects in the substrate (wood siding) behind the paint film. This diminishes the bond between the paint and the material itself. It is evidenced by severe cracking, flaking or crazing in which the bond between layers has broken down and there is no adhesion. At these blisters bare wood is exposed and the moisture seal of the exterior skin has been breached. The only remedy is to *remove* the unstable layers down to a solid stable base and blending the surface layers. Maryland State Law does NOT mandate the removal of lead paint except in certain circumstances. Churches, unless they are child care providers, are exempt from enforcement. It would be simpler to scrape down the existing siding, chemically strip it in place and repaint the visual surface. <u>But removing the lead paint will not solve the moisture retention issue.</u>

Project Solutions:

The primary purpose of exterior paint is 1) provide a moisture barrier, 2) create definition and color accent and 3) to improve appearances. When recoating an existing structure it is imperative to have a proper bond. The substrate must be dry, sound and free from all foreign matter, dirt, chalk [8] and scale. It must have a clean and prepared surface. In order to provide this condition there are only two viable options: First- strip the existing lead paint in place; sand the already warped siding; and piece meal replace the 35% damaged or inaccurate wood. Result: we would be left with a checker board historical band aid that would 12 years later have the same moisture defects. Second- remove the existing siding and install a breathable moisture barrier (Tyvec type) and create a breathable air space behind the siding. Thus we are able to remove the moisture problem. This condition would have to be done on 2900 SF of area that is currently insulated. Still remaining are questions about the uninsulated areas of the building or 2400 SF.

This solution supports the governing mandate of historical restorations; *The Secretary of the Interior Standard # 2 notes- The historic character of a property shall be retained and preserved. The replacement of intact or repairable historic materials . . . shall be avoided."*[6] By removing the existing siding, creating a breathable space and installing new, milled to specification D(e)utch siding, and we would solve the primary problem of trapped wall moisture. Furring strips over the "Tyvec" and existing studs would create air spaces behind the siding. Insect screening would be added at the bottom and at the top vent, and windows would have to be furred out accordingly. This replacement process would resolve additional problems at the same time: split wood, poor caulking (much of it silicone which can not be heat removed or easily culled), dimensional warping and shrinkage, attachment failure (rusted nails), a hodge podge of mixed repairs with nonmatching woods, and cut in scabs that were never blended. To replace the existing 15% of already patched wood and the 10% of currently damaged wood, we literally would be replacing almost 50% of the lower and most visual 6 to 7 foot elevation. In order to create the breathable layer, there is no sensible alternative to replacement.

The Historical Commission had suggested that in order to eliminate moisture retention and allow air movement, the concept of installing 1/16" wedges should be followed. That would require

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[8] "Chalk is a powdering of the paint surface and is caused by the gradual breakdown of the resin in the paint film. It is an ideal method for paint to age, because when chalk is rinsed by rainwater, it carries discoloration and dirt away and provides an ideal surface for repainting. US Dept. of Parks, Historic Woodwork"

opening every lap joint at each layer of siding between studs *That is impossible given the unique nature of this lap siding.* In order to have a uniform and attractive surface, the laps were misguidedly filled with caulking. In order to wedge it, one must drive a shim between the ship lap joint (8/16" maximum), hope to disperse the 30 year siliconized acrylic caulk in order to allow air ventilation and one must do this without damaging the siding. Any attempt to drive wedges into siding that in fact would separate the caulking is bound to fail. Currently there is only 3/16" lap and in some areas none. In order to create additional moisture weep holes the complete removal of the caulking would be required. This is an impossible chore without removing the siding. In order to prevent future paint failure, the wood siding must breathe. Given the existing conditions, this wall assembly can not ventilate.

In Conclusion:

No method of paint removal is completely safe and effective[7]. Each has its own drawbacks. The continued desire of the St. Rose Catholic Community to worship in an attractive and aesthetic structure, using acceptable replacement techniques, presents a better construction option than stripping the existing siding with all of its defects. Is the historic character preserved? Is the existing structure repairable? The Commission Staff's original report rejected the application. In a hearing held on April 28, 1999, however, they were partially swayed by our strong representation and forceful position. They lament the loss of the durability of old growth woods of the existing siding and the resulting example of skills and techniques used by local craftsmen in the original installation. With 16 coats of paint and many more repairs, these qualities are lost. The failure of the wall system is regrettable but correctable. *The character will be preserved!* This restoration will allow us to perpetuate the beautiful structure that a rural immigrant people created. It is the continuing testimony of the community that has worshipped in this church for 120 years which expresses the feelings and bond they have with a place they call St. Rose.

After meeting With Richard J. Brand of the Maryland Historical Trust on site, he concluded with my findings. Finding an acceptable wood type that holds paint and is durable is the Commission's primary concern. Establishing a workable budget that my community will support remains mine.

Foot notes to draft presented to the Historical Commission

1

1985 Historical Preservation Commission Report

[2] Maryland LBP Abatement COMAR 26.02.07 page 24 & 25.

[3] "The Finish Line" US Dept of Agriculture bulletin January 1998

[4] 10 Preservation Briefs, by Kay Weeks and David Look, AIA , US Dept of Interior , NPS page 8.

[5] 10 Preservaton Briefs by Kay D Weeks and David W Look, AIA, US Dept of the Interior, NPS Preservation Assistance Division page 6

[6] Historic Preservation Commission Staff Report Case No 20/28-99A page 3.

[7] Danger: Restoration may be hazadous to your health. The Old House Journal. Vol r, No 6 (June 19765) pp 4-5.

St. Rose's 4/28/99

Don Dibble -

designated for type of architecture.

Dennis Mallen - Contractor. Worked on Wilson ~~House~~ woodrow Wilson House + Morrison-Clarke Hotel Wash Hist Soc. Willard Hotel!

Robert ~~McNatt~~ McAnally

Murray ~~George~~ Thiel - AIA.

Moisture finding - insulation added of moisture barrier inside attic insulation

New Roof structure. Took Rafter system + made new trusses for it.

→ Continued to 5/12

Get MHT out

Get Bryan Blundell out ~~[illegible]~~ or Hank?

The Maryland-National Capital Park and Planning Commission

Montgomery County Planning Board

Approved Preliminary Subdivision Plan No. 1-88134

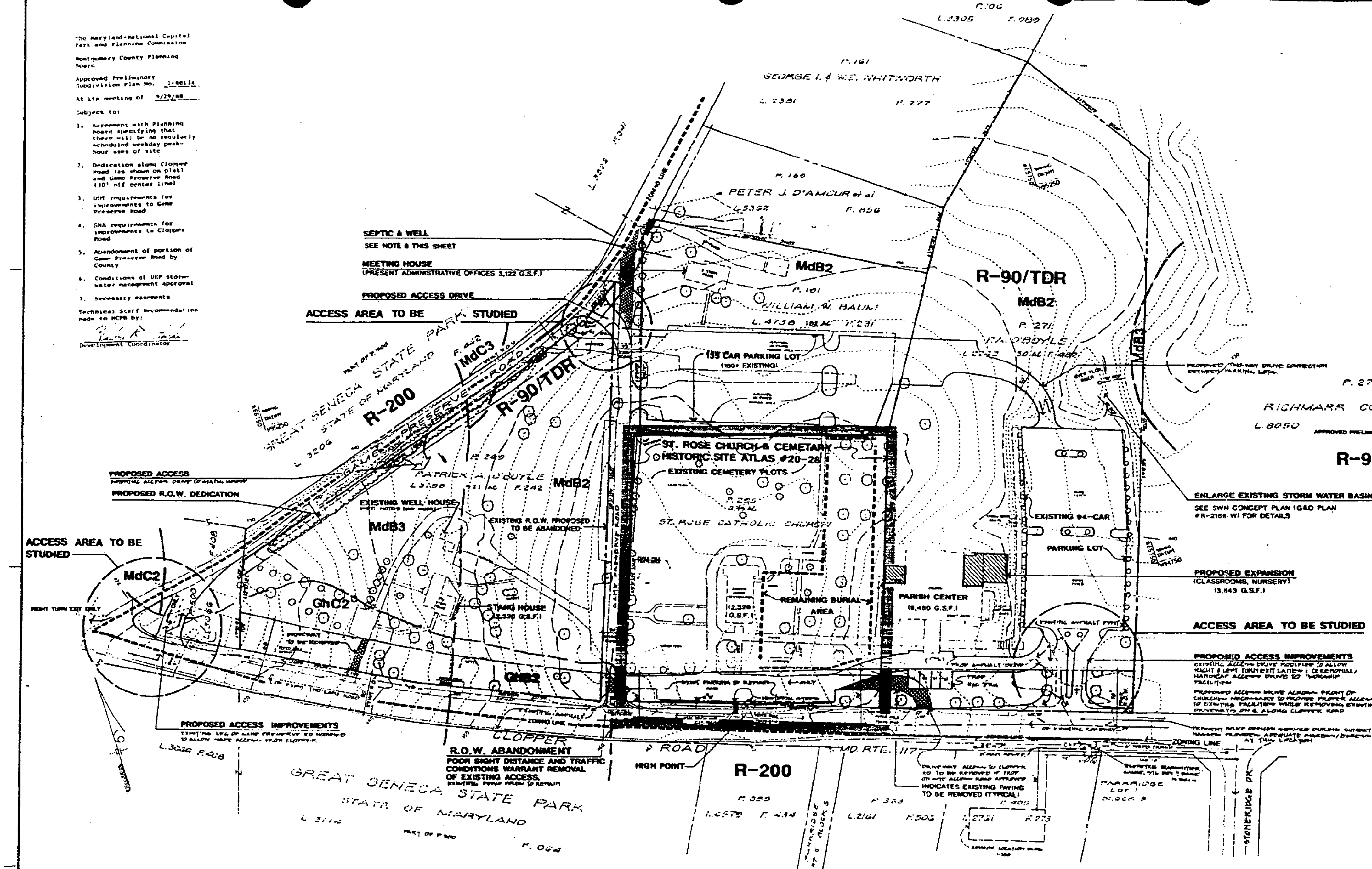
At its meeting of 9/29/88

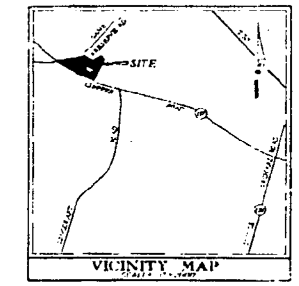
Subject to:

1. Agreement with Planning Board specifying that there will be no regularly scheduled weekday peak-hour uses of site
2. Dedication along Clopper Road (as shown on plat) and Game Preserve Road (30' off center line)
3. DOT requirements for improvements to Game Preserve Road
4. SHA requirements for improvements to Clopper Road
5. Abandonment of portion of Game Preserve Road by County
6. Conditions of DEP storm-water management approval
7. Necessary easements

Technical Staff Recommendation made to MCPB by:

[signature]
Development Coordinator





Purpose:

This Preliminary Plan of subdivision seeks the abandonment of the eastern leg of Game Preserve Road as a public right-of-way and the consolidation of this property with P. 271 (5 acres), P. 191 (1.82 acres), P. 285 (2.42 acres) and P. 249 (3.21 acres) into a single lot. This action is necessary to allow application for construction permits for the expansion of existing facilities as shown on the plan in accordance with the Montgomery County Zoning Ordinance.

Plan Summary:

1. Existing Facilities: 17,450 gross square feet
2. Proposed Expansion: 3,843 gross square feet
3. Existing Parking: 247 car parking (7 Barrier Free)
4. Proposed Parking: 280 car parking (6 Barrier Free)
5. Required Parking: 188 car parking

GENERAL NOTES

1. Actual boundary by: Greenhorne & O'Mara, Inc. (transit tape survey).
2. Topo by Greenhorne & O'Mara, Inc. field survey.
3. Grid coordinates are per WSSC datum.
4. The subject property is located within WSSC grids 224 NW 11 (Western 1/2) and 224 NW 12 (Eastern 1/2).
5. Existing utilities shown per available records provided by respective utility companies.
6. Proposed right-of-way dedication along Clopper Road per Maryland National Capital Park and Planning Commission transportation planning records (3/17/88).
7. Soils information taken from Montgomery County Soil Survey Plate #22 and dated October, 1961.
8. Exact locations of existing well and septic systems for the Meeting House and Stone House are unverifiable. Impact by proposed relighting and improvements are not anticipated.

I hereby certify that this preliminary plan has been prepared in accordance with the subdivision regulations adopted October 17, 1961 and amendments thereto.

SIGNATURE Jeffy B. Rettew 9/8/88

P.E. #13716

OWNER ROMAN CATHOLIC CHURCH, ARCHDIOCESE OF WASHINGTON

C/O ST. ROSE OF LIMA CHURCH 11801 CLOPPER ROAD

(301) 948-7545 GAITHERSBURG, MARYLAND 20878

No.	REVISION	DATE	BY

ENGINEERS • ARCHITECTS • PLANNERS • SCIENTISTS • SURVEYORS • PHOTOGRAMMETRISTS

GREENHORNE & O'MARA, INC.

6 TAFT COURT, ROCKVILLE, MARYLAND 20850

(301)948-0900

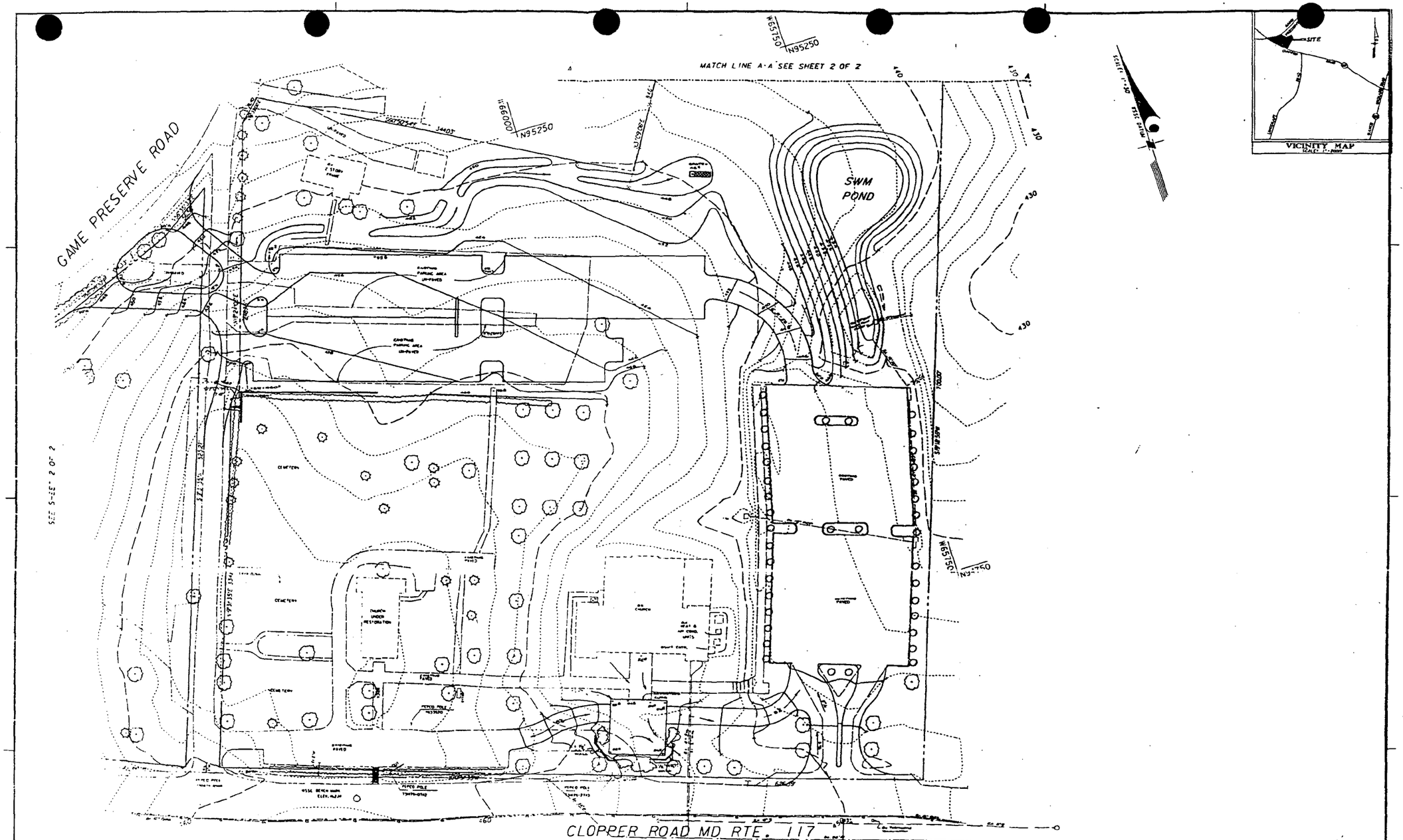
ANNAPOLIS, MD • ATLANTA, GA • AURORA, CO • CULPEPER, VA • EXPORT, PA • FAIRFAX, VA • GREENBELT, MD • MANASSAS, VA • MONROE, MI • RALEIGH, NC • TAMPA, FL

PRELIMINARY PLAN

ST. ROSE OF LIMA

9TH ELECTION DISTRICT
MONTGOMERY COUNTY, MARYLAND

DESIGN J.C.	SCALE 1" = 50'
DRAWN A.G.	SHEET 1 OF 1
CHECKED	
DATE March 1988	JOB No. / FILE No. R-2153-W



OWNER:
ROMAN CATHOLIC CHURCH, ARCHDIOCESE OF WASHINGTON, D.C.
C/O ST. ROSE OF LIMA CHURCH
18111 CLOPPER ROAD
GAITHERSBURG, MD. 20878 PH. (301) 9487545

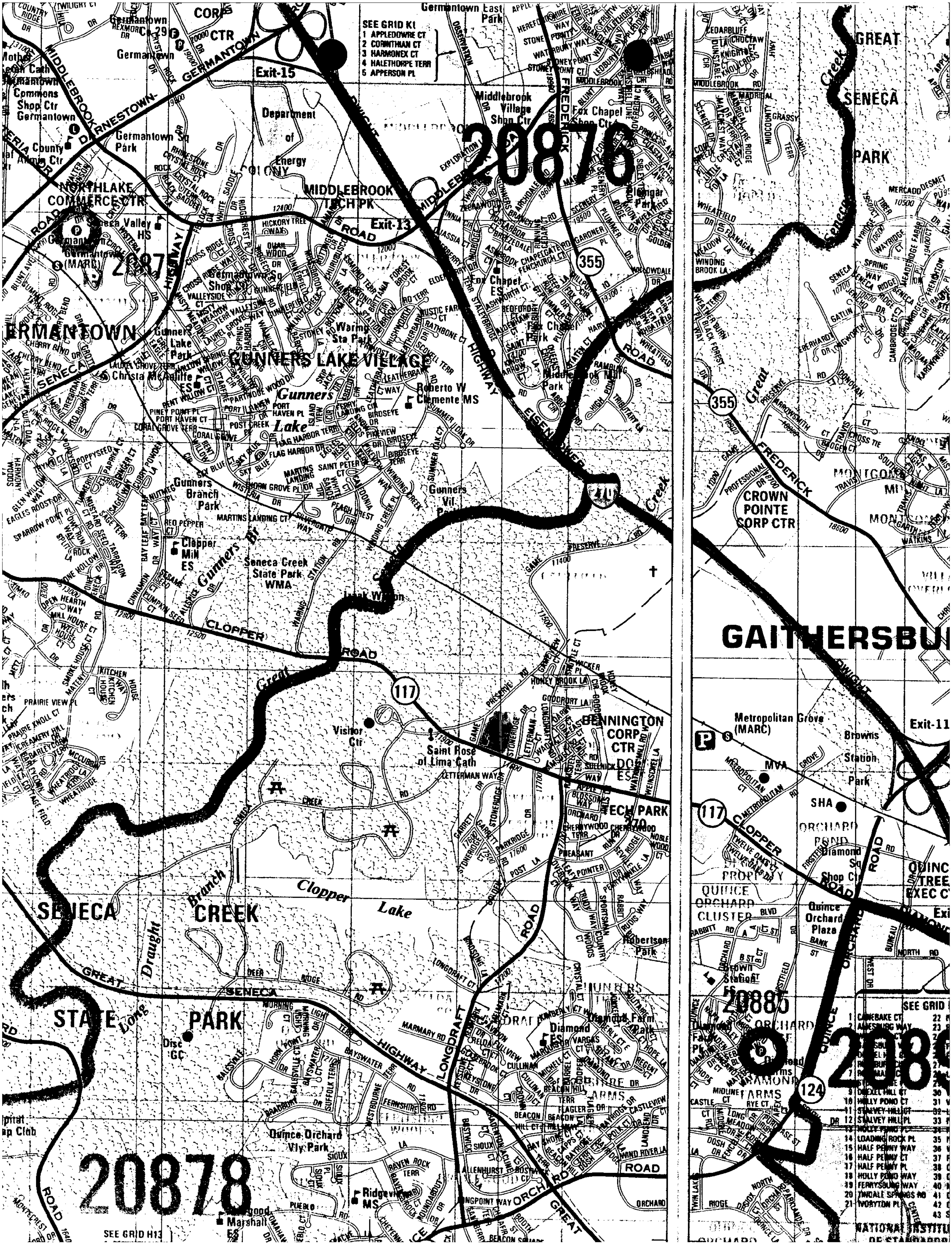
No.	REVISION	DATE	BY

ENGINEERS • ARCHITECTS • PLANNERS • SCIENTISTS • SURVEYORS • PHOTOGRAMMETRISTS
GREENHORNE & O'MARA, INC.
4 TAFT COURT, ROCKVILLE, MARYLAND 20850
(301) 948-0900
GREENBELT, MD • ANNAPOLIS, MD • ATLANTA, GA • BEDFORD, PA • CHARLESTON, WV • CHESTER, MD • DENVER, CO
FAIRFAX, VA • GREENSBORO, NC • MONROE, GA • EXPORT, PA • WILLISTON PARK, NY

ROUGH GRADING PLAN
ST. ROSE OF LIMA
9TH ELECTION DISTRICT
MONTGOMERY COUNTY, MARYLAND

J.L. DESIGN	SCALE 1"=30'
M.C.N. DRAWN	1 OF 2
R.S.P. CHECKED	SHEET
MAY 1988 DATE	JOB No.
	FILE No.

20


SEE GRID K1
1 APPLEDOWRE CT
2 CORINTHIAN CT
3 HARMONEX CT
4 HALETHORPE TERR
5 APPERSON PL
20876
20874
20878
20885
GERMANTOWN
GUNNERS LAKE VILLAGE
NORTHLAKE COMMERCE CTR
MIDDLEBROOK TECH PK
Department of Energy
Germantown Sq Park
Middlebrook Village Shop Ctr
Fox Chapel Shop Ctr
Fox Chapel ES
Fox Chapel Park
Gunners Lake Park
Gunners Lake
Gunners Branch Park
Roberto W Clemente MS
Clopper Mill ES
Seneca Creek State Park WMA
Seneca Valley HS
Germantown (MARC)
Christa McAuliffe ES
BENNINGTON CORP CTR
TECH PARK 270
Saint Rose of Lima Cath
Visitor Ctr
Clopper Lake
SENECA CREEK STATE PARK
Quince Orchard Vly Park
Ridgeview MS
Marshall ES
Diamond ES
Robertson Park
GAITHERSBURG
CROWN POINTE CORP CTR
Metropolitan Grove (MARC)
MVA
SHA
Browns Station Park
Quince Orchard Plaza
QUINCE ORCHARD CLUSTER
Great Seneca Park
Exit-15
Exit-13
Exit-11
355
117
124
270
CLOPPER ROAD
GREAT SENECA HIGHWAY
DWIGHT D EISENHOWER HIGHWAY
FREDERICK ROAD
MIDDLEBROOK ROAD
GERMANTOWN ROAD
DARNESTOWN-GERMANTOWN ROAD
LONGDRAFT ROAD
QUINCE ORCHARD ROAD
SEE GRID H13

ST. ROSE OF LIMA PARISH
Historic Chapel Restoration Project
Planned Restoration Schedule - August 1, 1999 to September 3, 1999

PROJECT BACKGROUND

A major renovation of the building was completed in the mid-1980s. A new roof structure was fabricated and installed and a new interior was installed. Also installed were a new HVAC system and new electrical wiring. The exterior of the building was scraped, repaired and painted. A design error was made; provisions for proper attic ventilation were not made.

At present, the exterior of the building has deteriorated to the point where simple painting cannot restore the exterior to a suitable condition. Tests of the existing paint revealed lead content several hundred times greater than the allowable safe level. Some areas of the siding have decayed to the point where simple repair is not feasible. Large areas of the clapboard siding have been sealed with putty at the overlapping joints. Several pieces of siding have been replaced over the years. Most of the replacement boards do not match the original siding in size, shape or wood texture. A lot of the trim wood around the windows was replaced during the major mid-1980s restoration; however, the ornate trim and moulding decorating the main entrance was not restored. During the last 18 months, several approaches to restoration of the building have been investigated. The results of this investigation are outlined below.

A. Power sand the siding to remove all paint, down to bare wood.
Issues:
- Decayed areas would remain, requiring siding replacement.
- The wood grain is deep in some areas and removal of all of the paint would be difficult. Deep sanding would alter siding.
- Problems with putty in overlapping board interfaces would remain.
- Improper siding materials from previous repairs would remain.

B. Chemically strip siding, using a product called Peel-Away. A preliminary test was conducted on a 3' x 5' section of the building. The results were not encouraging.
Issues:
- Peel-Away did not penetrate deeply enough to remove all the old paint.
- The thickness of the paint would require the application of substantial amounts of the product. The product mixed with the lead paint would be chemically very toxic. Large amounts of water would be required to wash the building to neutralize the chemicals. Capturing this water before it is absorbed into the ground would be difficult. The probability of doing environmental damage is high.
- We would still be left with all the other issues to deal with; i.e. putty decaying wood, improper previous repairs, etc.

C. Remove loose paint particles and seal using a lead barrier compound.
Issues:

- This is a 10 - 15 year solution. After that time, we would be back to the same condition, with added an added problem, i.e. dealing with the sealant in addition to the original problems.
- This solution by itself does not address the putty, decaying wood or improper earlier repairs.

D. Chemically break down the paint using Corte - L, thus capturing and bonding the existing paint to the surface. This process breaks down the paint through chemical curing and changes its form to a polyurethane membrane.
Issues:

- This is a new process and has not been proven over time. The estimated life of the product is 10 - 20 years. After that, we would need to deal with this product on the structure as well as all the original problems, i.e. putty, decaying wood and previous repairs.

E. Remove and replace the siding with a similar type manufactured to the original specifications. Remove ornate trim and tank strip. Install, prime and paint.

RECOMMENDATION:

Item E above: Remove and replace siding. The exterior restorations include removing all of the old siding, corner boards and window and ornate trim. The old window and ornate trim is to be dipped at a local stripping workshop to remove all the old paint. They will then be reinstalled afer the new siding is installed. All new siding will be milled to match the existing German siding using clear North East Pine. The North East Pine is similar to the Sugar Pine currently on the building. Both are similar hardness with deep grain. The size and thickness will be maintained by a milling process set up specifically for this purpose. No paint removal is to be done on eaves other than scraping and sanding prior to finish coats. All bare wood will receive an oil based primer, followed by 2 coats of Acrylic paint. The under side of the siding will not be primed, as is the current condition.

Donald R. Dibble, Business Manager
St. Rose of Lima Parish
11701 Clopper Road, Gaithersburg, MD 20878
Phone: (301) 948-7545, ext. 222
Fax: (301) 869-2170
E-mail: ddibble@strose.com

St. Rose's

Roof system all new
Roof shingles (metal) all new
Rose window removed/rebuilt/

Cross to be re-fabricated
new cross proposed at entrance roof

ext. trim on side walls new.
Back door is new -

Siding is sealed w/ putty at joints

The putty is a question of whether siding can breathe or not.

vents in side under eaves

+ Insulation from interior - done correctly

take off all original trim

1838 date stone
1988 construction

5-10% of the siding is rotted - lower bds, at (valleys, etc
not this
exactly
but similar
roof arrangement)

Notes 5/13/99

1. Meeting w/ Richard Brand
   - Slow down: gutters, downspouts, grading, more vegetation
   - moisture meters

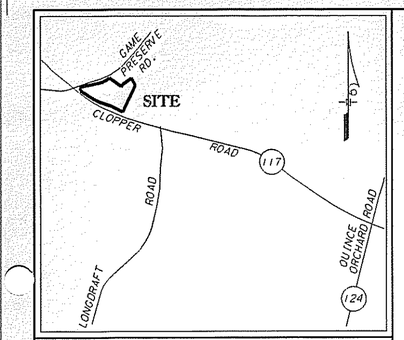
If do anything, go from exterior because the interior ~~is~~ doesn't need work... except for staining which is probably related to the insulation + lack of ventilation in the attic.

R-19 Expansion - how would you address that with new siding?

Tyvec.

(1) with a furring strip, would leave ½" air space? Is this sufficient?

(2) Need to work out new details for the windows: Siding.



VICINITY MAP
SCALE: 1"-2000'

N 95,300
W 66,800

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE PLAN SHOWN HEREON IS CORRECT; THAT IT IS A SUBDIVISION OF THE FOLLOWING PARCELS OR TRACTS OF GROUND: 1) PART OF THE LAND CONVEYED TO THE ARCHBISHOP OF BALTIMORE IN A DEED DATED OCTOBER 7, 1847 AND RECORDED AMONG THE LAND RECORDS OF MONTGOMERY COUNTY, MARYLAND IN LIBER STS 3 AT FOLIO 188 2) PART OF THE LAND CONVEYED TO JAMES GIBBONS, ARCHBISHOP OF BALTIMORE IN A DEED DATED JANUARY 3, 1882 AND RECORDED AMONG SAID LAND RECORDS IN LIBER EPB 25 AT FOLIO 253 3)PART OF THE LAND CONVEYED TO PATRICK A. O'BOYLE, ROMAN CATHOLIC ARCHBISHOP OF WASHINGTON AND HIS SUCCESSORS IN OFFICE, A CORPORATION SOLE BY DEED DATED AUGUST 14, 1956 AND RECORDED AMONG THE LAND RECORDS OF MONTGOMERY COUNTY, MARYLAND IN LIBER 2243 AT FOLIO 482, 4) PART OF THE LAND CONVEYED TO PATRICK A. O'BOYLE, ROMAN CATHOLIC ARCHBISHOP OF WASHINGTON AND HIS SUCCESSORS IN OFFICE BY DEED DATED MARCH 12, 1964 AND RECORDED AMONG SAID LAND RECORDS IN LIBER 3198 AT FOLIO 242; 5) PART OF THE LAND CONVEYED TO WILLIAM W. BAUM, ARCHBISHOP OF WASHINGTON BY DEED DATED JANUARY 9, 1976 AND RECORDED AMONG SAID LAND RECORDS IN LIBER 4738 AT FOLIO 231; 6) ALL OF THE ABANDONMENT OF GAME PRESERVE ROAD AS ADOPTED BY COUNTY COUNCIL FOR MONTGOMERY COUNTY, MARYLAND AND TO BE KNOWN AND FILED AS RESOLUTION No. AMONG SAID LAND RECORDS IN CONFORMITY WITH THE MONTGOMERY COUNTY CODE.

I FURTHER CERTIFY THAT IRON PIPES SHOWN THUS ⊸ WILL BE SET AS REQUIERED BY SECTION 50-24(e) OF THE MONTGOMERY COUNTY SUBDIVISION REGULATIONS, IF SO ENGAGED.

THE TOTAL AREA OF THIS SUBDIVISION IS 11.6185 ACRES OR 506,102 SQUARE FEET OF LAND.

Daniel R. Schriever 6-5-98

DANIEL R. SCHRIEVER
PROFESSIONAL LAND SURVEYOR
MARYLAND REGISTRATION No. 11015

NOTES:

1. ALL TERMS, CONDITIONS, AGREEMENTS, LIMITATIONS, AND REQUIREMENTS ASSOCIATED WITH ANY PRELIMINARY PLAN, SITE PLAN, PROJECT PLAN OR OTHER PLAN, ALLOWING DEVELOPMENT OF THIS PROPERTY, APPROVED BY THE MONTGOMERY COUNTY PLANNING BOARD ARE INTENDED TO SURVIVE AND NOT BE EXTINGUISHED BY THE RECORDATION OF THIS PLAT, UNLESS EXPRESSLY CONTEMPLATED BY THE PLAN OR ANY AMMENDMENT THERETO AS APPROVED OR SUBSEQUENTLY APPROVED. THE OFFICIAL PUBLIC FILES FOR ANY SUCH PLAN ARE MAINTAINED BY THE PLANNING BOARD AND ARE AVAILABLE FOR PUBLIC REVIEW DURING NORMAL BUSINESS HOURS.

N/F
MARY A. GLOYD
L. 13359 F. 608

N/F
GEORGE I. WHITWORTH
L. 2381 F. 277

N/F
NOLAN F. CIRILO
L. 12232 F. 762

WILLIAM W. BAUM
ARCHBISHOP OF WASHINGTON
L. 4738 F. 231

PATRICK A. O'BOYLE
ROMAN CATHOLIC
ARCHBISHOP OF WASHINGTON
L. 3198 F. 242

ARCHBISHOP OF BALTIMORE
STS 3 F. 188

JAMES GIBBONS
ARCHBISHOP OF BALTIMORE
EPB 25 F. 253

PATRICK A. O'BOYLE
ROMAN CATHOLIC
ARCHBISHOP OF WASHINGTON
L. 2243 F. 482

PARKRIDGE ESTATES
PLAT No. 17035

N 95400.144
W 65712.454

N 95,300
W 65,700

WSSC DATUM
1" = 50'

S33°42'03"E 193.82'
N47°00'15"E 211.75'
84.61'
N23°09'06"E
S60°50'54"E 332.80'
96.79'
N47°43'42"E
A=106.94'
R=252.52'
1
C/L ROAD
50'
GAME PRESERVE ROAD
(R/W VARIES)
424.20'
N71°59'32"E
AREA PREVIOUSLY DEDICATED TO MONTGOMERY COUNTY L.9506 F. 98
30'
2
R=120.00'
A=71.86'
N12°46'37"W 69.27'
N 95055.148
W 66826.440
67'
R=2417.05'
3
A=494.59'
C/L ROAD
GAME PRESERVE ROAD ABANDONED BY MONT. CO. RES. No.
PARCEL A
11.6185 AC. OR 506,102±
STORM WATER MANAGEMENT EASEMENT
L. 9509 F. 640
649.22'
S19°18'59"W
N75°48'23"W
60'
CLOPPER ROAD
(MARYLAND ROUTE 117)
(R/W VARIES)
242.70'
70'
N71°12'08"E
333.40'
AREA PREVIOUSLY CONVEYED TO THE STATE OF MARYLAND
70'
N 94,700
W 65,700
N 94626.224
W 65819.650

PRINTED
MAR 18 1999
GREENHORNE & O'MARA, INC.
ROCKVILLE OFFICE

OWNERS CERTIFICATE

WE, THE ROMAN CATHOLIC CHURCH, ARCHDIOCESE OF WASHINGTON, D.C., OWNERS OF THE PROPERTY SHOWN HEREON AND DESCRIBED IN THE SURVEYOR'S CERTIFICATE, HEREBY ADOPT THIS PLAN OF SUBDIVISION AND ESTABLISH THE MINIMUM BUILDING RESTRICTION LINES.

THERE ARE NO SUITS, ACTIONS AT LAW OR LIENS ON THE PROPERTY SHOWN HEREON.

FURTHER, AS OWNERS OF THIS SUBDIVISION, WE, OUR SUCCESSORS AND ASSIGNS, WILL CAUSE PROPERTY CORNER MARKERS TO BE SET BY A REGISTERED MARYLAND SURVEYOR IN ACCORDANCE WITH SECTION 50-24(e) OF THE MONTGOMERY COUNTY CODE.

THE ROMAN CATHOLIC CHURCH, ARCHDIOCESE OF WASHINGTON, D.C.

JAMES A HICKEY, ROMAN CATHOLIC ARCHBISHOP OF WASHINGTON, A CORPORATION SOLE — DATE

AREA TABULATION

AREA OF PARCELS	11.6185 ACRES OR 506,102±
TOTAL AREA OF PLAT	11.6185 ACRES OR 506,102±

CURVE TABLE

NO.	RADIUS	DELTA	ARC	TANGENT	CHORD	BEARING
1	252.52'	24°15'49"	106.94'	54.28'	106.14'	N 59° 51' 37" E
2	120.00'	34°18'36"	71.86'	37.04'	70.79'	N 54° 50' 18" E
3	2417.05'	11°43'27"	494.59'	248.16'	493.73'	N 64° 19' 22" W

PARCEL A
SAINT ROSE OF LIMA
9TH ELECTION DISTRICT
MONTGOMERY COUNTY, MARYLAND

Scale: 1"= 60'
DATE: JUNE, 1998

298253R90TDR

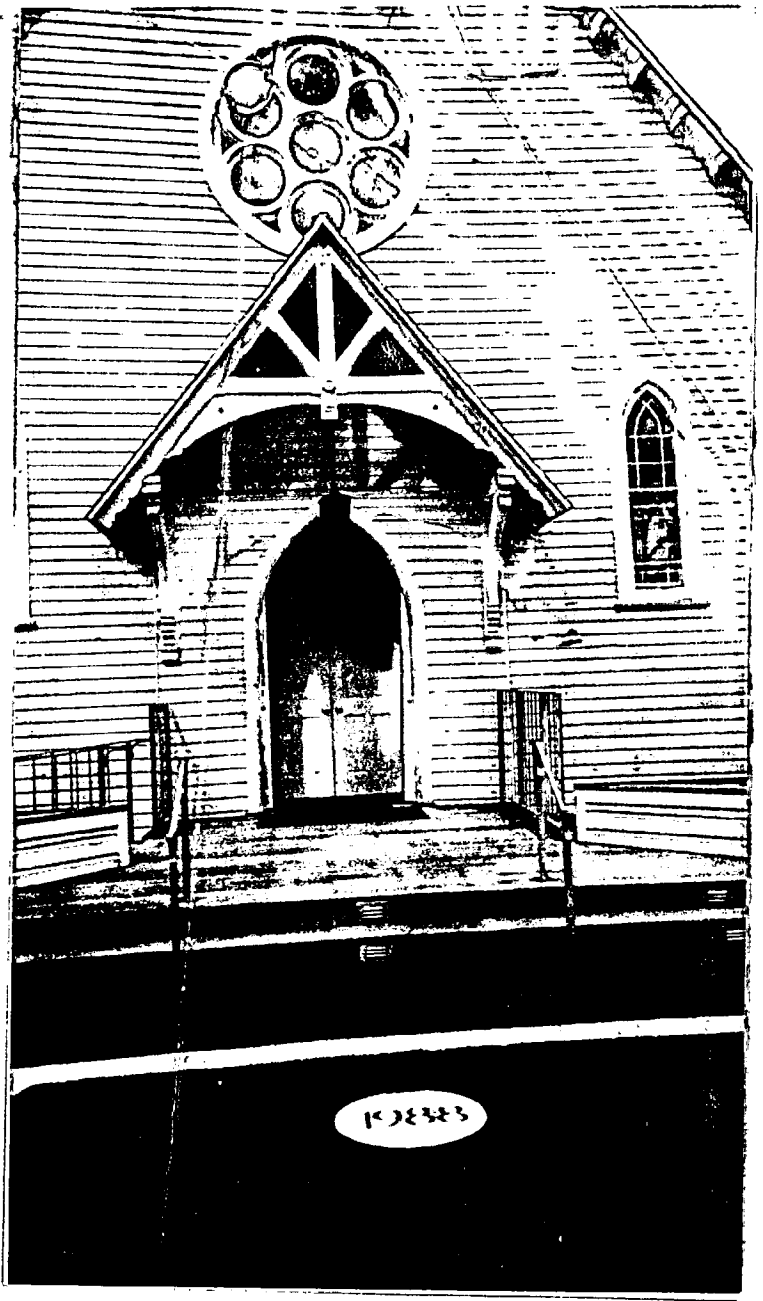
Maryland National Capital Park & Planning Commission
Montgomery County Planning Board
Approved: July 2, 1998
Chairman — Asst. Secretary Treasurer
MNCP&PC File NO.

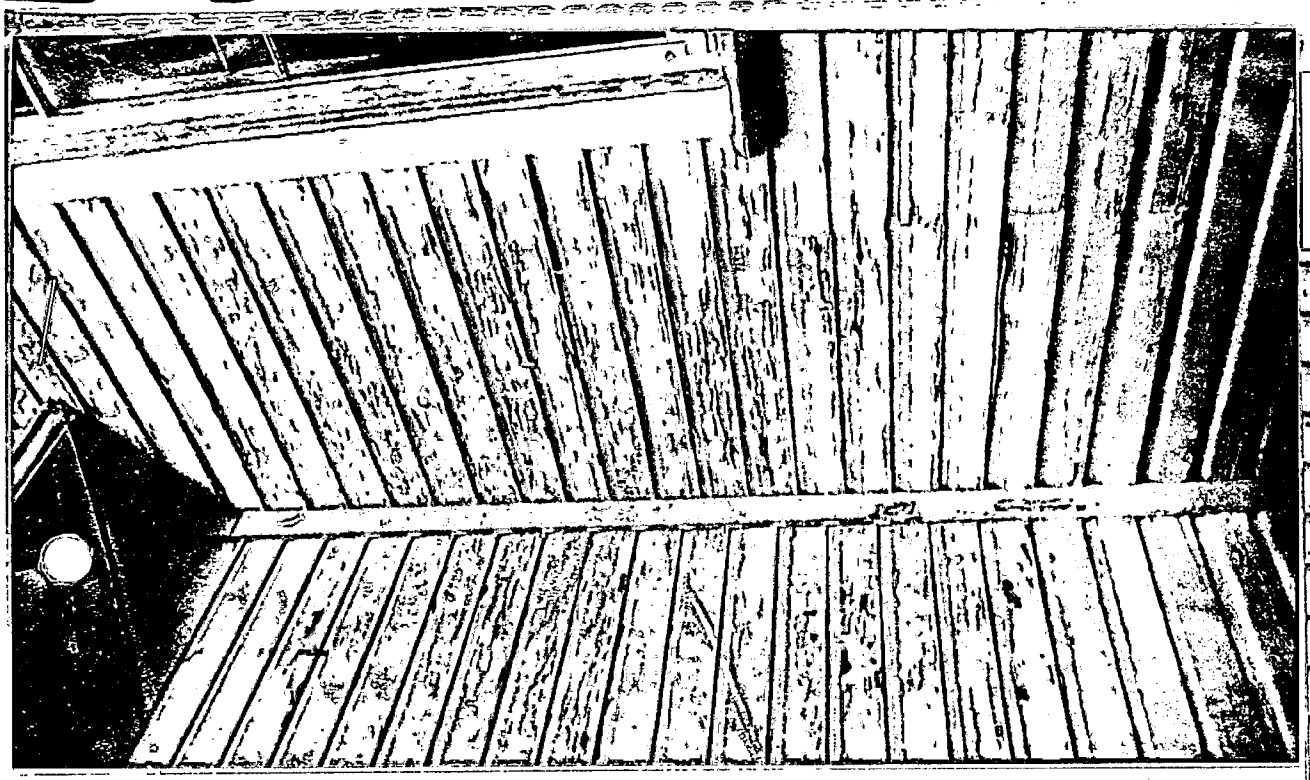
Department of Permitting Services
Montgomery County, Maryland,
Approved: ____
For Director
PIA No.

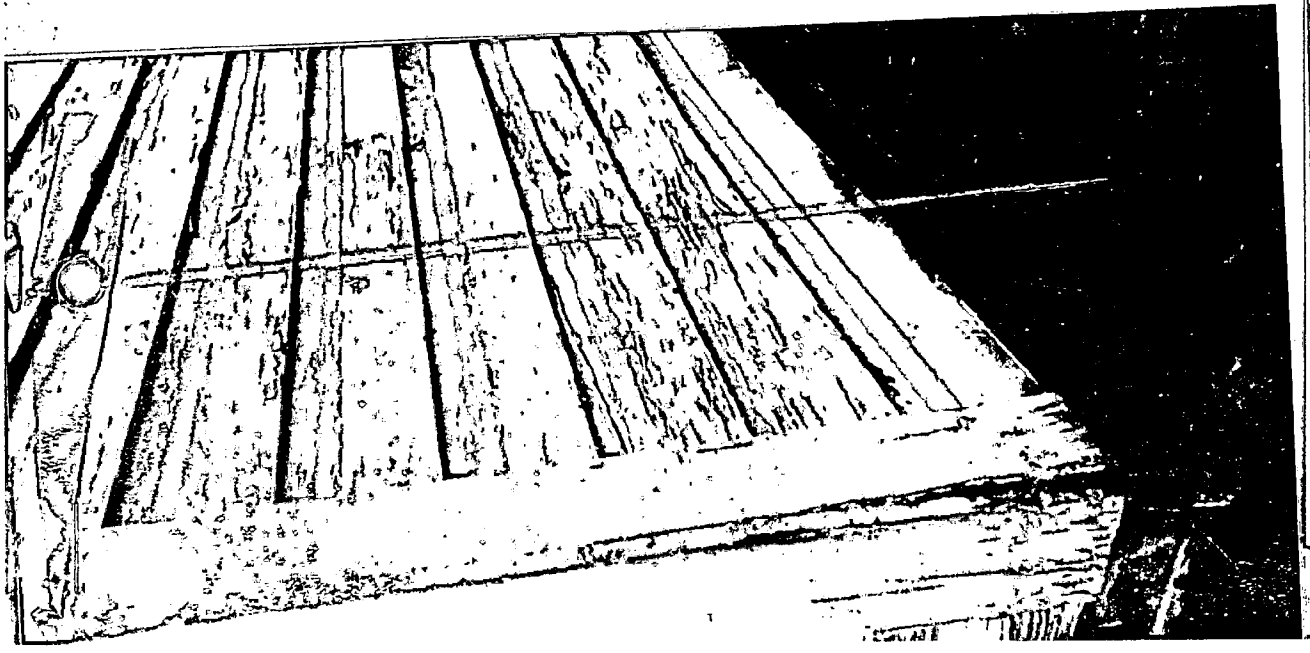
Recorded
Plat Book
Plat No.

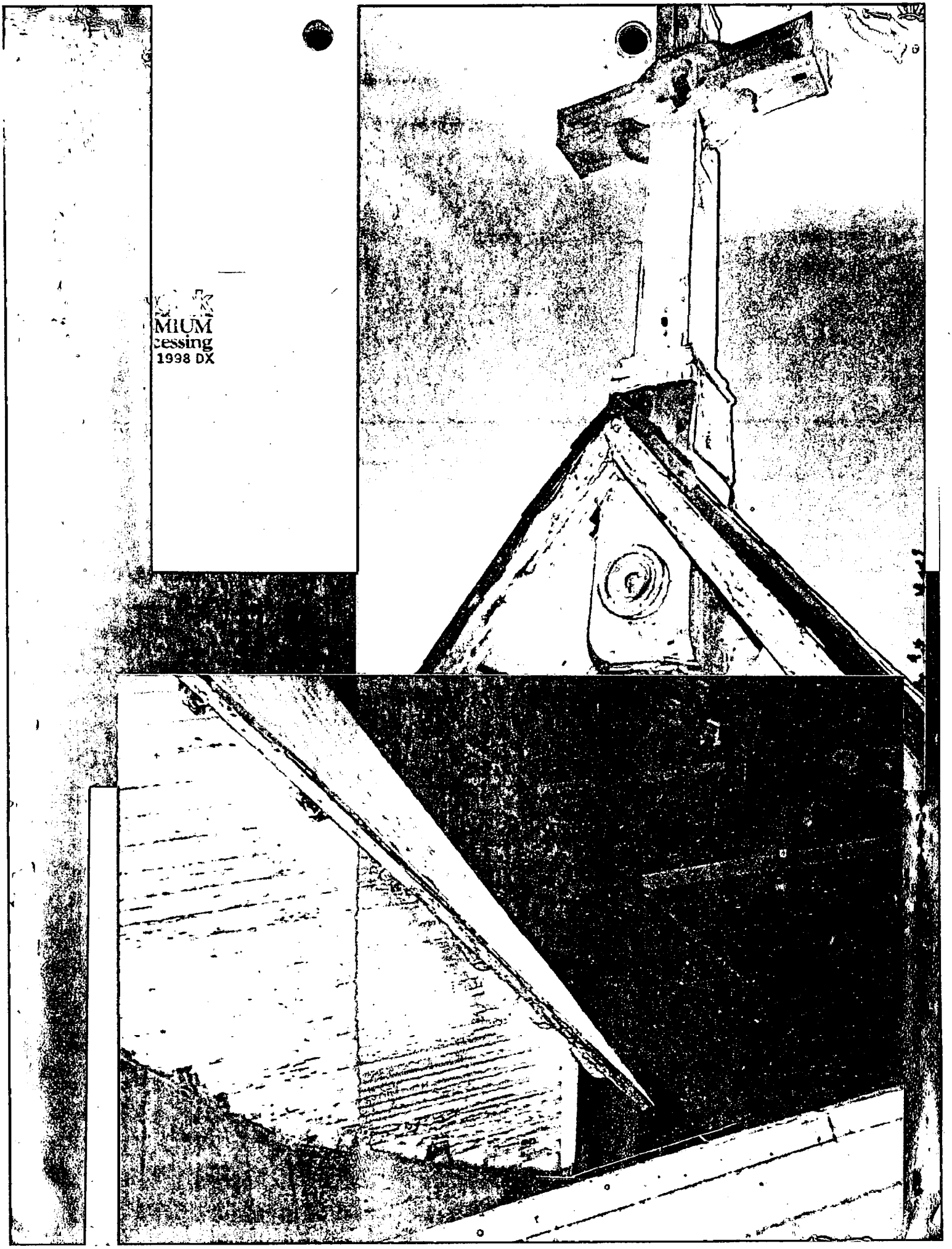
GREENHORNE & O'MARA INC.
ENGINEERS-ARCHITECTS-PLANNERS-SURVEYORS
15020 SHADY GROVE ROAD
ROCKVILLE, MARYLAND 20850
(301) 738-3890

Sect.
Comp. - Drafter
File No.
R-2308-M








MIUM
cessing
1998 DX