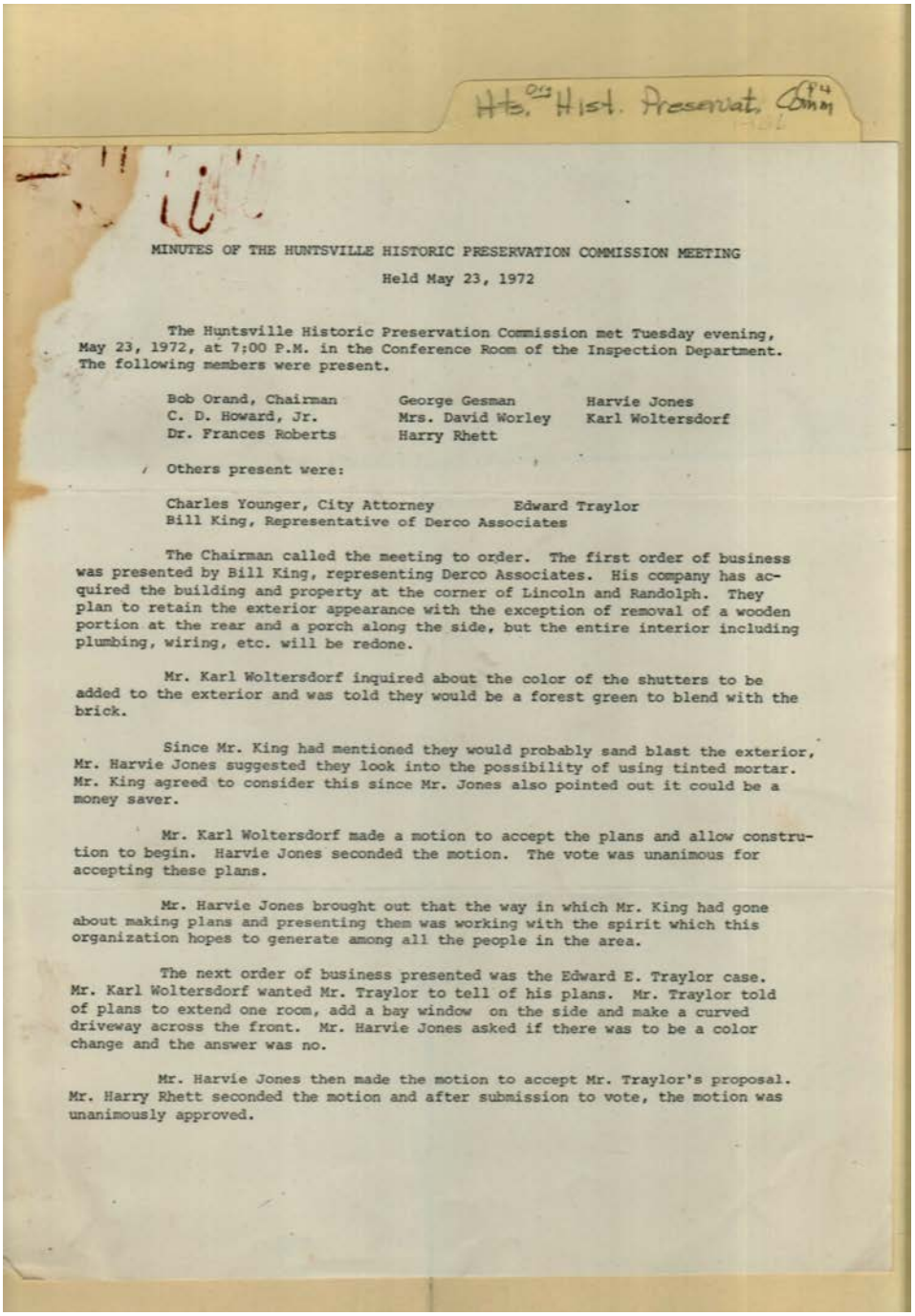


Hts. Hist. Preservat. Comm

MINUTES OF THE HUNTSVILLE HISTORIC PRESERVATION COMMISSION MEETING

Held May 23, 1972

The Huntsville Historic Preservation Commission met Tuesday evening, May 23, 1972, at 7:00 P.M. in the Conference Room of the Inspection Department. The following members were present.

Bob Orand, Chairman — George Gesman — Harvie Jones
C. D. Howard, Jr. — Mrs. David Worley — Karl Woltersdorf
Dr. Frances Roberts — Harry Rhett

Others present were:

Charles Younger, City Attorney — Edward Traylor
Bill King, Representative of Derco Associates

The Chairman called the meeting to order. The first order of business was presented by Bill King, representing Derco Associates. His company has acquired the building and property at the corner of Lincoln and Randolph. They plan to retain the exterior appearance with the exception of removal of a wooden portion at the rear and a porch along the side, but the entire interior including plumbing, wiring, etc. will be redone.

Mr. Karl Woltersdorf inquired about the color of the shutters to be added to the exterior and was told they would be a forest green to blend with the brick.

Since Mr. King had mentioned they would probably sand blast the exterior, Mr. Harvie Jones suggested they look into the possibility of using tinted mortar. Mr. King agreed to consider this since Mr. Jones also pointed out it could be a money saver.

Mr. Karl Woltersdorf made a motion to accept the plans and allow construction to begin. Harvie Jones seconded the motion. The vote was unanimous for accepting these plans.

Mr. Harvie Jones brought out that the way in which Mr. King had gone about making plans and presenting them was working with the spirit which this organization hopes to generate among all the people in the area.

The next order of business presented was the Edward E. Traylor case. Mr. Karl Woltersdorf wanted Mr. Traylor to tell of his plans. Mr. Traylor told of plans to extend one room, add a bay window on the side and make a curved driveway across the front. Mr. Harvie Jones asked if there was to be a color change and the answer was no.

Mr. Harvie Jones then made the motion to accept Mr. Traylor's proposal. Mr. Harry Rhett seconded the motion and after submission to vote, the motion was unanimously approved.

Names:

Gesman, George
Historic Preservation Commission
Howard, C. D., Jr.
Jones, Harvie
King, Bill
Orand, Bob
Rhett, Harry
Roberts, Frances, Dr.
Traylor, Edward, E.
Woltersdorf, Karl
Worley, David, Mrs.
Younger, Charles

Places:

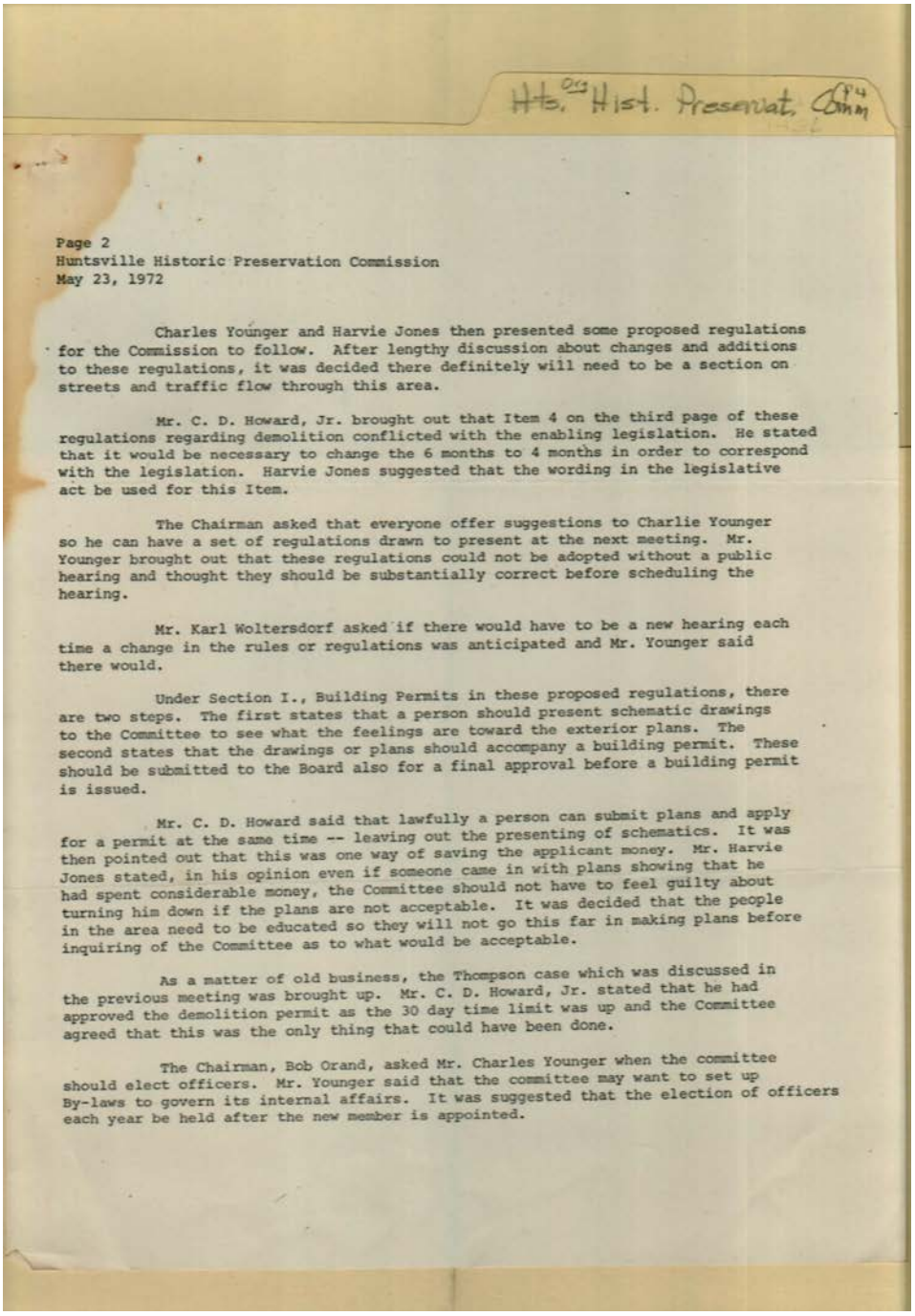
Huntsville, AL

Types:

minutes

Dates:

May 23, 1972



Hts. Hist. Preservat. Comm

Charles Younger and Harvie Jones then presented some proposed regulations for the Commission to follow. After lengthy discussion about changes and additions to these regulations, it was decided there definitely will need to be a section on streets and traffic flow through this area.

Mr. C. D. Howard, Jr. brought out that Item 4 on the third page of these regulations regarding demolition conflicted with the enabling legislation. He stated that it would be necessary to change the 6 months to 4 months in order to correspond with the legislation. Harvie Jones suggested that the wording in the legislative act be used for this Item.

The Chairman asked that everyone offer suggestions to Charlie Younger so he can have a set of regulations drawn to present at the next meeting. Mr. Younger brought out that these regulations could not be adopted without a public hearing and thought they should be substantially correct before scheduling the hearing.

Mr. Karl Woltersdorf asked if there would have to be a new hearing each time a change in the rules or regulations was anticipated and Mr. Younger said there would.

Under Section I., Building Permits in these proposed regulations, there are two steps. The first states that a person should present schematic drawings to the Committee to see what the feelings are toward the exterior plans. The second states that the drawings or plans should accompany a building permit. These should be submitted to the Board also for a final approval before a building permit is issued.

Mr. C. D. Howard said that lawfully a person can submit plans and apply for a permit at the same time -- leaving out the presenting of schematics. It was then pointed out that this was one way of saving the applicant money. Mr. Harvie Jones stated, in his opinion even if someone came in with plans showing that he had spent considerable money, the Committee should not have to feel guilty about turning him down if the plans are not acceptable. It was decided that the people in the area need to be educated so they will not go this far in making plans before inquiring of the Committee as to what would be acceptable.

As a matter of old business, the Thompson case which was discussed in the previous meeting was brought up. Mr. C. D. Howard, Jr. stated that he had approved the demolition permit as the 30 day time limit was up and the Committee agreed that this was the only thing that could have been done.

The Chairman, Bob Orand, asked Mr. Charles Younger when the committee should elect officers. Mr. Younger said that the committee may want to set up By-laws to govern its internal affairs. It was suggested that the election of officers each year be held after the new member is appointed.

Names:

Howard, C. D., Jr.
Jones, Harvie
Orand, Bob
Thompson,
Waltersdorf, Karl
Younger, Charles

Places:

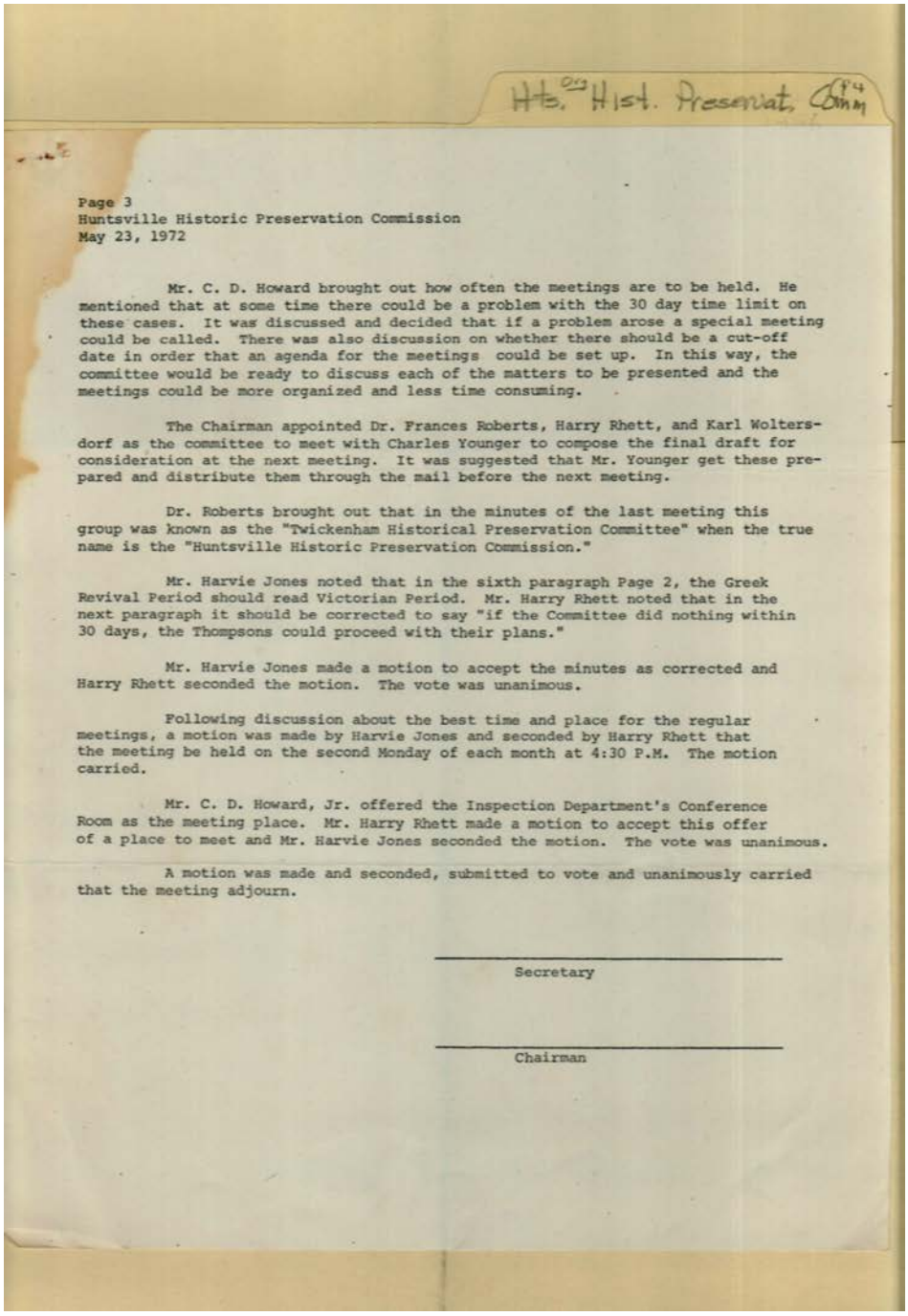
Huntsville, AL

Types:

minutes

Dates:

May 23, 1972



Hts. Dev Hist. Preservat. Comm 84

Page 3
Huntsville Historic Preservation Commission
May 23, 1972

Mr. C. D. Howard brought out how often the meetings are to be held. He mentioned that at some time there could be a problem with the 30 day time limit on these cases. It was discussed and decided that if a problem arose a special meeting could be called. There was also discussion on whether there should be a cut-off date in order that an agenda for the meetings could be set up. In this way, the committee would be ready to discuss each of the matters to be presented and the meetings could be more organized and less time consuming.

The Chairman appointed Dr. Frances Roberts, Harry Rhett, and Karl Woltersdorf as the committee to meet with Charles Younger to compose the final draft for consideration at the next meeting. It was suggested that Mr. Younger get these prepared and distribute them through the mail before the next meeting.

Dr. Roberts brought out that in the minutes of the last meeting this group was known as the "Twickenham Historical Preservation Committee" when the true name is the "Huntsville Historic Preservation Commission."

Mr. Harvie Jones noted that in the sixth paragraph Page 2, the Greek Revival Period should read Victorian Period. Mr. Harry Rhett noted that in the next paragraph it should be corrected to say "if the Committee did nothing within 30 days, the Thompsons could proceed with their plans."

Mr. Harvie Jones made a motion to accept the minutes as corrected and Harry Rhett seconded the motion. The vote was unanimous.

Following discussion about the best time and place for the regular meetings, a motion was made by Harvie Jones and seconded by Harry Rhett that the meeting be held on the second Monday of each month at 4:30 P.M. The motion carried.

Mr. C. D. Howard, Jr. offered the Inspection Department's Conference Room as the meeting place. Mr. Harry Rhett made a motion to accept this offer of a place to meet and Mr. Harvie Jones seconded the motion. The vote was unanimous.

A motion was made and seconded, submitted to vote and unanimously carried that the meeting adjourn.

_____
Secretary

_____
Chairman

Names:

Howard, C. D., Jr.
Jones, Harvie
Rhett, Harry
Roberts, Frances, Dr.
Thompson,
Woltersdorf, Karl
Younger, Charles

Places:

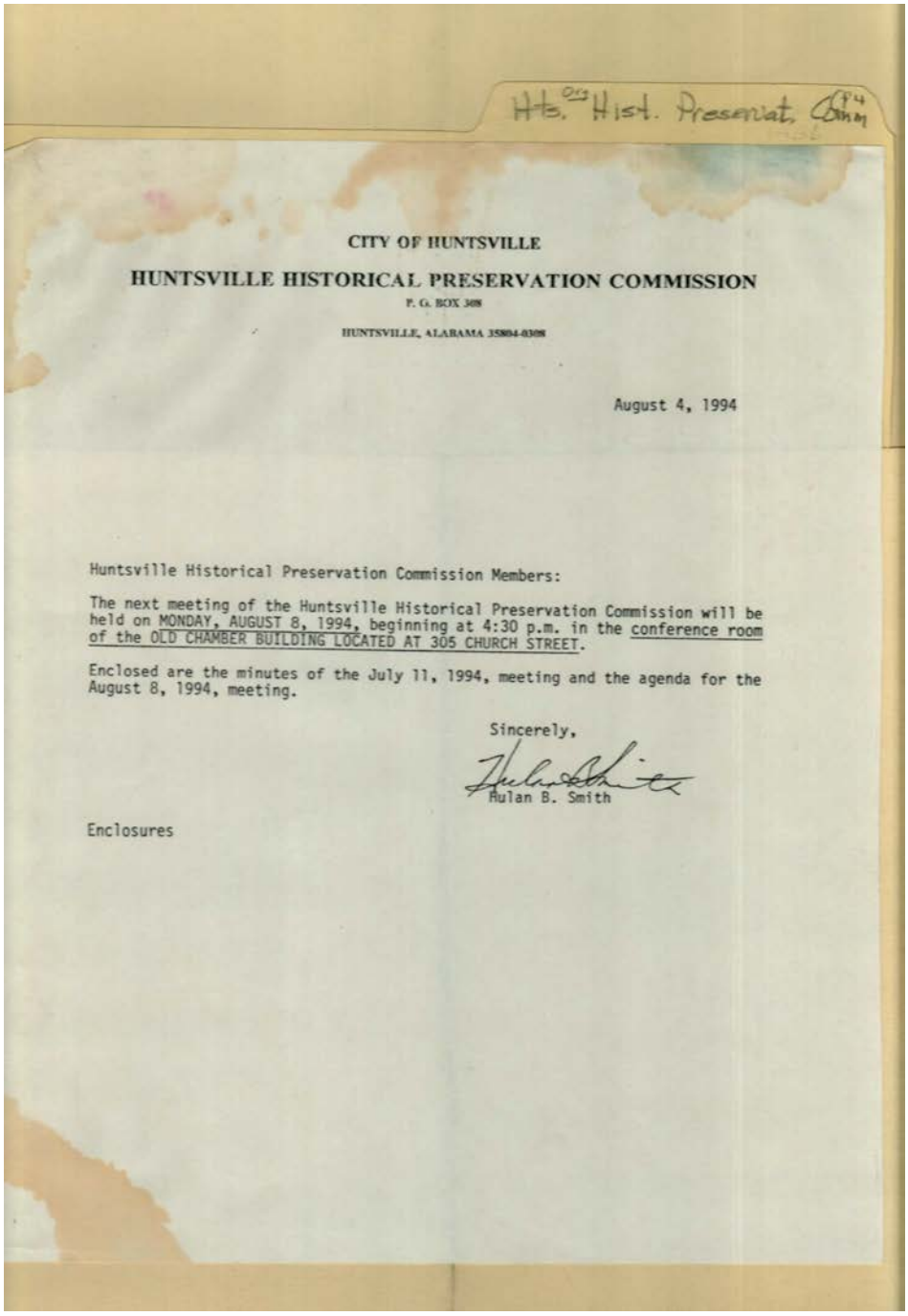
Huntsville, AL

Types:

minutes

Dates:

May 23, 1972



Hts. Hist. Preservat. Comm 94

CITY OF HUNTSVILLE

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION

P. O. BOX 308

HUNTSVILLE, ALABAMA 35804-0308

August 4, 1994

Huntsville Historical Preservation Commission Members:

The next meeting of the Huntsville Historical Preservation Commission will be held on MONDAY, AUGUST 8, 1994, beginning at 4:30 p.m. in the conference room of the OLD CHAMBER BUILDING LOCATED AT 305 CHURCH STREET.

Enclosed are the minutes of the July 11, 1994, meeting and the agenda for the August 8, 1994, meeting.

Sincerely,

Hulan B. Smith

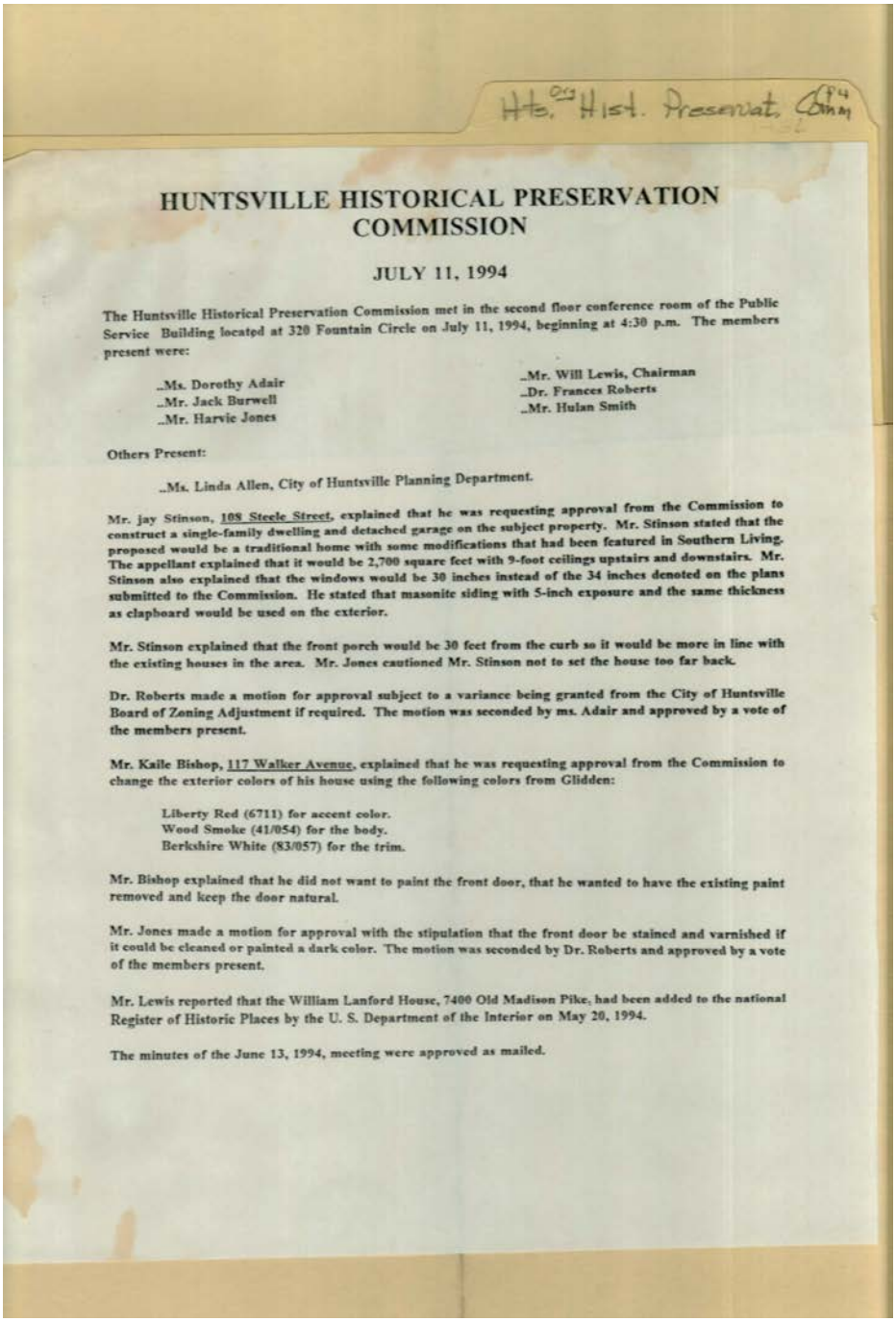
Enclosures

Names:
Smith, Hulan B.

Places:
Huntsville, AL

Types:
correspondence

Dates:
Aug 04, 1994



Hts. Org. Hist. Preservat. Comm

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION

JULY 11, 1994

The Huntsville Historical Preservation Commission met in the second floor conference room of the Public Service Building located at 320 Fountain Circle on July 11, 1994, beginning at 4:30 p.m. The members present were:

_Ms. Dorothy Adair
_Mr. Jack Burwell
_Mr. Harvie Jones
_Mr. Will Lewis, Chairman
_Dr. Frances Roberts
_Mr. Hulan Smith

Others Present:

_Ms. Linda Allen, City of Huntsville Planning Department.

Mr. jay Stinson, 108 Steele Street, explained that he was requesting approval from the Commission to construct a single-family dwelling and detached garage on the subject property. Mr. Stinson stated that the proposed would be a traditional home with some modifications that had been featured in Southern Living. The appellant explained that it would be 2,700 square feet with 9-foot ceilings upstairs and downstairs. Mr. Stinson also explained that the windows would be 30 inches instead of the 34 inches denoted on the plans submitted to the Commission. He stated that masonite siding with 5-inch exposure and the same thickness as clapboard would be used on the exterior.

Mr. Stinson explained that the front porch would be 30 feet from the curb so it would be more in line with the existing houses in the area. Mr. Jones cautioned Mr. Stinson not to set the house too far back.

Dr. Roberts made a motion for approval subject to a variance being granted from the City of Huntsville Board of Zoning Adjustment if required. The motion was seconded by ms. Adair and approved by a vote of the members present.

Mr. Kaile Bishop, 117 Walker Avenue, explained that he was requesting approval from the Commission to change the exterior colors of his house using the following colors from Glidden:

Liberty Red (6711) for accent color.
Wood Smoke (41/054) for the body.
Berkshire White (83/057) for the trim.

Mr. Bishop explained that he did not want to paint the front door, that he wanted to have the existing paint removed and keep the door natural.

Mr. Jones made a motion for approval with the stipulation that the front door be stained and varnished if it could be cleaned or painted a dark color. The motion was seconded by Dr. Roberts and approved by a vote of the members present.

Mr. Lewis reported that the William Lanford House, 7400 Old Madison Pike, had been added to the national Register of Historic Places by the U. S. Department of the Interior on May 20, 1994.

The minutes of the June 13, 1994, meeting were approved as mailed.

Names:

Adair, Dorothy, Ms.
Allen, Linda
Bishop, Kaile
Burwell, Jack
Jones, Harvie
Lanford, William
Lewis, Will
Roberts, Frances, Dr.
Smith, Hulan
Stinson, Jay

Places:

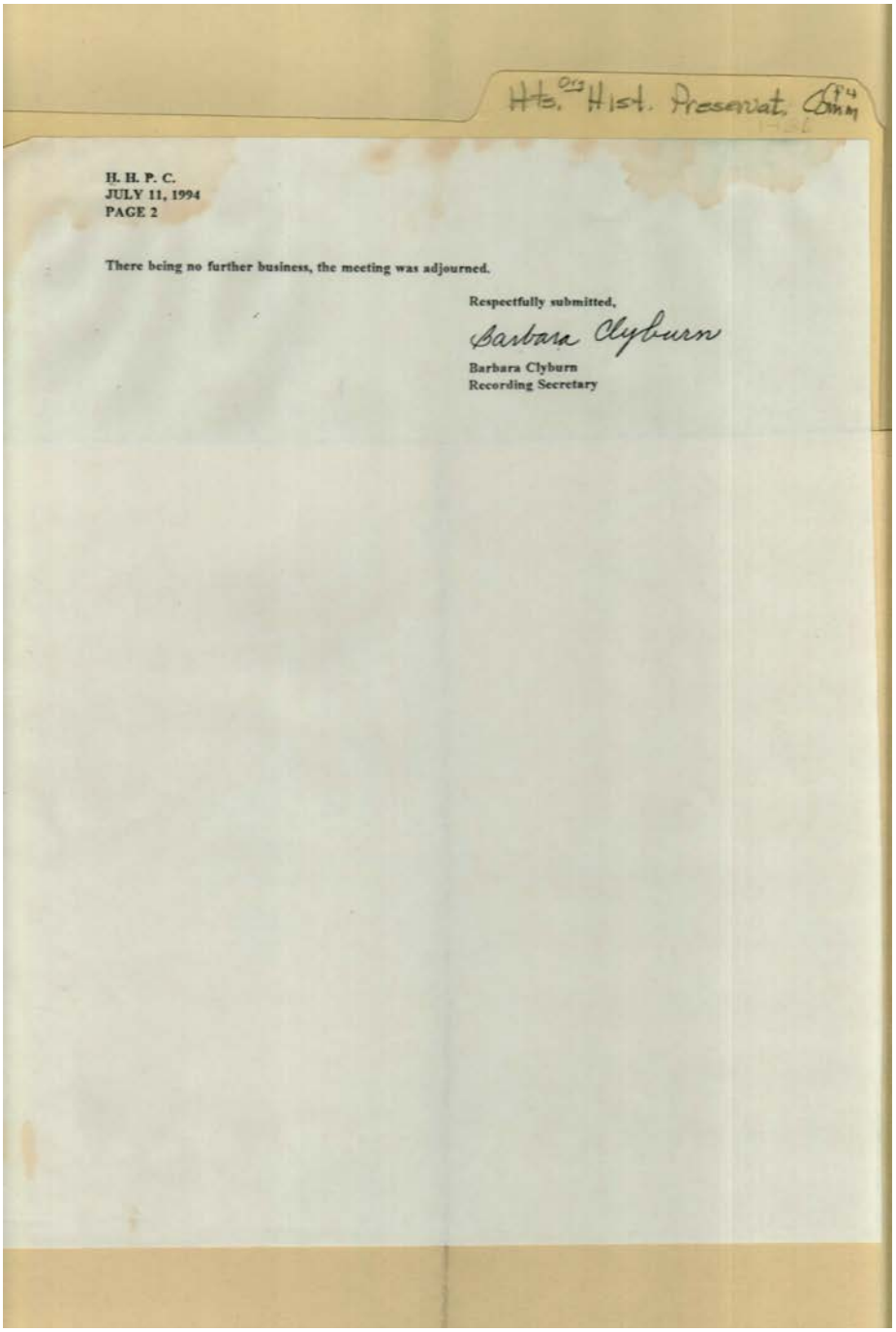
Huntsville, AL

Types:

minutes

Dates:

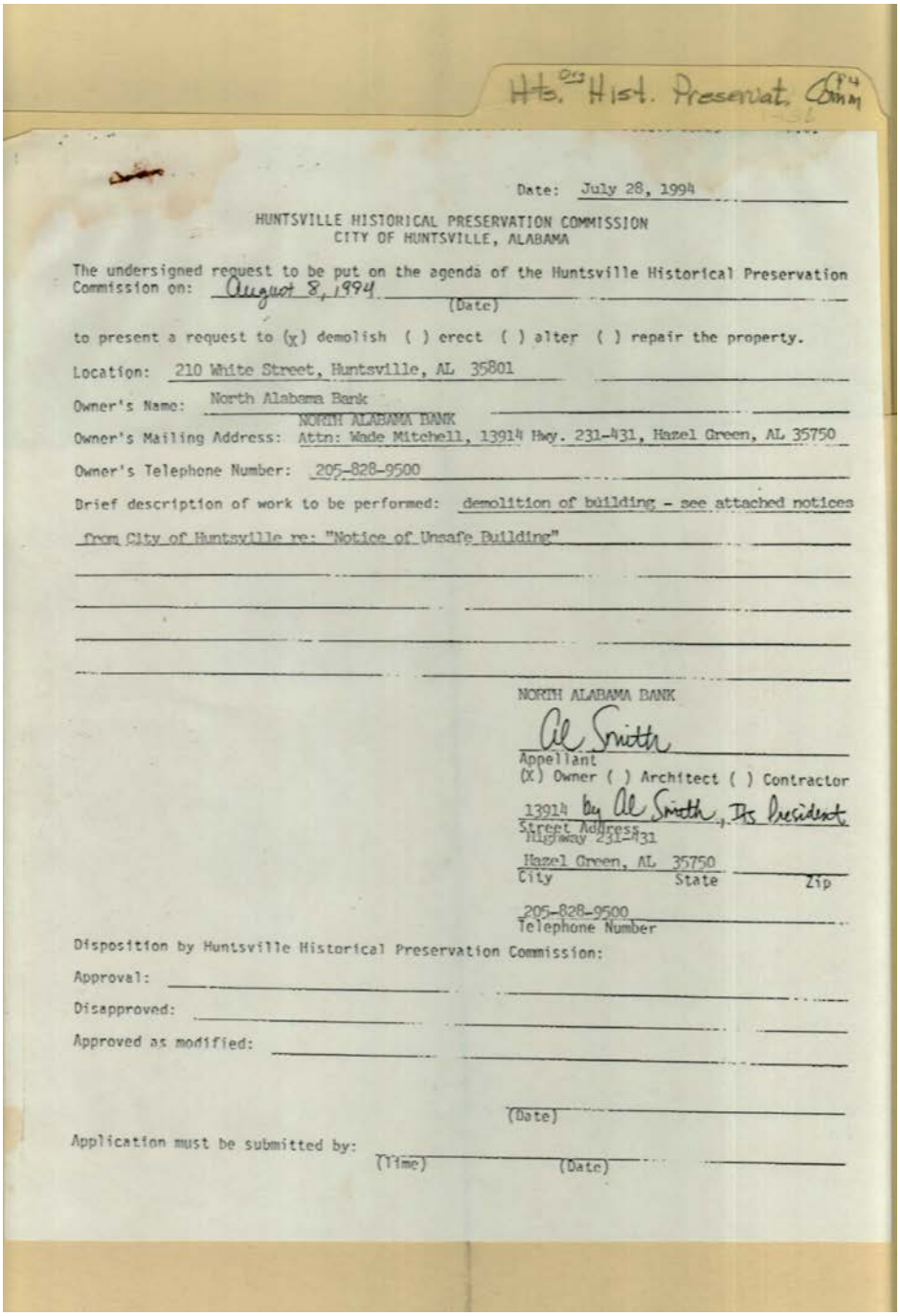
Jul 11, 1994



Names:
Clyburn, Barbara

Types:
minutes

Dates:
Jul 11, 1994



Hts. Dis. Hist. Preservat. Comm '94

Date: July 28, 1994

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION
CITY OF HUNTSVILLE, ALABAMA

The undersigned request to be put on the agenda of the Huntsville Historical Preservation Commission on: August 8, 1994 (Date)

to present a request to (x) demolish ( ) erect ( ) alter ( ) repair the property.

Location: 210 White Street, Huntsville, AL 35801

Owner's Name: North Alabama Bank
NORTH ALABAMA BANK

Owner's Mailing Address: Attn: Wade Mitchell, 13914 Hwy. 231-431, Hazel Green, AL 35750

Owner's Telephone Number: 205-828-9500

Brief description of work to be performed: demolition of building - see attached notices from City of Huntsville re: "Notice of Unsafe Building"

NORTH ALABAMA BANK

Al Smith
Appellant
(x) Owner ( ) Architect ( ) Contractor

13914 by Al Smith, Its President
Street Address
Highway 231-431

Hazel Green, AL 35750
City State Zip

205-828-9500
Telephone Number

Disposition by Huntsville Historical Preservation Commission:

Approval:

Disapproved:

Approved as modified:

(Date)

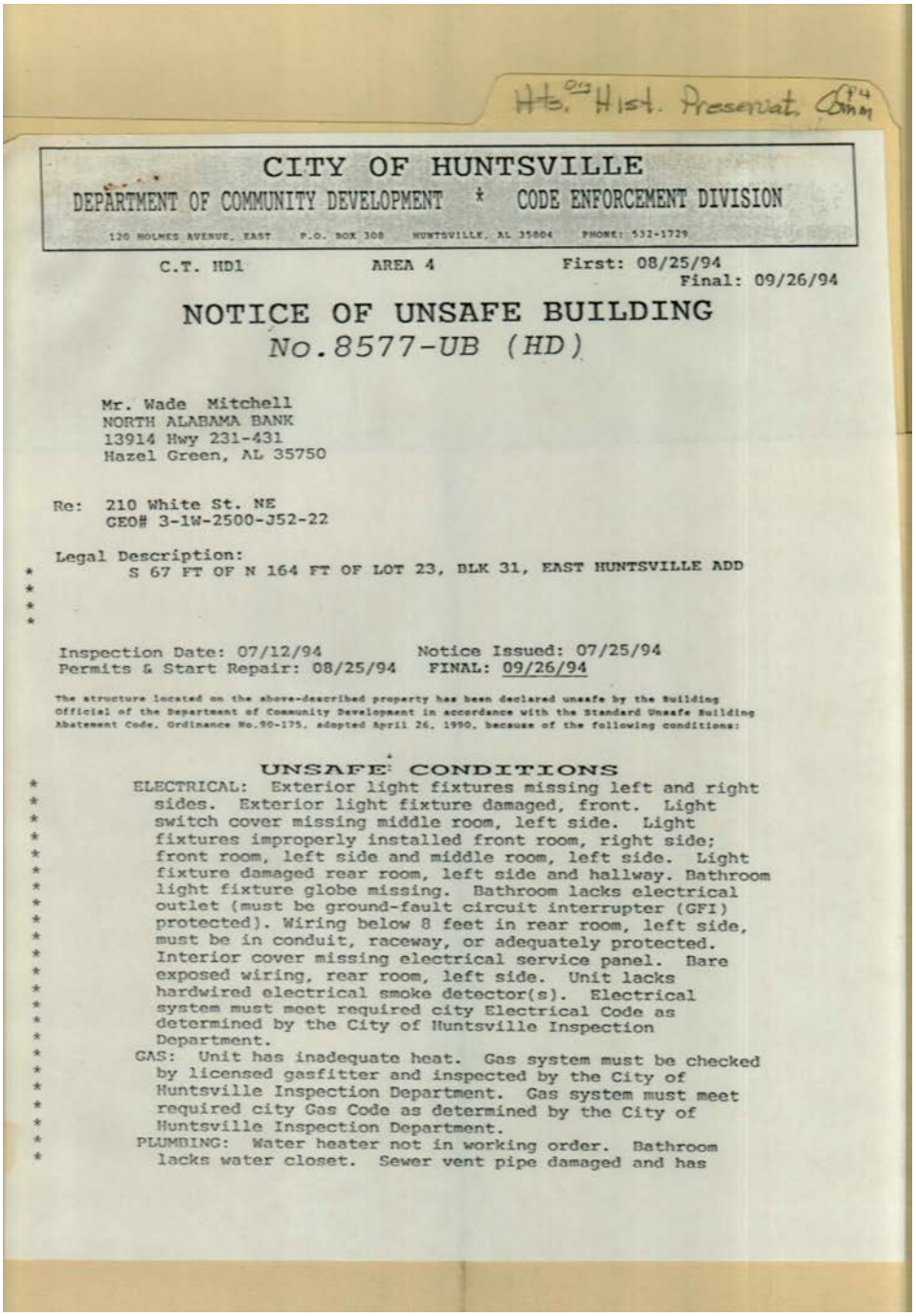
Application must be submitted by:
(Time) (Date)

Names:
Mitchell, Wade
Smith, Al

Places:
Huntsville, AL

Types:
application

Dates:
Jul 28, 1994



Hts. Dis. Hist. Preservat. Comm 94

CITY OF HUNTSVILLE
DEPARTMENT OF COMMUNITY DEVELOPMENT * CODE ENFORCEMENT DIVISION
120 HOLMES AVENUE, EAST P.O. BOX 308 HUNTSVILLE, AL 35804 PHONE: 532-1729

C.T. HD1 AREA 4 First: 08/25/94
Final: 09/26/94

NOTICE OF UNSAFE BUILDING
No.8577-UB (HD)

Mr. Wade Mitchell
NORTH ALABAMA BANK
13914 Hwy 231-431
Hazel Green, AL 35750

Re: 210 White St. NE
GEO# 3-1W-2500-J52-22

Legal Description:
S 67 FT OF N 164 FT OF LOT 23, BLK 31, EAST HUNTSVILLE ADD

Inspection Date: 07/12/94 Notice Issued: 07/25/94
Permits & Start Repair: 08/25/94 FINAL: 09/26/94

The structure located on the above-described property has been declared unsafe by the Building Official of the Department of Community Development in accordance with the Standard Unsafe Building Abatement Code, Ordinance No.90-175, adopted April 26, 1990, because of the following conditions:

UNSAFE CONDITIONS

ELECTRICAL: Exterior light fixtures missing left and right sides. Exterior light fixture damaged, front. Light switch cover missing middle room, left side. Light fixtures improperly installed front room, right side; front room, left side and middle room, left side. Light fixture damaged rear room, left side and hallway. Bathroom light fixture globe missing. Bathroom lacks electrical outlet (must be ground-fault circuit interrupter (GFI) protected). Wiring below 8 feet in rear room, left side, must be in conduit, raceway, or adequately protected. Interior cover missing electrical service panel. Bare exposed wiring, rear room, left side. Unit lacks hardwired electrical smoke detector(s). Electrical system must meet required city Electrical Code as determined by the City of Huntsville Inspection Department.

GAS: Unit has inadequate heat. Gas system must be checked by licensed gasfitter and inspected by the City of Huntsville Inspection Department. Gas system must meet required city Gas Code as determined by the City of Huntsville Inspection Department.

PLUMBING: Water heater not in working order. Bathroom lacks water closet. Sewer vent pipe damaged and has

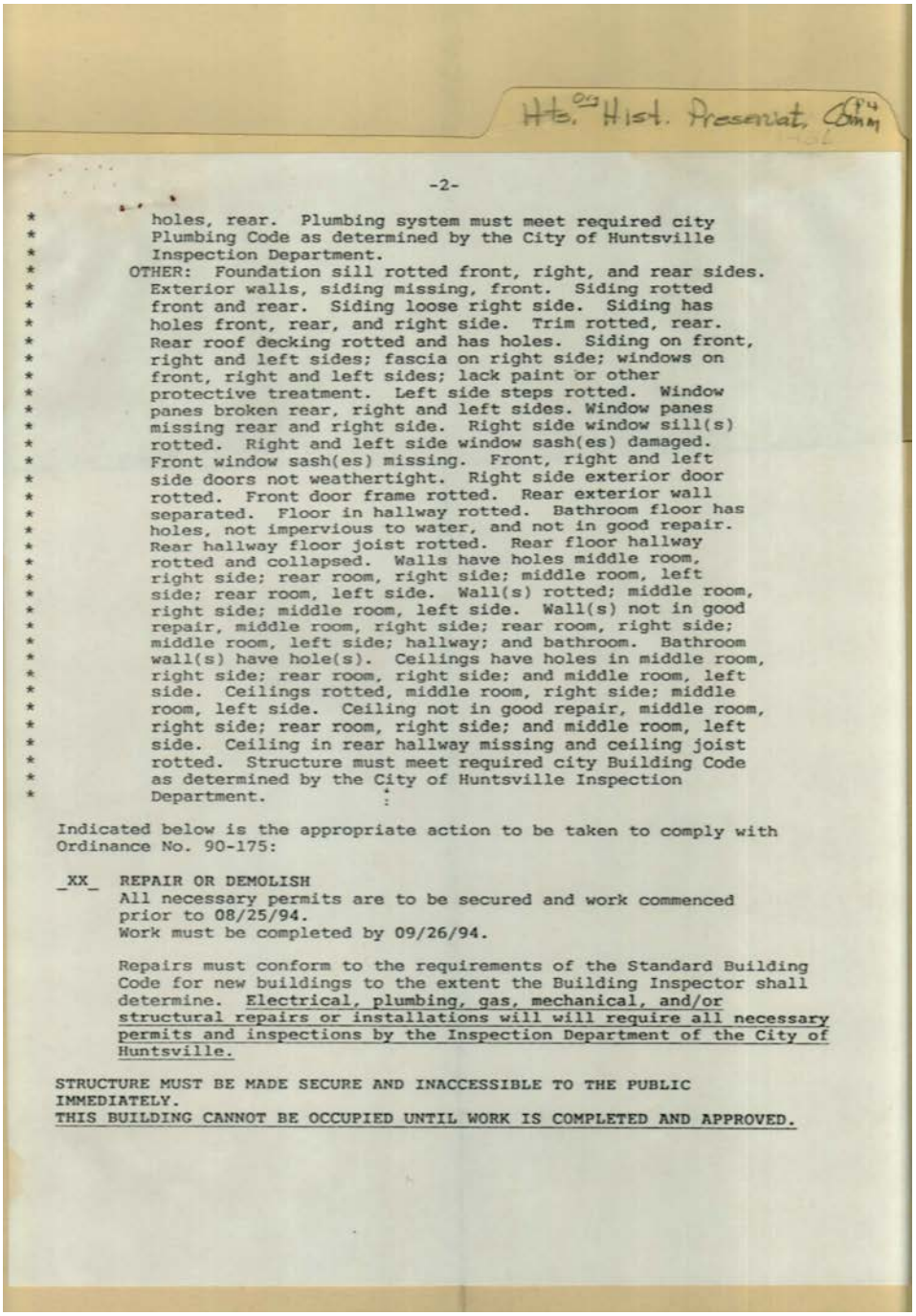
Names:
Mitchell, Wade

Unsafe Building
Notice

Places:
Huntsville, AL

Types:
notice

Dates:
Sep 26, 1994



Hts. Dis Hist. Preservat. Comm

holes, rear. Plumbing system must meet required city Plumbing Code as determined by the City of Huntsville Inspection Department.

OTHER: Foundation sill rotted front, right, and rear sides. Exterior walls, siding missing, front. Siding rotted front and rear. Siding loose right side. Siding has holes front, rear, and right side. Trim rotted, rear. Rear roof decking rotted and has holes. Siding on front, right and left sides; fascia on right side; windows on front, right and left sides; lack paint or other protective treatment. Left side steps rotted. Window panes broken rear, right and left sides. Window panes missing rear and right side. Right side window sill(s) rotted. Right and left side window sash(es) damaged. Front window sash(es) missing. Front, right and left side doors not weathertight. Right side exterior door rotted. Front door frame rotted. Rear exterior wall separated. Floor in hallway rotted. Bathroom floor has holes, not impervious to water, and not in good repair. Rear hallway floor joist rotted. Rear floor hallway rotted and collapsed. Walls have holes middle room, right side; rear room, right side; middle room, left side; rear room, left side. Wall(s) rotted; middle room, right side; middle room, left side. Wall(s) not in good repair, middle room, right side; rear room, right side; middle room, left side; hallway; and bathroom. Bathroom wall(s) have hole(s). Ceilings have holes in middle room, right side; rear room, right side; and middle room, left side. Ceilings rotted, middle room, right side; middle room, left side. Ceiling not in good repair, middle room, right side; rear room, right side; and middle room, left side. Ceiling in rear hallway missing and ceiling joist rotted. Structure must meet required city Building Code as determined by the City of Huntsville Inspection Department.

Indicated below is the appropriate action to be taken to comply with Ordinance No. 90-175:

_XX_ REPAIR OR DEMOLISH
All necessary permits are to be secured and work commenced prior to 08/25/94.
Work must be completed by 09/26/94.

Repairs must conform to the requirements of the Standard Building Code for new buildings to the extent the Building Inspector shall determine. Electrical, plumbing, gas, mechanical, and/or structural repairs or installations will will require all necessary permits and inspections by the Inspection Department of the City of Huntsville.

STRUCTURE MUST BE MADE SECURE AND INACCESSIBLE TO THE PUBLIC IMMEDIATELY.
THIS BUILDING CANNOT BE OCCUPIED UNTIL WORK IS COMPLETED AND APPROVED.

Places:
Huntsville, AL

Types:
notice

Hts. Hist. Preservat. Comm

-3-

APPEALS:
Any person having legal interest in this property may appeal any action by the Building Official to the Housing Board of Adjustments and Appeals within thirty (30) days from the date of the notice. Such appeal shall state identification of the building or structure, identification of legal interest of each appellant, specific order or section being appealed, detailed issues on which appellant desires to be heard and legal signature and official mailing address of each appellant. Failure to appeal within the specified time will constitute a waiver of all rights to an administrative hearing.

NOTE: If the required action is not started or completed by the dates specified, and no appeal is filed as specified, the Building Official may cause the work necessary to render the building safe to be done and all costs incurred charged against the property or the owner of record.

Our office is located at 120 Holmes Avenue, East. If any additional information or any assistance is desired, you can call (205)532-1729, between 8:00 a.m. and 5:00 p.m.

NOTE:
As provided by Ordinances No. 72-47 and 77-57, and State Act No. 1307, H.2095, no building or structure in "The Twickenham Historic District" or "The Old Town Preservation District" shall be erected, constructed or reconstructed, altered, restored or renovated, demolished or removed unless a certificate of appropriateness has been issued by the Huntsville Historic Preservation Commission. For additional information concerning this, contact the City of Huntsville Inspection Department at (205) 532-7473.

R G Galloway
R.G. Galloway
Director, Community Development

cc: Mr. Keith Jones
905 Bob Wallace Ave.
Suite 100
Huntsville, AL 35801

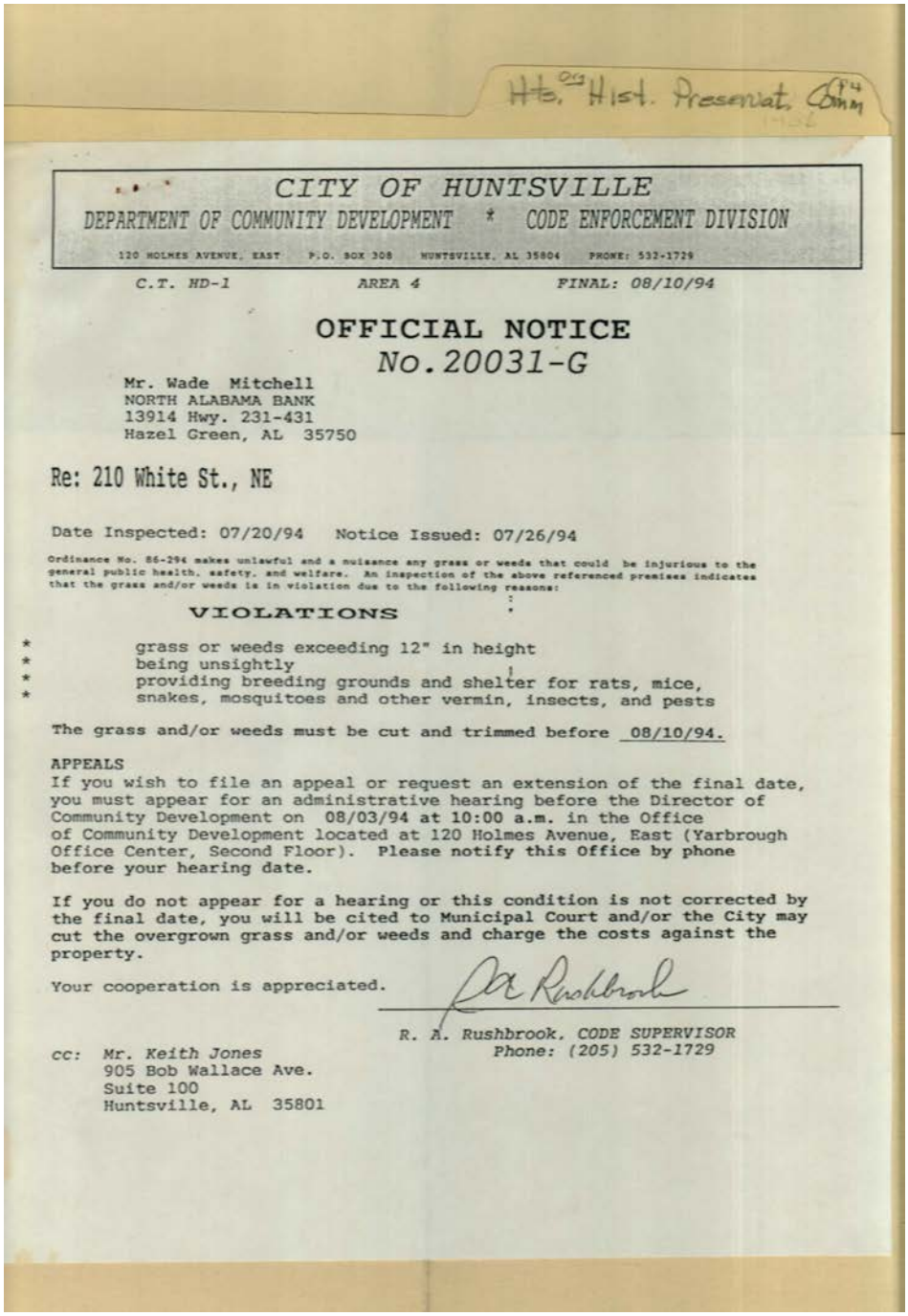
Hulan Smith

① →
Junk → fountain → ct action → more time
② Request ext. for the purpose
③ Application form

make prior
8th of Aug
4:30
Dollar + Chris

Names:
Galloway, R. G. Jones, Keith Smith, Hulan

Types:
notice



Hts. Dis Hist. Preservat. Comm

CITY OF HUNTSVILLE
DEPARTMENT OF COMMUNITY DEVELOPMENT * CODE ENFORCEMENT DIVISION
120 HOLMES AVENUE, EAST P.O. BOX 308 HUNTSVILLE, AL 35804 PHONE: 532-1729

C.T. HD-1 AREA 4 FINAL: 08/10/94

OFFICIAL NOTICE
No. 20031-G

Mr. Wade Mitchell
NORTH ALABAMA BANK
13914 Hwy. 231-431
Hazel Green, AL 35750

Re: 210 White St., NE

Date Inspected: 07/20/94 Notice Issued: 07/26/94

Ordinance No. 86-296 makes unlawful and a nuisance any grass or weeds that could be injurious to the general public health, safety, and welfare. An inspection of the above referenced premises indicates that the grass and/or weeds is in violation due to the following reasons:

VIOLATIONS

* grass or weeds exceeding 12" in height
* being unsightly
* providing breeding grounds and shelter for rats, mice, snakes, mosquitoes and other vermin, insects, and pests

The grass and/or weeds must be cut and trimmed before 08/10/94.

APPEALS
If you wish to file an appeal or request an extension of the final date, you must appear for an administrative hearing before the Director of Community Development on 08/03/94 at 10:00 a.m. in the Office of Community Development located at 120 Holmes Avenue, East (Yarbrough Office Center, Second Floor). Please notify this Office by phone before your hearing date.

If you do not appear for a hearing or this condition is not corrected by the final date, you will be cited to Municipal Court and/or the City may cut the overgrown grass and/or weeds and charge the costs against the property.

Your cooperation is appreciated.

R. A. Rushbrook, CODE SUPERVISOR
Phone: (205) 532-1729

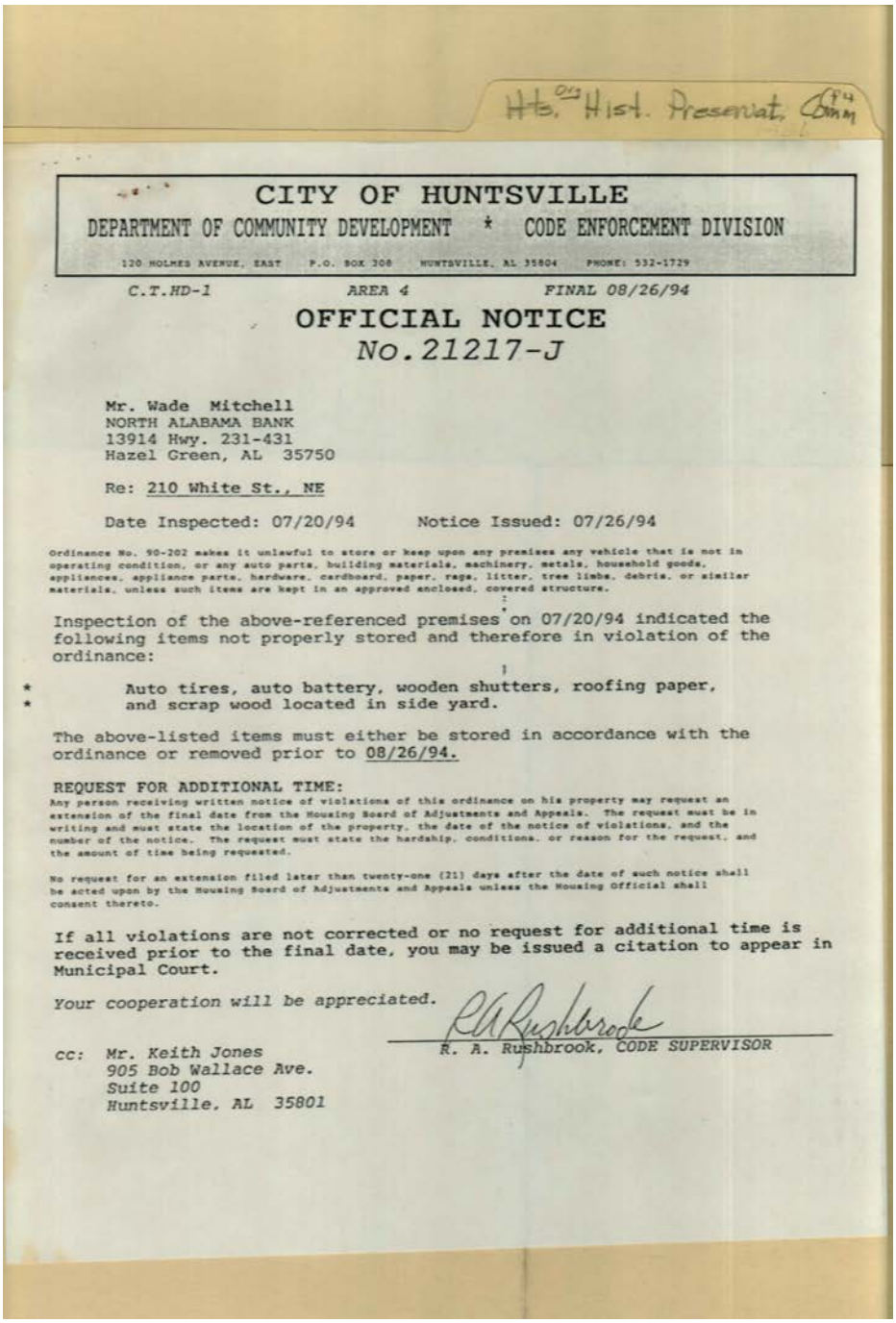
cc: Mr. Keith Jones
905 Bob Wallace Ave.
Suite 100
Huntsville, AL 35801

Names:
Jones, Keith Mitchell, Wade Rushbrook, R. A.

Places:
Huntsville, AL

Types:
notice

Dates:
Jul 26, 1994



Hts. Dis Hist. Preservat. Comm 94

CITY OF HUNTSVILLE
DEPARTMENT OF COMMUNITY DEVELOPMENT * CODE ENFORCEMENT DIVISION
120 HOLMES AVENUE, EAST P.O. BOX 308 HUNTSVILLE, AL 35804 PHONE: 532-1729

C.T.HD-1 AREA 4 FINAL 08/26/94

OFFICIAL NOTICE
No.21217-J

Mr. Wade Mitchell
NORTH ALABAMA BANK
13914 Hwy. 231-431
Hazel Green, AL 35750

Re: 210 White St., NE

Date Inspected: 07/20/94 Notice Issued: 07/26/94

Ordinance No. 90-202 makes it unlawful to store or keep upon any premises any vehicle that is not in operating condition, or any auto parts, building materials, machinery, metals, household goods, appliances, appliance parts, hardware, cardboard, paper, rags, litter, tree limbs, debris, or similar materials, unless such items are kept in an approved enclosed, covered structure.

Inspection of the above-referenced premises on 07/20/94 indicated the following items not properly stored and therefore in violation of the ordinance:

* Auto tires, auto battery, wooden shutters, roofing paper,
* and scrap wood located in side yard.

The above-listed items must either be stored in accordance with the ordinance or removed prior to 08/26/94.

REQUEST FOR ADDITIONAL TIME:
Any person receiving written notice of violations of this ordinance on his property may request an extension of the final date from the Housing Board of Adjustments and Appeals. The request must be in writing and must state the location of the property, the date of the notice of violations, and the number of the notice. The request must state the hardship, conditions, or reason for the request, and the amount of time being requested.

No request for an extension filed later than twenty-one (21) days after the date of such notice shall be acted upon by the Housing Board of Adjustments and Appeals unless the Housing Official shall consent thereto.

If all violations are not corrected or no request for additional time is received prior to the final date, you may be issued a citation to appear in Municipal Court.

Your cooperation will be appreciated.

R. A. Rushbrook, CODE SUPERVISOR

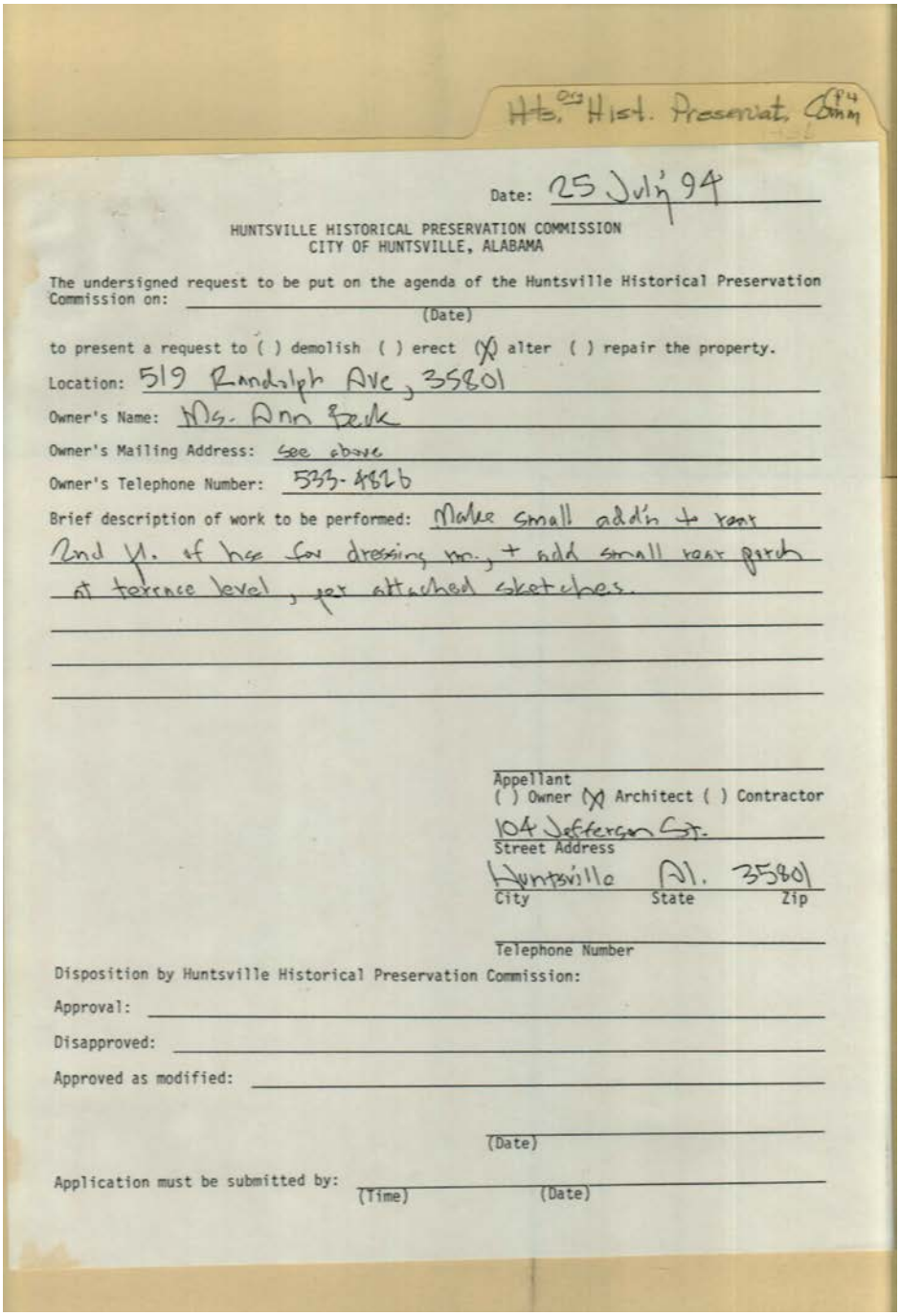
cc: Mr. Keith Jones
905 Bob Wallace Ave.
Suite 100
Huntsville, AL 35801

Names:
Jones, Keith Mitchell, Wade Rushbrook, R. A.

Places:
Huntsville, AL

Types:
notice

Dates:
Jul 26, 1994



Hts. Hist. Preservat. Comm '94

Date: 25 July 94

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION
CITY OF HUNTSVILLE, ALABAMA

The undersigned request to be put on the agenda of the Huntsville Historical Preservation Commission on: _____ (Date)

to present a request to ( ) demolish ( ) erect (X) alter ( ) repair the property.

Location: 519 Randolph Ave, 35801

Owner's Name: Ms. Ann Beck

Owner's Mailing Address: see above

Owner's Telephone Number: 533-4826

Brief description of work to be performed: Make small addn to rear 2nd fl. of hse for dressing rm., + add small rear porch at terrace level, per attached sketches.

Appellant
( ) Owner (X) Architect ( ) Contractor

104 Jefferson St.
Street Address

Huntsville Al. 35801
City State Zip

Telephone Number

Disposition by Huntsville Historical Preservation Commission:

Approval: _____

Disapproved: _____

Approved as modified: _____

(Date)

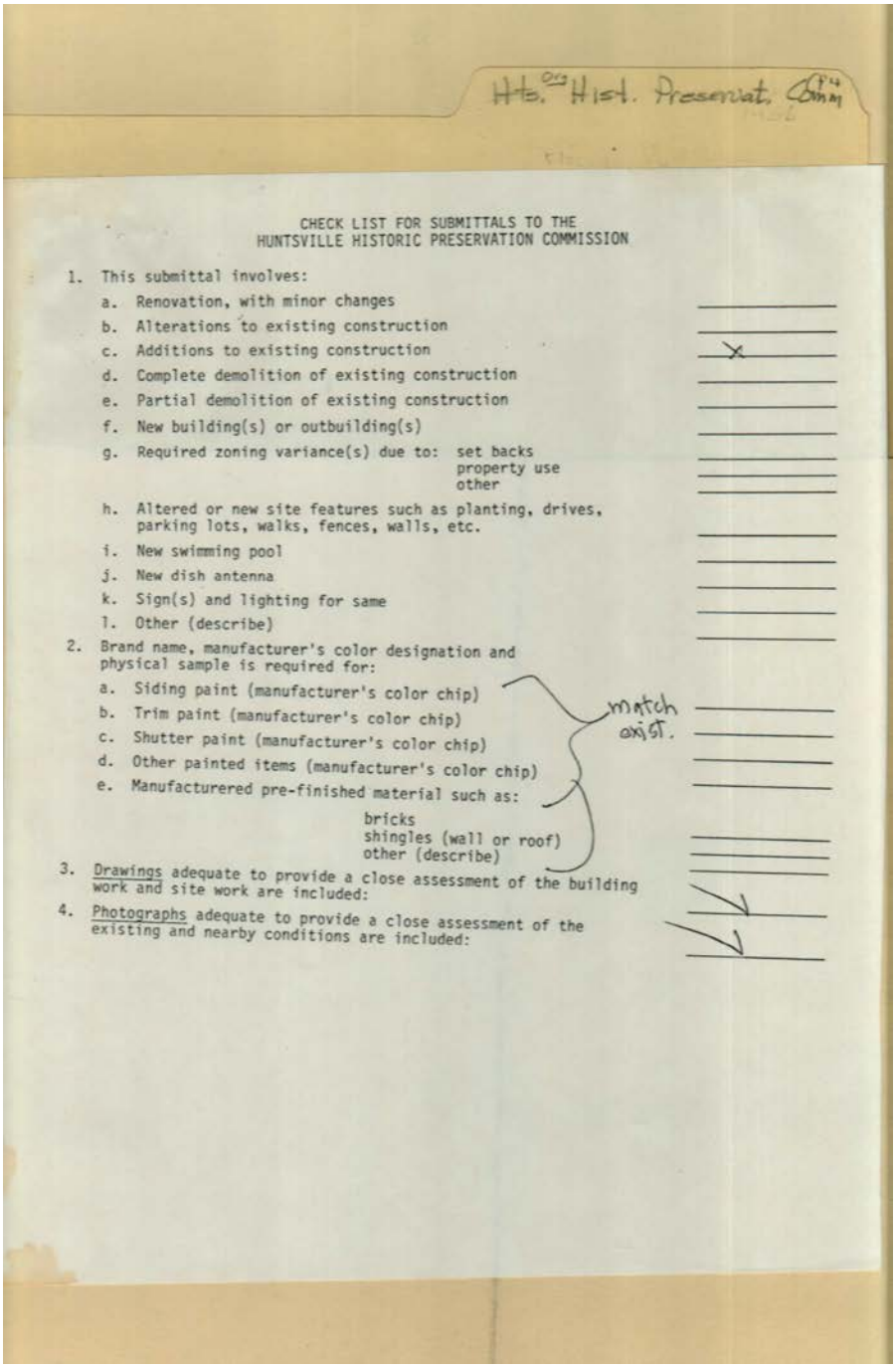
Application must be submitted by: _____ (Time) _____ (Date)

Names:
Beck, Ann

Places:
Huntsville, AL

Types:
application

Dates:
Jul 25, 1994



Hts. Dis. Hist. Preservat. Comm

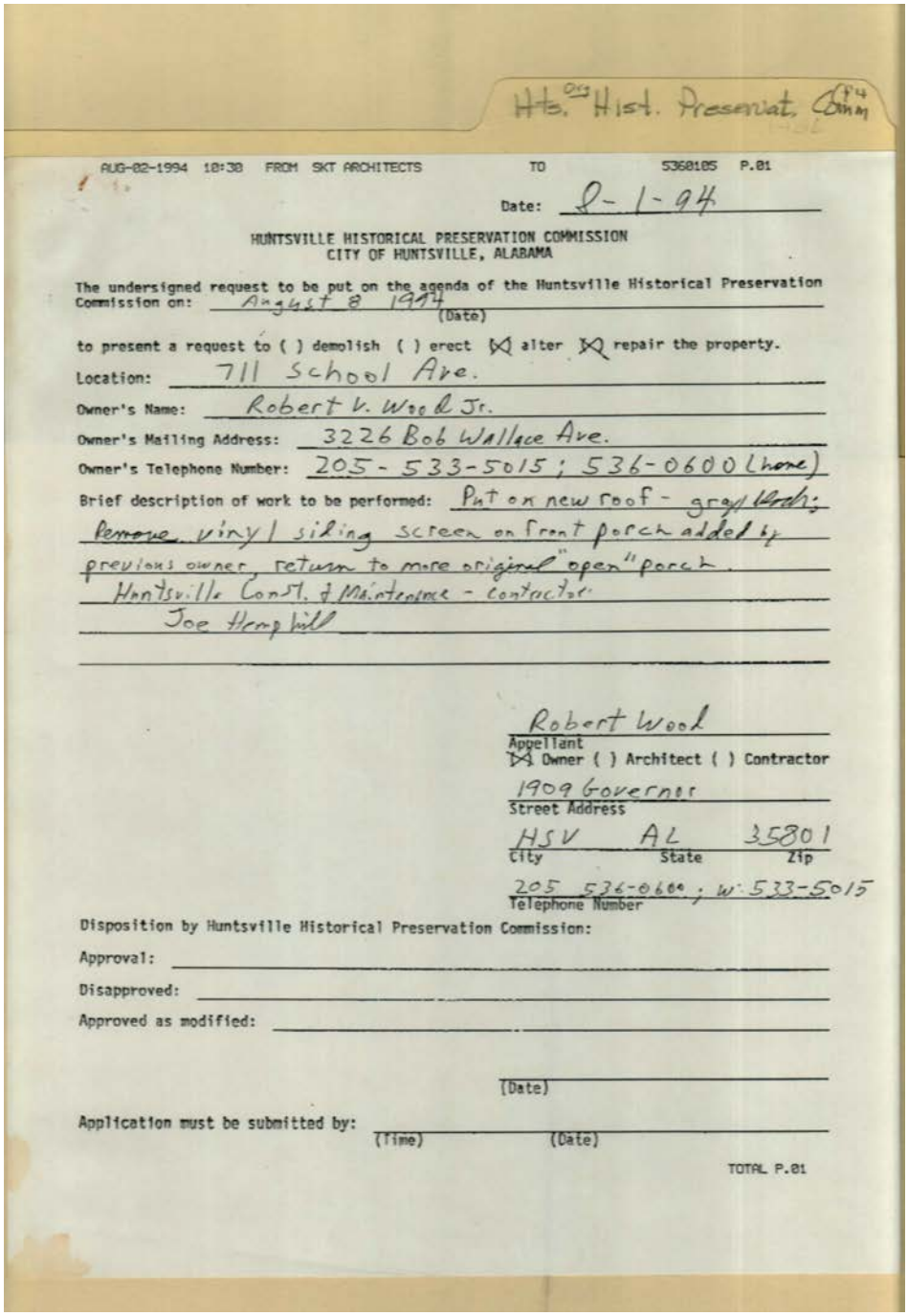
CHECK LIST FOR SUBMITTALS TO THE
HUNTSVILLE HISTORIC PRESERVATION COMMISSION

1. This submittal involves:
   a. Renovation, with minor changes
   b. Alterations to existing construction
   c. Additions to existing construction — X
   d. Complete demolition of existing construction
   e. Partial demolition of existing construction
   f. New building(s) or outbuilding(s)
   g. Required zoning variance(s) due to: set backs
      property use
      other
   h. Altered or new site features such as planting, drives, parking lots, walks, fences, walls, etc.
   i. New swimming pool
   j. New dish antenna
   k. Sign(s) and lighting for same
   l. Other (describe)
2. Brand name, manufacturer's color designation and physical sample is required for:
   a. Siding paint (manufacturer's color chip)
   b. Trim paint (manufacturer's color chip)
   c. Shutter paint (manufacturer's color chip)
   d. Other painted items (manufacturer's color chip)
   e. Manufacturered pre-finished material such as:
      bricks
      shingles (wall or roof)
      other (describe)

   match exist.
3. Drawings adequate to provide a close assessment of the building work and site work are included:
4. Photographs adequate to provide a close assessment of the existing and nearby conditions are included:

Places:
Huntsville, AL

Types:
list



Hts. Hist. Preservat. Comm

AUG-02-1994 10:38 FROM SKT ARCHITECTS TO 5360105 P.01

Date: 8-1-94

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION
CITY OF HUNTSVILLE, ALABAMA

The undersigned request to be put on the agenda of the Huntsville Historical Preservation Commission on: August 8 1994 (Date)

to present a request to ( ) demolish ( ) erect ☒ alter ☒ repair the property.

Location: 711 School Ave.

Owner's Name: Robert V. Wood Jr.

Owner's Mailing Address: 3226 Bob Wallace Ave.

Owner's Telephone Number: 205-533-5015; 536-0600 (home)

Brief description of work to be performed: Put on new roof - gray/black; Remove vinyl siding screen on front porch added by previous owner, return to more original "open" porch.

Huntsville Const. & Maintenance - Contractor

Joe Hemphill

Robert Wood
Appellant
☒ Owner ( ) Architect ( ) Contractor

1909 Governor
Street Address

HSV AL 35801
City State Zip

205 536-0600; W: 533-5015
Telephone Number

Disposition by Huntsville Historical Preservation Commission:

Approval: _____

Disapproved: _____

Approved as modified: _____

(Date)

Application must be submitted by: (Time) (Date)

TOTAL P.01

Names:
Hemphill, Joe
Wood, Robert V., Jr.

Places:
Huntsville, AL

Types:
application

Dates:
Aug 01, 1994

Hts. Org. Hist. Preservat. Comm.

AUG-02-1994 10:28 FROM SKT ARCHITECTS TO 5360105 P.01

Post-it™ brand Fax Transmittal Memo 7672 | No. of Pages 2 | Today's Date 8-2-94

To: Bob Wood
Company
Location
Fax #
Telephone #
Comments

From: Rob Van Peursem
Company: SKT
Location
Dept. Charge
Fax #
Telephone #
Original Disposition: ☐ Destroy ☐ Return ☐ Call for pickup

CHECK LIST FOR SUBMITTALS TO THE
HUNTSVILLE HISTORIC PRESERVATION COMMISSION

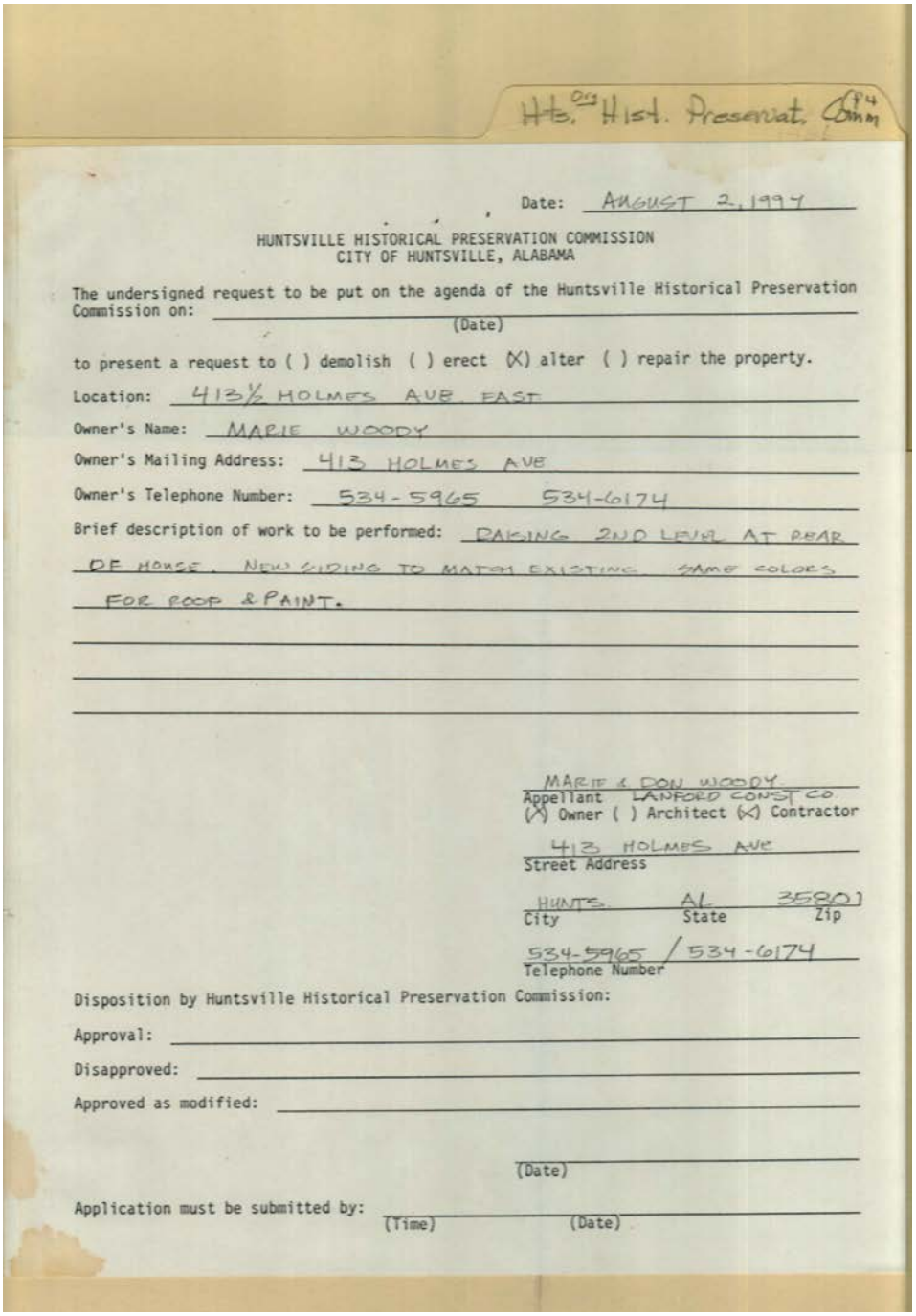
1. This submittal involves:
   a. Renovation, with minor changes ___X___
   b. Alterations to existing construction ______
   c. Additions to existing construction ______
   d. Complete demolition of existing construction ______
   e. Partial demolition of existing construction ______
   f. New building(s) or outbuilding(s) ______
   g. Required zoning variance(s) due to: set backs ______
      property use ______
      other ______
   h. Altered or new site features such as planting, drives, parking lots, walks, fences, walls, etc. ______
   i. New swimming pool ______
   j. New dish antenna ______
   k. Sign(s) and lighting for same ______
   l. Other (describe) ______
2. Brand name, manufacturer's color designation and physical sample is required for:
   a. Siding paint (manufacturer's color chip) ______
   b. Trim paint (manufacturer's color chip) ______
   c. Shutter paint (manufacturer's color chip) ______
   d. Other painted items (manufacturer's color chip) ___X___
   e. Manufacturered pre-finished material such as:
      bricks ___X___
      shingles (wall or roof) ______
      other (describe) ______
3. Drawings adequate to provide a close assessment of the building work and site work are included: ___X___
4. Photographs adequate to provide a close assessment of the existing and nearby conditions are included: ___X___

Names:
Van Peursem, Rob
Wood, Bob

Places:
Huntsville, AL

Types:
list

Dates:
Aug 02, 1994



Hts. Org. Hist. Preservat. Comm 94

Date: AUGUST 2, 1994

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION
CITY OF HUNTSVILLE, ALABAMA

The undersigned request to be put on the agenda of the Huntsville Historical Preservation Commission on: _____ (Date)

to present a request to ( ) demolish ( ) erect (X) alter ( ) repair the property.

Location: 413½ HOLMES AVE. EAST

Owner's Name: MARIE WOODY

Owner's Mailing Address: 413 HOLMES AVE

Owner's Telephone Number: 534-5965 534-6174

Brief description of work to be performed: RAISING 2ND LEVEL AT REAR OF HOUSE. NEW SIDING TO MATCH EXISTING. SAME COLORS FOR ROOF & PAINT.

MARIE & DON WOODY
Appellant LANFORD CONST CO
(X) Owner ( ) Architect (X) Contractor

413 HOLMES AVE
Street Address

HUNTS. AL 35801
City State Zip

534-5965 / 534-6174
Telephone Number

Disposition by Huntsville Historical Preservation Commission:

Approval: _____

Disapproved: _____

Approved as modified: _____

_____ (Date)

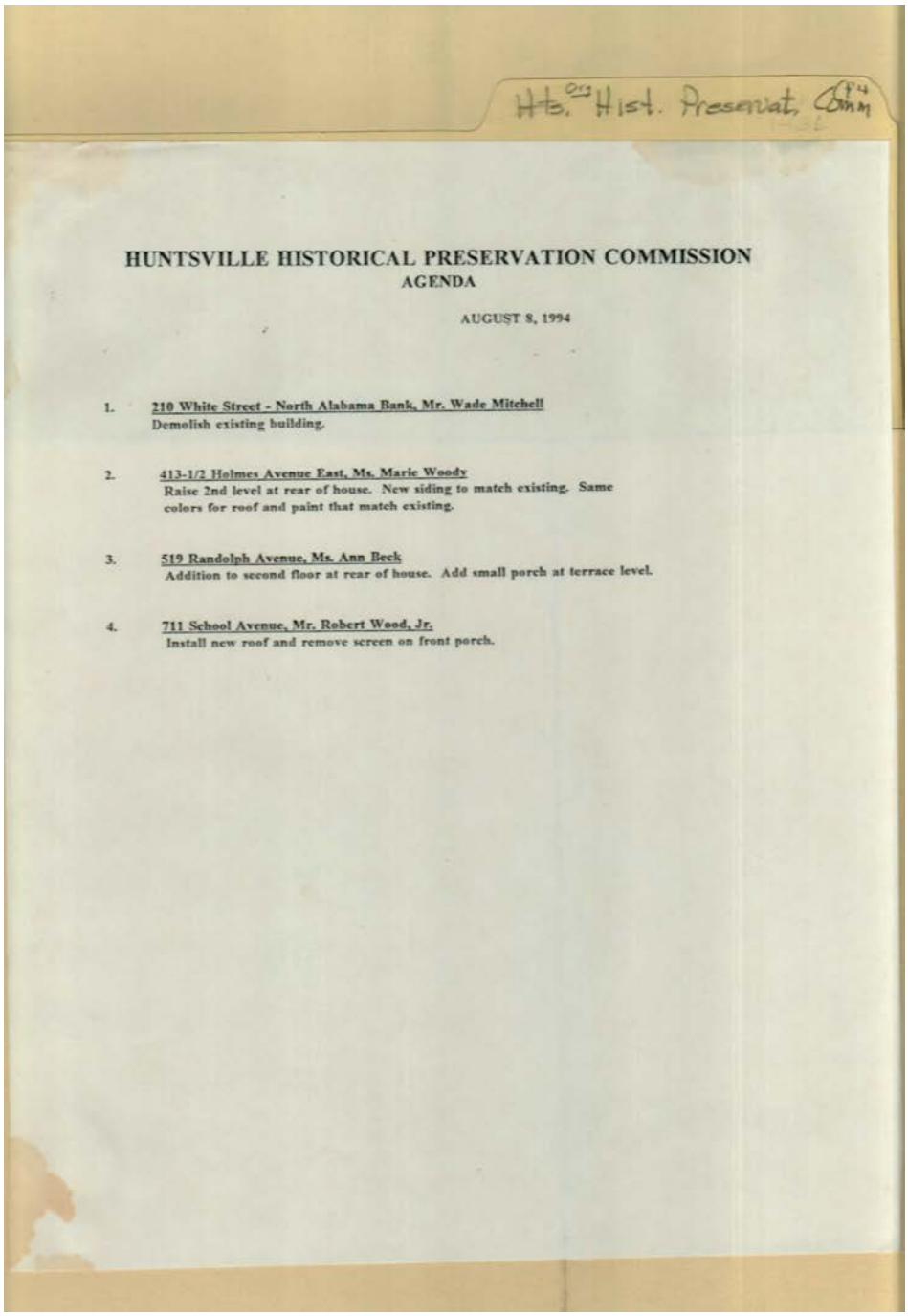
Application must be submitted by: _____ (Time) _____ (Date)

Names:
Woody, Don
Woody, Marie

Places:
Huntsville, AL

Types:
application

Dates:
Aug 02, 1994



Hts. Hist. Preservat. Comm

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION
AGENDA

AUGUST 8, 1994

1. 210 White Street - North Alabama Bank, Mr. Wade Mitchell
Demolish existing building.

2. 413-1/2 Holmes Avenue East, Ms. Marie Woody
Raise 2nd level at rear of house. New siding to match existing. Same colors for roof and paint that match existing.

3. 519 Randolph Avenue, Ms. Ann Beck
Addition to second floor at rear of house. Add small porch at terrace level.

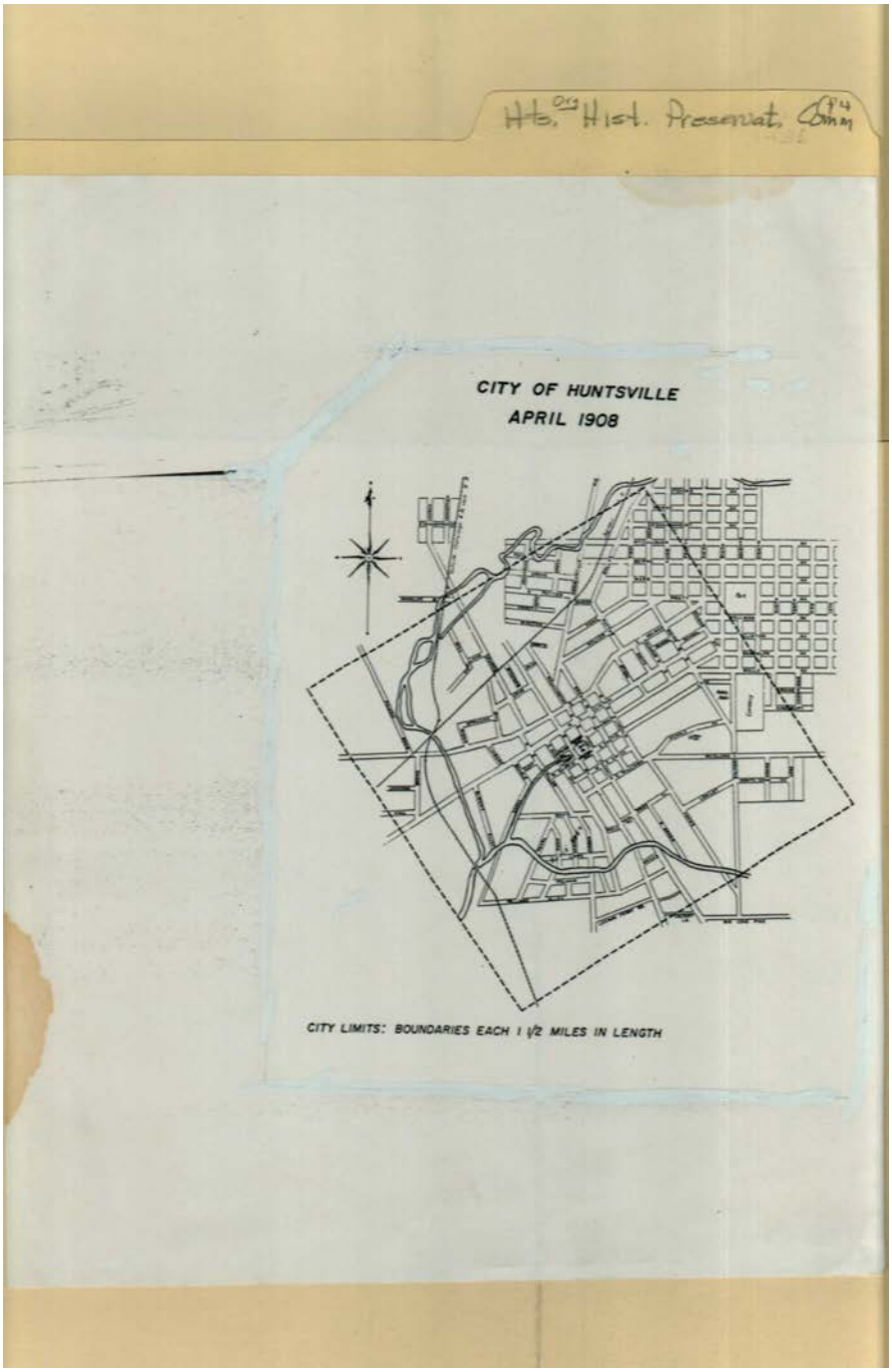
4. 711 School Avenue, Mr. Robert Wood, Jr.
Install new roof and remove screen on front porch.

Names:
Beck, Ann
Mitchell, Wade
Wood, Robert, Jr.
Woody, Marie

Places:
Huntsville, AL

Types:
agenda

Dates:
Aug 08, 1994

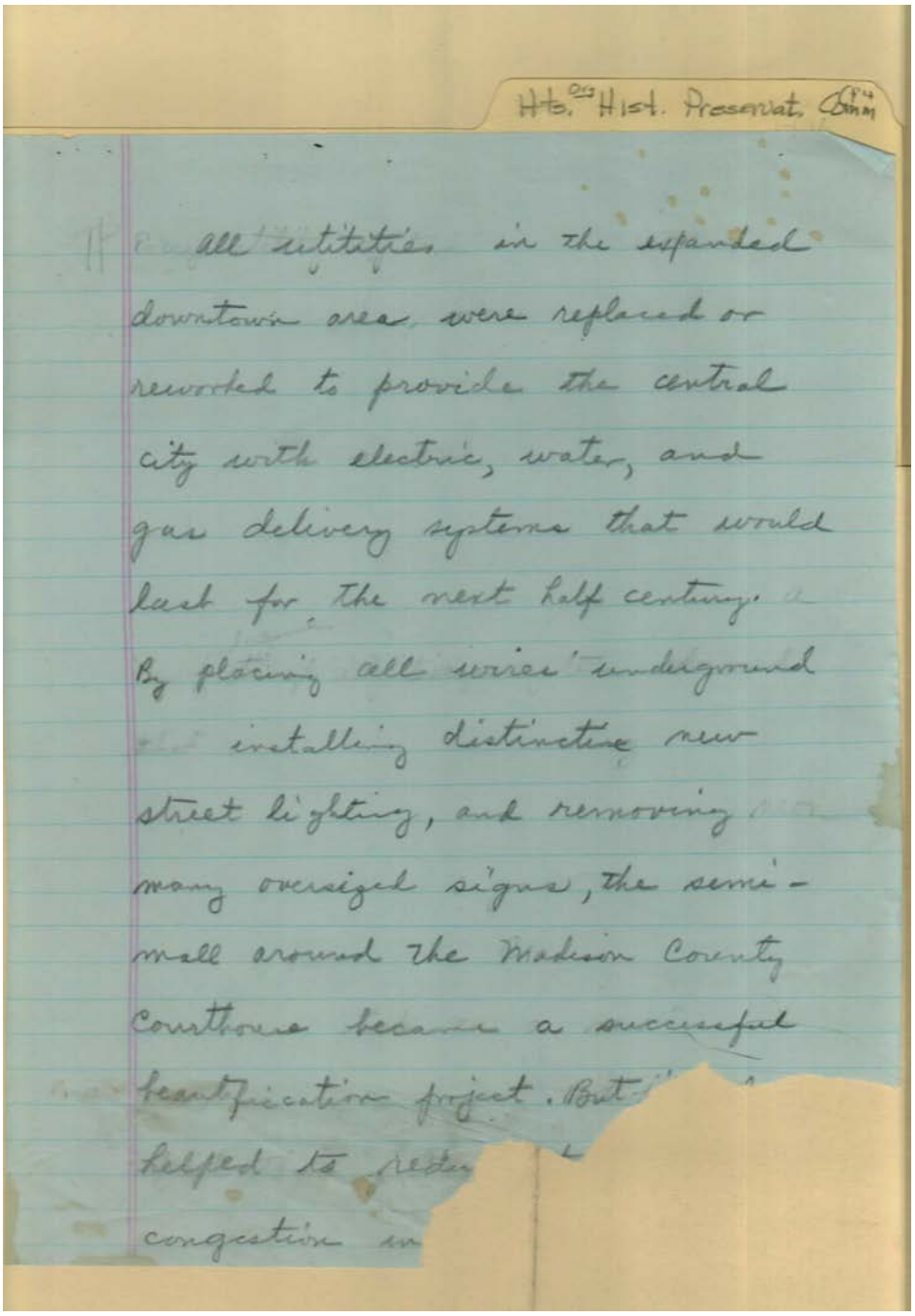


Names:
City of Huntsville

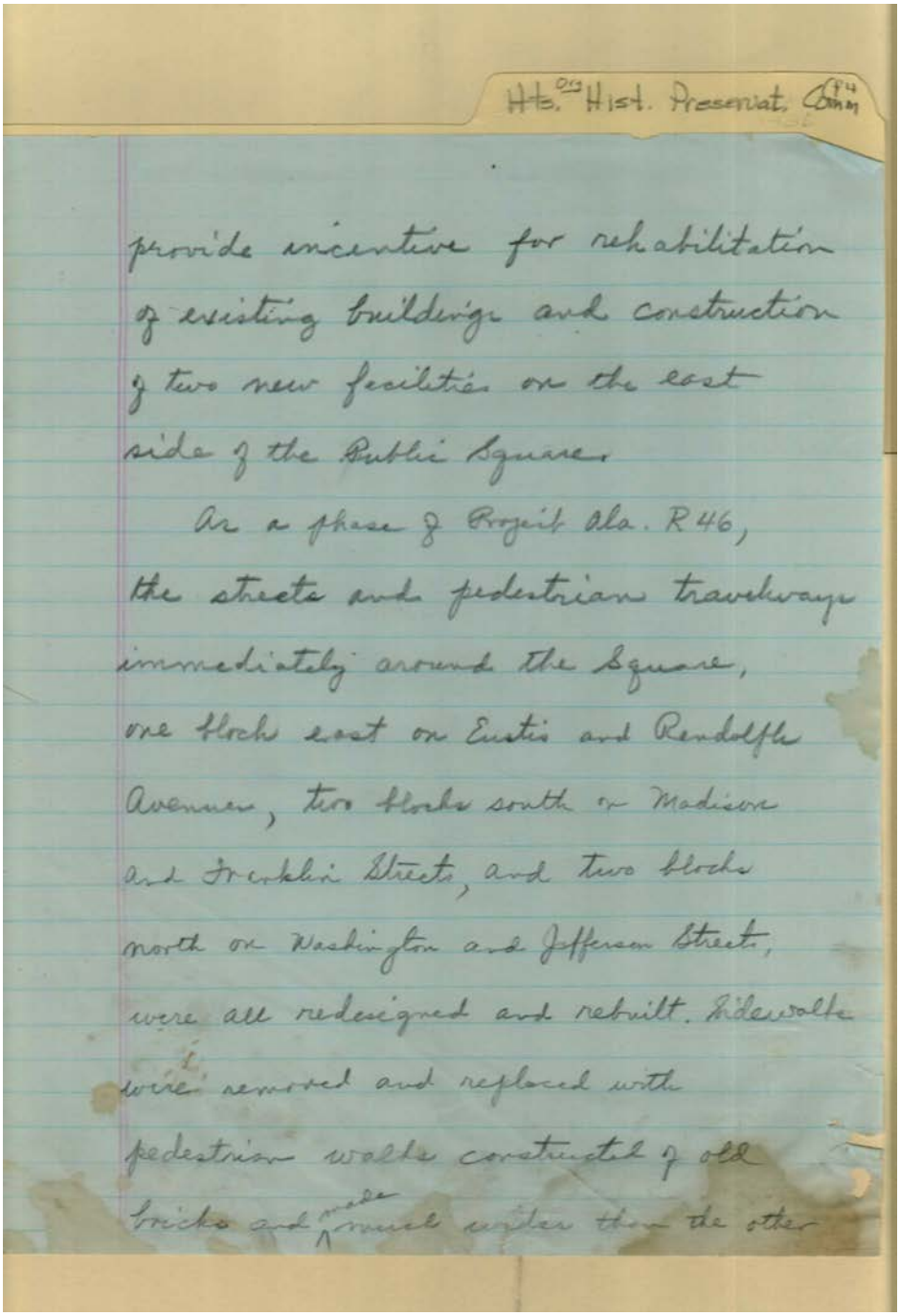
Places:
Huntsville, AL

Types:
map

Dates:
April, 1908


Hts. Dis. Hist. Preservat. Comm
all utilities in the expanded
downtown area, were replaced or
reworked to provide the central
city with electric, water, and
gas delivery systems that would
last for the next half century.
By placing all wires underground
installing distinctive new
street lighting, and removing
many oversized signs, the semi-
mall around the Madison County
Courthouse became a successful
beautification project. But
helped to reduce
congestion in

Types:
notes



Hts. Dis Hist. Preservat. Comm

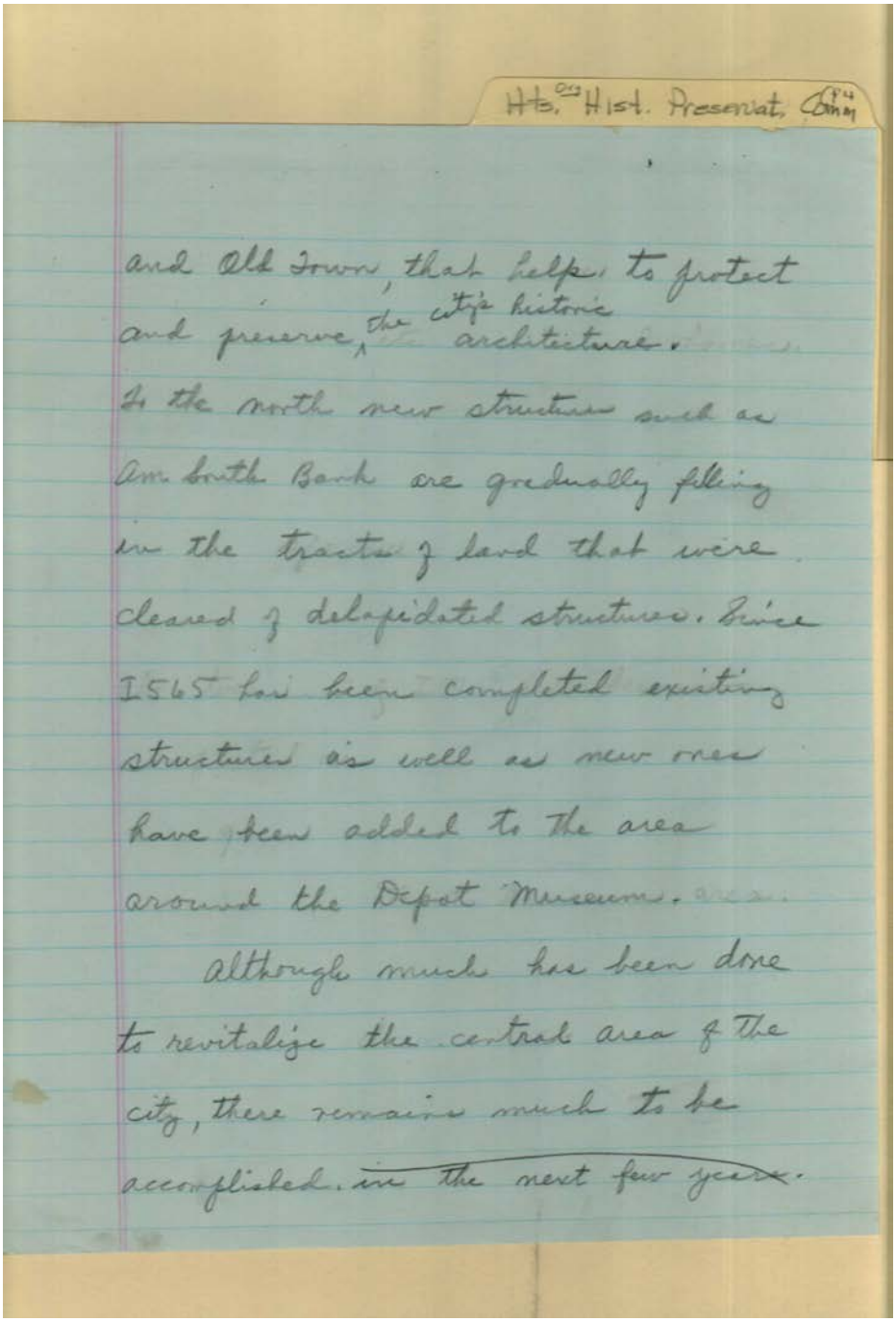
provide incentive for rehabilitation
of existing buildings and construction
of two new facilities on the east
side of the Public Square.

As a phase of Project Ala. R46,
the streets and pedestrian travelways
immediately around the Square,
one block east on Eustis and Randolph
Avenues, two blocks south on Madison
and Franklin Streets, and two blocks
north on Washington and Jefferson Streets,
were all redesigned and rebuilt. Sidewalks
were removed and replaced with
pedestrian walks constructed of old
bricks and made mud mortar than the other

Types:
notes

walks. Trees, planters, lawn areas, and covered rest stops were installed to create a parklike environment.

Today the Public Square remains at the heart of downtown Huntsville, and serves as a legal and professional center. It is protected from physical decline because of its location. To the west the International Big Spring Park serves to connect the square with all municipal buildings and the Von Braun Center Complex. To the south lies Alabama's Constitutional Village and the Medical District. To the east it is protected by two historical districts, Twickenham



Hts. Dis. Hist. Preservat. Comm.

and Old Town, that help to protect and preserve, the city's historic architecture.

In the north new structures such as Am. South Bank are gradually filling in the tracts of land that were cleared of delapidated structures. Since 1565 has been completed existing structures as well as new ones have been added to the area around the Depot Museum.

Although much has been done to revitalize the central area of the city, there remains much to be accomplished. ~~in the next few years.~~

Types:
notes

Hts. Co. Hist. Preservat. Comm '84

The courthouse as well as the grounds around it need to be refurbished. In order for the Public Square to retain its beauty and usefulness its walkways need repair, its trees and shrubs need to be trimmed, its and inappropriate signs need to be replaced with those in keeping with the physical structures, and its vacant buildings need to be put to use.

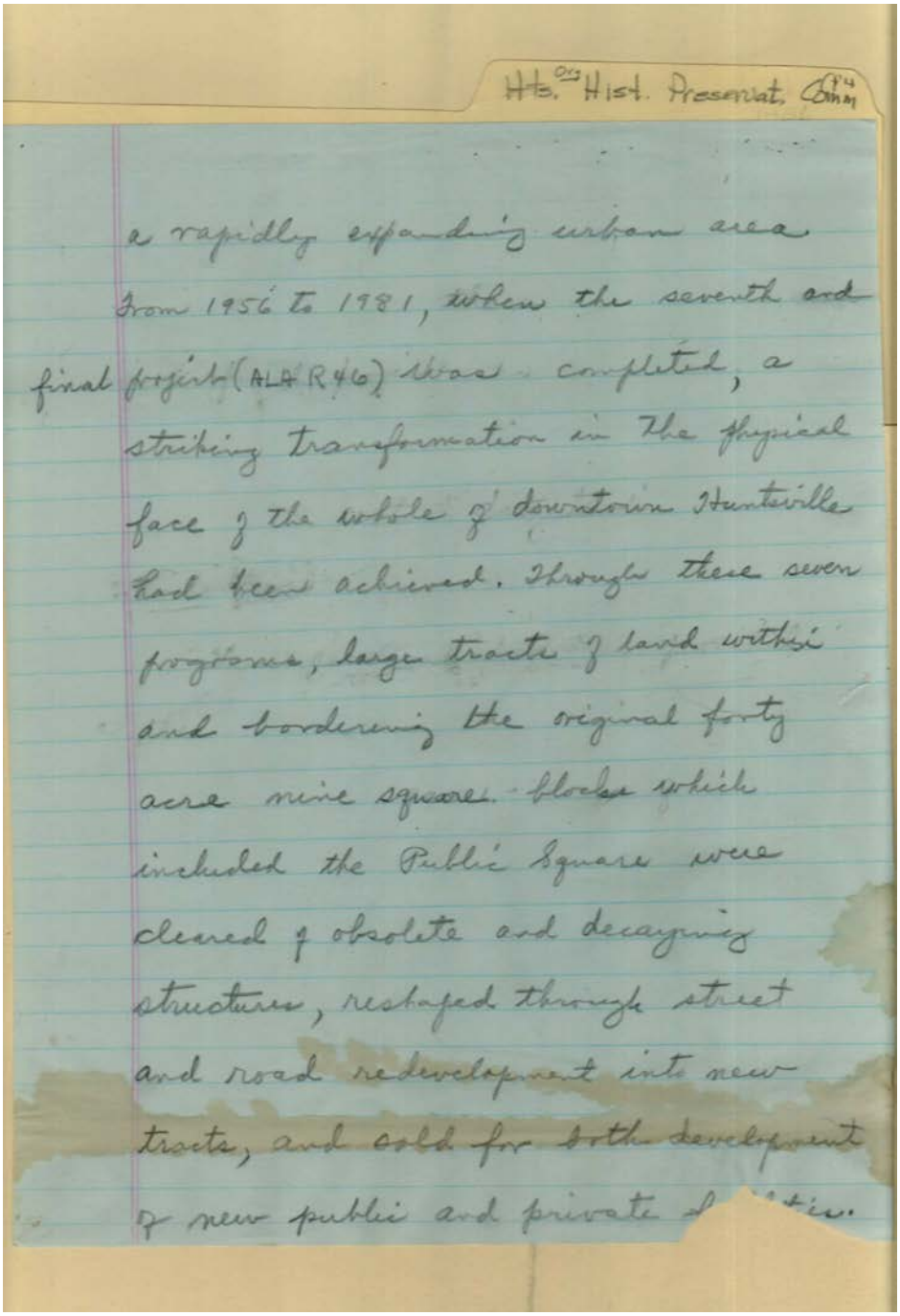
Thus far in Huntsville's history its citizens have been able to blend the past with the present and look to the future in such a way that ~~they have been able to keep~~ the Public Square ~~as~~ continues to be an important focal point in the city.

Types:
notes

Hts. Hist. Preservat. Comm

large amounts of federal money to aid them in rehabilitating most of the the territory which lay within the city limits of Huntsville in 1950. The Housing Authority of the city of Huntsville undertook the responsibility for carrying out seven major projects which conserved, rehabilitated, and developed almost two square miles of land. (See [illegible] map ~~on pg~~). These projects replaced blighted, substandard, and crime-ridden areas of the central city with a redesigned and rebuilt metropolitan area capable of serving the ne

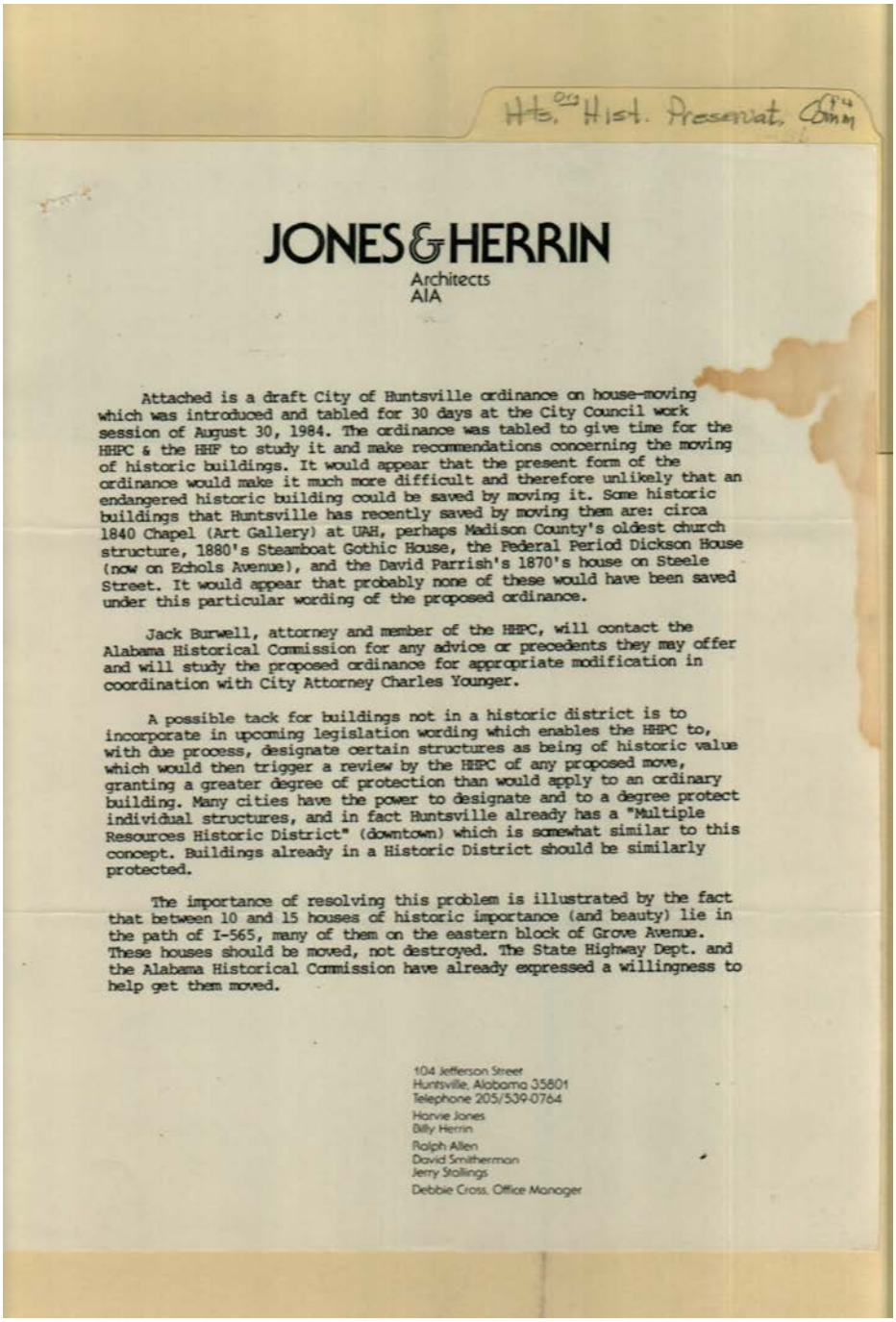
Types:
notes



Hts. Dis. Hist. Preservat. Com.

a rapidly expanding urban area. From 1956 to 1981, when the seventh and final projects (ALA R46) was completed, a striking transformation in the physical face of the whole of downtown Huntsville had been achieved. Through these seven programs, large tracts of land within and bordering the original forty acre nine square blocks which included the Public Square were cleared of obsolete and decaying structures, reshaped through street and road redevelopment into new tracts, and sold for both development of new public and private [illegible].

Types:
notes



Hts. Dis. Hist. Preservat. Comm

JONES & HERRIN
Architects
AIA

Attached is a draft City of Huntsville ordinance on house-moving which was introduced and tabled for 30 days at the City Council work session of August 30, 1984. The ordinance was tabled to give time for the HHPC & the HHF to study it and make recommendations concerning the moving of historic buildings. It would appear that the present form of the ordinance would make it much more difficult and therefore unlikely that an endangered historic building could be saved by moving it. Some historic buildings that Huntsville has recently saved by moving them are: circa 1840 Chapel (Art Gallery) at UAH, perhaps Madison County's oldest church structure, 1880's Steamboat Gothic House, the Federal Period Dickson House (now on Echols Avenue), and the David Parrish's 1870's house on Steele Street. It would appear that probably none of these would have been saved under this particular wording of the proposed ordinance.

Jack Burwell, attorney and member of the HHPC, will contact the Alabama Historical Commission for any advice or precedents they may offer and will study the proposed ordinance for appropriate modification in coordination with City Attorney Charles Younger.

A possible tack for buildings not in a historic district is to incorporate in upcoming legislation wording which enables the HHPC to, with due process, designate certain structures as being of historic value which would then trigger a review by the HHPC of any proposed move, granting a greater degree of protection than would apply to an ordinary building. Many cities have the power to designate and to a degree protect individual structures, and in fact Huntsville already has a "Multiple Resources Historic District" (downtown) which is somewhat similar to this concept. Buildings already in a Historic District should be similarly protected.

The importance of resolving this problem is illustrated by the fact that between 10 and 15 houses of historic importance (and beauty) lie in the path of I-565, many of them on the eastern block of Grove Avenue. These houses should be moved, not destroyed. The State Highway Dept. and the Alabama Historical Commission have already expressed a willingness to help get them moved.

104 Jefferson Street
Huntsville, Alabama 35801
Telephone 205/539-0764
Harvie Jones
Billy Herrin
Ralph Allen
David Smitherman
Jerry Stallings
Debbie Cross, Office Manager

Names:

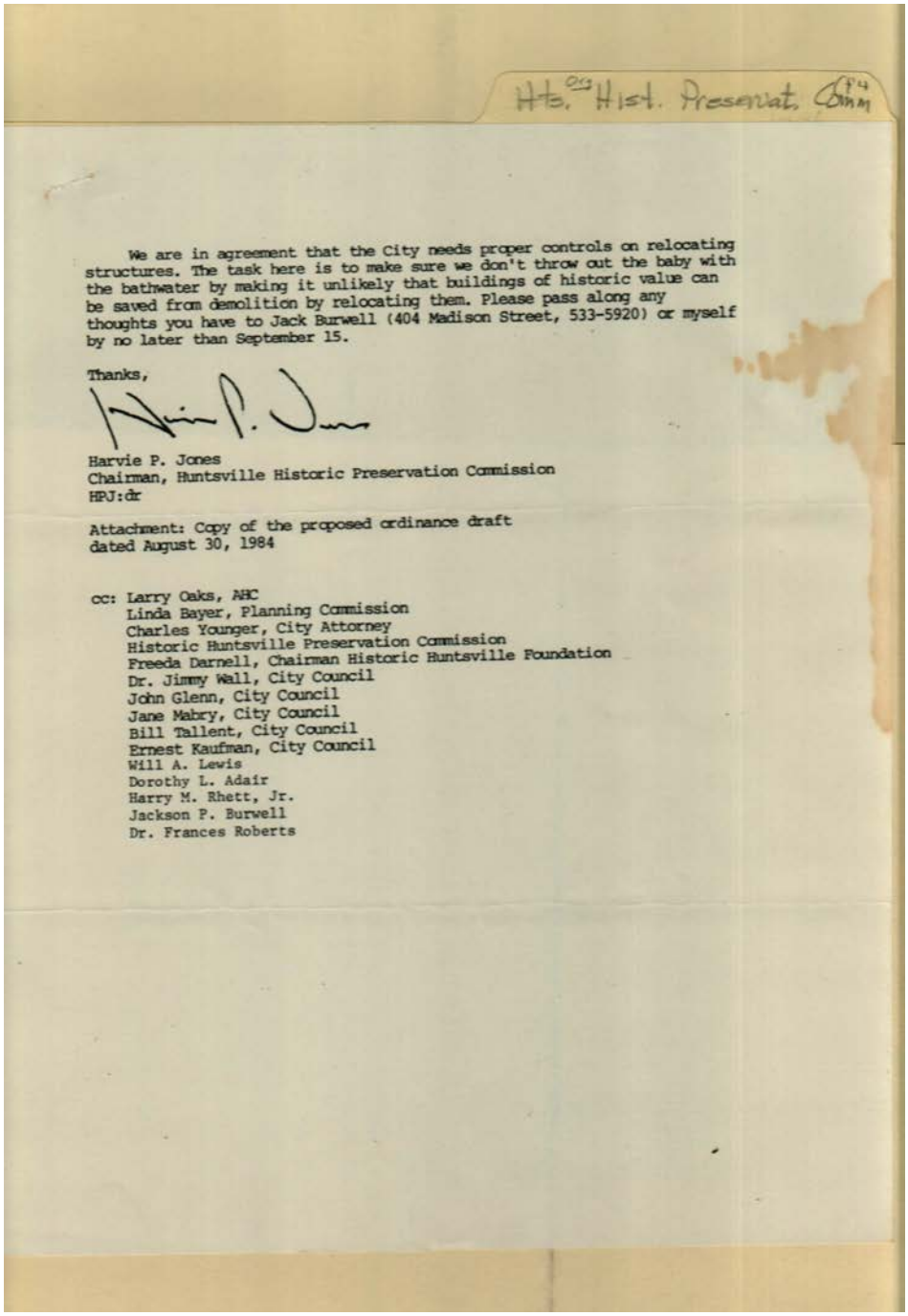
Allen, Ralph
Burwell, Jack
Cross, Debbie
Herrin, Billy
House-Moving Draft Ordinance
Jones, Harvie
Parrish, David
Smitherman, David
Stallings, Jerry
Younger, Charles

Places:

Huntsville, AL

Types:

ordinance



Hts. Hist. Preservat. 84

We are in agreement that the City needs proper controls on relocating structures. The task here is to make sure we don't throw out the baby with the bathwater by making it unlikely that buildings of historic value can be saved from demolition by relocating them. Please pass along any thoughts you have to Jack Burwell (404 Madison Street, 533-5920) or myself by no later than September 15.

Thanks,

Harvie P. Jones
Chairman, Huntsville Historic Preservation Commission
HPJ:dr

Attachment: Copy of the proposed ordinance draft
dated August 30, 1984

cc: Larry Oaks, AHC
Linda Bayer, Planning Commission
Charles Younger, City Attorney
Historic Huntsville Preservation Commission
Freeda Darnell, Chairman Historic Huntsville Foundation
Dr. Jimmy Wall, City Council
John Glenn, City Council
Jane Mabry, City Council
Bill Tallent, City Council
Ernest Kaufman, City Council
Will A. Lewis
Dorothy L. Adair
Harry M. Rhett, Jr.
Jackson P. Burwell
Dr. Frances Roberts

Names:

Adair, Dorothy L.
Bayer, Linda
Burwell, Jackson P.
Darnell, Freeda
Glenn, John
Jones, Harvie
Kaufman, Ernest
Lewis, Will A.
Mabry, Jane
Oaks, Larry
Rhett, Harry M., Jr.
Roberts, Frances, Dr.
Tallent, Bill
Wall, Jimmy, Dr.
Younger, Charles

Places:

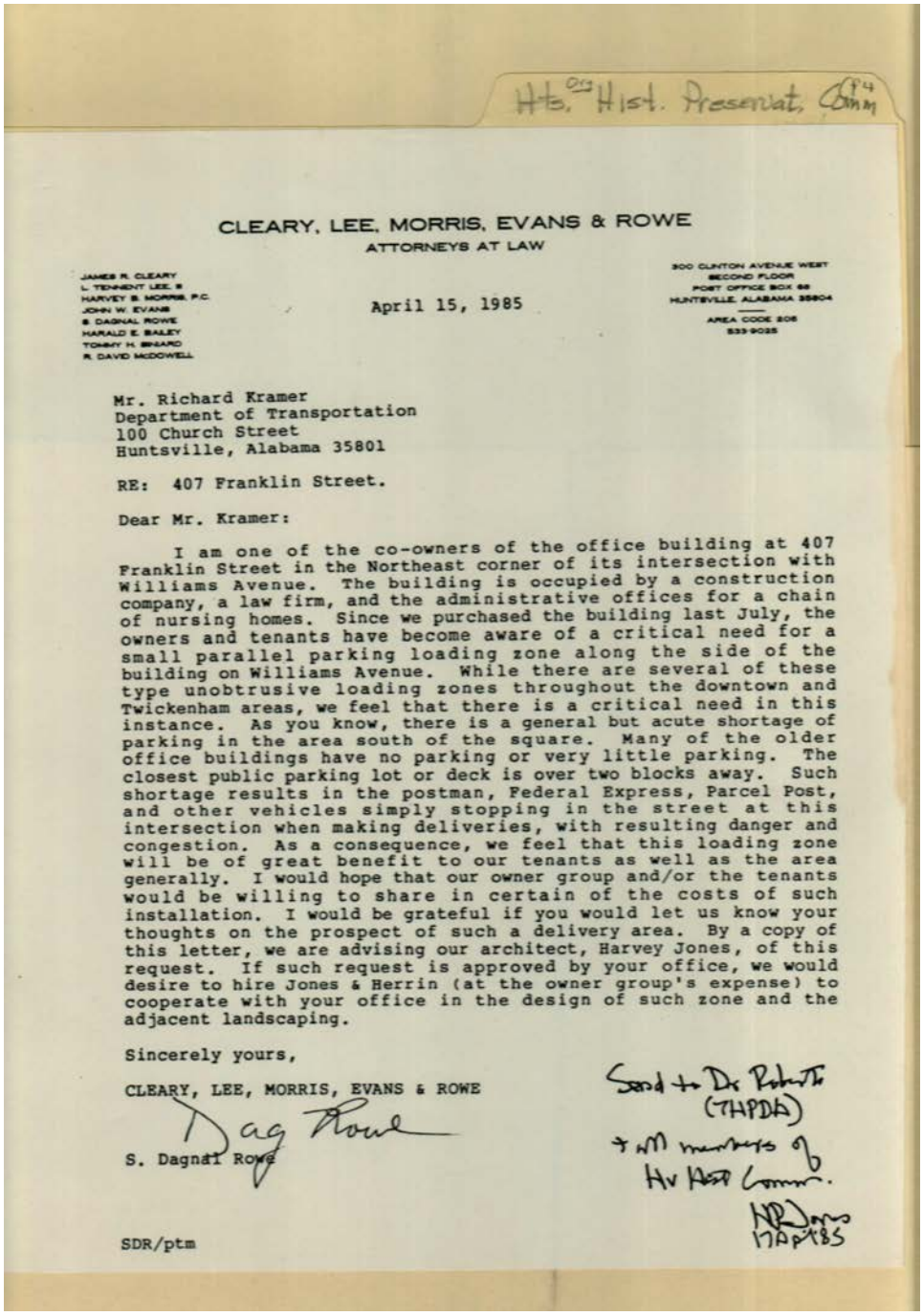
Huntsville, AL

Types:

ordinance

Dates:

Aug 30, 1984



Hts. Hist. Preservat. Comm

CLEARY, LEE, MORRIS, EVANS & ROWE
ATTORNEYS AT LAW

JAMES R. CLEARY
L. TENNENT LEE, II
HARVEY B. MORRIS, P.C.
JOHN W. EVANS
S. DAGNAL ROWE
HARALD E. BAILEY
TOMMY H. SINARD
R. DAVID McDOWELL

300 CLINTON AVENUE WEST
SECOND FLOOR
POST OFFICE BOX 88
HUNTSVILLE, ALABAMA 35804

AREA CODE 205
533-9035

April 15, 1985

Mr. Richard Kramer
Department of Transportation
100 Church Street
Huntsville, Alabama 35801

RE: 407 Franklin Street.

Dear Mr. Kramer:

I am one of the co-owners of the office building at 407 Franklin Street in the Northeast corner of its intersection with Williams Avenue. The building is occupied by a construction company, a law firm, and the administrative offices for a chain of nursing homes. Since we purchased the building last July, the owners and tenants have become aware of a critical need for a small parallel parking loading zone along the side of the building on Williams Avenue. While there are several of these type unobtrusive loading zones throughout the downtown and Twickenham areas, we feel that there is a critical need in this instance. As you know, there is a general but acute shortage of parking in the area south of the square. Many of the older office buildings have no parking or very little parking. The closest public parking lot or deck is over two blocks away. Such shortage results in the postman, Federal Express, Parcel Post, and other vehicles simply stopping in the street at this intersection when making deliveries, with resulting danger and congestion. As a consequence, we feel that this loading zone will be of great benefit to our tenants as well as the area generally. I would hope that our owner group and/or the tenants would be willing to share in certain of the costs of such installation. I would be grateful if you would let us know your thoughts on the prospect of such a delivery area. By a copy of this letter, we are advising our architect, Harvey Jones, of this request. If such request is approved by your office, we would desire to hire Jones & Herrin (at the owner group's expense) to cooperate with your office in the design of such zone and the adjacent landscaping.

Sincerely yours,

CLEARY, LEE, MORRIS, EVANS & ROWE

Dag Rowe

S. Dagnal Rowe

SDR/ptm

Send to Dr Roberts (THPDA)
+ all members of Hv Hist Comm.
HJ Jones 17 Apr 85

Names:

Bailey, Harald, E.
Cleary, James R.
Evans, John W.
Jones, Harvie
Kramer, Richard
Lee, L. Tennent
McDowell, R. David
Morris, Harvey B.
Roberts, Dr.
Rowe, S. Dagnal
Sinard, Tommy H.

Places:

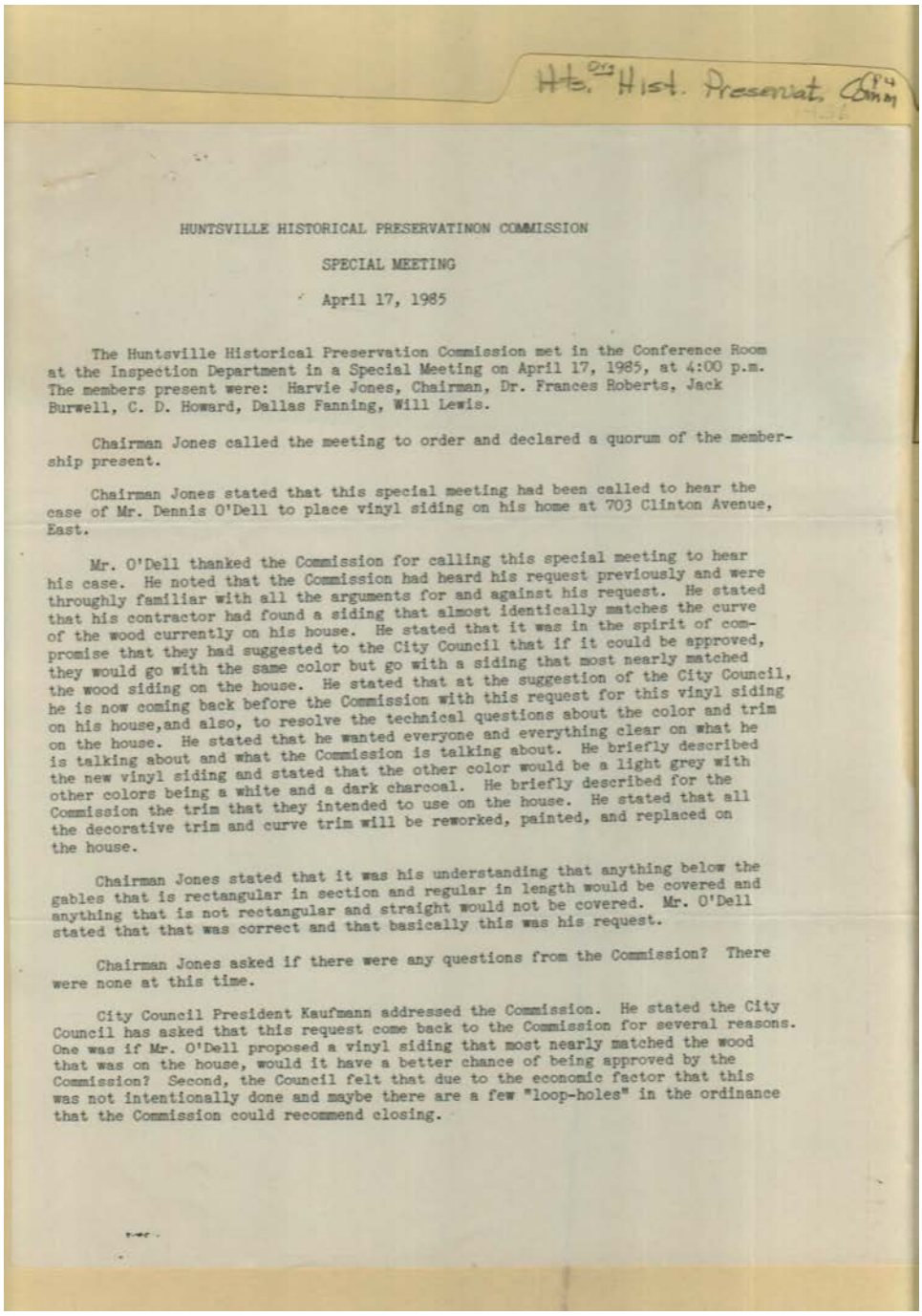
Huntsville, AL

Types:

correspondence

Dates:

Apr 15, 1985



Hts. Org Hist. Preservat. Comm

HUNTSVILLE HISTORICAL PRESERVATINON COMMISSION

SPECIAL MEETING

April 17, 1985

The Huntsville Historical Preservation Commission met in the Conference Room at the Inspection Department in a Special Meeting on April 17, 1985, at 4:00 p.m. The members present were: Harvie Jones, Chairman, Dr. Frances Roberts, Jack Burwell, C. D. Howard, Dallas Fanning, Will Lewis.

Chairman Jones called the meeting to order and declared a quorum of the membership present.

Chairman Jones stated that this special meeting had been called to hear the case of Mr. Dennis O'Dell to place vinyl siding on his home at 703 Clinton Avenue, East.

Mr. O'Dell thanked the Commission for calling this special meeting to hear his case. He noted that the Commission had heard his request previously and were throughly familiar with all the arguments for and against his request. He stated that his contractor had found a siding that almost identically matches the curve of the wood currently on his house. He stated that it was in the spirit of compromise that they had suggested to the City Council that if it could be approved, they would go with the same color but go with a siding that most nearly matched the wood siding on the house. He stated that at the suggestion of the City Council, he is now coming back before the Commission with this request for this vinyl siding on his house,and also, to resolve the technical questions about the color and trim on the house. He stated that he wanted everyone and everything clear on what he is talking about and what the Commission is talking about. He briefly described the new vinyl siding and stated that the other color would be a light grey with other colors being a white and a dark charcoal. He briefly described for the Commission the trim that they intended to use on the house. He stated that all the decorative trim and curve trim will be reworked, painted, and replaced on the house.

Chairman Jones stated that it was his understanding that anything below the gables that is rectangular in section and regular in length would be covered and anything that is not rectangular and straight would not be covered. Mr. O'Dell stated that that was correct and that basically this was his request.

Chairman Jones asked if there were any questions from the Commission? There were none at this time.

City Council President Kaufmann addressed the Commission. He stated the City Council has asked that this request come back to the Commission for several reasons. One was if Mr. O'Dell proposed a vinyl siding that most nearly matched the wood that was on the house, would it have a better chance of being approved by the Commission? Second, the Council felt that due to the economic factor that this was not intentionally done and maybe there are a few "loop-holes" in the ordinance that the Commission could recommend closing.

Names:

Burwell, Jack
Fanning, Dallas
Howard, C. D.
Jones, Harvie
Kaufmann,
Lewis, Will
O'Dell, Dennis
Roberts, Frances, Dr.

Places:

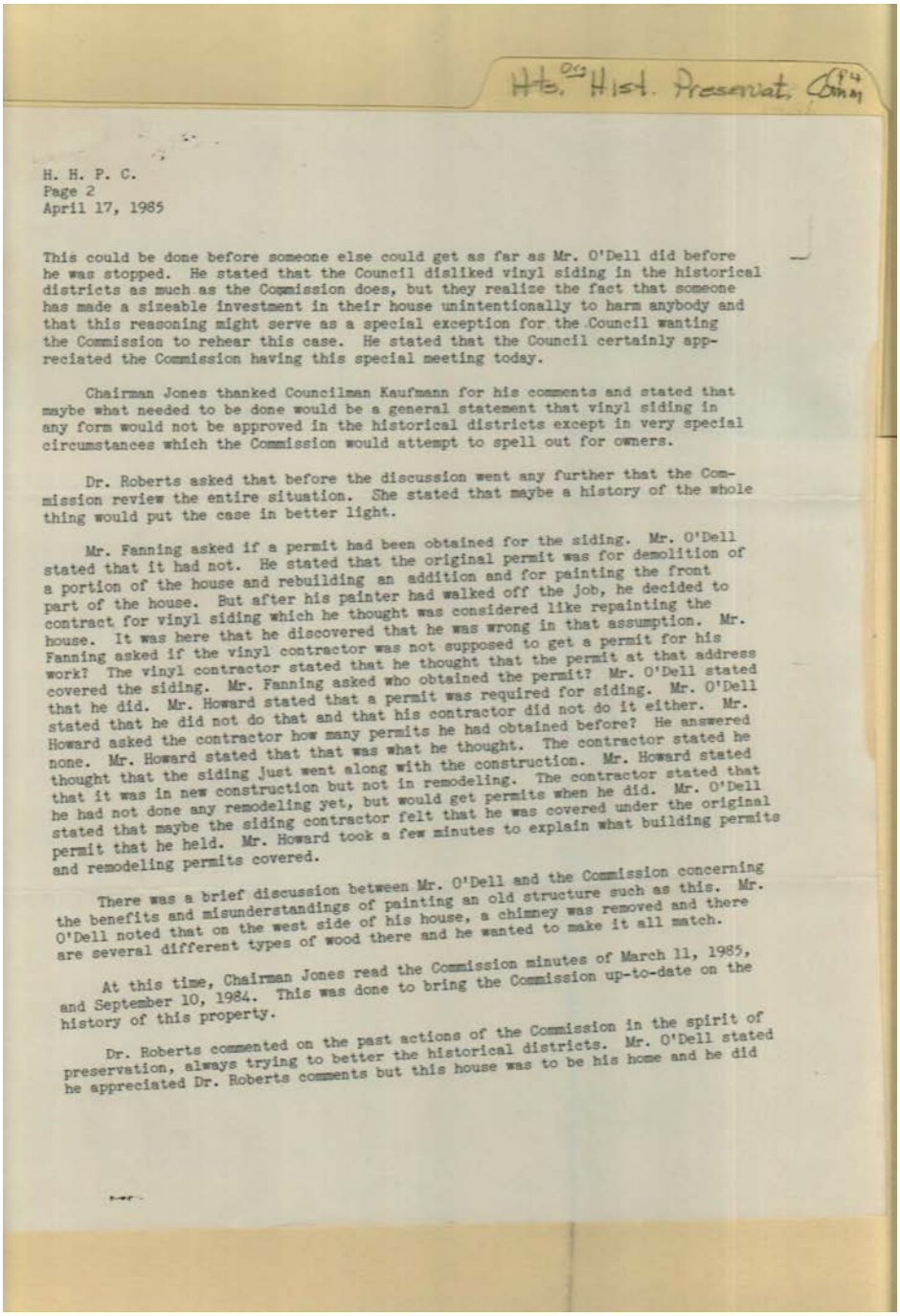
Huntsville, AL

Types:

minutes

Dates:

Apr 17, 1985



Hts. Hist. Preservat. Comm

This could be done before someone else could get as far as Mr. O'Dell did before he was stopped. He stated that the Council disliked vinyl siding in the historical districts as much as the Commission does, but they realize the fact that someone has made a sizeable investment in their house unintentionally to harm anybody and that this reasoning might serve as a special exception for the Council wanting the Commission to rehear this case. He stated that the Council certainly appreciated the Commission having this special meeting today.

Chairman Jones thanked Councilman Kaufmann for his comments and stated that maybe what needed to be done would be a general statement that vinyl siding in any form would not be approved in the historical districts except in very special circumstances which the Commission would attempt to spell out for owners.

Dr. Roberts asked that before the discussion went any further that the Commission review the entire situation. She stated that maybe a history of the whole thing would put the case in better light.

Mr. Fanning asked if a permit had been obtained for the siding. Mr. O'Dell stated that it had not. He stated that the original permit was for demolition of a portion of the house and rebuilding an addition and for painting the front part of the house. But after his painter had walked off the job, he decided to contract for vinyl siding which he thought was considered like repainting the house. It was here that he discovered that he was wrong in that assumption. Mr. Fanning asked if the vinyl contractor was not supposed to get a permit for his work? The vinyl contractor stated that he thought that the permit at that address covered the siding. Mr. Fanning asked who obtained the permit? Mr. O'Dell stated that he did. Mr. Howard stated that a permit was required for siding. Mr. O'Dell stated that he did not do that and that his contractor did not do it either. Mr. Howard asked the contractor how many permits he had obtained before? He answered none. Mr. Howard stated that that was what he thought. The contractor stated he thought that the siding just went along with the construction. Mr. Howard stated that it was in new construction but not in remodeling. The contractor stated that he had not done any remodeling yet, but would get permits when he did. Mr. O'Dell stated that maybe the siding contractor felt that he was covered under the original permit that he held. Mr. Howard took a few minutes to explain what building permits and remodeling permits covered.

There was a brief discussion between Mr. O'Dell and the Commission concerning the benefits and misunderstandings of painting an old structure such as this. Mr. O'Dell noted that on the west side of his house, a chimney was removed and there are several different types of wood there and he wanted to make it all match.

At this time, Chairman Jones read the Commission minutes of March 11, 1985, and September 10, 1984. This was done to bring the Commission up-to-date on the history of this property.

Dr. Roberts commented on the past actions of the Commission in the spirit of preservation, always trying to better the historical districts. Mr. O'Dell stated he appreciated Dr. Roberts comments but this house was to be his home and he did

Names:

Fanning,
Howard,
Jones,
Kaufmann,
O'Dell,
Roberts, Dr.

Places:

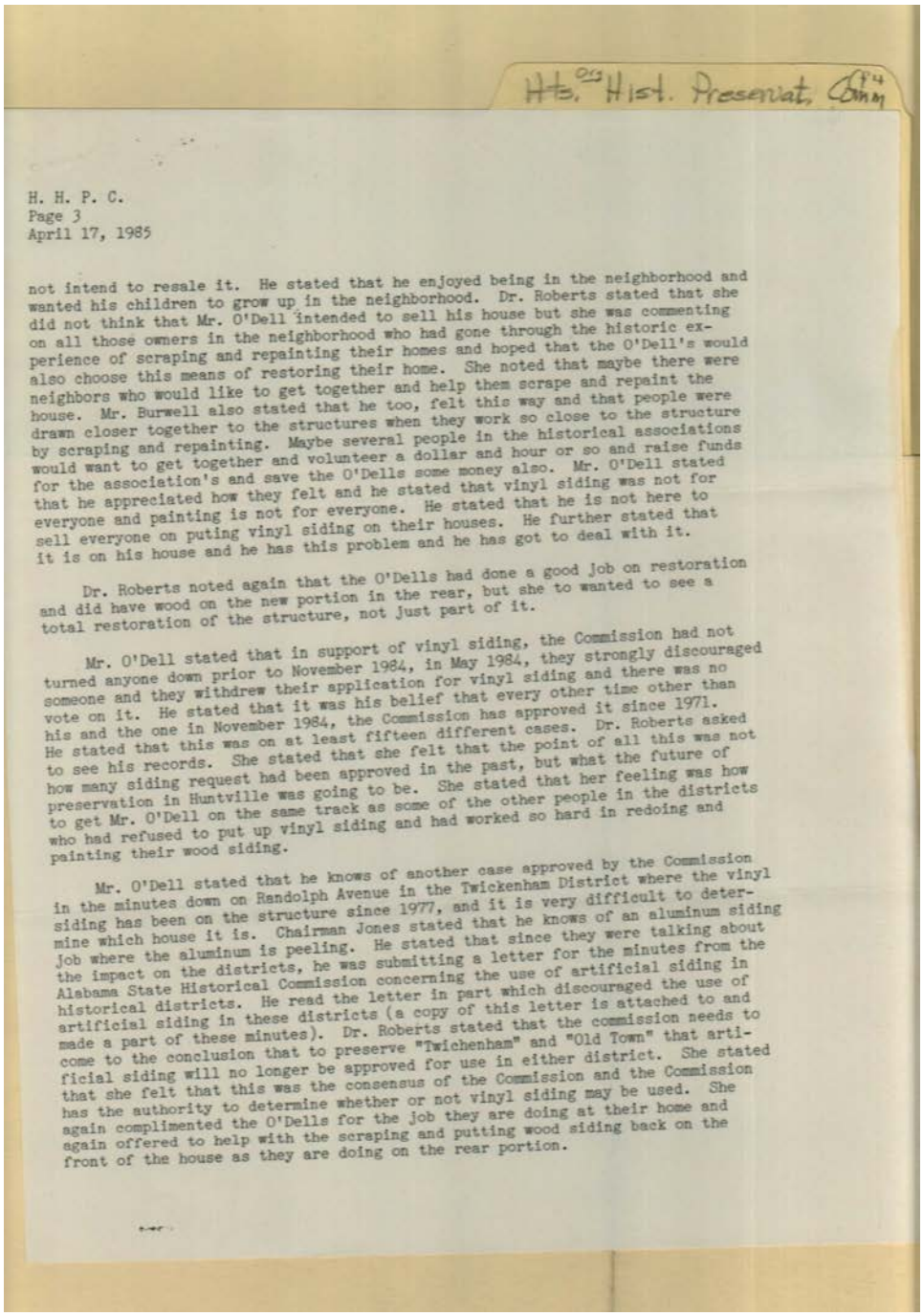
Huntsville, AL

Types:

minutes

Dates:

Apr 17, 1985



Hts. Hist. Preservat. Comm

H. H. P. C.
Page 3
April 17, 1985

not intend to resale it. He stated that he enjoyed being in the neighborhood and wanted his children to grow up in the neighborhood. Dr. Roberts stated that she did not think that Mr. O'Dell intended to sell his house but she was commenting on all those owners in the neighborhood who had gone through the historic experience of scraping and repainting their homes and hoped that the O'Dell's would also choose this means of restoring their home. She noted that maybe there were neighbors who would like to get together and help them scrape and repaint the house. Mr. Burwell also stated that he too, felt this way and that people were drawn closer together to the structures when they work so close to the structure by scraping and repainting. Maybe several people in the historical associations would want to get together and volunteer a dollar and hour or so and raise funds for the association's and save the O'Dells some money also. Mr. O'Dell stated that he appreciated how they felt and he stated that vinyl siding was not for everyone and painting is not for everyone. He stated that he is not here to sell everyone on puting vinyl siding on their houses. He further stated that it is on his house and he has this problem and he has got to deal with it.

Dr. Roberts noted again that the O'Dells had done a good job on restoration and did have wood on the new portion in the rear, but she to wanted to see a total restoration of the structure, not just part of it.

Mr. O'Dell stated that in support of vinyl siding, the Commission had not turned anyone down prior to November 1984, in May 1984, they strongly discouraged someone and they withdrew their application for vinyl siding and there was no vote on it. He stated that it was his belief that every other time other than his and the one in November 1984, the Commission has approved it since 1971. He stated that this was on at least fifteen different cases. Dr. Roberts asked to see his records. She stated that she felt that the point of all this was not how many siding request had been approved in the past, but what the future of preservation in Huntville was going to be. She stated that her feeling was how to get Mr. O'Dell on the same track as some of the other people in the districts who had refused to put up vinyl siding and had worked so hard in redoing and painting their wood siding.

Mr. O'Dell stated that he knows of another case approved by the Commission in the minutes down on Randolph Avenue in the Twickenham District where the vinyl siding has been on the structure since 1977, and it is very difficult to determine which house it is. Chairman Jones stated that he knows of an aluminum siding job where the aluminum is peeling. He stated that since they were talking about the impact on the districts, he was submitting a letter for the minutes from the Alabama State Historical Commission concerning the use of artificial siding in historical districts. He read the letter in part which discouraged the use of artificial siding in these districts (a copy of this letter is attached to and made a part of these minutes). Dr. Roberts stated that the commission needs to come to the conclusion that to preserve "Twichenham" and "Old Town" that artificial siding will no longer be approved for use in either district. She stated that she felt that this was the consensus of the Commission and the Commission has the authority to determine whether or not vinyl siding may be used. She again complimented the O'Dells for the job they are doing at their home and again offered to help with the scraping and putting wood siding back on the front of the house as they are doing on the rear portion.

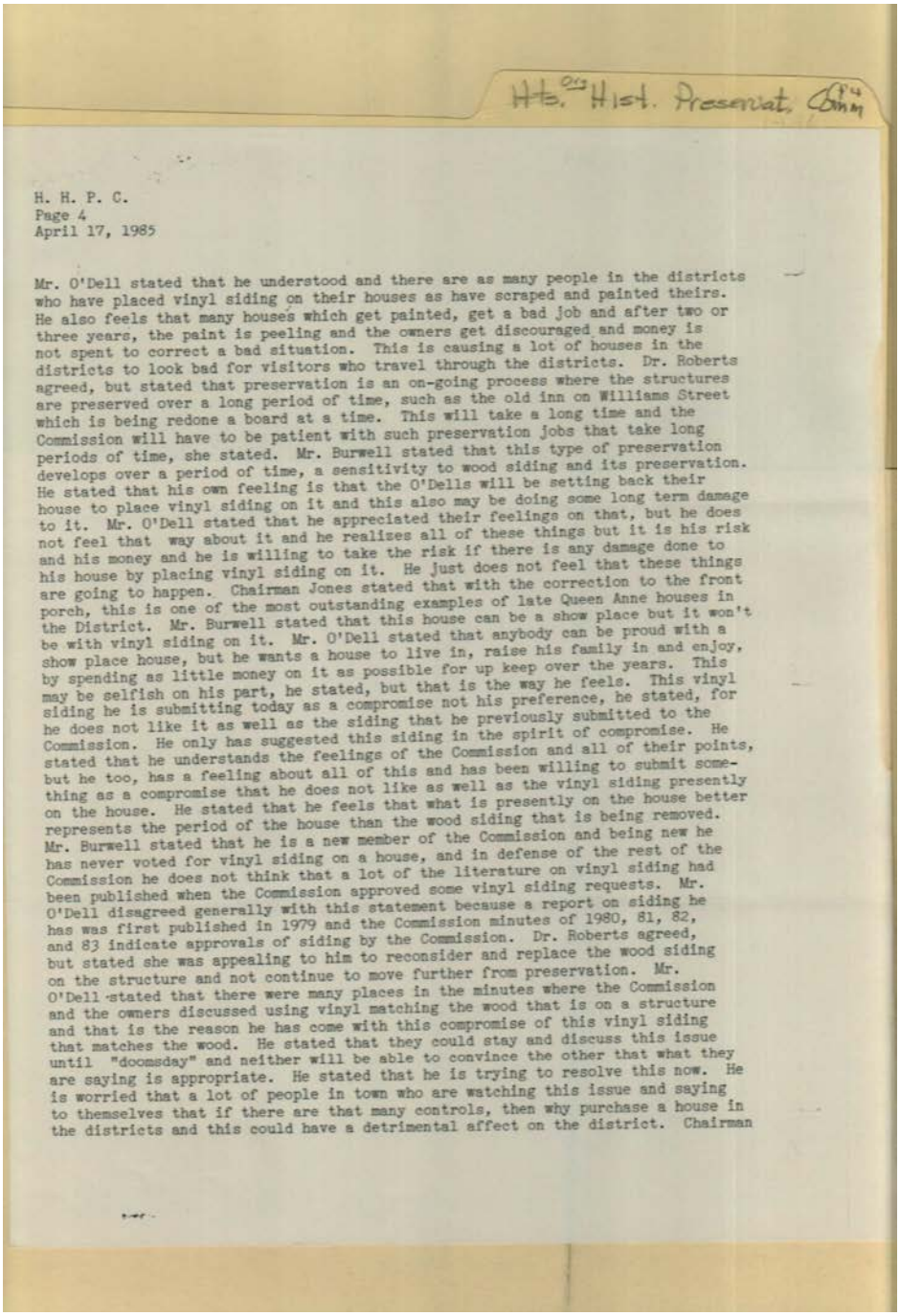
Names:
Burwell,
Jones,
O'Dell,
Roberts, Dr.

Subjects:
Siding, Artificial,
Debate

Places:
Huntsville, AL

Types:
minutes

Dates:
Apr 17, 1985



Hts. Dis Hist. Preservat. Comm F4

H. H. P. C.
Page 4
April 17, 1985

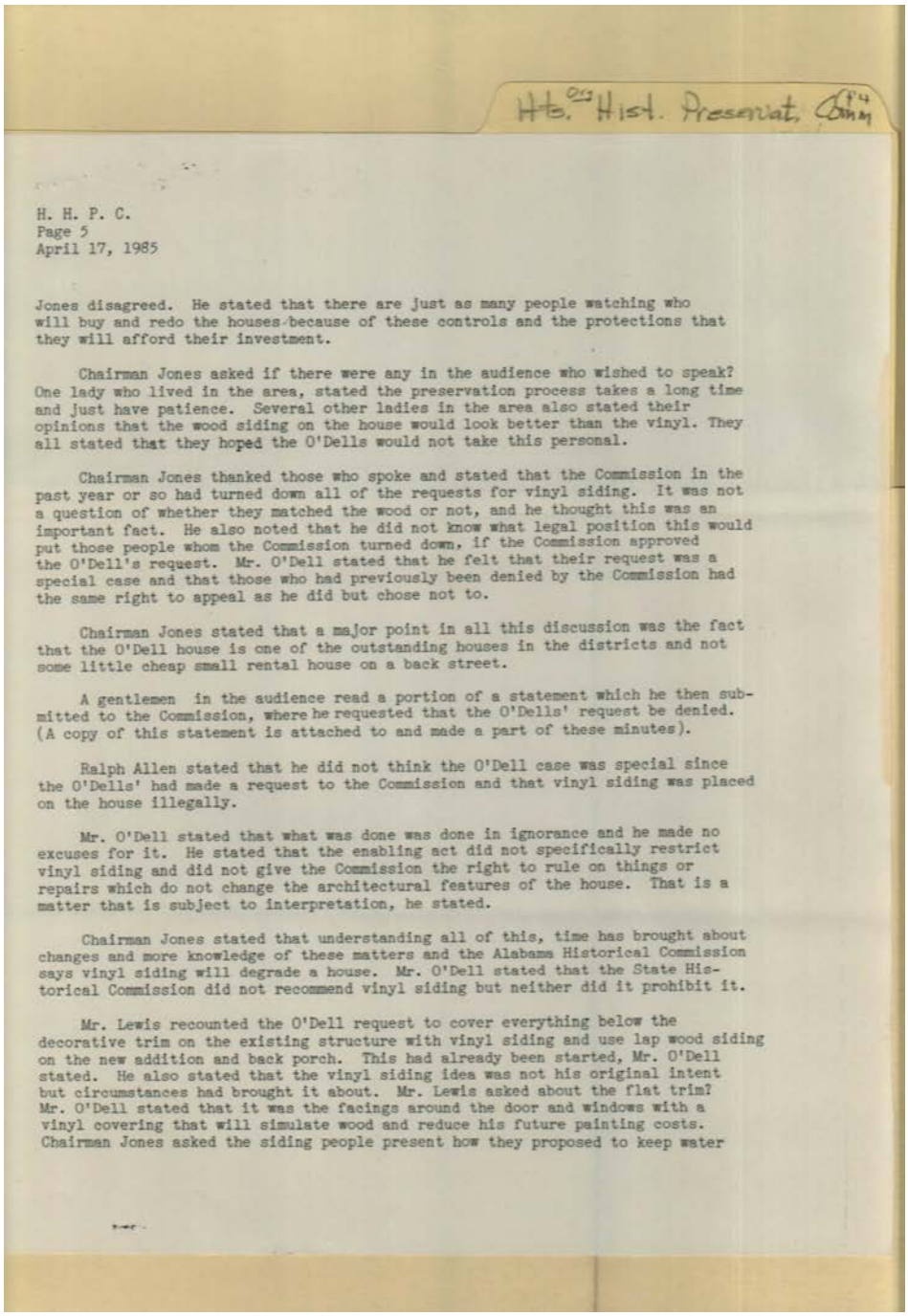
Mr. O'Dell stated that he understood and there are as many people in the districts who have placed vinyl siding on their houses as have scraped and painted theirs. He also feels that many houses which get painted, get a bad job and after two or three years, the paint is peeling and the owners get discouraged and money is not spent to correct a bad situation. This is causing a lot of houses in the districts to look bad for visitors who travel through the districts. Dr. Roberts agreed, but stated that preservation is an on-going process where the structures are preserved over a long period of time, such as the old inn on Williams Street which is being redone a board at a time. This will take a long time and the Commission will have to be patient with such preservation jobs that take long periods of time, she stated. Mr. Burwell stated that this type of preservation develops over a period of time, a sensitivity to wood siding and its preservation. He stated that his own feeling is that the O'Dells will be setting back their house to place vinyl siding on it and this also may be doing some long term damage to it. Mr. O'Dell stated that he appreciated their feelings on that, but he does not feel that way about it and he realizes all of these things but it is his risk and his money and he is willing to take the risk if there is any damage done to his house by placing vinyl siding on it. He just does not feel that these things are going to happen. Chairman Jones stated that with the correction to the front porch, this is one of the most outstanding examples of late Queen Anne houses in the District. Mr. Burwell stated that this house can be a show place but it won't be with vinyl siding on it. Mr. O'Dell stated that anybody can be proud with a show place house, but he wants a house to live in, raise his family in and enjoy, by spending as little money on it as possible for up keep over the years. This may be selfish on his part, he stated, but that is the way he feels. This vinyl siding he is submitting today as a compromise not his preference, he stated, for he does not like it as well as the siding that he previously submitted to the Commission. He only has suggested this siding in the spirit of compromise. He stated that he understands the feelings of the Commission and all of their points, but he too, has a feeling about all of this and has been willing to submit something as a compromise that he does not like as well as the vinyl siding presently on the house. He stated that he feels that what is presently on the house better represents the period of the house than the wood siding that is being removed. Mr. Burwell stated that he is a new member of the Commission and being new he has never voted for vinyl siding on a house, and in defense of the rest of the Commission he does not think that a lot of the literature on vinyl siding had been published when the Commission approved some vinyl siding requests. Mr. O'Dell disagreed generally with this statement because a report on siding he has was first published in 1979 and the Commission minutes of 1980, 81, 82, and 83 indicate approvals of siding by the Commission. Dr. Roberts agreed, but stated she was appealing to him to reconsider and replace the wood siding on the structure and not continue to move further from preservation. Mr. O'Dell stated that there were many places in the minutes where the Commission and the owners discussed using vinyl matching the wood that is on a structure and that is the reason he has come with this compromise of this vinyl siding that matches the wood. He stated that they could stay and discuss this issue until "doomsday" and neither will be able to convince the other that what they are saying is appropriate. He stated that he is trying to resolve this now. He is worried that a lot of people in town who are watching this issue and saying to themselves that if there are that many controls, then why purchase a house in the districts and this could have a detrimental affect on the district. Chairman

Names:
Burwell, Jones, O'Dell, Roberts, Dr.

Places:
Huntsville, AL

Types:
minutes

Dates:
Apr 17, 1985



Hts. Dis Hist. Preservat. Comm

H. H. P. C.
Page 5
April 17, 1985

Jones disagreed. He stated that there are just as many people watching who will buy and redo the houses because of these controls and the protections that they will afford their investment.

Chairman Jones asked if there were any in the audience who wished to speak? One lady who lived in the area, stated the preservation process takes a long time and just have patience. Several other ladies in the area also stated their opinions that the wood siding on the house would look better than the vinyl. They all stated that they hoped the O'Dells would not take this personal.

Chairman Jones thanked those who spoke and stated that the Commission in the past year or so had turned down all of the requests for vinyl siding. It was not a question of whether they matched the wood or not, and he thought this was an important fact. He also noted that he did not know what legal position this would put those people whom the Commission turned down, if the Commission approved the O'Dell's request. Mr. O'Dell stated that he felt that their request was a special case and that those who had previously been denied by the Commission had the same right to appeal as he did but chose not to.

Chairman Jones stated that a major point in all this discussion was the fact that the O'Dell house is one of the outstanding houses in the districts and not some little cheap small rental house on a back street.

A gentlemen in the audience read a portion of a statement which he then submitted to the Commission, where he requested that the O'Dells' request be denied. (A copy of this statement is attached to and made a part of these minutes).

Ralph Allen stated that he did not think the O'Dell case was special since the O'Dells' had made a request to the Commission and that vinyl siding was placed on the house illegally.

Mr. O'Dell stated that what was done was done in ignorance and he made no excuses for it. He stated that the enabling act did not specifically restrict vinyl siding and did not give the Commission the right to rule on things or repairs which do not change the architectural features of the house. That is a matter that is subject to interpretation, he stated.

Chairman Jones stated that understanding all of this, time has brought about changes and more knowledge of these matters and the Alabama Historical Commission says vinyl siding will degrade a house. Mr. O'Dell stated that the State Historical Commission did not recommend vinyl siding but neither did it prohibit it.

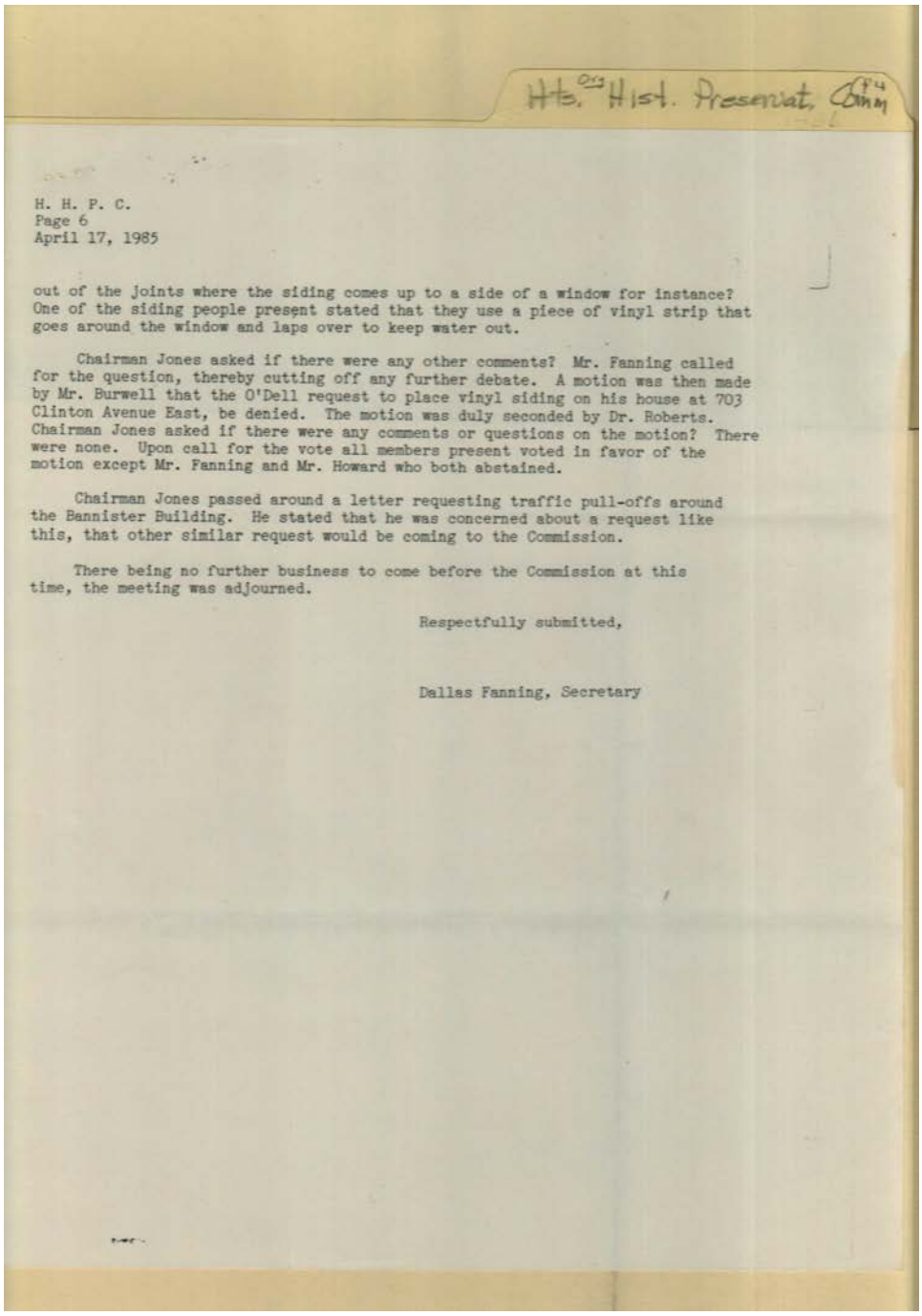
Mr. Lewis recounted the O'Dell request to cover everything below the decorative trim on the existing structure with vinyl siding and use lap wood siding on the new addition and back porch. This had already been started, Mr. O'Dell stated. He also stated that the vinyl siding idea was not his original intent but circumstances had brought it about. Mr. Lewis asked about the flat trim? Mr. O'Dell stated that it was the facings around the door and windows with a vinyl covering that will simulate wood and reduce his future painting costs. Chairman Jones asked the siding people present how they proposed to keep water

Names:
Allen, Ralph Jones, Lewis, O'Dell,

Places:
Huntsville, AL

Types:
minutes

Dates:
Apr 17, 1985



Hts. Dis. Hist. Preservat. Comm

out of the joints where the siding comes up to a side of a window for instance? One of the siding people present stated that they use a piece of vinyl strip that goes around the window and laps over to keep water out.

Chairman Jones asked if there were any other comments? Mr. Fanning called for the question, thereby cutting off any further debate. A motion was then made by Mr. Burwell that the O'Dell request to place vinyl siding on his house at 703 Clinton Avenue East, be denied. The motion was duly seconded by Dr. Roberts. Chairman Jones asked if there were any comments or questions on the motion? There were none. Upon call for the vote all members present voted in favor of the motion except Mr. Fanning and Mr. Howard who both abstained.

Chairman Jones passed around a letter requesting traffic pull-offs around the Bannister Building. He stated that he was concerned about a request like this, that other similar request would be coming to the Commission.

There being no further business to come before the Commission at this time, the meeting was adjourned.

Respectfully submitted,

Dallas Fanning, Secretary

Names:

Burwell, Fanning, Fanning, Dallas Howard, Jones, O'Dell, Roberts, Dr.

Places:

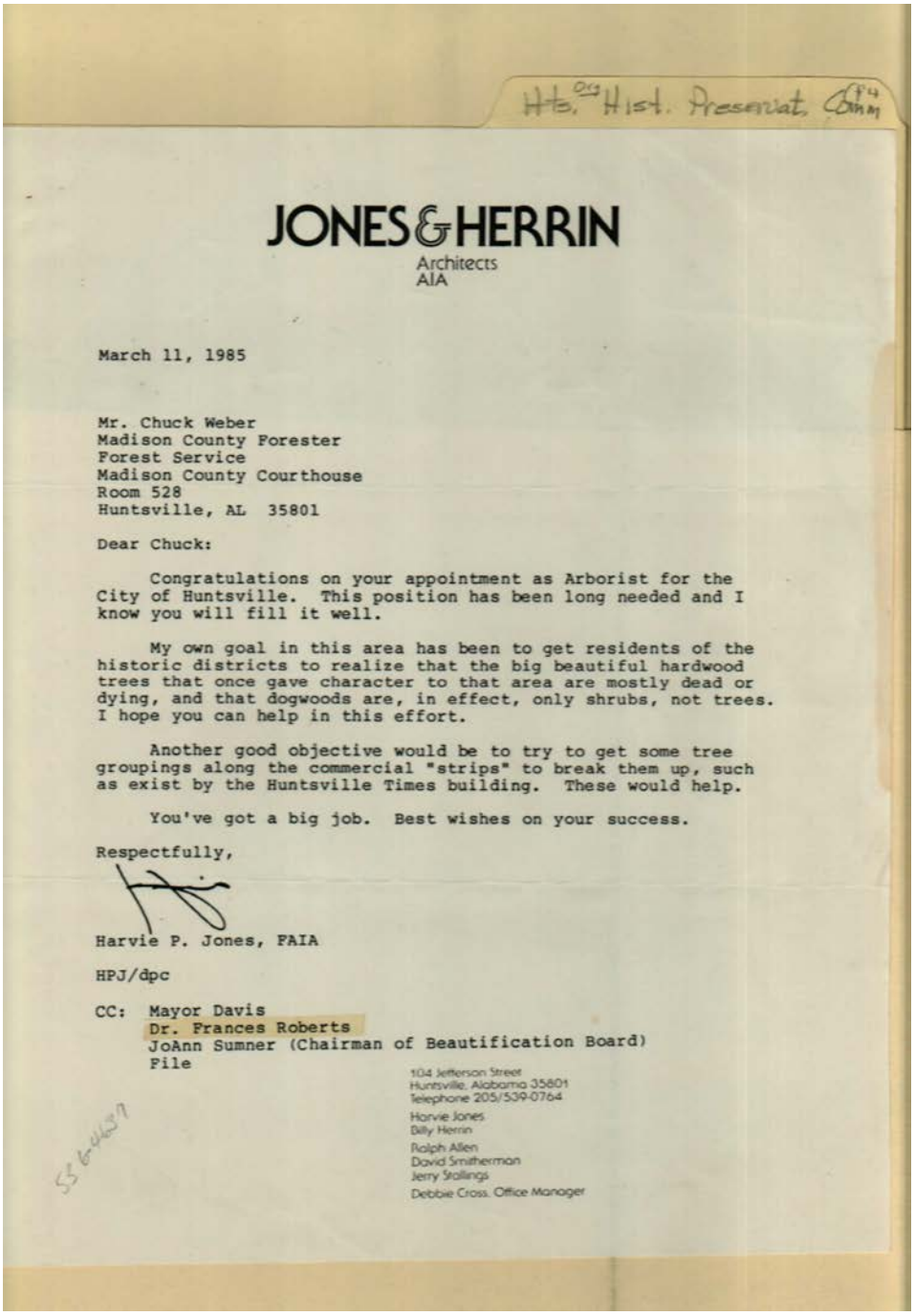
Huntsville, AL

Types:

minutes

Dates:

Apr 17, 1985



Hts. City Hist. Preservat. Comm

JONES & HERRIN
Architects
AIA

March 11, 1985

Mr. Chuck Weber
Madison County Forester
Forest Service
Madison County Courthouse
Room 528
Huntsville, AL 35801

Dear Chuck:

Congratulations on your appointment as Arborist for the City of Huntsville. This position has been long needed and I know you will fill it well.

My own goal in this area has been to get residents of the historic districts to realize that the big beautiful hardwood trees that once gave character to that area are mostly dead or dying, and that dogwoods are, in effect, only shrubs, not trees. I hope you can help in this effort.

Another good objective would be to try to get some tree groupings along the commercial "strips" to break them up, such as exist by the Huntsville Times building. These would help.

You've got a big job. Best wishes on your success.

Respectfully,

Harvie P. Jones, FAIA

HPJ/dpc

CC: Mayor Davis
Dr. Frances Roberts
JoAnn Sumner (Chairman of Beautification Board)
File

104 Jefferson Street
Huntsville, Alabama 35801
Telephone 205/539-0764

Harvie Jones
Billy Herrin

Ralph Allen
David Smitherman
Jerry Stallings

Debbie Cross, Office Manager

55-64637

Names:

Allen, Ralph
Cross, Debbie
Davis, Mayor
Herrin, Billy
Jones, Harvie P.
Roberts, Frances, Dr.
Smitherman, David
Stallings, Jerry
Sumner, JoAnn
Weber, Chuck

Places:

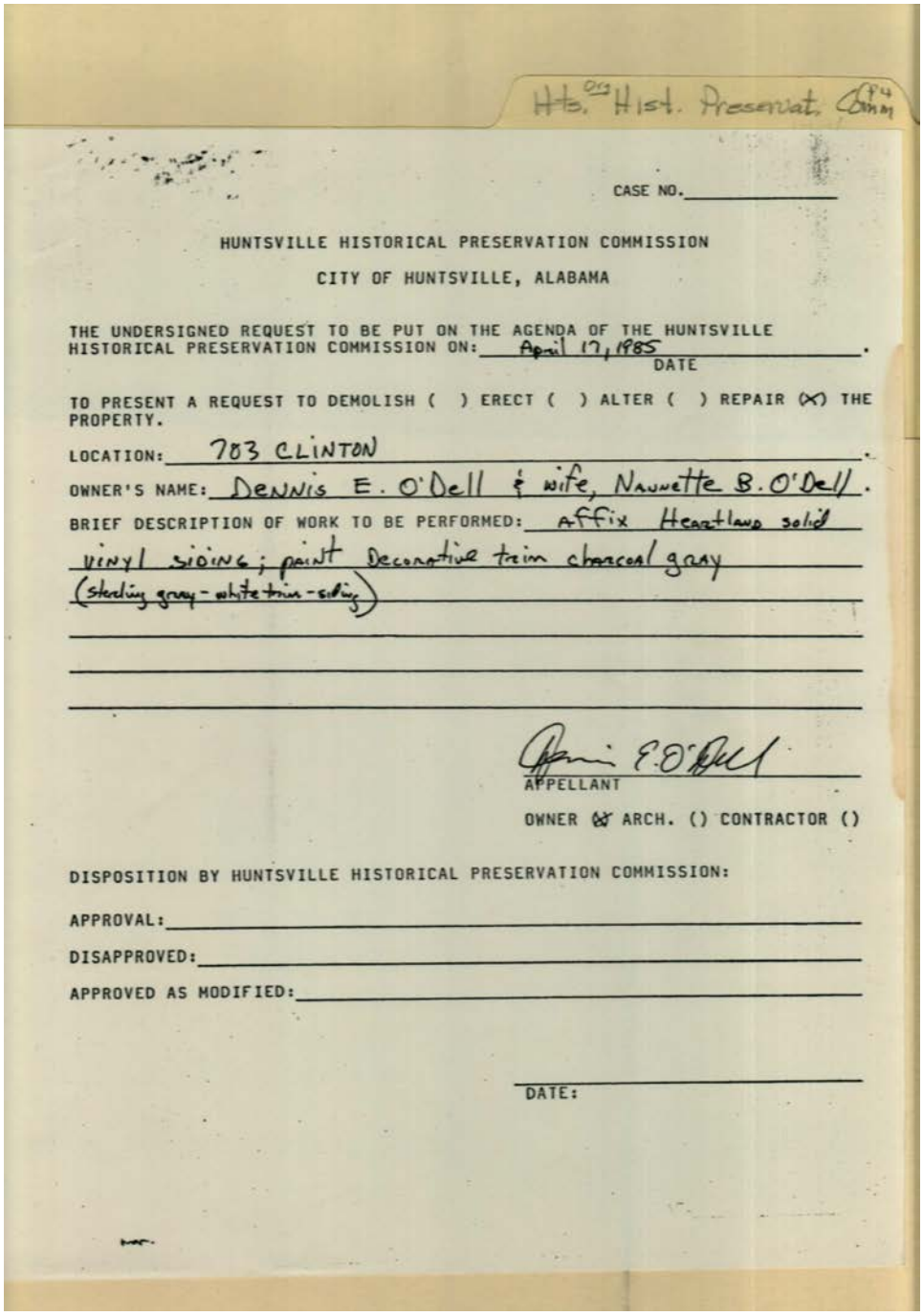
Huntsville, AL

Types:

correspondence

Dates:

Mar 11, 1985



Hts. Hist. Preservat. Comm

CASE NO._____

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION

CITY OF HUNTSVILLE, ALABAMA

THE UNDERSIGNED REQUEST TO BE PUT ON THE AGENDA OF THE HUNTSVILLE HISTORICAL PRESERVATION COMMISSION ON: April 17, 1985 (DATE).

TO PRESENT A REQUEST TO DEMOLISH ( ) ERECT ( ) ALTER ( ) REPAIR (X) THE PROPERTY.

LOCATION: 703 CLINTON

OWNER'S NAME: Dennis E. O'Dell & wife, Nannette B. O'Dell.

BRIEF DESCRIPTION OF WORK TO BE PERFORMED: Affix Heartland solid vinyl siding; paint Decorative trim charcoal gray (sterling gray - white trim - siding)

Dennis E. O'Dell
APPELLANT

OWNER (X) ARCH. ( ) CONTRACTOR ( )

DISPOSITION BY HUNTSVILLE HISTORICAL PRESERVATION COMMISSION:

APPROVAL:_____

DISAPPROVED:_____

APPROVED AS MODIFIED:_____

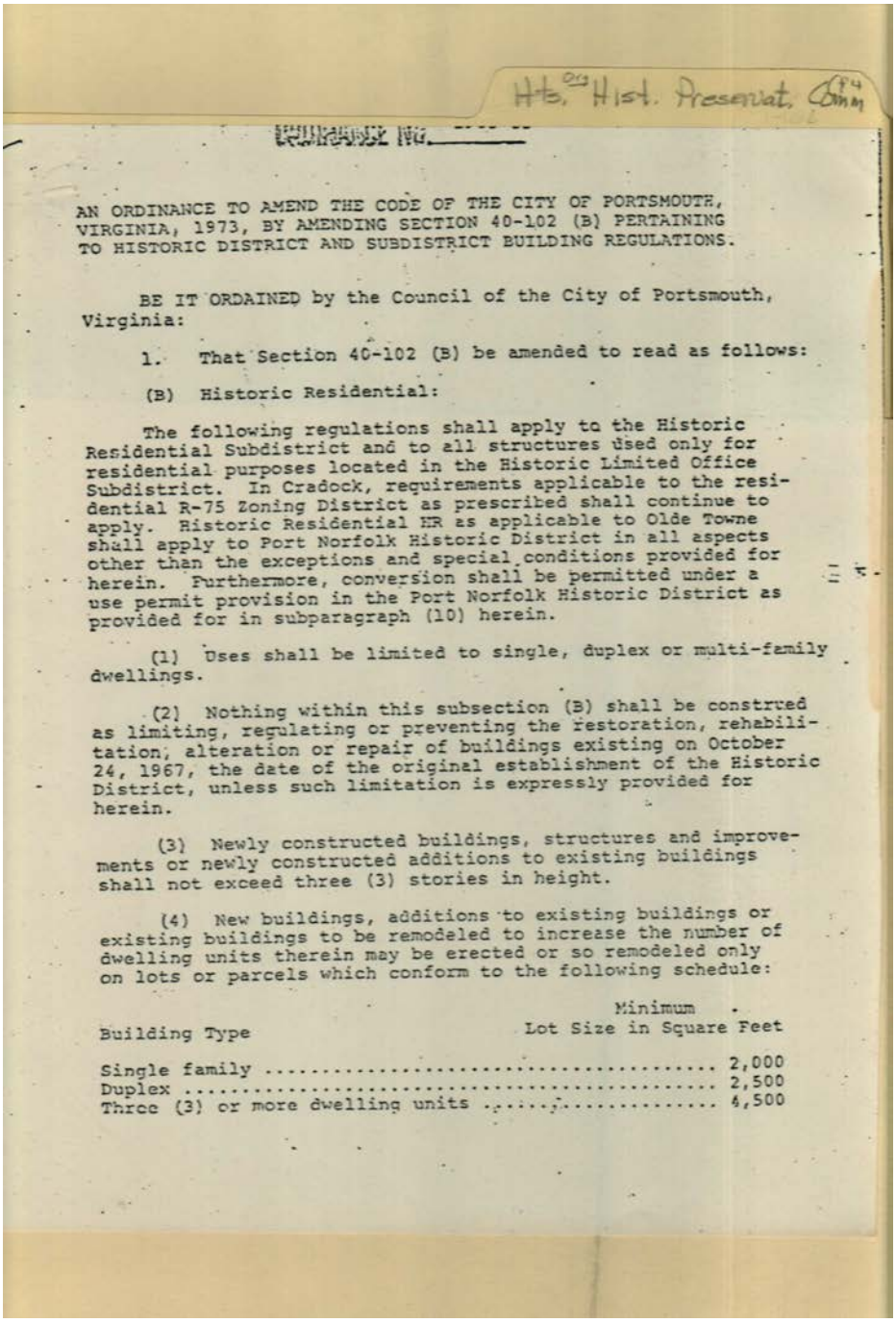
DATE:_____

Names:
O'Dell, Dennis E. O'Dell, Nannette B.

Places:
Huntsville, AL

Types:
application

Dates:
Apr 17, 1985



Hts. Dis Hist. Preservat. Comm

ORDINANCE NO. _____

AN ORDINANCE TO AMEND THE CODE OF THE CITY OF PORTSMOUTH, VIRGINIA, 1973, BY AMENDING SECTION 40-102 (B) PERTAINING TO HISTORIC DISTRICT AND SUBDISTRICT BUILDING REGULATIONS.

BE IT ORDAINED by the Council of the City of Portsmouth, Virginia:

1. That Section 40-102 (B) be amended to read as follows:

(B) Historic Residential:

The following regulations shall apply to the Historic Residential Subdistrict and to all structures used only for residential purposes located in the Historic Limited Office Subdistrict. In Cradock, requirements applicable to the residential R-75 Zoning District as prescribed shall continue to apply. Historic Residential HR as applicable to Olde Towne shall apply to Port Norfolk Historic District in all aspects other than the exceptions and special conditions provided for herein. Furthermore, conversion shall be permitted under a use permit provision in the Port Norfolk Historic District as provided for in subparagraph (10) herein.

(1) Uses shall be limited to single, duplex or multi-family dwellings.

(2) Nothing within this subsection (B) shall be construed as limiting, regulating or preventing the restoration, rehabilitation, alteration or repair of buildings existing on October 24, 1967, the date of the original establishment of the Historic District, unless such limitation is expressly provided for herein.

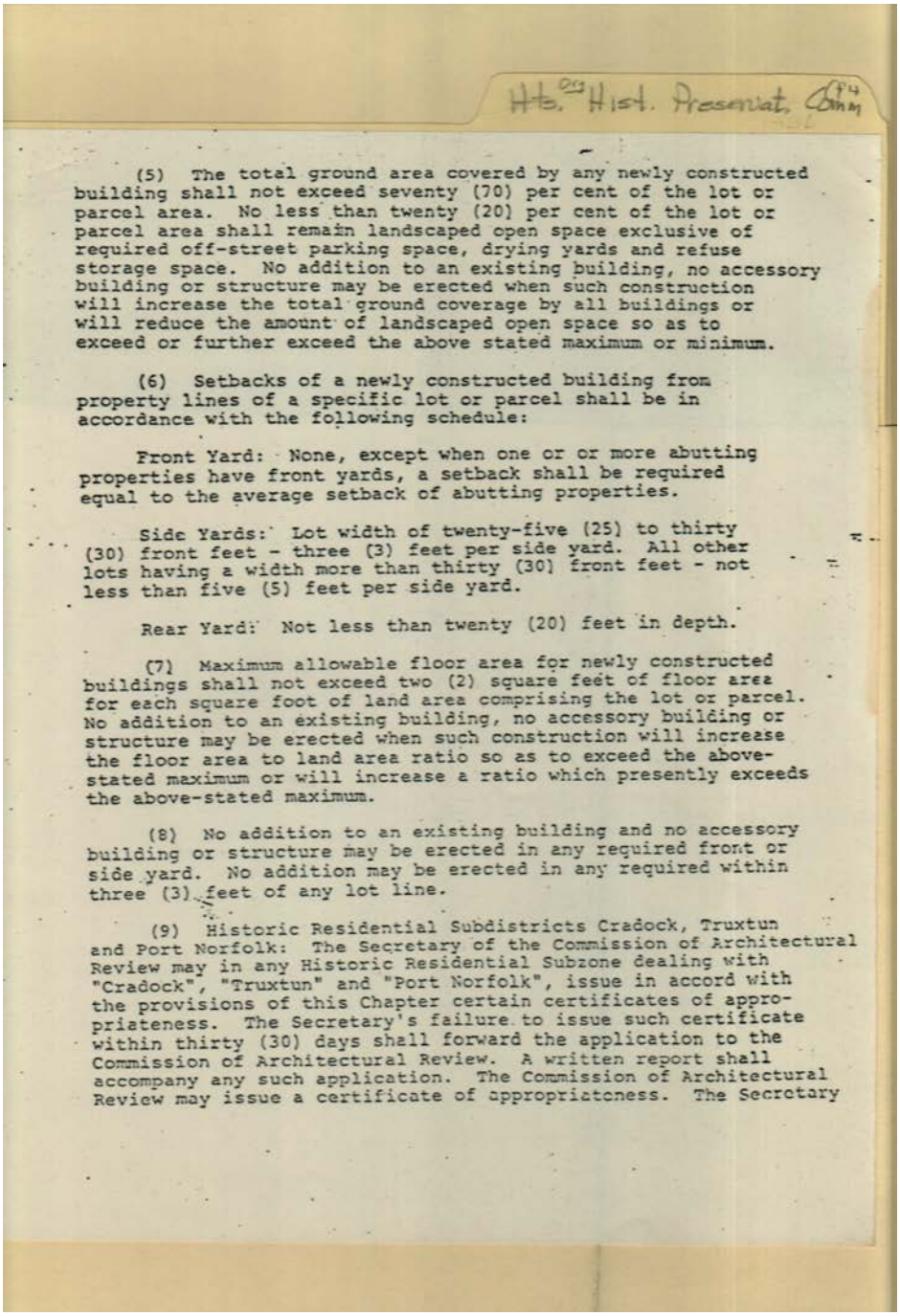
(3) Newly constructed buildings, structures and improvements or newly constructed additions to existing buildings shall not exceed three (3) stories in height.

(4) New buildings, additions to existing buildings or existing buildings to be remodeled to increase the number of dwelling units therein may be erected or so remodeled only on lots or parcels which conform to the following schedule:

Building Type	Minimum Lot Size in Square Feet
Single family	2,000
Duplex	2,500
Three (3) or more dwelling units	4,500

Places:
Portsmouth, VA

Types:
ordinance



Hts. Hist. Preservat. Comm

(5) The total ground area covered by any newly constructed building shall not exceed seventy (70) per cent of the lot or parcel area. No less than twenty (20) per cent of the lot or parcel area shall remain landscaped open space exclusive of required off-street parking space, drying yards and refuse storage space. No addition to an existing building, no accessory building or structure may be erected when such construction will increase the total ground coverage by all buildings or will reduce the amount of landscaped open space so as to exceed or further exceed the above stated maximum or minimum.

(6) Setbacks of a newly constructed building from property lines of a specific lot or parcel shall be in accordance with the following schedule:

Front Yard: None, except when one or or more abutting properties have front yards, a setback shall be required equal to the average setback of abutting properties.

Side Yards: Lot width of twenty-five (25) to thirty (30) front feet - three (3) feet per side yard. All other lots having a width more than thirty (30) front feet - not less than five (5) feet per side yard.

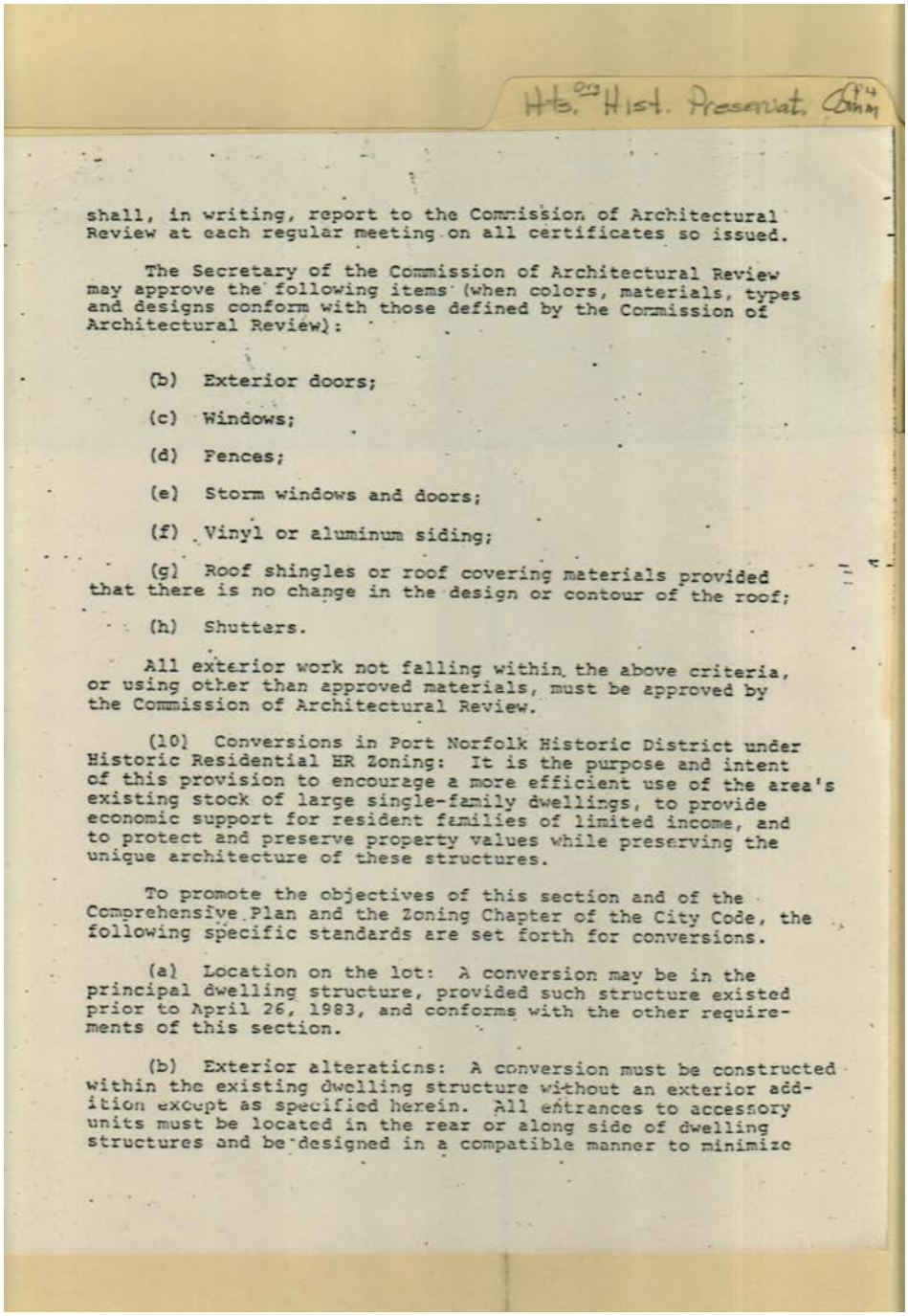
Rear Yard: Not less than twenty (20) feet in depth.

(7) Maximum allowable floor area for newly constructed buildings shall not exceed two (2) square feet of floor area for each square foot of land area comprising the lot or parcel. No addition to an existing building, no accessory building or structure may be erected when such construction will increase the floor area to land area ratio so as to exceed the above-stated maximum or will increase a ratio which presently exceeds the above-stated maximum.

(8) No addition to an existing building and no accessory building or structure may be erected in any required front or side yard. No addition may be erected in any required within three (3) feet of any lot line.

(9) Historic Residential Subdistricts Cradock, Truxtun and Port Norfolk: The Secretary of the Commission of Architectural Review may in any Historic Residential Subzone dealing with "Cradock", "Truxtun" and "Port Norfolk", issue in accord with the provisions of this Chapter certain certificates of appropriateness. The Secretary's failure to issue such certificate within thirty (30) days shall forward the application to the Commission of Architectural Review. A written report shall accompany any such application. The Commission of Architectural Review may issue a certificate of appropriateness. The Secretary

Types:
ordinance



Hts. Dis Hist. Preservat. Comm 84

shall, in writing, report to the Commission of Architectural Review at each regular meeting on all certificates so issued.

The Secretary of the Commission of Architectural Review may approve the following items (when colors, materials, types and designs conform with those defined by the Commission of Architectural Review):

(b) Exterior doors;

(c) Windows;

(d) Fences;

(e) Storm windows and doors;

(f) Vinyl or aluminum siding;

(g) Roof shingles or roof covering materials provided that there is no change in the design or contour of the roof;

(h) Shutters.

All exterior work not falling within the above criteria, or using other than approved materials, must be approved by the Commission of Architectural Review.

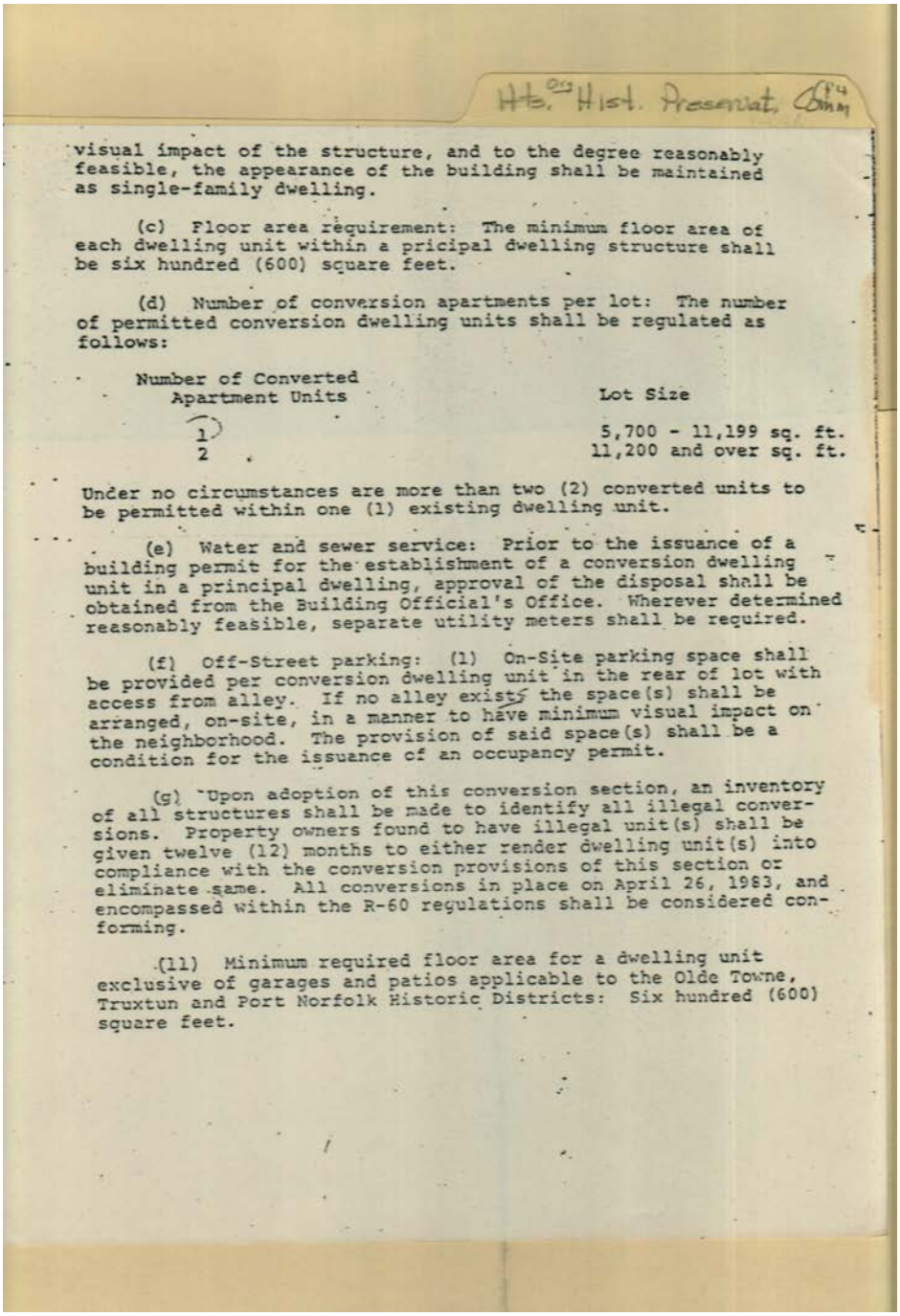
(10) Conversions in Port Norfolk Historic District under Historic Residential HR Zoning: It is the purpose and intent of this provision to encourage a more efficient use of the area's existing stock of large single-family dwellings, to provide economic support for resident families of limited income, and to protect and preserve property values while preserving the unique architecture of these structures.

To promote the objectives of this section and of the Comprehensive Plan and the Zoning Chapter of the City Code, the following specific standards are set forth for conversions.

(a) Location on the lot: A conversion may be in the principal dwelling structure, provided such structure existed prior to April 26, 1983, and conforms with the other requirements of this section.

(b) Exterior alterations: A conversion must be constructed within the existing dwelling structure without an exterior addition except as specified herein. All entrances to accessory units must be located in the rear or along side of dwelling structures and be designed in a compatible manner to minimize

Types:
ordinance



Hts. Dev. Hist. Preservat. Comm

visual impact of the structure, and to the degree reasonably feasible, the appearance of the building shall be maintained as single-family dwelling.

(c) Floor area requirement: The minimum floor area of each dwelling unit within a pricipal dwelling structure shall be six hundred (600) square feet.

(d) Number of conversion apartments per lot: The number of permitted conversion dwelling units shall be regulated as follows:

Number of Converted Apartment Units	Lot Size
1	5,700 - 11,199 sq. ft.
2	11,200 and over sq. ft.

Under no circumstances are more than two (2) converted units to be permitted within one (1) existing dwelling unit.

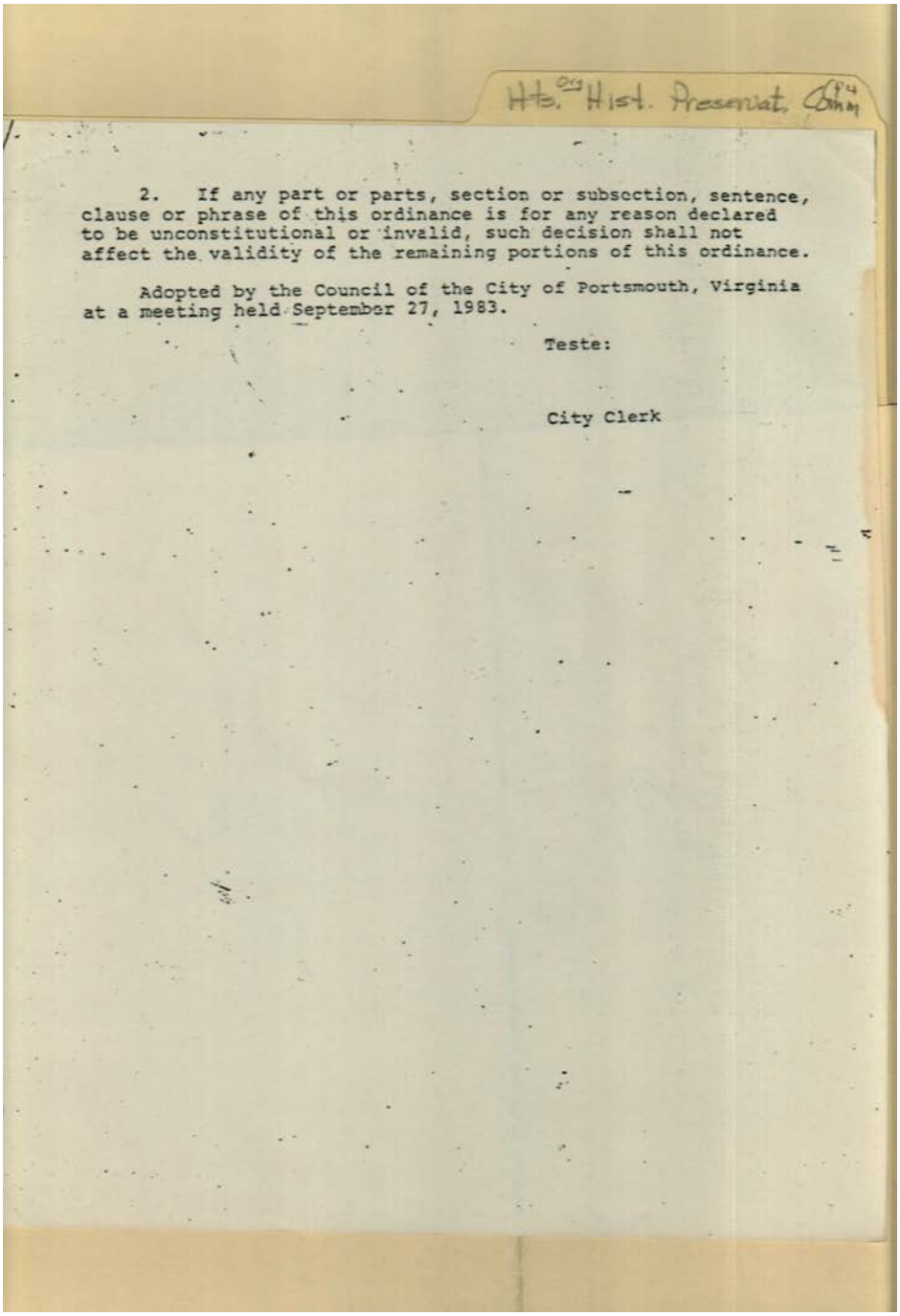
(e) Water and sewer service: Prior to the issuance of a building permit for the establishment of a conversion dwelling unit in a principal dwelling, approval of the disposal shall be obtained from the Building Official's Office. Wherever determined reasonably feasible, separate utility meters shall be required.

(f) Off-Street parking: (1) On-Site parking space shall be provided per conversion dwelling unit in the rear of lot with access from alley. If no alley exists the space(s) shall be arranged, on-site, in a manner to have minimum visual impact on the neighborhood. The provision of said space(s) shall be a condition for the issuance of an occupancy permit.

(g) Upon adoption of this conversion section, an inventory of all structures shall be made to identify all illegal conversions. Property owners found to have illegal unit(s) shall be given twelve (12) months to either render dwelling unit(s) into compliance with the conversion provisions of this section or eliminate same. All conversions in place on April 26, 1983, and encompassed within the R-60 regulations shall be considered conforming.

(11) Minimum required floor area for a dwelling unit exclusive of garages and patios applicable to the Olde Towne, Truxtun and Port Norfolk Historic Districts: Six hundred (600) square feet.

Types:
ordinance



Hts. Dev Hist. Preservat. Comm

2. If any part or parts, section or subsection, sentence, clause or phrase of this ordinance is for any reason declared to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of this ordinance.

Adopted by the Council of the City of Portsmouth, Virginia at a meeting held September 27, 1983.

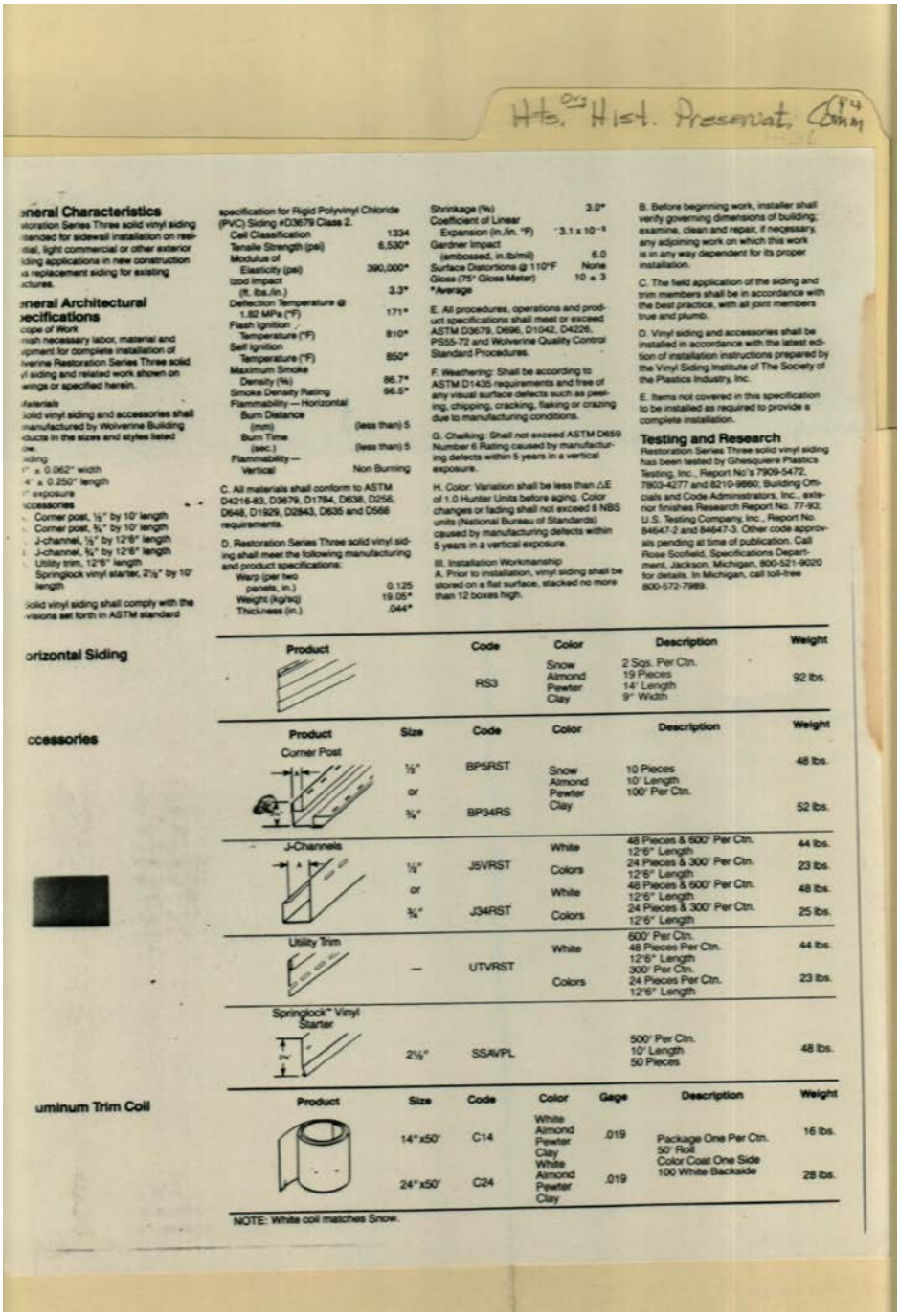
Teste:

City Clerk

Places:
Portsmouth, VA

Types:
ordinance

Dates:
Sep 27, 1983



Hts. Hist. Preservat. Comm

eneral Characteristics

storation Series Three solid vinyl siding tended for sidewall installation on resi- tial, light commercial or other exterior ding applications in new construction d replacement siding for existing ctures.

eneral Architectural ecifications

cope of Work
nish necessary labor, material and pment for complete installation of verine Restoration Series Three solid d siding and related work shown on wings or specified herein.

Materials
olid vinyl siding and accessories shall manufactured by Wolverine Building ducts in the sizes and styles listed ow.
iding:
" x 0.062" width
4" x 0.250" length
" exposure
ccessories
Corner post, ½" by 10' length
Corner post, ¾" by 10' length
J-channel, ½" by 12'6" length
J-channel, ¾" by 12'6" length
Utility trim, 12'6" length
Springlock vinyl starter, 2½" by 10' length

olid vinyl siding shall comply with the visions set forth in ASTM standard specification for Rigid Polyvinyl Chloride (PVC) Siding #D3679 Class 2.

Cell Classification	1334
Tensile Strength (psi)	6,530*
Modulus of Elasticity (psi)	390,000*
Izod Impact (ft. lbs./in.)	3.3*
Deflection Temperature @ 1.82 MPa (°F)	171*
Flash Ignition Temperature (°F)	810*
Self Ignition Temperature (°F)	850*
Maximum Smoke Density (%)	86.7*
Smoke Density Rating	66.5*
Flammability — Horizontal Burn Distance (mm)	(less than) 5
Burn Time (sec.)	(less than) 5
Flammability — Vertical	Non Burning

C. All materials shall conform to ASTM D4216-83, D3679, D1784, D638, D256, D648, D1929, D2843, D635 and D568 requirements.

D. Restoration Series Three solid vinyl siding shall meet the following manufacturing and product specifications:

Warp (per two panels, in.)	0.125
Weight (kg/sq)	19.05*
Thickness (in.)	.044*
Shrinkage (%)	3.0*
Coefficient of Linear Expansion (in./in. °F)	3.1 x 10⁻⁵
Gardner Impact (embossed, in.lb/mil)	6.0
Surface Distortions @ 110°F	None
Gloss (75° Gloss Meter)	10 ± 3

*Average

E. All procedures, operations and product specifications shall meet or exceed ASTM D3679, D696, D1042, D4226, PS55-72 and Wolverine Quality Control Standard Procedures.

F. Weathering: Shall be according to ASTM D1435 requirements and free of any visual surface defects such as peeling, chipping, cracking, flaking or crazing due to manufacturing conditions.

G. Chalking: Shall not exceed ASTM D659 Number 6 Rating caused by manufacturing defects within 5 years in a vertical exposure.

H. Color: Variation shall be less than ΔE of 1.0 Hunter Units before aging. Color changes or fading shall not exceed 8 NBS units (National Bureau of Standards) caused by manufacturing defects within 5 years in a vertical exposure.

III. Installation Workmanship
A. Prior to installation, vinyl siding shall be stored on a flat surface, stacked no more than 12 boxes high.

B. Before beginning work, installer shall verify governing dimensions of building; examine, clean and repair, if necessary, any adjoining work on which this work is in any way dependent for its proper installation.

C. The field application of the siding and trim members shall be in accordance with the best practice, with all joint members true and plumb.

D. Vinyl siding and accessories shall be installed in accordance with the latest edition of installation instructions prepared by the Vinyl Siding Institute of The Society of the Plastics Industry, Inc.

E. Items not covered in this specification to be installed as required to provide a complete installation.

Testing and Research

Restoration Series Three solid vinyl siding has been tested by Ghesquiere Plastics Testing, Inc., Report No's 7909-5472, 7903-4277 and 8210-9860; Building Officials and Code Administrators, Inc., exterior finishes Research Report No. 77-93; U.S. Testing Company, Inc., Report No. 84647-2 and 84647-3. Other code approvals pending at time of publication. Call Rose Scofield, Specifications Department, Jackson, Michigan, 800-521-9020 for details. In Michigan, call toll-free 800-572-7989.

orizontal Siding

Product	Code	Color	Description	Weight
	RS3	Snow Almond Pewter Clay	2 Sqs. Per Ctn. 19 Pieces 14' Length 9" Width	92 lbs.

ccessories

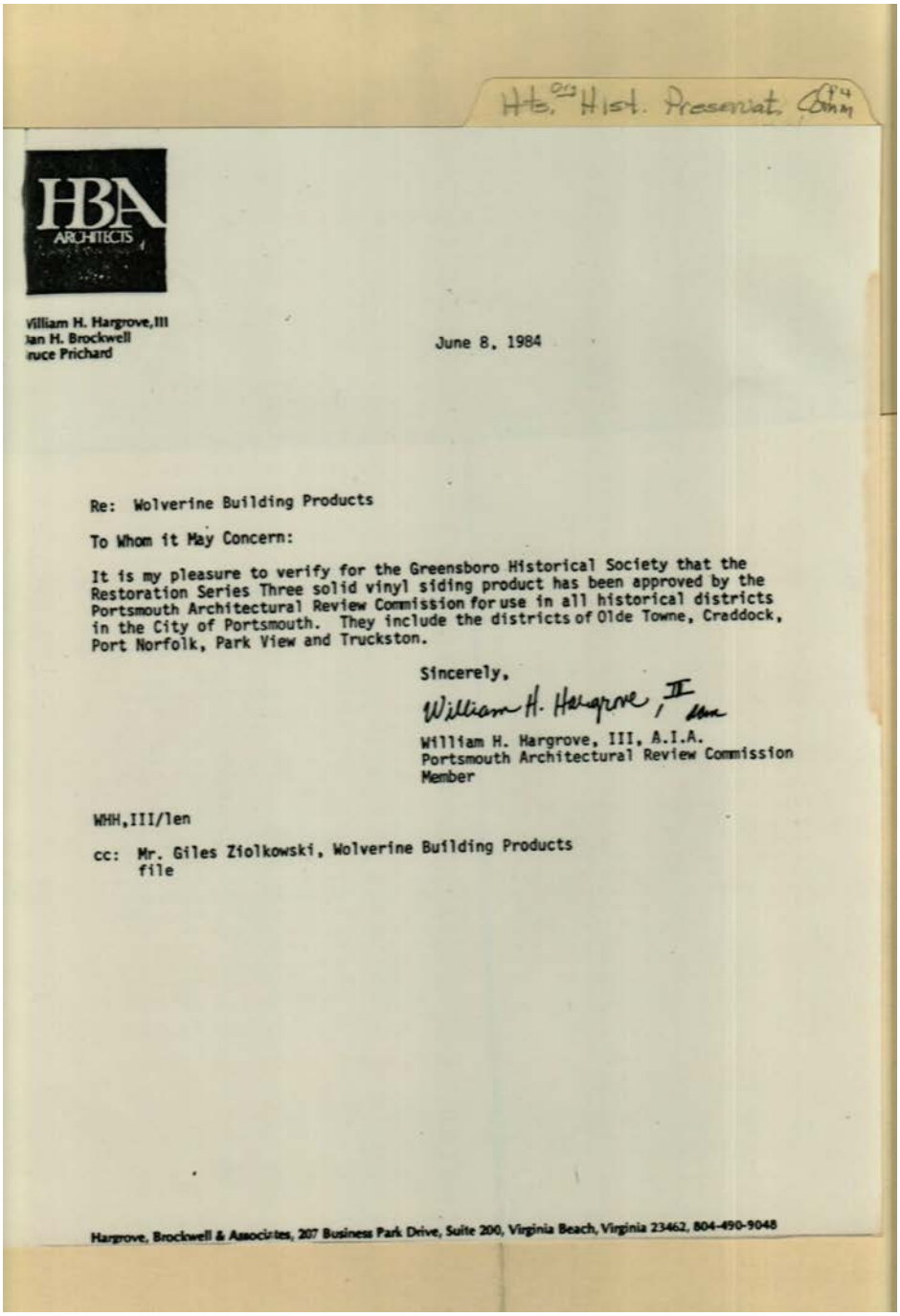
Product	Size	Code	Color	Description	Weight
Corner Post	½"	BP5RST	Snow Almond Pewter Clay	10 Pieces 10' Length 100' Per Ctn.	48 lbs.
	or ¾"	BP34RS			52 lbs.
J-Channels	½"	J5VRST	White	48 Pieces & 600' Per Ctn. 12'6" Length	44 lbs.
			Colors	24 Pieces & 300' Per Ctn. 12'6" Length	23 lbs.
	or ¾"	J34RST	White	48 Pieces & 600' Per Ctn. 12'6" Length	48 lbs.
			Colors	24 Pieces & 300' Per Ctn. 12'6" Length	25 lbs.
Utility Trim	—	UTVRST	White	600' Per Ctn. 48 Pieces Per Ctn. 12'6" Length	44 lbs.
			Colors	300' Per Ctn. 24 Pieces Per Ctn. 12'6" Length	23 lbs.
Springlock™ Vinyl Starter	2½"	SSAVPL		500' Per Ctn. 10' Length 50 Pieces	48 lbs.

uminum Trim Coil

Product	Size	Code	Color	Gage	Description	Weight
	14"x50'	C14	White Almond Pewter Clay	.019	Package One Per Ctn. 50' Roll Color Coat One Side 100 White Backside	16 lbs.
	24"x50'	C24	White Almond Pewter Clay	.019		28 lbs.

NOTE: White coil matches Snow.

Types:
specifications



Hts. Dis. Hist. Preservat. Comm

HBA ARCHITECTS

William H. Hargrove,III
Jan H. Brockwell
Bruce Prichard

June 8, 1984

Re: Wolverine Building Products

To Whom it May Concern:

It is my pleasure to verify for the Greensboro Historical Society that the Restoration Series Three solid vinyl siding product has been approved by the Portsmouth Architectural Review Commission for use in all historical districts in the City of Portsmouth. They include the districts of Olde Towne, Craddock, Port Norfolk, Park View and Truckston.

Sincerely,

William H. Hargrove, III

William H. Hargrove, III, A.I.A.
Portsmouth Architectural Review Commission
Member

WHH,III/len

cc: Mr. Giles Ziolkowski, Wolverine Building Products
file

Hargrove, Brockwell & Associates, 207 Business Park Drive, Suite 200, Virginia Beach, Virginia 23462, 804-490-9048

Names:

Brockwell, Jan H.
Hargrove, William H., III
Prichard, Bruce
Ziolkowski, Giles

Places:

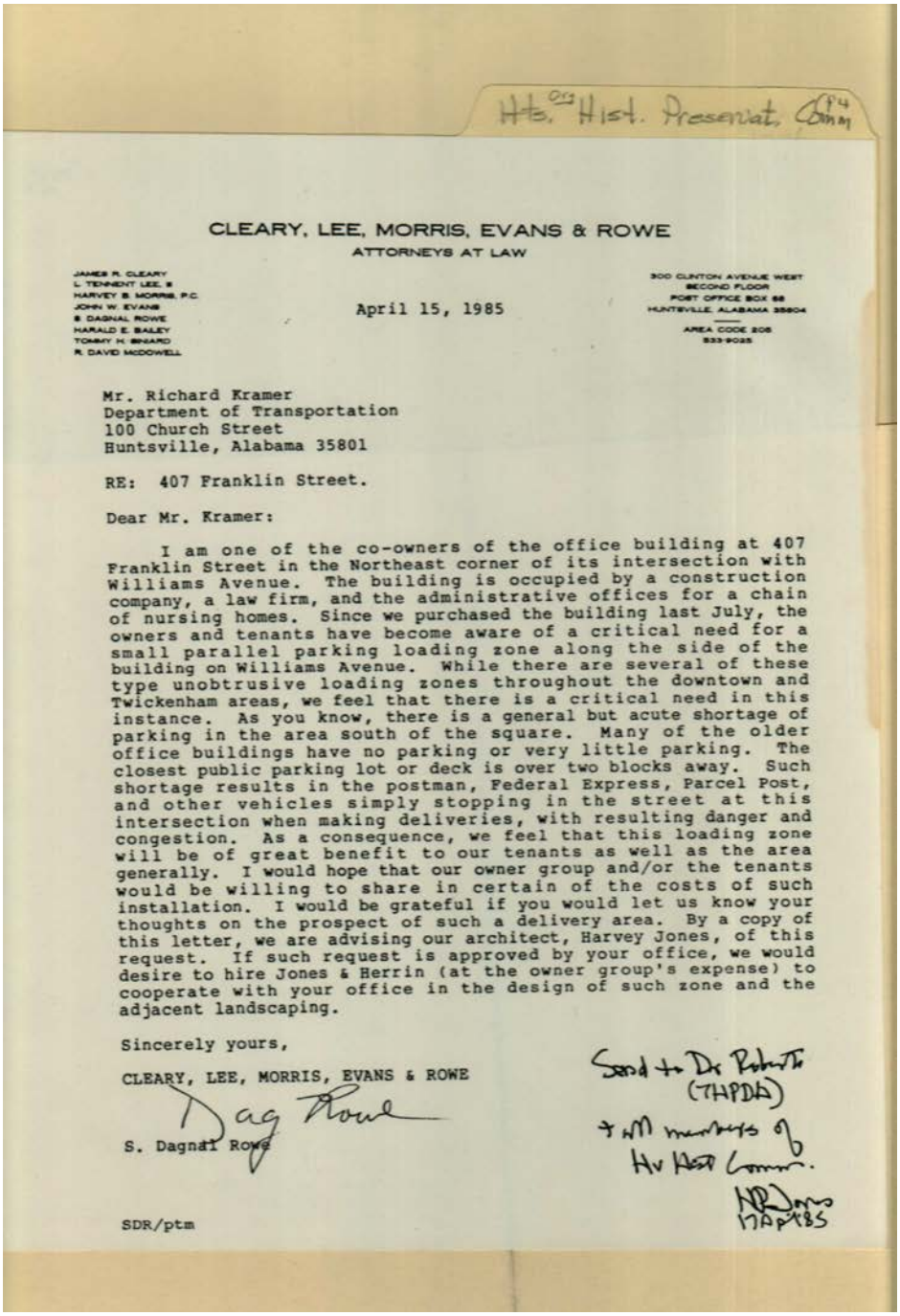
Virginia Beach, VA

Types:

correspondence

Dates:

Jun 08, 1984



Hts. Hist. Preservat. Comm

CLEARY, LEE, MORRIS, EVANS & ROWE
ATTORNEYS AT LAW

JAMES R. CLEARY
L. TENNENT LEE, II
HARVEY B. MORRIS, P.C.
JOHN W. EVANS
S. DAGNAL ROWE
HARALD E. BAILEY
TOMMY H. SINARD
R. DAVID McDOWELL

300 CLINTON AVENUE WEST
SECOND FLOOR
POST OFFICE BOX 88
HUNTSVILLE, ALABAMA 35804
AREA CODE 205
533-9025

April 15, 1985

Mr. Richard Kramer
Department of Transportation
100 Church Street
Huntsville, Alabama 35801

RE: 407 Franklin Street.

Dear Mr. Kramer:

I am one of the co-owners of the office building at 407 Franklin Street in the Northeast corner of its intersection with Williams Avenue. The building is occupied by a construction company, a law firm, and the administrative offices for a chain of nursing homes. Since we purchased the building last July, the owners and tenants have become aware of a critical need for a small parallel parking loading zone along the side of the building on Williams Avenue. While there are several of these type unobtrusive loading zones throughout the downtown and Twickenham areas, we feel that there is a critical need in this instance. As you know, there is a general but acute shortage of parking in the area south of the square. Many of the older office buildings have no parking or very little parking. The closest public parking lot or deck is over two blocks away. Such shortage results in the postman, Federal Express, Parcel Post, and other vehicles simply stopping in the street at this intersection when making deliveries, with resulting danger and congestion. As a consequence, we feel that this loading zone will be of great benefit to our tenants as well as the area generally. I would hope that our owner group and/or the tenants would be willing to share in certain of the costs of such installation. I would be grateful if you would let us know your thoughts on the prospect of such a delivery area. By a copy of this letter, we are advising our architect, Harvey Jones, of this request. If such request is approved by your office, we would desire to hire Jones & Herrin (at the owner group's expense) to cooperate with your office in the design of such zone and the adjacent landscaping.

Sincerely yours,

CLEARY, LEE, MORRIS, EVANS & ROWE

Dag Rowe

S. Dagnal Rowe

SDR/ptm

Send to Dr Roberts (THPDA)
+ all members of Hv Hist Comm.
MAP 4/85

Names:

Bailey, Harald, E.
Cleary, James R.
Evans, John W.
Jones, H. P.
Kramer, Richard
Lee, L. Tennent
McDowell, R. David
Morris, Harvey B.
Roberts, Dr.
Rowe, S. Dagnal
Sinard, Tommy H.

Places:

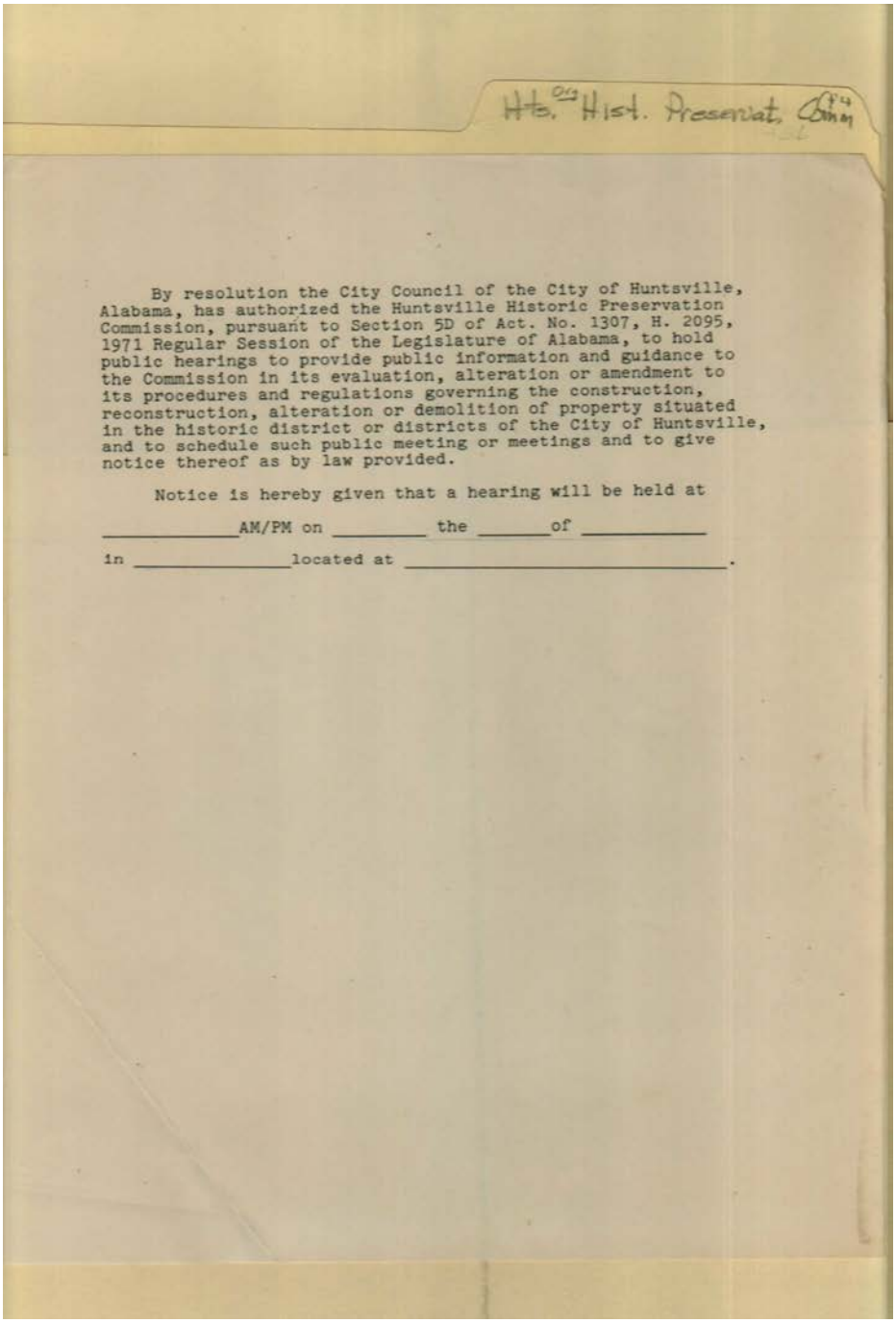
Huntsville, AL

Types:

correspondence

Dates:

Apr 15, 1985



Hts. Org Hist. Preservat. Comm

By resolution the City Council of the City of Huntsville, Alabama, has authorized the Huntsville Historic Preservation Commission, pursuant to Section 5D of Act. No. 1307, H. 2095, 1971 Regular Session of the Legislature of Alabama, to hold public hearings to provide public information and guidance to the Commission in its evaluation, alteration or amendment to its procedures and regulations governing the construction, reconstruction, alteration or demolition of property situated in the historic district or districts of the City of Huntsville, and to schedule such public meeting or meetings and to give notice thereof as by law provided.

Notice is hereby given that a hearing will be held at

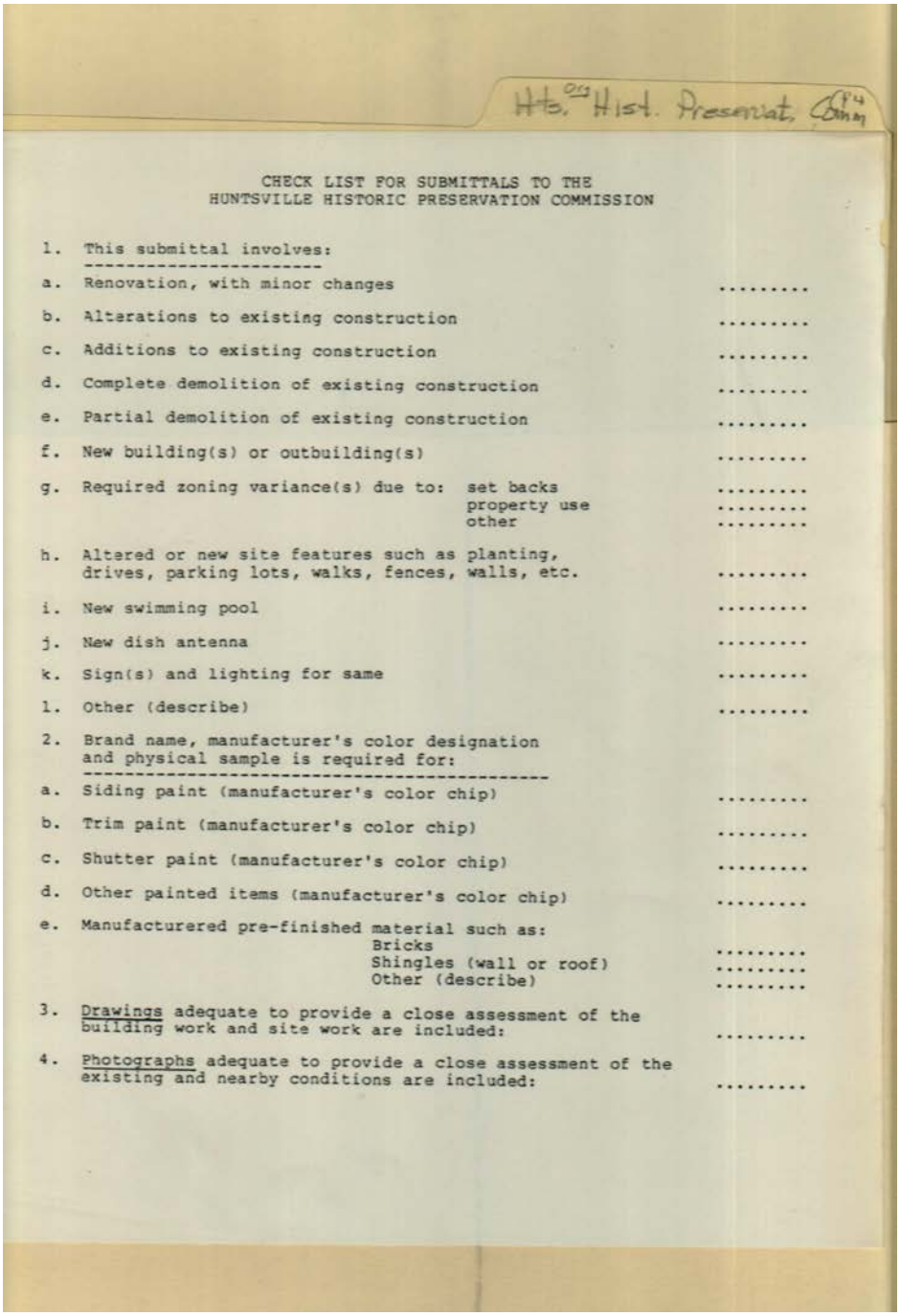
_____AM/PM on _____ the _____of _____

in _____located at _____.

Names:
Huntsville Historic Preservation Comm.

Places:
Huntsville, AL

Types:
resolution



Hts. Org Hist. Preservat. Comm 84

CHECK LIST FOR SUBMITTALS TO THE
HUNTSVILLE HISTORIC PRESERVATION COMMISSION

1. This submittal involves:
   ---
   a. Renovation, with minor changes .....
   b. Alterations to existing construction .....
   c. Additions to existing construction .....
   d. Complete demolition of existing construction .....
   e. Partial demolition of existing construction .....
   f. New building(s) or outbuilding(s) .....
   g. Required zoning variance(s) due to: set backs .....
      property use .....
      other .....
   h. Altered or new site features such as planting, drives, parking lots, walks, fences, walls, etc. .....
   i. New swimming pool .....
   j. New dish antenna .....
   k. Sign(s) and lighting for same .....
   l. Other (describe) .....

2. Brand name, manufacturer's color designation and physical sample is required for:
   ---
   a. Siding paint (manufacturer's color chip) .....
   b. Trim paint (manufacturer's color chip) .....
   c. Shutter paint (manufacturer's color chip) .....
   d. Other painted items (manufacturer's color chip) .....
   e. Manufacturered pre-finished material such as:
      Bricks .....
      Shingles (wall or roof) .....
      Other (describe) .....

3. Drawings adequate to provide a close assessment of the building work and site work are included: .....

4. Photographs adequate to provide a close assessment of the existing and nearby conditions are included: .....

Names:
Submittal Checklist

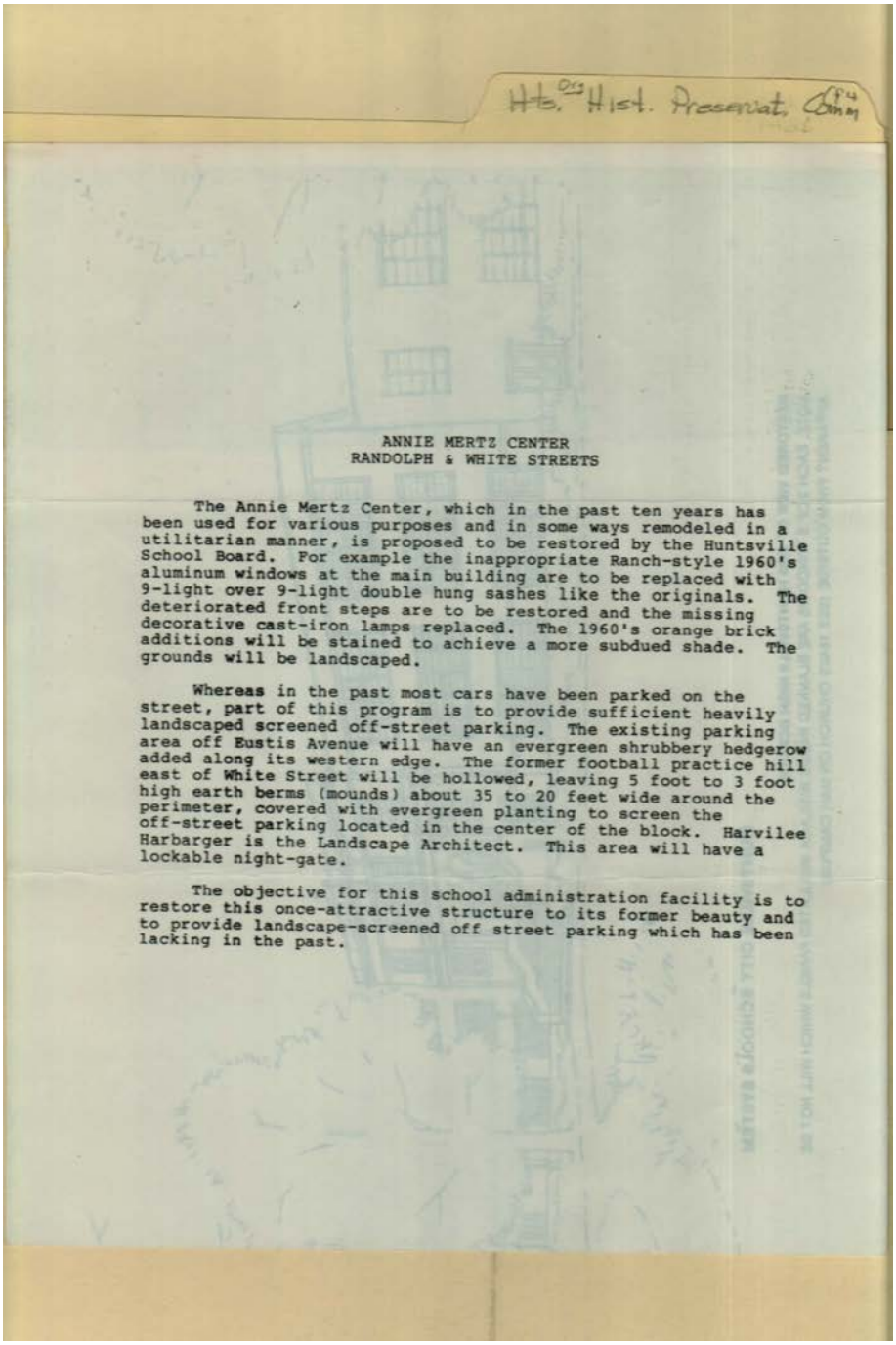
Places:
Huntsville, AL

Types:
form

Names:
Huntsville High School Restored View

Places:
Huntsville, AL

Types:
drawing



Hts. Dis Hist. Preservat. Comm

ANNIE MERTZ CENTER
RANDOLPH & WHITE STREETS

The Annie Mertz Center, which in the past ten years has been used for various purposes and in some ways remodeled in a utilitarian manner, is proposed to be restored by the Huntsville School Board. For example the inappropriate Ranch-style 1960's aluminum windows at the main building are to be replaced with 9-light over 9-light double hung sashes like the originals. The deteriorated front steps are to be restored and the missing decorative cast-iron lamps replaced. The 1960's orange brick additions will be stained to achieve a more subdued shade. The grounds will be landscaped.

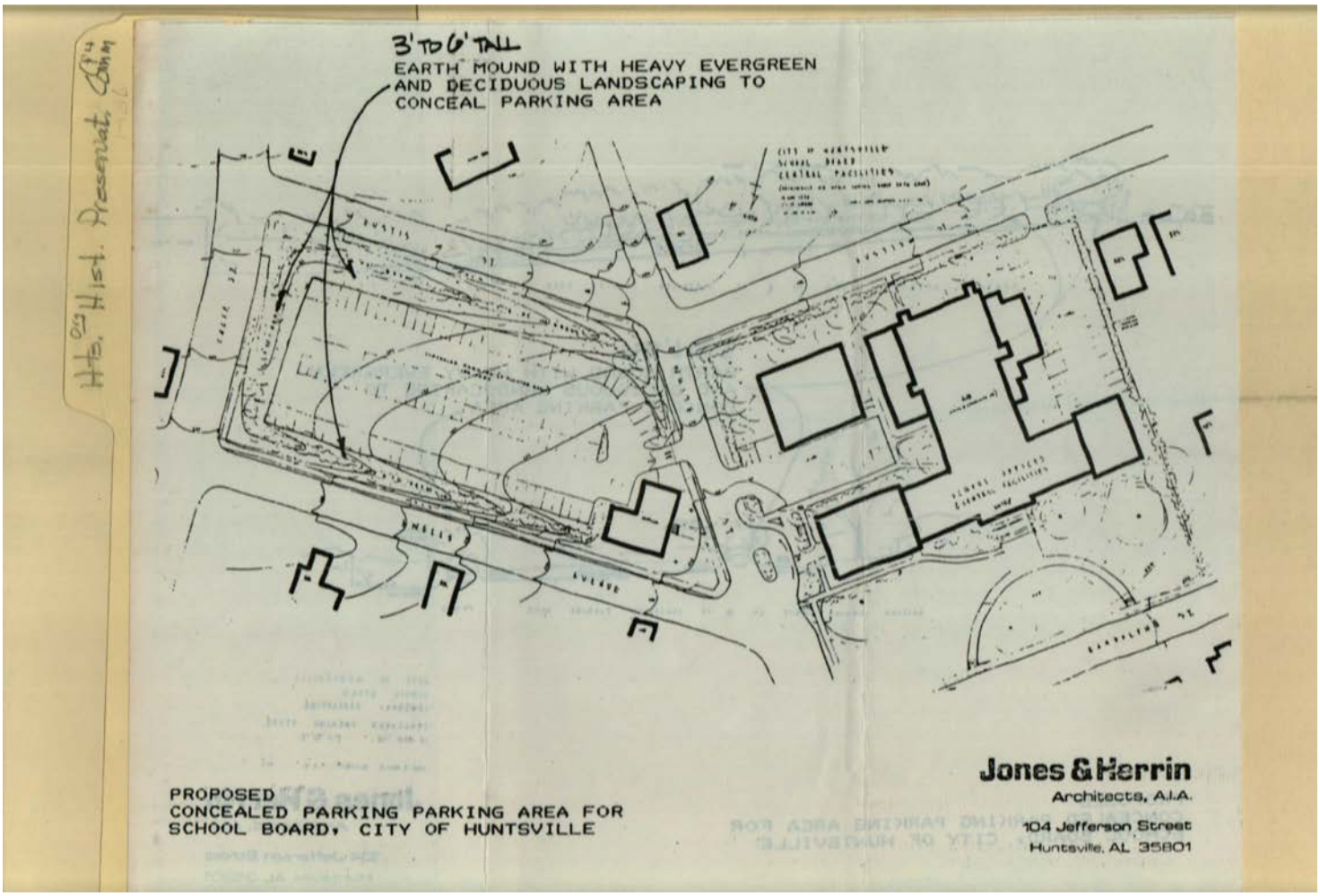
Whereas in the past most cars have been parked on the street, part of this program is to provide sufficient heavily landscaped screened off-street parking. The existing parking area off Eustis Avenue will have an evergreen shrubbery hedgerow added along its western edge. The former football practice hill east of White Street will be hollowed, leaving 5 foot to 3 foot high earth berms (mounds) about 35 to 20 feet wide around the perimeter, covered with evergreen planting to screen the off-street parking located in the center of the block. Harvilee Harbarger is the Landscape Architect. This area will have a lockable night-gate.

The objective for this school administration facility is to restore this once-attractive structure to its former beauty and to provide landscape-screened off street parking which has been lacking in the past.

Names:
Annie Mertz Center

Places:
Huntsville, AL

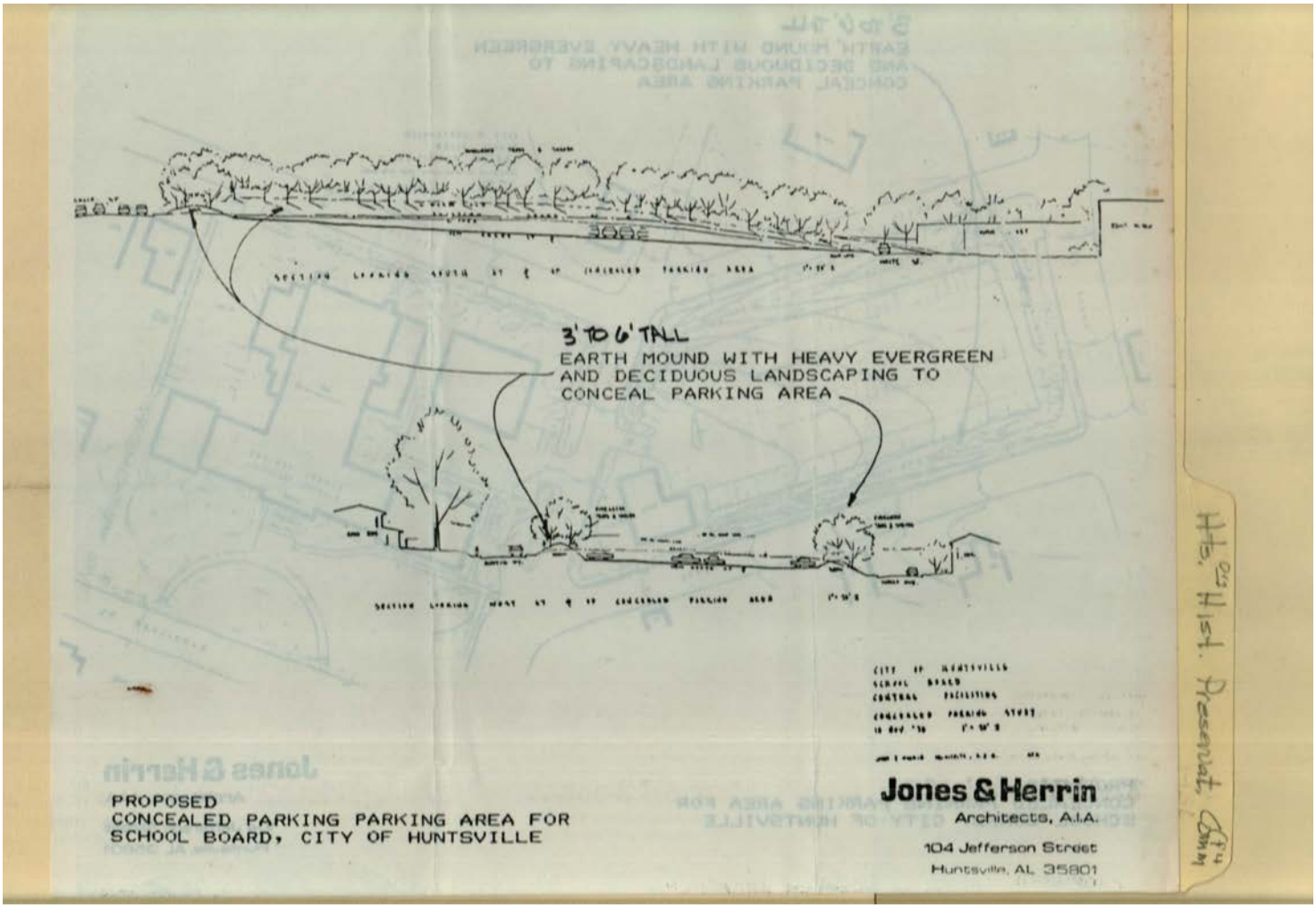
Types:
plans



Names:
Parking Area for
School Board

Places:
Huntsville, AL

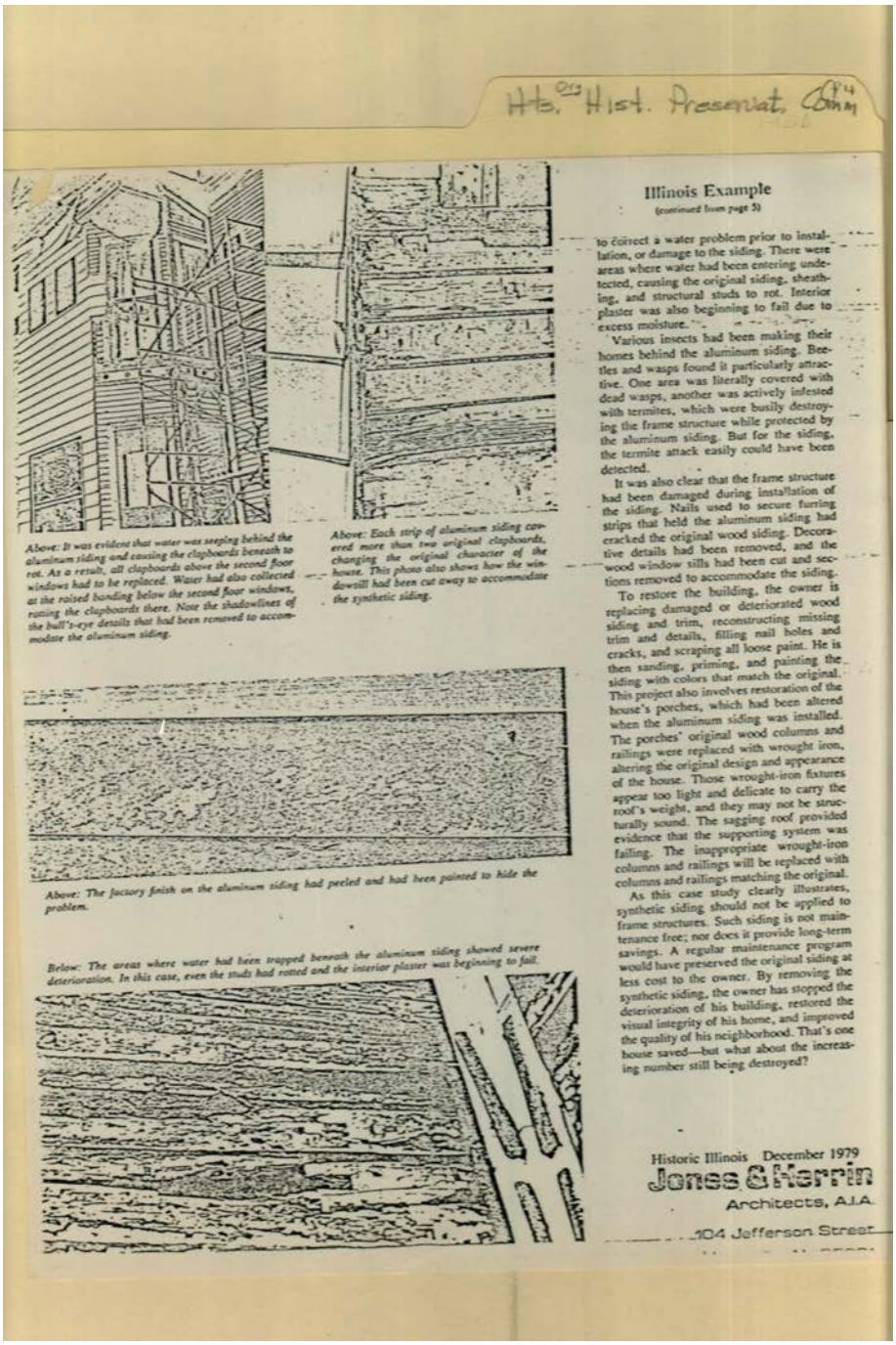
Types:
drawing



Names:
Parking Area for
School Board

Places:
Huntsville, AL

Types:
drawing



Hts. Hist. Preservat. Comm

Illinois Example

(continued from page 5)

to correct a water problem prior to installation, or damage to the siding. There were areas where water had been entering undetected, causing the original siding, sheathing, and structural studs to rot. Interior plaster was also beginning to fail due to excess moisture.

Various insects had been making their homes behind the aluminum siding. Beetles and wasps found it particularly attractive. One area was literally covered with dead wasps, another was actively infested with termites, which were busily destroying the frame structure while protected by the aluminum siding. But for the siding, the termite attack easily could have been detected.

It was also clear that the frame structure had been damaged during installation of the siding. Nails used to secure furring strips that held the aluminum siding had cracked the original wood siding. Decorative details had been removed, and the wood window sills had been cut and sections removed to accommodate the siding.

To restore the building, the owner is replacing damaged or deteriorated wood siding and trim, reconstructing missing trim and details, filling nail holes and cracks, and scraping all loose paint. He is then sanding, priming, and painting the siding with colors that match the original. This project also involves restoration of the house's porches, which had been altered when the aluminum siding was installed. The porches' original wood columns and railings were replaced with wrought iron, altering the original design and appearance of the house. Those wrought-iron fixtures appear too light and delicate to carry the roof's weight, and they may not be structurally sound. The sagging roof provided evidence that the supporting system was failing. The inappropriate wrought-iron columns and railings will be replaced with columns and railings matching the original.

As this case study clearly illustrates, synthetic siding should not be applied to frame structures. Such siding is not maintenance free; nor does it provide long-term savings. A regular maintenance program would have preserved the original siding at less cost to the owner. By removing the synthetic siding, the owner has stopped the deterioration of his building, restored the visual integrity of his home, and improved the quality of his neighborhood. That's one house saved—but what about the increasing number still being destroyed?

Above: It was evident that water was seeping behind the aluminum siding and causing the clapboards beneath to rot. As a result, all clapboards above the second floor windows had to be replaced. Water had also collected at the raised banding below the second floor windows, rusting the clapboards there. Note the shadowlines of the bull's-eye details that had been removed to accommodate the aluminum siding.

Above: Each strip of aluminum siding covered more than two original clapboards, changing the original character of the house. This photo also shows how the windowsill had been cut away to accommodate the synthetic siding.

Above: The factory finish on the aluminum siding had peeled and had been painted to hide the problem.

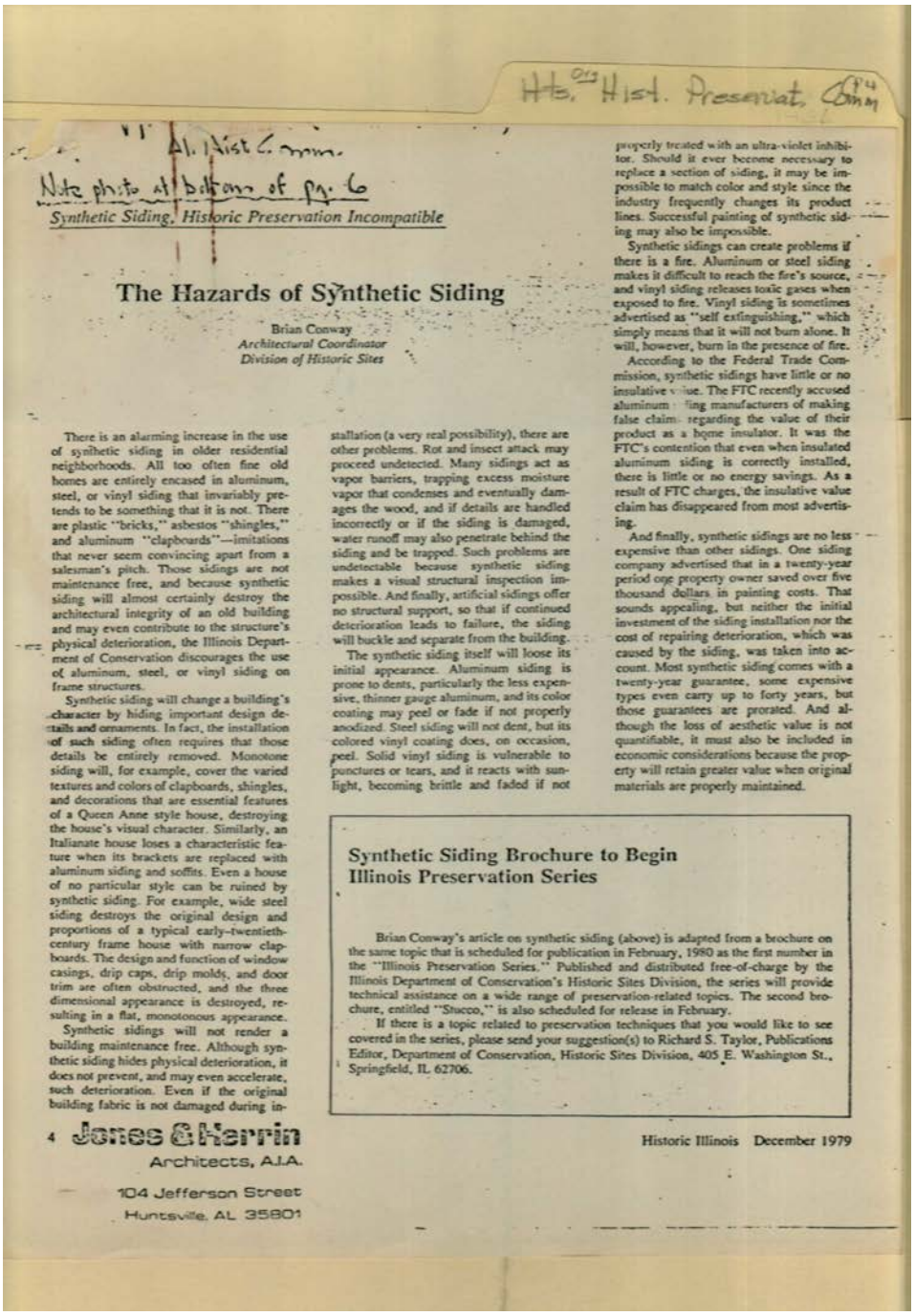
Below: The areas where water had been trapped beneath the aluminum siding showed severe deterioration. In this case, even the studs had rotted and the interior plaster was beginning to fail.

Historic Illinois December 1979

Jones & Herrin
Architects, A.I.A.
104 Jefferson Street

Types:
specifications

Dates:
Dec 1979



Hts. Hist. Preservat. Comm

Al. Hist. Comm.

Note photo at bottom of pg. 6

Synthetic Siding, Historic Preservation Incompatible

The Hazards of Synthetic Siding

Brian Conway
Architectural Coordinator
Division of Historic Sites

There is an alarming increase in the use of synthetic siding in older residential neighborhoods. All too often fine old homes are entirely encased in aluminum, steel, or vinyl siding that invariably pretends to be something that it is not. There are plastic "bricks," asbestos "shingles," and aluminum "clapboards"—imitations that never seem convincing apart from a salesman's pitch. Those sidings are not maintenance free, and because synthetic siding will almost certainly destroy the architectural integrity of an old building and may even contribute to the structure's physical deterioration, the Illinois Department of Conservation discourages the use of aluminum, steel, or vinyl siding on frame structures.

Synthetic siding will change a building's character by hiding important design details and ornaments. In fact, the installation of such siding often requires that those details be entirely removed. Monotone siding will, for example, cover the varied textures and colors of clapboards, shingles, and decorations that are essential features of a Queen Anne style house, destroying the house's visual character. Similarly, an Italianate house loses a characteristic feature when its brackets are replaced with aluminum siding and soffits. Even a house of no particular style can be ruined by synthetic siding. For example, wide steel siding destroys the original design and proportions of a typical early-twentieth-century frame house with narrow clapboards. The design and function of window casings, drip caps, drip molds, and door trim are often obstructed, and the three dimensional appearance is destroyed, resulting in a flat, monotonous appearance.

Synthetic sidings will not render a building maintenance free. Although synthetic siding hides physical deterioration, it does not prevent, and may even accelerate, such deterioration. Even if the original building fabric is not damaged during installation (a very real possibility), there are other problems. Rot and insect attack may proceed undetected. Many sidings act as vapor barriers, trapping excess moisture vapor that condenses and eventually damages the wood, and if details are handled incorrectly or if the siding is damaged, water runoff may also penetrate behind the siding and be trapped. Such problems are undetectable because synthetic siding makes a visual structural inspection impossible. And finally, artificial sidings offer no structural support, so that if continued deterioration leads to failure, the siding will buckle and separate from the building.

The synthetic siding itself will loose its initial appearance. Aluminum siding is prone to dents, particularly the less expensive, thinner gauge aluminum, and its color coating may peel or fade if not properly anodized. Steel siding will not dent, but its colored vinyl coating does, on occasion, peel. Solid vinyl siding is vulnerable to punctures or tears, and it reacts with sunlight, becoming brittle and faded if not properly treated with an ultra-violet inhibitor. Should it ever become necessary to replace a section of siding, it may be impossible to match color and style since the industry frequently changes its product lines. Successful painting of synthetic siding may also be impossible.

Synthetic sidings can create problems if there is a fire. Aluminum or steel siding makes it difficult to reach the fire's source, and vinyl siding releases toxic gases when exposed to fire. Vinyl siding is sometimes advertised as "self extinguishing," which simply means that it will not burn alone. It will, however, burn in the presence of fire.

According to the Federal Trade Commission, synthetic sidings have little or no insulative value. The FTC recently accused aluminum siding manufacturers of making false claims regarding the value of their product as a home insulator. It was the FTC's contention that even when insulated aluminum siding is correctly installed, there is little or no energy savings. As a result of FTC charges, the insulative value claim has disappeared from most advertising.

And finally, synthetic sidings are no less expensive than other sidings. One siding company advertised that in a twenty-year period one property owner saved over five thousand dollars in painting costs. That sounds appealing, but neither the initial investment of the siding installation nor the cost of repairing deterioration, which was caused by the siding, was taken into account. Most synthetic siding comes with a twenty-year guarantee, some expensive types even carry up to forty years, but those guarantees are prorated. And although the loss of aesthetic value is not quantifiable, it must also be included in economic considerations because the property will retain greater value when original materials are properly maintained.

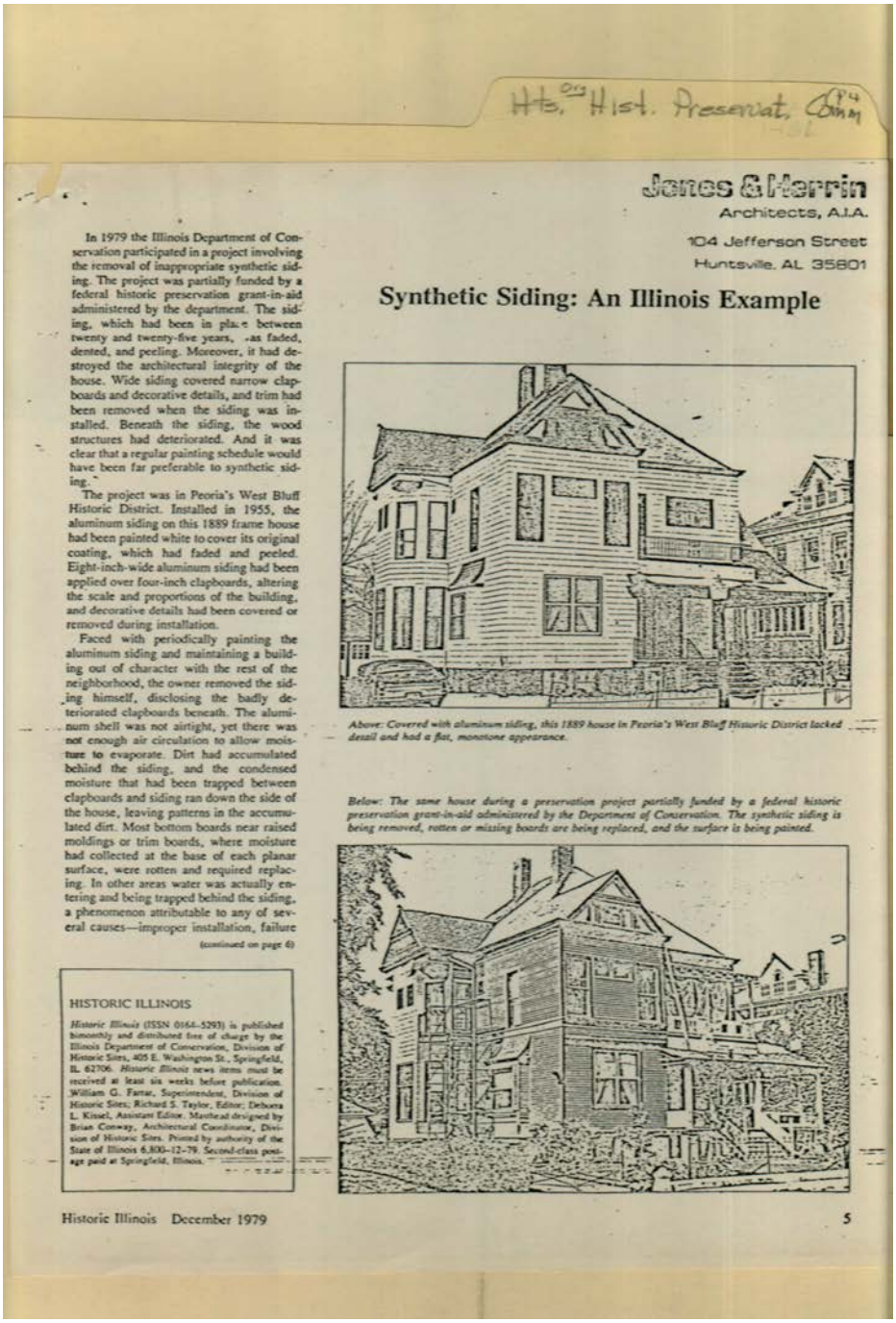
Synthetic Siding Brochure to Begin Illinois Preservation Series

Brian Conway's article on synthetic siding (above) is adapted from a brochure on the same topic that is scheduled for publication in February, 1980 as the first number in the "Illinois Preservation Series." Published and distributed free-of-charge by the Illinois Department of Conservation's Historic Sites Division, the series will provide technical assistance on a wide range of preservation-related topics. The second brochure, entitled "Stucco," is also scheduled for release in February.

If there is a topic related to preservation techniques that you would like to see covered in the series, please send your suggestion(s) to Richard S. Taylor, Publications Editor, Department of Conservation, Historic Sites Division, 405 E. Washington St., Springfield, IL 62706.

Names:
Synthetic Siding

Types:
article



Hts. Org Hist. Preservat. Comm '84

Synthetic Siding: An Illinois Example

In 1979 the Illinois Department of Conservation participated in a project involving the removal of inappropriate synthetic siding. The project was partially funded by a federal historic preservation grant-in-aid administered by the department. The siding, which had been in place between twenty and twenty-five years, was faded, dented, and peeling. Moreover, it had destroyed the architectural integrity of the house. Wide siding covered narrow clapboards and decorative details, and trim had been removed when the siding was installed. Beneath the siding, the wood structures had deteriorated. And it was clear that a regular painting schedule would have been far preferable to synthetic siding.

The project was in Peoria's West Bluff Historic District. Installed in 1955, the aluminum siding on this 1889 frame house had been painted white to cover its original coating, which had faded and peeled. Eight-inch-wide aluminum siding had been applied over four-inch clapboards, altering the scale and proportions of the building, and decorative details had been covered or removed during installation.

Faced with periodically painting the aluminum siding and maintaining a building out of character with the rest of the neighborhood, the owner removed the siding himself, disclosing the badly deteriorated clapboards beneath. The aluminum shell was not airtight, yet there was not enough air circulation to allow moisture to evaporate. Dirt had accumulated behind the siding, and the condensed moisture that had been trapped between clapboards and siding ran down the side of the house, leaving patterns in the accumulated dirt. Most bottom boards near raised moldings or trim boards, where moisture had collected at the base of each planar surface, were rotten and required replacing. In other areas water was actually entering and being trapped behind the siding, a phenomenon attributable to any of several causes—improper installation, failure

(continued on page 6)

HISTORIC ILLINOIS

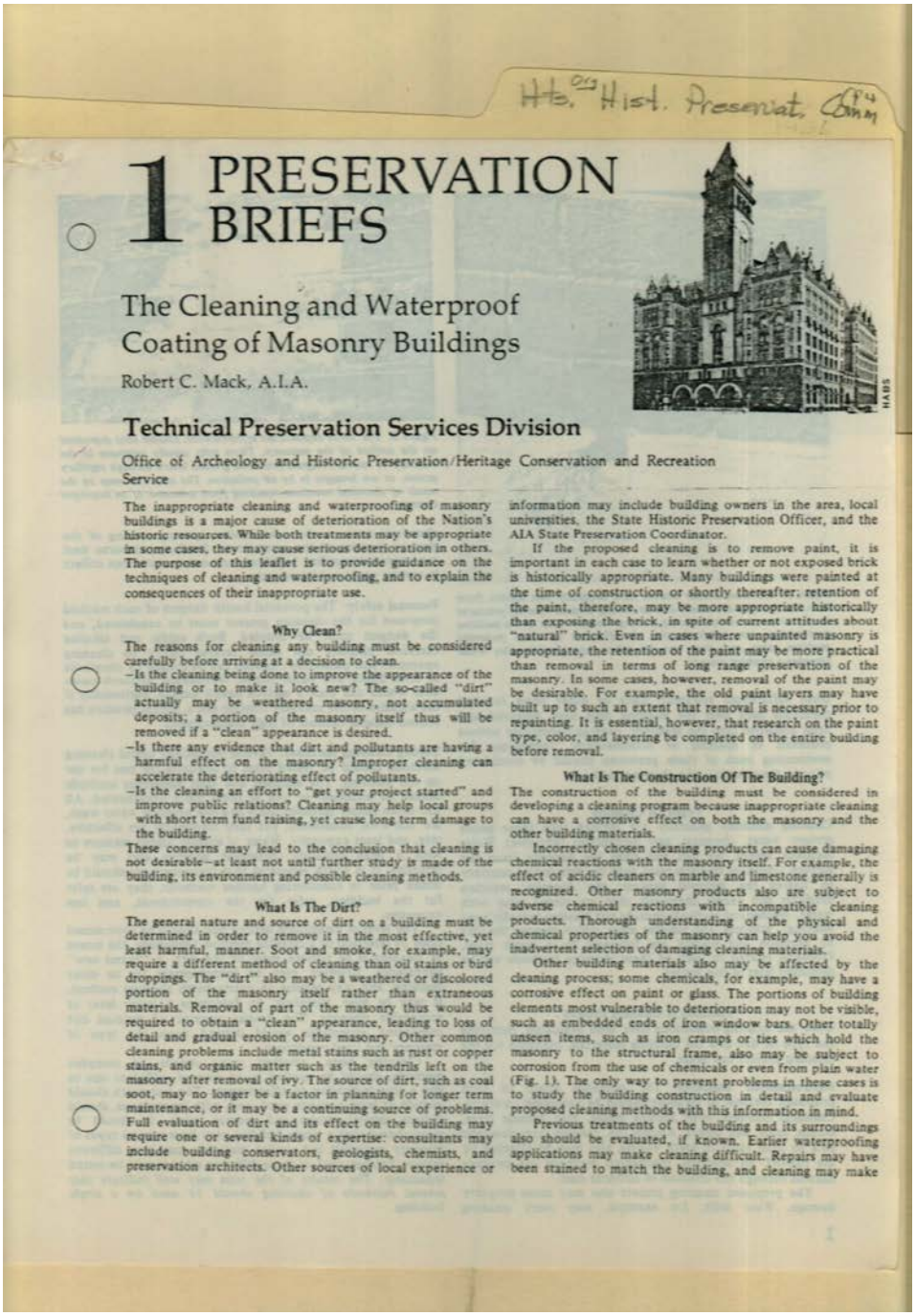
Historic Illinois (ISSN 0164–5293) is published bimonthly and distributed free of charge by the Illinois Department of Conservation, Division of Historic Sites, 405 E. Washington St., Springfield, IL 62706. *Historic Illinois* news items must be received at least six weeks before publication. William G. Farrar, Superintendent, Division of Historic Sites; Richard S. Taylor, Editor; Debora L. Kissel, Assistant Editor. Masthead designed by Brian Conway, Architectural Coordinator, Division of Historic Sites. Printed by authority of the State of Illinois 6,800–12–79. Second-class postage paid at Springfield, Illinois.

Above: Covered with aluminum siding, this 1889 house in Peoria's West Bluff Historic District lacked detail and had a flat, monotone appearance.

Below: The same house during a preservation project partially funded by a federal historic preservation grant-in-aid administered by the Department of Conservation. The synthetic siding is being removed, rotten or missing boards are being replaced, and the surface is being painted.

Names:
Synthetic Siding

Types:
article



Hts. Hist. Preservat. Comm

1 PRESERVATION BRIEFS

The Cleaning and Waterproof Coating of Masonry Buildings

Robert C. Mack, A.I.A.

Technical Preservation Services Division

Office of Archeology and Historic Preservation/Heritage Conservation and Recreation Service

The inappropriate cleaning and waterproofing of masonry buildings is a major cause of deterioration of the Nation's historic resources. While both treatments may be appropriate in some cases, they may cause serious deterioration in others. The purpose of this leaflet is to provide guidance on the techniques of cleaning and waterproofing, and to explain the consequences of their inappropriate use.

Why Clean?

The reasons for cleaning any building must be considered carefully before arriving at a decision to clean.

–Is the cleaning being done to improve the appearance of the building or to make it look new? The so-called "dirt" actually may be weathered masonry, not accumulated deposits; a portion of the masonry itself thus will be removed if a "clean" appearance is desired.

–Is there any evidence that dirt and pollutants are having a harmful effect on the masonry? Improper cleaning can accelerate the deteriorating effect of pollutants.

–Is the cleaning an effort to "get your project started" and improve public relations? Cleaning may help local groups with short term fund raising, yet cause long term damage to the building.

These concerns may lead to the conclusion that cleaning is not desirable—at least not until further study is made of the building, its environment and possible cleaning methods.

What Is The Dirt?

The general nature and source of dirt on a building must be determined in order to remove it in the most effective, yet least harmful, manner. Soot and smoke, for example, may require a different method of cleaning than oil stains or bird droppings. The "dirt" also may be a weathered or discolored portion of the masonry itself rather than extraneous materials. Removal of part of the masonry thus would be required to obtain a "clean" appearance, leading to loss of detail and gradual erosion of the masonry. Other common cleaning problems include metal stains such as rust or copper stains, and organic matter such as the tendrils left on the masonry after removal of ivy. The source of dirt, such as coal soot, may no longer be a factor in planning for longer term maintenance, or it may be a continuing source of problems. Full evaluation of dirt and its effect on the building may require one or several kinds of expertise: consultants may include building conservators, geologists, chemists, and preservation architects. Other sources of local experience or information may include building owners in the area, local universities, the State Historic Preservation Officer, and the AIA State Preservation Coordinator.

If the proposed cleaning is to remove paint, it is important in each case to learn whether or not exposed brick is historically appropriate. Many buildings were painted at the time of construction or shortly thereafter; retention of the paint, therefore, may be more appropriate historically than exposing the brick, in spite of current attitudes about "natural" brick. Even in cases where unpainted masonry is appropriate, the retention of the paint may be more practical than removal in terms of long range preservation of the masonry. In some cases, however, removal of the paint may be desirable. For example, the old paint layers may have built up to such an extent that removal is necessary prior to repainting. It is essential, however, that research on the paint type, color, and layering be completed on the entire building before removal.

What Is The Construction Of The Building?

The construction of the building must be considered in developing a cleaning program because inappropriate cleaning can have a corrosive effect on both the masonry and the other building materials.

Incorrectly chosen cleaning products can cause damaging chemical reactions with the masonry itself. For example, the effect of acidic cleaners on marble and limestone generally is recognized. Other masonry products also are subject to adverse chemical reactions with incompatible cleaning products. Thorough understanding of the physical and chemical properties of the masonry can help you avoid the inadvertent selection of damaging cleaning materials.

Other building materials also may be affected by the cleaning process; some chemicals, for example, may have a corrosive effect on paint or glass. The portions of building elements most vulnerable to deterioration may not be visible, such as embedded ends of iron window bars. Other totally unseen items, such as iron cramps or ties which hold the masonry to the structural frame, also may be subject to corrosion from the use of chemicals or even from plain water (Fig. 1). The only way to prevent problems in these cases is to study the building construction in detail and evaluate proposed cleaning methods with this information in mind.

Previous treatments of the building and its surroundings also should be evaluated, if known. Earlier waterproofing applications may make cleaning difficult. Repairs may have been stained to match the building, and cleaning may make

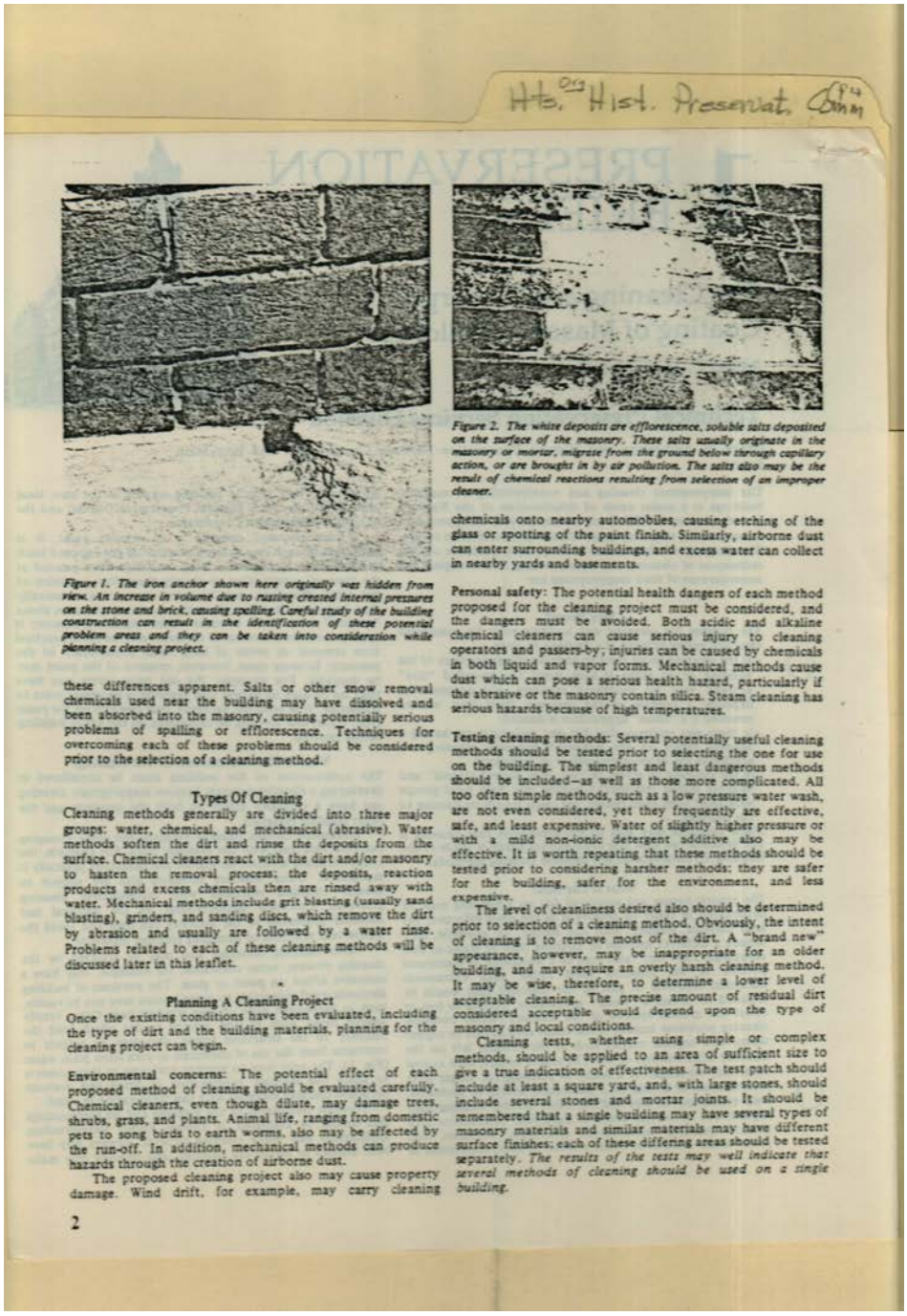
Names:

Jones & Herrin

Waterproof Building Coatings

Types:

article



Hts. Dig Hist. Preservat. Comm

Figure 1. The iron anchor shown here originally was hidden from view. An increase in volume due to rusting created internal pressures on the stone and brick, causing spalling. Careful study of the building construction can result in the identification of these potential problem areas and they can be taken into consideration while planning a cleaning project.

these differences apparent. Salts or other snow removal chemicals used near the building may have dissolved and been absorbed into the masonry, causing potentially serious problems of spalling or efflorescence. Techniques for overcoming each of these problems should be considered prior to the selection of a cleaning method.

Types Of Cleaning

Cleaning methods generally are divided into three major groups: water, chemical, and mechanical (abrasive). Water methods soften the dirt and rinse the deposits from the surface. Chemical cleaners react with the dirt and/or masonry to hasten the removal process; the deposits, reaction products and excess chemicals then are rinsed away with water. Mechanical methods include grit blasting (usually sand blasting), grinders, and sanding discs, which remove the dirt by abrasion and usually are followed by a water rinse. Problems related to each of these cleaning methods will be discussed later in this leaflet.

Planning A Cleaning Project

Once the existing conditions have been evaluated, including the type of dirt and the building materials, planning for the cleaning project can begin.

Environmental concerns: The potential effect of each proposed method of cleaning should be evaluated carefully. Chemical cleaners, even though dilute, may damage trees, shrubs, grass, and plants. Animal life, ranging from domestic pets to song birds to earth worms, also may be affected by the run-off. In addition, mechanical methods can produce hazards through the creation of airborne dust.

The proposed cleaning project also may cause property damage. Wind drift, for example, may carry cleaning

Figure 2. The white deposits are efflorescence, soluble salts deposited on the surface of the masonry. These salts usually originate in the masonry or mortar, migrate from the ground below through capillary action, or are brought in by air pollution. The salts also may be the result of chemical reactions resulting from selection of an improper cleaner.

chemicals onto nearby automobiles, causing etching of the glass or spotting of the paint finish. Similarly, airborne dust can enter surrounding buildings, and excess water can collect in nearby yards and basements.

Personal safety: The potential health dangers of each method proposed for the cleaning project must be considered, and the dangers must be avoided. Both acidic and alkaline chemical cleaners can cause serious injury to cleaning operators and passers-by; injuries can be caused by chemicals in both liquid and vapor forms. Mechanical methods cause dust which can pose a serious health hazard, particularly if the abrasive or the masonry contain silica. Steam cleaning has serious hazards because of high temperatures.

Testing cleaning methods: Several potentially useful cleaning methods should be tested prior to selecting the one for use on the building. The simplest and least dangerous methods should be included--as well as those more complicated. All too often simple methods, such as a low pressure water wash, are not even considered, yet they frequently are effective, safe, and least expensive. Water of slightly higher pressure or with a mild non-ionic detergent additive also may be effective. It is worth repeating that these methods should be tested prior to considering harsher methods: they are safer for the building, safer for the environment, and less expensive.

The level of cleanliness desired also should be determined prior to selection of a cleaning method. Obviously, the intent of cleaning is to remove most of the dirt. A "brand new" appearance, however, may be inappropriate for an older building, and may require an overly harsh cleaning method. It may be wise, therefore, to determine a lower level of acceptable cleaning. The precise amount of residual dirt considered acceptable would depend upon the type of masonry and local conditions.

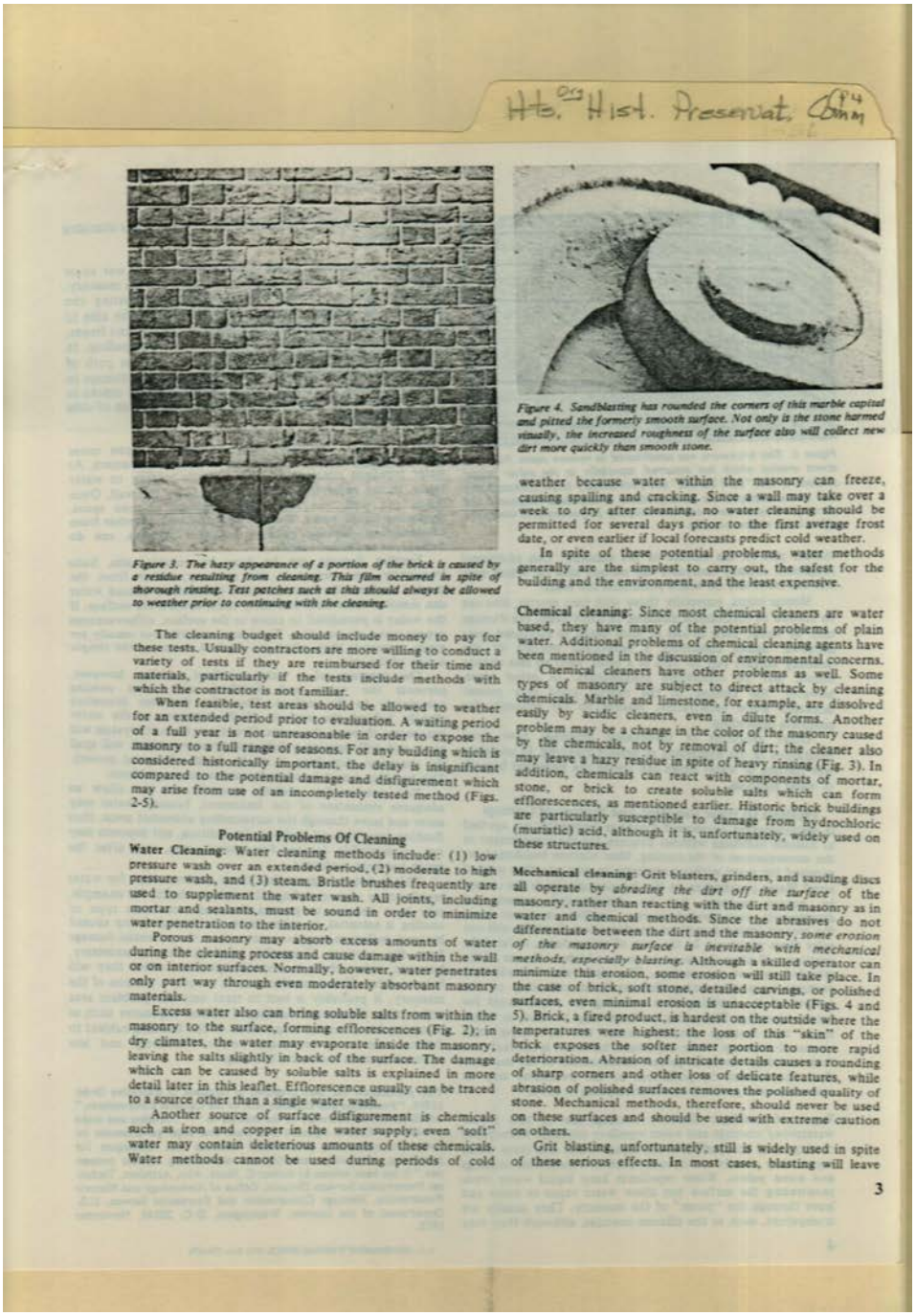
Cleaning tests, whether using simple or complex methods, should be applied to an area of sufficient size to give a true indication of effectiveness. The test patch should include at least a square yard, and, with large stones, should include several stones and mortar joints. It should be remembered that a single building may have several types of masonry materials and similar materials may have different surface finishes; each of these differing areas should be tested separately. *The results of the tests may well indicate that several methods of cleaning should be used on a single building.*

Names:

Waterproof Building Coatings

Types:

article



Hts. Org Hist. Preservat. Comm P4

Figure 3. The hazy appearance of a portion of the brick is caused by a residue resulting from cleaning. This film occurred in spite of thorough rinsing. Test patches such as this should always be allowed to weather prior to continuing with the cleaning.

The cleaning budget should include money to pay for these tests. Usually contractors are more willing to conduct a variety of tests if they are reimbursed for their time and materials, particularly if the tests include methods with which the contractor is not familiar.

When feasible, test areas should be allowed to weather for an extended period prior to evaluation. A waiting period of a full year is not unreasonable in order to expose the masonry to a full range of seasons. For any building which is considered historically important, the delay is insignificant compared to the potential damage and disfigurement which may arise from use of an incompletely tested method (Figs. 2-5).

Potential Problems Of Cleaning

Water Cleaning: Water cleaning methods include: (1) low pressure wash over an extended period, (2) moderate to high pressure wash, and (3) steam. Bristle brushes frequently are used to supplement the water wash. All joints, including mortar and sealants, must be sound in order to minimize water penetration to the interior.

Porous masonry may absorb excess amounts of water during the cleaning process and cause damage within the wall or on interior surfaces. Normally, however, water penetrates only part way through even moderately absorbant masonry materials.

Excess water also can bring soluble salts from within the masonry to the surface, forming efflorescences (Fig. 2); in dry climates, the water may evaporate inside the masonry, leaving the salts slightly in back of the surface. The damage which can be caused by soluble salts is explained in more detail later in this leaflet. Efflorescence usually can be traced to a source other than a single water wash.

Another source of surface disfigurement is chemicals such as iron and copper in the water supply; even "soft" water may contain deleterious amounts of these chemicals. Water methods cannot be used during periods of cold

Figure 4. Sandblasting has rounded the corners of this marble capital and pitted the formerly smooth surface. Not only is the stone harmed visually, the increased roughness of the surface also will collect new dirt more quickly than smooth stone.

weather because water within the masonry can freeze, causing spalling and cracking. Since a wall may take over a week to dry after cleaning, no water cleaning should be permitted for several days prior to the first average frost date, or even earlier if local forecasts predict cold weather.

In spite of these potential problems, water methods generally are the simplest to carry out, the safest for the building and the environment, and the least expensive.

Chemical cleaning: Since most chemical cleaners are water based, they have many of the potential problems of plain water. Additional problems of chemical cleaning agents have been mentioned in the discussion of environmental concerns.

Chemical cleaners have other problems as well. Some types of masonry are subject to direct attack by cleaning chemicals. Marble and limestone, for example, are dissolved easily by acidic cleaners, even in dilute forms. Another problem may be a change in the color of the masonry caused by the chemicals, not by removal of dirt; the cleaner also may leave a hazy residue in spite of heavy rinsing (Fig. 3). In addition, chemicals can react with components of mortar, stone, or brick to create soluble salts which can form efflorescences, as mentioned earlier. Historic brick buildings are particularly susceptible to damage from hydrochloric (muriatic) acid, although it is, unfortunately, widely used on these structures.

Mechanical cleaning: Grit blasters, grinders, and sanding discs all operate by *abrading the dirt off the surface* of the masonry, rather than reacting with the dirt and masonry as in water and chemical methods. Since the abrasives do not differentiate between the dirt and the masonry, *some erosion of the masonry surface is inevitable with mechanical methods, especially blasting.* Although a skilled operator can minimize this erosion, some erosion will still take place. In the case of brick, soft stone, detailed carvings, or polished surfaces, even minimal erosion is unacceptable (Figs. 4 and 5). Brick, a fired product, is hardest on the outside where the temperatures were highest; the loss of this "skin" of the brick exposes the softer inner portion to more rapid deterioration. Abrasion of intricate details causes a rounding of sharp corners and other loss of delicate features, while abrasion of polished surfaces removes the polished quality of stone. Mechanical methods, therefore, should never be used on these surfaces and should be used with extreme caution on others.

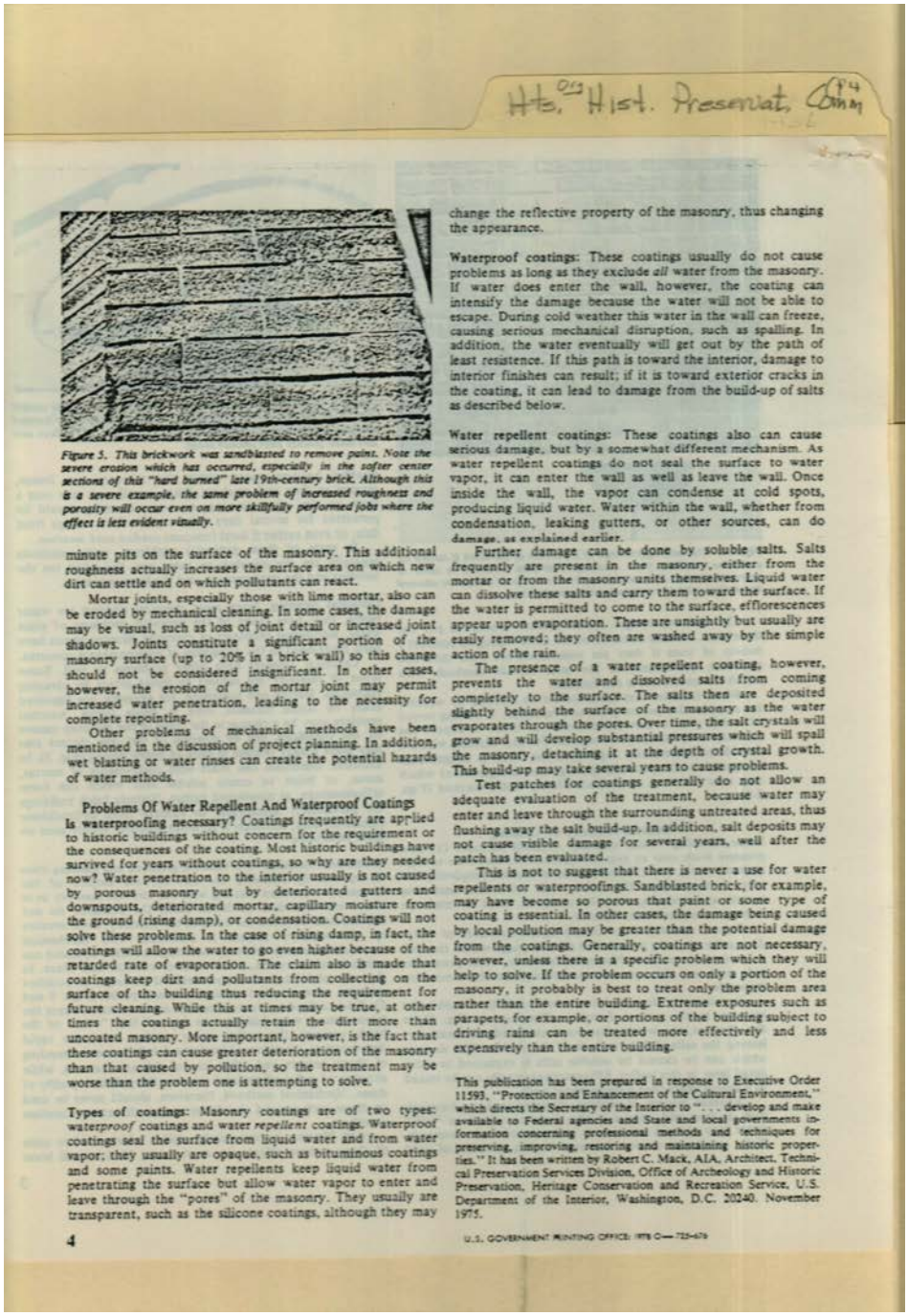
Grit blasting, unfortunately, still is widely used in spite of these serious effects. In most cases, blasting will leave

Names:

Waterproof Building Coatings

Types:

article



Hts. Hist. Preservat. Comm

Figure 5. This brickwork was sandblasted to remove paint. Note the severe erosion which has occurred, especially in the softer center sections of this "hard burned" late 19th-century brick. Although this is a severe example, the same problem of increased roughness and porosity will occur even on more skillfully performed jobs where the effect is less evident visually.

minute pits on the surface of the masonry. This additional roughness actually increases the surface area on which new dirt can settle and on which pollutants can react.

Mortar joints, especially those with lime mortar, also can be eroded by mechanical cleaning. In some cases, the damage may be visual, such as loss of joint detail or increased joint shadows. Joints constitute a significant portion of the masonry surface (up to 20% in a brick wall) so this change should not be considered insignificant. In other cases, however, the erosion of the mortar joint may permit increased water penetration, leading to the necessity for complete repointing.

Other problems of mechanical methods have been mentioned in the discussion of project planning. In addition, wet blasting or water rinses can create the potential hazards of water methods.

Problems Of Water Repellent And Waterproof Coatings

Is waterproofing necessary? Coatings frequently are applied to historic buildings without concern for the requirement or the consequences of the coating. Most historic buildings have survived for years without coatings, so why are they needed now? Water penetration to the interior usually is not caused by porous masonry but by deteriorated gutters and downspouts, deteriorated mortar, capillary moisture from the ground (rising damp), or condensation. Coatings will not solve these problems. In the case of rising damp, in fact, the coatings will allow the water to go even higher because of the retarded rate of evaporation. The claim also is made that coatings keep dirt and pollutants from collecting on the surface of the building thus reducing the requirement for future cleaning. While this at times may be true, at other times the coatings actually retain the dirt more than uncoated masonry. More important, however, is the fact that these coatings can cause greater deterioration of the masonry than that caused by pollution, so the treatment may be worse than the problem one is attempting to solve.

Types of coatings: Masonry coatings are of two types: *waterproof* coatings and water *repellent* coatings. Waterproof coatings seal the surface from liquid water and from water vapor; they usually are opaque, such as bituminous coatings and some paints. Water repellents keep liquid water from penetrating the surface but allow water vapor to enter and leave through the "pores" of the masonry. They usually are transparent, such as the silicone coatings, although they may change the reflective property of the masonry, thus changing the appearance.

Waterproof coatings: These coatings usually do not cause problems as long as they exclude *all* water from the masonry. If water does enter the wall, however, the coating can intensify the damage because the water will not be able to escape. During cold weather this water in the wall can freeze, causing serious mechanical disruption, such as spalling. In addition, the water eventually will get out by the path of least resistence. If this path is toward the interior, damage to interior finishes can result; if it is toward exterior cracks in the coating, it can lead to damage from the build-up of salts as described below.

Water repellent coatings: These coatings also can cause serious damage, but by a somewhat different mechanism. As water repellent coatings do not seal the surface to water vapor, it can enter the wall as well as leave the wall. Once inside the wall, the vapor can condense at cold spots, producing liquid water. Water within the wall, whether from condensation, leaking gutters, or other sources, can do damage, as explained earlier.

Further damage can be done by soluble salts. Salts frequently are present in the masonry, either from the mortar or from the masonry units themselves. Liquid water can dissolve these salts and carry them toward the surface. If the water is permitted to come to the surface, efflorescences appear upon evaporation. These are unsightly but usually are easily removed; they often are washed away by the simple action of the rain.

The presence of a water repellent coating, however, prevents the water and dissolved salts from coming completely to the surface. The salts then are deposited slightly behind the surface of the masonry as the water evaporates through the pores. Over time, the salt crystals will grow and will develop substantial pressures which will spall the masonry, detaching it at the depth of crystal growth. This build-up may take several years to cause problems.

Test patches for coatings generally do not allow an adequate evaluation of the treatment, because water may enter and leave through the surrounding untreated areas, thus flushing away the salt build-up. In addition, salt deposits may not cause visible damage for several years, well after the patch has been evaluated.

This is not to suggest that there is never a use for water repellents or waterproofings. Sandblasted brick, for example, may have become so porous that paint or some type of coating is essential. In other cases, the damage being caused by local pollution may be greater than the potential damage from the coatings. Generally, coatings are not necessary, however, unless there is a specific problem which they will help to solve. If the problem occurs on only a portion of the masonry, it probably is best to treat only the problem area rather than the entire building. Extreme exposures such as parapets, for example, or portions of the building subject to driving rains can be treated more effectively and less expensively than the entire building.

This publication has been prepared in response to Executive Order 11593, "Protection and Enhancement of the Cultural Environment," which directs the Secretary of the Interior to ". . . develop and make available to Federal agencies and State and local governments information concerning professional methods and techniques for preserving, improving, restoring and maintaining historic properties." It has been written by Robert C. Mack, AIA, Architect, Technical Preservation Services Division, Office of Archeology and Historic Preservation, Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington, D.C. 20240. November 1975.

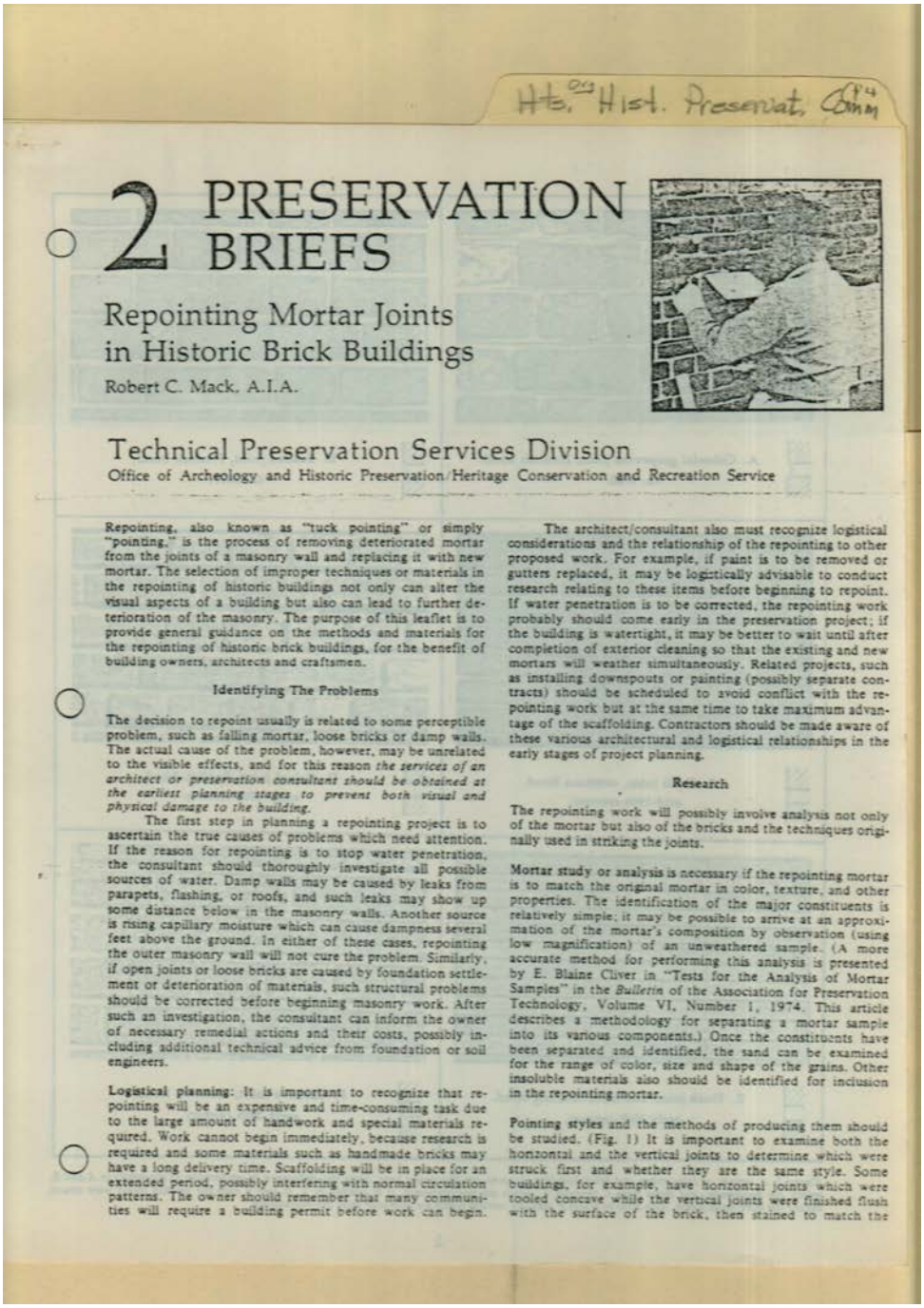
U.S. GOVERNMENT PRINTING OFFICE: 1976 O—725-479

Names:

Waterproof Building Coatings

Types:

article



Hts. Dis Hist. Preservat. Comm

2 PRESERVATION BRIEFS

Repointing Mortar Joints in Historic Brick Buildings

Robert C. Mack, A.I.A.

Technical Preservation Services Division

Office of Archeology and Historic Preservation/Heritage Conservation and Recreation Service

Repointing, also known as "tuck pointing" or simply "pointing," is the process of removing deteriorated mortar from the joints of a masonry wall and replacing it with new mortar. The selection of improper techniques or materials in the repointing of historic buildings not only can alter the visual aspects of a building but also can lead to further deterioration of the masonry. The purpose of this leaflet is to provide general guidance on the methods and materials for the repointing of historic brick buildings, for the benefit of building owners, architects and craftsmen.

Identifying The Problems

The decision to repoint usually is related to some perceptible problem, such as falling mortar, loose bricks or damp walls. The actual cause of the problem, however, may be unrelated to the visible effects, and for this reason *the services of an architect or preservation consultant should be obtained at the earliest planning stages to prevent both visual and physical damage to the building.*

The first step in planning a repointing project is to ascertain the true causes of problems which need attention. If the reason for repointing is to stop water penetration, the consultant should thoroughly investigate all possible sources of water. Damp walls may be caused by leaks from parapets, flashing, or roofs, and such leaks may show up some distance below in the masonry walls. Another source is rising capillary moisture which can cause dampness several feet above the ground. In either of these cases, repointing the outer masonry wall will not cure the problem. Similarly, if open joints or loose bricks are caused by foundation settlement or deterioration of materials, such structural problems should be corrected before beginning masonry work. After such an investigation, the consultant can inform the owner of necessary remedial actions and their costs, possibly including additional technical advice from foundation or soil engineers.

Logistical planning: It is important to recognize that repointing will be an expensive and time-consuming task due to the large amount of handwork and special materials required. Work cannot begin immediately, because research is required and some materials such as handmade bricks may have a long delivery time. Scaffolding will be in place for an extended period, possibly interfering with normal circulation patterns. The owner should remember that many communities will require a building permit before work can begin.

The architect/consultant also must recognize logistical considerations and the relationship of the repointing to other proposed work. For example, if paint is to be removed or gutters replaced, it may be logistically advisable to conduct research relating to these items before beginning to repoint. If water penetration is to be corrected, the repointing work probably should come early in the preservation project; if the building is watertight, it may be better to wait until after completion of exterior cleaning so that the existing and new mortars will weather simultaneously. Related projects, such as installing downspouts or painting (possibly separate contracts) should be scheduled to avoid conflict with the repointing work but at the same time to take maximum advantage of the scaffolding. Contractors should be made aware of these various architectural and logistical relationships in the early stages of project planning.

Research

The repointing work will possibly involve analysis not only of the mortar but also of the bricks and the techniques originally used in striking the joints.

Mortar study or analysis is necessary if the repointing mortar is to match the original mortar in color, texture, and other properties. The identification of the major constituents is relatively simple; it may be possible to arrive at an approximation of the mortar's composition by observation (using low magnification) of an unweathered sample. (A more accurate method for performing this analysis is presented by E. Blaine Cliver in "Tests for the Analysis of Mortar Samples" in the *Bulletin* of the Association for Preservation Technology, Volume VI, Number 1, 1974. This article describes a methodology for separating a mortar sample into its various components.) Once the constituents have been separated and identified, the sand can be examined for the range of color, size and shape of the grains. Other insoluble materials also should be identified for inclusion in the repointing mortar.

Pointing styles and the methods of producing them should be studied. (Fig. 1) It is important to examine both the horizontal and the vertical joints to determine which were struck first and whether they are the same style. Some buildings, for example, have horizontal joints which were tooled concave while the vertical joints were finished flush with the surface of the brick, then stained to match the

Names:

Waterproof Building Coatings

Types:

article

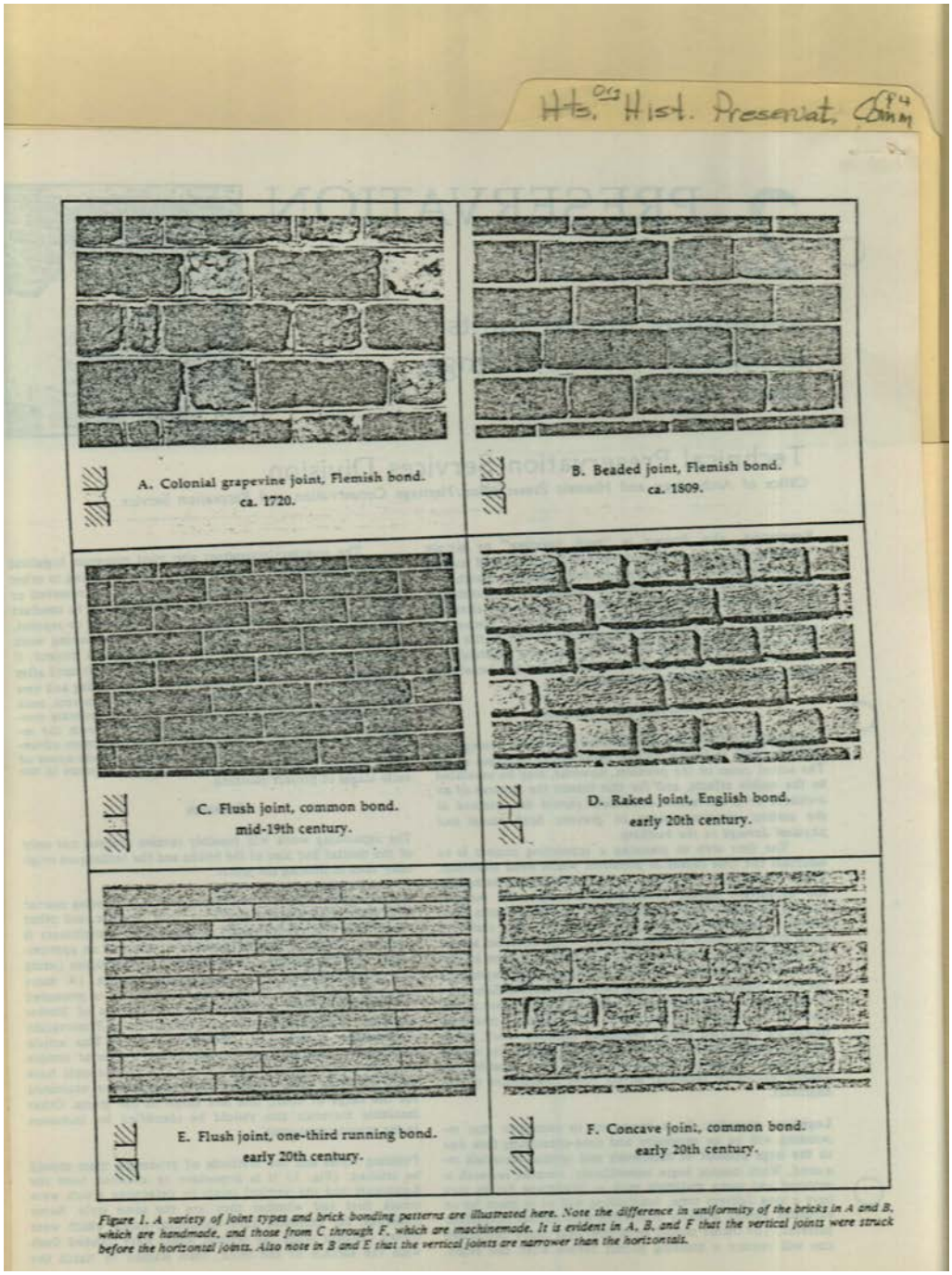
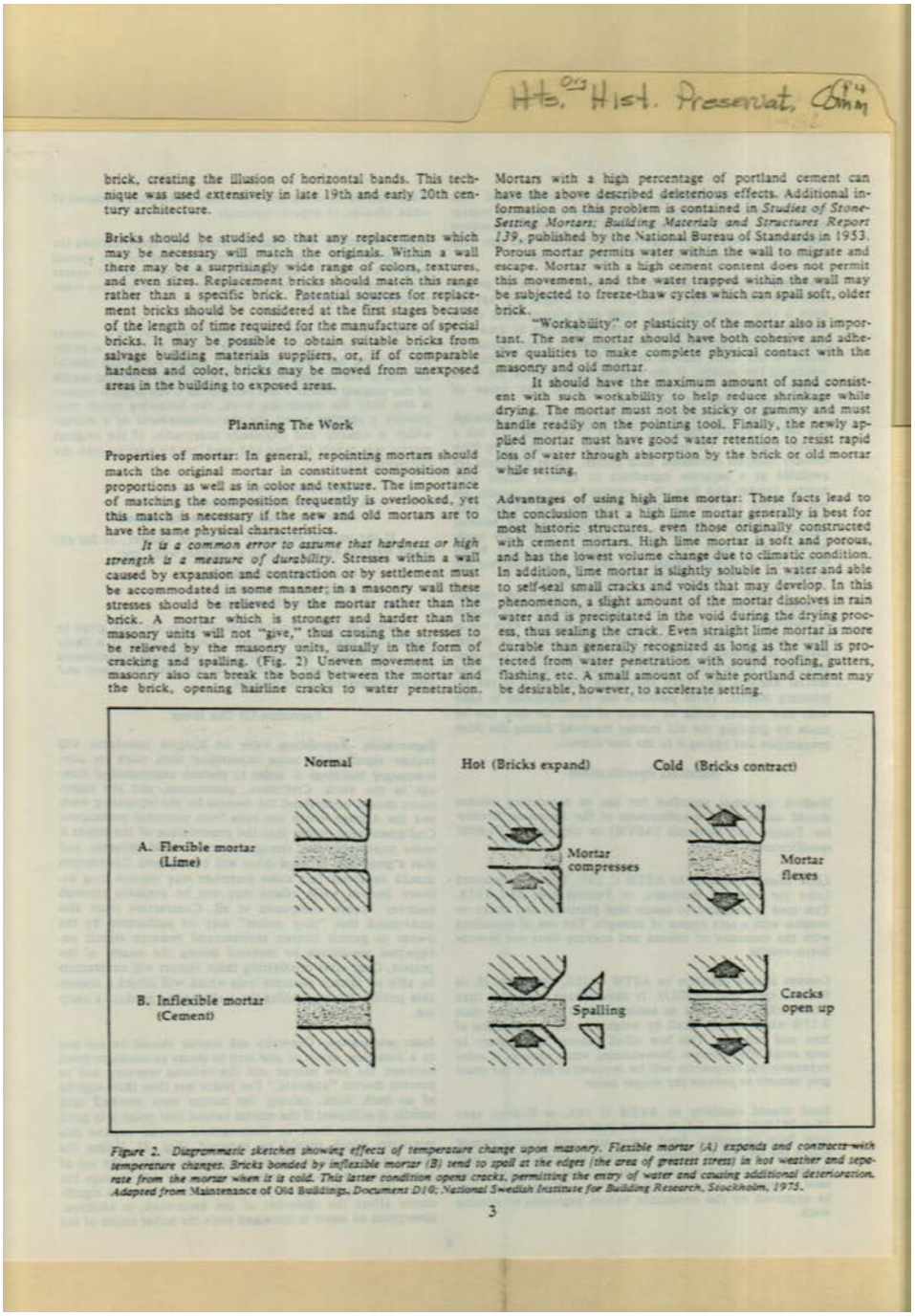


Figure 1. A variety of joint types and brick bonding patterns are illustrated here. Note the difference in uniformity of the bricks in A and B, which are handmade, and those from C through F, which are machinemade. It is evident in A, B, and F that the vertical joints were struck before the horizontal joints. Also note in B and E that the vertical joints are narrower than the horizontals.

Names:
Mortar Joints

Types:
article



Hts. Dis Hist. Preservat. Comm

brick, creating the illusion of horizontal bands. This technique was used extensively in late 19th and early 20th century architecture.

Bricks should be studied so that any replacements which may be necessary will match the originals. Within a wall there may be a surprisingly wide range of colors, textures, and even sizes. Replacement bricks should match this range rather than a specific brick. Potential sources for replacement bricks should be considered at the first stages because of the length of time required for the manufacture of special bricks. It may be possible to obtain suitable bricks from salvage building materials suppliers, or, if of comparable hardness and color, bricks may be moved from unexposed areas in the building to exposed areas.

Planning The Work

Properties of mortar: In general, repointing mortars should match the original mortar in constituent composition and proportions as well as in color and texture. The importance of matching the composition frequently is overlooked, yet this match is necessary if the new and old mortars are to have the same physical characteristics.

It is a common error to assume that hardness or high strength is a measure of durability. Stresses within a wall caused by expansion and contraction or by settlement must be accommodated in some manner; in a masonry wall these stresses should be relieved by the mortar rather than the brick. A mortar which is stronger and harder than the masonry units will not "give," thus causing the stresses to be relieved by the masonry units, usually in the form of cracking and spalling. (Fig. 2) Uneven movement in the masonry also can break the bond between the mortar and the brick, opening hairline cracks to water penetration. Mortars with a high percentage of portland cement can have the above described deleterious effects. Additional information on this problem is contained in *Studies of Stone-Setting Mortars; Building Materials and Structures Report 139*, published by the National Bureau of Standards in 1953. Porous mortar permits water within the wall to migrate and escape. Mortar with a high cement content does not permit this movement, and the water trapped within the wall may be subjected to freeze-thaw cycles which can spall soft, older brick.

"Workability" or plasticity of the mortar also is important. The new mortar should have both cohesive and adhesive qualities to make complete physical contact with the masonry and old mortar.

It should have the maximum amount of sand consistent with such workability to help reduce shrinkage while drying. The mortar must not be sticky or gummy and must handle readily on the pointing tool. Finally, the newly applied mortar must have good water retention to resist rapid loss of water through absorption by the brick or old mortar while setting.

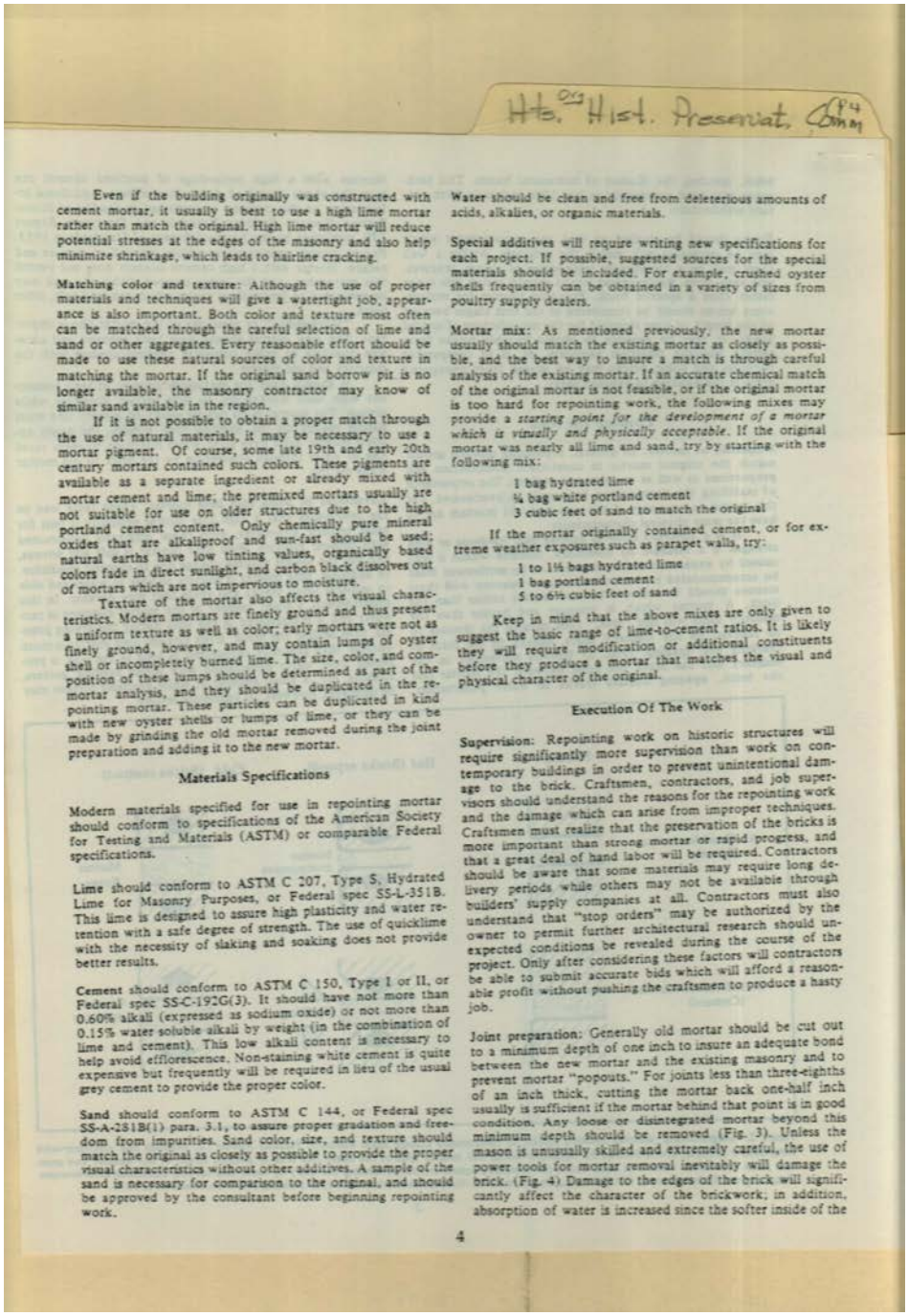
Advantages of using high lime mortar: These facts lead to the conclusion that a high lime mortar generally is best for most historic structures, even those originally constructed with cement mortars. High lime mortar is soft and porous, and has the lowest volume change due to climatic condition. In addition, lime mortar is slightly soluble in water and able to self-seal small cracks and voids that may develop. In this phenomenon, a slight amount of the mortar dissolves in rain water and is precipitated in the void during the drying process, thus sealing the crack. Even straight lime mortar is more durable than generally recognized as long as the wall is protected from water penetration with sound roofing, gutters, flashing, etc. A small amount of white portland cement may be desirable, however, to accelerate setting.

Figure 2. Diagrammatic sketches showing effects of temperature change upon masonry. Flexible mortar (A) expands and contracts with temperature changes. Bricks bonded by inflexible mortar (B) tend to spall at the edges (the area of greatest stress) in hot weather and separate from the mortar when it is cold. This latter condition opens cracks, permitting the entry of water and causing additional deterioration. Adapted from Maintenance of Old Buildings, *Document D10; National Swedish Institute for Building Research, Stockholm, 1975.*

3

Names:
Mortar Joints

Types:
article



Even if the building originally was constructed with cement mortar, it usually is best to use a high lime mortar rather than match the original. High lime mortar will reduce potential stresses at the edges of the masonry and also help minimize shrinkage, which leads to hairline cracking.

Matching color and texture: Although the use of proper materials and techniques will give a watertight job, appearance is also important. Both color and texture most often can be matched through the careful selection of lime and sand or other aggregates. Every reasonable effort should be made to use these natural sources of color and texture in matching the mortar. If the original sand borrow pit is no longer available, the masonry contractor may know of similar sand available in the region.

If it is not possible to obtain a proper match through the use of natural materials, it may be necessary to use a mortar pigment. Of course, some late 19th and early 20th century mortars contained such colors. These pigments are available as a separate ingredient or already mixed with mortar cement and lime; the premixed mortars usually are not suitable for use on older structures due to the high portland cement content. Only chemically pure mineral oxides that are alkaliproof and sun-fast should be used; natural earths have low tinting values, organically based colors fade in direct sunlight, and carbon black dissolves out of mortars which are not impervious to moisture.

Texture of the mortar also affects the visual characteristics. Modern mortars are finely ground and thus present a uniform texture as well as color; early mortars were not as finely ground, however, and may contain lumps of oyster shell or incompletely burned lime. The size, color, and composition of these lumps should be determined as part of the mortar analysis, and they should be duplicated in the repointing mortar. These particles can be duplicated in kind with new oyster shells or lumps of lime, or they can be made by grinding the old mortar removed during the joint preparation and adding it to the new mortar.

Materials Specifications

Modern materials specified for use in repointing mortar should conform to specifications of the American Society for Testing and Materials (ASTM) or comparable Federal specifications.

Lime should conform to ASTM C 207, Type S, Hydrated Lime for Masonry Purposes, or Federal spec SS-L-351B. This lime is designed to assure high plasticity and water retention with a safe degree of strength. The use of quicklime with the necessity of slaking and soaking does not provide better results.

Cement should conform to ASTM C 150, Type I or II, or Federal spec SS-C-192G(3). It should have not more than 0.60% alkali (expressed as sodium oxide) or not more than 0.15% water soluble alkali by weight (in the combination of lime and cement). This low alkali content is necessary to help avoid efflorescence. Non-staining white cement is quite expensive but frequently will be required in lieu of the usual grey cement to provide the proper color.

Sand should conform to ASTM C 144, or Federal spec SS-A-281B(1) para. 3.1, to assure proper gradation and freedom from impurities. Sand color, size, and texture should match the original as closely as possible to provide the proper visual characteristics without other additives. A sample of the sand is necessary for comparison to the original, and should be approved by the consultant before beginning repointing work.

Water should be clean and free from deleterious amounts of acids, alkalies, or organic materials.

Special additives will require writing new specifications for each project. If possible, suggested sources for the special materials should be included. For example, crushed oyster shells frequently can be obtained in a variety of sizes from poultry supply dealers.

Mortar mix: As mentioned previously, the new mortar usually should match the existing mortar as closely as possible, and the best way to insure a match is through careful analysis of the existing mortar. If an accurate chemical match of the original mortar is not feasible, or if the original mortar is too hard for repointing work, the following mixes may provide a *starting point for the development of a mortar which is visually and physically acceptable*. If the original mortar was nearly all lime and sand, try by starting with the following mix:

1 bag hydrated lime
¼ bag white portland cement
3 cubic feet of sand to match the original

If the mortar originally contained cement, or for extreme weather exposures such as parapet walls, try:

1 to 1½ bags hydrated lime
1 bag portland cement
5 to 6½ cubic feet of sand

Keep in mind that the above mixes are only given to suggest the basic range of lime-to-cement ratios. It is likely they will require modification or additional constituents before they produce a mortar that matches the visual and physical character of the original.

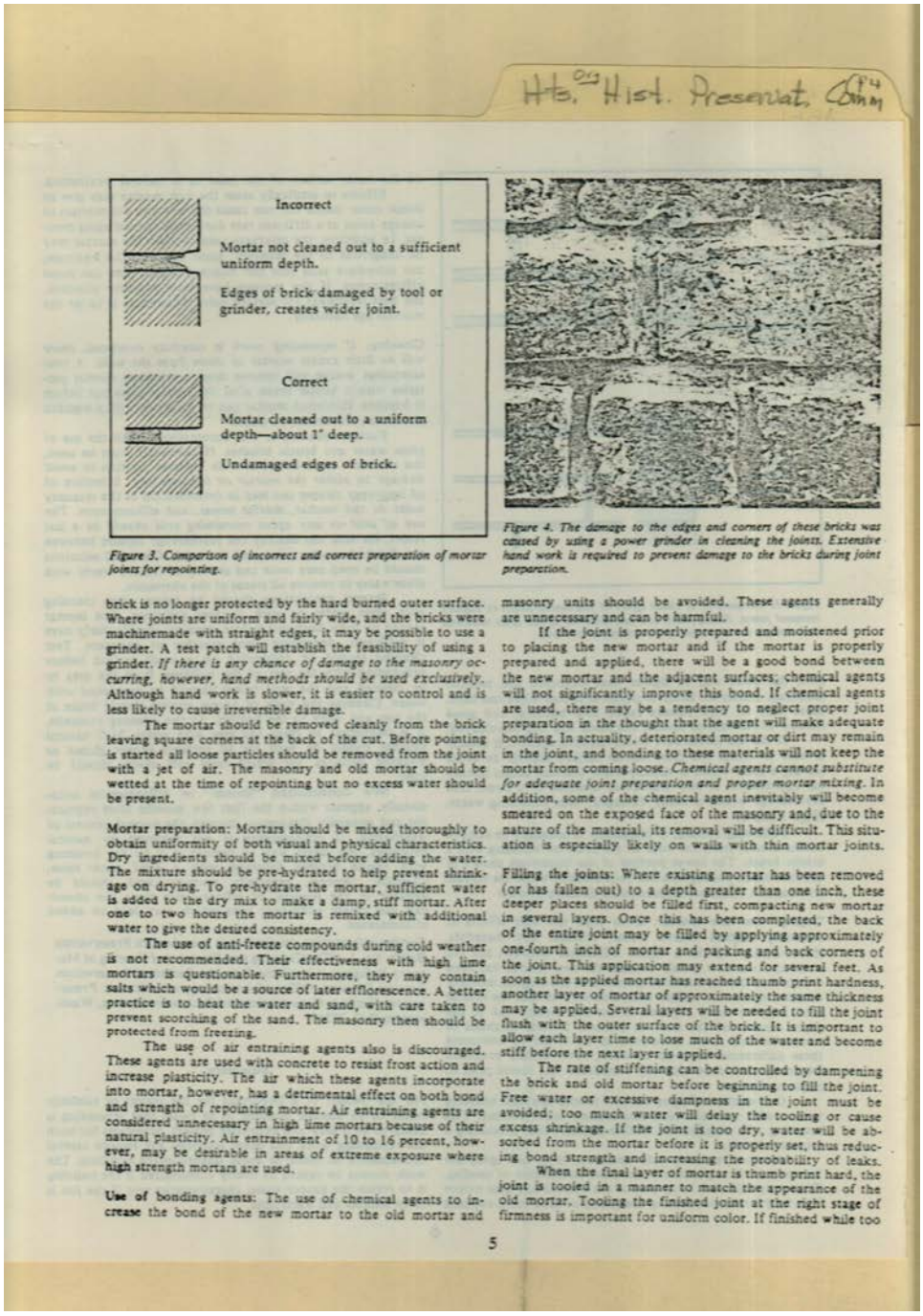
Execution Of The Work

Supervision: Repointing work on historic structures will require significantly more supervision than work on contemporary buildings in order to prevent unintentional damage to the brick. Craftsmen, contractors, and job supervisors should understand the reasons for the repointing work and the damage which can arise from improper techniques. Craftsmen must realize that the preservation of the bricks is more important than strong mortar or rapid progress, and that a great deal of hand labor will be required. Contractors should be aware that some materials may require long delivery periods while others may not be available through builders' supply companies at all. Contractors must also understand that "stop orders" may be authorized by the owner to permit further architectural research should unexpected conditions be revealed during the course of the project. Only after considering these factors will contractors be able to submit accurate bids which will afford a reasonable profit without pushing the craftsmen to produce a hasty job.

Joint preparation: Generally old mortar should be cut out to a minimum depth of one inch to insure an adequate bond between the new mortar and the existing masonry and to prevent mortar "popouts." For joints less than three-eighths of an inch thick, cutting the mortar back one-half inch usually is sufficient if the mortar behind that point is in good condition. Any loose or disintegrated mortar beyond this minimum depth should be removed (Fig. 3). Unless the mason is unusually skilled and extremely careful, the use of power tools for mortar removal inevitably will damage the brick. (Fig. 4) Damage to the edges of the brick will significantly affect the character of the brickwork; in addition, absorption of water is increased since the softer inside of the

Names:
Mortar Joints

Types:
article



Hts. Org. Hist. Preservat. Comm 84

Figure 3. Comparison of incorrect and correct preparation of mortar joints for repointing.

Figure 4. The damage to the edges and corners of these bricks was caused by using a power grinder in cleaning the joints. Extensive hand work is required to prevent damage to the bricks during joint preparation.

brick is no longer protected by the hard burned outer surface. Where joints are uniform and fairly wide, and the bricks were machinemade with straight edges, it may be possible to use a grinder. A test patch will establish the feasibility of using a grinder. *If there is any chance of damage to the masonry occurring, however, hand methods should be used exclusively.* Although hand work is slower, it is easier to control and is less likely to cause irreversible damage.

The mortar should be removed cleanly from the brick leaving square corners at the back of the cut. Before pointing is started all loose particles should be removed from the joint with a jet of air. The masonry and old mortar should be wetted at the time of repointing but no excess water should be present.

Mortar preparation: Mortars should be mixed thoroughly to obtain uniformity of both visual and physical characteristics. Dry ingredients should be mixed before adding the water. The mixture should be pre-hydrated to help prevent shrinkage on drying. To pre-hydrate the mortar, sufficient water is added to the dry mix to make a damp, stiff mortar. After one to two hours the mortar is remixed with additional water to give the desired consistency.

The use of anti-freeze compounds during cold weather is not recommended. Their effectiveness with high lime mortars is questionable. Furthermore, they may contain salts which would be a source of later efflorescence. A better practice is to heat the water and sand, with care taken to prevent scorching of the sand. The masonry then should be protected from freezing.

The use of air entraining agents also is discouraged. These agents are used with concrete to resist frost action and increase plasticity. The air which these agents incorporate into mortar, however, has a detrimental effect on both bond and strength of repointing mortar. Air entraining agents are considered unnecessary in high lime mortars because of their natural plasticity. Air entrainment of 10 to 16 percent, however, may be desirable in areas of extreme exposure where high strength mortars are used.

Use of bonding agents: The use of chemical agents to increase the bond of the new mortar to the old mortar and masonry units should be avoided. These agents generally are unnecessary and can be harmful.

If the joint is properly prepared and moistened prior to placing the new mortar and if the mortar is properly prepared and applied, there will be a good bond between the new mortar and the adjacent surfaces; chemical agents will not significantly improve this bond. If chemical agents are used, there may be a tendency to neglect proper joint preparation in the thought that the agent will make adequate bonding. In actuality, deteriorated mortar or dirt may remain in the joint, and bonding to these materials will not keep the mortar from coming loose. *Chemical agents cannot substitute for adequate joint preparation and proper mortar mixing.* In addition, some of the chemical agent inevitably will become smeared on the exposed face of the masonry and, due to the nature of the material, its removal will be difficult. This situation is especially likely on walls with thin mortar joints.

Filling the joints: Where existing mortar has been removed (or has fallen out) to a depth greater than one inch, these deeper places should be filled first, compacting new mortar in several layers. Once this has been completed, the back of the entire joint may be filled by applying approximately one-fourth inch of mortar and packing and back corners of the joint. This application may extend for several feet. As soon as the applied mortar has reached thumb print hardness, another layer of mortar of approximately the same thickness may be applied. Several layers will be needed to fill the joint flush with the outer surface of the brick. It is important to allow each layer time to lose much of the water and become stiff before the next layer is applied.

The rate of stiffening can be controlled by dampening the brick and old mortar before beginning to fill the joint. Free water or excessive dampness in the joint must be avoided; too much water will delay the tooling or cause excess shrinkage. If the joint is too dry, water will be absorbed from the mortar before it is properly set, thus reducing bond strength and increasing the probability of leaks.

When the final layer of mortar is thumb print hard, the joint is tooled in a manner to match the appearance of the old mortar. Tooling the finished joint at the right stage of firmness is important for uniform color. If finished while too

5

Names:
Mortar Joints

Types:
article

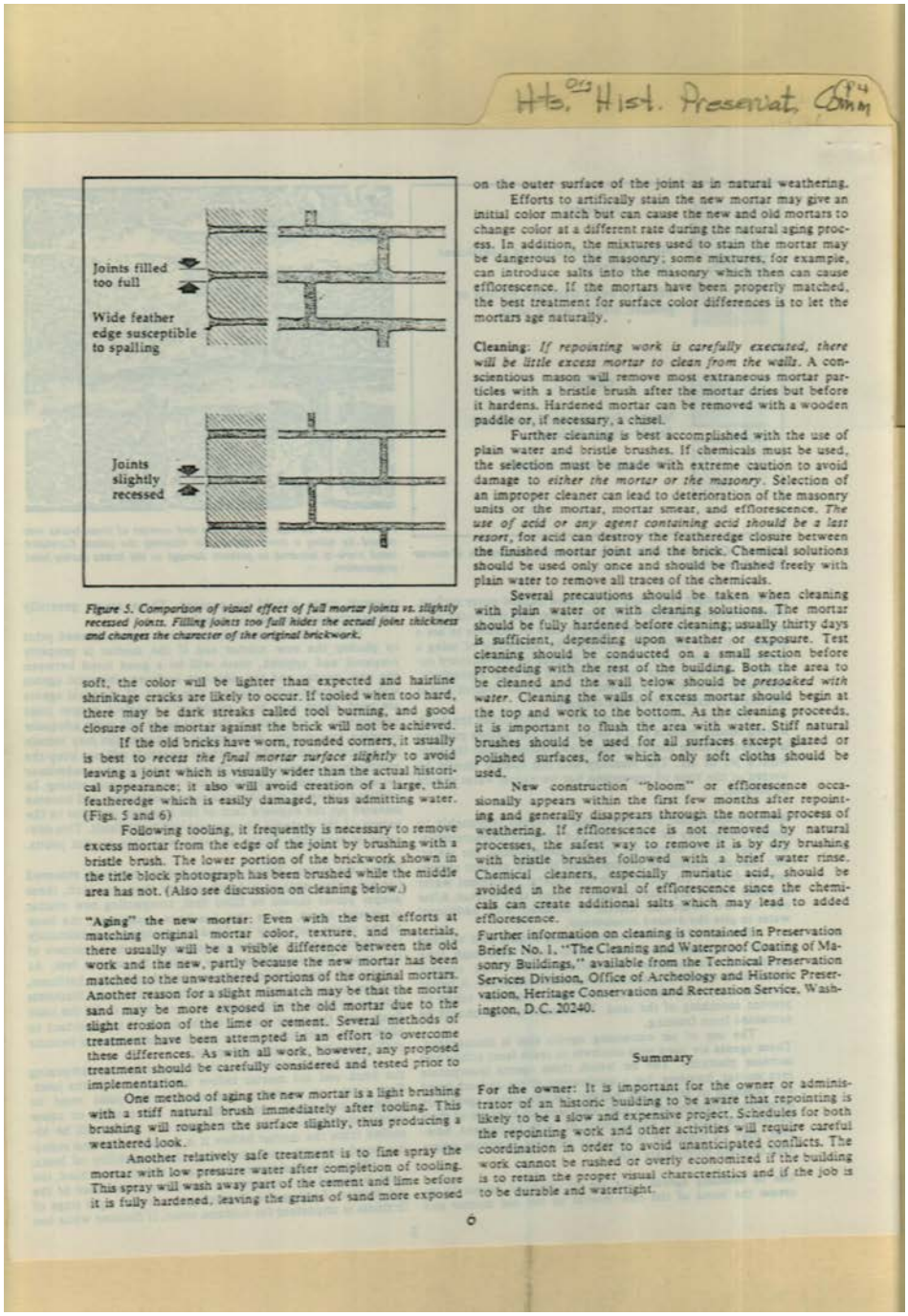


Figure 5. Comparison of visual effect of full mortar joints vs. slightly recessed joints. Filling joints too full hides the actual joint thickness and changes the character of the original brickwork.

soft, the color will be lighter than expected and hairline shrinkage cracks are likely to occur. If tooled when too hard, there may be dark streaks called tool burning, and good closure of the mortar against the brick will not be achieved.

If the old bricks have worn, rounded corners, it usually is best to *recess the final mortar surface slightly* to avoid leaving a joint which is visually wider than the actual historical appearance; it also will avoid creation of a large, thin featheredge which is easily damaged, thus admitting water. (Figs. 5 and 6)

Following tooling, it frequently is necessary to remove excess mortar from the edge of the joint by brushing with a bristle brush. The lower portion of the brickwork shown in the title block photograph has been brushed while the middle area has not. (Also see discussion on cleaning below.)

"Aging" the new mortar: Even with the best efforts at matching original mortar color, texture, and materials, there usually will be a visible difference between the old work and the new, partly because the new mortar has been matched to the unweathered portions of the original mortars. Another reason for a slight mismatch may be that the mortar sand may be more exposed in the old mortar due to the slight erosion of the lime or cement. Several methods of treatment have been attempted in an effort to overcome these differences. As with all work, however, any proposed treatment should be carefully considered and tested prior to implementation.

One method of aging the new mortar is a light brushing with a stiff natural brush immediately after tooling. This brushing will roughen the surface slightly, thus producing a weathered look.

Another relatively safe treatment is to fine spray the mortar with low pressure water after completion of tooling. This spray will wash away part of the cement and lime before it is fully hardened, leaving the grains of sand more exposed on the outer surface of the joint as in natural weathering.

Efforts to artifically stain the new mortar may give an initial color match but can cause the new and old mortars to change color at a different rate during the natural aging process. In addition, the mixtures used to stain the mortar may be dangerous to the masonry; some mixtures, for example, can introduce salts into the masonry which then can cause efflorescence. If the mortars have been properly matched, the best treatment for surface color differences is to let the mortars age naturally.

Cleaning: *If repointing work is carefully executed, there will be little excess mortar to clean from the walls.* A conscientious mason will remove most extraneous mortar particles with a bristle brush after the mortar dries but before it hardens. Hardened mortar can be removed with a wooden paddle or, if necessary, a chisel.

Further cleaning is best accomplished with the use of plain water and bristle brushes. If chemicals must be used, the selection must be made with extreme caution to avoid damage to *either the mortar or the masonry*. Selection of an improper cleaner can lead to deterioration of the masonry units or the mortar, mortar smear, and efflorescence. *The use of acid or any agent containing acid should be a last resort*, for acid can destroy the featheredge closure between the finished mortar joint and the brick. Chemical solutions should be used only once and should be flushed freely with plain water to remove all traces of the chemicals.

Several precautions should be taken when cleaning with plain water or with cleaning solutions. The mortar should be fully hardened before cleaning; usually thirty days is sufficient, depending upon weather or exposure. Test cleaning should be conducted on a small section before proceeding with the rest of the building. Both the area to be cleaned and the wall below should be *presoaked with water*. Cleaning the walls of excess mortar should begin at the top and work to the bottom. As the cleaning proceeds, it is important to flush the area with water. Stiff natural brushes should be used for all surfaces except glazed or polished surfaces, for which only soft cloths should be used.

New construction "bloom" or efflorescence occasionally appears within the first few months after repointing and generally disappears through the normal process of weathering. If efflorescence is not removed by natural processes, the safest way to remove it is by dry brushing with bristle brushes followed with a brief water rinse. Chemical cleaners, especially muriatic acid, should be avoided in the removal of efflorescence since the chemicals can create additional salts which may lead to added efflorescence.

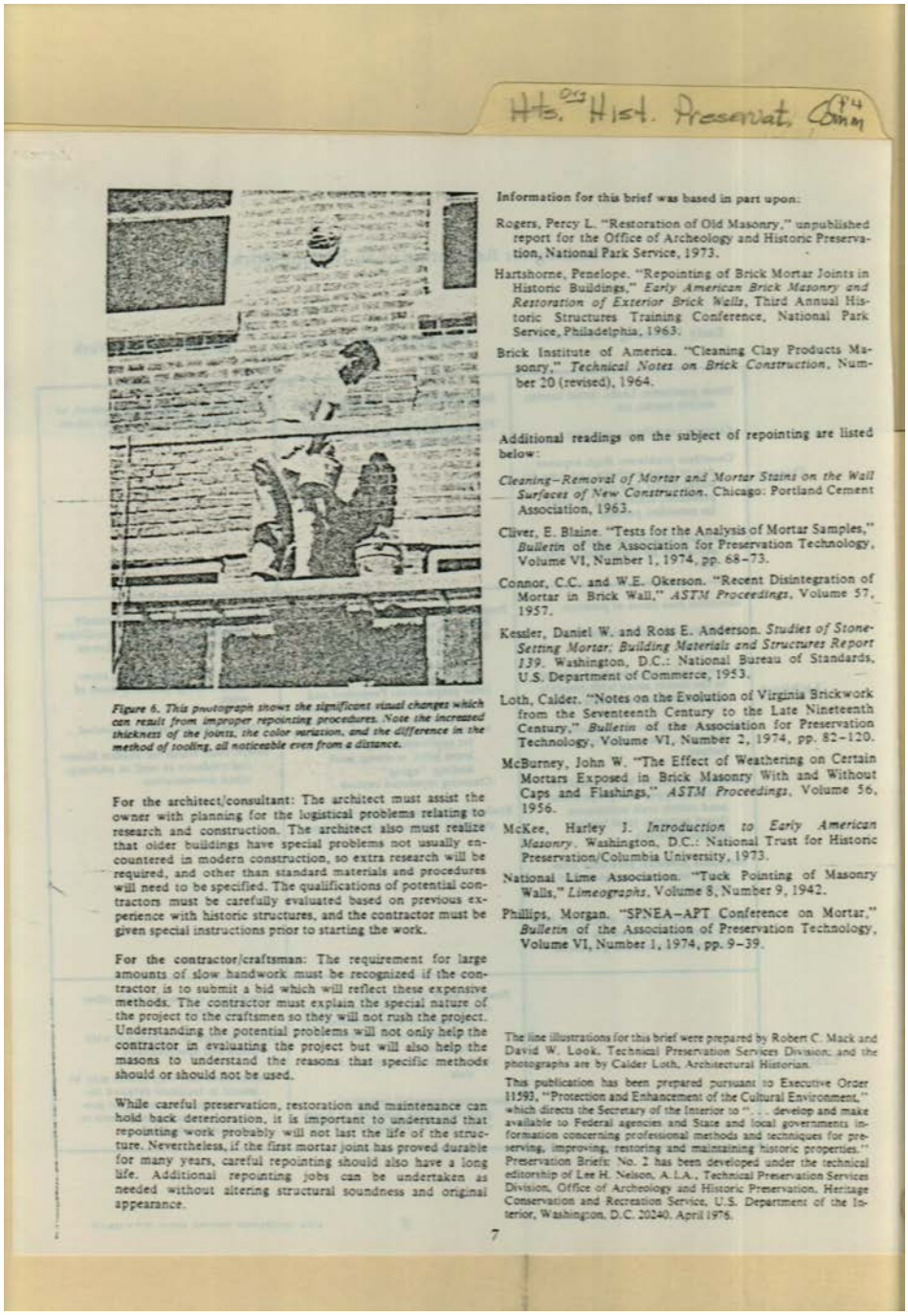
Further information on cleaning is contained in Preservation Briefs: No. 1, "The Cleaning and Waterproof Coating of Masonry Buildings," available from the Technical Preservation Services Division, Office of Archeology and Historic Preservation, Heritage Conservation and Recreation Service, Washington, D.C. 20240.

Summary

For the owner: It is important for the owner or administrator of an historic building to be aware that repointing is likely to be a slow and expensive project. Schedules for both the repointing work and other activities will require careful coordination in order to avoid unanticipated conflicts. The work cannot be rushed or overly economized if the building is to retain the proper visual characteristics and if the job is to be durable and watertight.

Names:
Mortar Joints

Types:
article



Hts. Hist. Preservat. Comm

Figure 6. This photograph shows the significant visual changes which can result from improper repointing procedures. Note the increased thickness of the joints, the color variation, and the difference in the method of tooling, all noticeable even from a distance.

For the architect/consultant: The architect must assist the owner with planning for the logistical problems relating to research and construction. The architect also must realize that older buildings have special problems not usually encountered in modern construction, so extra research will be required, and other than standard materials and procedures will need to be specified. The qualifications of potential contractors must be carefully evaluated based on previous experience with historic structures, and the contractor must be given special instructions prior to starting the work.

For the contractor/craftsman: The requirement for large amounts of slow handwork must be recognized if the contractor is to submit a bid which will reflect these expensive methods. The contractor must explain the special nature of the project to the craftsmen so they will not rush the project. Understanding the potential problems will not only help the contractor in evaluating the project but will also help the masons to understand the reasons that specific methods should or should not be used.

While careful preservation, restoration and maintenance can hold back deterioration, it is important to understand that repointing work probably will not last the life of the structure. Nevertheless, if the first mortar joint has proved durable for many years, careful repointing should also have a long life. Additional repointing jobs can be undertaken as needed without altering structural soundness and original appearance.

Information for this brief was based in part upon:

Rogers, Percy L. "Restoration of Old Masonry," unpublished report for the Office of Archeology and Historic Preservation, National Park Service, 1973.

Hartshorne, Penelope. "Repointing of Brick Mortar Joints in Historic Buildings," *Early American Brick Masonry and Restoration of Exterior Brick Walls*, Third Annual Historic Structures Training Conference, National Park Service, Philadelphia, 1963.

Brick Institute of America. "Cleaning Clay Products Masonry," *Technical Notes on Brick Construction*, Number 20 (revised), 1964.

Additional readings on the subject of repointing are listed below:

Cleaning–Removal of Mortar and Mortar Stains on the Wall Surfaces of New Construction. Chicago: Portland Cement Association, 1963.

Cliver, E. Blaine. "Tests for the Analysis of Mortar Samples," *Bulletin* of the Association for Preservation Technology, Volume VI, Number 1, 1974, pp. 68–73.

Connor, C.C. and W.E. Okerson. "Recent Disintegration of Mortar in Brick Wall," *ASTM Proceedings*, Volume 57, 1957.

Kessler, Daniel W. and Ross E. Anderson. *Studies of Stone-Setting Mortar; Building Materials and Structures Report 139*. Washington, D.C.: National Bureau of Standards, U.S. Department of Commerce, 1953.

Loth, Calder. "Notes on the Evolution of Virginia Brickwork from the Seventeenth Century to the Late Nineteenth Century," *Bulletin* of the Association for Preservation Technology, Volume VI, Number 2, 1974, pp. 82–120.

McBurney, John W. "The Effect of Weathering on Certain Mortars Exposed in Brick Masonry With and Without Caps and Flashings," *ASTM Proceedings*, Volume 56, 1956.

McKee, Harley J. *Introduction to Early American Masonry*. Washington, D.C.: National Trust for Historic Preservation/Columbia University, 1973.

National Lime Association. "Tuck Pointing of Masonry Walls," *Limeographs*, Volume 8, Number 9, 1942.

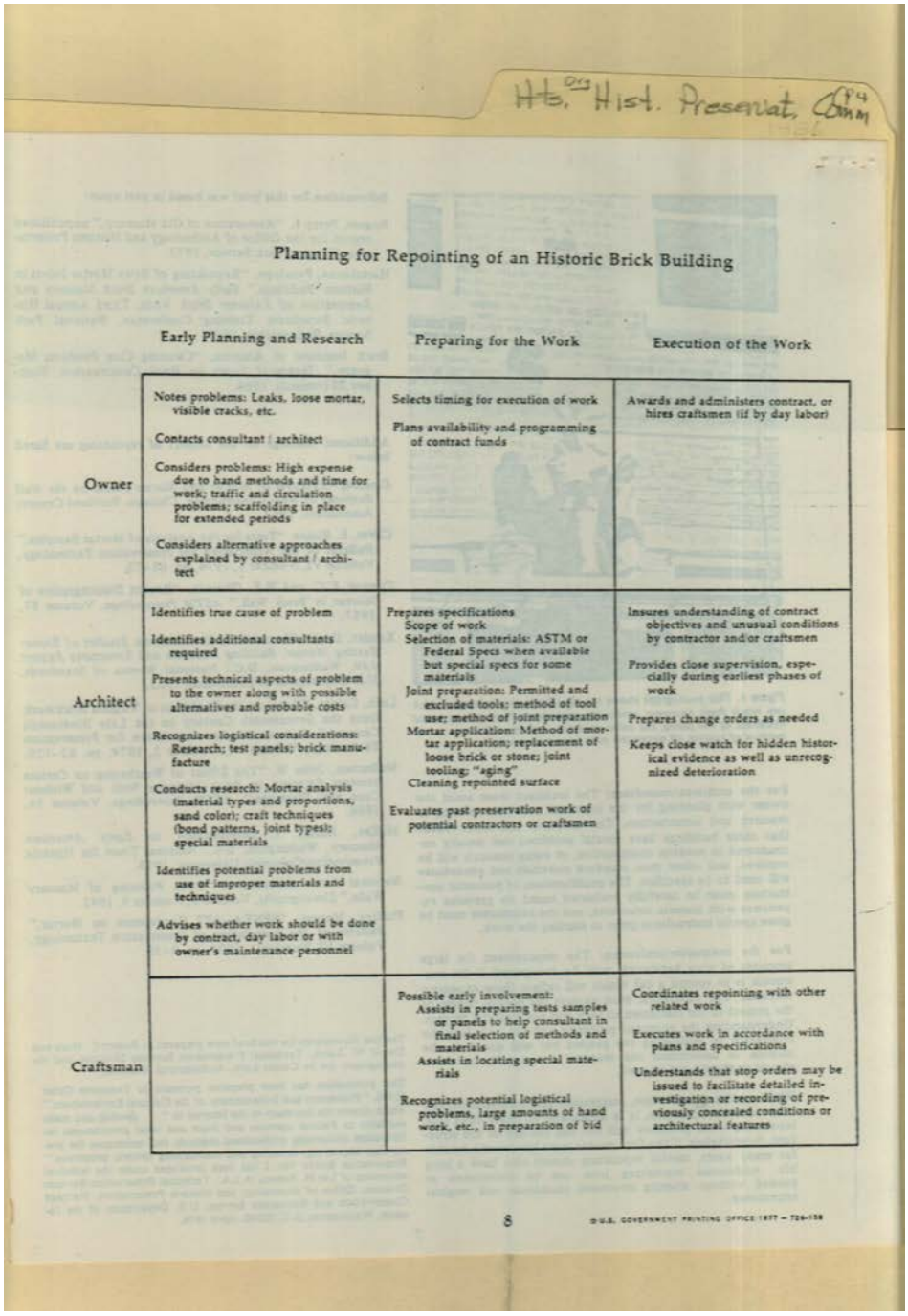
Phillips, Morgan. "SPNEA–APT Conference on Mortar," *Bulletin* of the Association of Preservation Technology, Volume VI, Number 1, 1974, pp. 9–39.

The line illustrations for this brief were prepared by Robert C. Mack and David W. Look, Technical Preservation Services Division; and the photographs are by Calder Loth, Architectural Historian.

This publication has been prepared pursuant to Executive Order 11593, "Protection and Enhancement of the Cultural Environment," which directs the Secretary of the Interior to "... develop and make available to Federal agencies and State and local governments information concerning professional methods and techniques for preserving, improving, restoring and maintaining historic properties." Preservation Briefs: No. 2 has been developed under the technical editorship of Lee H. Nelson, A.I.A., Technical Preservation Services Division, Office of Archeology and Historic Preservation, Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington, D.C. 20240. April 1976.

Names:
Mortar Joints

Types:
article



Hts. Hist. Preservat. Comm

Planning for Repointing of an Historic Brick Building

	Early Planning and Research	Preparing for the Work	Execution of the Work
Owner	Notes problems: Leaks, loose mortar, visible cracks, etc. Contacts consultant / architect Considers problems: High expense due to hand methods and time for work; traffic and circulation problems; scaffolding in place for extended periods Considers alternative approaches explained by consultant / architect	Selects timing for execution of work Plans availability and programming of contract funds	Awards and administers contract, or hires craftsmen (if by day labor)
Architect	Identifies true cause of problem Identifies additional consultants required Presents technical aspects of problem to the owner along with possible alternatives and probable costs Recognizes logistical considerations: Research; test panels; brick manufacture Conducts research: Mortar analysis (material types and proportions, sand color); craft techniques (bond patterns, joint types); special materials Identifies potential problems from use of improper materials and techniques Advises whether work should be done by contract, day labor or with owner's maintenance personnel	Prepares specifications Scope of work Selection of materials: ASTM or Federal Specs when available but special specs for some materials Joint preparation: Permitted and excluded tools; method of tool use; method of joint preparation Mortar application: Method of mortar application; replacement of loose brick or stone; joint tooling; "aging" Cleaning repointed surface Evaluates past preservation work of potential contractors or craftsmen	Insures understanding of contract objectives and unusual conditions by contractor and/or craftsmen Provides close supervision, especially during earliest phases of work Prepares change orders as needed Keeps close watch for hidden historical evidence as well as unrecognized deterioration
Craftsman		Possible early involvement: Assists in preparing tests samples or panels to help consultant in final selection of methods and materials Assists in locating special materials Recognizes potential logistical problems, large amounts of hand work, etc., in preparation of bid	Coordinates repointing with other related work Executes work in accordance with plans and specifications Understands that stop orders may be issued to facilitate detailed investigation or recording of previously concealed conditions or architectural features

8

U.S. GOVERNMENT PRINTING OFFICE: 1977 — 726-158

Names:
Mortar Joints

Types:
article

Hts. Dis Hist. Preservat. Comm 74

3 PRESERVATION BRIEFS

Conserving Energy in Historic Buildings

Baird M. Smith, AIA

Technical Preservation Services Division
Office of Archeology and Historic Preservation/Heritage Conservation and Recreation Service

With the dwindling supply of energy resources and new efficiency demands placed on the existing building stock, many owners of historic buildings and their architects are assessing the ability of these buildings to conserve energy with an eye to improving thermal performance. This brief has been developed to assist those persons attempting energy conservation measures and weatherization improvements such as adding insulation and storm windows or caulking of exterior building joints. In historic buildings, many measures can result in the inappropriate alteration of important architectural features, or, perhaps even worse, cause serious damage to the historic building materials through unwanted chemical reactions or moisture-caused deterioration. This brief recommends measures that will achieve the greatest energy savings with the least alteration to the historic buildings, while using materials that do not cause damage and that represent sound economic investments.

Inherent Energy Saving Characteristics of Historic Buildings

Many historic buildings have energy-saving physical features and devices that contribute to good thermal performance. Studies by the Energy Research and Development Administration (see bibliography) show that the buildings with the poorest energy efficiency are actually those built between 1940 and 1975. Older buildings were found to use less energy for heating and cooling and hence probably require fewer weatherization improvements. They use less energy because they were built with a well-developed sense of physical comfort and because they maximized the natural sources of heating, lighting and ventilation. The historic building owner should understand these inherent energy-saving qualities.

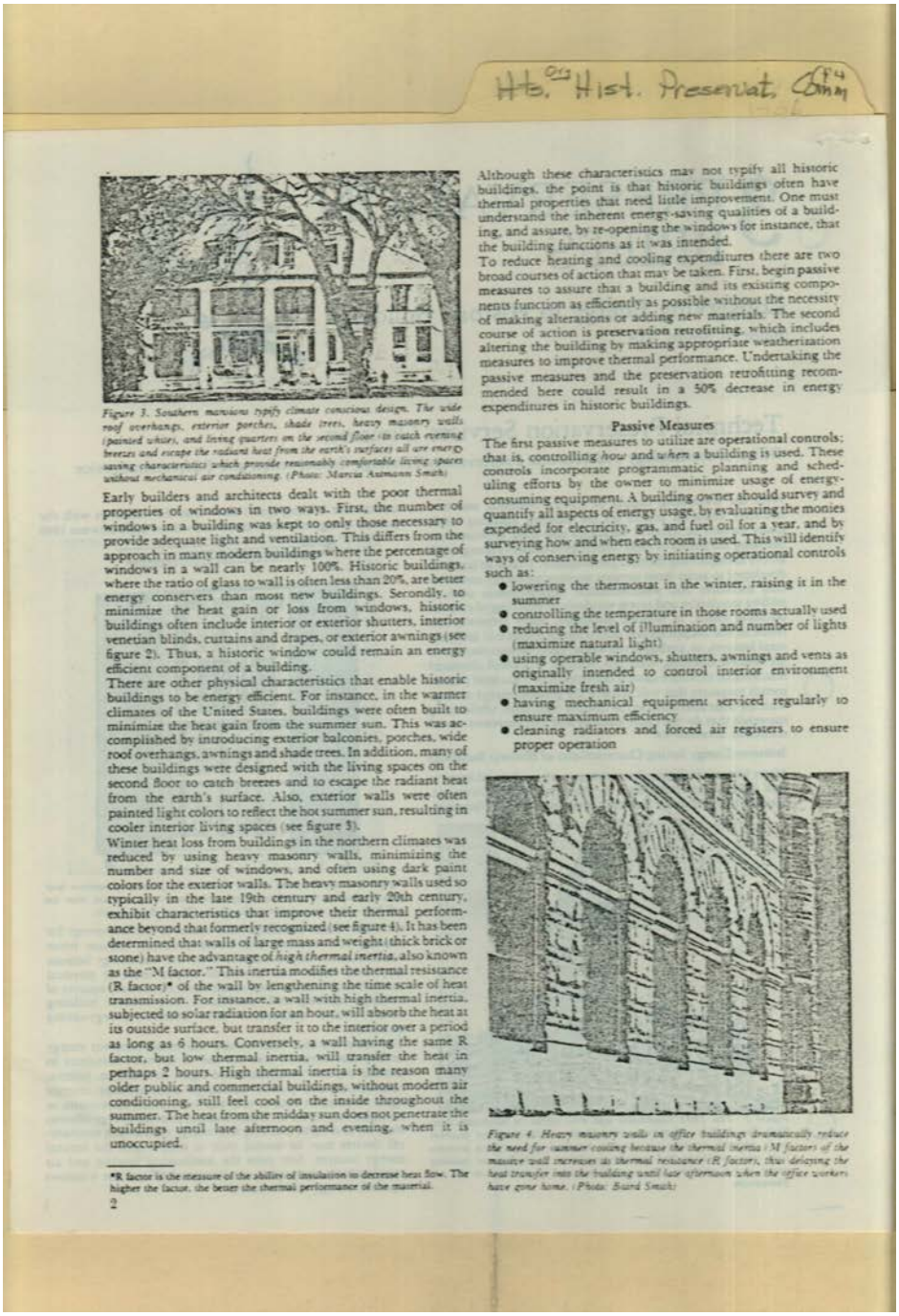
Figure 1. The 1891 Courthouse and Post Office in Rochester, New York, has built-in energy conserving features such as, heavy masonry walls, operable windows, an interior skylighted atrium which provides light and ventilation, and roof-top ventilators which keep the building cooler in the summer. Also note the presence of awnings in this old photograph.

Figure 2. Shutters can be used to minimize the problem of summer heat gain by shading the windows. If operable shutters are in place, their use will help reduce the summer cooling load. (Photo: Baird Smith)

The most obvious (and almost universal) inherent energy saving characteristic was the use of *operable windows* to provide natural ventilation and light. In addition, historic commercial and public buildings often include interior light ventilation courts, roof-top ventilators, clerestories or skylights (see figure 1). These features provide energy efficient fresh air and light, assuring that energy consuming mechanical devices may be needed only to supplement the natural energy sources. Any time the mechanical heating and air conditioning equipment can be turned off and the windows opened, energy will be saved.

Names:
Energy in Historic Buildings

Types:
article



Hts. Hist. Preservat. Comm

Figure 3. Southern mansions typify climate conscious design. The wide roof overhangs, exterior porches, shade trees, heavy masonry walls (painted white), and living quarters on the second floor (to catch evening breezes and escape the radiant heat from the earth's surface) all are energy saving characteristics which provide reasonably comfortable living spaces without mechanical air conditioning. (Photo: Marcia Aumann Smith)

Early builders and architects dealt with the poor thermal properties of windows in two ways. First, the number of windows in a building was kept to only those necessary to provide adequate light and ventilation. This differs from the approach in many modern buildings where the percentage of windows in a wall can be nearly 100%. Historic buildings, where the ratio of glass to wall is often less than 20%, are better energy conservers than most new buildings. Secondly, to minimize the heat gain or loss from windows, historic buildings often include interior or exterior shutters, interior venetian blinds, curtains and drapes, or exterior awnings (see figure 2). Thus, a historic window could remain an energy efficient component of a building.

There are other physical characteristics that enable historic buildings to be energy efficient. For instance, in the warmer climates of the United States, buildings were often built to minimize the heat gain from the summer sun. This was accomplished by introducing exterior balconies, porches, wide roof overhangs, awnings and shade trees. In addition, many of these buildings were designed with the living spaces on the second floor to catch breezes and to escape the radiant heat from the earth's surface. Also, exterior walls were often painted light colors to reflect the hot summer sun, resulting in cooler interior living spaces (see figure 3).

Winter heat loss from buildings in the northern climates was reduced by using heavy masonry walls, minimizing the number and size of windows, and often using dark paint colors for the exterior walls. The heavy masonry walls used so typically in the late 19th century and early 20th century, exhibit characteristics that improve their thermal performance beyond that formerly recognized (see figure 4). It has been determined that walls of large mass and weight (thick brick or stone) have the advantage of *high thermal inertia*, also known as the "M factor." This inertia modifies the thermal resistance (R factor)* of the wall by lengthening the time scale of heat transmission. For instance, a wall with high thermal inertia, subjected to solar radiation for an hour, will absorb the heat at its outside surface, but transfer it to the interior over a period as long as 6 hours. Conversely, a wall having the same R factor, but low thermal inertia, will transfer the heat in perhaps 2 hours. High thermal inertia is the reason many older public and commercial buildings, without modern air conditioning, still feel cool on the inside throughout the summer. The heat from the midday sun does not penetrate the buildings until late afternoon and evening, when it is unoccupied.

*R factor is the measure of the ability of insulation to decrease heat flow. The higher the factor, the better the thermal performance of the material.

Although these characteristics may not typify all historic buildings, the point is that historic buildings often have thermal properties that need little improvement. One must understand the inherent energy-saving qualities of a building, and assure, by re-opening the windows for instance, that the building functions as it was intended.

To reduce heating and cooling expenditures there are two broad courses of action that may be taken. First, begin passive measures to assure that a building and its existing components function as efficiently as possible without the necessity of making alterations or adding new materials. The second course of action is **preservation retrofitting**, which includes altering the building by making appropriate weatherization measures to improve thermal performance. Undertaking the passive measures and the preservation retrofitting recommended here could result in a 50% decrease in energy expenditures in historic buildings.

Passive Measures

The first passive measures to utilize are operational controls; that is, controlling *how* and *when* a building is used. These controls incorporate programmatic planning and scheduling efforts by the owner to minimize usage of energy-consuming equipment. A building owner should survey and quantify all aspects of energy usage, by evaluating the monies expended for electricity, gas, and fuel oil for a year, and by surveying how and when each room is used. This will identify ways of conserving energy by initiating operational controls such as:

- lowering the thermostat in the winter, raising it in the summer
- controlling the temperature in those rooms actually used
- reducing the level of illumination and number of lights (maximize natural light)
- using operable windows, shutters, awnings and vents as originally intended to control interior environment (maximize fresh air)
- having mechanical equipment serviced regularly to ensure maximum efficiency
- cleaning radiators and forced air registers to ensure proper operation

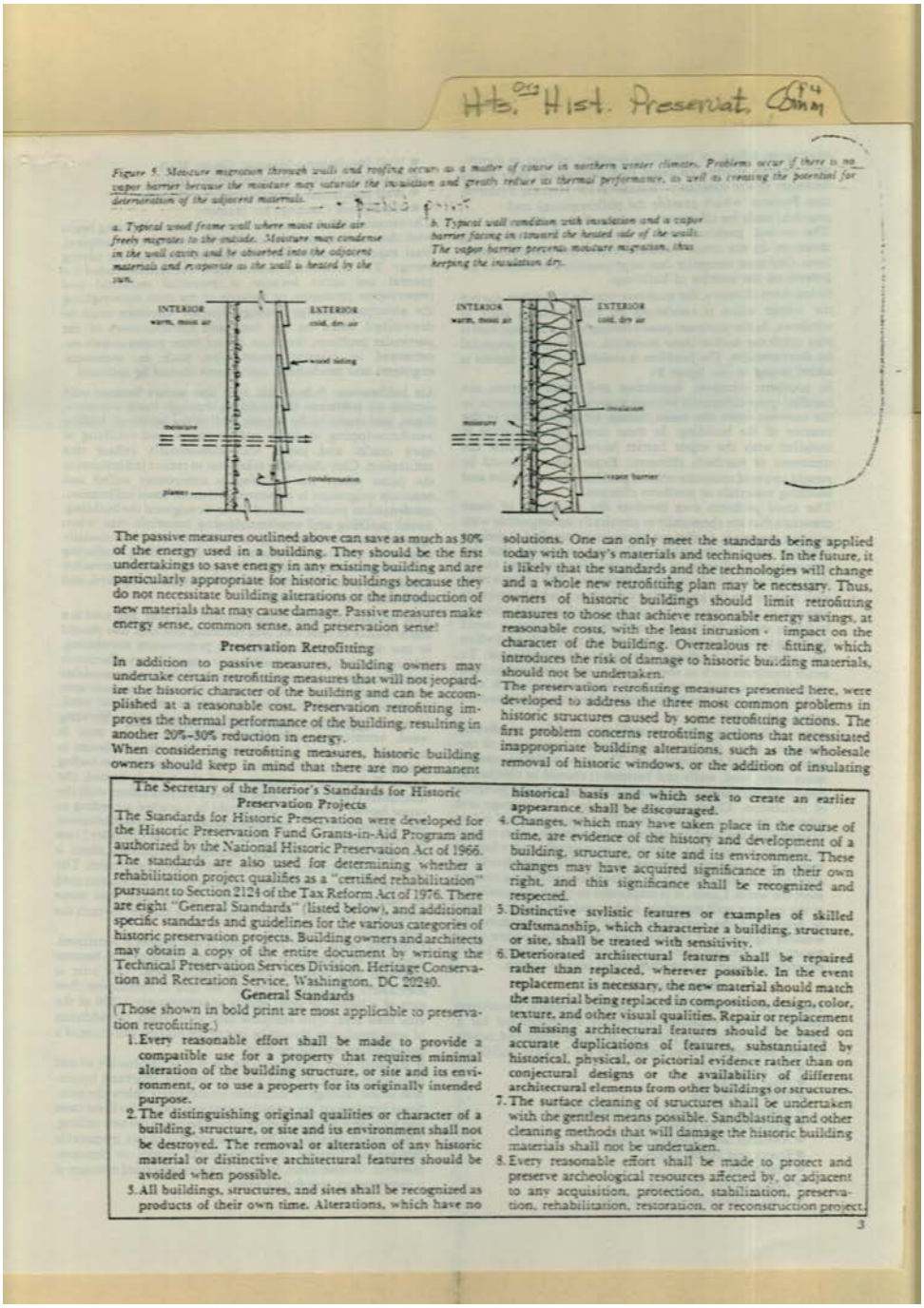
Figure 4. Heavy masonry walls in office buildings dramatically reduce the need for summer cooling because the thermal inertia (M factor) of the massive wall increases its thermal resistance (R factor), thus delaying the heat transfer into the building until late afternoon when the office workers have gone home. (Photo: Beard Smith)

Names:

Energy in Historic Buildings

Types:

article



Hts. Dis Hist. Preservat. Comm 84

Figure 5. Moisture migration through walls and roofing occurs as a matter of course in northern winter climates. Problems occur if there is no vapor barrier because the moisture may saturate the insulation and greatly reduce its thermal performance, as well as creating the potential for deterioration of the adjacent materials.

a. Typical wood frame wall where moist inside air freely migrates to the outside. Moisture may condense in the wall cavity and be absorbed into the adjacent materials and evaporate as the wall is heated by the sun.

b. Typical wall condition with insulation and a vapor barrier facing in (toward the heated side of the wall). The vapor barrier prevents moisture migration, thus keeping the insulation dry.

The passive measures outlined above can save as much as 50% of the energy used in a building. They should be the first undertakings to save energy in any existing building and are particularly appropriate for historic buildings because they do not necessitate building alterations or the introduction of new materials that may cause damage. Passive measures make energy sense, common sense, and preservation sense!

Preservation Retrofitting

In addition to passive measures, building owners may undertake certain retrofitting measures that will not jeopardize the historic character of the building and can be accomplished at a reasonable cost. Preservation retrofitting improves the thermal performance of the building, resulting in another 20%–30% reduction in energy.

When considering retrofitting measures, historic building owners should keep in mind that there are no permanent solutions. One can only meet the standards being applied today with today's materials and techniques. In the future, it is likely that the standards and the technologies will change and a whole new retrofitting plan may be necessary. Thus, owners of historic buildings should limit retrofitting measures to those that achieve reasonable energy savings, at reasonable costs, with the least intrusion - impact on the character of the building. Overzealous re fitting, which introduces the risk of damage to historic building materials, should not be undertaken.

The preservation retrofitting measures presented here, were developed to address the three most common problems in historic structures caused by some retrofitting actions. The first problem concerns retrofitting actions that necessitated inappropriate building alterations, such as the wholesale removal of historic windows, or the addition of insulating

The Secretary of the Interior's Standards for Historic Preservation Projects

The Standards for Historic Preservation were developed for the Historic Preservation Fund Grants-in-Aid Program and authorized by the National Historic Preservation Act of 1966. The standards are also used for determining whether a rehabilitation project qualifies as a "certified rehabilitation" pursuant to Section 2124 of the Tax Reform Act of 1976. There are eight "General Standards" (listed below), and additional specific standards and guidelines for the various categories of historic preservation projects. Building owners and architects may obtain a copy of the entire document by writing the Technical Preservation Services Division, Heritage Conservation and Recreation Service, Washington, DC 20240.

General Standards

(Those shown in bold print are most applicable to preservation retrofitting.)

1. **Every reasonable effort shall be made to provide a compatible use for a property that requires minimal alteration of the building structure, or site and its environment, or to use a property for its originally intended purpose.**
2. **The distinguishing original qualities or character of a building, structure, or site and its environment shall not be destroyed. The removal or alteration of any historic material or distinctive architectural features should be avoided when possible.**
3. **All buildings, structures, and sites shall be recognized as products of their own time. Alterations, which have no historical basis and which seek to create an earlier appearance, shall be discouraged.**
4. **Changes, which may have taken place in the course of time, are evidence of the history and development of a building, structure, or site and its environment. These changes may have acquired significance in their own right, and this significance shall be recognized and respected.**
5. **Distinctive stylistic features or examples of skilled craftsmanship, which characterize a building, structure, or site, shall be treated with sensitivity.**
6. **Deteriorated architectural features shall be repaired rather than replaced, wherever possible. In the event replacement is necessary, the new material should match the material being replaced in composition, design, color, texture, and other visual qualities. Repair or replacement of missing architectural features should be based on accurate duplications of features, substantiated by historical, physical, or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other buildings or structures.**
7. **The surface cleaning of structures shall be undertaken with the gentlest means possible. Sandblasting and other cleaning methods that will damage the historic building materials shall not be undertaken.**
8. **Every reasonable effort shall be made to protect and preserve archeological resources affected by, or adjacent to any acquisition, protection, stabilization, preservation, rehabilitation, restoration, or reconstruction project.**

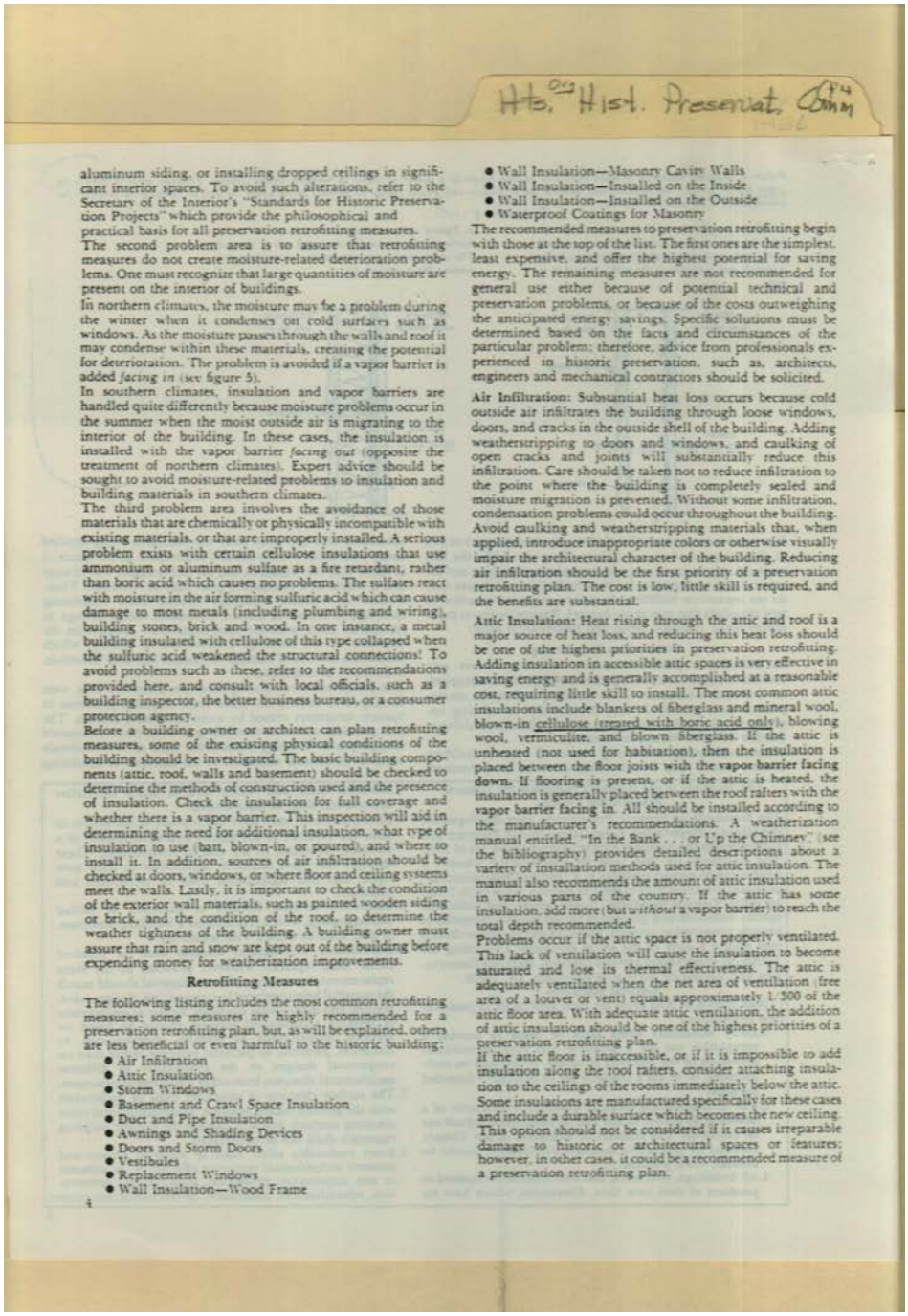
3

Names:

Energy in Historic Buildings

Types:

article



Hts. Hist. Preservat. Comm

aluminum siding, or installing dropped ceilings in significant interior spaces. To avoid such alterations, refer to the Secretary of the Interior's "Standards for Historic Preservation Projects" which provide the philosophical and practical basis for all preservation retrofitting measures.

The second problem area is to assure that retrofitting measures do not create moisture-related deterioration problems. One must recognize that large quantities of moisture are present on the interior of buildings.

In northern climates, the moisture may be a problem during the winter when it condenses on cold surfaces such as windows. As the moisture passes through the walls and roof it may condense within these materials, creating the potential for deterioration. The problem is avoided if a vapor barrier is added *facing in* (see figure 5).

In southern climates, insulation and vapor barriers are handled quite differently because moisture problems occur in the summer when the moist outside air is migrating to the interior of the building. In these cases, the insulation is installed with the vapor barrier *facing out* (opposite the treatment of northern climates). Expert advice should be sought to avoid moisture-related problems to insulation and building materials in southern climates.

The third problem area involves the avoidance of those materials that are chemically or physically incompatible with existing materials, or that are improperly installed. A serious problem exists with certain cellulose insulations that use ammonium or aluminum sulfate as a fire retardant, rather than boric acid which causes no problems. The sulfates react with moisture in the air forming sulfuric acid which can cause damage to most metals (including plumbing and wiring), building stones, brick and wood. In one instance, a metal building insulated with cellulose of this type collapsed when the sulfuric acid weakened the structural connections! To avoid problems such as these, refer to the recommendations provided here, and consult with local officials, such as a building inspector, the better business bureau, or a consumer protection agency.

Before a building owner or architect can plan retrofitting measures, some of the existing physical conditions of the building should be investigated. The basic building components (attic, roof, walls and basement) should be checked to determine the methods of construction used and the presence of insulation. Check the insulation for full coverage and whether there is a vapor barrier. This inspection will aid in determining the need for additional insulation, what type of insulation to use (batt, blown-in, or poured), and where to install it. In addition, sources of air infiltration should be checked at doors, windows, or where floor and ceiling systems meet the walls. Lastly, it is important to check the condition of the exterior wall materials, such as painted wooden siding or brick, and the condition of the roof, to determine the weather tightness of the building. A building owner must assure that rain and snow are kept out of the building before expending money for weatherization improvements.

Retrofitting Measures

The following listing includes the most common retrofitting measures; some measures are highly recommended for a preservation retrofitting plan, but, as will be explained, others are less beneficial or even harmful to the historic building:

- Air Infiltration
- Attic Insulation
- Storm Windows
- Basement and Crawl Space Insulation
- Duct and Pipe Insulation
- Awnings and Shading Devices
- Doors and Storm Doors
- Vestibules
- Replacement Windows
- Wall Insulation—Wood Frame
- Wall Insulation—Masonry Cavity Walls
- Wall Insulation—Installed on the Inside
- Wall Insulation—Installed on the Outside
- Waterproof Coatings for Masonry

The recommended measures to preservation retrofitting begin with those at the top of the list. The first ones are the simplest, least expensive, and offer the highest potential for saving energy. The remaining measures are not recommended for general use either because of potential technical and preservation problems, or because of the costs outweighing the anticipated energy savings. Specific solutions must be determined based on the facts and circumstances of the particular problem; therefore, advice from professionals experienced in historic preservation, such as, architects, engineers and mechanical contractors should be solicited.

Air Infiltration: Substantial heat loss occurs because cold outside air infiltrates the building through loose windows, doors, and cracks in the outside shell of the building. Adding weatherstripping to doors and windows, and caulking of open cracks and joints will substantially reduce this infiltration. Care should be taken not to reduce infiltration to the point where the building is completely sealed and moisture migration is prevented. Without some infiltration, condensation problems could occur throughout the building. Avoid caulking and weatherstripping materials that, when applied, introduce inappropriate colors or otherwise visually impair the architectural character of the building. Reducing air infiltration should be the first priority of a preservation retrofitting plan. The cost is low, little skill is required, and the benefits are substantial.

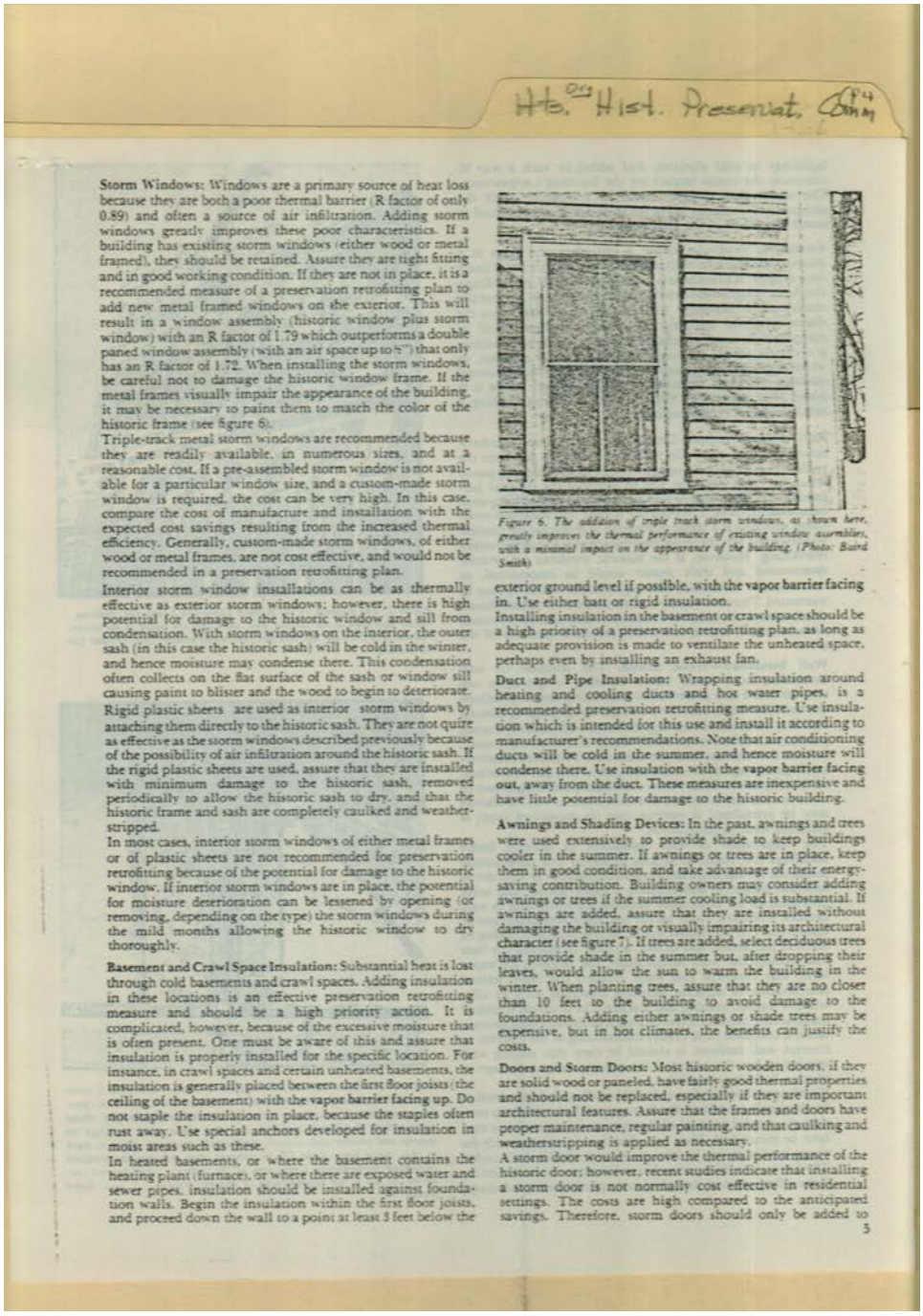
Attic Insulation: Heat rising through the attic and roof is a major source of heat loss, and reducing this heat loss should be one of the highest priorities in preservation retrofitting. Adding insulation in accessible attic spaces is very effective in saving energy and is generally accomplished at a reasonable cost, requiring little skill to install. The most common attic insulations include blankets of fiberglass and mineral wool, blown-in cellulose (treated with boric acid only), blowing wool, vermiculite, and blown fiberglass. If the attic is unheated (not used for habitation), then the insulation is placed between the floor joists with the **vapor barrier facing down.** If flooring is present, or if the attic is heated, the insulation is generally placed between the roof rafters with the **vapor barrier facing in.** All should be installed according to the manufacturer's recommendations. A weatherization manual entitled, "In the Bank . . . or Up the Chimney" (see the bibliography) provides detailed descriptions about a variety of installation methods used for attic insulation. The manual also recommends the amount of attic insulation used in various parts of the country. If the attic has some insulation, add more (but *without* a vapor barrier) to reach the total depth recommended.

Problems occur if the attic space is not properly ventilated. This lack of ventilation will cause the insulation to become saturated and lose its thermal effectiveness. The attic is adequately ventilated when the net area of ventilation (free area of a louver or vent) equals approximately 1/300 of the attic floor area. With adequate attic ventilation, the addition of attic insulation should be one of the highest priorities of a preservation retrofitting plan.

If the attic floor is inaccessible, or if it is impossible to add insulation along the roof rafters, consider attaching insulation to the ceilings of the rooms immediately below the attic. Some insulations are manufactured specifically for these cases and include a durable surface which becomes the new ceiling. This option should not be considered if it causes irreparable damage to historic or architectural spaces or features; however, in other cases, it could be a recommended measure of a preservation retrofitting plan.

Names:
Energy in Historic Buildings

Types:
article



Hts. Dis Hist. Preservat. Comm

Storm Windows: Windows are a primary source of heat loss because they are both a poor thermal barrier (R factor of only 0.89) and often a source of air infiltration. Adding storm windows greatly improves these poor characteristics. If a building has existing storm windows (either wood or metal framed), they should be retained. Assure they are tight fitting and in good working condition. If they are not in place, it is a recommended measure of a preservation retrofitting plan to add new metal framed windows on the exterior. This will result in a window assembly (historic window plus storm window) with an R factor of 1.79 which outperforms a double paned window assembly (with an air space up to ½") that only has an R factor of 1.72. When installing the storm windows, be careful not to damage the historic window frame. If the metal frames visually impair the appearance of the building, it may be necessary to paint them to match the color of the historic frame (see figure 6).

Triple-track metal storm windows are recommended because they are readily available, in numerous sizes, and at a reasonable cost. If a pre-assembled storm window is not available for a particular window size, and a custom-made storm window is required, the cost can be very high. In this case, compare the cost of manufacture and installation with the expected cost savings resulting from the increased thermal efficiency. Generally, custom-made storm windows, of either wood or metal frames, are not cost effective, and would not be recommended in a preservation retrofitting plan.

Interior storm window installations can be as thermally effective as exterior storm windows; however, there is high potential for damage to the historic window and sill from condensation. With storm windows on the interior, the outer sash (in this case the historic sash) will be cold in the winter, and hence moisture may condense there. This condensation often collects on the flat surface of the sash or window sill causing paint to blister and the wood to begin to deteriorate.

Rigid plastic sheets are used as interior storm windows by attaching them directly to the historic sash. They are not quite as effective as the storm windows described previously because of the possibility of air infiltration around the historic sash. If the rigid plastic sheets are used, assure that they are installed with minimum damage to the historic sash, removed periodically to allow the historic sash to dry, and that the historic frame and sash are completely caulked and weatherstripped.

In most cases, interior storm windows of either metal frames or of plastic sheets are not recommended for preservation retrofitting because of the potential for damage to the historic window. If interior storm windows are in place, the potential for moisture deterioration can be lessened by opening (or removing, depending on the type) the storm windows during the mild months allowing the historic window to dry thoroughly.

Basement and Crawl Space Insulation: Substantial heat is lost through cold basements and crawl spaces. Adding insulation in these locations is an effective preservation retrofitting measure and should be a high priority action. It is complicated, however, because of the excessive moisture that is often present. One must be aware of this and assure that insulation is properly installed for the specific location. For instance, in crawl spaces and certain unheated basements, the insulation is generally placed between the first floor joists (the ceiling of the basement) with the **vapor barrier facing up.** Do not staple the insulation in place, because the staples often rust away. Use special anchors developed for insulation in moist areas such as these.

In heated basements, or where the basement contains the heating plant (furnace), or where there are exposed water and sewer pipes, insulation should be installed against foundation walls. Begin the insulation within the first floor joists, and proceed down the wall to a point at least 3 feet below the exterior ground level if possible, with the **vapor barrier facing** in. Use either batt or rigid insulation.

Figure 6. The addition of triple track storm windows, as shown here, greatly improves the thermal performance of existing window assemblies, with a minimal impact on the appearance of the building. (Photo: Baird Smith)

Installing insulation in the basement or crawl space should be a high priority of a preservation retrofitting plan, as long as adequate provision is made to ventilate the unheated space, perhaps even by installing an exhaust fan.

Duct and Pipe Insulation: Wrapping insulation around heating and cooling ducts and hot water pipes, is a recommended preservation retrofitting measure. Use insulation which is intended for this use and install it according to manufacturer's recommendations. Note that air conditioning ducts will be cold in the summer, and hence moisture will condense there. Use insulation with the **vapor barrier facing** out, away from the duct. These measures are inexpensive and have little potential for damage to the historic building.

Awnings and Shading Devices: In the past, awnings and trees were used extensively to provide shade to keep buildings cooler in the summer. If awnings or trees are in place, keep them in good condition, and take advantage of their energy-saving contribution. Building owners may consider adding awnings or trees if the summer cooling load is substantial. If awnings are added, assure that they are installed without damaging the building or visually impairing its architectural character (see figure 7). If trees are added, select deciduous trees that provide shade in the summer but, after dropping their leaves, would allow the sun to warm the building in the winter. When planting trees, assure that they are no closer than 10 feet to the building to avoid damage to the foundations. Adding either awnings or shade trees may be expensive, but in hot climates, the benefits can justify the costs.

Doors and Storm Doors: Most historic wooden doors, if they are solid wood or paneled, have fairly good thermal properties and should not be replaced, especially if they are important architectural features. Assure that the frames and doors have proper maintenance, regular painting, and that caulking and weatherstripping is applied as necessary.

A storm door would improve the thermal performance of the historic door; however, recent studies indicate that installing a storm door is not normally cost effective in residential settings. The costs are high compared to the anticipated savings. Therefore, storm doors should only be added to

Names:
Energy in Historic Buildings

Types:
article

Hts. Org Hist. Preservat. Comm

buildings in cold climates, and added in such a way to minimize the visual impact on the building's appearance. The storm door design should be compatible with the architectural character of the building and may be painted to match the colors of the historic door.

Vestibules: Vestibules create a secondary air space at a doorway to reduce air infiltration occurring while the primary door is open. If a vestibule is in place, retain it. If not, adding a vestibule, either on the exterior or interior, should be carefully considered to determine the possible visual impact on the character of the building. The energy savings would be comparatively small compared to construction costs. Adding a vestibule should be considered in very cold climates, or where door use is very high, but in either case, the additional question of visual intrusion must be resolved before it is added. For most cases with historic buildings, adding a vestibule is not recommended.

Replacement Windows: Unfortunately, a common weatherization measure, especially in larger buildings, has been the replacement of historic windows with modern double paned windows. The intention was to improve the thermal performance of the existing windows and to reduce long-term maintenance costs. The evidence is clear that adding exterior storm windows is a viable alternative to replacing the historic windows and it is the recommended approach in preservation retrofitting. However, if the historic windows are severely deteriorated and their repair would be impractical, or economically infeasible, then replacement windows may be warranted. The new windows, of either wood or metal, should closely match the historic windows in size, number of panes, muntin shape, frame, color and reflective qualities of the glass.

Wall Insulation—Wood Frame: The addition of wall insulation in a wood frame building is generally not recommended as a preservation retrofitting measure because the costs are high, and the potential for damage to historic building materials is even higher. Also, wall insulation is not particularly effective for small frame buildings (one story) because the heat loss from the uninsulated walls is a relatively small percentage of the total, and part of that can be attributed to infiltration. If, however, the historic building is two or more stories, and is located in a cold climate, wall insulation may be considered if extreme care (as explained later) is exercised with its installation.

The installation of wall insulation in historic frame buildings can result in serious technical and preservation problems. As discussed before, insulation must be kept dry to function properly, and requires a vapor barrier and some provision for air movement. Introducing insulation in wall cavities, without a vapor barrier and some ventilation can be disastrous. The insulation would become saturated, losing its thermal properties, and in fact, actually increasing the heat loss through the wall. Additionally, the moisture (in vapor form) may condense into water droplets and begin serious deterioration of adjacent building materials such as sills, window frames, framing and bracing. The situation is greatly complicated, because correcting such problems could necessitate the complete (and costly) dismantling of the exterior or interior wall surfaces. It should be clear that adding wall insulation has the potential for causing serious damage to historic building materials.

If adding wall insulation to frame buildings is determined to be absolutely necessary, the first approach should be to consider the careful removal of the exterior siding so that it may later be reinstalled. Then introduce batt insulation with the vapor barrier facing in into the now accessible wall cavity. The first step in this approach is an investigation to determine if the siding can be removed without causing serious damage.

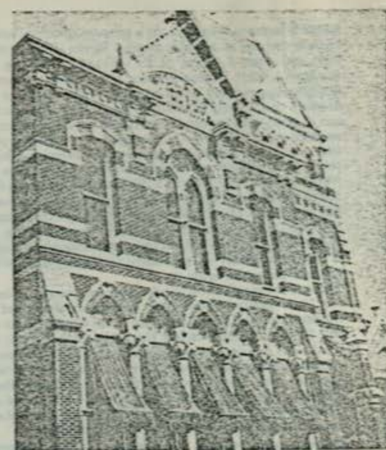


Figure 7. The awnings on the Willard Library in Evansville, Indiana, reduce heat gain in the summer and, when they are raised in the winter, radiant heat from the sun provides free supplementary heat. (Photo: Lee H. Nelson)

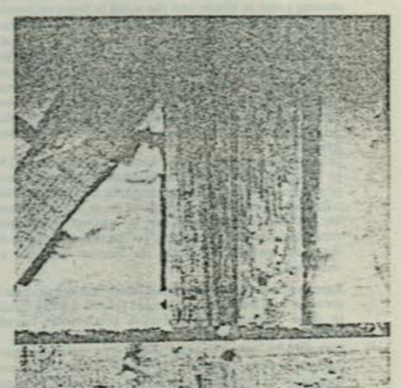
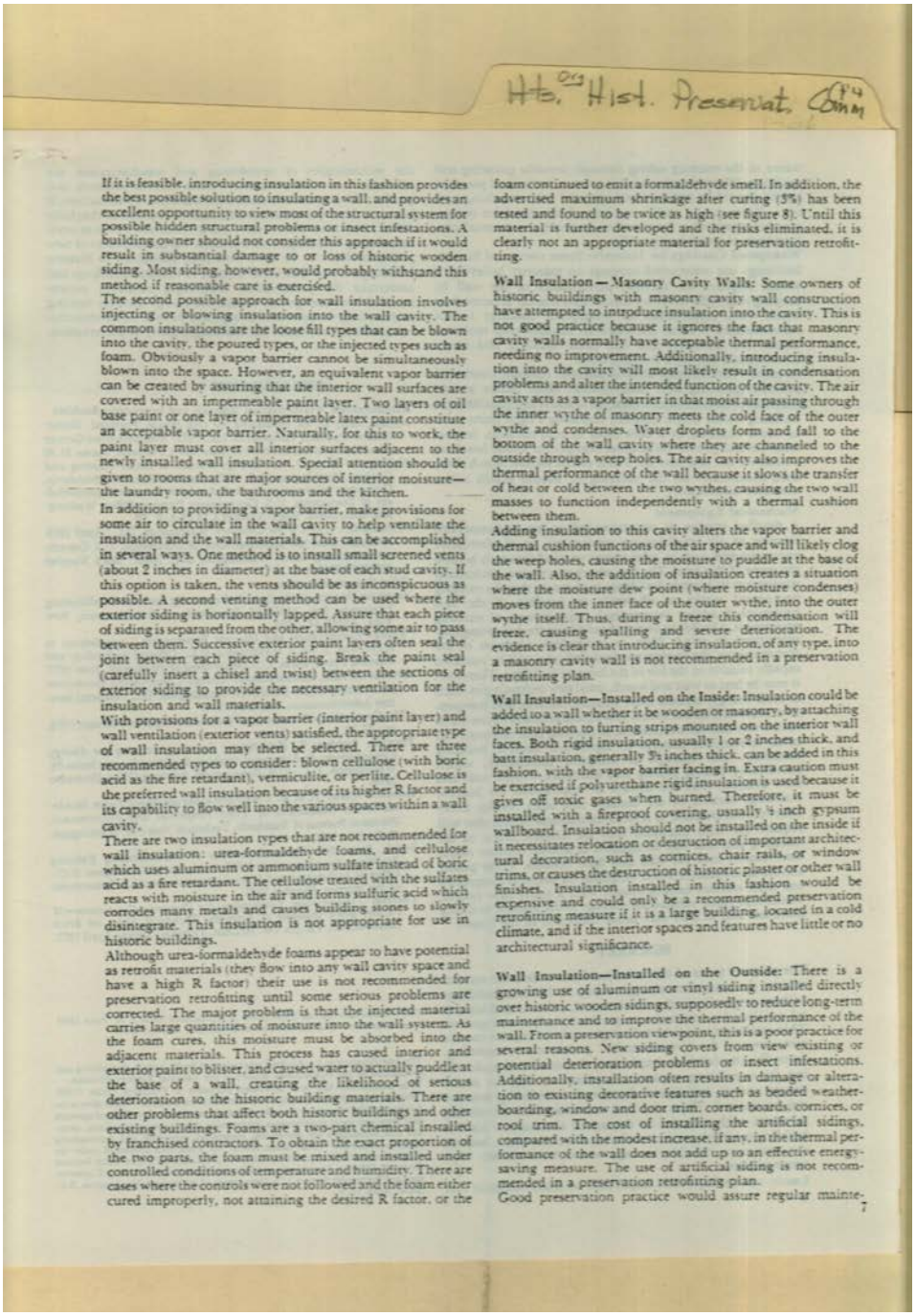


Figure 8. The white material seen between the wooden wall studs is urea-formaldehyde foam. It is injected into the wall cavity wet, and as it cures, large quantities of moisture are given off creating the potential for serious deterioration of adjacent materials and may cause paint to blister on interior and exterior wall surfaces. Additionally, foam can shrink as much as that shown here (about 7% by volume), thus reducing the predicted insulating performance. Until some of the technical problems are corrected, its use is not recommended in historic structures. (Photo: Baird Smith)

Names:
Energy in Historic Buildings

Types:
article



Hts. Org Hist. Preservat. Comm

If it is feasible, introducing insulation in this fashion provides the best possible solution to insulating a wall, and provides an excellent opportunity to view most of the structural system for possible hidden structural problems or insect infestations. A building owner should not consider this approach if it would result in substantial damage to or loss of historic wooden siding. Most siding, however, would probably withstand this method if reasonable care is exercised.

The second possible approach for wall insulation involves injecting or blowing insulation into the wall cavity. The common insulations are the loose fill types that can be blown into the cavity, the poured types, or the injected types such as foam. Obviously a vapor barrier cannot be simultaneously blown into the space. However, an equivalent vapor barrier can be created by assuring that the interior wall surfaces are covered with an impermeable paint layer. Two layers of oil base paint or one layer of impermeable latex paint constitute an acceptable vapor barrier. Naturally, for this to work, the paint layer must cover all interior surfaces adjacent to the newly installed wall insulation. Special attention should be given to rooms that are major sources of interior moisture—the laundry room, the bathrooms and the kitchen.

In addition to providing a vapor barrier, make provisions for some air to circulate in the wall cavity to help ventilate the insulation and the wall materials. This can be accomplished in several ways. One method is to install small screened vents (about 2 inches in diameter) at the base of each stud cavity. If this option is taken, the vents should be as inconspicuous as possible. A second venting method can be used where the exterior siding is horizontally lapped. Assure that each piece of siding is separated from the other, allowing some air to pass between them. Successive exterior paint layers often seal the joint between each piece of siding. Break the paint seal (carefully insert a chisel and twist) between the sections of exterior siding to provide the necessary ventilation for the insulation and wall materials.

With provisions for a vapor barrier (interior paint layer) and wall ventilation (exterior vents) satisfied, the appropriate type of wall insulation may then be selected. There are three recommended types to consider: blown cellulose (with boric acid as the fire retardant), vermiculite, or perlite. Cellulose is the preferred wall insulation because of its higher R factor and its capability to flow well into the various spaces within a wall cavity.

There are two insulation types that are not recommended for wall insulation: urea-formaldehyde foams, and cellulose which uses aluminum or ammonium sulfate instead of boric acid as a fire retardant. The cellulose treated with the sulfates reacts with moisture in the air and forms sulfuric acid which corrodes many metals and causes building stones to slowly disintegrate. This insulation is not appropriate for use in historic buildings.

Although urea-formaldehyde foams appear to have potential as retrofit materials (they flow into any wall cavity space and have a high R factor) their use is not recommended for preservation retrofitting until some serious problems are corrected. The major problem is that the injected material carries large quantities of moisture into the wall system. As the foam cures, this moisture must be absorbed into the adjacent materials. This process has caused interior and exterior paint to blister, and caused water to actually puddle at the base of a wall, creating the likelihood of serious deterioration to the historic building materials. There are other problems that affect both historic buildings and other existing buildings. Foams are a two-part chemical installed by franchised contractors. To obtain the exact proportion of the two parts, the foam must be mixed and installed under controlled conditions of temperature and humidity. There are cases where the controls were not followed and the foam either cured improperly, not attaining the desired R factor, or the foam continued to emit a formaldehyde smell. In addition, the advertised maximum shrinkage after curing (3%) has been tested and found to be twice as high (see figure 8). Until this material is further developed and the risks eliminated, it is clearly not an appropriate material for preservation retrofitting.

Wall Insulation—Masonry Cavity Walls: Some owners of historic buildings with masonry cavity wall construction have attempted to introduce insulation into the cavity. This is not good practice because it ignores the fact that masonry cavity walls normally have acceptable thermal performance, needing no improvement. Additionally, introducing insulation into the cavity will most likely result in condensation problems and alter the intended function of the cavity. The air cavity acts as a vapor barrier in that moist air passing through the inner wythe of masonry meets the cold face of the outer wythe and condenses. Water droplets form and fall to the bottom of the wall cavity where they are channeled to the outside through weep holes. The air cavity also improves the thermal performance of the wall because it slows the transfer of heat or cold between the two wythes, causing the two wall masses to function independently with a thermal cushion between them.

Adding insulation to this cavity alters the vapor barrier and thermal cushion functions of the air space and will likely clog the weep holes, causing the moisture to puddle at the base of the wall. Also, the addition of insulation creates a situation where the moisture dew point (where moisture condenses) moves from the inner face of the outer wythe, into the outer wythe itself. Thus, during a freeze this condensation will freeze, causing spalling and severe deterioration. The evidence is clear that introducing insulation, of any type, into a masonry cavity wall is not recommended in a preservation retrofitting plan.

Wall Insulation—Installed on the Inside: Insulation could be added to a wall whether it be wooden or masonry, by attaching the insulation to furring strips mounted on the interior wall faces. Both rigid insulation, usually 1 or 2 inches thick, and batt insulation, generally 3½ inches thick, can be added in this fashion, with the vapor barrier facing in. Extra caution must be exercised if polyurethane rigid insulation is used because it gives off toxic gases when burned. Therefore, it must be installed with a fireproof covering, usually ½ inch gypsum wallboard. Insulation should not be installed on the inside if it necessitates relocation or destruction of important architectural decoration, such as cornices, chair rails, or window trims, or causes the destruction of historic plaster or other wall finishes. Insulation installed in this fashion would be expensive and could only be a recommended preservation retrofitting measure if it is a large building, located in a cold climate, and if the interior spaces and features have little or no architectural significance.

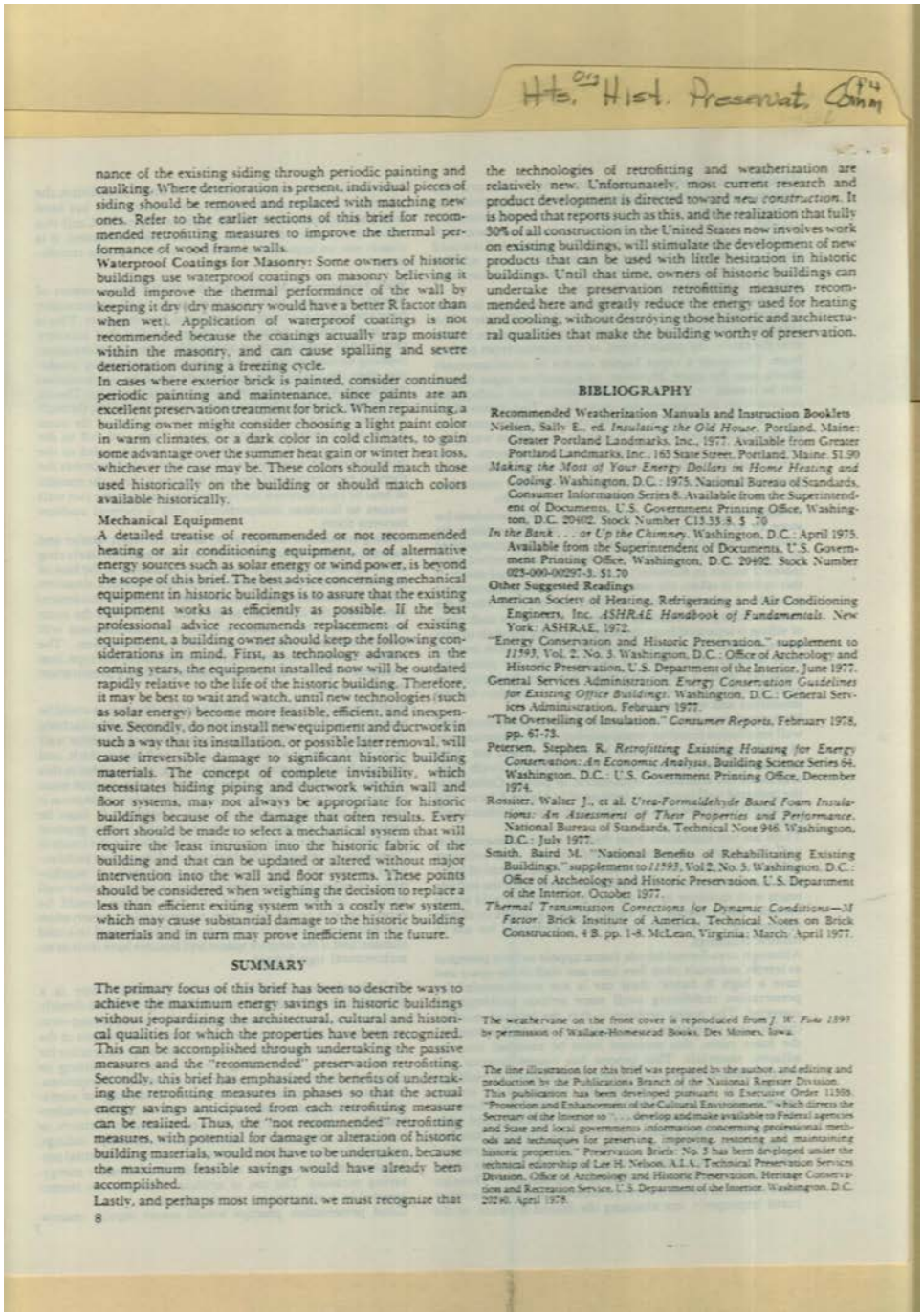
Wall Insulation—Installed on the Outside: There is a growing use of aluminum or vinyl siding installed directly over historic wooden sidings, supposedly to reduce long-term maintenance and to improve the thermal performance of the wall. From a preservation viewpoint, this is a poor practice for several reasons. New siding covers from view existing or potential deterioration problems or insect infestations. Additionally, installation often results in damage or alteration to existing decorative features such as beaded weatherboarding, window and door trim, corner boards, cornices, or roof trim. The cost of installing the artificial sidings, compared with the modest increase, if any, in the thermal performance of the wall does not add up to an effective energy-saving measure. The use of artificial siding is not recommended in a preservation retrofitting plan.

Good preservation practice would assure regular mainte-

7

Names:
Energy in Historic Buildings

Types:
article



Hts. Org. Hist. Preservat. Comm

nance of the existing siding through periodic painting and caulking. Where deterioration is present, individual pieces of siding should be removed and replaced with matching new ones. Refer to the earlier sections of this brief for recommended retrofitting measures to improve the thermal performance of wood frame walls.

Waterproof Coatings for Masonry: Some owners of historic buildings use waterproof coatings on masonry believing it would improve the thermal performance of the wall by keeping it dry (dry masonry would have a better R factor than when wet). Application of waterproof coatings is not recommended because the coatings actually trap moisture within the masonry, and can cause spalling and severe deterioration during a freezing cycle.

In cases where exterior brick is painted, consider continued periodic painting and maintenance, since paints are an excellent preservation treatment for brick. When repainting, a building owner might consider choosing a light paint color in warm climates, or a dark color in cold climates, to gain some advantage over the summer heat gain or winter heat loss, whichever the case may be. These colors should match those used historically on the building or should match colors available historically.

Mechanical Equipment

A detailed treatise of recommended or not recommended heating or air conditioning equipment, or of alternative energy sources such as solar energy or wind power, is beyond the scope of this brief. The best advice concerning mechanical equipment in historic buildings is to assure that the existing equipment works as efficiently as possible. If the best professional advice recommends replacement of existing equipment, a building owner should keep the following considerations in mind. First, as technology advances in the coming years, the equipment installed now will be outdated rapidly relative to the life of the historic building. Therefore, it may be best to wait and watch, until new technologies (such as solar energy) become more feasible, efficient, and inexpensive. Secondly, do not install new equipment and ductwork in such a way that its installation, or possible later removal, will cause irreversible damage to significant historic building materials. The concept of complete invisibility, which necessitates hiding piping and ductwork within wall and floor systems, may not always be appropriate for historic buildings because of the damage that often results. Every effort should be made to select a mechanical system that will require the least intrusion into the historic fabric of the building and that can be updated or altered without major intervention into the wall and floor systems. These points should be considered when weighing the decision to replace a less than efficient exiting system with a costly new system, which may cause substantial damage to the historic building materials and in turn may prove inefficient in the future.

SUMMARY

The primary focus of this brief has been to describe ways to achieve the maximum energy savings in historic buildings without jeopardizing the architectural, cultural and historical qualities for which the properties have been recognized. This can be accomplished through undertaking the passive measures and the "recommended" preservation retrofitting. Secondly, this brief has emphasized the benefits of undertaking the retrofitting measures in phases so that the actual energy savings anticipated from each retrofitting measure can be realized. Thus, the "not recommended" retrofitting measures, with potential for damage or alteration of historic building materials, would not have to be undertaken, because the maximum feasible savings would have already been accomplished.

Lastly, and perhaps most important, we must recognize that the technologies of retrofitting and weatherization are relatively new. Unfortunately, most current research and product development is directed toward *new construction*. It is hoped that reports such as this, and the realization that fully 30% of all construction in the United States now involves work on existing buildings, will stimulate the development of new products that can be used with little hesitation in historic buildings. Until that time, owners of historic buildings can undertake the preservation retrofitting measures recommended here and greatly reduce the energy used for heating and cooling, without destroying those historic and architectural qualities that make the building worthy of preservation.

BIBLIOGRAPHY

Recommended Weatherization Manuals and Instruction Booklets

Nielsen, Sally E., ed. *Insulating the Old House*. Portland, Maine: Greater Portland Landmarks, Inc., 1977. Available from Greater Portland Landmarks, Inc., 165 State Street, Portland, Maine. $1.50

Making the Most of Your Energy Dollars in Home Heating and Cooling. Washington, D.C.: 1975. National Bureau of Standards, Consumer Information Series 8. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock Number C13.35:8. $.70

In the Bank . . . or Up the Chimney. Washington, D.C.: April 1975. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock Number 023-000-00297-3. $1.70

Other Suggested Readings

American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. *ASHRAE Handbook of Fundamentals*. New York: ASHRAE, 1972.

"Energy Conservation and Historic Preservation," supplement to *11593*, Vol. 2, No. 3. Washington, D.C.: Office of Archeology and Historic Preservation, U.S. Department of the Interior, June 1977.

General Services Administration. *Energy Conservation Guidelines for Existing Office Buildings*. Washington, D.C.: General Services Administration, February 1977.

"The Overselling of Insulation." *Consumer Reports*, February 1978, pp. 67-73.

Petersen, Stephen R. *Retrofitting Existing Housing for Energy Conservation: An Economic Analysis*. Building Science Series 64. Washington, D.C.: U.S. Government Printing Office, December 1974.

Rossiter, Walter J., et al. *Urea-Formaldehyde Based Foam Insulations: An Assessment of Their Properties and Performance*. National Bureau of Standards, Technical Note 946. Washington, D.C.: July 1977.

Smith, Baird M. "National Benefits of Rehabilitating Existing Buildings," supplement to *11593*, Vol 2, No. 5. Washington, D.C.: Office of Archeology and Historic Preservation, U.S. Department of the Interior, October 1977.

Thermal Transmission Corrections for Dynamic Conditions—M Factor. Brick Institute of America, Technical Notes on Brick Construction, 4 B, pp. 1-8. McLean, Virginia: March/April 1977.

The weathervane on the front cover is reproduced from *J. W. Fiske 1893* by permission of Wallace-Homestead Books, Des Moines, Iowa.

The line illustration for this brief was prepared by the author, and editing and production by the Publications Branch of the National Register Division.

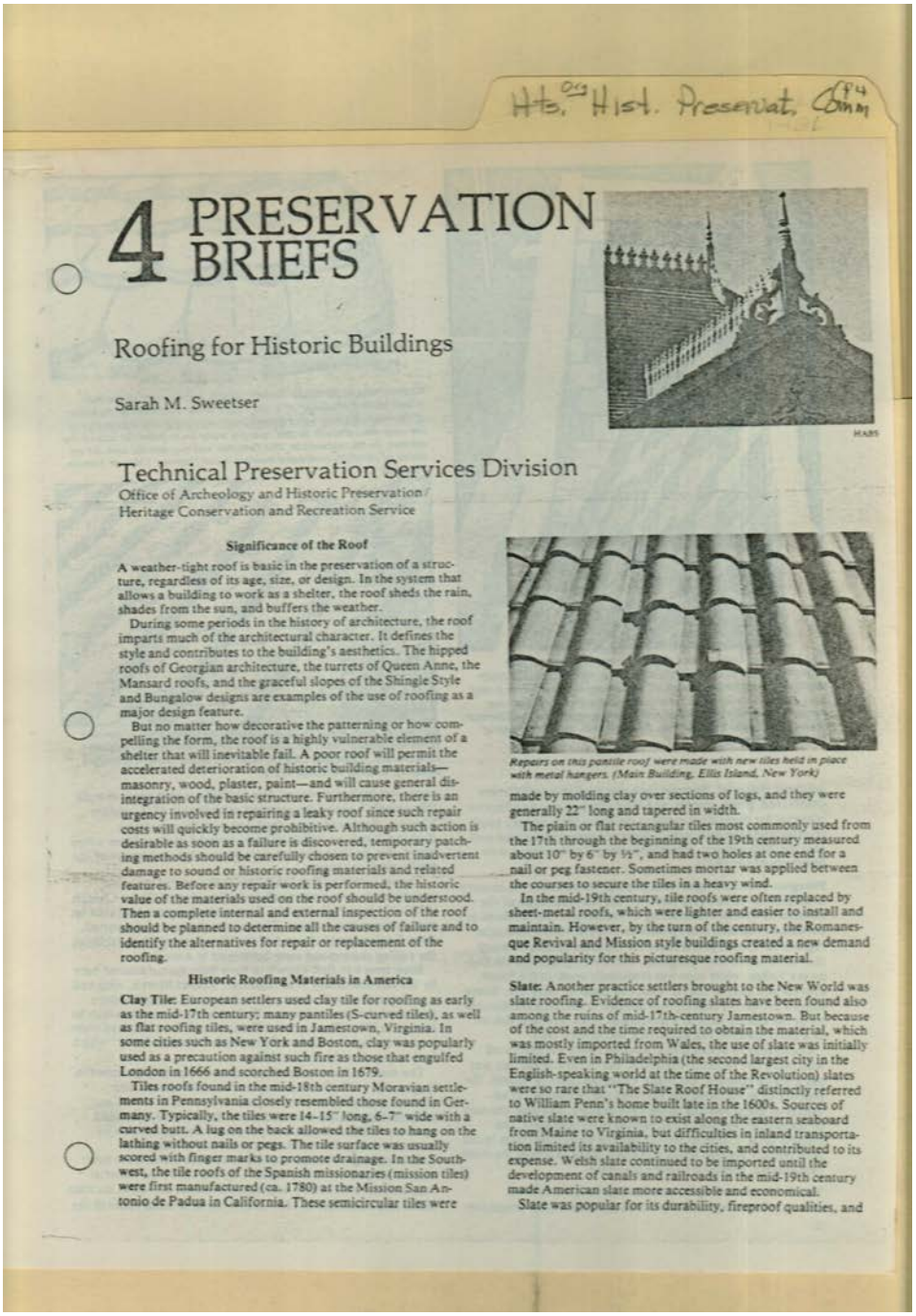
This publication has been developed pursuant to Executive Order 11593, "Protection and Enhancement of the Cultural Environment," which directs the Secretary of the Interior to ". . . develop and make available to Federal agencies and State and local governments information concerning professional methods and techniques for preserving, improving, restoring and maintaining historic properties." Preservation Briefs No. 3 has been developed under the technical editorship of Lee H. Nelson, A.I.A., Technical Preservation Services Division, Office of Archeology and Historic Preservation, Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington, D.C. 20240. April 1978.

Names:

Energy in Historic Buildings

Types:

article



Hts. Org. Hist. Preservat. Comm '84

4 PRESERVATION BRIEFS

Roofing for Historic Buildings

Sarah M. Sweetser

Technical Preservation Services Division
Office of Archeology and Historic Preservation
Heritage Conservation and Recreation Service

Significance of the Roof

A weather-tight roof is basic in the preservation of a structure, regardless of its age, size, or design. In the system that allows a building to work as a shelter, the roof sheds the rain, shades from the sun, and buffers the weather.

During some periods in the history of architecture, the roof imparts much of the architectural character. It defines the style and contributes to the building's aesthetics. The hipped roofs of Georgian architecture, the turrets of Queen Anne, the Mansard roofs, and the graceful slopes of the Shingle Style and Bungalow designs are examples of the use of roofing as a major design feature.

But no matter how decorative the patterning or how compelling the form, the roof is a highly vulnerable element of a shelter that will inevitable fail. A poor roof will permit the accelerated deterioration of historic building materials—masonry, wood, plaster, paint—and will cause general disintegration of the basic structure. Furthermore, there is an urgency involved in repairing a leaky roof since such repair costs will quickly become prohibitive. Although such action is desirable as soon as a failure is discovered, temporary patching methods should be carefully chosen to prevent inadvertent damage to sound or historic roofing materials and related features. Before any repair work is performed, the historic value of the materials used on the roof should be understood. Then a complete internal and external inspection of the roof should be planned to determine all the causes of failure and to identify the alternatives for repair or replacement of the roofing.

Historic Roofing Materials in America

Clay Tile: European settlers used clay tile for roofing as early as the mid-17th century; many pantiles (S-curved tiles), as well as flat roofing tiles, were used in Jamestown, Virginia. In some cities such as New York and Boston, clay was popularly used as a precaution against such fire as those that engulfed London in 1666 and scorched Boston in 1679.

Tiles roofs found in the mid-18th century Moravian settlements in Pennsylvania closely resembled those found in Germany. Typically, the tiles were 14–15" long, 6–7" wide with a curved butt. A lug on the back allowed the tiles to hang on the lathing without nails or pegs. The tile surface was usually scored with finger marks to promote drainage. In the Southwest, the tile roofs of the Spanish missionaries (mission tiles) were first manufactured (ca. 1780) at the Mission San Antonio de Padua in California. These semicircular tiles were made by molding clay over sections of logs, and they were generally 22" long and tapered in width.

Repairs on this pantile roof were made with new tiles held in place with metal hangers. (Main Building, Ellis Island, New York)

The plain or flat rectangular tiles most commonly used from the 17th through the beginning of the 19th century measured about 10" by 6" by ½", and had two holes at one end for a nail or peg fastener. Sometimes mortar was applied between the courses to secure the tiles in a heavy wind.

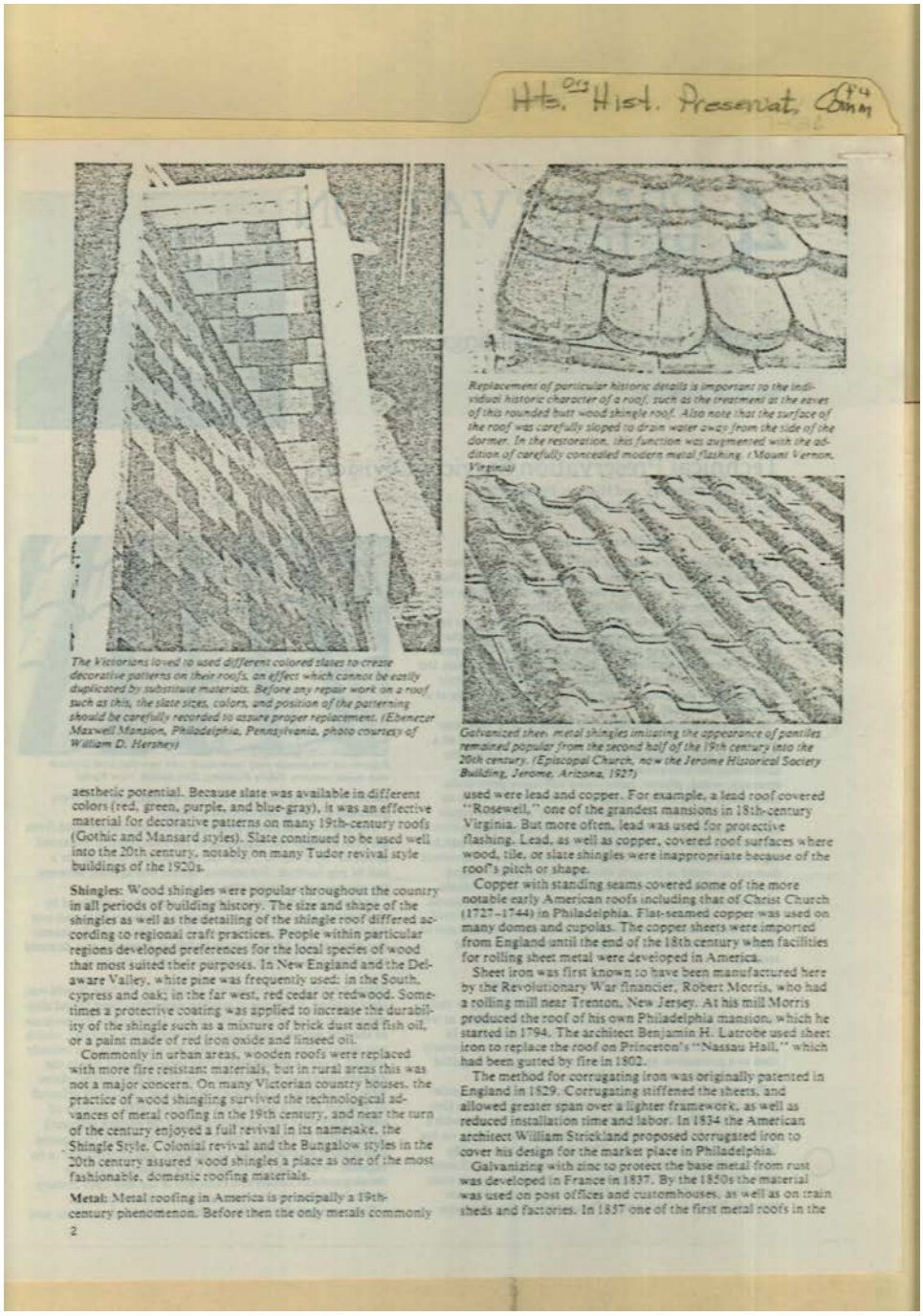
In the mid-19th century, tile roofs were often replaced by sheet-metal roofs, which were lighter and easier to install and maintain. However, by the turn of the century, the Romanesque Revival and Mission style buildings created a new demand and popularity for this picturesque roofing material.

Slate: Another practice settlers brought to the New World was slate roofing. Evidence of roofing slates have been found also among the ruins of mid-17th-century Jamestown. But because of the cost and the time required to obtain the material, which was mostly imported from Wales, the use of slate was initially limited. Even in Philadelphia (the second largest city in the English-speaking world at the time of the Revolution) slates were so rare that "The Slate Roof House" distinctly referred to William Penn's home built late in the 1600s. Sources of native slate were known to exist along the eastern seaboard from Maine to Virginia, but difficulties in inland transportation limited its availability to the cities, and contributed to its expense. Welsh slate continued to be imported until the development of canals and railroads in the mid-19th century made American slate more accessible and economical.

Slate was popular for its durability, fireproof qualities, and

Names:
Roofing in Historic Buildings

Types:
article



Hts. Hist. Preservat. Comm

The Victorians loved to used different colored slates to create decorative patterns on their roofs, an effect which cannot be easily duplicated by substitute materials. Before any repair work on a roof such as this, the slate sizes, colors, and position of the patterning should be carefully recorded to assure proper replacement. (Ebenezer Maxwell Mansion, Philadelphia, Pennsylvania, photo courtesy of William D. Hershey)

Replacement of particular historic details is important to the individual historic character of a roof, such as the treatment at the eaves of this rounded butt wood shingle roof. Also note that the surface of the roof was carefully sloped to drain water away from the side of the dormer. In the restoration, this function was augmented with the addition of carefully concealed modern metal flashing. (Mount Vernon, Virginia)

Galvanized sheet metal shingles imitating the appearance of pantiles remained popular from the second half of the 19th century into the 20th century. (Episcopal Church, now the Jerome Historical Society Building, Jerome, Arizona, 1927)

aesthetic potential. Because slate was available in different colors (red, green, purple, and blue-gray), it was an effective material for decorative patterns on many 19th-century roofs (Gothic and Mansard styles). Slate continued to be used well into the 20th century, notably on many Tudor revival style buildings of the 1920s.

Shingles: Wood shingles were popular throughout the country in all periods of building history. The size and shape of the shingles as well as the detailing of the shingle roof differed according to regional craft practices. People within particular regions developed preferences for the local species of wood that most suited their purposes. In New England and the Delaware Valley, white pine was frequently used; in the South, cypress and oak; in the far west, red cedar or redwood. Sometimes a protective coating was applied to increase the durability of the shingle such as a mixture of brick dust and fish oil, or a paint made of red iron oxide and linseed oil.

Commonly in urban areas, wooden roofs were replaced with more fire resistant materials, but in rural areas this was not a major concern. On many Victorian country houses, the practice of wood shingling survived the technological advances of metal roofing in the 19th century, and near the turn of the century enjoyed a full revival in its namesake, the Shingle Style. Colonial revival and the Bungalow styles in the 20th century assured wood shingles a place as one of the most fashionable, domestic roofing materials.

Metal: Metal roofing in America is principally a 19th-century phenomenon. Before then the only metals commonly used were lead and copper. For example, a lead roof covered "Rosewell," one of the grandest mansions in 18th-century Virginia. But more often, lead was used for protective flashing. Lead, as well as copper, covered roof surfaces where wood, tile, or slate shingles were inappropriate because of the roof's pitch or shape.

Copper with standing seams covered some of the more notable early American roofs including that of Christ Church (1727–1744) in Philadelphia. Flat-seamed copper was used on many domes and cupolas. The copper sheets were imported from England until the end of the 18th century when facilities for rolling sheet metal were developed in America.

Sheet iron was first known to have been manufactured here by the Revolutionary War financier, Robert Morris, who had a rolling mill near Trenton, New Jersey. At his mill Morris produced the roof of his own Philadelphia mansion, which he started in 1794. The architect Benjamin H. Latrobe used sheet iron to replace the roof on Princeton's "Nassau Hall," which had been gutted by fire in 1802.

The method for corrugating iron was originally patented in England in 1829. Corrugating stiffened the sheets, and allowed greater span over a lighter framework, as well as reduced installation time and labor. In 1834 the American architect William Strickland proposed corrugated iron to cover his design for the market place in Philadelphia.

Galvanizing with zinc to protect the base metal from rust was developed in France in 1837. By the 1850s the material was used on post offices and customhouses, as well as on train sheds and factories. In 1857 one of the first metal roofs in the

Names:
Roofing in Historic Buildings

Types:
article

Hts. Org Hist. Preservat. Comm 84

Repeated repair with asphalt, which cracks as it hardens, has created a blistered surface on this sheet-metal roof and built-in gutter, which will retain water. Repairs could be made by carefully heating and scraping the surface clean, repairing the holes in the metal with a flexible mastic compound or a metal patch, and coating the surface with a fibre paint. (Roane County Courthouse, Kingston, Tennessee, photo courtesy of Building Conservation Technology, Inc.)

A Chicago firm's catalog dated 1896 illustrates a method of unrolling, turning the edges, and finishing the standing seam on a metal roof.

Tin shingles, commonly embossed to imitate wood or tile, or with a decorative design, were popular as an inexpensive, textured roofing material. These shingles 8⅞ inch by 12⅛ inch on the exposed surface) were designed with interlocking edges, but they have been repaired by surface nailing, which may cause future leakage. (Ballard House, Yorktown, Virgina, photo by Gordie Whittington, National Park Service)

South was installed on the U.S. Mint in New Orleans. The Mint was thereby "fireproofed" with a 20-gauge galvanized, corrugated iron roof on iron trusses.

Tin-plate iron, commonly called "tin roofing," was used extensively in Canada in the 18th century, but it was not as common in the United States until later. Thomas Jefferson was an early advocate of tin roofing, and he installed a standing-seam tin roof on "Monticello" (ca. 1770–1802). The Arch Street Meetinghouse (1804) in Philadelphia had tin shingles laid in a herringbone pattern on a "piazza" roof.

However, once rolling mills were established in this country, the low cost, light weight, and low maintenance of tin plate made it the most common roofing material. Embossed tin shingles, whose surfaces created interesting patterns, were popular throughout the country in the late 19th century. Tin roofs were kept well-painted, usually red; or, as the architect A. J. Davis suggested, in a color to imitate the green patina of copper.

Terne plate differed from tin plate in that the iron was dipped in an alloy of lead and tin, giving it a duller finish. Historic, as well as modern, documentation often confuses the two, so much that it is difficult to determine how often actual "terne" was used.

Zinc came into use in the 1820s, at the same time tin plate was becoming popular. Although a less expensive substitute for lead, its advantages were controversial, and it was never widely used in this country.

Other Materials: Asphalt shingles and roll roofing were used in the 1890s. Many roofs of asbestos, aluminum, stainless steel, galvinized steel, and lead-coated copper may soon have historic values as well. Awareness of these and other traditions of roofing materials and their detailing will contribute to more sensitive preservation treatments.

Locating the Problem

Failures of Surface Materials

When trouble occurs, it is important to contact a professional, either an architect, a reputable roofing contractor, or a craftsman familiar with the inherent characteristics of the particular historic roofing system involved. These professionals may be able to advise on immediate patching procedures and help plan more permanent repairs. A thorough examination of the roof should start with an appraisal of the existing condition and quality of the roofing material itself. Particular attention should be given to any southern slope because year-round exposure to direct sun may cause it to break down first.

Wood: Some historic roofing materials have limited life expectancies because of normal organic decay and "wear." For example, the flat surfaces of wood shingles erode from exposure to rain and ultraviolet rays. Some species are more hardy than others, and heartwood, for example, is stronger and more durable than sapwood.

Ideally, shingles are split with the grain perpendicular to

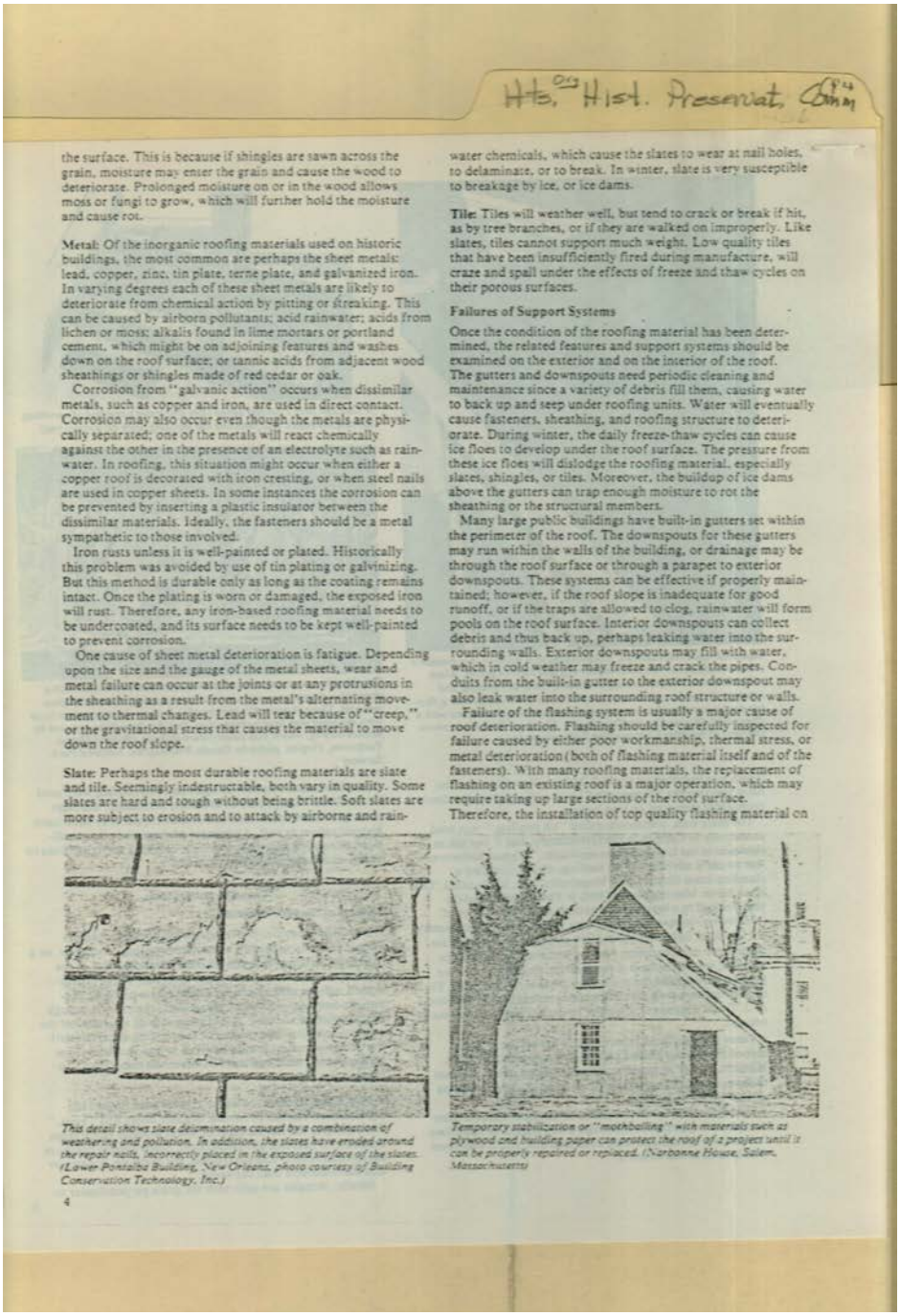
3

Names:

Roofing in Historic Buildings

Types:

article



Hts. Dis. Hist. Preservat. Comm

the surface. This is because if shingles are sawn across the grain, moisture may enter the grain and cause the wood to deteriorate. Prolonged moisture on or in the wood allows moss or fungi to grow, which will further hold the moisture and cause rot.

Metal: Of the inorganic roofing materials used on historic buildings, the most common are perhaps the sheet metals: lead, copper, zinc, tin plate, terne plate, and galvanized iron. In varying degrees each of these sheet metals are likely to deteriorate from chemical action by pitting or streaking. This can be caused by airborn pollutants; acid rainwater; acids from lichen or moss; alkalis found in lime mortars or portland cement, which might be on adjoining features and washes down on the roof surface; or tannic acids from adjacent wood sheathings or shingles made of red cedar or oak.

Corrosion from "galvanic action" occurs when dissimilar metals, such as copper and iron, are used in direct contact. Corrosion may also occur even though the metals are physically separated; one of the metals will react chemically against the other in the presence of an electrolyte such as rainwater. In roofing, this situation might occur when either a copper roof is decorated with iron cresting, or when steel nails are used in copper sheets. In some instances the corrosion can be prevented by inserting a plastic insulator between the dissimilar materials. Ideally, the fasteners should be a metal sympathetic to those involved.

Iron rusts unless it is well-painted or plated. Historically this problem was avoided by use of tin plating or galvinizing. But this method is durable only as long as the coating remains intact. Once the plating is worn or damaged, the exposed iron will rust. Therefore, any iron-based roofing material needs to be undercoated, and its surface needs to be kept well-painted to prevent corrosion.

One cause of sheet metal deterioration is fatigue. Depending upon the size and the gauge of the metal sheets, wear and metal failure can occur at the joints or at any protrusions in the sheathing as a result from the metal's alternating movement to thermal changes. Lead will tear because of "creep," or the gravitational stress that causes the material to move down the roof slope.

Slate: Perhaps the most durable roofing materials are slate and tile. Seemingly indestructable, both vary in quality. Some slates are hard and tough without being brittle. Soft slates are more subject to erosion and to attack by airborne and rain-water chemicals, which cause the slates to wear at nail holes, to delaminate, or to break. In winter, slate is very susceptible to breakage by ice, or ice dams.

Tile: Tiles will weather well, but tend to crack or break if hit, as by tree branches, or if they are walked on improperly. Like slates, tiles cannot support much weight. Low quality tiles that have been insufficiently fired during manufacture, will craze and spall under the effects of freeze and thaw cycles on their porous surfaces.

Failures of Support Systems

Once the condition of the roofing material has been determined, the related features and support systems should be examined on the exterior and on the interior of the roof. The gutters and downspouts need periodic cleaning and maintenance since a variety of debris fill them, causing water to back up and seep under roofing units. Water will eventually cause fasteners, sheathing, and roofing structure to deteriorate. During winter, the daily freeze-thaw cycles can cause ice floes to develop under the roof surface. The pressure from these ice floes will dislodge the roofing material, especially slates, shingles, or tiles. Moreover, the buildup of ice dams above the gutters can trap enough moisture to rot the sheathing or the structural members.

Many large public buildings have built-in gutters set within the perimeter of the roof. The downspouts for these gutters may run within the walls of the building, or drainage may be through the roof surface or through a parapet to exterior downspouts. These systems can be effective if properly maintained; however, if the roof slope is inadequate for good runoff, or if the traps are allowed to clog, rainwater will form pools on the roof surface. Interior downspouts can collect debris and thus back up, perhaps leaking water into the surrounding walls. Exterior downspouts may fill with water, which in cold weather may freeze and crack the pipes. Conduits from the built-in gutter to the exterior downspout may also leak water into the surrounding roof structure or walls.

Failure of the flashing system is usually a major cause of roof deterioration. Flashing should be carefully inspected for failure caused by either poor workmanship, thermal stress, or metal deterioration (both of flashing material itself and of the fasteners). With many roofing materials, the replacement of flashing on an existing roof is a major operation, which may require taking up large sections of the roof surface. Therefore, the installation of top quality flashing material on

This detail shows slate delamination caused by a combination of weathering and pollution. In addition, the slates have eroded around the repair nails, incorrectly placed in the exposed surface of the slates. (Lower Pontalba Building, New Orleans, photo courtesy of Building Conservation Technology, Inc.)

Temporary stabilization or "mothballing" with materials such as plywood and building paper can protect the roof of a project until it can be properly repaired or replaced. (Narbonne House, Salem, Massachusetts)

4

Names:

Roofing in Historic Buildings

Types:

article

Hts. Hist. Preservat. Comm

These two views of the same house demonstrate how the use of a substitute material can drastically affect the overall character of a structure. The textural interest of the original tile roof was lost with the use of asphalt shingles. Recent preservation efforts are replacing the tile roof. (Frank House, Kearney, Nebraska, photo courtesy of the Nebraska State Historical Society, Lincoln, Nebraska)

a new or replaced roof should be a primary consideration. *Remember, some roofing and flashing materials are not compatible.*

Roof fasteners and clips should also be made of a material compatible with all other materials used, or coated to prevent rust. For example, the tannic acid in oak will corrode iron nails. Some roofs such as slate and sheet metals may fail if nailed too rigidly.

If the roof structure appears sound and nothing indicates recent movement, the area to be examined most closely is the roof substrate—the sheathing or the battens. The danger spots would be near the roof plates, under any exterior patches, at the intersections of the roof planes, or at vertical surfaces such as dormers. Water penetration, indicating a breach in the roofing surface or flashing, should be readily apparent, usually as a damp spot or stain. Probing with a small pen knife may reveal any rot which may indicate previously undetected damage to the roofing membrane. Insect infestation evident by small exit holes and frass (a sawdust-like debris) should also be noted. Condensation on the underside of the roofing is undesirable and indicates improper ventilation. Moisture will have an adverse effect on any roofing material; a good roof stays dry inside and out.

Repair or Replace

Understanding potential weaknesses of roofing material also requires knowledge of repair difficulties. Individual slates can be replaced normally without major disruption to the rest of the roof, but replacing flashing on a slate roof can require substantial removal of surrounding slates. If it is the substrate or a support material that has deteriorated, many surface materials such as slate or tile can be reused if handled carefully during the repair. Such problems should be evaluated at the outset of any project to determine if the roof can be effectively patched, or if it should be completely replaced.

Will the repairs be effective? Maintenance costs tend to multiply once trouble starts. As the cost of labor escalates, repeated repairs could soon equal the cost of a new roof.

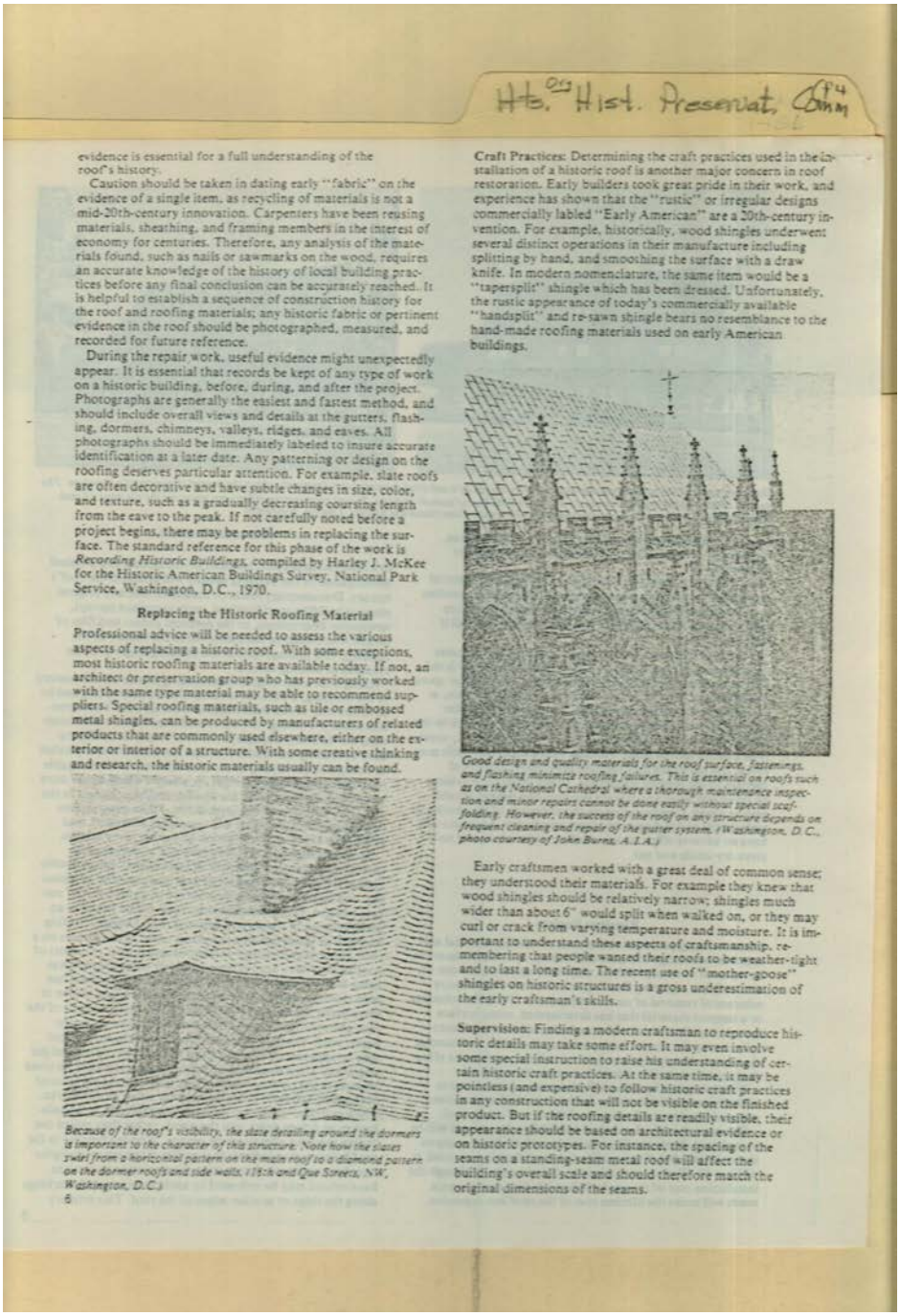
The more durable the surface is initially, the easier it will be to maintain. Some roofing materials such as slate are expensive to install, but if top quality slate and flashing are used, it will last 40-60 years with minimal maintenance. Although the installation cost of the roof will be high, low maintenance needs will make the lifetime cost of the roof less expensive.

Historical Research

In a restoration project, research of documents and physical investigation of the building usually will establish the roof's history. Documentary research should include any original plans or building specifications, early insurance surveys, newspaper descriptions, or the personal papers and files of people who owned or were involved in the history of the building. Old photographs of the building might provide evidence of missing details.

Along with a thorough understanding of any written history of the building, a physical investigation of the roofing and its structure may reveal information about the roof's construction history. Starting with an overall impression of the structure, are there any changes in the roof slope, its configuration, or roofing materials? Perhaps there are obvious patches or changes in patterning of exterior brickwork where a gable roof was changed to a gambrel, or where a whole upper story was added. Perhaps there are obvious stylistic changes in the roof line, dormers, or ornamentation. These observations could help one understand any important alteration, and could help establish the direction of further investigation.

Because most roofs are physically out of the range of careful scrutiny, the "principle of least effort" has probably limited the extent and quality of previous patching or replacing, and usually considerable evidence of an earlier roof surface remains. Sometimes the older roof will be found as an underlayment of the current exposed roof. Original roofing may still be intact in awkward places under later features on a roof. Often if there is any unfinished attic space, remnants of roofing may have been dropped and left when the roof was being built or repaired. If the configuration of the roof has been changed, some of the original material might still be in place under the existing roof. Sometimes whole sections of the roof and roof framing will have been left intact under the higher roof. The profile and/or flashing of the earlier roof may be apparent on the interior of the walls at the level of the alteration. If the sheathing or lathing appears to have survived changes in the roofing surface, they may contain evidence of the roofing systems. These may appear either as dirt marks, which provide "shadows" of a roofing material, or as nails broken or driven down into the wood, rather than pulled out during previous alterations or repairs. Wooden headers in the roof framing may indicate that earlier chimneys or skylights have been removed. Any metal ornamentation that might have existed may be indicated by anchors or unusual markings along the ridge or at other edges of the roof. This primary



Hts. Hist. Preservat. Comm

evidence is essential for a full understanding of the roof's history.

Caution should be taken in dating early "fabric" on the evidence of a single item, as recycling of materials is not a mid-20th-century innovation. Carpenters have been reusing materials, sheathing, and framing members in the interest of economy for centuries. Therefore, any analysis of the materials found, such as nails or sawmarks on the wood, requires an accurate knowledge of the history of local building practices before any final conclusion can be accurately reached. It is helpful to establish a sequence of construction history for the roof and roofing materials; any historic fabric or pertinent evidence in the roof should be photographed, measured, and recorded for future reference.

During the repair work, useful evidence might unexpectedly appear. It is essential that records be kept of any type of work on a historic building, before, during, and after the project. Photographs are generally the easiest and fastest method, and should include overall views and details at the gutters, flashing, dormers, chimneys, valleys, ridges, and eaves. All photographs should be immediately labeled to insure accurate identification at a later date. Any patterning or design on the roofing deserves particular attention. For example, slate roofs are often decorative and have subtle changes in size, color, and texture, such as a gradually decreasing coursing length from the eave to the peak. If not carefully noted before a project begins, there may be problems in replacing the surface. The standard reference for this phase of the work is *Recording Historic Buildings*, compiled by Harley J. McKee for the Historic American Buildings Survey, National Park Service, Washington, D.C., 1970.

Replacing the Historic Roofing Material

Professional advice will be needed to assess the various aspects of replacing a historic roof. With some exceptions, most historic roofing materials are available today. If not, an architect or preservation group who has previously worked with the same type material may be able to recommend suppliers. Special roofing materials, such as tile or embossed metal shingles, can be produced by manufacturers of related products that are commonly used elsewhere, either on the exterior or interior of a structure. With some creative thinking and research, the historic materials usually can be found.

Because of the roof's visibility, the slate detailing around the dormers is important to the character of this structure. Note how the slates swirl from a horizontal pattern on the main roof to a diamond pattern on the dormer roofs and side walls. (15th and Que Streets, NW, Washington, D.C.)

6

Craft Practices: Determining the craft practices used in the installation of a historic roof is another major concern in roof restoration. Early builders took great pride in their work, and experience has shown that the "rustic" or irregular designs commercially labled "Early American" are a 20th-century invention. For example, historically, wood shingles underwent several distinct operations in their manufacture including splitting by hand, and smoothing the surface with a draw knife. In modern nomenclature, the same item would be a "tapersplit" shingle which has been dressed. Unfortunately, the rustic appearance of today's commercially available "handsplit" and re-sawn shingle bears no resemblance to the hand-made roofing materials used on early American buildings.

Good design and quality materials for the roof surface, fastenings, and flashing minimize roofing failures. This is essential on roofs such as on the National Cathedral where a thorough maintenance inspection and minor repairs cannot be done easily without special scaffolding. However, the success of the roof on any structure depends on frequent cleaning and repair of the gutter system. (Washington, D.C., photo courtesy of John Burns, A.I.A.)

Early craftsmen worked with a great deal of common sense; they understood their materials. For example they knew that wood shingles should be relatively narrow; shingles much wider than about 6" would split when walked on, or they may curl or crack from varying temperature and moisture. It is important to understand these aspects of craftsmanship, remembering that people wanted their roofs to be weather-tight and to last a long time. The recent use of "mother-goose" shingles on historic structures is a gross underestimation of the early craftsman's skills.

Supervision: Finding a modern craftsman to reproduce historic details may take some effort. It may even involve some special instruction to raise his understanding of certain historic craft practices. At the same time, it may be pointless (and expensive) to follow historic craft practices in any construction that will not be visible on the finished product. But if the roofing details are readily visible, their appearance should be based on architectural evidence or on historic prototypes. For instance, the spacing of the seams on a standing-seam metal roof will affect the building's overall scale and should therefore match the original dimensions of the seams.

Names:
Roofing in Historic Buildings

Types:
article

Hts. Dev Hist. Preservat. Comm '94

Many older roofing practices are no longer performed because of modern improvements. Research and review of specific detailing in the roof with the contractor before beginning the project is highly recommended. For example, one early craft practice was to finish the ridge of a wood shingle roof with a roof "comb"—that is, the top course of one slope of the roof was extended uniformly beyond the peak to shield the ridge, and to provide some weather protection for the raw horizontal edges of the shingles on the other slope. If the "comb" is known to have been the correct detail, it should be used. Though this method leaves the top course vulnerable to the weather, a disguised strip of flashing will strengthen this weak point.

Detail drawings or a sample mock-up will help ensure that the contractor or craftsman understands the scope and special requirements of the project. It should never be assumed that the modern carpenter, slater, sheet metal worker, or roofer will know all the historic details. Supervision is as important as any other stage of the process.

Special problems inherent in the design of an elaborate historic roof can be controlled through the use of good materials and regular maintenance. The shape and detailing are essential elements of the building's historic character, and should not be modified, despite the use of alternative surface materials. (Gamwell House, Bellingham, Washington)

Alternative Materials

The use of the historic roofing material on a structure may be restricted by building codes or by the availability of the materials, in which case an appropriate alternative will have to be found.

Some municipal building codes allow variances for roofing materials in historic districts. In other instances, individual variances may be obtained. Most modern heating and cooking is fueled by gas, electricity, or oil—none of which emit the hot embers that historically have been the cause of roof fires. Where wood burning fireplaces or stoves are used, spark arrestor screens at the top of the chimneys help to prevent flaming material from escaping, thus reducing the number of fires that start at the roof. In most states, insurance rates have been equalized to reflect revised considerations for the risks involved with various roofing materials.

In a rehabilitation project, there may be valid reasons for replacing the roof with a material other than the original. The historic roofing may no longer be available, or the cost of obtaining specially fabricated materials may be prohibitive. But the decision to use an alternative material should be weighed carefully against the primary concern to keep the historic character of the building. If the roof is flat and is not visible from any elevation of the building, and if there are advantages to substituting a modern built-up composition roof for what might have been a flat metal roof, then it may make better economic and construction sense to use a modern roofing method. But if the roof is readily visible, the alternative material should match as closely as possible the scale, texture, and coloration of the historic roofing material.

Asphalt shingles or ceramic tiles are common substitute materials intended to duplicate the appearance of wood shingles, slates, or tiles. Fire-retardant, treated wood shingles are currently available. The treated wood tends, however, to be brittle, and may require extra care (and expense) to install. In some instances, shingles laid with an interlay of fire-retardent building paper may be an acceptable alternative.

Lead-coated copper, terne-coated steel, and aluminum/zinc-coated steel can successfully replace tin, terne plate, zinc, or lead. Copper-coated steel is a less expensive (and less durable) substitute for sheet copper.

The search for alternative roofing materials is not new. As early as the 18th century, fear of fire cause many wood shingle or board roofs to be replaced by sheet metal or clay tile. Some historic roofs were failures from the start, based on over-ambitious and naive use of materials as they were first developed. Research on a structure may reveal that an inadequately designed or a highly combustible roof was replaced early in its history, and therefore restoration of a later roof material would have a valid precedent. In some cities, the substitution of sheet metal on early row houses occurred as soon as the rolled material became available.

Cost and ease of maintenance may dictate the substitution of a material wholly different in appearance from the original. The practical problems (wind, weather, and roof pitch) should be weighed against the historical consideration of scale, texture, and color. Sometimes the effect of the alternative material will be minimal. But on roofs with a high degree of visibility and patterning or texture, the substitution may seriously alter the architectural character of the building.

Temporary Stabilization

It may be necessary to carry out an immediate and temporary stabilization to prevent further deterioration until research can determine how the roof should be restored or rehabilitated, or until funding can be provided to do a proper job. A simple covering of exterior plywood or roll roofing might provide adequate protection, but any temporary covering should be applied with caution. One should be careful not to overload the roof structure, or to damage or destroy historic evidence or fabric that might be incorporated into a new roof at a later date. In this sense, repairs with caulking or bituminous patching compounds should be recognized as potentially harmful, since they are difficult to remove, and at their best, are very temporary.

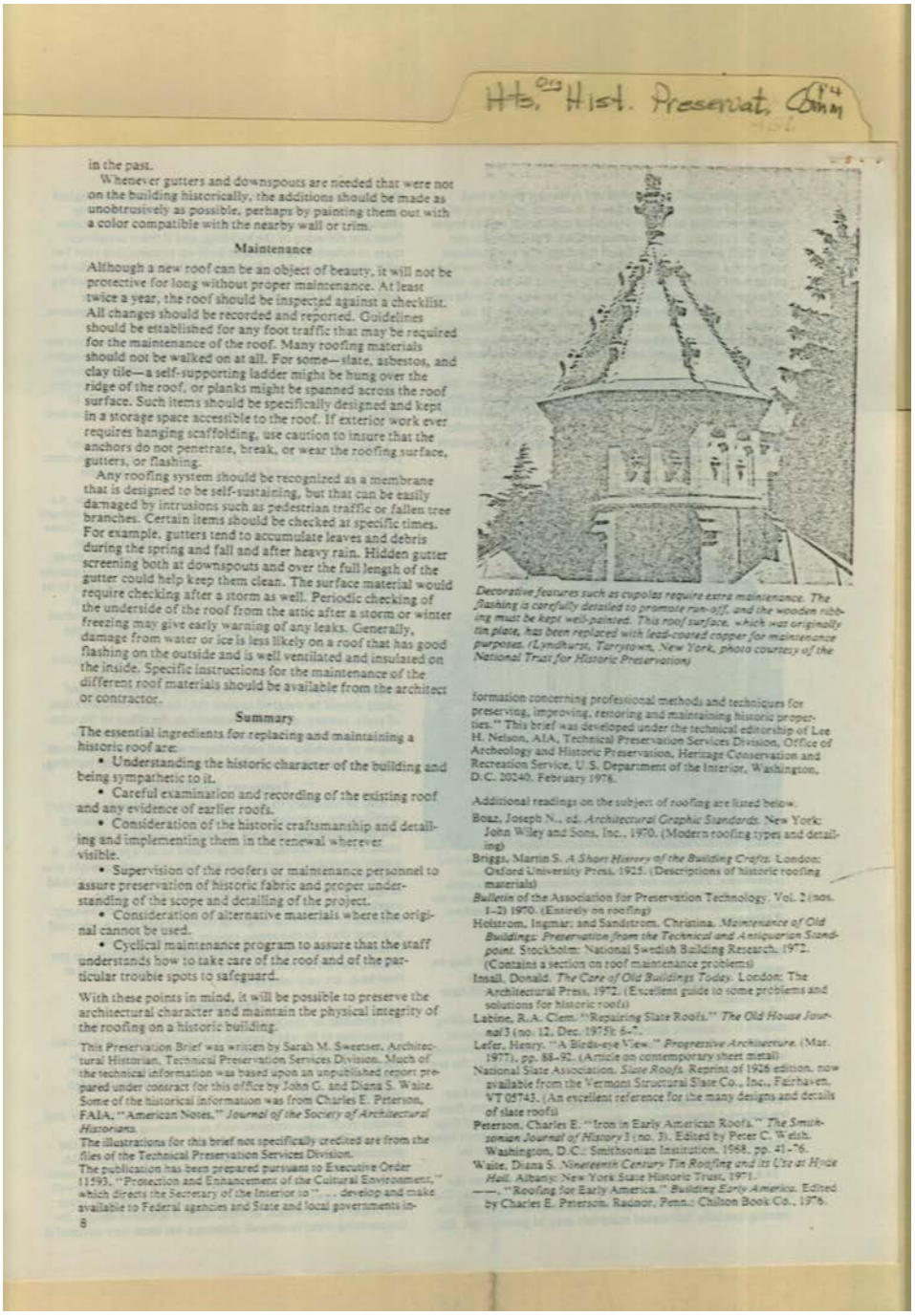
Precautions

The architect or contractor should warn the owner of any precautions to be taken against the specific hazards in installing the roofing material. Soldering of sheet metals, for instance, can be a fire hazard, either from the open flame or from overheating and undected smoldering of the wooden substrate materials.

Thought should be given to the design and placement of any modern roof appurtenances such as plumbing stacks, air vents, or TV antennas. Consideration should begin with the placement of modern plumbing on the interior of the building, otherwise a series of vent stacks may pierce the roof membrane at various spots creating maintenance problems as well as aesthetic ones. Air handling units placed in the attic space will require vents which, in turn, require sensitive design. Incorporating these in unused chimneys has been very successful

Names:
Roofing in Historic Buildings

Types:
article



Htsv. Hist. Preservat. Comm

in the past.

Whenever gutters and downspouts are needed that were not on the building historically, the additions should be made as unobtrusively as possible, perhaps by painting them out with a color compatible with the nearby wall or trim.

Maintenance

Although a new roof can be an object of beauty, it will not be protective for long without proper maintenance. At least twice a year, the roof should be inspected against a checklist. All changes should be recorded and reported. Guidelines should be established for any foot traffic that may be required for the maintenance of the roof. Many roofing materials should not be walked on at all. For some—slate, asbestos, and clay tile—a self-supporting ladder might be hung over the ridge of the roof, or planks might be spanned across the roof surface. Such items should be specifically designed and kept in a storage space accessible to the roof. If exterior work ever requires hanging scaffolding, use caution to insure that the anchors do not penetrate, break, or wear the roofing surface, gutters, or flashing.

Any roofing system should be recognized as a membrane that is designed to be self-sustaining, but that can be easily damaged by intrusions such as pedestrian traffic or fallen tree branches. Certain items should be checked at specific times. For example, gutters tend to accumulate leaves and debris during the spring and fall and after heavy rain. Hidden gutter screening both at downspouts and over the full length of the gutter could help keep them clean. The surface material would require checking after a storm as well. Periodic checking of the underside of the roof from the attic after a storm or winter freezing may give early warning of any leaks. Generally, damage from water or ice is less likely on a roof that has good flashing on the outside and is well ventilated and insulated on the inside. Specific instructions for the maintenance of the different roof materials should be available from the architect or contractor.

Summary

The essential ingredients for replacing and maintaining a historic roof are:

- Understanding the historic character of the building and being sympathetic to it.
- Careful examination and recording of the existing roof and any evidence of earlier roofs.
- Consideration of the historic craftsmanship and detailing and implementing them in the renewal wherever visible.
- Supervision of the roofers or maintenance personnel to assure preservation of historic fabric and proper understanding of the scope and detailing of the project.
- Consideration of alternative materials where the original cannot be used.
- Cyclical maintenance program to assure that the staff understands how to take care of the roof and of the particular trouble spots to safeguard.

With these points in mind, it will be possible to preserve the architectural character and maintain the physical integrity of the roofing on a historic building.

This Preservation Brief was written by Sarah M. Sweetser, Architectural Historian, Technical Preservation Services Division. Much of the technical information was based upon an unpublished report prepared under contract for this office by John G. and Diana S. Waite. Some of the historical information was from Charles E. Peterson, FAIA, "American Notes," *Journal of the Society of Architectural Historians.*

The illustrations for this brief not specifically credited are from the files of the Technical Preservation Services Division.

The publication has been prepared pursuant to Executive Order 11593, "Protection and Enhancement of the Cultural Environment," which directs the Secretary of the Interior to" . . . develop and make available to Federal agencies and State and local governments in-

Decorative features such as cupolas require extra maintenance. The flashing is carefully detailed to promote run-off, and the wooden ribbing must be kept well-painted. This roof surface, which was originally tin plate, has been replaced with lead-coated copper for maintenance purposes. (Lyndhurst, Tarrytown, New York, photo courtesy of the National Trust for Historic Preservation)

formation concerning professional methods and techniques for preserving, improving, restoring and maintaining historic properties." This brief was developed under the technical editorship of Lee H. Nelson, AIA, Technical Preservation Services Division, Office of Archeology and Historic Preservation, Heritage Conservation and Recreation Service, U. S. Department of the Interior, Washington, D.C. 20240. February 1978.

Additional readings on the subject of roofing are listed below.

Boaz, Joseph N., ed. *Architectural Graphic Standards.* New York: John Wiley and Sons, Inc., 1970. (Modern roofing types and detailing)

Briggs, Martin S. *A Short History of the Building Crafts.* London: Oxford University Press, 1925. (Descriptions of historic roofing materials)

Bulletin of the Association for Preservation Technology. Vol. 2 (nos. 1–2) 1970. (Entirely on roofing)

Holstrom, Ingmar; and Sandstrom, Christina. *Maintenance of Old Buildings: Preservation from the Technical and Antiquarian Standpoint.* Stockholm: National Swedish Building Research, 1972. (Contains a section on roof maintenance problems)

Insall, Donald. *The Care of Old Buildings Today.* London: The Architectural Press, 1972. (Excellent guide to some problems and solutions for historic roofs)

Labine, R.A. Clem. "Repairing Slate Roofs." *The Old House Journal* 3 (no. 12, Dec. 1975): 6-7.

Lefer, Henry. "A Birds-eye View." *Progressive Architecture.* (Mar. 1977), pp. 88–92. (Article on contemporary sheet metal)

National Slate Association. *Slate Roofs.* Reprint of 1926 edition, now available from the Vermont Structural Slate Co., Inc., Fairhaven, VT 05743. (An excellent reference for the many designs and details of slate roofs)

Peterson, Charles E. "Iron in Early American Roofs." *The Smithsonian Journal of History* 3 (no. 3). Edited by Peter C. Welsh. Washington, D.C.: Smithsonian Institution, 1968. pp. 41–76.

Waite, Diana S. *Nineteenth Century Tin Roofing and its Use at Hyde Hall.* Albany: New York State Historic Trust, 1971.

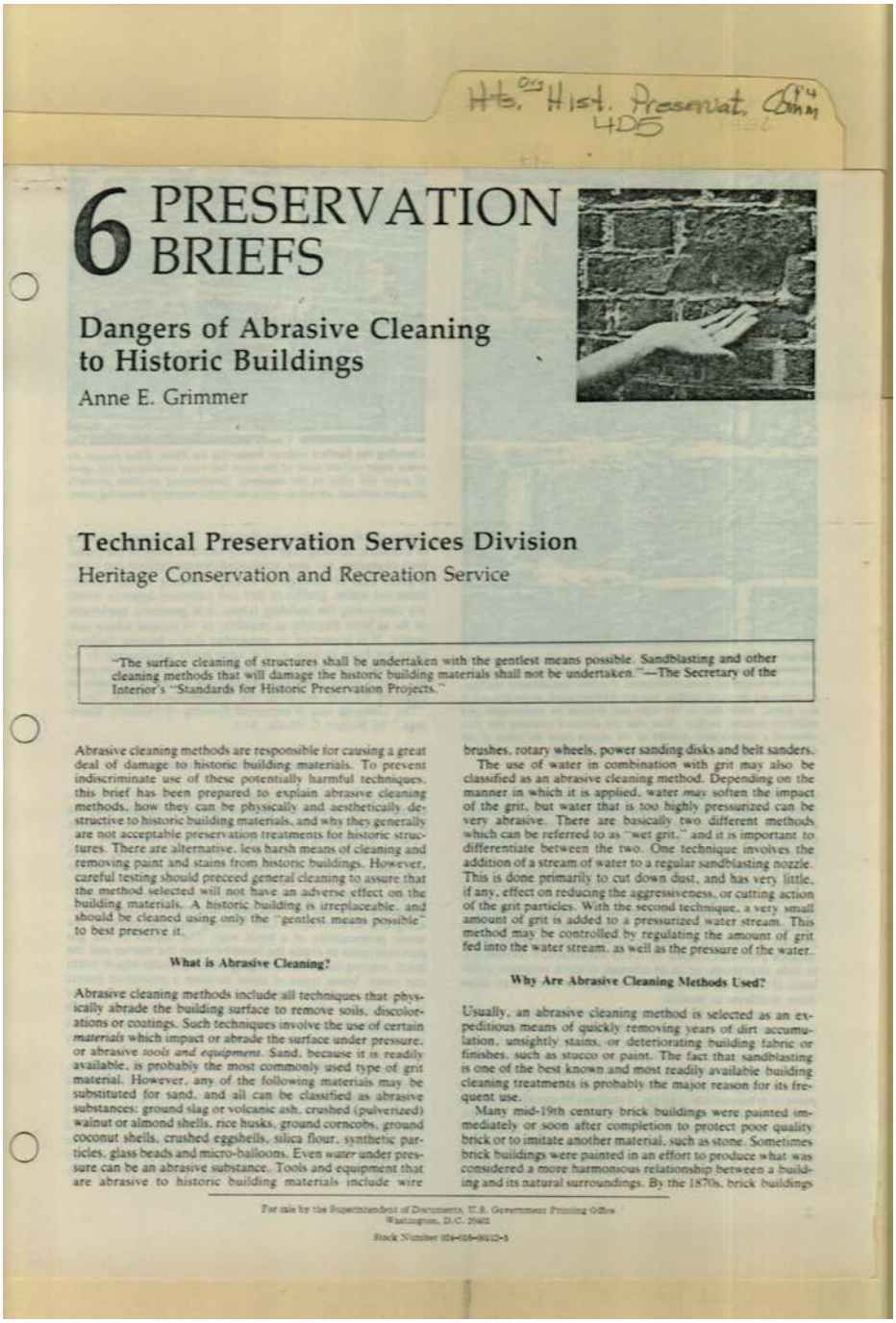
——. "Roofing for Early America." *Building Early America.* Edited by Charles E. Peterson. Radnor, Penn.: Chilton Book Co., 1976.

Names:

Roofing in Historic Buildings

Types:

article



Hts. Hist. Preservat. Comm
4D5

6 PRESERVATION BRIEFS

Dangers of Abrasive Cleaning to Historic Buildings

Anne E. Grimmer

Technical Preservation Services Division
Heritage Conservation and Recreation Service

"The surface cleaning of structures shall be undertaken with the gentlest means possible. Sandblasting and other cleaning methods that will damage the historic building materials shall not be undertaken."—The Secretary of the Interior's "Standards for Historic Preservation Projects."

Abrasive cleaning methods are responsible for causing a great deal of damage to historic building materials. To prevent indiscriminate use of these potentially harmful techniques, this brief has been prepared to explain abrasive cleaning methods, how they can be physically and aesthetically destructive to historic building materials, and why they generally are not acceptable preservation treatments for historic structures. There are alternative, less harsh means of cleaning and removing paint and stains from historic buildings. However, careful testing should preceed general cleaning to assure that the method selected will not have an adverse effect on the building materials. A historic building is irreplaceable, and should be cleaned using only the "gentlest means possible" to best preserve it.

What is Abrasive Cleaning?

Abrasive cleaning methods include all techniques that physically abrade the building surface to remove soils, discolorations or coatings. Such techniques involve the use of certain *materials* which impact or abrade the surface under pressure, or abrasive *tools and equipment*. Sand, because it is readily available, is probably the most commonly used type of grit material. However, any of the following materials may be substituted for sand, and all can be classified as abrasive substances: ground slag or volcanic ash, crushed (pulverized) walnut or almond shells, rice husks, ground corncobs, ground coconut shells, crushed eggshells, silica flour, synthetic particles, glass beads and micro-balloons. Even *water* under pressure can be an abrasive substance. Tools and equipment that are abrasive to historic building materials include wire brushes, rotary wheels, power sanding disks and belt sanders.

The use of water in combination with grit may also be classified as an abrasive cleaning method. Depending on the manner in which it is applied, water *may* soften the impact of the grit, but water that is too highly pressurized can be very abrasive. There are basically two different methods which can be referred to as "wet grit," and it is important to differentiate between the two. One technique involves the addition of a stream of water to a regular sandblasting nozzle. This is done primarily to cut down dust, and has very little, if any, effect on reducing the aggressiveness, or cutting action of the grit particles. With the second technique, a very small amount of grit is added to a pressurized water stream. This method may be controlled by regulating the amount of grit fed into the water stream, as well as the pressure of the water.

Why Are Abrasive Cleaning Methods Used?

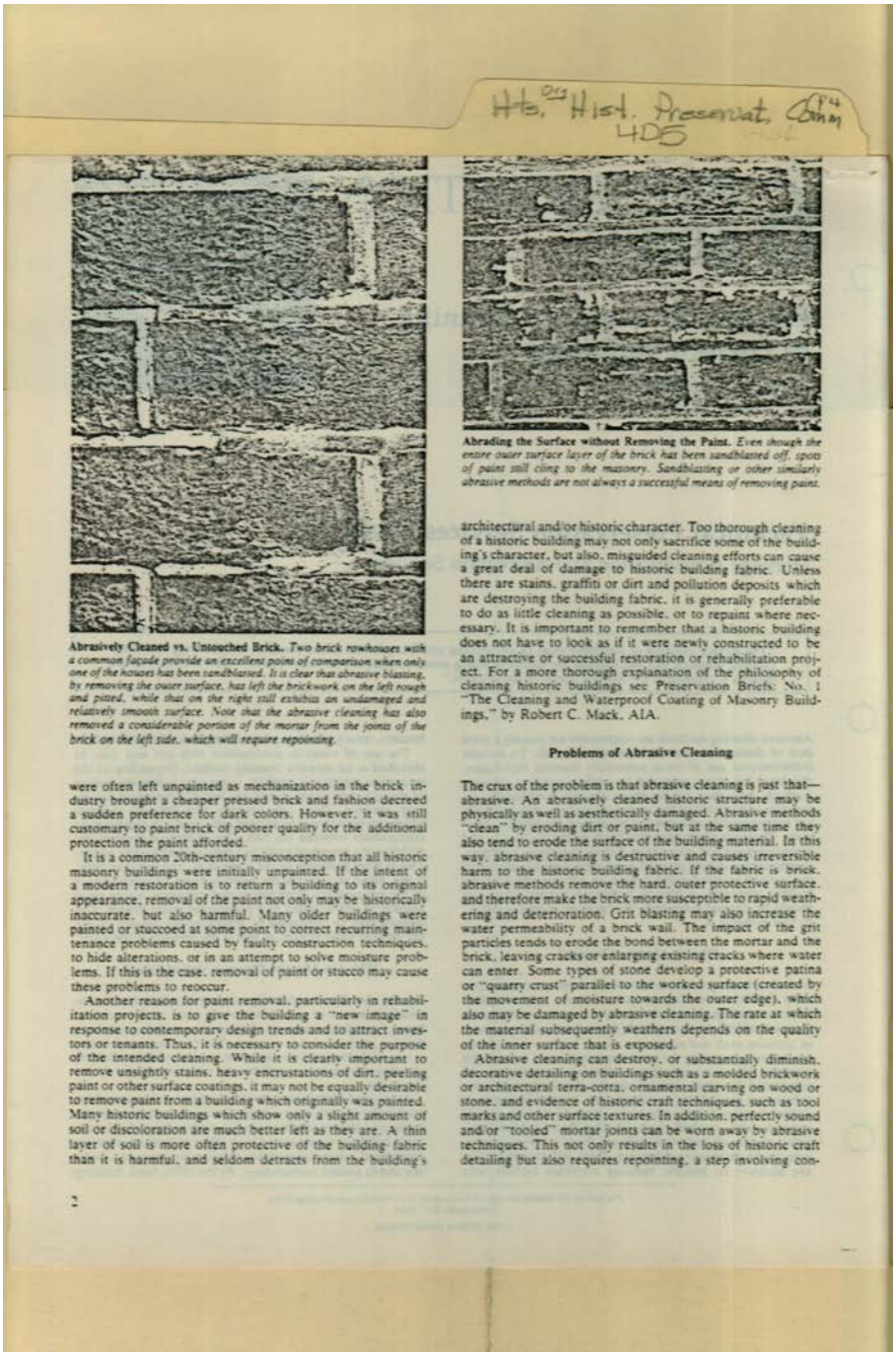
Usually, an abrasive cleaning method is selected as an expeditious means of quickly removing years of dirt accumulation, unsightly stains, or deteriorating building fabric or finishes, such as stucco or paint. The fact that sandblasting is one of the best known and most readily available building cleaning treatments is probably the major reason for its frequent use.

Many mid-19th century brick buildings were painted immediately or soon after completion to protect poor quality brick or to imitate another material, such as stone. Sometimes brick buildings were painted in an effort to produce what was considered a more harmonious relationship between a building and its natural surroundings. By the 1870s, brick buildings

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402
Stock Number 024-016-00112-5

Names:
Cleaning Abrasives in Historic Buildings

Types:
article



Hts. Hist. Preservat. Comm
4D5

Abrasively Cleaned vs. Untouched Brick. *Two brick rowhouses with a common façade provide an excellent point of comparison when only one of the houses has been sandblasted. It is clear that abrasive blasting, by removing the outer surface, has left the brickwork on the left rough and pitted, while that on the right still exhibits an undamaged and relatively smooth surface. Note that the abrasive cleaning has also removed a considerable portion of the mortar from the joints of the brick on the left side, which will require repointing.*

were often left unpainted as mechanization in the brick industry brought a cheaper pressed brick and fashion decreed a sudden preference for dark colors. However, it was still customary to paint brick of poorer quality for the additional protection the paint afforded.

It is a common 20th-century misconception that all historic masonry buildings were initially unpainted. If the intent of a modern restoration is to return a building to its original appearance, removal of the paint not only may be historically inaccurate, but also harmful. Many older buildings were painted or stuccoed at some point to correct recurring maintenance problems caused by faulty construction techniques, to hide alterations, or in an attempt to solve moisture problems. If this is the case, removal of paint or stucco may cause these problems to reoccur.

Another reason for paint removal, particularly in rehabilitation projects, is to give the building a "new image" in response to contemporary design trends and to attract investors or tenants. Thus, it is necessary to consider the purpose of the intended cleaning. While it is clearly important to remove unsightly stains, heavy encrustations of dirt, peeling paint or other surface coatings, it may not be equally desirable to remove paint from a building which originally was painted. Many historic buildings which show only a slight amount of soil or discoloration are much better left as they are. A thin layer of soil is more often protective of the building fabric than it is harmful, and seldom detracts from the building's

Abrading the Surface without Removing the Paint. *Even though the entire outer surface layer of the brick has been sandblasted off, spots of paint still cling to the masonry. Sandblasting or other similarly abrasive methods are not always a successful means of removing paint.*

architectural and/or historic character. Too thorough cleaning of a historic building may not only sacrifice some of the building's character, but also, misguided cleaning efforts can cause a great deal of damage to historic building fabric. Unless there are stains, graffiti or dirt and pollution deposits which are destroying the building fabric, it is generally preferable to do as little cleaning as possible, or to repaint where necessary. It is important to remember that a historic building does not have to look as if it were newly constructed to be an attractive or successful restoration or rehabilitation project. For a more thorough explanation of the philosophy of cleaning historic buildings see Preservation Briefs: No. 1 "The Cleaning and Waterproof Coating of Masonry Buildings," by Robert C. Mack, AIA.

Problems of Abrasive Cleaning

The crux of the problem is that abrasive cleaning is just that—abrasive. An abrasively cleaned historic structure may be physically as well as aesthetically damaged. Abrasive methods "clean" by eroding dirt or paint, but at the same time they also tend to erode the surface of the building material. In this way, abrasive cleaning is destructive and causes irreversible harm to the historic building fabric. If the fabric is brick, abrasive methods remove the hard, outer protective surface, and therefore make the brick more susceptible to rapid weathering and deterioration. Grit blasting may also increase the water permeability of a brick wall. The impact of the grit particles tends to erode the bond between the mortar and the brick, leaving cracks or enlarging existing cracks where water can enter. Some types of stone develop a protective patina or "quarry crust" parallel to the worked surface (created by the movement of moisture towards the outer edge), which also may be damaged by abrasive cleaning. The rate at which the material subsequently weathers depends on the quality of the inner surface that is exposed.

Abrasive cleaning can destroy, or substantially diminish, decorative detailing on buildings such as a molded brickwork or architectural terra-cotta; ornamental carving on wood or stone, and evidence of historic craft techniques, such as tool marks and other surface textures. In addition, perfectly sound and/or "tooled" mortar joints can be worn away by abrasive techniques. This not only results in the loss of historic craft detailing but also requires repointing, a step involving con-

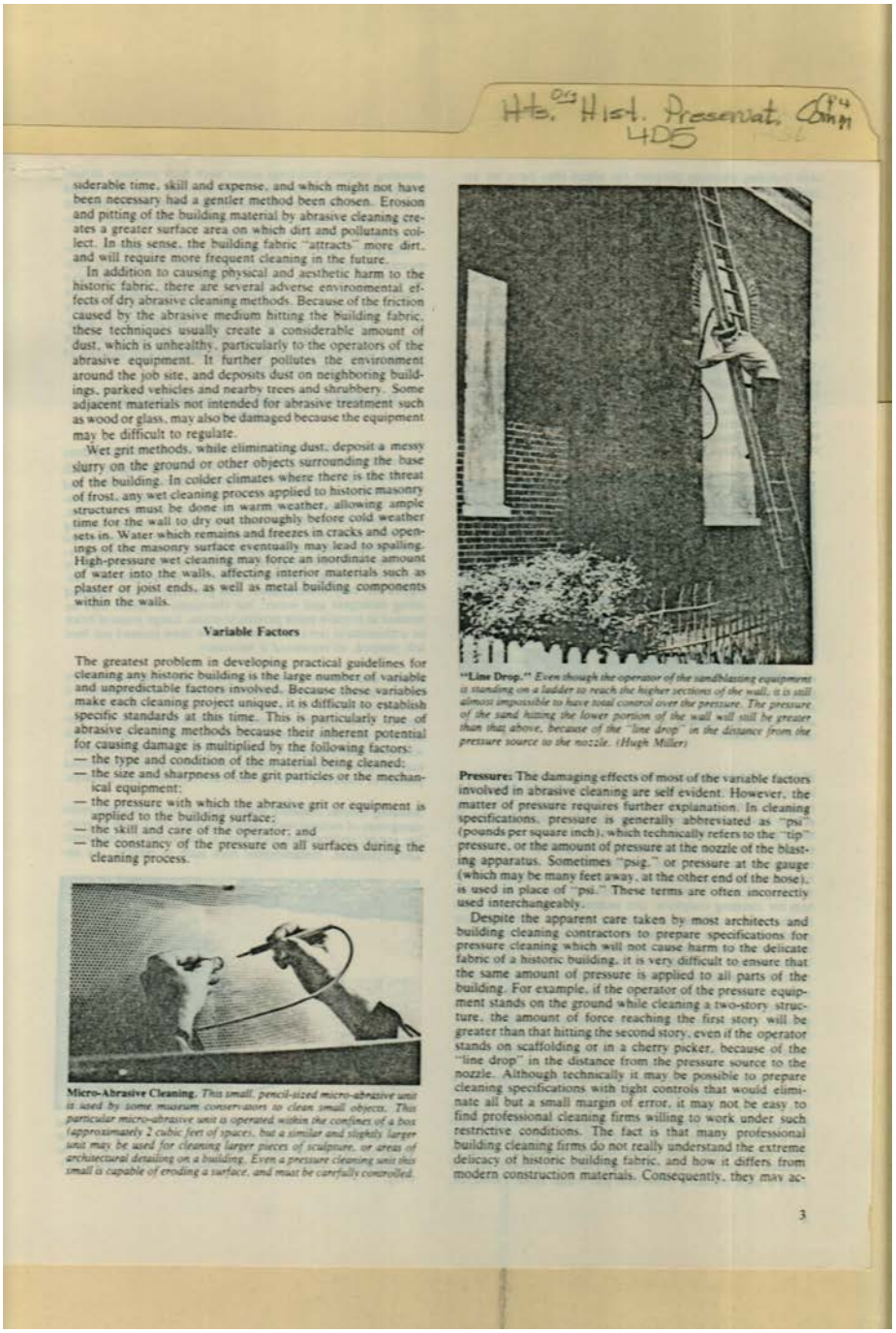
2

Names:

Cleaning Abrasives in Historic Buildings

Types:

article



Hts. Dis Hist. Preservat. Comm
4D5

siderable time, skill and expense, and which might not have been necessary had a gentler method been chosen. Erosion and pitting of the building material by abrasive cleaning creates a greater surface area on which dirt and pollutants collect. In this sense, the building fabric "attracts" more dirt, and will require more frequent cleaning in the future.

In addition to causing physical and aesthetic harm to the historic fabric, there are several adverse environmental effects of dry abrasive cleaning methods. Because of the friction caused by the abrasive medium hitting the building fabric, these techniques usually create a considerable amount of dust, which is unhealthy, particularly to the operators of the abrasive equipment. It further pollutes the environment around the job site, and deposits dust on neighboring buildings, parked vehicles and nearby trees and shrubbery. Some adjacent materials not intended for abrasive treatment such as wood or glass, may also be damaged because the equipment may be difficult to regulate.

Wet grit methods, while eliminating dust, deposit a messy slurry on the ground or other objects surrounding the base of the building. In colder climates where there is the threat of frost, any wet cleaning process applied to historic masonry structures must be done in warm weather, allowing ample time for the wall to dry out thoroughly before cold weather sets in. Water which remains and freezes in cracks and openings of the masonry surface eventually may lead to spalling. High-pressure wet cleaning may force an inordinate amount of water into the walls, affecting interior materials such as plaster or joist ends, as well as metal building components within the walls.

Variable Factors

The greatest problem in developing practical guidelines for cleaning any historic building is the large number of variable and unpredictable factors involved. Because these variables make each cleaning project unique, it is difficult to establish specific standards at this time. This is particularly true of abrasive cleaning methods because their inherent potential for causing damage is multiplied by the following factors:

— the type and condition of the material being cleaned;
— the size and sharpness of the grit particles or the mechanical equipment;
— the pressure with which the abrasive grit or equipment is applied to the building surface;
— the skill and care of the operator; and
— the constancy of the pressure on all surfaces during the cleaning process.

Micro-Abrasive Cleaning. *This small, pencil-sized micro-abrasive unit is used by some museum conservators to clean small objects. This particular micro-abrasive unit is operated within the confines of a box (approximately 2 cubic feet of space), but a similar and slightly larger unit may be used for cleaning larger pieces of sculpture, or areas of architectural detailing on a building. Even a pressure cleaning unit this small is capable of eroding a surface, and must be carefully controlled.*

"Line Drop." *Even though the operator of the sandblasting equipment is standing on a ladder to reach the higher sections of the wall, it is still almost impossible to have total control over the pressure. The pressure of the sand hitting the lower portion of the wall will still be greater than that above, because of the "line drop" in the distance from the pressure source to the nozzle. (Hugh Miller)*

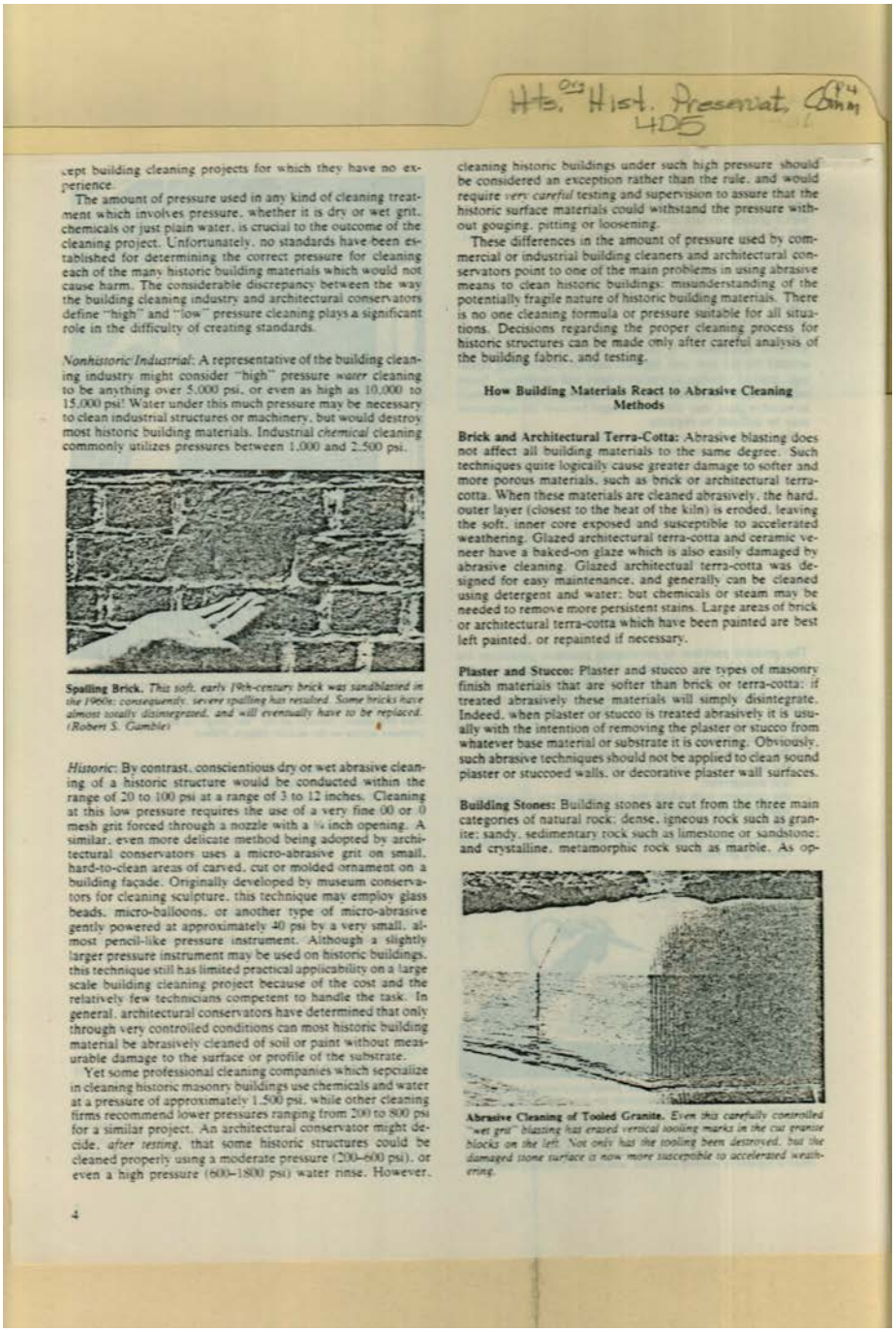
Pressure: The damaging effects of most of the variable factors involved in abrasive cleaning are self evident. However, the matter of pressure requires further explanation. In cleaning specifications, pressure is generally abbreviated as "psi" (pounds per square inch), which technically refers to the "tip" pressure, or the amount of pressure at the nozzle of the blasting apparatus. Sometimes "psig," or pressure at the gauge (which may be many feet away, at the other end of the hose), is used in place of "psi." These terms are often incorrectly used interchangeably.

Despite the apparent care taken by most architects and building cleaning contractors to prepare specifications for pressure cleaning which will not cause harm to the delicate fabric of a historic building, it is very difficult to ensure that the same amount of pressure is applied to all parts of the building. For example, if the operator of the pressure equipment stands on the ground while cleaning a two-story structure, the amount of force reaching the first story will be greater than that hitting the second story, even if the operator stands on scaffolding or in a cherry picker, because of the "line drop" in the distance from the pressure source to the nozzle. Although technically it may be possible to prepare cleaning specifications with tight controls that would eliminate all but a small margin of error, it may not be easy to find professional cleaning firms willing to work under such restrictive conditions. The fact is that many professional building cleaning firms do not really understand the extreme delicacy of historic building fabric, and how it differs from modern construction materials. Consequently, they may ac-

3

Names:
Cleaning Abrasives in Historic Buildings

Types:
article



Hts. Hist. Preservat. Comm
4D5

cept building cleaning projects for which they have no experience.

The amount of pressure used in any kind of cleaning treatment which involves pressure, whether it is dry or wet grit, chemicals or just plain water, is crucial to the outcome of the cleaning project. Unfortunately, no standards have been established for determining the correct pressure for cleaning each of the many historic building materials which would not cause harm. The considerable discrepancy between the way the building cleaning industry and architectural conservators define "high" and "low" pressure cleaning plays a significant role in the difficulty of creating standards.

Nonhistoric/Industrial: A representative of the building cleaning industry might consider "high" pressure *water* cleaning to be anything over 5,000 psi, or even as high as 10,000 to 15,000 psi! Water under this much pressure may be necessary to clean industrial structures or machinery, but would destroy most historic building materials. Industrial *chemical* cleaning commonly utilizes pressures between 1,000 and 2,500 psi.

Spalling Brick. *This soft, early 19th-century brick was sandblasted in the 1960s; consequently, severe spalling has resulted. Some bricks have almost totally disintegrated, and will eventually have to be replaced. (Robert S. Gamble)*

Historic: By contrast, conscientious dry or wet abrasive cleaning of a historic structure would be conducted within the range of 20 to 100 psi at a range of 3 to 12 inches. Cleaning at this low pressure requires the use of a very fine 00 or 0 mesh grit forced through a nozzle with a ⅛ inch opening. A similar, even more delicate method being adopted by architectural conservators uses a micro-abrasive grit on small, hard-to-clean areas of carved, cut or molded ornament on a building façade. Originally developed by museum conservators for cleaning sculpture, this technique may employ glass beads, micro-balloons, or another type of micro-abrasive gently powered at approximately 40 psi by a very small, almost pencil-like pressure instrument. Although a slightly larger pressure instrument may be used on historic buildings, this technique still has limited practical applicability on a large scale building cleaning project because of the cost and the relatively few technicians competent to handle the task. In general, architectural conservators have determined that only through very controlled conditions can most historic building material be abrasively cleaned of soil or paint without measurable damage to the surface or profile of the substrate.

Yet some professional cleaning companies which specialize in cleaning historic masonry buildings use chemicals and water at a pressure of approximately 1,500 psi, while other cleaning firms recommend lower pressures ranging from 200 to 800 psi for a similar project. An architectural conservator might decide, *after testing*, that some historic structures could be cleaned properly using a moderate pressure (200–600 psi), or even a high pressure (600–1800 psi) water rinse. However, cleaning historic buildings under such high pressure should be considered an exception rather than the rule, and would require *very careful* testing and supervision to assure that the historic surface materials could withstand the pressure without gouging, pitting or loosening.

These differences in the amount of pressure used by commercial or industrial building cleaners and architectural conservators point to one of the main problems in using abrasive means to clean historic buildings: misunderstanding of the potentially fragile nature of historic building materials. There is no one cleaning formula or pressure suitable for all situations. Decisions regarding the proper cleaning process for historic structures can be made only after careful analysis of the building fabric, and testing.

How Building Materials React to Abrasive Cleaning Methods

Brick and Architectural Terra-Cotta: Abrasive blasting does not affect all building materials to the same degree. Such techniques quite logically cause greater damage to softer and more porous materials, such as brick or architectural terra-cotta. When these materials are cleaned abrasively, the hard, outer layer (closest to the heat of the kiln) is eroded, leaving the soft, inner core exposed and susceptible to accelerated weathering. Glazed architectural terra-cotta and ceramic veneer have a baked-on glaze which is also easily damaged by abrasive cleaning. Glazed architectual terra-cotta was designed for easy maintenance, and generally can be cleaned using detergent and water; but chemicals or steam may be needed to remove more persistent stains. Large areas of brick or architectural terra-cotta which have been painted are best left painted, or repainted if necessary.

Plaster and Stucco: Plaster and stucco are types of masonry finish materials that are softer than brick or terra-cotta; if treated abrasively these materials will simply disintegrate. Indeed, when plaster or stucco is treated abrasively it is usually with the intention of removing the plaster or stucco from whatever base material or substrate it is covering. Obviously, such abrasive techniques should not be applied to clean sound plaster or stuccoed walls, or decorative plaster wall surfaces.

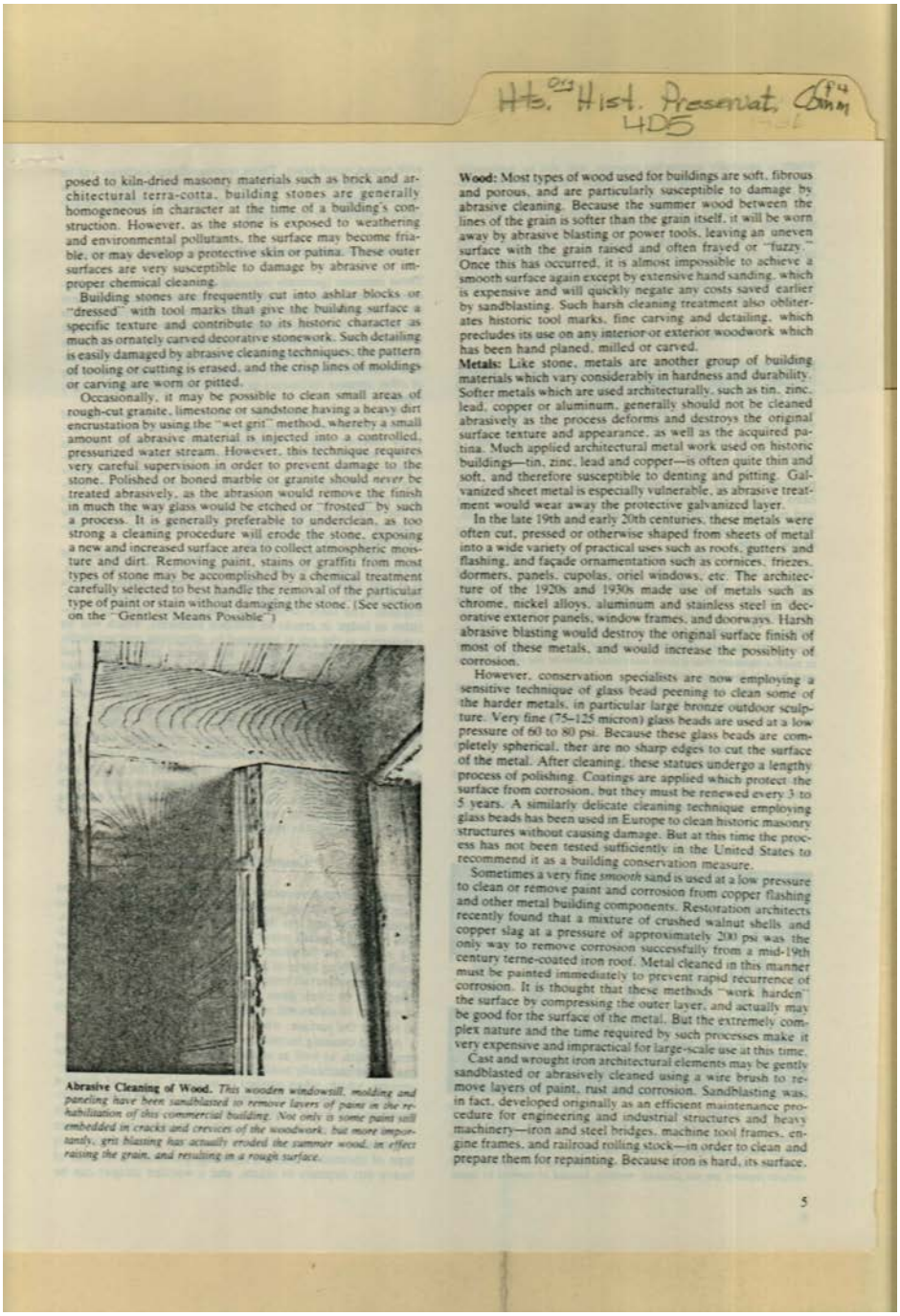
Building Stones: Building stones are cut from the three main categories of natural rock: dense, igneous rock such as granite; sandy, sedimentary rock such as limestone or sandstone; and crystalline, metamorphic rock such as marble. As op-

Abrasive Cleaning of Tooled Granite. *Even this carefully controlled "wet grit" blasting has erased vertical tooling marks in the cut granite blocks on the left. Not only has the tooling been destroyed, but the damaged stone surface is now more susceptible to accelerated weathering.*

4

Names:
Cleaning Abrasives in Historic Buildings

Types:
article



Hts. Hist. Preservat. Comm
4D5

posed to kiln-dried masonry materials such as brick and architectural terra-cotta, building stones are generally homogeneous in character at the time of a building's construction. However, as the stone is exposed to weathering and environmental pollutants, the surface may become friable, or may develop a protective skin or patina. These outer surfaces are very susceptible to damage by abrasive or improper chemical cleaning.

Building stones are frequently cut into ashlar blocks or "dressed" with tool marks that give the building surface a specific texture and contribute to its historic character as much as ornately carved decorative stonework. Such detailing is easily damaged by abrasive cleaning techniques; the pattern of tooling or cutting is erased, and the crisp lines of moldings or carving are worn or pitted.

Occasionally, it may be possible to clean small areas of rough-cut granite, limestone or sandstone having a heavy dirt encrustation by using the "wet grit" method, whereby a small amount of abrasive material is injected into a controlled, pressurized water stream. However, this technique requires very careful supervision in order to prevent damage to the stone. Polished or honed marble or granite should *never* be treated abrasively, as the abrasion would remove the finish in much the way glass would be etched or "frosted" by such a process. It is generally preferable to underclean, as too strong a cleaning procedure will erode the stone, exposing a new and increased surface area to collect atmospheric moisture and dirt. Removing paint, stains or graffiti from most types of stone may be accomplished by a chemical treatment carefully selected to best handle the removal of the particular type of paint or stain without damaging the stone. (See section on the "Gentlest Means Possible")

Abrasive Cleaning of Wood. *This wooden windowsill, molding and paneling have been sandblasted to remove layers of paint in the rehabilitation of this commercial building. Not only is some paint still embedded in cracks and crevices of the woodwork, but more importantly, grit blasting has actually eroded the summer wood, in effect raising the grain, and resulting in a rough surface.*

Wood: Most types of wood used for buildings are soft, fibrous and porous, and are particularly susceptible to damage by abrasive cleaning. Because the summer wood between the lines of the grain is softer than the grain itself, it will be worn away by abrasive blasting or power tools, leaving an uneven surface with the grain raised and often frayed or "fuzzy." Once this has occurred, it is almost impossible to achieve a smooth surface again except by extensive hand sanding, which is expensive and will quickly negate any costs saved earlier by sandblasting. Such harsh cleaning treatment also obliterates historic tool marks, fine carving and detailing, which precludes its use on any interior or exterior woodwork which has been hand planed, milled or carved.

Metals: Like stone, metals are another group of building materials which vary considerably in hardness and durability. Softer metals which are used architecturally, such as tin, zinc, lead, copper or aluminum, generally should not be cleaned abrasively as the process deforms and destroys the original surface texture and appearance, as well as the acquired patina. Much applied architectural metal work used on historic buildings—tin, zinc, lead and copper—is often quite thin and soft, and therefore susceptible to denting and pitting. Galvanized sheet metal is especially vulnerable, as abrasive treatment would wear away the protective galvanized layer.

In the late 19th and early 20th centuries, these metals were often cut, pressed or otherwise shaped from sheets of metal into a wide variety of practical uses such as roofs, gutters and flashing, and façade ornamentation such as cornices, friezes, dormers, panels, cupolas, oriel windows, etc. The architecture of the 1920s and 1930s made use of metals such as chrome, nickel alloys, aluminum and stainless steel in decorative exterior panels, window frames, and doorways. Harsh abrasive blasting would destroy the original surface finish of most of these metals, and would increase the possiblity of corrosion.

However, conservation specialists are now employing a sensitive technique of glass bead peening to clean some of the harder metals, in particular large bronze outdoor sculpture. Very fine (75–125 micron) glass beads are used at a low pressure of 60 to 80 psi. Because these glass beads are completely spherical, ther are no sharp edges to cut the surface of the metal. After cleaning, these statues undergo a lengthy process of polishing. Coatings are applied which protect the surface from corrosion, but they must be renewed every 3 to 5 years. A similarly delicate cleaning technique employing glass beads has been used in Europe to clean historic masonry structures without causing damage. But at this time the process has not been tested sufficiently in the United States to recommend it as a building conservation measure.

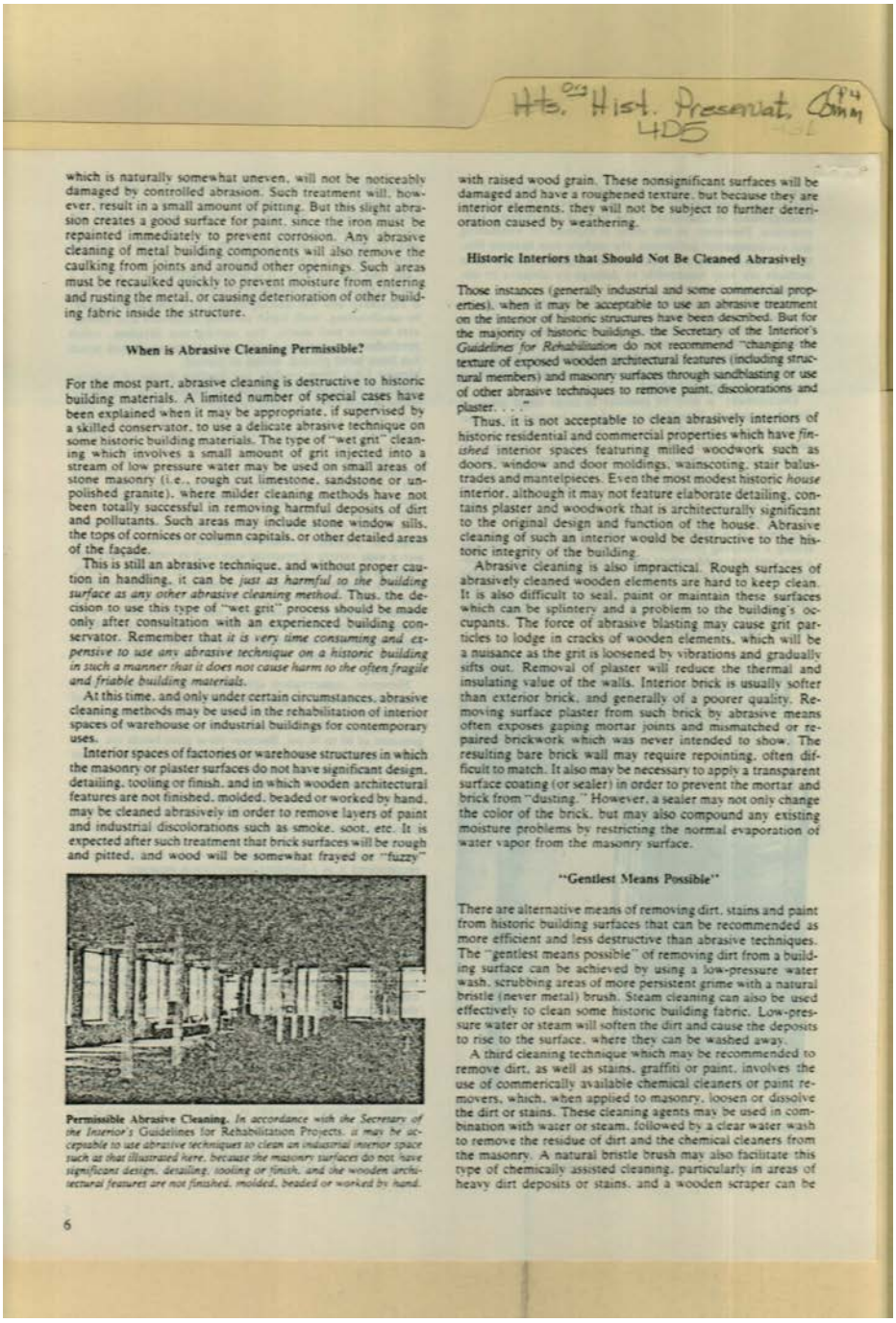
Sometimes a very fine *smooth* sand is used at a low pressure to clean or remove paint and corrosion from copper flashing and other metal building components. Restoration architects recently found that a mixture of crushed walnut shells and copper slag at a pressure of approximately 200 psi was the only way to remove corrosion successfully from a mid-19th century terne-coated iron roof. Metal cleaned in this manner must be painted immediately to prevent rapid recurrence of corrosion. It is thought that these methods "work harden" the surface by compressing the outer layer, and actually may be good for the surface of the metal. But the extremely complex nature and the time required by such processes make it very expensive and impractical for large-scale use at this time.

Cast and wrought iron architectural elements may be gently sandblasted or abrasively cleaned using a wire brush to remove layers of paint, rust and corrosion. Sandblasting was, in fact, developed originally as an efficient maintenance procedure for engineering and industrial structures and heavy machinery—iron and steel bridges, machine tool frames, engine frames, and railroad rolling stock—in order to clean and prepare them for repainting. Because iron is hard, its surface,

5

Names:
Cleaning Abrasives in Historic Buildings

Types:
article



Hts. Hist. Preservat. Comm
4D5

which is naturally somewhat uneven, will not be noticeably damaged by controlled abrasion. Such treatment will, however, result in a small amount of pitting. But this slight abrasion creates a good surface for paint, since the iron must be repainted immediately to prevent corrosion. Any abrasive cleaning of metal building components will also remove the caulking from joints and around other openings. Such areas must be recaulked quickly to prevent moisture from entering and rusting the metal, or causing deterioration of other building fabric inside the structure.

When is Abrasive Cleaning Permissible?

For the most part, abrasive cleaning is destructive to historic building materials. A limited number of special cases have been explained when it may be appropriate, if supervised by a skilled conservator, to use a delicate abrasive technique on some historic building materials. The type of "wet grit" cleaning which involves a small amount of grit injected into a stream of low pressure water may be used on small areas of stone masonry (i.e., rough cut limestone, sandstone or unpolished granite), where milder cleaning methods have not been totally successful in removing harmful deposits of dirt and pollutants. Such areas may include stone window sills, the tops of cornices or column capitals, or other detailed areas of the façade.

This is still an abrasive technique, and without proper caution in handling, it can be *just as harmful to the building surface as any other abrasive cleaning method*. Thus, the decision to use this type of "wet grit" process should be made only after consultation with an experienced building conservator. Remember that *it is very time consuming and expensive to use any abrasive technique on a historic building in such a manner that it does not cause harm to the often fragile and friable building materials.*

At this time, and only under certain circumstances, abrasive cleaning methods may be used in the rehabilitation of interior spaces of warehouse or industrial buildings for contemporary uses.

Interior spaces of factories or warehouse structures in which the masonry or plaster surfaces do not have significant design, detailing, tooling or finish, and in which wooden architectural features are not finished, molded, beaded or worked by hand, may be cleaned abrasively in order to remove layers of paint and industrial discolorations such as smoke, soot, etc. It is expected after such treatment that brick surfaces will be rough and pitted, and wood will be somewhat frayed or "fuzzy" with raised wood grain. These nonsignificant surfaces will be damaged and have a roughened texture, but because they are interior elements, they will not be subject to further deterioration caused by weathering.

Permissible Abrasive Cleaning. *In accordance with the Secretary of the Interior's* Guidelines for Rehabilitation Projects, *it may be acceptable to use abrasive techniques to clean an industrial interior space such as that illustrated here, because the masonry surfaces do not have significant design, detailing, tooling or finish, and the wooden architectural features are not finished, molded, beaded or worked by hand.*

Historic Interiors that Should Not Be Cleaned Abrasively

Those instances (generally industrial and some commercial properties), when it may be acceptable to use an abrasive treatment on the interior of historic structures have been described. But for the majority of historic buildings, the Secretary of the Interior's *Guidelines for Rehabilitation* do not recommend "changing the texture of exposed wooden architectural features (including structural members) and masonry surfaces through sandblasting or use of other abrasive techniques to remove paint, discolorations and plaster. . . ."

Thus, it is not acceptable to clean abrasively interiors of historic residential and commercial properties which have *finished* interior spaces featuring milled woodwork such as doors, window and door moldings, wainscoting, stair balustrades and mantelpieces. Even the most modest historic *house* interior, although it may not feature elaborate detailing, contains plaster and woodwork that is architecturally significant to the original design and function of the house. Abrasive cleaning of such an interior would be destructive to the historic integrity of the building.

Abrasive cleaning is also impractical. Rough surfaces of abrasively cleaned wooden elements are hard to keep clean. It is also difficult to seal, paint or maintain these surfaces which can be splintery and a problem to the building's occupants. The force of abrasive blasting may cause grit particles to lodge in cracks of wooden elements, which will be a nuisance as the grit is loosened by vibrations and gradually sifts out. Removal of plaster will reduce the thermal and insulating value of the walls. Interior brick is usually softer than exterior brick, and generally of a poorer quality. Removing surface plaster from such brick by abrasive means often exposes gaping mortar joints and mismatched or repaired brickwork which was never intended to show. The resulting bare brick wall may require repointing, often difficult to match. It also may be necessary to apply a transparent surface coating (or sealer) in order to prevent the mortar and brick from "dusting." However, a sealer may not only change the color of the brick, but may also compound any existing moisture problems by restricting the normal evaporation of water vapor from the masonry surface.

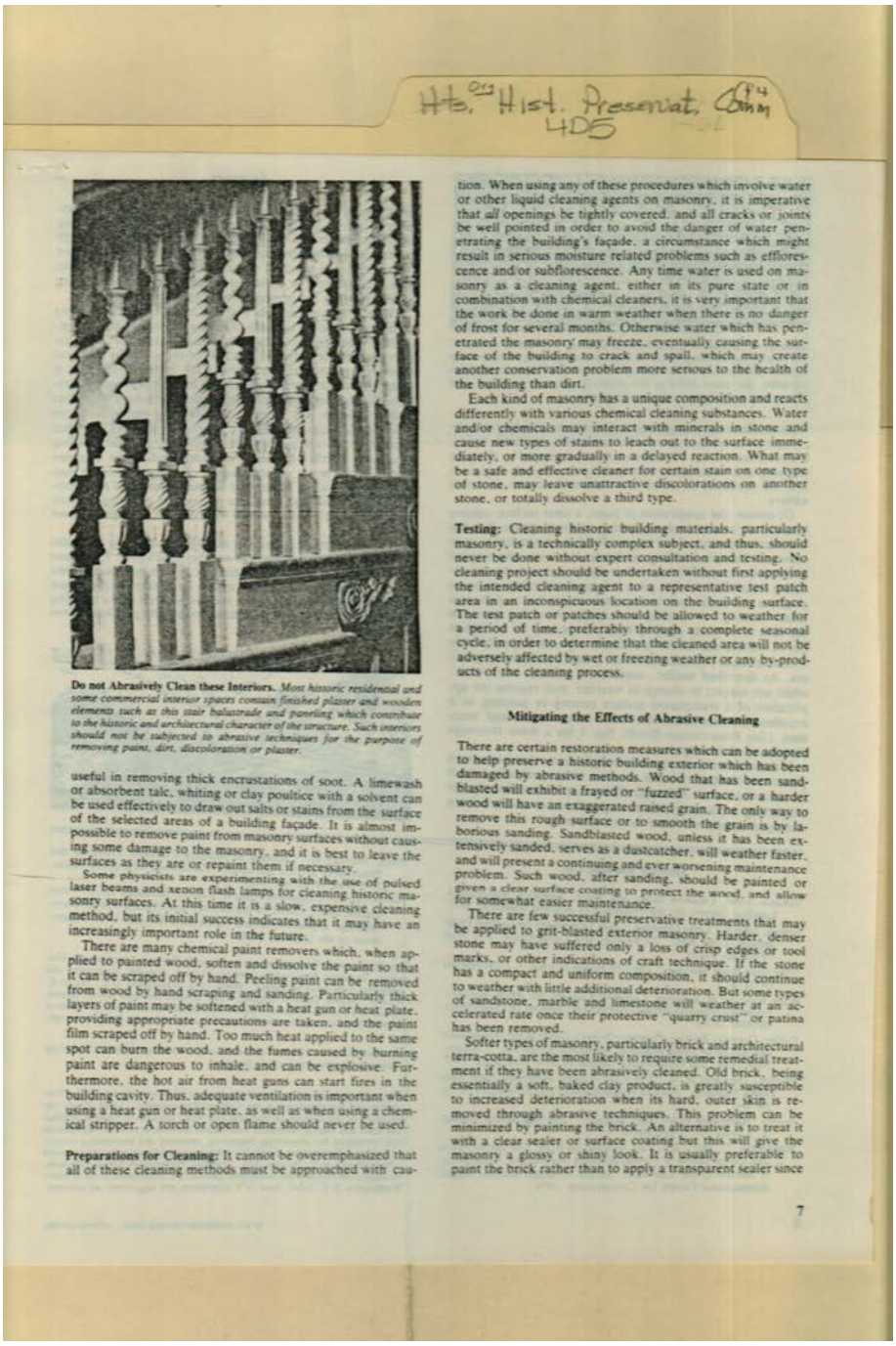
"Gentlest Means Possible"

There are alternative means of removing dirt, stains and paint from historic building surfaces that can be recommended as more efficient and less destructive than abrasive techniques. The "gentlest means possible" of removing dirt from a building surface can be achieved by using a low-pressure water wash, scrubbing areas of more persistent grime with a natural bristle (never metal) brush. Steam cleaning can also be used effectively to clean some historic building fabric. Low-pressure water or steam will soften the dirt and cause the deposits to rise to the surface, where they can be washed away.

A third cleaning technique which may be recommended to remove dirt, as well as stains, graffiti or paint, involves the use of commerically available chemical cleaners or paint removers, which, when applied to masonry, loosen or dissolve the dirt or stains. These cleaning agents may be used in combination with water or steam, followed by a clear water wash to remove the residue of dirt and the chemical cleaners from the masonry. A natural bristle brush may also facilitate this type of chemically assisted cleaning, particularly in areas of heavy dirt deposits or stains, and a wooden scraper can be

Names:
Cleaning Abrasives in Historic Buildings

Types:
article



Hts. Hist. Preservat. Comm
405

Do not Abrasively Clean these Interiors. *Most historic residential and some commercial interior spaces contain finished plaster and wooden elements such as this stair balustrade and paneling which contribute to the historic and architectural character of the structure. Such interiors should not be subjected to abrasive techniques for the purpose of removing paint, dirt, discoloration or plaster.*

useful in removing thick encrustations of soot. A limewash or absorbent talc, whiting or clay poultice with a solvent can be used effectively to draw out salts or stains from the surface of the selected areas of a building façade. It is almost impossible to remove paint from masonry surfaces without causing some damage to the masonry, and it is best to leave the surfaces as they are or repaint them if necessary.

Some physicists are experimenting with the use of pulsed laser beams and xenon flash lamps for cleaning historic masonry surfaces. At this time it is a slow, expensive cleaning method, but its initial success indicates that it may have an increasingly important role in the future.

There are many chemical paint removers which, when applied to painted wood, soften and dissolve the paint so that it can be scraped off by hand. Peeling paint can be removed from wood by hand scraping and sanding. Particularly thick layers of paint may be softened with a heat gun or heat plate, providing appropriate precautions are taken, and the paint film scraped off by hand. Too much heat applied to the same spot can burn the wood, and the fumes caused by burning paint are dangerous to inhale, and can be explosive. Furthermore, the hot air from heat guns can start fires in the building cavity. Thus, adequate ventilation is important when using a heat gun or heat plate, as well as when using a chemical stripper. A torch or open flame should never be used.

Preparations for Cleaning: It cannot be overemphasized that all of these cleaning methods must be approached with caution. When using any of these procedures which involve water or other liquid cleaning agents on masonry, it is imperative that *all* openings be tightly covered, and all cracks or joints be well pointed in order to avoid the danger of water penetrating the building's façade, a circumstance which might result in serious moisture related problems such as efflorescence and/or subflorescence. Any time water is used on masonry as a cleaning agent, either in its pure state or in combination with chemical cleaners, it is very important that the work be done in warm weather when there is no danger of frost for several months. Otherwise water which has penetrated the masonry may freeze, eventually causing the surface of the building to crack and spall, which may create another conservation problem more serious to the health of the building than dirt.

Each kind of masonry has a unique composition and reacts differently with various chemical cleaning substances. Water and/or chemicals may interact with minerals in stone and cause new types of stains to leach out to the surface immediately, or more gradually in a delayed reaction. What may be a safe and effective cleaner for certain stain on one type of stone, may leave unattractive discolorations on another stone, or totally dissolve a third type.

Testing: Cleaning historic building materials, particularly masonry, is a technically complex subject, and thus, should never be done without expert consultation and testing. No cleaning project should be undertaken without first applying the intended cleaning agent to a representative test patch area in an inconspicuous location on the building surface. The test patch or patches should be allowed to weather for a period of time, preferably through a complete seasonal cycle, in order to determine that the cleaned area will not be adversely affected by wet or freezing weather or any by-products of the cleaning process.

Mitigating the Effects of Abrasive Cleaning

There are certain restoration measures which can be adopted to help preserve a historic building exterior which has been damaged by abrasive methods. Wood that has been sandblasted will exhibit a frayed or "fuzzed" surface, or a harder wood will have an exaggerated raised grain. The only way to remove this rough surface or to smooth the grain is by laborious sanding. Sandblasted wood, unless it has been extensively sanded, serves as a dustcatcher, will weather faster, and will present a continuing and ever worsening maintenance problem. Such wood, after sanding, should be painted or given a clear surface coating to protect the wood, and allow for somewhat easier maintenance.

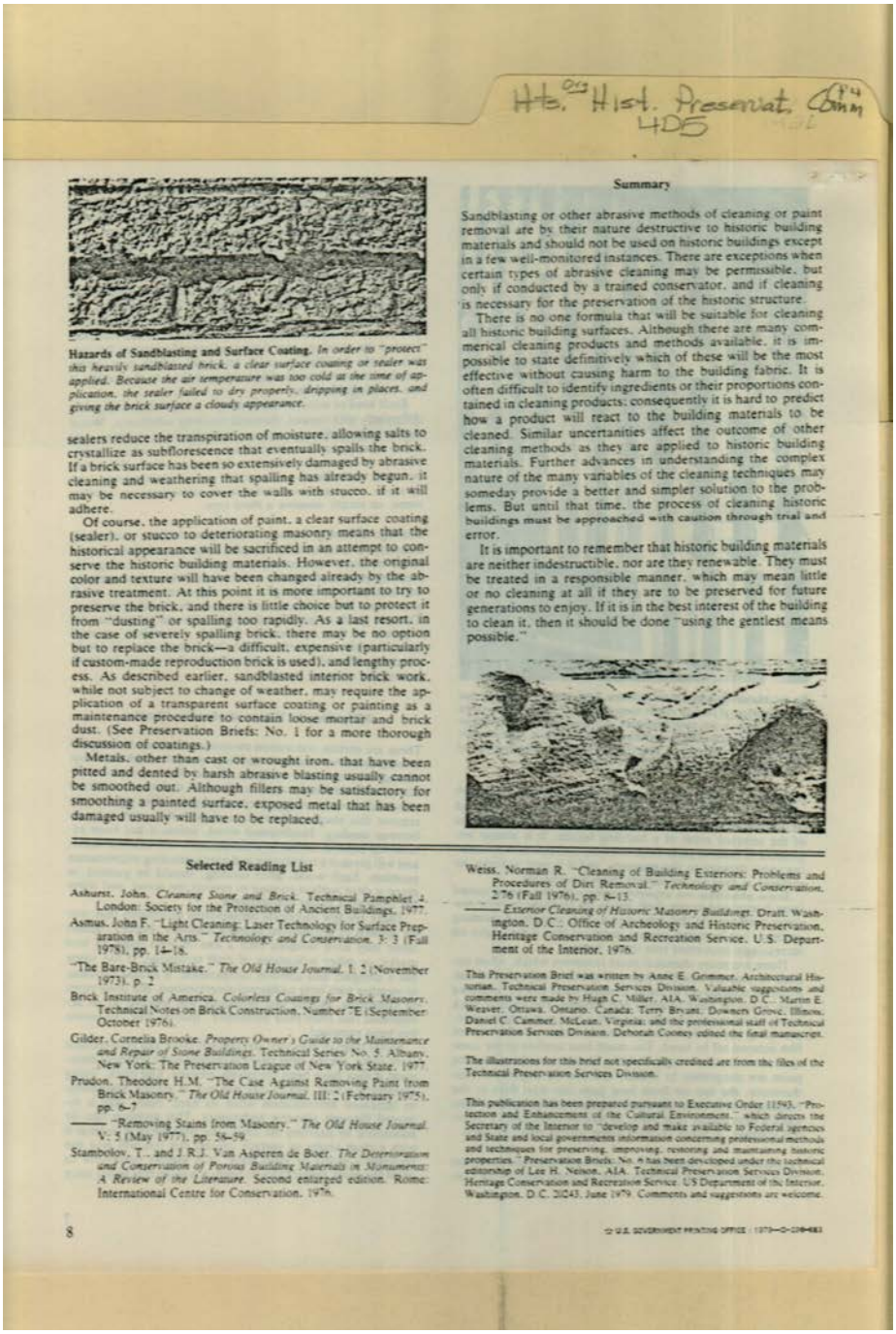
There are few successful preservative treatments that may be applied to grit-blasted exterior masonry. Harder, denser stone may have suffered only a loss of crisp edges or tool marks, or other indications of craft technique. If the stone has a compact and uniform composition, it should continue to weather with little additional deterioration. But some types of sandstone, marble and limestone will weather at an accelerated rate once their protective "quarry crust" or patina has been removed.

Softer types of masonry, particularly brick and architectural terra-cotta, are the most likely to require some remedial treatment if they have been abrasively cleaned. Old brick, being essentially a soft, baked clay product, is greatly susceptible to increased deterioration when its hard, outer skin is removed through abrasive techniques. This problem can be minimized by painting the brick. An alternative is to treat it with a clear sealer or surface coating but this will give the masonry a glossy or shiny look. It is usually preferable to paint the brick rather than to apply a transparent sealer since

7

Names:
Cleaning Abrasives in Historic Buildings

Types:
article



Hts. Hist. Preservat. Comm
405

Hazards of Sandblasting and Surface Coating. *In order to "protect" this heavily sandblasted brick, a clear surface coating or sealer was applied. Because the air temperature was too cold at the time of application, the sealer failed to dry properly, dripping in places, and giving the brick surface a cloudy appearance.*

sealers reduce the transpiration of moisture, allowing salts to crystallize as subflorescence that eventually spalls the brick. If a brick surface has been so extensively damaged by abrasive cleaning and weathering that spalling has already begun, it may be necessary to cover the walls with stucco, if it will adhere.

Of course, the application of paint, a clear surface coating (sealer), or stucco to deteriorating masonry means that the historical appearance will be sacrificed in an attempt to conserve the historic building materials. However, the original color and texture will have been changed already by the abrasive treatment. At this point it is more important to try to preserve the brick, and there is little choice but to protect it from "dusting" or spalling too rapidly. As a last resort, in the case of severely spalling brick, there may be no option but to replace the brick—a difficult, expensive (particularly if custom-made reproduction brick is used), and lengthy process. As described earlier, sandblasted interior brick work, while not subject to change of weather, may require the application of a transparent surface coating or painting as a maintenance procedure to contain loose mortar and brick dust. (See Preservation Briefs: No. 1 for a more thorough discussion of coatings.)

Metals, other than cast or wrought iron, that have been pitted and dented by harsh abrasive blasting usually cannot be smoothed out. Although fillers may be satisfactory for smoothing a painted surface, exposed metal that has been damaged usually will have to be replaced.

Summary

Sandblasting or other abrasive methods of cleaning or paint removal are by their nature destructive to historic building materials and should not be used on historic buildings except in a few well-monitored instances. There are exceptions when certain types of abrasive cleaning may be permissible, but only if conducted by a trained conservator, and if cleaning is necessary for the preservation of the historic structure.

There is no one formula that will be suitable for cleaning all historic building surfaces. Although there are many commerical cleaning products and methods available, it is impossible to state definitively which of these will be the most effective without causing harm to the building fabric. It is often difficult to identify ingredients or their proportions contained in cleaning products; consequently it is hard to predict how a product will react to the building materials to be cleaned. Similar uncertainties affect the outcome of other cleaning methods as they are applied to historic building materials. Further advances in understanding the complex nature of the many variables of the cleaning techniques may someday provide a better and simpler solution to the problems. But until that time, the process of cleaning historic buildings must be approached with caution through trial and error.

It is important to remember that historic building materials are neither indestructible, nor are they renewable. They must be treated in a responsible manner, which may mean little or no cleaning at all if they are to be preserved for future generations to enjoy. If it is in the best interest of the building to clean it, then it should be done "using the gentlest means possible."

Selected Reading List

Ashurst, John. *Cleaning Stone and Brick.* Technical Pamphlet 4. London: Society for the Protection of Ancient Buildings, 1977.

Asmus, John F. "Light Cleaning: Laser Technology for Surface Preparation in the Arts." *Technology and Conservation.* 3: 3 (Fall 1978), pp. 14–18.

"The Bare-Brick Mistake." *The Old House Journal.* 1: 2 (November 1973), p. 2.

Brick Institute of America. *Colorless Coatings for Brick Masonry.* Technical Notes on Brick Construction, Number 7E (September/October 1976).

Gilder, Cornelia Brooke. *Property Owner's Guide to the Maintenance and Repair of Stone Buildings.* Technical Series No. 5. Albany, New York: The Preservation League of New York State, 1977.

Prudon, Theodore H.M. "The Case Against Removing Paint from Brick Masonry." *The Old House Journal.* III: 2 (February 1975), pp. 6–7.

——— "Removing Stains from Masonry." *The Old House Journal.* V: 5 (May 1977), pp. 58–59.

Stambolov, T., and J.R.J. Van Asperen de Boer. *The Deterioration and Conservation of Porous Building Materials in Monuments: A Review of the Literature.* Second enlarged edition. Rome: International Centre for Conservation, 1976.

Weiss, Norman R. "Cleaning of Building Exteriors: Problems and Procedures of Dirt Removal." *Technology and Conservation,* 2:76 (Fall 1976), pp. 8–15.

——— *Exterior Cleaning of Historic Masonry Buildings.* Draft. Washington, D.C.: Office of Archeology and Historic Preservation, Heritage Conservation and Recreation Service, U.S. Department of the Interior, 1976.

This Preservation Brief was written by Anne E. Grimmer, Architectural Historian, Technical Preservation Services Division. Valuable suggestions and comments were made by Hugh C. Miller, AIA, Washington, D.C.; Martin E. Weaver, Ottawa, Ontario, Canada; Terry Bryant, Downers Grove, Illinois; Daniel C. Cammer, McLean, Virginia; and the professional staff of Technical Preservation Services Division. Deborah Cooney edited the final manuscript.

The illustrations for this brief not specifically credited are from the files of the Technical Preservation Services Division.

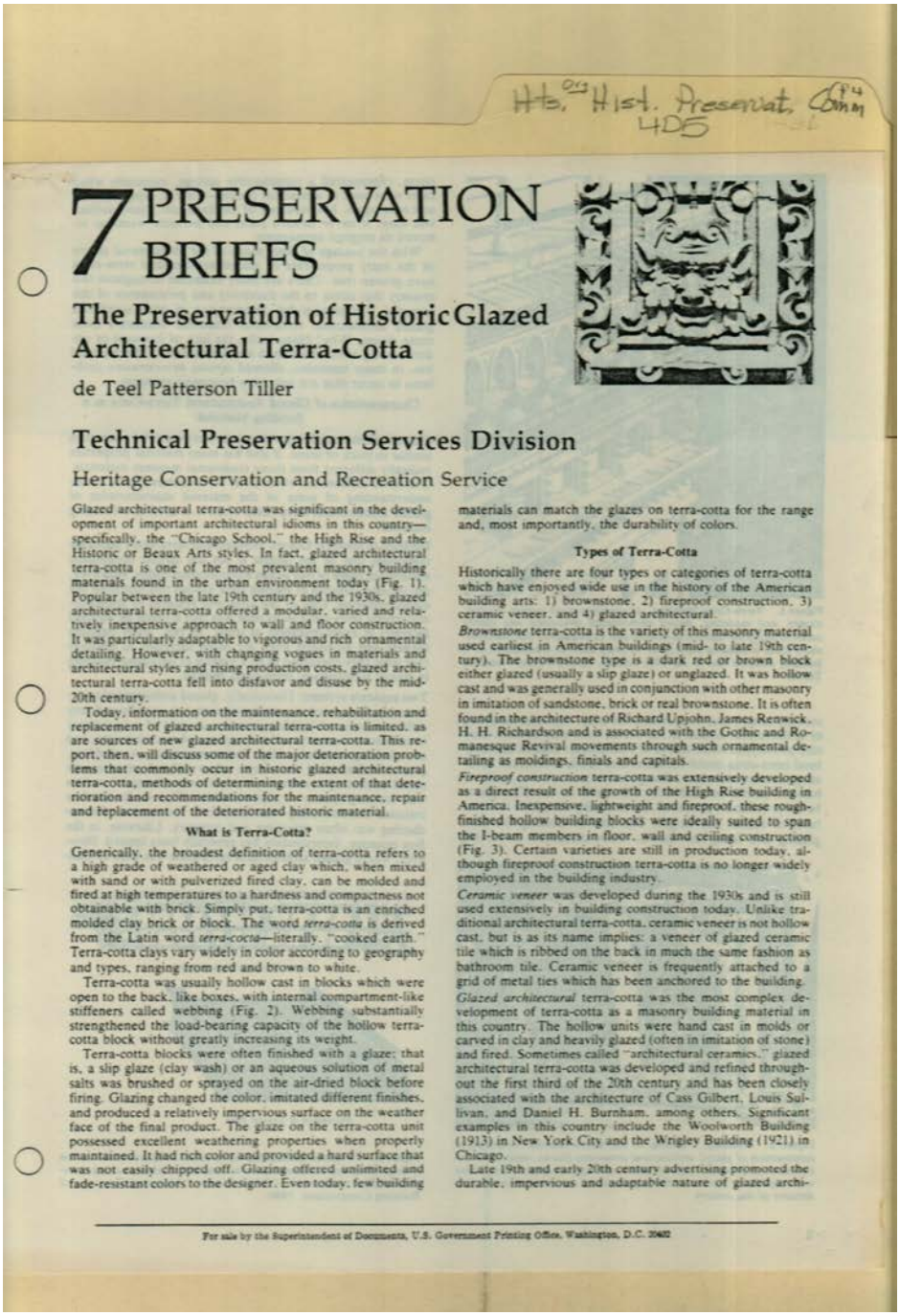
This publication has been prepared pursuant to Executive Order 11593, "Protection and Enhancement of the Cultural Environment," which directs the Secretary of the Interior to "develop and make available to Federal agencies and State and local governments information concerning professional methods and techniques for preserving, improving, restoring and maintaining historic properties." Preservation Briefs: No. 6 has been developed under the technical editorship of Lee H. Nelson, AIA, Technical Preservation Services Division, Heritage Conservation and Recreation Service, US Department of the Interior, Washington, D.C. 20243. June 1979. Comments and suggestions are welcome.

Names:

Cleaning Abrasives in Historic Buildings

Types:

article



Hts. Hist. Preservat. Comm
4D5

7 PRESERVATION BRIEFS

The Preservation of Historic Glazed Architectural Terra-Cotta

de Teel Patterson Tiller

Technical Preservation Services Division

Heritage Conservation and Recreation Service

Glazed architectural terra-cotta was significant in the development of important architectural idioms in this country—specifically, the "Chicago School," the High Rise and the Historic or Beaux Arts styles. In fact, glazed architectural terra-cotta is one of the most prevalent masonry building materials found in the urban environment today (Fig. 1). Popular between the late 19th century and the 1930s, glazed architectural terra-cotta offered a modular, varied and relatively inexpensive approach to wall and floor construction. It was particularly adaptable to vigorous and rich ornamental detailing. However, with changing vogues in materials and architectural styles and rising production costs, glazed architectural terra-cotta fell into disfavor and disuse by the mid-20th century.

Today, information on the maintenance, rehabilitation and replacement of glazed architectural terra-cotta is limited, as are sources of new glazed architectural terra-cotta. This report, then, will discuss some of the major deterioration problems that commonly occur in historic glazed architectural terra-cotta, methods of determining the extent of that deterioration and recommendations for the maintenance, repair and replacement of the deteriorated historic material.

What is Terra-Cotta?

Generically, the broadest definition of terra-cotta refers to a high grade of weathered or aged clay which, when mixed with sand or with pulverized fired clay, can be molded and fired at high temperatures to a hardness and compactness not obtainable with brick. Simply put, terra-cotta is an enriched molded clay brick or block. The word *terra-cotta* is derived from the Latin word *terra-cocta*—literally, "cooked earth." Terra-cotta clays vary widely in color according to geography and types, ranging from red and brown to white.

Terra-cotta was usually hollow cast in blocks which were open to the back, like boxes, with internal compartment-like stiffeners called webbing (Fig. 2). Webbing substantially strengthened the load-bearing capacity of the hollow terra-cotta block without greatly increasing its weight.

Terra-cotta blocks were often finished with a glaze; that is, a slip glaze (clay wash) or an aqueous solution of metal salts was brushed or sprayed on the air-dried block before firing. Glazing changed the color, imitated different finishes, and produced a relatively impervious surface on the weather face of the final product. The glaze on the terra-cotta unit possessed excellent weathering properties when properly maintained. It had rich color and provided a hard surface that was not easily chipped off. Glazing offered unlimited and fade-resistant colors to the designer. Even today, few building materials can match the glazes on terra-cotta for the range and, most importantly, the durability of colors.

Types of Terra-Cotta

Historically there are four types or categories of terra-cotta which have enjoyed wide use in the history of the American building arts: 1) brownstone, 2) fireproof construction, 3) ceramic veneer, and 4) glazed architectural.

Brownstone terra-cotta is the variety of this masonry material used earliest in American buildings (mid- to late 19th century). The brownstone type is a dark red or brown block either glazed (usually a slip glaze) or unglazed. It was hollow cast and was generally used in conjunction with other masonry in imitation of sandstone, brick or real brownstone. It is often found in the architecture of Richard Upjohn, James Renwick, H. H. Richardson and is associated with the Gothic and Romanesque Revival movements through such ornamental detailing as moldings, finials and capitals.

Fireproof construction terra-cotta was extensively developed as a direct result of the growth of the High Rise building in America. Inexpensive, lightweight and fireproof, these rough-finished hollow building blocks were ideally suited to span the I-beam members in floor, wall and ceiling construction (Fig. 3). Certain varieties are still in production today, although fireproof construction terra-cotta is no longer widely employed in the building industry.

Ceramic veneer was developed during the 1930s and is still used extensively in building construction today. Unlike traditional architectural terra-cotta, ceramic veneer is not hollow cast, but is as its name implies: a veneer of glazed ceramic tile which is ribbed on the back in much the same fashion as bathroom tile. Ceramic veneer is frequently attached to a grid of metal ties which has been anchored to the building.

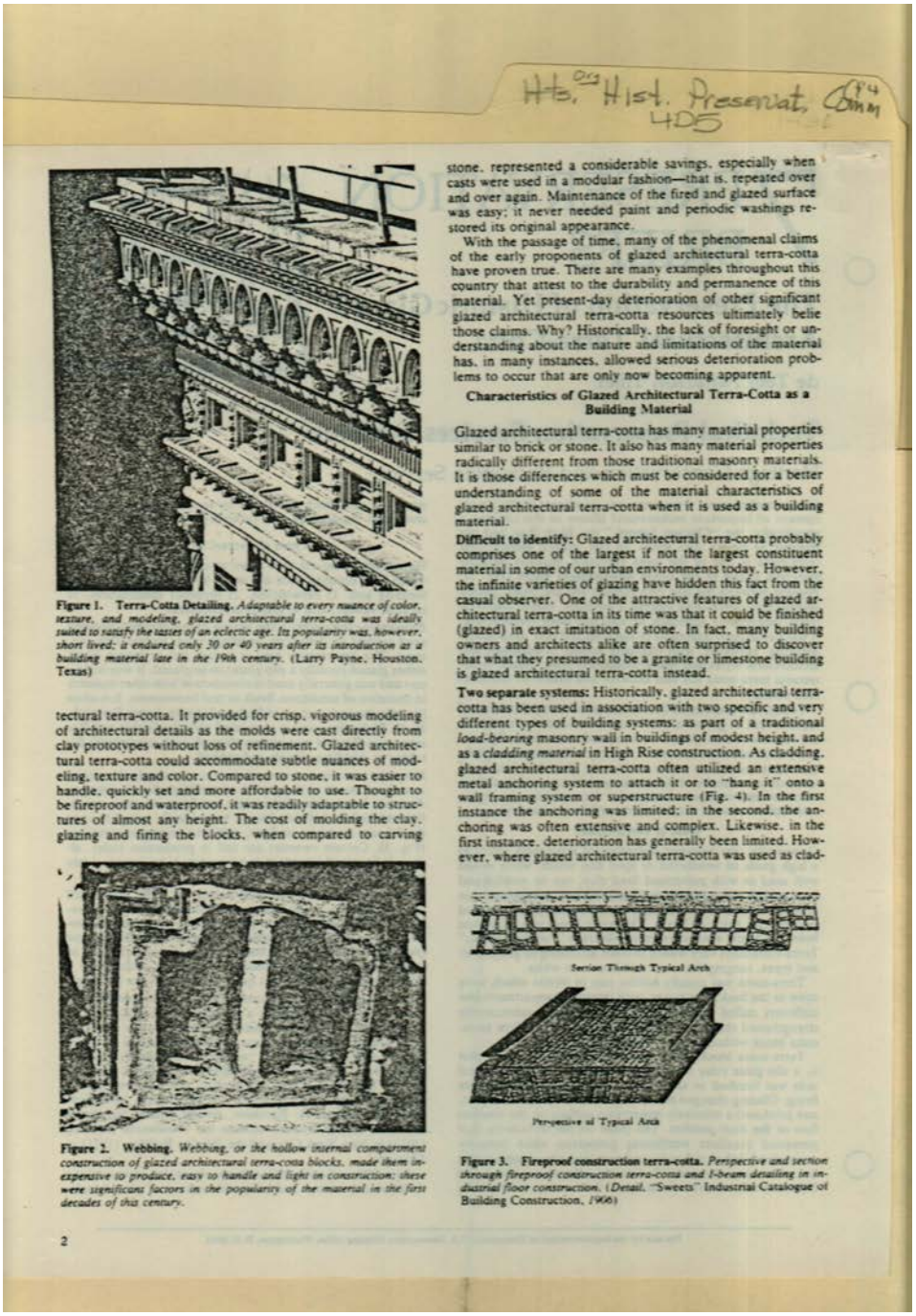
Glazed architectural terra-cotta was the most complex development of terra-cotta as a masonry building material in this country. The hollow units were hand cast in molds or carved in clay and heavily glazed (often in imitation of stone) and fired. Sometimes called "architectural ceramics," glazed architectural terra-cotta was developed and refined throughout the first third of the 20th century and has been closely associated with the architecture of Cass Gilbert, Louis Sullivan, and Daniel H. Burnham, among others. Significant examples in this country include the Woolworth Building (1913) in New York City and the Wrigley Building (1921) in Chicago.

Late 19th and early 20th century advertising promoted the durable, impervious and adaptable nature of glazed archi-

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

Names:
Terra-Cotta
Preservation

Types:
article



Hts. Dis. Hist. Preservat. 84
405

Figure 1. Terra-Cotta Detailing. *Adaptable to every nuance of color, texture, and modeling, glazed architectural terra-cotta was ideally suited to satisfy the tastes of an eclectic age. Its popularity was, however, short lived: it endured only 30 or 40 years after its introduction as a building material late in the 19th century.* (Larry Payne, Houston, Texas)

tectural terra-cotta. It provided for crisp, vigorous modeling of architectural details as the molds were cast directly from clay prototypes without loss of refinement. Glazed architectural terra-cotta could accommodate subtle nuances of modeling, texture and color. Compared to stone, it was easier to handle, quickly set and more affordable to use. Thought to be fireproof and waterproof, it was readily adaptable to structures of almost any height. The cost of molding the clay, glazing and firing the blocks, when compared to carving stone, represented a considerable savings, especially when casts were used in a modular fashion—that is, repeated over and over again. Maintenance of the fired and glazed surface was easy; it never needed paint and periodic washings restored its original appearance.

With the passage of time, many of the phenomenal claims of the early proponents of glazed architectural terra-cotta have proven true. There are many examples throughout this country that attest to the durability and permanence of this material. Yet present-day deterioration of other significant glazed architectural terra-cotta resources ultimately belie those claims. Why? Historically, the lack of foresight or understanding about the nature and limitations of the material has, in many instances, allowed serious deterioration problems to occur that are only now becoming apparent.

Characteristics of Glazed Architectural Terra-Cotta as a Building Material

Glazed architectural terra-cotta has many material properties similar to brick or stone. It also has many material properties radically different from those traditional masonry materials. It is those differences which must be considered for a better understanding of some of the material characteristics of glazed architectural terra-cotta when it is used as a building material.

Difficult to identify: Glazed architectural terra-cotta probably comprises one of the largest if not the largest constituent material in some of our urban environments today. However, the infinite varieties of glazing have hidden this fact from the casual observer. One of the attractive features of glazed architectural terra-cotta in its time was that it could be finished (glazed) in exact imitation of stone. In fact, many building owners and architects alike are often surprised to discover that what they presumed to be a granite or limestone building is glazed architectural terra-cotta instead.

Two separate systems: Historically, glazed architectural terra-cotta has been used in association with two specific and very different types of building systems: as part of a traditional *load-bearing* masonry wall in buildings of modest height, and as a *cladding material* in High Rise construction. As cladding, glazed architectural terra-cotta often utilized an extensive metal anchoring system to attach it or to "hang it" onto a wall framing system or superstructure (Fig. 4). In the first instance the anchoring was limited; in the second, the anchoring was often extensive and complex. Likewise, in the first instance, deterioration has generally been limited. However, where glazed architectural terra-cotta was used as clad-

Figure 2. Webbing. *Webbing, or the hollow internal compartment construction of glazed architectural terra-cotta blocks, made them inexpensive to produce, easy to handle and light in construction; these were significant factors in the popularity of the material in the first decades of this century.*

Section Through Typical Arch

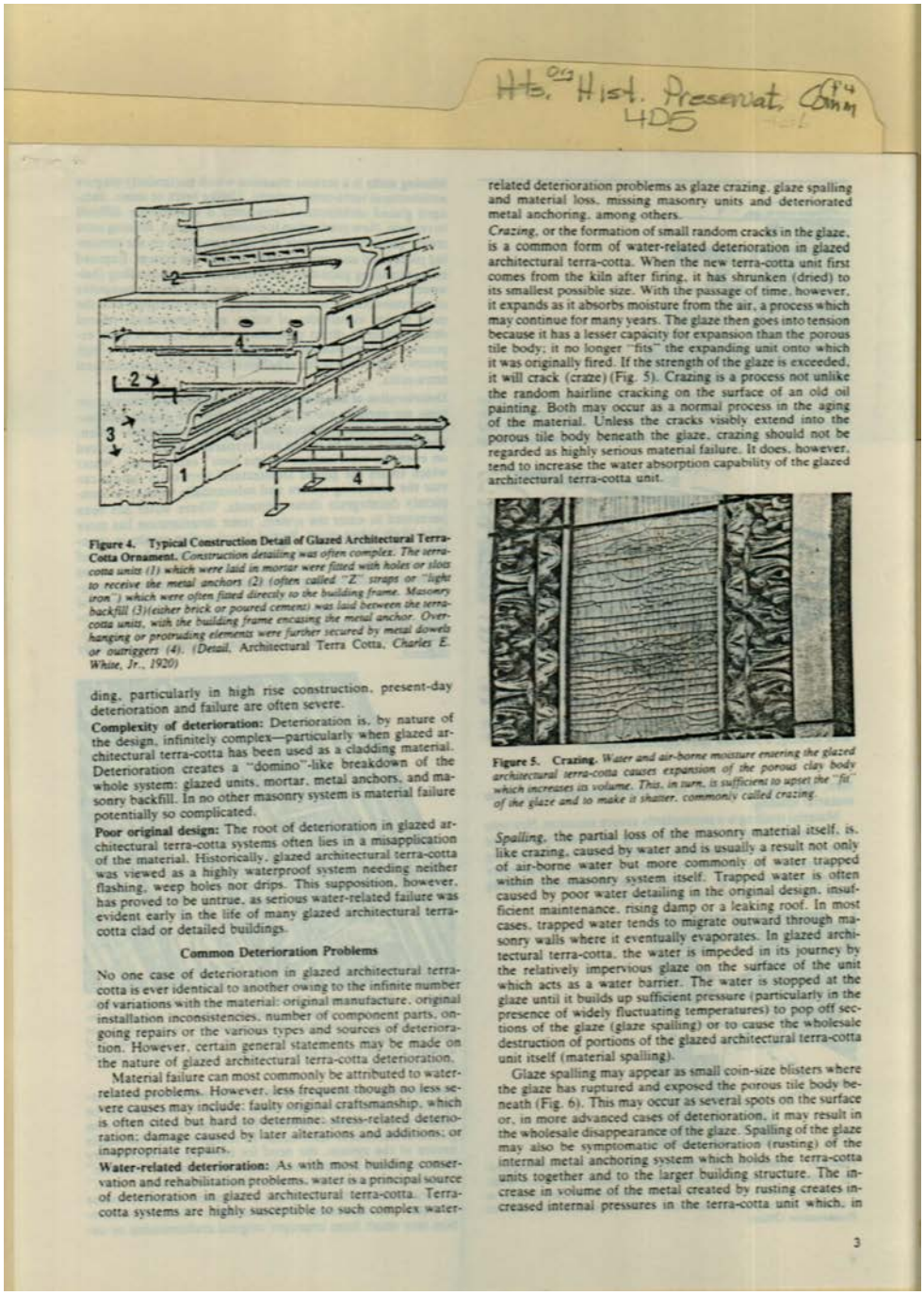
Perspective of Typical Arch

Figure 3. Fireproof construction terra-cotta. *Perspective and section through fireproof construction terra-cotta and I-beam detailing in industrial floor construction.* (*Detail,* "Sweets" Industrial Catalogue of Building Construction, *1966*)

2

Names:
Terra-Cotta
Preservation

Types:
article



Hts. Hist. Preservat. Comm
4D5

Figure 4. Typical Construction Detail of Glazed Architectural Terra-Cotta Ornament. *Construction detailing was often complex. The terra-cotta units (1) which were laid in mortar were fitted with holes or slots to receive the metal anchors (2) (often called "Z" straps or "light iron") which were often fitted directly to the building frame. Masonry backfill (3) (either brick or poured cement) was laid between the terra-cotta units, with the building frame encasing the metal anchor. Over-hanging or protruding elements were further secured by metal dowels or outriggers (4). (Detail, Architectural Terra Cotta, Charles E. White, Jr., 1920)*

ding, particularly in high rise construction, present-day deterioration and failure are often severe.

Complexity of deterioration: Deterioration is, by nature of the design, infinitely complex—particularly when glazed architectural terra-cotta has been used as a cladding material. Deterioration creates a "domino"-like breakdown of the whole system: glazed units, mortar, metal anchors, and masonry backfill. In no other masonry system is material failure potentially so complicated.

Poor original design: The root of deterioration in glazed architectural terra-cotta systems often lies in a misapplication of the material. Historically, glazed architectural terra-cotta was viewed as a highly waterproof system needing neither flashing, weep holes nor drips. This supposition, however, has proved to be untrue, as serious water-related failure was evident early in the life of many glazed architectural terra-cotta clad or detailed buildings.

Common Deterioration Problems

No one case of deterioration in glazed architectural terra-cotta is ever identical to another owing to the infinite number of variations with the material: original manufacture, original installation inconsistencies, number of component parts, on-going repairs or the various types and sources of deterioration. However, certain general statements may be made on the nature of glazed architectural terra-cotta deterioration.

Material failure can most commonly be attributed to water-related problems. However, less frequent though no less severe causes may include: faulty original craftsmanship, which is often cited but hard to determine; stress-related deterioration; damage caused by later alterations and additions; or inappropriate repairs.

Water-related deterioration: As with most building conservation and rehabilitation problems, water is a principal source of deterioration in glazed architectural terra-cotta. Terra-cotta systems are highly susceptible to such complex water-related deterioration problems as glaze crazing, glaze spalling and material loss, missing masonry units and deteriorated metal anchoring, among others.

Crazing, or the formation of small random cracks in the glaze, is a common form of water-related deterioration in glazed architectural terra-cotta. When the new terra-cotta unit first comes from the kiln after firing, it has shrunken (dried) to its smallest possible size. With the passage of time, however, it expands as it absorbs moisture from the air, a process which may continue for many years. The glaze then goes into tension because it has a lesser capacity for expansion than the porous tile body; it no longer "fits" the expanding unit onto which it was originally fired. If the strength of the glaze is exceeded, it will crack (craze) (Fig. 5). Crazing is a process not unlike the random hairline cracking on the surface of an old oil painting. Both may occur as a normal process in the aging of the material. Unless the cracks visibly extend into the porous tile body beneath the glaze, crazing should not be regarded as highly serious material failure. It does, however, tend to increase the water absorption capability of the glazed architectural terra-cotta unit.

Figure 5. Crazing. *Water and air-borne moisture entering the glazed architectural terra-cotta causes expansion of the porous clay body which increases its volume. This, in turn, is sufficient to upset the "fit" of the glaze and to make it shatter, commonly called crazing.*

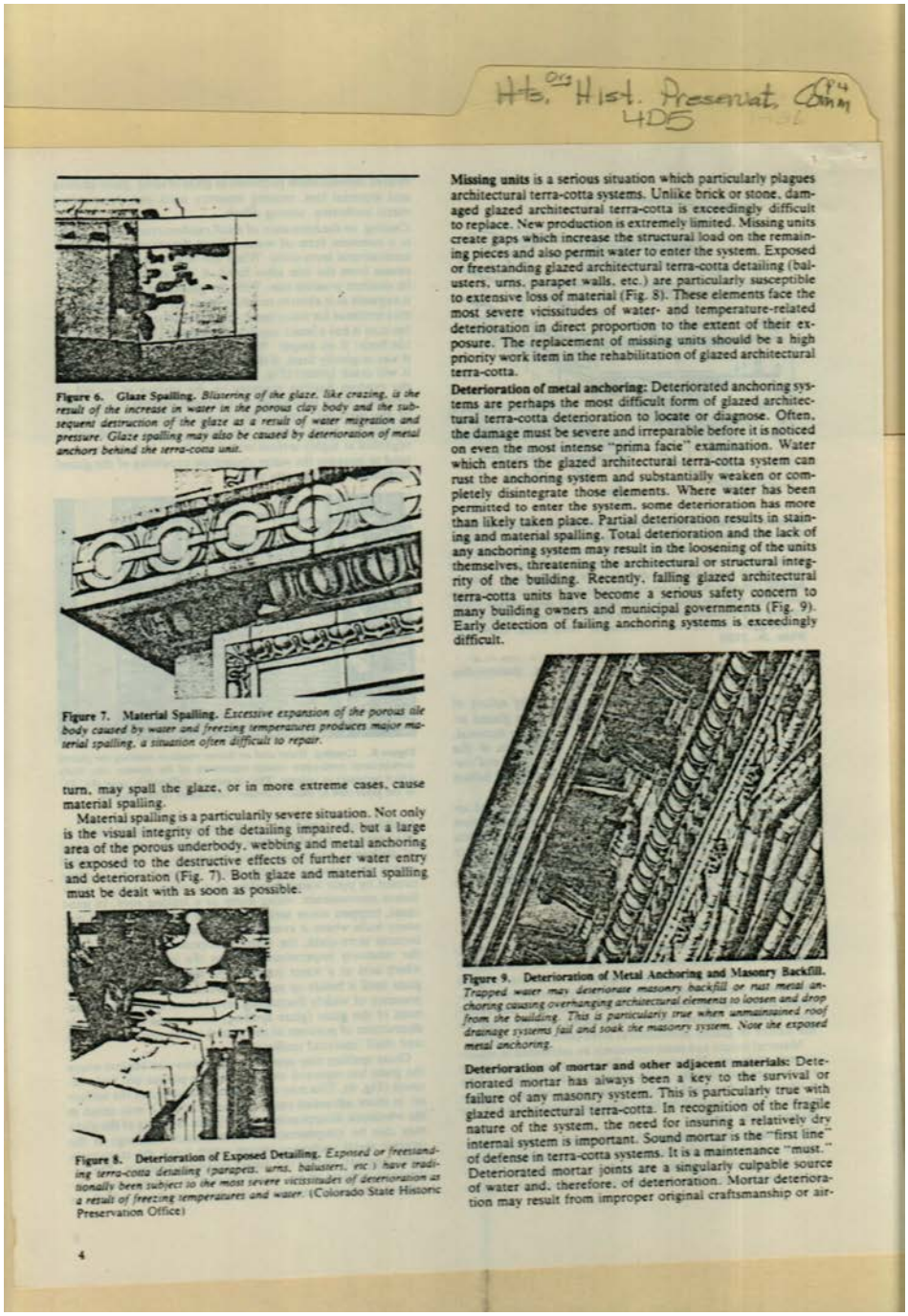
Spalling, the partial loss of the masonry material itself, is, like crazing, caused by water and is usually a result not only of air-borne water but more commonly of water trapped within the masonry system itself. Trapped water is often caused by poor water detailing in the original design, insufficient maintenance, rising damp or a leaking roof. In most cases, trapped water tends to migrate outward through masonry walls where it eventually evaporates. In glazed architectural terra-cotta, the water is impeded in its journey by the relatively impervious glaze on the surface of the unit which acts as a water barrier. The water is stopped at the glaze until it builds up sufficient pressure (particularly in the presence of widely fluctuating temperatures) to pop off sections of the glaze (glaze spalling) or to cause the wholesale destruction of portions of the glazed architectural terra-cotta unit itself (material spalling).

Glaze spalling may appear as small coin-size blisters where the glaze has ruptured and exposed the porous tile body beneath (Fig. 6). This may occur as several spots on the surface or, in more advanced cases of deterioration, it may result in the wholesale disappearance of the glaze. Spalling of the glaze may also be symptomatic of deterioration (rusting) of the internal metal anchoring system which holds the terra-cotta units together and to the larger building structure. The increase in volume of the metal created by rusting creates increased internal pressures in the terra-cotta unit which, in

3

Names:
Terra-Cotta
Preservation

Types:
article



Hts. Dis Hist. Preservat. Comm
4D5

Figure 6. Glaze Spalling. *Blistering of the glaze, like crazing, is the result of the increase in water in the porous clay body and the subsequent destruction of the glaze as a result of water migration and pressure. Glaze spalling may also be caused by deterioration of metal anchors behind the terra-cotta unit.*

Figure 7. Material Spalling. *Excessive expansion of the porous tile body caused by water and freezing temperatures produces major material spalling, a situation often difficult to repair.*

turn, may spall the glaze, or in more extreme cases, cause material spalling.

Material spalling is a particularly severe situation. Not only is the visual integrity of the detailing impaired, but a large area of the porous underbody, webbing and metal anchoring is exposed to the destructive effects of further water entry and deterioration (Fig. 7). Both glaze and material spalling must be dealt with as soon as possible.

Figure 8. Deterioration of Exposed Detailing. *Exposed or freestanding terra-cotta detailing (parapets, urns, balusters, etc.) have traditionally been subject to the most severe vicissitudes of deterioration as a result of freezing temperatures and water.* (Colorado State Historic Preservation Office)

Missing units is a serious situation which particularly plagues architectural terra-cotta systems. Unlike brick or stone, damaged glazed architectural terra-cotta is exceedingly difficult to replace. New production is extremely limited. Missing units create gaps which increase the structural load on the remaining pieces and also permit water to enter the system. Exposed or freestanding glazed architectural terra-cotta detailing (balusters, urns, parapet walls, etc.) are particularly susceptible to extensive loss of material (Fig. 8). These elements face the most severe vicissitudes of water- and temperature-related deterioration in direct proportion to the extent of their exposure. The replacement of missing units should be a high priority work item in the rehabilitation of glazed architectural terra-cotta.

Deterioration of metal anchoring: Deteriorated anchoring systems are perhaps the most difficult form of glazed architectural terra-cotta deterioration to locate or diagnose. Often, the damage must be severe and irreparable before it is noticed on even the most intense "prima facie" examination. Water which enters the glazed architectural terra-cotta system can rust the anchoring system and substantially weaken or completely disintegrate those elements. Where water has been permitted to enter the system, some deterioration has more than likely taken place. Partial deterioration results in staining and material spalling. Total deterioration and the lack of any anchoring system may result in the loosening of the units themselves, threatening the architectural or structural integrity of the building. Recently, falling glazed architectural terra-cotta units have become a serious safety concern to many building owners and municipal governments (Fig. 9). Early detection of failing anchoring systems is exceedingly difficult.

Figure 9. Deterioration of Metal Anchoring and Masonry Backfill. *Trapped water may deteriorate masonry backfill or rust metal anchoring causing overhanging architectural elements to loosen and drop from the building. This is particularly true when unmaintained roof drainage systems fail and soak the masonry system. Note the exposed metal anchoring.*

Deterioration of mortar and other adjacent materials: Deteriorated mortar has always been a key to the survival or failure of any masonry system. This is particularly true with glazed architectural terra-cotta. In recognition of the fragile nature of the system, the need for insuring a relatively dry internal system is important. Sound mortar is the "first line" of defense in terra-cotta systems. It is a maintenance "must." Deteriorated mortar joints are a singularly culpable source of water and, therefore, of deterioration. Mortar deterioration may result from improper original craftsmanship or air-

4

Names:
Terra-Cotta
Preservation

Types:
article

and water-borne pollution. More often, however, lack of ongoing maintenance is mainly responsible. Deteriorated mortar should not be overlooked as a major source of glazed architectural terra-cotta failure.

The deterioration of materials adjoining the glazed architectural terra-cotta (flashing, capping, roofing, caulking around windows and doors) bears significant responsibility in its deterioration. When these adjoining materials fail, largely as a result of lack of maintenance, water-related deterioration results. For instance, it is not uncommon to find wholesale terra-cotta spalling in close proximity to a window or doorway where the caulking has deteriorated.

Stress-related deterioration: Stress-related deterioration of glazed architectural terra-cotta frequently occurs in high rise buildings. The evolution of stress relieving details (flexible joints, shelf angles, etc.) occurred late in the development of American building construction. Consequently, most early continuously clad High Rise buildings (c.1900–1920s) had little or no provisions for normal material and building movement in their original design. The development of large stress-related cracks or wholesale material deterioration is often caused by unaccommodated building-frame shortening under load, thermal expansion and contraction of the façade and moisture expansion of the glazed architectural terrá-cotta units themselves (Fig. 10). Cracks running through many units or stories or large areas of material deterioration often indicate stress-related problems. This sort of deterioration, in turn, permits significant water entry into the terra-cotta system.

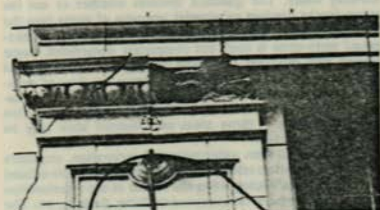


Figure 10. Structural Cracking. *Structural cracking, whether static (nonmoving) or dynamic (moving or active), should be caulked to prevent water entry into the glazed architectural terra-cotta system. Note the exposed webbing.*

Inappropriate repairs: Inappropriate repairs result because using new terra-cotta for replacement of deteriorated or missing glazed architectural terra-cotta has generally been impractical. Repairs, therefore, have traditionally been made in brick or cementitious build ups of numerous materials such as stucco or fiberglass. Some materials *are appropriate* temporary or permanent replacements, while others are not. (These issues are discussed at a later point in this report.) However, improper anchoring or bonding of the repair work or visual incompatibility of repairs have themselves, with the passage of time, become rehabilitation problems: replacement brick that is pulling free, cement stucco that is cracking and spalling, or a cement or bituminous repairs that are not visually compatible with the original material.

Alteration damage: Alteration damage has occurred as a result of the installation of such building additions as signs, screens, marquees or bird proofing. These installations often necessitated the boring of holes or cutting of the glazed architectural terra-cotta to anchor these additions to the building frame beneath. As the anchoring or caulking deteriorated, or as these elements were removed in subsequent renovation work, these holes have become significant sources of water-related damage to the glazed architectural terra-cotta system.

Deterioration Inspection and Analysis

Certain deterioration in glazed architectural terra-cotta may be on the building surface and patently obvious to the casual observer—crazing, spalling, deterioration of mortar joints. Other deterioration may be internal or within the masonry system and hard to determine—deterioration of anchoring, deterioration behind the glaze, crumbling of internal webbing. Prima facie, "first inspection," examination may indicate surface deterioration problems while not revealing others. This demonstrates one of the most frustrating aspects of dealing with deteriorated glazed architectural terra-cotta: that there are two systems or levels of deterioration, one which is visible and the other which is not.

Material failure in glazed architectural terra-cotta is necessarily complex. For this reason, it is generally advised that the examination and repair of this material should be the responsibility of an experienced professional. Few restorationists have experience in the inspection, repair and replacement of glazed architectural terra-cotta. This is certainly never the province of the amateur or the most well-intentioned but inexperienced architect or engineer. There are some methods of internal and external inspection and analysis which are relatively simple to the trained professional. Other methods, however, are expensive, time consuming, and only in the experimental stage at this writing. These all generally preclude the use of anyone but an experienced professional.

Preliminary cleaning: Before a terra-cotta building is analyzed for deterioration, it is often advisable, but not always necessary, to clean the surface of the material. This is particularly true when the material has been exposed to the vicissitudes of heavy urban pollution. While most building materials are cleaned for "cosmetic" purposes, the cleaning of glazed architectural terra-cotta for the purpose of inspection and analysis may be advised. Dirt on glazed architectural terra-cotta often hides a multitude of problems. It is only with cleaning that these problems become obvious. Recommended cleaning procedures are covered later in the report.

Methods of inspection:

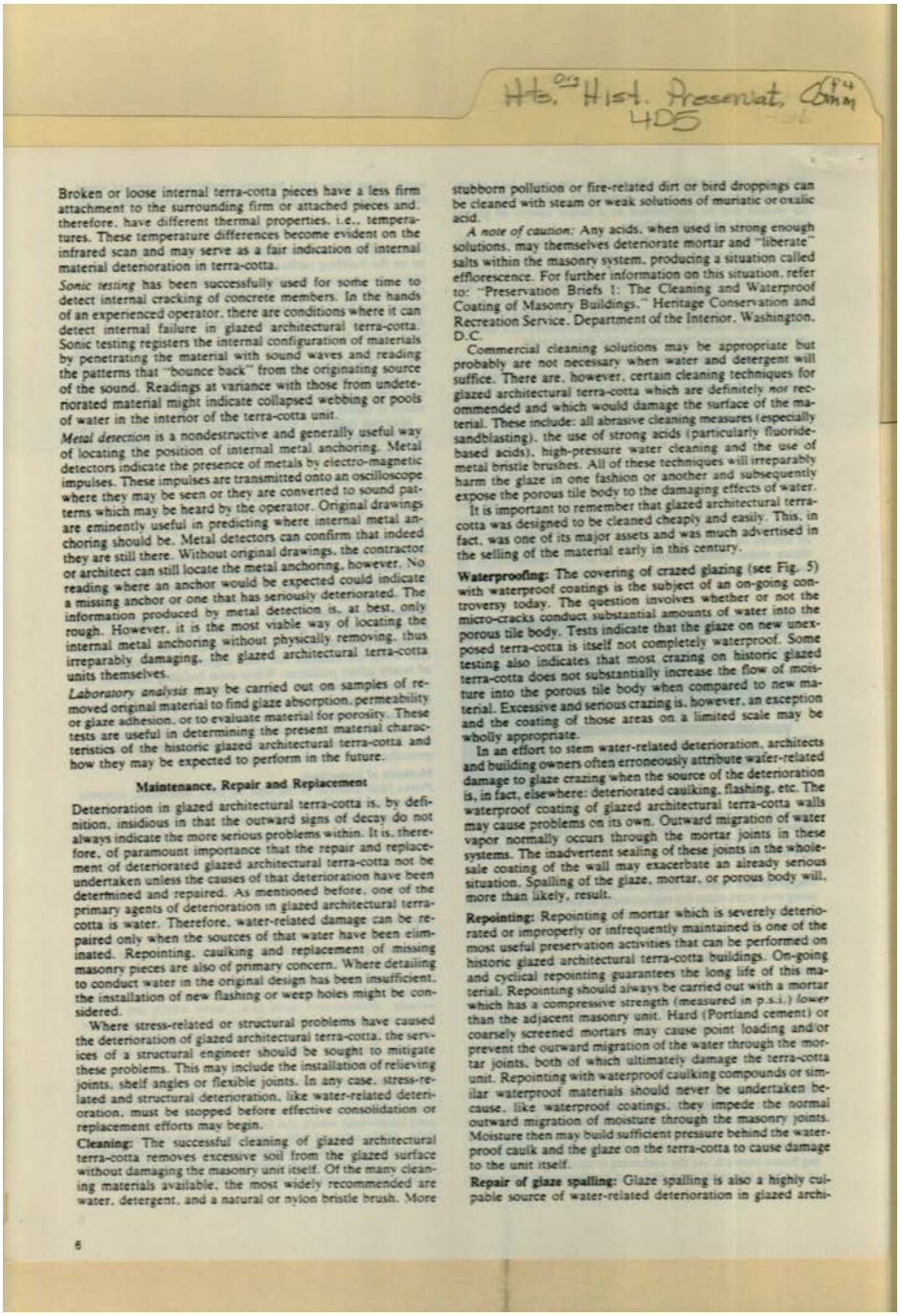
Prima facie analysis is the unit by unit, first-hand, external inspection of the glazed architectural terra-cotta building surface. Special note of all visible surface deterioration (staining, crazing, spalling, cracking, etc.) should be made on elevation drawings. Binoculars are often used where cost, height, or inaccessibility prevent easy inspection. However, much deterioration may go unnoticed unless scaffolding or window-washing apparatus is used in a true "hands on" inspection of each unit of the façade.

Tapping, a somewhat inexact method of detection of internal deterioration is, nevertheless, the most reliable inspection procedure presently available. Quite simply, tapping is the striking of each unit with a wooden mallet. When struck, an undamaged glazed architectural terra-cotta unit gives a pronounced ring, indicating its sound internal condition. Conversely, deteriorated units (i.e., units which are failing internally) produce a flat, hollow sound. Metal hammers are never to be used, as they may damage the glazed surface of the unit. Extensive experience is the best teacher with this inspection method.

Infrared scanning is only in the experimental stage at this time, but its use seems to hold great promise in locating deteriorated internal material in terra-cotta. All materials emit heat—heat which can be measured in terms of infrared light. While infrared light cannot be seen by the human eye, it can be measured by infrared scanning. Infrared photography, a kind of infrared scanning, has been of particular use in detecting sources of heat loss in buildings in recent years.

Names:
Terra-Cotta
Preservation

Types:
article



Hts. Dis Hist. Preservat. Comm
4D5

Broken or loose internal terra-cotta pieces have a less firm attachment to the surrounding firm or attached pieces and, therefore, have different thermal properties, i.e., temperatures. These temperature differences become evident on the infrared scan and may serve as a fair indication of internal material deterioration in terra-cotta.

Sonic testing has been successfully used for some time to detect internal cracking of concrete members. In the hands of an experienced operator, there are conditions where it can detect internal failure in glazed architectural terra-cotta. Sonic testing registers the internal configuration of materials by penetrating the material with sound waves and reading the patterns that "bounce back" from the originating source of the sound. Readings at variance with those from undeteriorated material might indicate collapsed webbing or pools of water in the interior of the terra-cotta unit.

Metal detection is a nondestructive and generally useful way of locating the position of internal metal anchoring. Metal detectors indicate the presence of metals by electro-magnetic impulses. These impulses are transmitted onto an oscilloscope where they may be seen or they are converted to sound patterns which may be heard by the operator. Original drawings are eminently useful in predicting where internal metal anchoring should be. Metal detectors can confirm that indeed they are still there. Without original drawings, the contractor or architect can still locate the metal anchoring, however. No reading where an anchor would be expected could indicate a missing anchor or one that has seriously deteriorated. The information produced by metal detection is, at best, only rough. However, it is the most viable way of locating the internal metal anchoring without physically removing, thus irreparably damaging, the glazed architectural terra-cotta units themselves.

Laboratory analysis may be carried out on samples of removed original material to find glaze absorption, permeability or glaze adhesion, or to evaluate material for porosity. These tests are useful in determining the present material characteristics of the historic glazed architectural terra-cotta and how they may be expected to perform in the future.

Maintenance, Repair and Replacement

Deterioration in glazed architectural terra-cotta is, by definition, insidious in that the outward signs of decay do not always indicate the more serious problems within. It is, therefore, of paramount importance that the repair and replacement of deteriorated glazed architectural terra-cotta not be undertaken unless the causes of that deterioration have been determined and repaired. As mentioned before, one of the primary agents of deterioration in glazed architectural terra-cotta is water. Therefore, water-related damage can be repaired only when the sources of that water have been eliminated. Repointing, caulking and replacement of missing masonry pieces are also of primary concern. Where detailing to conduct water in the original design has been insufficient, the installation of new flashing or weep holes might be considered.

Where stress-related or structural problems have caused the deterioration of glazed architectural terra-cotta, the services of a structural engineer should be sought to mitigate these problems. This may include the installation of relieving joints, shelf angles or flexible joints. In any case, stress-related and structural deterioration, like water-related deterioration, must be stopped before effective consolidation or replacement efforts may begin.

Cleaning: The successful cleaning of glazed architectural terra-cotta removes excessive soil from the glazed surface without damaging the masonry unit itself. Of the many cleaning materials available, the most widely recommended are water, detergent, and a natural or nylon bristle brush. More stubborn pollution or fire-related dirt or bird droppings can be cleaned with steam or weak solutions of muriatic or oxalic acid.

A note of caution: Any acids, when used in strong enough solutions, may themselves deteriorate mortar and "liberate" salts within the masonry system, producing a situation called efflorescence. For further information on this situation, refer to: "Preservation Briefs 1: The Cleaning and Waterproof Coating of Masonry Buildings," Heritage Conservation and Recreation Service, Department of the Interior, Washington, D.C.

Commercial cleaning solutions may be appropriate but probably are not necessary when water and detergent will suffice. There are, however, certain cleaning techniques for glazed architectural terra-cotta which are definitely *not* recommended and which would damage the surface of the material. These include: all abrasive cleaning measures (especially sandblasting), the use of strong acids (particularly fluoride-based acids), high-pressure water cleaning and the use of metal bristle brushes. All of these techniques will irreparably harm the glaze in one fashion or another and subsequently expose the porous tile body to the damaging effects of water.

It is important to remember that glazed architectural terra-cotta was designed to be cleaned cheaply and easily. This, in fact, was one of its major assets and was much advertised in the selling of the material early in this century.

Waterproofing: The covering of crazed glazing (see Fig. 5) with waterproof coatings is the subject of an on-going controversy today. The question involves whether or not the micro-cracks conduct substantial amounts of water into the porous tile body. Tests indicate that the glaze on new unexposed terra-cotta is itself not completely waterproof. Some testing also indicates that most crazing on historic glazed terra-cotta does not substantially increase the flow of moisture into the porous tile body when compared to new material. Excessive and serious crazing is, however, an exception and the coating of those areas on a limited scale may be wholly appropriate.

In an effort to stem water-related deterioration, architects and building owners often erroneously attribute wafer-related damage to glaze crazing when the source of the deterioration is, in fact, elsewhere: deteriorated caulking, flashing, etc. The waterproof coating of glazed architectural terra-cotta walls may cause problems on its own. Outward migration of water vapor normally occurs through the mortar joints in these systems. The inadvertent sealing of these joints in the wholesale coating of the wall may exacerbate an already serious situation. Spalling of the glaze, mortar, or porous body will, more than likely, result.

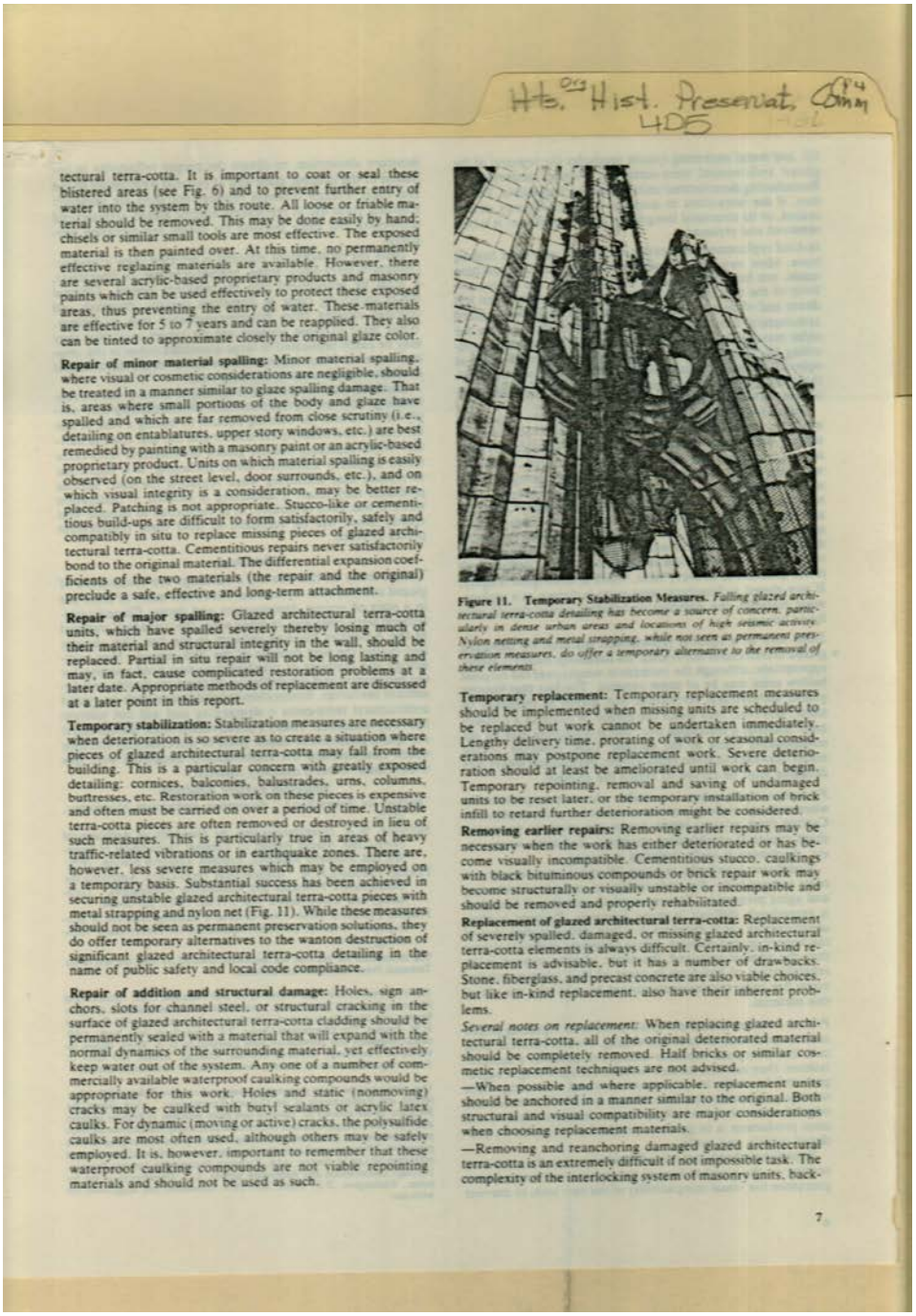
Repointing: Repointing of mortar which is severely deteriorated or improperly or infrequently maintained is one of the most useful preservation activities that can be performed on historic glazed architectural terra-cotta buildings. On-going and cyclical repointing guarantees the long life of this material. Repointing should always be carried out with a mortar which has a compressive strength (measured in p.s.i.) *lower* than the adjacent masonry unit. Hard (Portland cement) or coarsely screened mortars may cause point loading and/or prevent the outward migration of the water through the mortar joints, both of which ultimately damage the terra-cotta unit. Repointing with waterproof caulking compounds or similar waterproof materials should never be undertaken because, like waterproof coatings, they impede the normal outward migration of moisture through the masonry joints. Moisture then may build sufficient pressure behind the waterproof caulk and the glaze on the terra-cotta to cause damage to the unit itself.

Repair of glaze spalling: Glaze spalling is also a highly culpable source of water-related deterioration in glazed archi-

6

Names:
Terra-Cotta
Preservation

Types:
article



Hts. Hist. Preservat. Comm
4D5

tectural terra-cotta. It is important to coat or seal these blistered areas (see Fig. 6) and to prevent further entry of water into the system by this route. All loose or friable material should be removed. This may be done easily by hand; chisels or similar small tools are most effective. The exposed material is then painted over. At this time, no permanently effective reglazing materials are available. However, there are several acrylic-based proprietary products and masonry paints which can be used effectively to protect these exposed areas, thus preventing the entry of water. These materials are effective for 5 to 7 years and can be reapplied. They also can be tinted to approximate closely the original glaze color.

Repair of minor material spalling: Minor material spalling, where visual or cosmetic considerations are negligible, should be treated in a manner similar to glaze spalling damage. That is, areas where small portions of the body and glaze have spalled and which are far removed from close scrutiny (i.e., detailing on entablatures, upper story windows, etc.) are best remedied by painting with a masonry paint or an acrylic-based proprietary product. Units on which material spalling is easily observed (on the street level, door surrounds, etc.), and on which visual integrity is a consideration, may be better replaced. Patching is not appropriate. Stucco-like or cementitious build-ups are difficult to form satisfactorily, safely and compatibly in situ to replace missing pieces of glazed architectural terra-cotta. Cementitious repairs never satisfactorily bond to the original material. The differential expansion coefficients of the two materials (the repair and the original) preclude a safe, effective and long-term attachment.

Repair of major spalling: Glazed architectural terra-cotta units, which have spalled severely thereby losing much of their material and structural integrity in the wall, should be replaced. Partial in situ repair will not be long lasting and may, in fact, cause complicated restoration problems at a later date. Appropriate methods of replacement are discussed at a later point in this report.

Temporary stabilization: Stabilization measures are necessary when deterioration is so severe as to create a situation where pieces of glazed architectural terra-cotta may fall from the building. This is a particular concern with greatly exposed detailing: cornices, balconies, balustrades, urns, columns, buttresses, etc. Restoration work on these pieces is expensive and often must be carried on over a period of time. Unstable terra-cotta pieces are often removed or destroyed in lieu of such measures. This is particularly true in areas of heavy traffic-related vibrations or in earthquake zones. There are, however, less severe measures which may be employed on a temporary basis. Substantial success has been achieved in securing unstable glazed architectural terra-cotta pieces with metal strapping and nylon net (Fig. 11). While these measures should not be seen as permanent preservation solutions, they do offer temporary alternatives to the wanton destruction of significant glazed architectural terra-cotta detailing in the name of public safety and local code compliance.

Repair of addition and structural damage: Holes, sign anchors, slots for channel steel, or structural cracking in the surface of glazed architectural terra-cotta cladding should be permanently sealed with a material that will expand with the normal dynamics of the surrounding material, yet effectively keep water out of the system. Any one of a number of commercially available waterproof caulking compounds would be appropriate for this work. Holes and static (nonmoving) cracks may be caulked with butyl sealants or acrylic latex caulks. For dynamic (moving or active) cracks, the polysulfide caulks are most often used, although others may be safely employed. It is, however, important to remember that these waterproof caulking compounds are not viable repointing materials and should not be used as such.

Figure 11. Temporary Stabilization Measures. *Falling glazed architectural terra-cotta detailing has become a source of concern, particularly in dense urban areas and locations of high seismic activity. Nylon netting and metal strapping, while not seen as permanent preservation measures, do offer a temporary alternative to the removal of these elements.*

Temporary replacement: Temporary replacement measures should be implemented when missing units are scheduled to be replaced but work cannot be undertaken immediately. Lengthy delivery time, prorating of work or seasonal considerations may postpone replacement work. Severe deterioration should at least be ameliorated until work can begin. Temporary repointing, removal and saving of undamaged units to be reset later, or the temporary installation of brick infill to retard further deterioration might be considered.

Removing earlier repairs: Removing earlier repairs may be necessary when the work has either deteriorated or has become visually incompatible. Cementitious stucco, caulkings with black bituminous compounds or brick repair work may become structurally or visually unstable or incompatible and should be removed and properly rehabilitated.

Replacement of glazed architectural terra-cotta: Replacement of severely spalled, damaged, or missing glazed architectural terra-cotta elements is always difficult. Certainly, in-kind replacement is advisable, but it has a number of drawbacks. Stone, fiberglass, and precast concrete are also viable choices, but like in-kind replacement, also have their inherent problems.

Several notes on replacement: When replacing glazed architectural terra-cotta, all of the original deteriorated material should be completely removed. Half bricks or similar cosmetic replacement techniques are not advised.

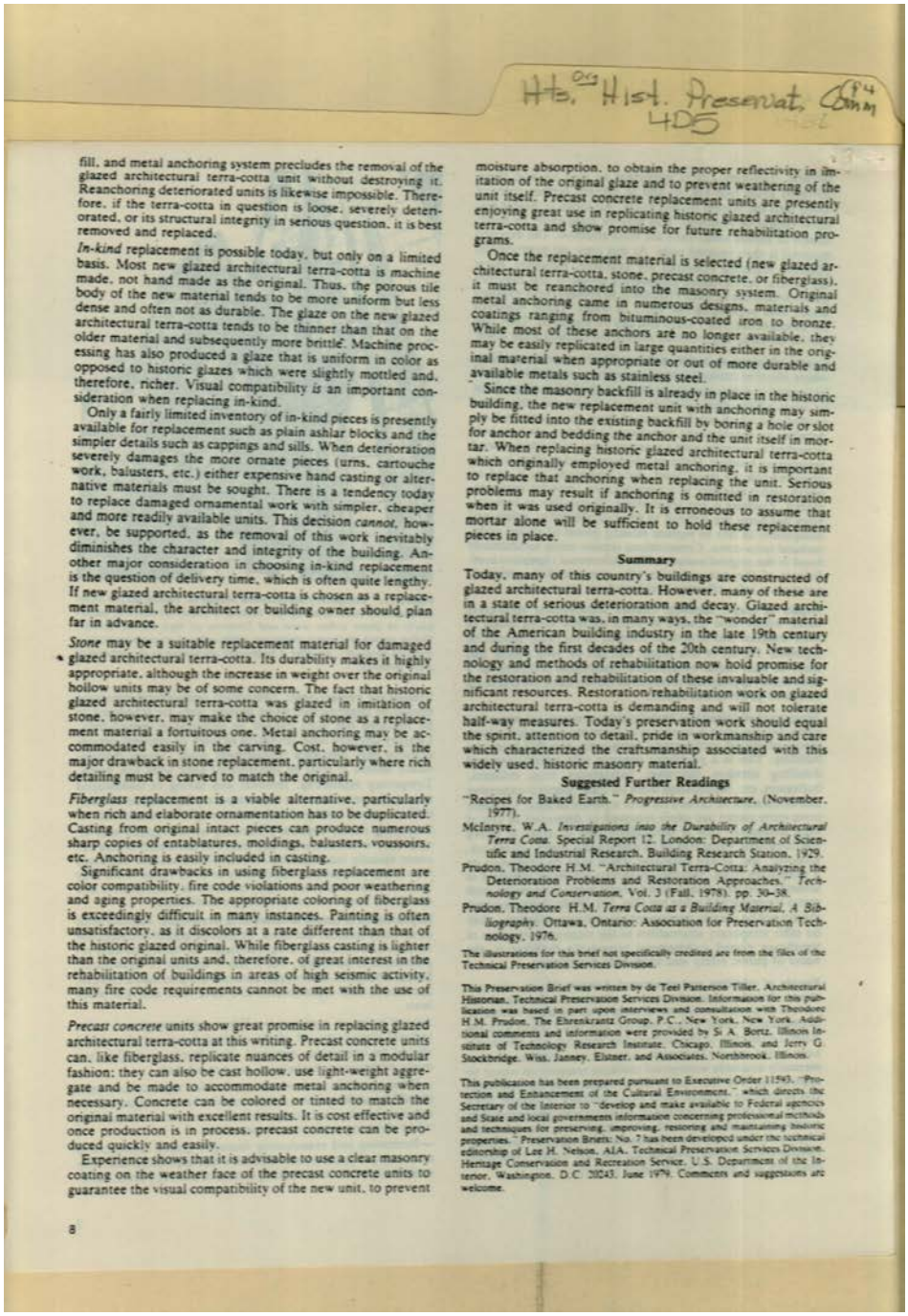
—When possible and where applicable, replacement units should be anchored in a manner similar to the original. Both structural and visual compatibility are major considerations when choosing replacement materials.

—Removing and reanchoring damaged glazed architectural terra-cotta is an extremely difficult if not impossible task. The complexity of the interlocking system of masonry units, back-

7

Names:
Terra-Cotta
Preservation

Types:
article



Hts. Hist. Preservat. 84
405

fill, and metal anchoring system precludes the removal of the glazed architectural terra-cotta unit without destroying it. Reanchoring deteriorated units is likewise impossible. Therefore, if the terra-cotta in question is loose, severely deteriorated, or its structural integrity in serious question, it is best removed and replaced.

In-kind replacement is possible today, but only on a limited basis. Most new glazed architectural terra-cotta is machine made, not hand made as the original. Thus, the porous tile body of the new material tends to be more uniform but less dense and often not as durable. The glaze on the new glazed architectural terra-cotta tends to be thinner than that on the older material and subsequently more brittle. Machine processing has also produced a glaze that is uniform in color as opposed to historic glazes which were slightly mottled and, therefore, richer. Visual compatibility *is* an important consideration when replacing in-kind.

Only a fairly limited inventory of in-kind pieces is presently available for replacement such as plain ashlar blocks and the simpler details such as cappings and sills. When deterioration severely damages the more ornate pieces (urns, cartouche work, balusters, etc.) either expensive hand casting or alternative materials must be sought. There is a tendency today to replace damaged ornamental work with simpler, cheaper and more readily available units. This decision *cannot*, however, be supported, as the removal of this work inevitably diminishes the character and integrity of the building. Another major consideration in choosing in-kind replacement is the question of delivery time, which is often quite lengthy. If new glazed architectural terra-cotta is chosen as a replacement material, the architect or building owner should plan far in advance.

Stone may be a suitable replacement material for damaged glazed architectural terra-cotta. Its durability makes it highly appropriate, although the increase in weight over the original hollow units may be of some concern. The fact that historic glazed architectural terra-cotta was glazed in imitation of stone, however, may make the choice of stone as a replacement material a fortuitous one. Metal anchoring may be accommodated easily in the carving. Cost, however, is the major drawback in stone replacement, particularly where rich detailing must be carved to match the original.

Fiberglass replacement is a viable alternative, particularly when rich and elaborate ornamentation has to be duplicated. Casting from original intact pieces can produce numerous sharp copies of entablatures, moldings, balusters, voussoirs, etc. Anchoring is easily included in casting.

Significant drawbacks in using fiberglass replacement are color compatibility, fire code violations and poor weathering and aging properties. The appropriate coloring of fiberglass is exceedingly difficult in many instances. Painting is often unsatisfactory, as it discolors at a rate different than that of the historic glazed original. While fiberglass casting is lighter than the original units and, therefore, of great interest in the rehabilitation of buildings in areas of high seismic activity, many fire code requirements cannot be met with the use of this material.

Precast concrete units show great promise in replacing glazed architectural terra-cotta at this writing. Precast concrete units can, like fiberglass, replicate nuances of detail in a modular fashion; they can also be cast hollow, use light-weight aggregate and be made to accommodate metal anchoring when necessary. Concrete can be colored or tinted to match the original material with excellent results. It is cost effective and once production is in process, precast concrete can be produced quickly and easily.

Experience shows that it is advisable to use a clear masonry coating on the weather face of the precast concrete units to guarantee the visual compatibility of the new unit, to prevent moisture absorption, to obtain the proper reflectivity in imitation of the original glaze and to prevent weathering of the unit itself. Precast concrete replacement units are presently enjoying great use in replicating historic glazed architectural terra-cotta and show promise for future rehabilitation programs.

Once the replacement material is selected (new glazed architectural terra-cotta, stone, precast concrete, or fiberglass), it must be reanchored into the masonry system. Original metal anchoring came in numerous designs, materials and coatings ranging from bituminous-coated iron to bronze. While most of these anchors are no longer available, they may be easily replicated in large quantities either in the original material when appropriate or out of more durable and available metals such as stainless steel.

Since the masonry backfill is already in place in the historic building, the new replacement unit with anchoring may simply be fitted into the existing backfill by boring a hole or slot for anchor and bedding the anchor and the unit itself in mortar. When replacing historic glazed architectural terra-cotta which originally employed metal anchoring, it is important to replace that anchoring when replacing the unit. Serious problems may result if anchoring is omitted in restoration when it was used originally. It is erroneous to assume that mortar alone will be sufficient to hold these replacement pieces in place.

Summary

Today, many of this country's buildings are constructed of glazed architectural terra-cotta. However, many of these are in a state of serious deterioration and decay. Glazed architectural terra-cotta was, in many ways, the "wonder" material of the American building industry in the late 19th century and during the first decades of the 20th century. New technology and methods of rehabilitation now hold promise for the restoration and rehabilitation of these invaluable and significant resources. Restoration/rehabilitation work on glazed architectural terra-cotta is demanding and will not tolerate half-way measures. Today's preservation work should equal the spirit, attention to detail, pride in workmanship and care which characterized the craftsmanship associated with this widely used, historic masonry material.

Suggested Further Readings

"Recipes for Baked Earth." *Progressive Architecture*, (November, 1977).

McIntyre, W.A. *Investigations into the Durability of Architectural Terra Cotta*. Special Report 12. London: Department of Scientific and Industrial Research, Building Research Station, 1929.

Prudon, Theodore H.M. "Architectural Terra-Cotta: Analyzing the Deterioration Problems and Restoration Approaches." *Technology and Conservation*, Vol. 3 (Fall, 1978), pp. 30–38.

Prudon, Theodore H.M. *Terra Cotta as a Building Material, A Bibliography*. Ottawa, Ontario: Association for Preservation Technology, 1976.

The illustrations for this brief not specifically credited are from the files of the Technical Preservation Services Division.

This Preservation Brief was written by de Teel Patterson Tiller, Architectural Historian, Technical Preservation Services Division. Information for this publication was based in part upon interviews and consultation with Theodore H.M. Prudon, The Ehrenkrantz Group, P.C., New York, New York. Additional comments and information were provided by Si A. Bortz, Illinois Institute of Technology Research Institute, Chicago, Illinois, and Jerry G. Stockbridge, Wiss, Janney, Elstner, and Associates, Northbrook, Illinois.

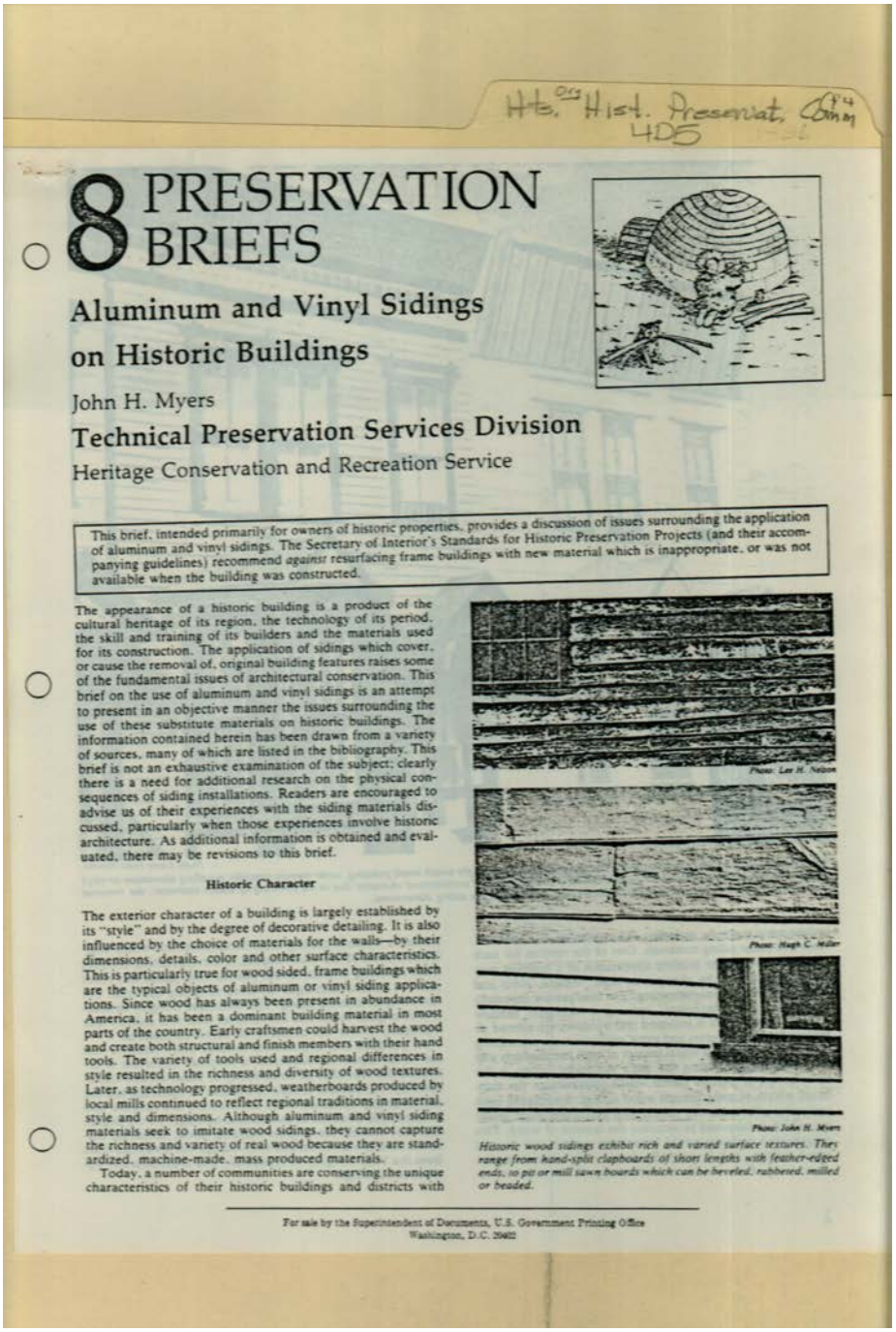
This publication has been prepared pursuant to Executive Order 11593, "Protection and Enhancement of the Cultural Environment," which directs the Secretary of the Interior to "develop and make available to Federal agencies and State and local governments information concerning professional methods and techniques for preserving, improving, restoring and maintaining historic properties." Preservation Briefs: No. 7 has been developed under the technical editorship of Lee H. Nelson, AIA, Technical Preservation Services Division, Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington, D.C. 20243. June 1979. Comments and suggestions are welcome.

Names:

Terra-Cotta
Preservation

Types:

article



Hts. Dis Hist. Preservat. Comm
4D5

8 PRESERVATION BRIEFS

Aluminum and Vinyl Sidings on Historic Buildings

John H. Myers
Technical Preservation Services Division
Heritage Conservation and Recreation Service

This brief, intended primarily for owners of historic properties, provides a discussion of issues surrounding the application of aluminum and vinyl sidings. The Secretary of Interior's Standards for Historic Preservation Projects (and their accompanying guidelines) recommend *against* resurfacing frame buildings with new material which is inappropriate, or was not available when the building was constructed.

The appearance of a historic building is a product of the cultural heritage of its region, the technology of its period, the skill and training of its builders and the materials used for its construction. The application of sidings which cover, or cause the removal of, original building features raises some of the fundamental issues of architectural conservation. This brief on the use of aluminum and vinyl sidings is an attempt to present in an objective manner the issues surrounding the use of these substitute materials on historic buildings. The information contained herein has been drawn from a variety of sources, many of which are listed in the bibliography. This brief is not an exhaustive examination of the subject; clearly there is a need for additional research on the physical consequences of siding installations. Readers are encouraged to advise us of their experiences with the siding materials discussed, particularly when those experiences involve historic architecture. As additional information is obtained and evaluated, there may be revisions to this brief.

Historic Character

The exterior character of a building is largely established by its "style" and by the degree of decorative detailing. It is also influenced by the choice of materials for the walls—by their dimensions, details, color and other surface characteristics. This is particularly true for wood sided, frame buildings which are the typical objects of aluminum or vinyl siding applications. Since wood has always been present in abundance in America, it has been a dominant building material in most parts of the country. Early craftsmen could harvest the wood and create both structural and finish members with their hand tools. The variety of tools used and regional differences in style resulted in the richness and diversity of wood textures. Later, as technology progressed, weatherboards produced by local mills continued to reflect regional traditions in material, style and dimensions. Although aluminum and vinyl siding materials seek to imitate wood sidings, they cannot capture the richness and variety of real wood because they are standardized, machine-made, mass produced materials.

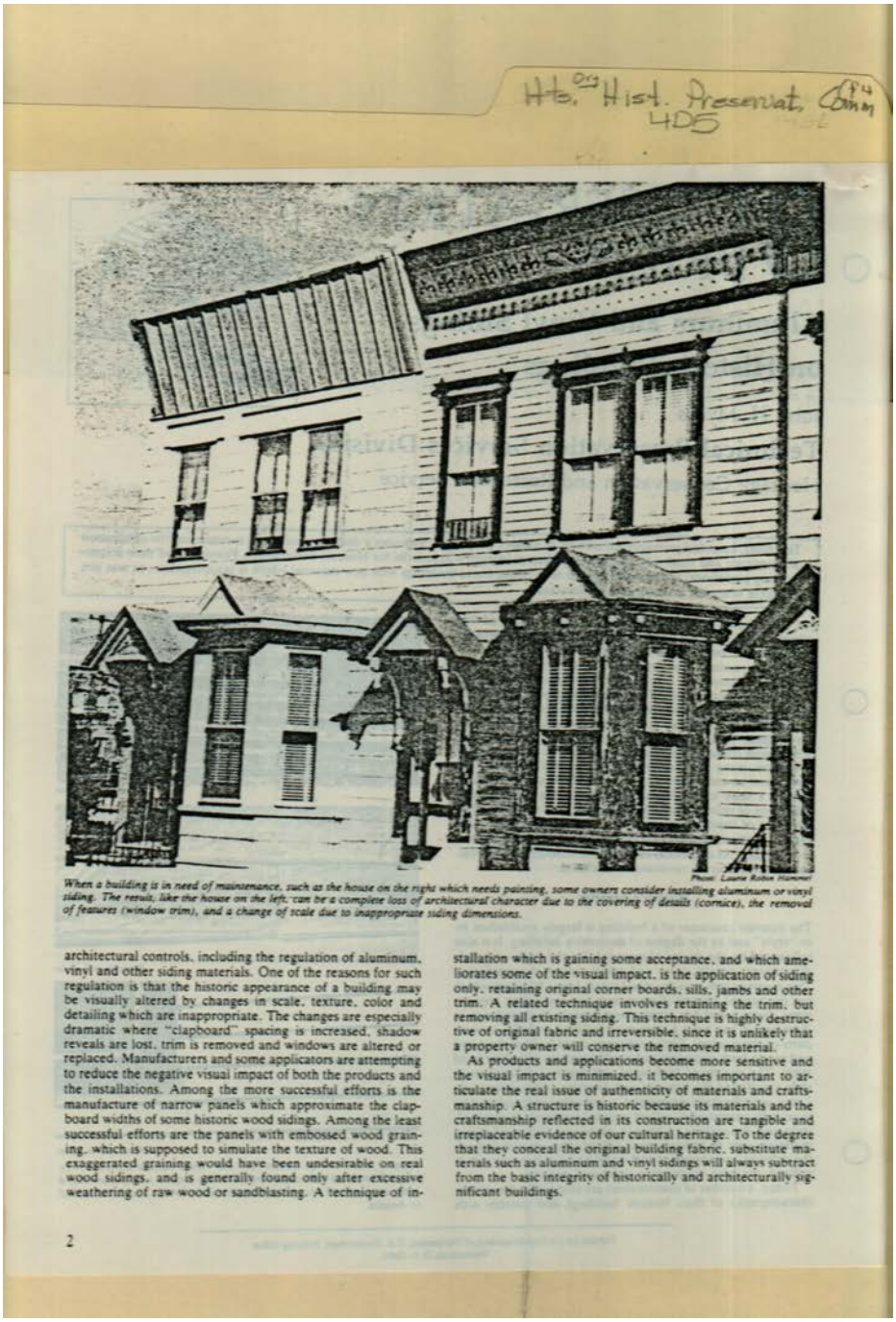
Today, a number of communities are conserving the unique characteristics of their historic buildings and districts with

Historic wood sidings exhibit rich and varied surface textures. They range from hand-split clapboards of short lengths with feather-edged ends, to pit or mill sawn boards which can be beveled, rabbeted, milled or beaded.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Names:
Siding on Historic Building

Types:
article



When a building is in need of maintenance, such as the house on the right which needs painting, some owners consider installing aluminum or vinyl siding. The result, like the house on the left, can be a complete loss of architectural character due to the covering of details (cornice), the removal of features (window trim), and a change of scale due to inappropriate siding dimensions.

Photo: Laura Robin Hummel

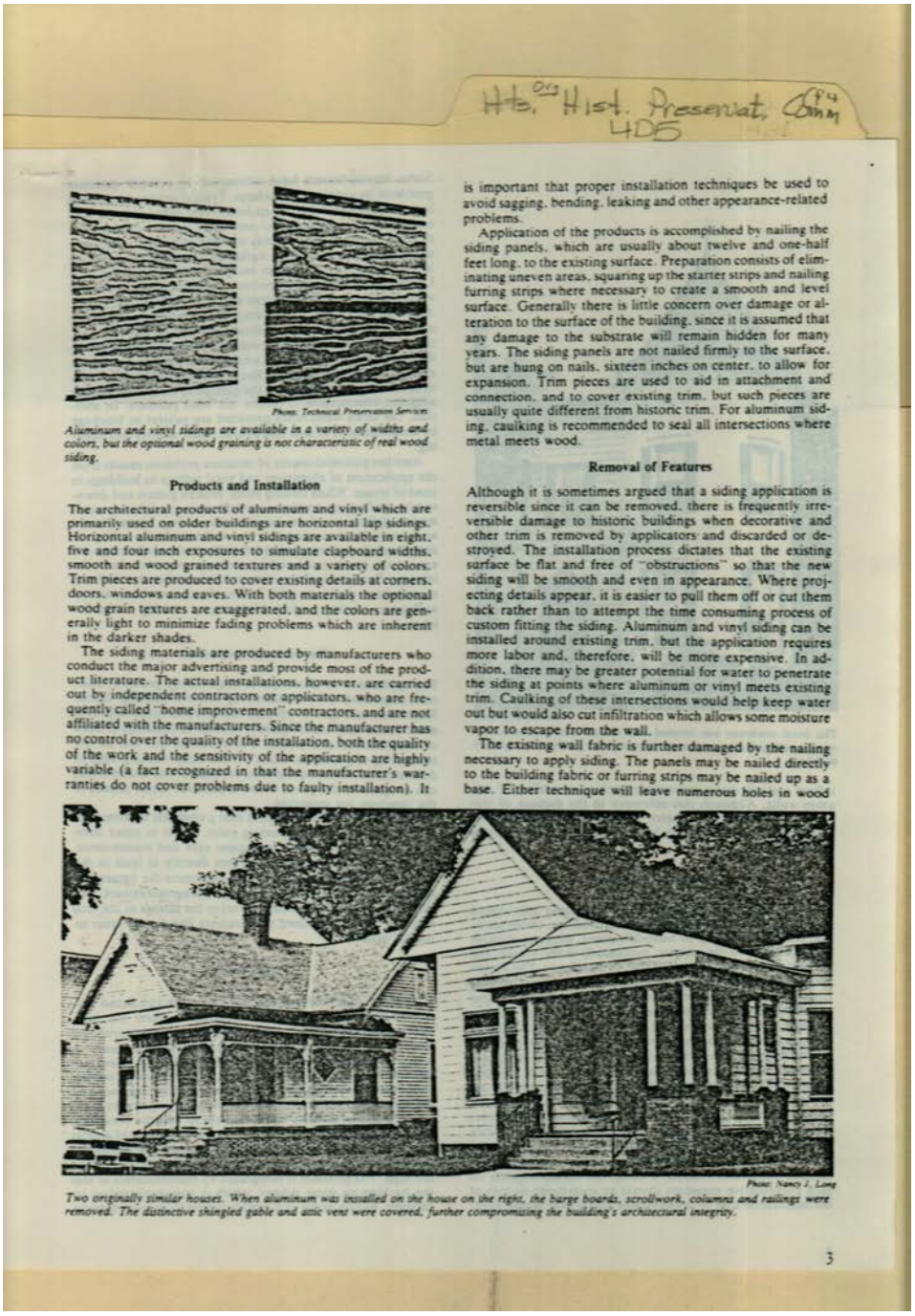
architectural controls, including the regulation of aluminum, vinyl and other siding materials. One of the reasons for such regulation is that the historic appearance of a building may be visually altered by changes in scale, texture, color and detailing which are inappropriate. The changes are especially dramatic where "clapboard" spacing is increased, shadow reveals are lost, trim is removed and windows are altered or replaced. Manufacturers and some applicators are attempting to reduce the negative visual impact of both the products and the installations. Among the more successful efforts is the manufacture of narrow panels which approximate the clapboard widths of some historic wood sidings. Among the least successful efforts are the panels with embossed wood graining, which is supposed to simulate the texture of wood. This exaggerated graining would have been undesirable on real wood sidings, and is generally found only after excessive weathering of raw wood or sandblasting. A technique of installation which is gaining some acceptance, and which ameliorates some of the visual impact, is the application of siding only, retaining original corner boards, sills, jambs and other trim. A related technique involves retaining the trim, but removing all existing siding. This technique is highly destructive of original fabric and irreversible, since it is unlikely that a property owner will conserve the removed material.

As products and applications become more sensitive and the visual impact is minimized, it becomes important to articulate the real issue of authenticity of materials and craftsmanship. A structure is historic because its materials and the craftsmanship reflected in its construction are tangible and irreplaceable evidence of our cultural heritage. To the degree that they conceal the original building fabric, substitute materials such as aluminum and vinyl sidings will always subtract from the basic integrity of historically and architecturally significant buildings.

2

Names:
Siding on Historic Building

Types:
article



Hts. Hist. Preservat. 4D5

Photo: Technical Preservation Services

Aluminum and vinyl sidings are available in a variety of widths and colors, but the optional wood graining is not characteristic of real wood siding.

Products and Installation

The architectural products of aluminum and vinyl which are primarily used on older buildings are horizontal lap sidings. Horizontal aluminum and vinyl sidings are available in eight, five and four inch exposures to simulate clapboard widths, smooth and wood grained textures and a variety of colors. Trim pieces are produced to cover existing details at corners, doors, windows and eaves. With both materials the optional wood grain textures are exaggerated, and the colors are generally light to minimize fading problems which are inherent in the darker shades.

The siding materials are produced by manufacturers who conduct the major advertising and provide most of the product literature. The actual installations, however, are carried out by independent contractors or applicators, who are frequently called "home improvement" contractors, and are not affiliated with the manufacturers. Since the manufacturer has no control over the quality of the installation, both the quality of the work and the sensitivity of the application are highly variable (a fact recognized in that the manufacturer's warranties do not cover problems due to faulty installation). It is important that proper installation techniques be used to avoid sagging, bending, leaking and other appearance-related problems.

Application of the products is accomplished by nailing the siding panels, which are usually about twelve and one-half feet long, to the existing surface. Preparation consists of eliminating uneven areas, squaring up the starter strips and nailing furring strips where necessary to create a smooth and level surface. Generally there is little concern over damage or alteration to the surface of the building, since it is assumed that any damage to the substrate will remain hidden for many years. The siding panels are not nailed firmly to the surface, but are hung on nails, sixteen inches on center, to allow for expansion. Trim pieces are used to aid in attachment and connection, and to cover existing trim, but such pieces are usually quite different from historic trim. For aluminum siding, caulking is recommended to seal all intersections where metal meets wood.

Removal of Features

Although it is sometimes argued that a siding application is reversible since it can be removed, there is frequently irreversible damage to historic buildings when decorative and other trim is removed by applicators and discarded or destroyed. The installation process dictates that the existing surface be flat and free of "obstructions" so that the new siding will be smooth and even in appearance. Where projecting details appear, it is easier to pull them off or cut them back rather than to attempt the time consuming process of custom fitting the siding. Aluminum and vinyl siding can be installed around existing trim, but the application requires more labor and, therefore, will be more expensive. In addition, there may be greater potential for water to penetrate the siding at points where aluminum or vinyl meets existing trim. Caulking of these intersections would help keep water out but would also cut infiltration which allows some moisture vapor to escape from the wall.

The existing wall fabric is further damaged by the nailing necessary to apply siding. The panels may be nailed directly to the building fabric or furring strips may be nailed up as a base. Either technique will leave numerous holes in wood

Photo: Nancy J. Long

Two originally similar houses. When aluminum was installed on the house on the right, the barge boards, scrollwork, columns and railings were removed. The distinctive shingled gable and attic vent were covered, further compromising the building's architectural integrity.

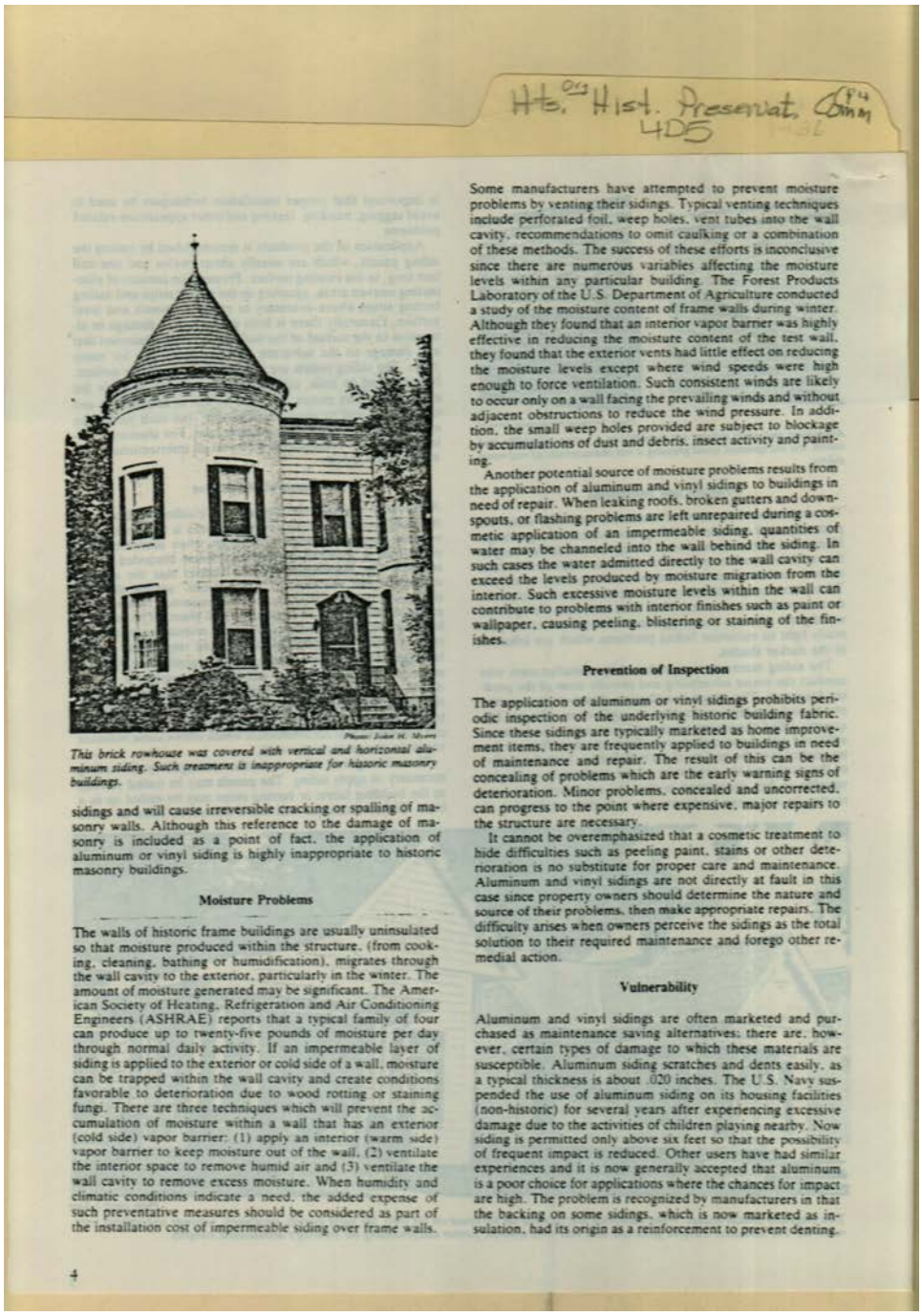
3

Names:

Siding on Historic Building

Types:

article



Hts. Hist. Preservat. Comm
4D5

This brick rowhouse was covered with vertical and horizontal aluminum siding. Such treatment is inappropriate for historic masonry buildings.

sidings and will cause irreversible cracking or spalling of masonry walls. Although this reference to the damage of masonry is included as a point of fact, the application of aluminum or vinyl siding is highly inappropriate to historic masonry buildings.

Moisture Problems

The walls of historic frame buildings are usually uninsulated so that moisture produced within the structure, (from cooking, cleaning, bathing or humidification), migrates through the wall cavity to the exterior, particularly in the winter. The amount of moisture generated may be significant. The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) reports that a typical family of four can produce up to twenty-five pounds of moisture per day through normal daily activity. If an impermeable layer of siding is applied to the exterior or cold side of a wall, moisture can be trapped within the wall cavity and create conditions favorable to deterioration due to wood rotting or staining fungi. There are three techniques which will prevent the accumulation of moisture within a wall that has an exterior (cold side) vapor barrier: (1) apply an interior (warm side) vapor barrier to keep moisture out of the wall, (2) ventilate the interior space to remove humid air and (3) ventilate the wall cavity to remove excess moisture. When humidity and climatic conditions indicate a need, the added expense of such preventative measures should be considered as part of the installation cost of impermeable siding over frame walls.

Some manufacturers have attempted to prevent moisture problems by venting their sidings. Typical venting techniques include perforated foil, weep holes, vent tubes into the wall cavity, recommendations to omit caulking or a combination of these methods. The success of these efforts is inconclusive since there are numerous variables affecting the moisture levels within any particular building. The Forest Products Laboratory of the U.S. Department of Agriculture conducted a study of the moisture content of frame walls during winter. Although they found that an interior vapor barrier was highly effective in reducing the moisture content of the test wall, they found that the exterior vents had little effect on reducing the moisture levels except where wind speeds were high enough to force ventilation. Such consistent winds are likely to occur only on a wall facing the prevailing winds and without adjacent obstructions to reduce the wind pressure. In addition, the small weep holes provided are subject to blockage by accumulations of dust and debris, insect activity and painting.

Another potential source of moisture problems results from the application of aluminum and vinyl sidings to buildings in need of repair. When leaking roofs, broken gutters and downspouts, or flashing problems are left unrepaired during a cosmetic application of an impermeable siding, quantities of water may be channeled into the wall behind the siding. In such cases the water admitted directly to the wall cavity can exceed the levels produced by moisture migration from the interior. Such excessive moisture levels within the wall can contribute to problems with interior finishes such as paint or wallpaper, causing peeling, blistering or staining of the finishes.

Prevention of Inspection

The application of aluminum or vinyl sidings prohibits periodic inspection of the underlying historic building fabric. Since these sidings are typically marketed as home improvement items, they are frequently applied to buildings in need of maintenance and repair. The result of this can be the concealing of problems which are the early warning signs of deterioration. Minor problems, concealed and uncorrected, can progress to the point where expensive, major repairs to the structure are necessary.

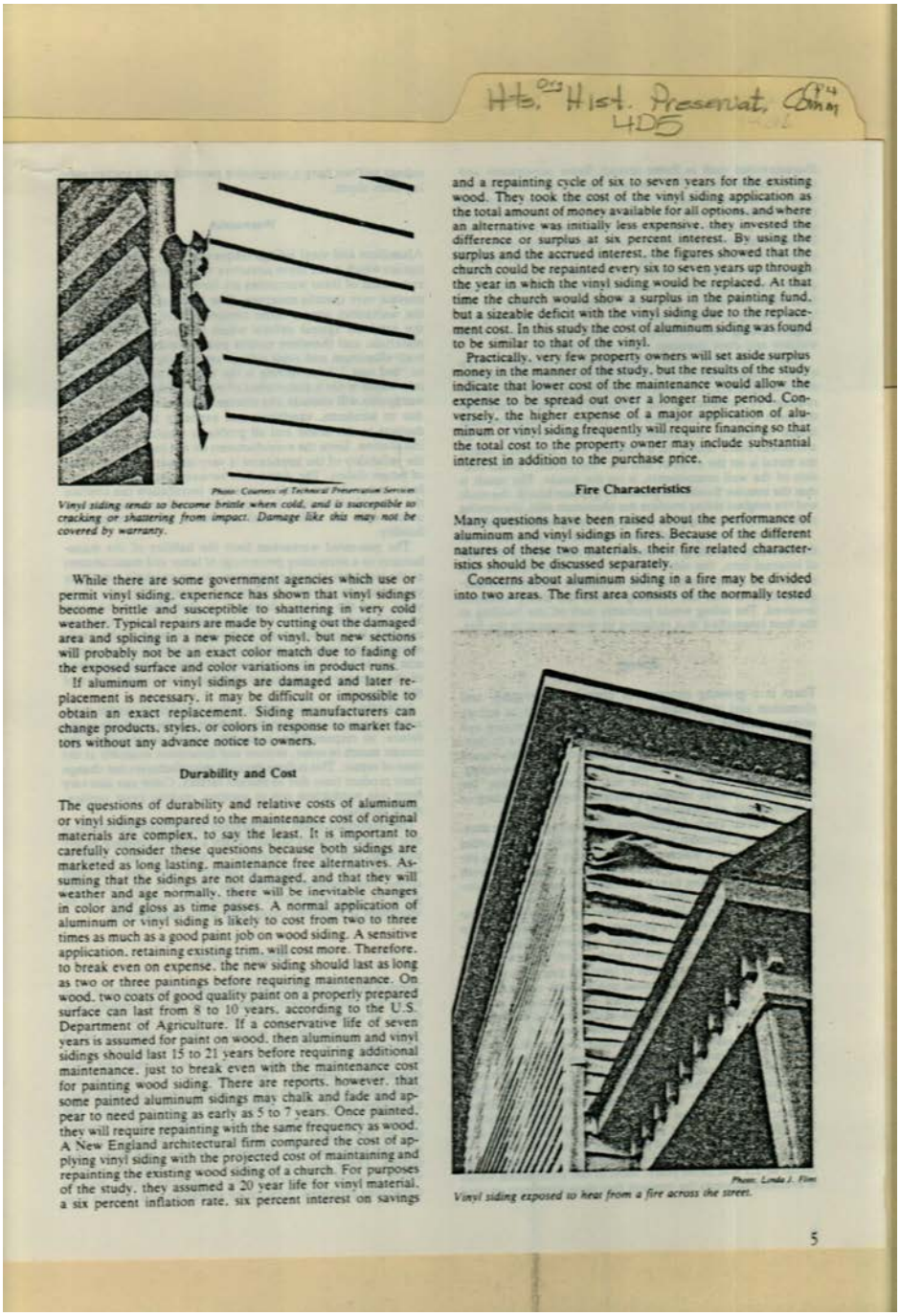
It cannot be overemphasized that a cosmetic treatment to hide difficulties such as peeling paint, stains or other deterioration is no substitute for proper care and maintenance. Aluminum and vinyl sidings are not directly at fault in this case since property owners should determine the nature and source of their problems, then make appropriate repairs. The difficulty arises when owners perceive the sidings as the total solution to their required maintenance and forego other remedial action.

Vulnerability

Aluminum and vinyl sidings are often marketed and purchased as maintenance saving alternatives; there are, however, certain types of damage to which these materials are susceptible. Aluminum siding scratches and dents easily, as a typical thickness is about .020 inches. The U.S. Navy suspended the use of aluminum siding on its housing facilities (non-historic) for several years after experiencing excessive damage due to the activities of children playing nearby. Now siding is permitted only above six feet so that the possibility of frequent impact is reduced. Other users have had similar experiences and it is now generally accepted that aluminum is a poor choice for applications where the chances for impact are high. The problem is recognized by manufacturers in that the backing on some sidings, which is now marketed as insulation, had its origin as a reinforcement to prevent denting.

Names:
Siding on Historic Building

Types:
article



Hts. Hist. Preservat. Comm
4D5

Photo: Courtesy of Technical Preservation Services

Vinyl siding tends to become brittle when cold, and is susceptible to cracking or shattering from impact. Damage like this may not be covered by warranty.

While there are some government agencies which use or permit vinyl siding, experience has shown that vinyl sidings become brittle and susceptible to shattering in very cold weather. Typical repairs are made by cutting out the damaged area and splicing in a new piece of vinyl, but new sections will probably not be an exact color match due to fading of the exposed surface and color variations in product runs.

If aluminum or vinyl sidings are damaged and later replacement is necessary, it may be difficult or impossible to obtain an exact replacement. Siding manufacturers can change products, styles, or colors in response to market factors without any advance notice to owners.

Durability and Cost

The questions of durability and relative costs of aluminum or vinyl sidings compared to the maintenance cost of original materials are complex, to say the least. It is important to carefully consider these questions because both sidings are marketed as long lasting, maintenance free alternatives. Assuming that the sidings are not damaged, and that they will weather and age normally, there will be inevitable changes in color and gloss as time passes. A normal application of aluminum or vinyl siding is likely to cost from two to three times as much as a good paint job on wood siding. A sensitive application, retaining existing trim, will cost more. Therefore, to break even on expense, the new siding should last as long as two or three paintings before requiring maintenance. On wood, two coats of good quality paint on a properly prepared surface can last from 8 to 10 years, according to the U.S. Department of Agriculture. If a conservative life of seven years is assumed for paint on wood, then aluminum and vinyl sidings should last 15 to 21 years before requiring additional maintenance, just to break even with the maintenance cost for painting wood siding. There are reports, however, that some painted aluminum sidings may chalk and fade and appear to need painting as early as 5 to 7 years. Once painted, they will require repainting with the same frequency as wood. A New England architectural firm compared the cost of applying vinyl siding with the projected cost of maintaining and repainting the existing wood siding of a church. For purposes of the study, they assumed a 20 year life for vinyl material, a six percent inflation rate, six percent interest on savings and a repainting cycle of six to seven years for the existing wood. They took the cost of the vinyl siding application as the total amount of money available for all options, and where an alternative was initially less expensive, they invested the difference or surplus at six percent interest. By using the surplus and the accrued interest, the figures showed that the church could be repainted every six to seven years up through the year in which the vinyl siding would be replaced. At that time the church would show a surplus in the painting fund, but a sizeable deficit with the vinyl siding due to the replacement cost. In this study the cost of aluminum siding was found to be similar to that of the vinyl.

Practically, very few property owners will set aside surplus money in the manner of the study, but the results of the study indicate that lower cost of the maintenance would allow the expense to be spread out over a longer time period. Conversely, the higher expense of a major application of aluminum or vinyl siding frequently will require financing so that the total cost to the property owner may include substantial interest in addition to the purchase price.

Fire Characteristics

Many questions have been raised about the performance of aluminum and vinyl sidings in fires. Because of the different natures of these two materials, their fire related characteristics should be discussed separately.

Concerns about aluminum siding in a fire may be divided into two areas. The first area consists of the normally tested

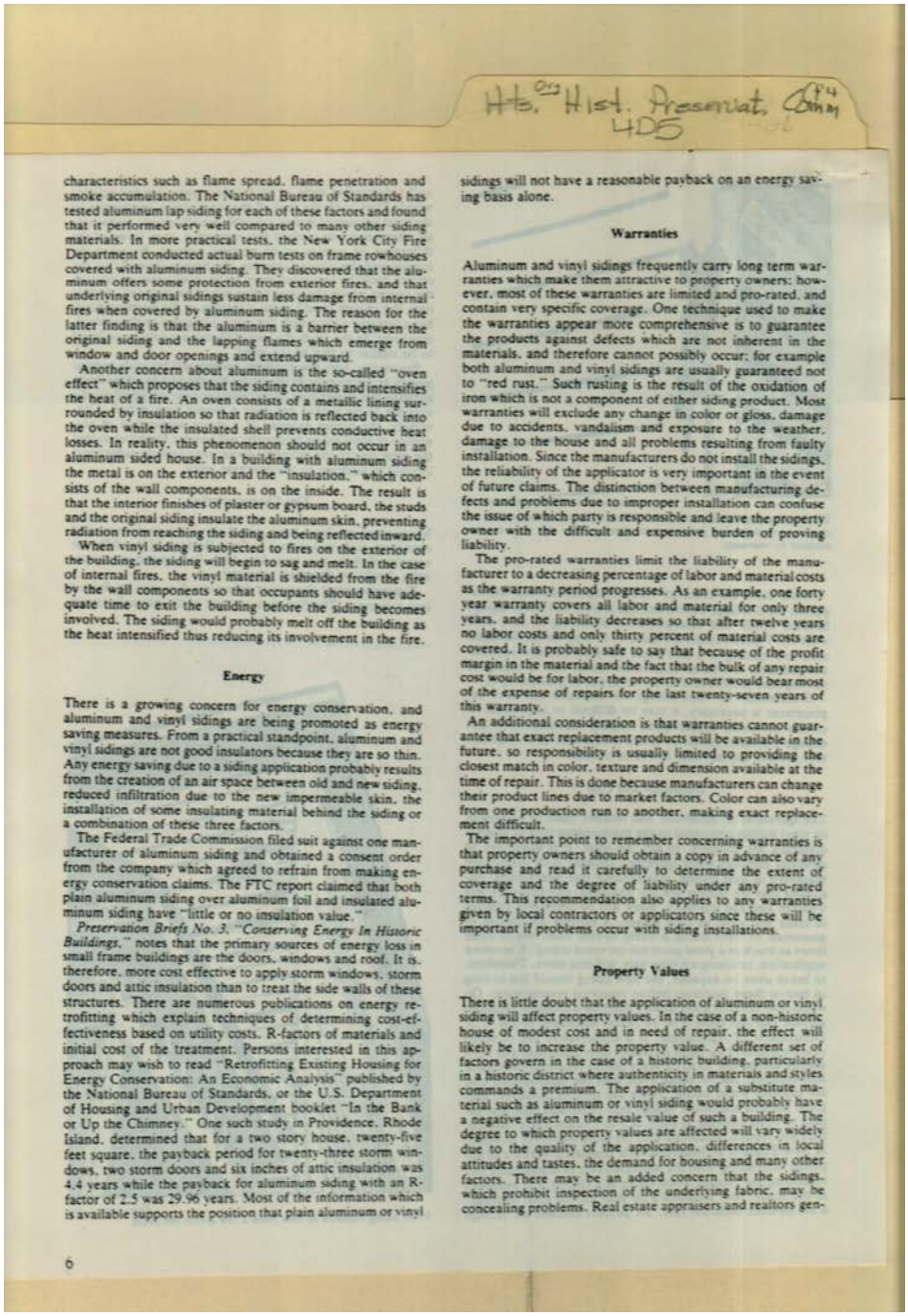
Photo: Linda J. Flint

Vinyl siding exposed to heat from a fire across the street.

5

Names:
Siding on Historic Building

Types:
article



Hts. Dis Hist. Preservat. Comm
4D5

characteristics such as flame spread, flame penetration and smoke accumulation. The National Bureau of Standards has tested aluminum lap siding for each of these factors and found that it performed very well compared to many other siding materials. In more practical tests, the New York City Fire Department conducted actual burn tests on frame rowhouses covered with aluminum siding. They discovered that the aluminum offers some protection from exterior fires, and that underlying original sidings sustain less damage from internal fires when covered by aluminum siding. The reason for the latter finding is that the aluminum is a barrier between the original siding and the lapping flames which emerge from window and door openings and extend upward.

Another concern about aluminum is the so-called "oven effect" which proposes that the siding contains and intensifies the heat of a fire. An oven consists of a metallic lining surrounded by insulation so that radiation is reflected back into the oven while the insulated shell prevents conductive heat losses. In reality, this phenomenon should not occur in an aluminum sided house. In a building with aluminum siding the metal is on the exterior and the "insulation," which consists of the wall components, is on the inside. The result is that the interior finishes of plaster or gypsum board, the studs and the original siding insulate the aluminum skin, preventing radiation from reaching the siding and being reflected inward.

When vinyl siding is subjected to fires on the exterior of the building, the siding will begin to sag and melt. In the case of internal fires, the vinyl material is shielded from the fire by the wall components so that occupants should have adequate time to exit the building before the siding becomes involved. The siding would probably melt off the building as the heat intensified thus reducing its involvement in the fire.

Energy

There is a growing concern for energy conservation, and aluminum and vinyl sidings are being promoted as energy saving measures. From a practical standpoint, aluminum and vinyl sidings are not good insulators because they are so thin. Any energy saving due to a siding application probably results from the creation of an air space between old and new siding, reduced infiltration due to the new impermeable skin, the installation of some insulating material behind the siding or a combination of these three factors.

The Federal Trade Commission filed suit against one manufacturer of aluminum siding and obtained a consent order from the company which agreed to refrain from making energy conservation claims. The FTC report claimed that both plain aluminum siding over aluminum foil and insulated aluminum siding have "little or no insulation value."

Preservation Briefs No. 3, "Conserving Energy In Historic Buildings," notes that the primary sources of energy loss in small frame buildings are the doors, windows and roof. It is, therefore, more cost effective to apply storm windows, storm doors and attic insulation than to treat the side walls of these structures. There are numerous publications on energy retrofitting which explain techniques of determining cost-effectiveness based on utility costs. R-factors of materials and initial cost of the treatment. Persons interested in this approach may wish to read "Retrofitting Existing Housing for Energy Conservation: An Economic Analysis" published by the National Bureau of Standards, or the U.S. Department of Housing and Urban Development booklet "In the Bank or Up the Chimney." One such study in Providence, Rhode Island, determined that for a two story house, twenty-five feet square, the payback period for twenty-three storm windows, two storm doors and six inches of attic insulation was 4.4 years while the payback for aluminum siding with an R-factor of 2.5 was 29.96 years. Most of the information which is available supports the position that plain aluminum or vinyl sidings will not have a reasonable payback on an energy saving basis alone.

Warranties

Aluminum and vinyl sidings frequently carry long term warranties which make them attractive to property owners; however, most of these warranties are limited and pro-rated, and contain very specific coverage. One technique used to make the warranties appear more comprehensive is to guarantee the products against defects which are not inherent in the materials, and therefore cannot possibly occur; for example both aluminum and vinyl sidings are usually guaranteed not to "red rust." Such rusting is the result of the oxidation of iron which is not a component of either siding product. Most warranties will exclude any change in color or gloss, damage due to accidents, vandalism and exposure to the weather, damage to the house and all problems resulting from faulty installation. Since the manufacturers do not install the sidings, the reliability of the applicator is very important in the event of future claims. The distinction between manufacturing defects and problems due to improper installation can confuse the issue of which party is responsible and leave the property owner with the difficult and expensive burden of proving liability.

The pro-rated warranties limit the liability of the manufacturer to a decreasing percentage of labor and material costs as the warranty period progresses. As an example, one forty year warranty covers all labor and material for only three years, and the liability decreases so that after twelve years no labor costs and only thirty percent of material costs are covered. It is probably safe to say that because of the profit margin in the material and the fact that the bulk of any repair cost would be for labor, the property owner would bear most of the expense of repairs for the last twenty-seven years of this warranty.

An additional consideration is that warranties cannot guarantee that exact replacement products will be available in the future, so responsibility is usually limited to providing the closest match in color, texture and dimension available at the time of repair. This is done because manufacturers can change their product lines due to market factors. Color can also vary from one production run to another, making exact replacement difficult.

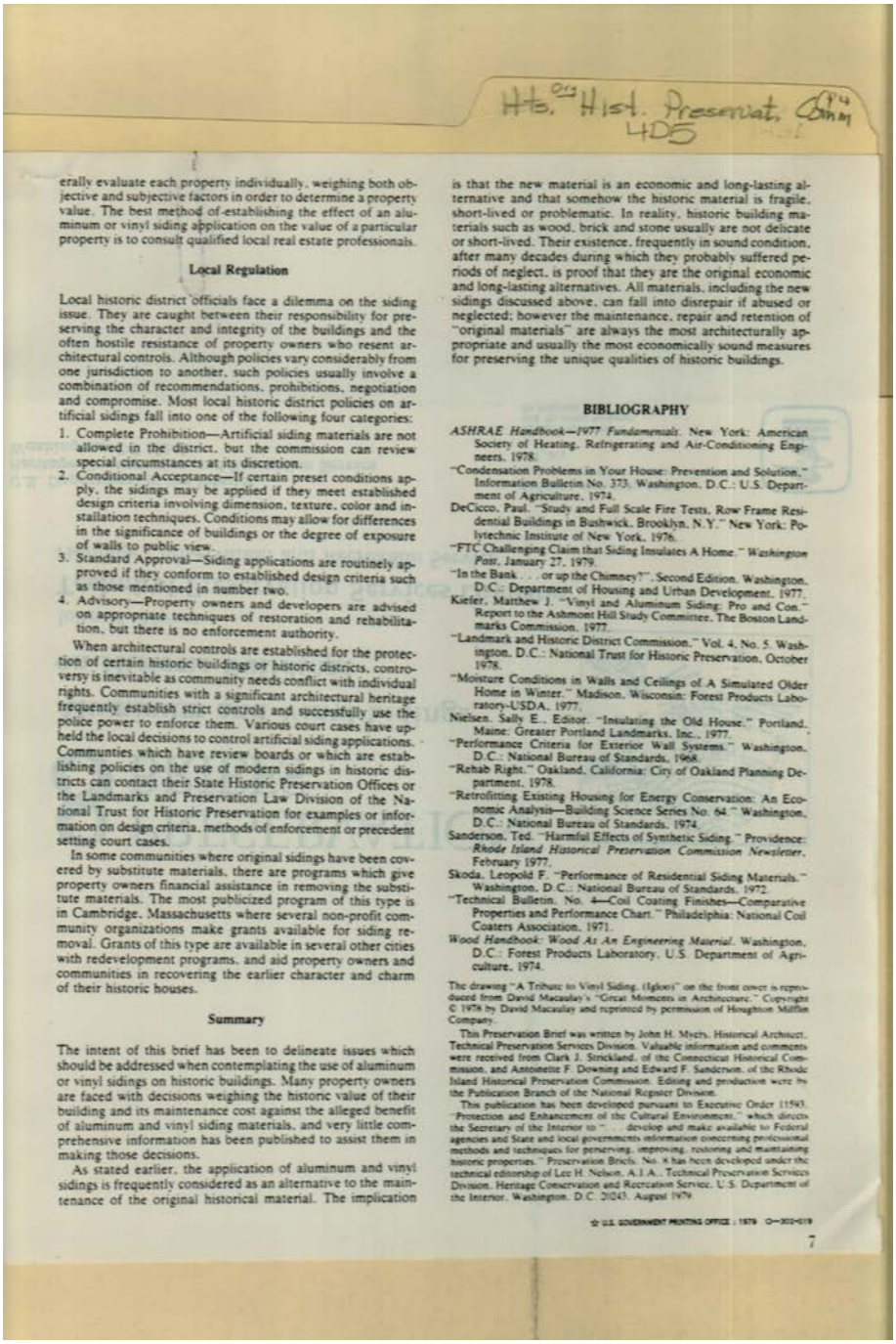
The important point to remember concerning warranties is that property owners should obtain a copy in advance of any purchase and read it carefully to determine the extent of coverage and the degree of liability under any pro-rated terms. This recommendation also applies to any warranties given by local contractors or applicators since these will be important if problems occur with siding installations.

Property Values

There is little doubt that the application of aluminum or vinyl siding will affect property values. In the case of a non-historic house of modest cost and in need of repair, the effect will likely be to increase the property value. A different set of factors govern in the case of a historic building, particularly in a historic district where authenticity in materials and styles commands a premium. The application of a substitute material such as aluminum or vinyl siding would probably have a negative effect on the resale value of such a building. The degree to which property values are affected will vary widely due to the quality of the application, differences in local attitudes and tastes, the demand for housing and many other factors. There may be an added concern that the sidings, which prohibit inspection of the underlying fabric, may be concealing problems. Real estate appraisers and realtors gen-

Names:
Siding on Historic Building

Types:
article



Hts. Hist. Preservat. Comm
4D5

erally evaluate each property individually, weighing both objective and subjective factors in order to determine a property value. The best method of establishing the effect of an aluminum or vinyl siding application on the value of a particular property is to consult qualified local real estate professionals.

Local Regulation

Local historic district officials face a dilemma on the siding issue. They are caught between their responsibility for preserving the character and integrity of the buildings and the often hostile resistance of property owners who resent architectural controls. Although policies vary considerably from one jurisdiction to another, such policies usually involve a combination of recommendations, prohibitions, negotiation and compromise. Most local historic district policies on artificial sidings fall into one of the following four categories:

1. Complete Prohibition—Artificial siding materials are not allowed in the district, but the commission can review special circumstances at its discretion.
2. Conditional Acceptance—If certain preset conditions apply, the sidings may be applied if they meet established design criteria involving dimension, texture, color and installation techniques. Conditions may allow for differences in the significance of buildings or the degree of exposure of walls to public view.
3. Standard Approval—Siding applications are routinely approved if they conform to established design criteria such as those mentioned in number two.
4. Advisory—Property owners and developers are advised on appropriate techniques of restoration and rehabilitation, but there is no enforcement authority.

When architectural controls are established for the protection of certain historic buildings or historic districts, controversy is inevitable as community needs conflict with individual rights. Communities with a significant architectural heritage frequently establish strict controls and successfully use the police power to enforce them. Various court cases have upheld the local decisions to control artificial siding applications. Communities which have review boards or which are establishing policies on the use of modern sidings in historic districts can contact their State Historic Preservation Offices or the Landmarks and Preservation Law Division of the National Trust for Historic Preservation for examples or information on design criteria, methods of enforcement or precedent setting court cases.

In some communities where original sidings have been covered by substitute materials, there are programs which give property owners financial assistance in removing the substitute materials. The most publicized program of this type is in Cambridge, Massachusetts where several non-profit community organizations make grants available for siding removal. Grants of this type are available in several other cities with redevelopment programs, and aid property owners and communities in recovering the earlier character and charm of their historic houses.

Summary

The intent of this brief has been to delineate issues which should be addressed when contemplating the use of aluminum or vinyl sidings on historic buildings. Many property owners are faced with decisions weighing the historic value of their building and its maintenance cost against the alleged benefit of aluminum and vinyl siding materials, and very little comprehensive information has been published to assist them in making those decisions.

As stated earlier, the application of aluminum and vinyl sidings is frequently considered as an alternative to the maintenance of the original historical material. The implication is that the new material is an economic and long-lasting alternative and that somehow the historic material is fragile, short-lived or problematic. In reality, historic building materials such as wood, brick and stone usually are not delicate or short-lived. Their existence, frequently in sound condition, after many decades during which they probably suffered periods of neglect, is proof that they are the original economic and long-lasting alternatives. All materials, including the new sidings discussed above, can fall into disrepair if abused or neglected; however the maintenance, repair and retention of "original materials" are always the most architecturally appropriate and usually the most economically sound measures for preserving the unique qualities of historic buildings.

BIBLIOGRAPHY

ASHRAE Handbook—1977 Fundamentals. New York: American Society of Heating, Refrigerating and Air-Conditioning Engineers, 1978.
"Condensation Problems in Your House: Prevention and Solution." Information Bulletin No. 373. Washington, D.C.: U.S. Department of Agriculture, 1974.
DeCicco, Paul. "Study and Full Scale Fire Tests, Row Frame Residential Buildings in Bushwick, Brooklyn, N.Y." New York: Polytechnic Institute of New York, 1976.
"FTC Challenging Claim that Siding Insulates A Home." *Washington Post*, January 27, 1979.
"In the Bank . . . or up the Chimney?". Second Edition. Washington, D.C.: Department of Housing and Urban Development, 1977.
Kiefer, Matthew J. "Vinyl and Aluminum Siding: Pro and Con." Report to the Ashmont Hill Study Committee. The Boston Landmarks Commission, 1977.
"Landmark and Historic District Commission." Vol. 4, No. 5. Washington, D.C.: National Trust for Historic Preservation, October 1978.
"Moisture Conditions in Walls and Ceilings of A Simulated Older Home in Winter." Madison, Wisconsin: Forest Products Laboratory-USDA, 1977.
Nielsen, Sally E., Editor. "Insulating the Old House." Portland, Maine: Greater Portland Landmarks, Inc., 1977.
"Performance Criteria for Exterior Wall Systems." Washington, D.C.: National Bureau of Standards, 1968.
"Rehab Right." Oakland, California: City of Oakland Planning Department, 1978.
"Retrofitting Existing Housing for Energy Conservation: An Economic Analysis—Building Science Series No. 64." Washington, D.C.: National Bureau of Standards, 1974.
Sanderson, Ted. "Harmful Effects of Synthetic Siding." Providence: *Rhode Island Historical Preservation Commission Newsletter*, February 1977.
Skoda, Leopold F. "Performance of Residential Siding Materials." Washington, D.C.: National Bureau of Standards, 1972.
"Technical Bulletin. No. 4—Cool Coating Finishes—Comparative Properties and Performance Chart." Philadelphia: National Coil Coaters Association, 1971.
Wood Handbook: Wood As An Engineering Material. Washington, D.C.: Forest Products Laboratory, U.S. Department of Agriculture, 1974.

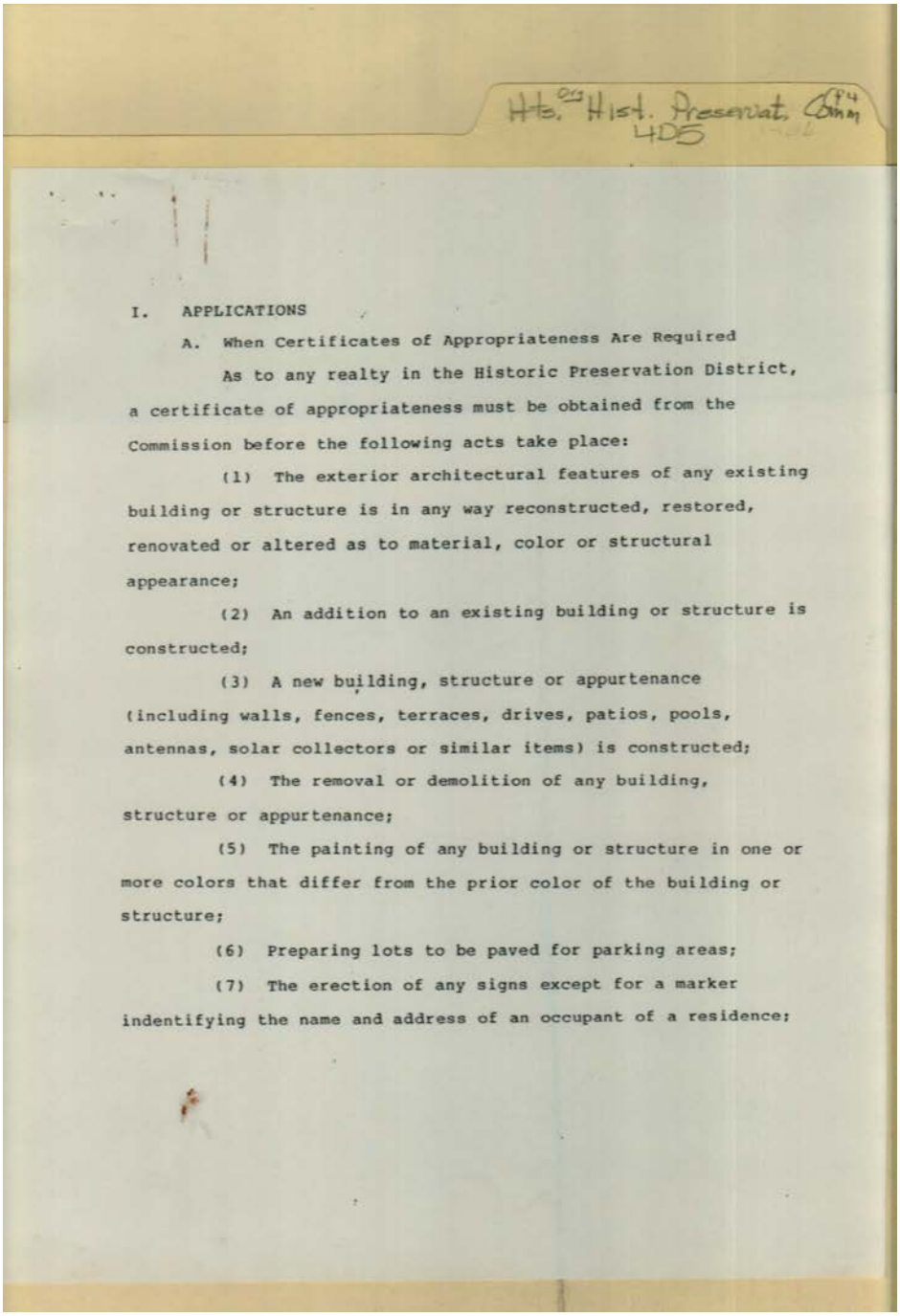
This Preservation Brief was written by John H. Myers, Historical Architect, Technical Preservation Services Division. Valuable information and comments were received from Clark J. Strickland, of the Connecticut Historical Commission, and Antoinette F. Downing and Edward F. Sanderson, of the Rhode Island Historical Preservation Commission. Editing and production were by the Publication Branch of the National Register Division.

This publication has been developed pursuant to Executive Order 11593, "Protection and Enhancement of the Cultural Environment," which directs the Secretary of the Interior to " . . . develop and make available to Federal agencies and State and local governments information concerning professional methods and techniques for preserving, improving, restoring and maintaining historic properties." Preservation Briefs No. 8 has been developed under the technical editorship of Lee H. Nelson, A.I.A., Technical Preservation Services Division, Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington, D.C. 20243, August 1979.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1979 O—302-019

Names:
Siding on Historic Building

Types:
article



Hts. Hist. Preservat. Comm
4D5

I. APPLICATIONS

A. When Certificates of Appropriateness Are Required

As to any realty in the Historic Preservation District, a certificate of appropriateness must be obtained from the Commission before the following acts take place:

(1) The exterior architectural features of any existing building or structure is in any way reconstructed, restored, renovated or altered as to material, color or structural appearance;

(2) An addition to an existing building or structure is constructed;

(3) A new building, structure or appurtenance (including walls, fences, terraces, drives, patios, pools, antennas, solar collectors or similar items) is constructed;

(4) The removal or demolition of any building, structure or appurtenance;

(5) The painting of any building or structure in one or more colors that differ from the prior color of the building or structure;

(6) Preparing lots to be paved for parking areas;

(7) The erection of any signs except for a marker indentifying the name and address of an occupant of a residence;

Names:
Appropriate
Certification

Types:
regulations

(8) A change being made in or upon any public street, way or park within or touching upon the boundaries of any Historic Preservation District.

B. Preliminary Review Allowed

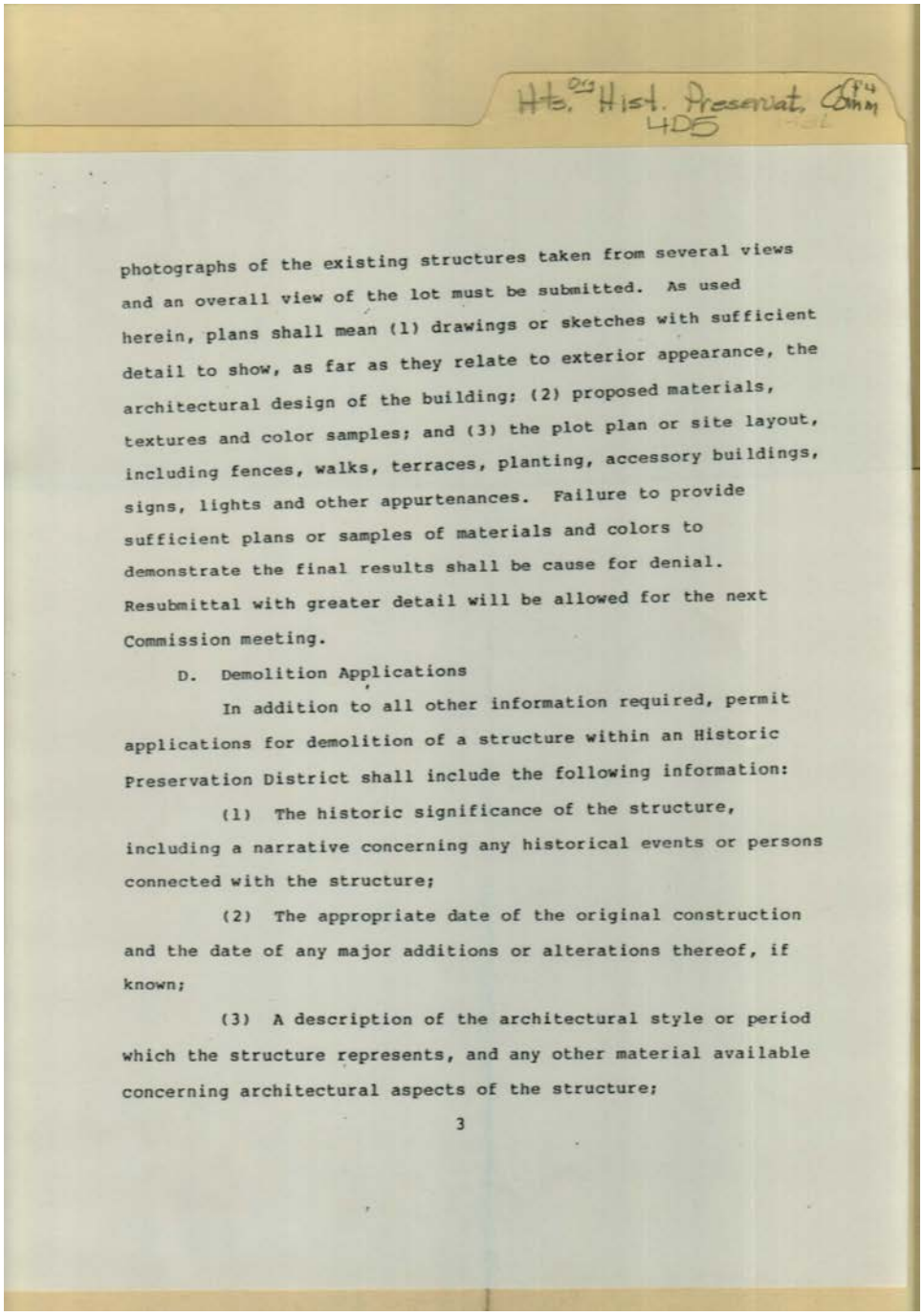
Prior to the final application for a certificate concerning a building which is proposed to be constructed, reconstructed, or altered, preliminary schematic plans may be submitted to the Commission for review. The purpose of this review stage is to reduce the cost to the property owner by providing a review stage prior to the preparation by the property owner of plans necessary to apply for a certificate. The said schematic plans shall depict the exterior architectural features of the building, and shall include a statement by the applicant concerning the compatibility of the proposed construction, reconstruction or alteration, with adjoining properties and with the architectural style and characteristics of the entire district in which the same is located. This stage is informal and optional with the applicant and is designed to allow both the applicant and the Commission to review the proposal prior to the applicant incurring significant expense in the proposal. If this stage is not followed by the applicant, then the Commission shall disregard any such expense or investment as a factor in its decision.

C. Submission of Plans

Every application for a certificate of appropriateness shall be accompanied by plans of the proposed construction, reconstruction, alteration or demolition. Additionally,

Names:
Appropriate
Certification

Types:
regulations



Hts. Dis. Hist. Preservat. Comm
4D5

photographs of the existing structures taken from several views and an overall view of the lot must be submitted. As used herein, plans shall mean (1) drawings or sketches with sufficient detail to show, as far as they relate to exterior appearance, the architectural design of the building; (2) proposed materials, textures and color samples; and (3) the plot plan or site layout, including fences, walks, terraces, planting, accessory buildings, signs, lights and other appurtenances. Failure to provide sufficient plans or samples of materials and colors to demonstrate the final results shall be cause for denial. Resubmittal with greater detail will be allowed for the next Commission meeting.

D. Demolition Applications

In addition to all other information required, permit applications for demolition of a structure within an Historic Preservation District shall include the following information:

(1) The historic significance of the structure, including a narrative concerning any historical events or persons connected with the structure;

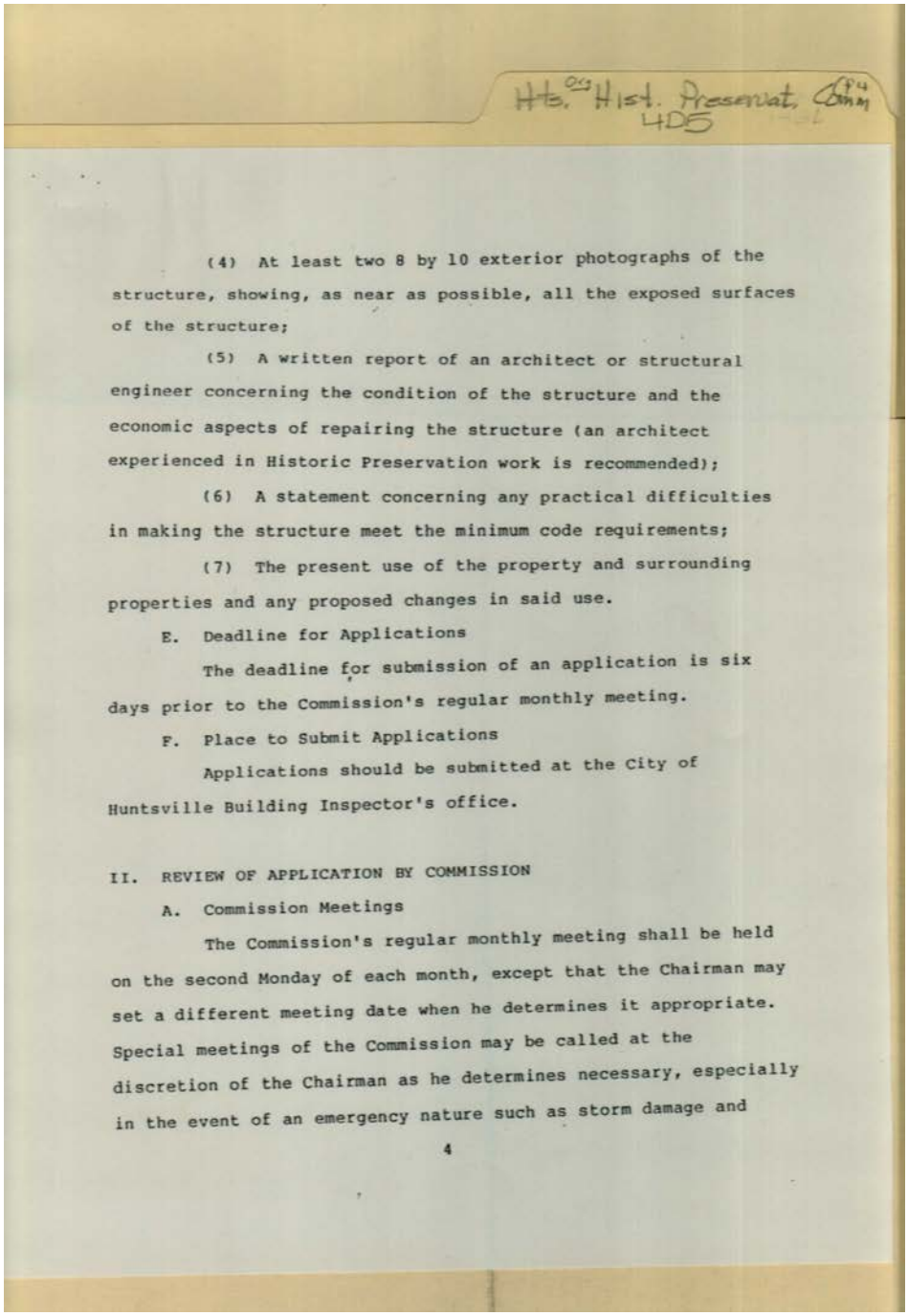
(2) The appropriate date of the original construction and the date of any major additions or alterations thereof, if known;

(3) A description of the architectural style or period which the structure represents, and any other material available concerning architectural aspects of the structure;

3

Names:
Appropriate
Certification

Types:
regulations



Hts. Dev. Hist. Preservat. Comm
4D5

(4) At least two 8 by 10 exterior photographs of the structure, showing, as near as possible, all the exposed surfaces of the structure;

(5) A written report of an architect or structural engineer concerning the condition of the structure and the economic aspects of repairing the structure (an architect experienced in Historic Preservation work is recommended);

(6) A statement concerning any practical difficulties in making the structure meet the minimum code requirements;

(7) The present use of the property and surrounding properties and any proposed changes in said use.

E. Deadline for Applications

The deadline for submission of an application is six days prior to the Commission's regular monthly meeting.

F. Place to Submit Applications

Applications should be submitted at the City of Huntsville Building Inspector's office.

II. REVIEW OF APPLICATION BY COMMISSION

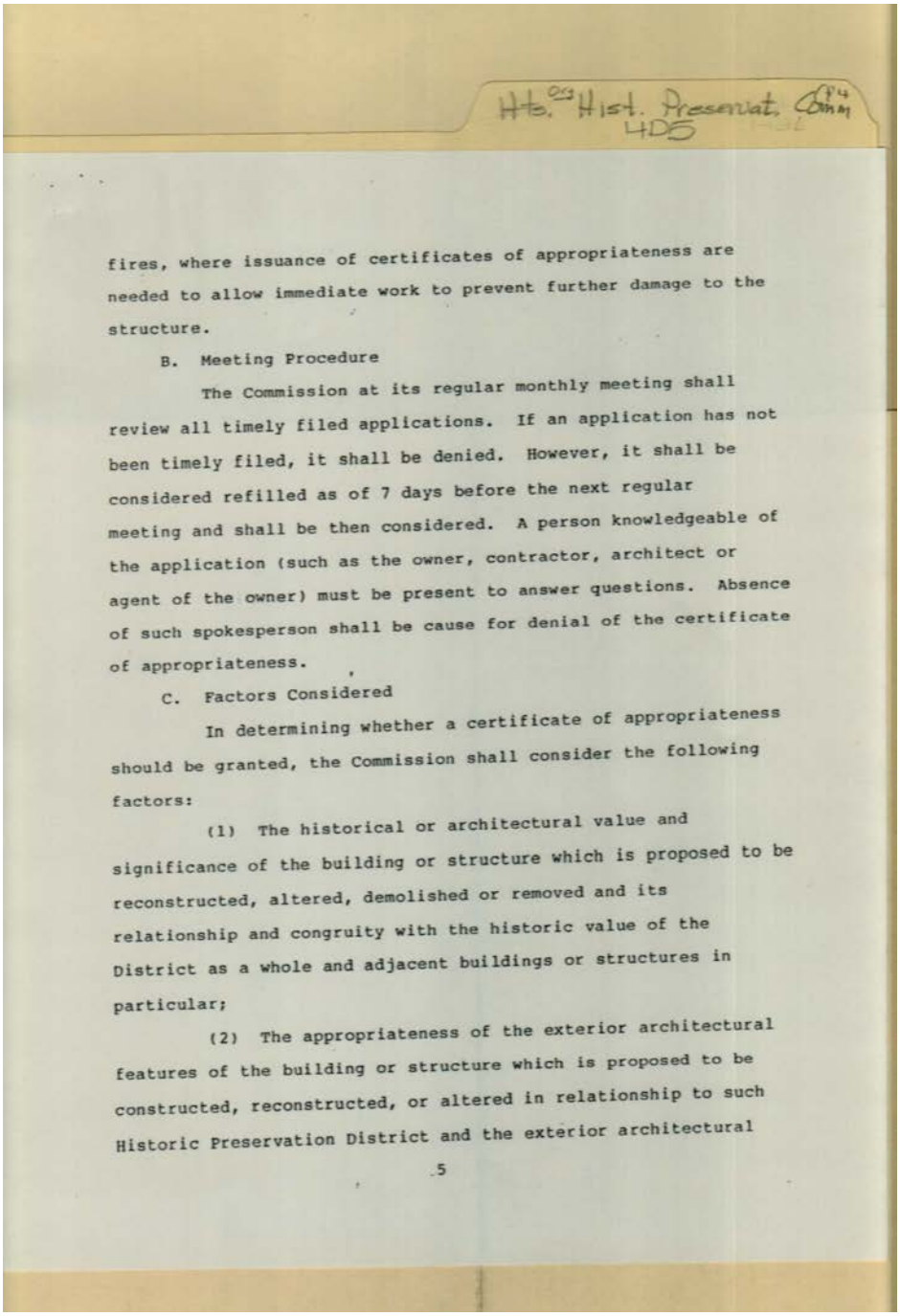
A. Commission Meetings

The Commission's regular monthly meeting shall be held on the second Monday of each month, except that the Chairman may set a different meeting date when he determines it appropriate. Special meetings of the Commission may be called at the discretion of the Chairman as he determines necessary, especially in the event of an emergency nature such as storm damage and

4

Names:
Appropriate
Certification

Types:
regulations



Hts. Hist. Preservat. Comm
4D5

fires, where issuance of certificates of appropriateness are needed to allow immediate work to prevent further damage to the structure.

B. Meeting Procedure

The Commission at its regular monthly meeting shall review all timely filed applications. If an application has not been timely filed, it shall be denied. However, it shall be considered refilled as of 7 days before the next regular meeting and shall be then considered. A person knowledgeable of the application (such as the owner, contractor, architect or agent of the owner) must be present to answer questions. Absence of such spokesperson shall be cause for denial of the certificate of appropriateness.

C. Factors Considered

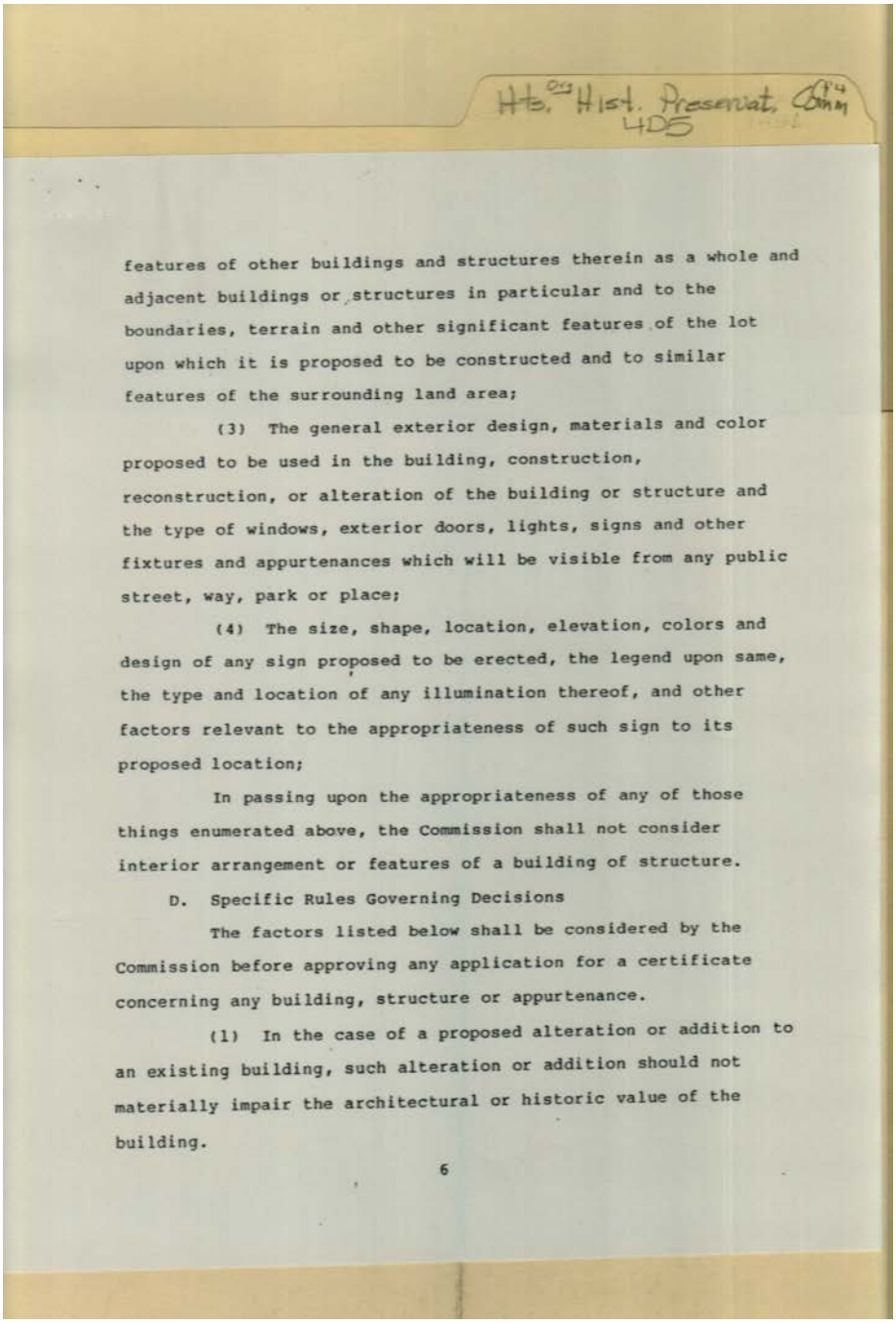
In determining whether a certificate of appropriateness should be granted, the Commission shall consider the following factors:

(1) The historical or architectural value and significance of the building or structure which is proposed to be reconstructed, altered, demolished or removed and its relationship and congruity with the historic value of the District as a whole and adjacent buildings or structures in particular;

(2) The appropriateness of the exterior architectural features of the building or structure which is proposed to be constructed, reconstructed, or altered in relationship to such Historic Preservation District and the exterior architectural

5

Types:
regulations



features of other buildings and structures therein as a whole and adjacent buildings or structures in particular and to the boundaries, terrain and other significant features of the lot upon which it is proposed to be constructed and to similar features of the surrounding land area;

(3) The general exterior design, materials and color proposed to be used in the building, construction, reconstruction, or alteration of the building or structure and the type of windows, exterior doors, lights, signs and other fixtures and appurtenances which will be visible from any public street, way, park or place;

(4) The size, shape, location, elevation, colors and design of any sign proposed to be erected, the legend upon same, the type and location of any illumination thereof, and other factors relevant to the appropriateness of such sign to its proposed location;

In passing upon the appropriateness of any of those things enumerated above, the Commission shall not consider interior arrangement or features of a building of structure.

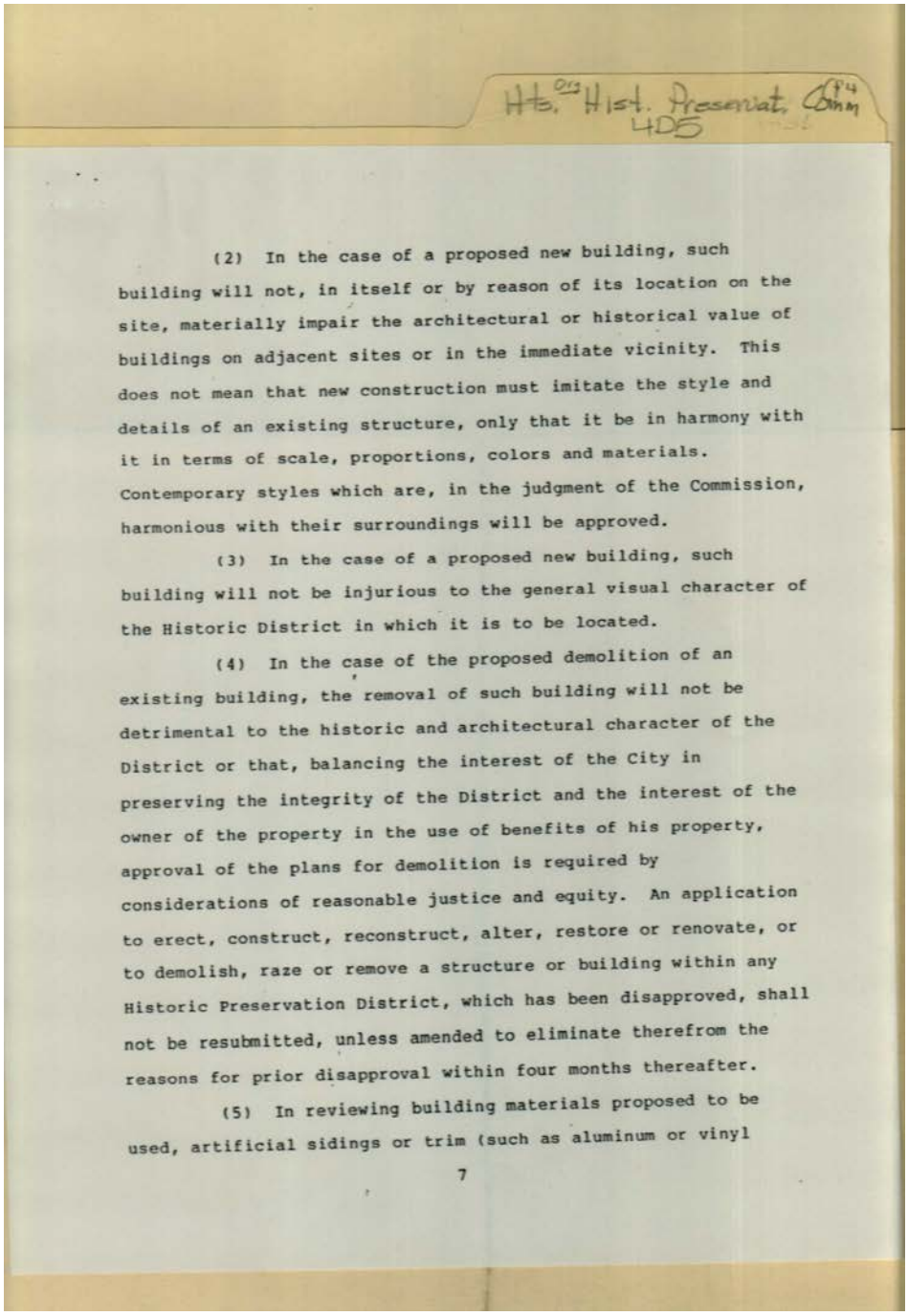
D. Specific Rules Governing Decisions

The factors listed below shall be considered by the Commission before approving any application for a certificate concerning any building, structure or appurtenance.

(1) In the case of a proposed alteration or addition to an existing building, such alteration or addition should not materially impair the architectural or historic value of the building.

6

Types:
regulations



Hts. Ors Hist. Preservat. Comm
4D5

(2) In the case of a proposed new building, such building will not, in itself or by reason of its location on the site, materially impair the architectural or historical value of buildings on adjacent sites or in the immediate vicinity. This does not mean that new construction must imitate the style and details of an existing structure, only that it be in harmony with it in terms of scale, proportions, colors and materials. Contemporary styles which are, in the judgment of the Commission, harmonious with their surroundings will be approved.

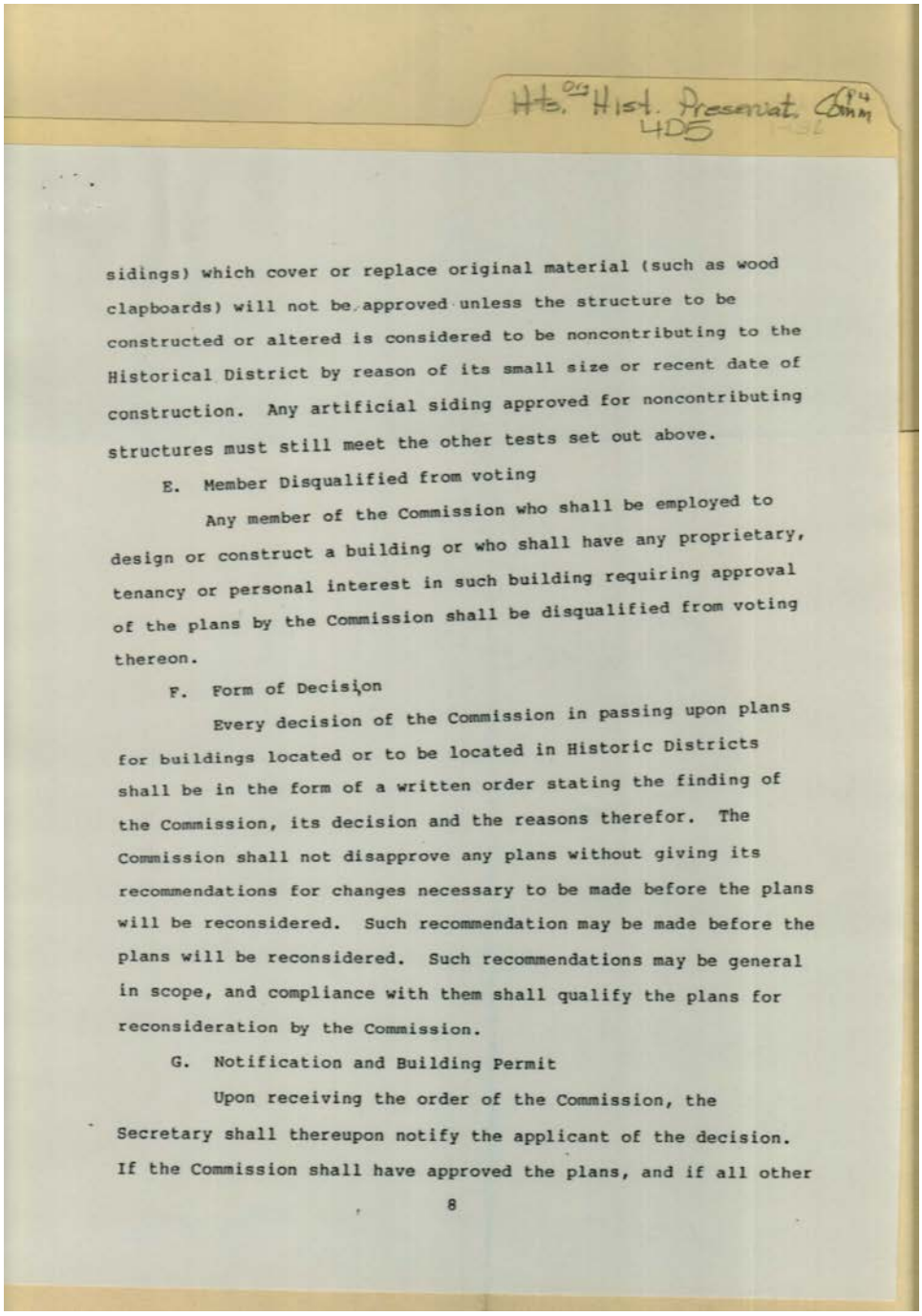
(3) In the case of a proposed new building, such building will not be injurious to the general visual character of the Historic District in which it is to be located.

(4) In the case of the proposed demolition of an existing building, the removal of such building will not be detrimental to the historic and architectural character of the District or that, balancing the interest of the City in preserving the integrity of the District and the interest of the owner of the property in the use of benefits of his property, approval of the plans for demolition is required by considerations of reasonable justice and equity. An application to erect, construct, reconstruct, alter, restore or renovate, or to demolish, raze or remove a structure or building within any Historic Preservation District, which has been disapproved, shall not be resubmitted, unless amended to eliminate therefrom the reasons for prior disapproval within four months thereafter.

(5) In reviewing building materials proposed to be used, artificial sidings or trim (such as aluminum or vinyl

7

Types:
regulations



Hts. Hist. Preservat. Comm
4D5

sidings) which cover or replace original material (such as wood clapboards) will not be approved unless the structure to be constructed or altered is considered to be noncontributing to the Historical District by reason of its small size or recent date of construction. Any artificial siding approved for noncontributing structures must still meet the other tests set out above.

E. Member Disqualified from voting

Any member of the Commission who shall be employed to design or construct a building or who shall have any proprietary, tenancy or personal interest in such building requiring approval of the plans by the Commission shall be disqualified from voting thereon.

F. Form of Decision

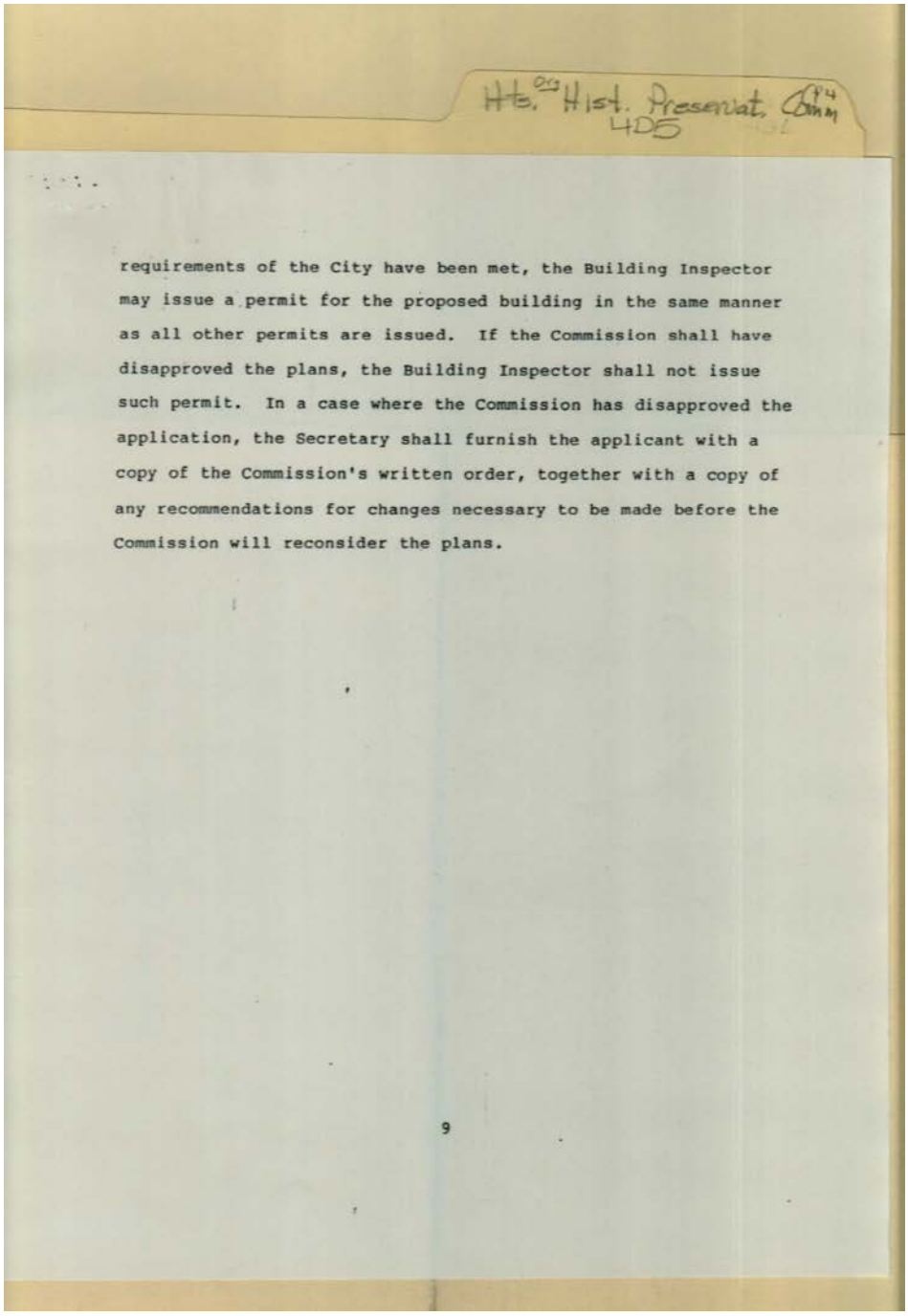
Every decision of the Commission in passing upon plans for buildings located or to be located in Historic Districts shall be in the form of a written order stating the finding of the Commission, its decision and the reasons therefor. The Commission shall not disapprove any plans without giving its recommendations for changes necessary to be made before the plans will be reconsidered. Such recommendation may be made before the plans will be reconsidered. Such recommendations may be general in scope, and compliance with them shall qualify the plans for reconsideration by the Commission.

G. Notification and Building Permit

Upon receiving the order of the Commission, the Secretary shall thereupon notify the applicant of the decision. If the Commission shall have approved the plans, and if all other

8

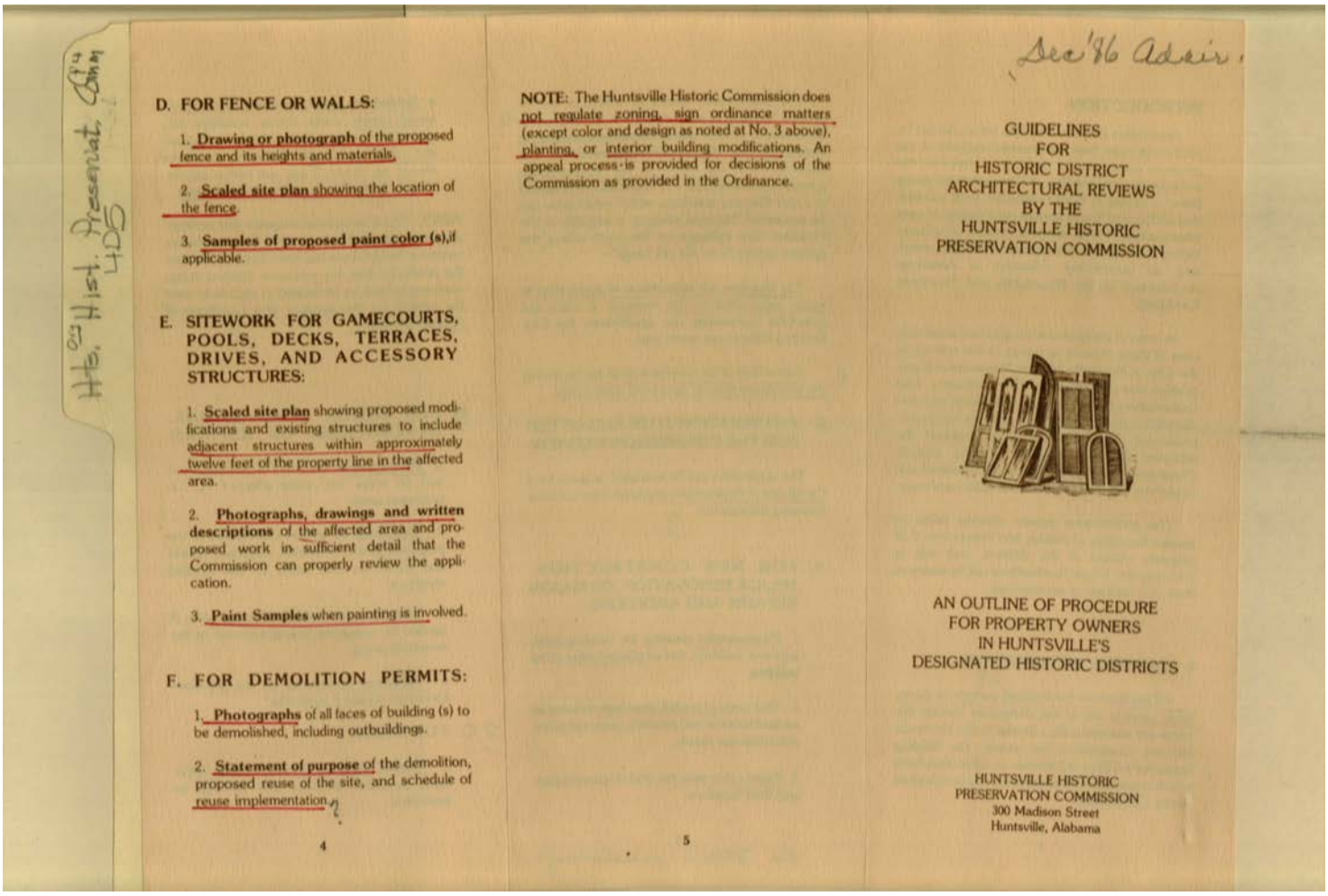
Types:
regulations



requirements of the City have been met, the Building Inspector may issue a permit for the proposed building in the same manner as all other permits are issued. If the Commission shall have disapproved the plans, the Building Inspector shall not issue such permit. In a case where the Commission has disapproved the application, the Secretary shall furnish the applicant with a copy of the Commission's written order, together with a copy of any recommendations for changes necessary to be made before the Commission will reconsider the plans.

9

Types:
regulations



Hts. City Hist. Preservat. Comm
4-D-5

D. FOR FENCE OR WALLS:

1. **Drawing or photograph** of the proposed fence and its heights and materials.

2. **Scaled site plan** showing the location of the fence.

3. **Samples of proposed paint color (s)**, if applicable.

E. SITEWORK FOR GAMECOURTS, POOLS, DECKS, TERRACES, DRIVES, AND ACCESSORY STRUCTURES:

1. **Scaled site plan** showing proposed modifications and existing structures to include adjacent structures within approximately twelve feet of the property line in the affected area.

2. **Photographs, drawings and written descriptions** of the affected area and proposed work in sufficient detail that the Commission can properly review the application.

3. **Paint Samples** when painting is involved.

F. FOR DEMOLITION PERMITS:

1. **Photographs** of all faces of building (s) to be demolished, including outbuildings.

2. **Statement of purpose** of the demolition, proposed reuse of the site, and schedule of reuse implementation.

4

NOTE: The Huntsville Historic Commission does not regulate zoning, sign ordinance matters (except color and design as noted at No. 3 above), planting, or interior building modifications. An appeal process is provided for decisions of the Commission as provided in the Ordinance.

5

Dec '86 Adair

GUIDELINES
FOR
HISTORIC DISTRICT
ARCHITECTURAL REVIEWS
BY THE
HUNTSVILLE HISTORIC
PRESERVATION COMMISSION

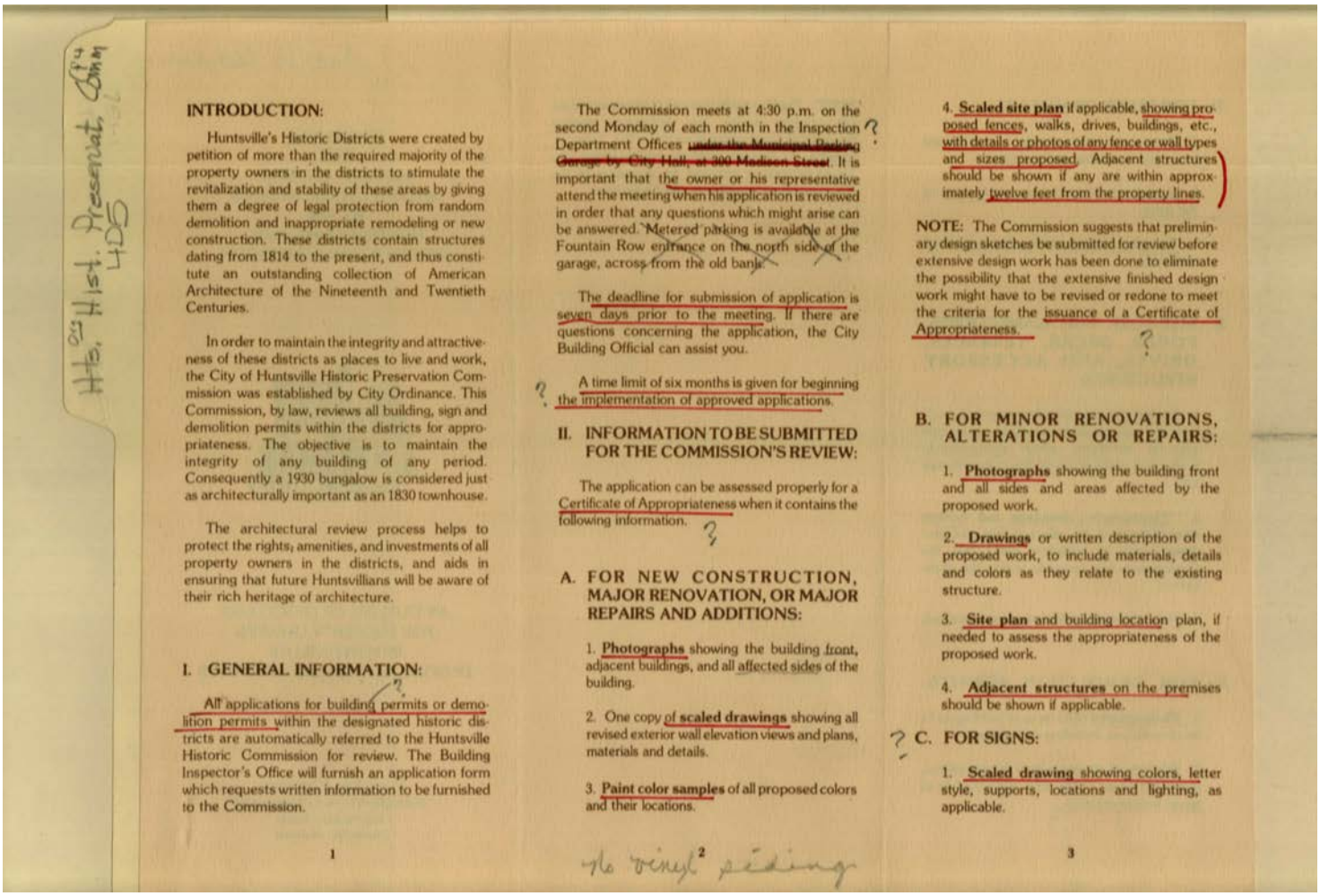
AN OUTLINE OF PROCEDURE
FOR PROPERTY OWNERS
IN HUNTSVILLE'S
DESIGNATED HISTORIC DISTRICTS

HUNTSVILLE HISTORIC
PRESERVATION COMMISSION
300 Madison Street
Huntsville, Alabama

Names:
Review of
Applications

Places:
Huntsville, AL

Types:
guidelines



INTRODUCTION:

Huntsville's Historic Districts were created by petition of more than the required majority of the property owners in the districts to stimulate the revitalization and stability of these areas by giving them a degree of legal protection from random demolition and inappropriate remodeling or new construction. These districts contain structures dating from 1814 to the present, and thus constitute an outstanding collection of American Architecture of the Nineteenth and Twentieth Centuries.

In order to maintain the integrity and attractiveness of these districts as places to live and work, the City of Huntsville Historic Preservation Commission was established by City Ordinance. This Commission, by law, reviews all building, sign and demolition permits within the districts for appropriateness. The objective is to maintain the integrity of any building of any period. Consequently a 1930 bungalow is considered just as architecturally important as an 1830 townhouse.

The architectural review process helps to protect the rights, amenities, and investments of all property owners in the districts, and aids in ensuring that future Huntsvillians will be aware of their rich heritage of architecture.

I. GENERAL INFORMATION:

All applications for building permits or demolition permits within the designated historic districts are automatically referred to the Huntsville Historic Commission for review. The Building Inspector's Office will furnish an application form which requests written information to be furnished to the Commission.

The Commission meets at 4:30 p.m. on the second Monday of each month in the Inspection Department Offices ~~under the Municipal Parking Garage by City Hall, at 300 Madison Street~~. It is important that the owner or his representative attend the meeting when his application is reviewed in order that any questions which might arise can be answered. Metered parking is available at the Fountain Row entrance on the north side of the garage, across from the old bank.

The deadline for submission of application is seven days prior to the meeting. If there are questions concerning the application, the City Building Official can assist you.

A time limit of six months is given for beginning the implementation of approved applications.

II. INFORMATION TO BE SUBMITTED FOR THE COMMISSION'S REVIEW:

The application can be assessed properly for a Certificate of Appropriateness when it contains the following information.

A. FOR NEW CONSTRUCTION, MAJOR RENOVATION, OR MAJOR REPAIRS AND ADDITIONS:

1. **Photographs** showing the building front, adjacent buildings, and all affected sides of the building.

2. One copy of **scaled drawings** showing all revised exterior wall elevation views and plans, materials and details.

3. **Paint color samples** of all proposed colors and their locations.

no vinyl siding

4. **Scaled site plan** if applicable, showing proposed fences, walks, drives, buildings, etc., with details or photos of any fence or wall types and sizes proposed. Adjacent structures should be shown if any are within approximately twelve feet from the property lines.

NOTE: The Commission suggests that preliminary design sketches be submitted for review before extensive design work has been done to eliminate the possibility that the extensive finished design work might have to be revised or redone to meet the criteria for the issuance of a Certificate of Appropriateness.

B. FOR MINOR RENOVATIONS, ALTERATIONS OR REPAIRS:

1. **Photographs** showing the building front and all sides and areas affected by the proposed work.

2. **Drawings** or written description of the proposed work, to include materials, details and colors as they relate to the existing structure.

3. **Site plan** and building location plan, if needed to assess the appropriateness of the proposed work.

4. **Adjacent structures** on the premises should be shown if applicable.

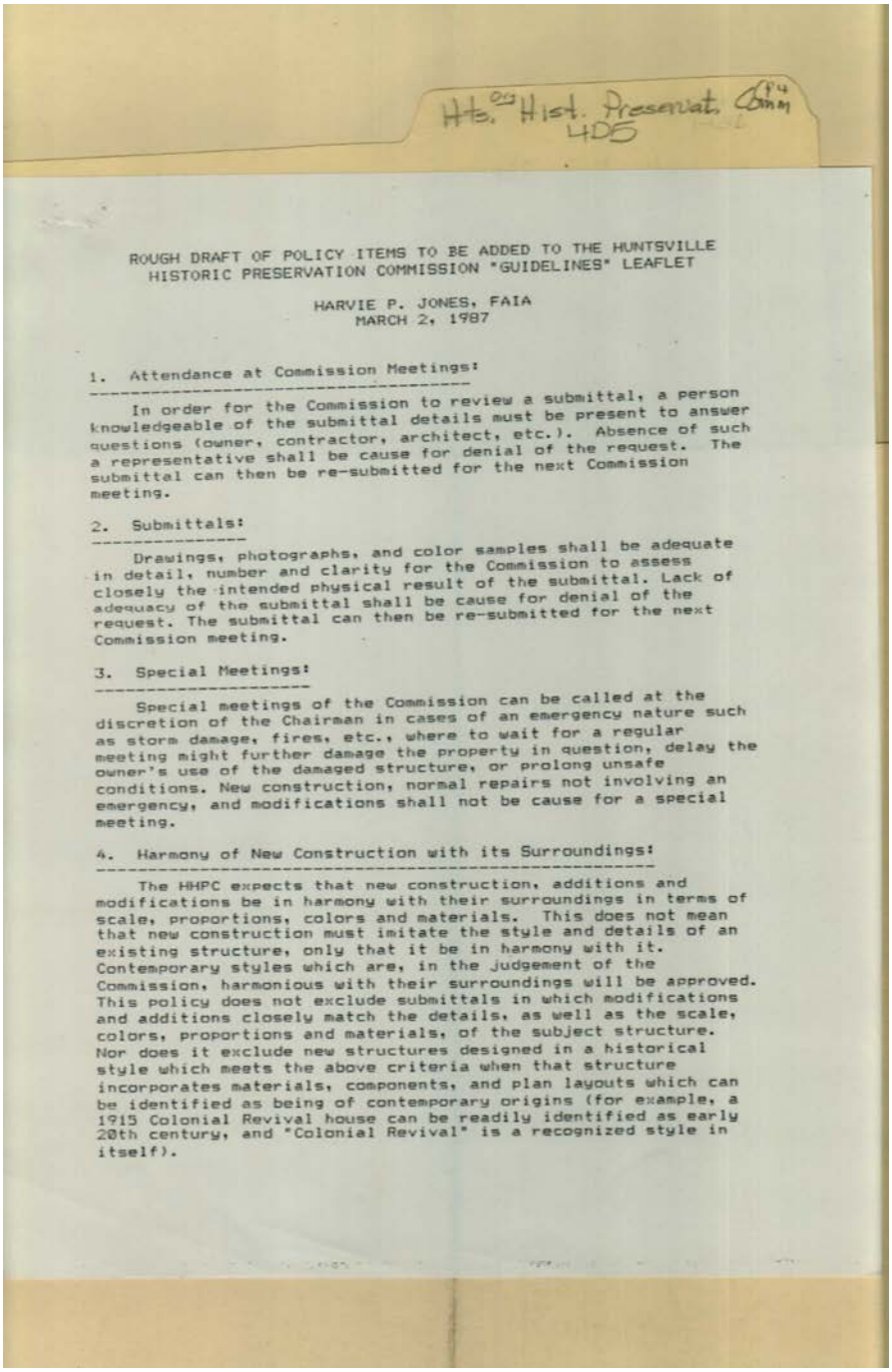
C. FOR SIGNS:

1. **Scaled drawing** showing colors, letter style, supports, locations and lighting, as applicable.

Names:
Review of Applications

Places:
Huntsville, AL

Types:
guidelines



Hts. Hist. Preservat. Comm
4D5

ROUGH DRAFT OF POLICY ITEMS TO BE ADDED TO THE HUNTSVILLE HISTORIC PRESERVATION COMMISSION "GUIDELINES" LEAFLET

HARVIE P. JONES, FAIA
MARCH 2, 1987

1. Attendance at Commission Meetings:

In order for the Commission to review a submittal, a person knowledgeable of the submittal details must be present to answer questions (owner, contractor, architect, etc.). Absence of such a representative shall be cause for denial of the request. The submittal can then be re-submitted for the next Commission meeting.

2. Submittals:

Drawings, photographs, and color samples shall be adequate in detail, number and clarity for the Commission to assess closely the intended physical result of the submittal. Lack of adequacy of the submittal shall be cause for denial of the request. The submittal can then be re-submitted for the next Commission meeting.

3. Special Meetings:

Special meetings of the Commission can be called at the discretion of the Chairman in cases of an emergency nature such as storm damage, fires, etc., where to wait for a regular meeting might further damage the property in question, delay the owner's use of the damaged structure, or prolong unsafe conditions. New construction, normal repairs not involving an emergency, and modifications shall not be cause for a special meeting.

4. Harmony of New Construction with its Surroundings:

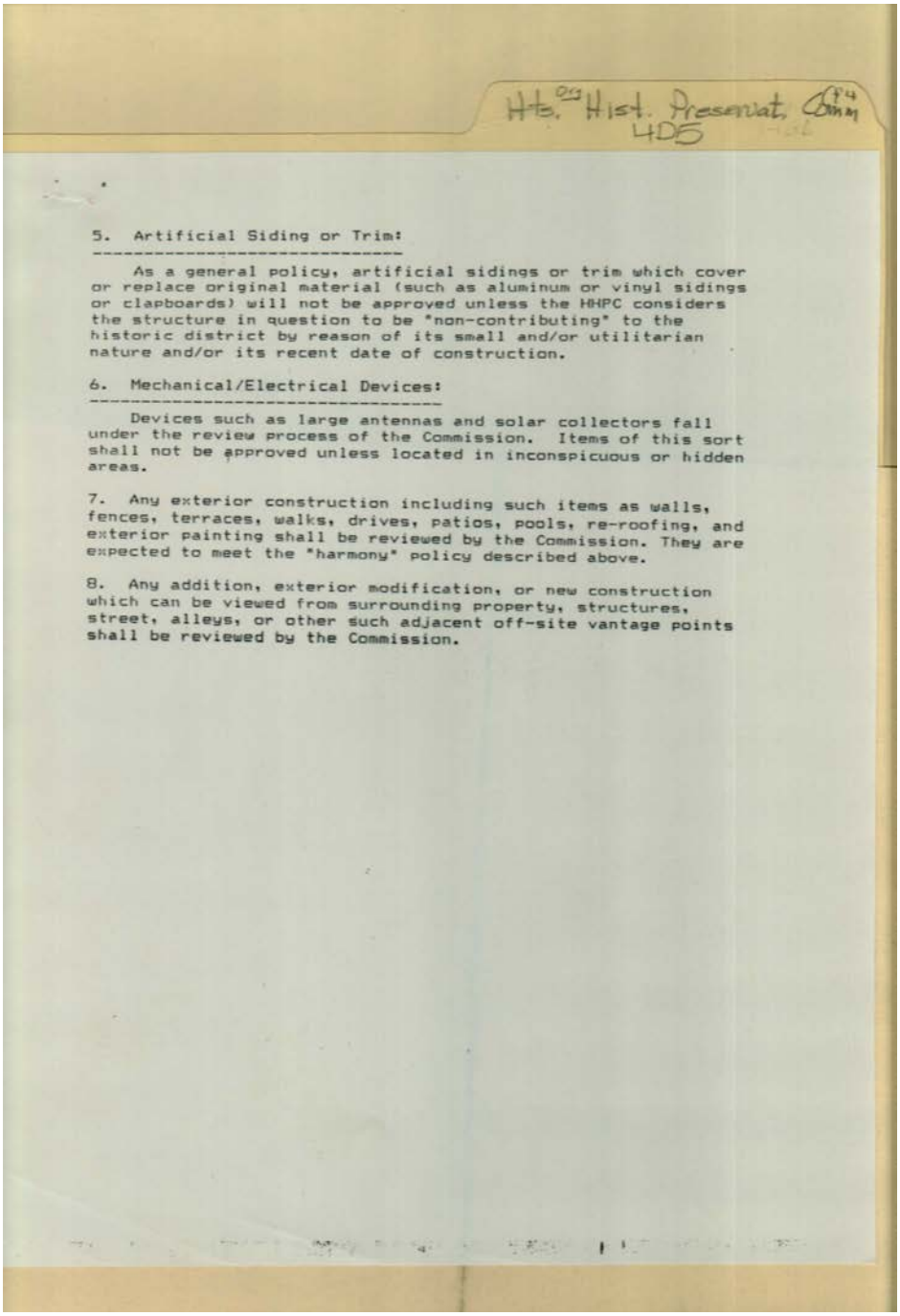
The HHPC expects that new construction, additions and modifications be in harmony with their surroundings in terms of scale, proportions, colors and materials. This does not mean that new construction must imitate the style and details of an existing structure, only that it be in harmony with it. Contemporary styles which are, in the judgement of the Commission, harmonious with their surroundings will be approved. This policy does not exclude submittals in which modifications and additions closely match the details, as well as the scale, colors, proportions and materials, of the subject structure. Nor does it exclude new structures designed in a historical style which meets the above criteria when that structure incorporates materials, components, and plan layouts which can be identified as being of contemporary origins (for example, a 1915 Colonial Revival house can be readily identified as early 20th century, and "Colonial Revival" is a recognized style in itself).

Names:
Jones, Harvie P.

Review of Applications

Places:
Huntsville, AL

Types:
guidelines



Hts. Dis Hist. Preservat. Comm
4D5

5. Artificial Siding or Trim:

As a general policy, artificial sidings or trim which cover or replace original material (such as aluminum or vinyl sidings or clapboards) will not be approved unless the HHPC considers the structure in question to be "non-contributing" to the historic district by reason of its small and/or utilitarian nature and/or its recent date of construction.

6. Mechanical/Electrical Devices:

Devices such as large antennas and solar collectors fall under the review process of the Commission. Items of this sort shall not be approved unless located in inconspicuous or hidden areas.

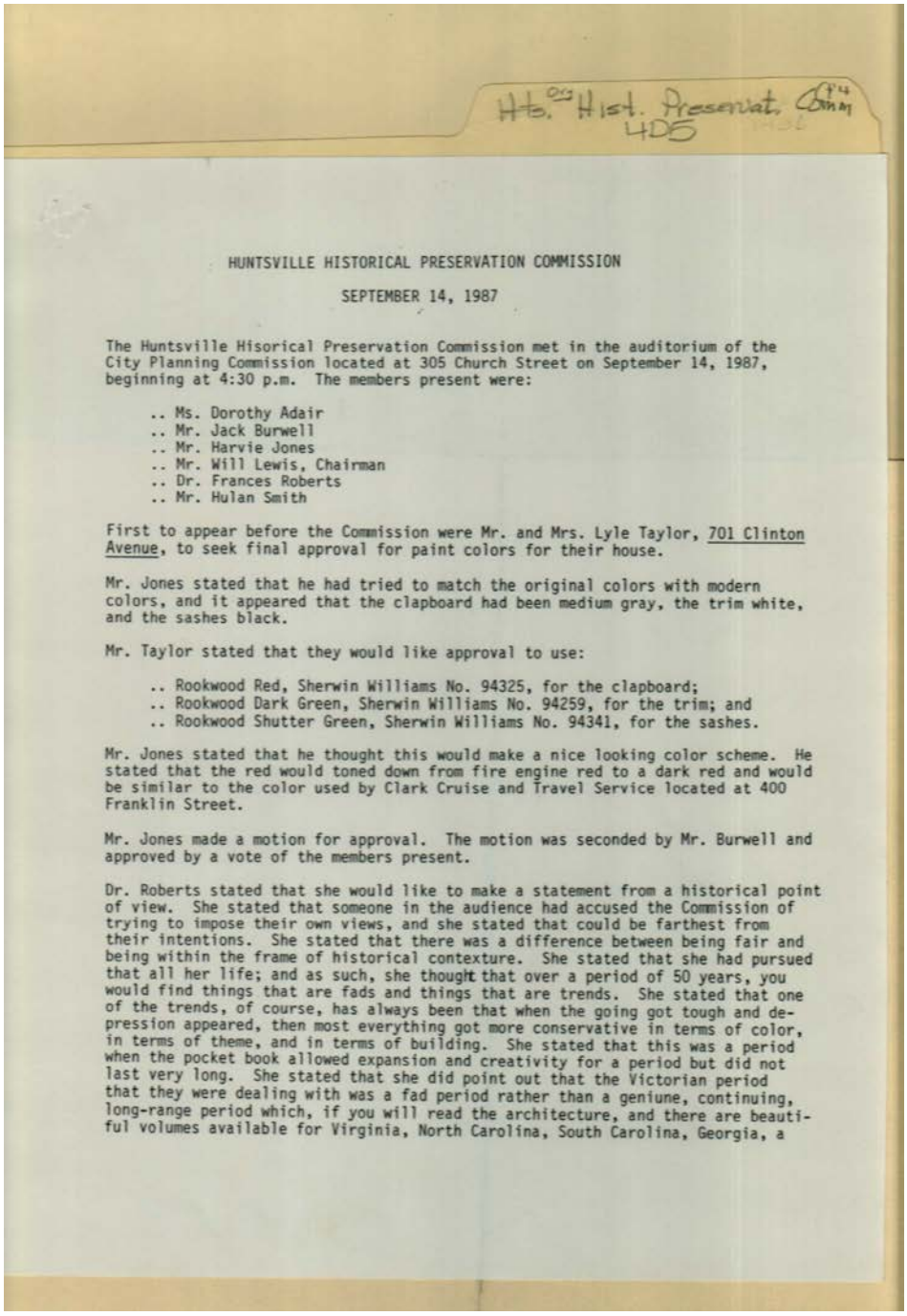
7. Any exterior construction including such items as walls, fences, terraces, walks, drives, patios, pools, re-roofing, and exterior painting shall be reviewed by the Commission. They are expected to meet the "harmony" policy described above.

8. Any addition, exterior modification, or new construction which can be viewed from surrounding property, structures, street, alleys, or other such adjacent off-site vantage points shall be reviewed by the Commission.

Names:
Review of Applications

Places:
Huntsville, AL

Types:
guidelines



Hts. Hist. Preservat. Comm
4D5

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION

SEPTEMBER 14, 1987

The Huntsville Hisorical Preservation Commission met in the auditorium of the City Planning Commission located at 305 Church Street on September 14, 1987, beginning at 4:30 p.m. The members present were:

.. Ms. Dorothy Adair
.. Mr. Jack Burwell
.. Mr. Harvie Jones
.. Mr. Will Lewis, Chairman
.. Dr. Frances Roberts
.. Mr. Hulan Smith

First to appear before the Commission were Mr. and Mrs. Lyle Taylor, 701 Clinton Avenue, to seek final approval for paint colors for their house.

Mr. Jones stated that he had tried to match the original colors with modern colors, and it appeared that the clapboard had been medium gray, the trim white, and the sashes black.

Mr. Taylor stated that they would like approval to use:

.. Rookwood Red, Sherwin Williams No. 94325, for the clapboard;
.. Rookwood Dark Green, Sherwin Williams No. 94259, for the trim; and
.. Rookwood Shutter Green, Sherwin Williams No. 94341, for the sashes.

Mr. Jones stated that he thought this would make a nice looking color scheme. He stated that the red would toned down from fire engine red to a dark red and would be similar to the color used by Clark Cruise and Travel Service located at 400 Franklin Street.

Mr. Jones made a motion for approval. The motion was seconded by Mr. Burwell and approved by a vote of the members present.

Dr. Roberts stated that she would like to make a statement from a historical point of view. She stated that someone in the audience had accused the Commission of trying to impose their own views, and she stated that could be farthest from their intentions. She stated that there was a difference between being fair and being within the frame of historical contexture. She stated that she had pursued that all her life; and as such, she thought that over a period of 50 years, you would find things that are fads and things that are trends. She stated that one of the trends, of course, has always been that when the going got tough and depression appeared, then most everything got more conservative in terms of color, in terms of theme, and in terms of building. She stated that this was a period when the pocket book allowed expansion and creativity for a period but did not last very long. She stated that she did point out that the Victorian period that they were dealing with was a fad period rather than a geniune, continuing, long-range period which, if you will read the architecture, and there are beautiful volumes available for Virginia, North Carolina, South Carolina, Georgia, a

Names:

Adair, Dorothy L.
Burwell, Jack
Jones, Harvie
Lewis, Will
Roberts, Frances, Dr.
Smith, Hulan
Taylor, Lyle

Places:

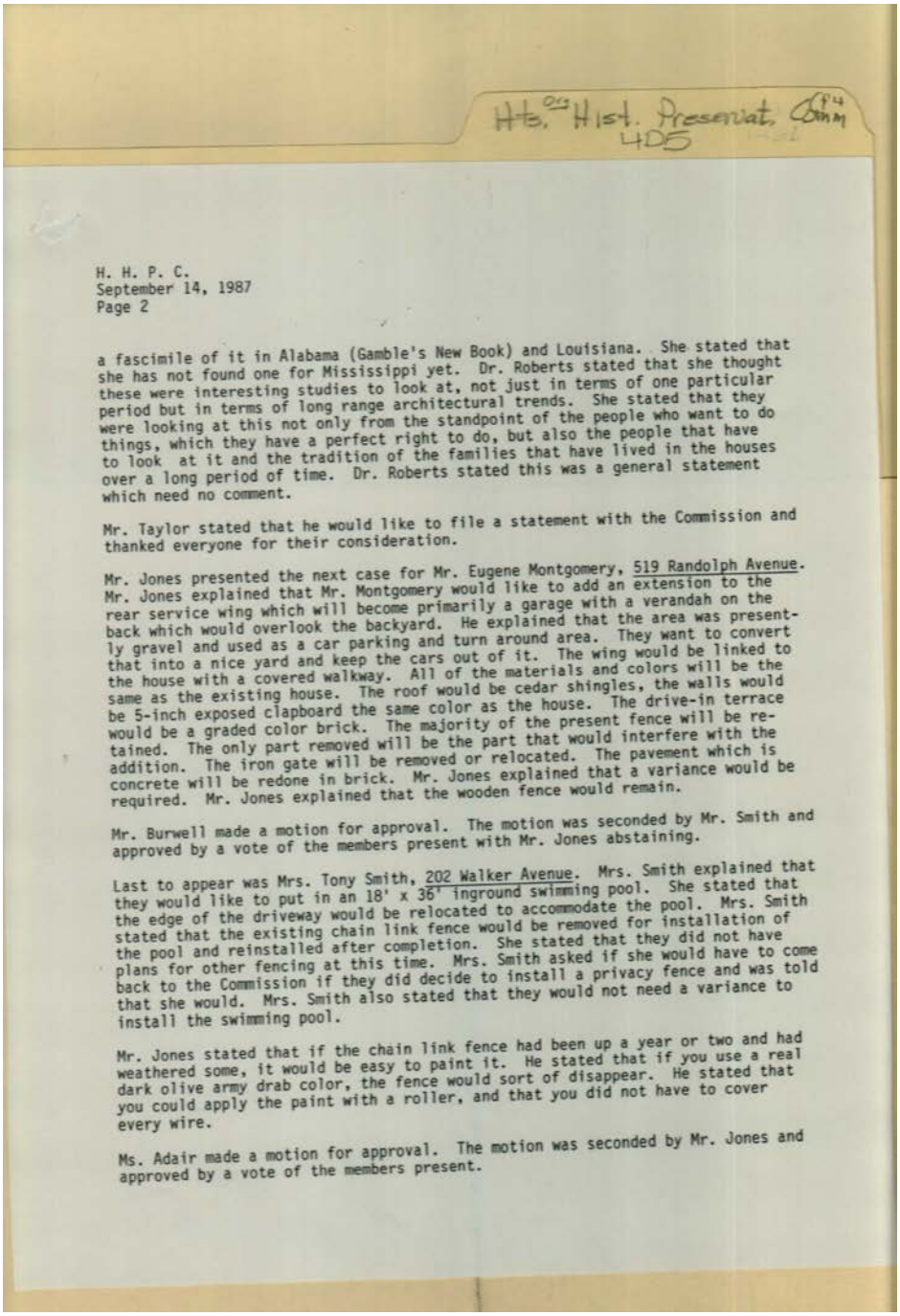
Huntsville, AL

Types:

minutes

Dates:

Sep 14, 1987



Hts. Dis. Hist. Preservat. Comm
4D5

a fascimile of it in Alabama (Gamble's New Book) and Louisiana. She stated that she has not found one for Mississippi yet. Dr. Roberts stated that she thought these were interesting studies to look at, not just in terms of one particular period but in terms of long range architectural trends. She stated that they were looking at this not only from the standpoint of the people who want to do things, which they have a perfect right to do, but also the people that have to look at it and the tradition of the families that have lived in the houses over a long period of time. Dr. Roberts stated this was a general statement which need no comment.

Mr. Taylor stated that he would like to file a statement with the Commission and thanked everyone for their consideration.

Mr. Jones presented the next case for Mr. Eugene Montgomery, 519 Randolph Avenue. Mr. Jones explained that Mr. Montgomery would like to add an extension to the rear service wing which will become primarily a garage with a verandah on the back which would overlook the backyard. He explained that the area was presently gravel and used as a car parking and turn around area. They want to convert that into a nice yard and keep the cars out of it. The wing would be linked to the house with a covered walkway. All of the materials and colors will be the same as the existing house. The roof would be cedar shingles, the walls would be 5-inch exposed clapboard the same color as the house. The drive-in terrace would be a graded color brick. The majority of the present fence will be retained. The only part removed will be the part that would interfere with the addition. The iron gate will be removed or relocated. The pavement which is concrete will be redone in brick. Mr. Jones explained that a variance would be required. Mr. Jones explained that the wooden fence would remain.

Mr. Burwell made a motion for approval. The motion was seconded by Mr. Smith and approved by a vote of the members present with Mr. Jones abstaining.

Last to appear was Mrs. Tony Smith, 202 Walker Avenue. Mrs. Smith explained that they would like to put in an 18' x 36' inground swimming pool. She stated that the edge of the driveway would be relocated to accommodate the pool. Mrs. Smith stated that the existing chain link fence would be removed for installation of the pool and reinstalled after completion. She stated that they did not have plans for other fencing at this time. Mrs. Smith asked if she would have to come back to the Commission if they did decide to install a privacy fence and was told that she would. Mrs. Smith also stated that they would not need a variance to install the swimming pool.

Mr. Jones stated that if the chain link fence had been up a year or two and had weathered some, it would be easy to paint it. He stated that if you use a real dark olive army drab color, the fence would sort of disappear. He stated that you could apply the paint with a roller, and that you did not have to cover every wire.

Ms. Adair made a motion for approval. The motion was seconded by Mr. Jones and approved by a vote of the members present.

Names:

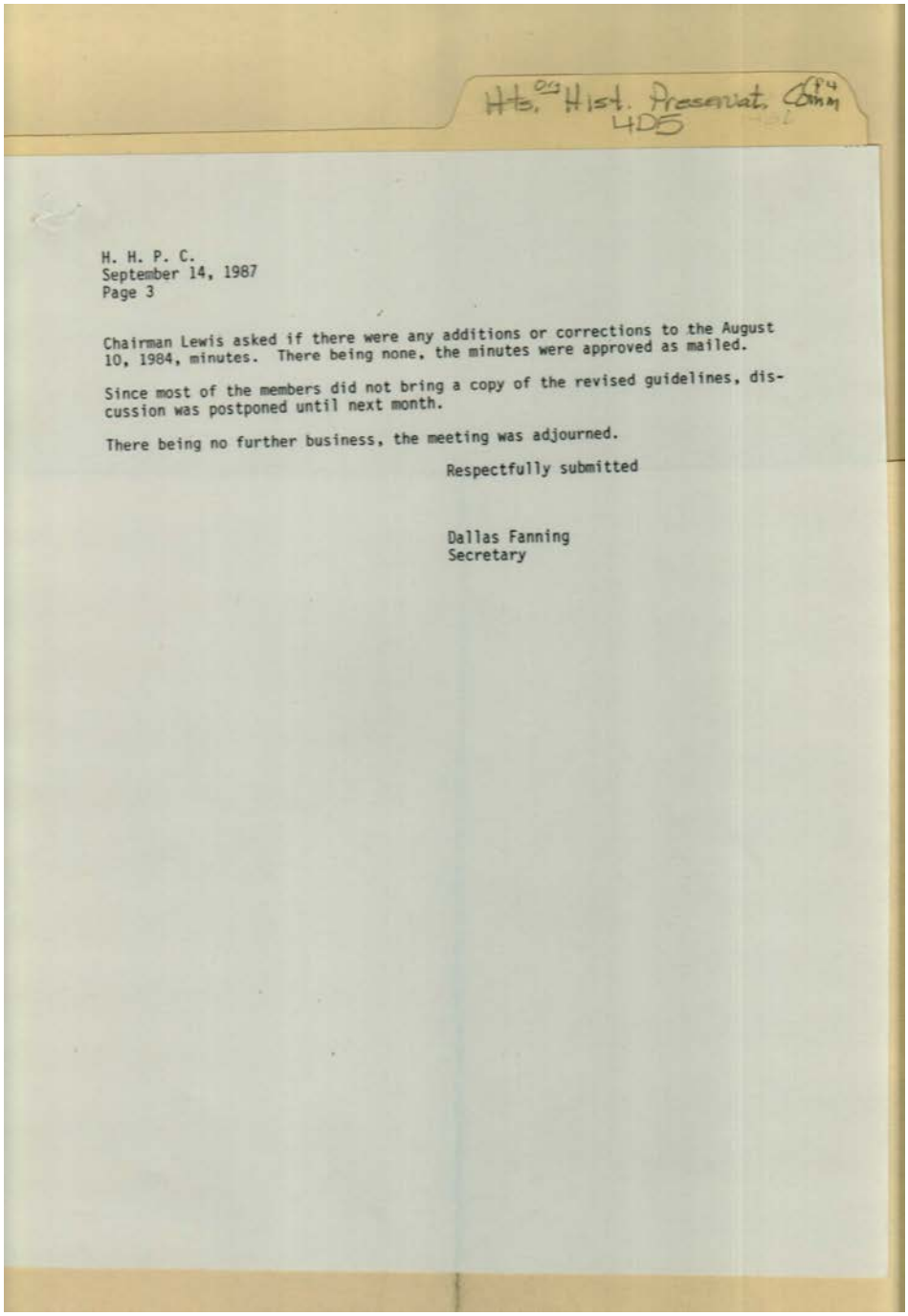
Adair, Ms.
Burwell,
Jones,
Montgomery, Eugene
Roberts, Dr.
Smith, Tony, Mrs.
Taylor,

Types:

minutes

Dates:

Sep 14, 1987



H. H. P. C.
September 14, 1987
Page 3

Chairman Lewis asked if there were any additions or corrections to the August 10, 1984, minutes. There being none, the minutes were approved as mailed.

Since most of the members did not bring a copy of the revised guidelines, discussion was postponed until next month.

There being no further business, the meeting was adjourned.

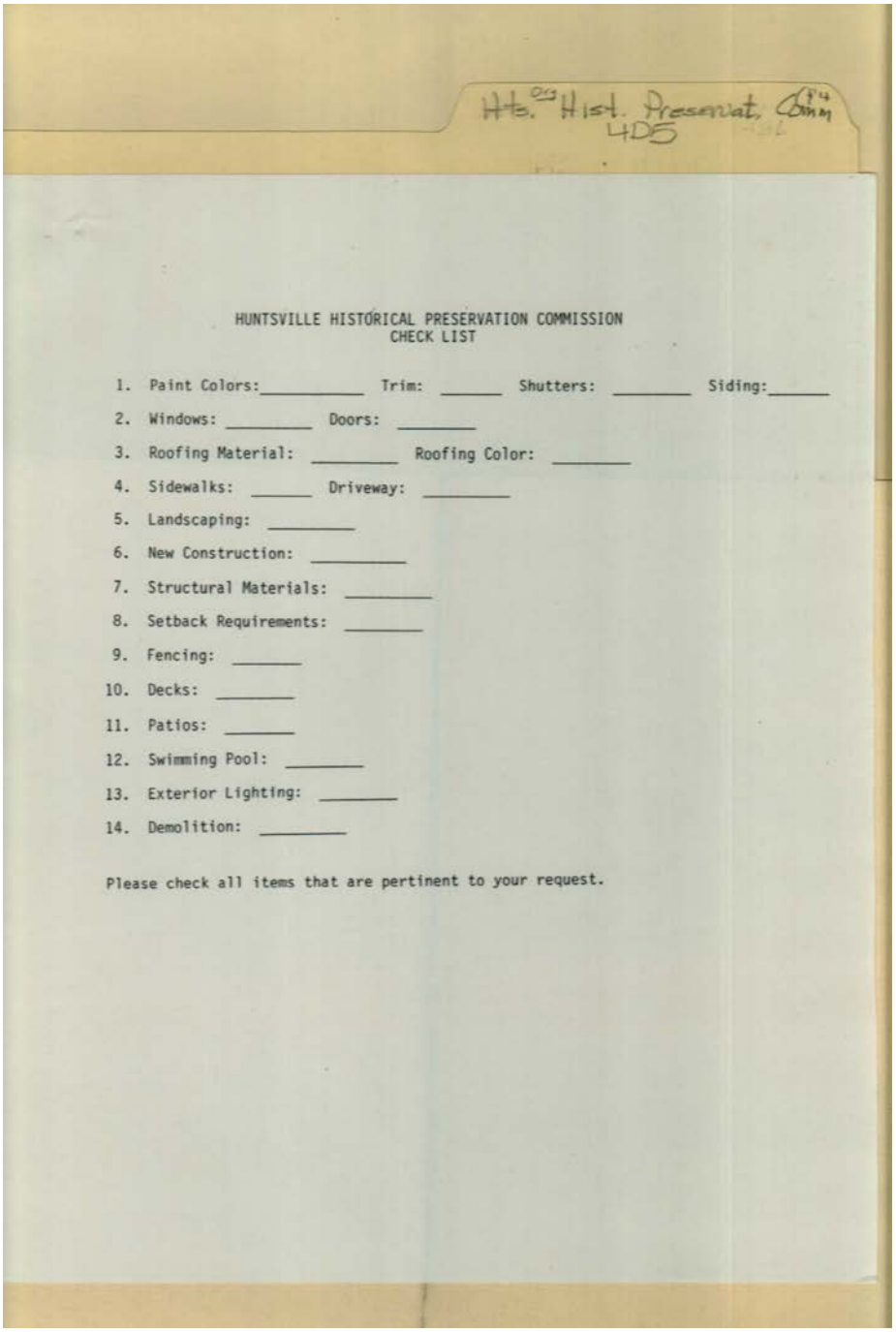
Respectfully submitted

Dallas Fanning
Secretary

Names:
Fanning, Dallas Lewis,

Types:
minutes

Dates:
Sep 14, 1987



Names:
Historical Commission

Types:
Checklist
list

Hts. Hist. Preservat. Comm
4D5

CASE NO. --

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION

CITY OF HUNTSVILLE, ALABAMA

THE UNDERSIGNED REQUEST TO BE PUT ON THE AGENDA OF THE HUNTSVILLE HISTORICAL PRESERVATION COMMISSION ON: 12 Oct 1987
DATE

TO PRESENT A REQUEST TO DEMOLISH ( ) ERECT ( ) ALTER (X) REPAIR (X) THE PROPERTY.

LOCATION: 413 McClung Ave (c.1834 Leroy Pope Walker)

OWNER'S NAME: Peter Lowe

BRIEF DESCRIPTION OF WORK TO BE PERFORMED: The c.1920's existing terrace reinforced conc. floor slab is deteriorated (see photos). Replace slab & cover w/ limestone & brick. Cover deteriorated conc. steps w/ limestone. Replace conc. terrace-wall caps w/ limestone if cost & tech. considerations allow. Replace broken conc. walks w/ brick Brick to be Bickerstaff Woodmould Regency, like exist. walks at the cast-iron terrace lights. Rewire the existing 1920's service wiring.

Harvie P. Jones, FAIA
APPELLANT

OWNER () ARCH. (X) CONTRACTOR ()

DISPOSITION BY HUNTSVILLE HISTORICAL PRESERVATION COMMISSION:

APPROVAL: ______

DISAPPROVED: ______

APPROVED AS MODIFIED: ______

DATE: ______

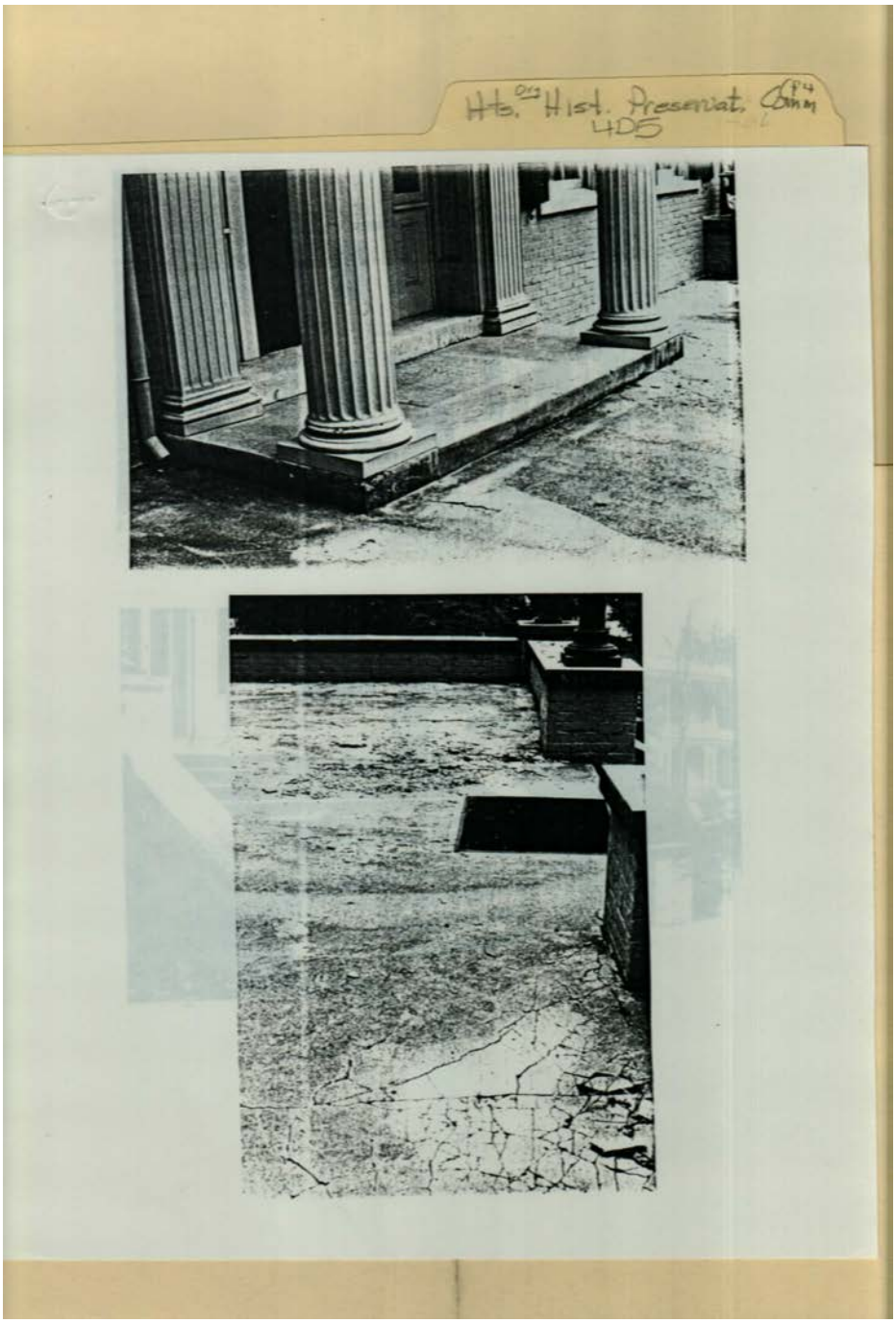
Copy: Peter Lowe
File

Names:
Jones, Harvie P.
Lowe, Peter

Places:
Huntsville, AL

Types:
application

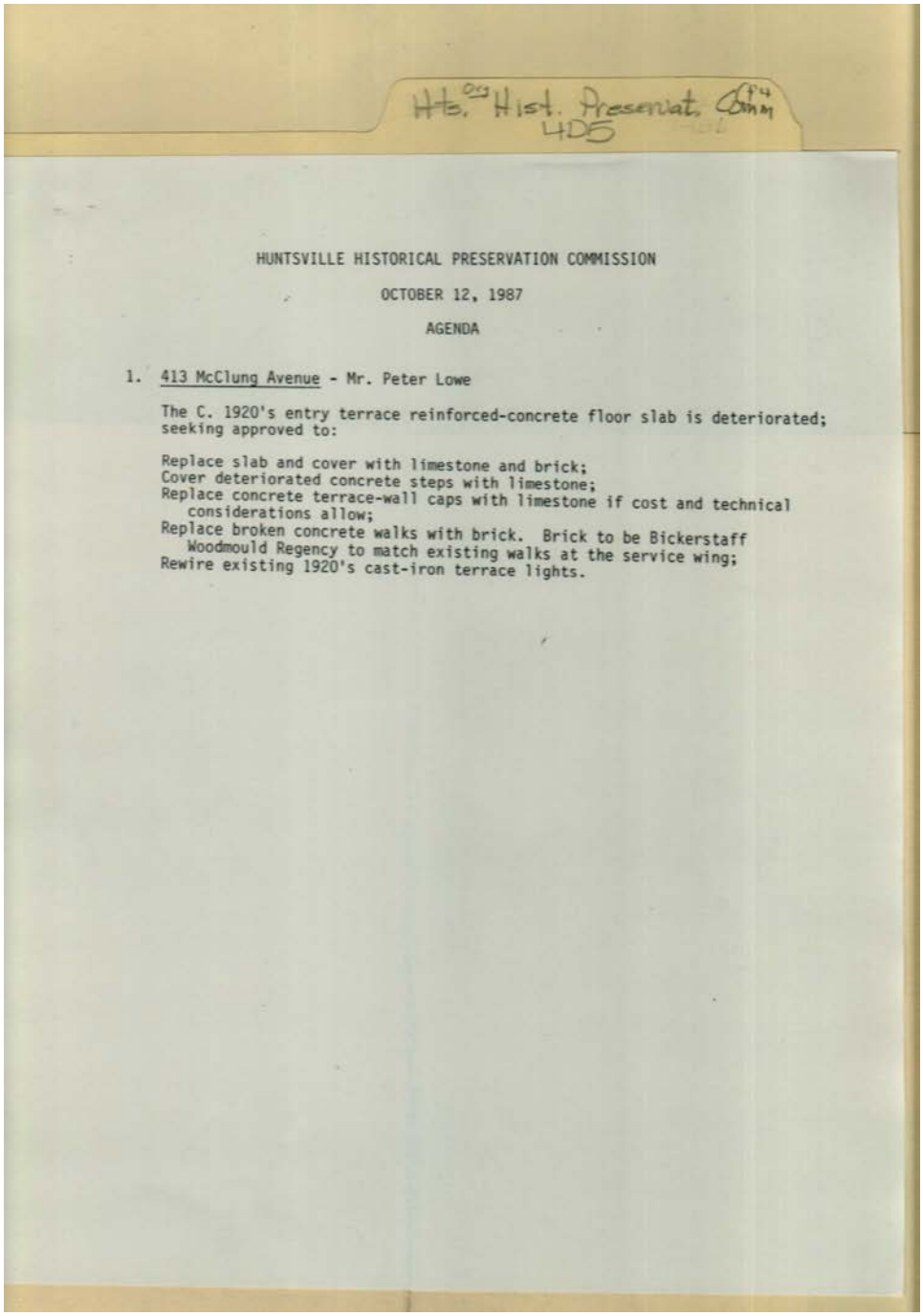
Dates:
Oct 12, 1987



Types:
photo

Names:
413 McClung Ave.

Types:
photo



Hts. Hist. Preservat. Comm
4D5

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION

OCTOBER 12, 1987

AGENDA

1. 413 McClung Avenue - Mr. Peter Lowe

The C. 1920's entry terrace reinforced-concrete floor slab is deteriorated; seeking approved to:

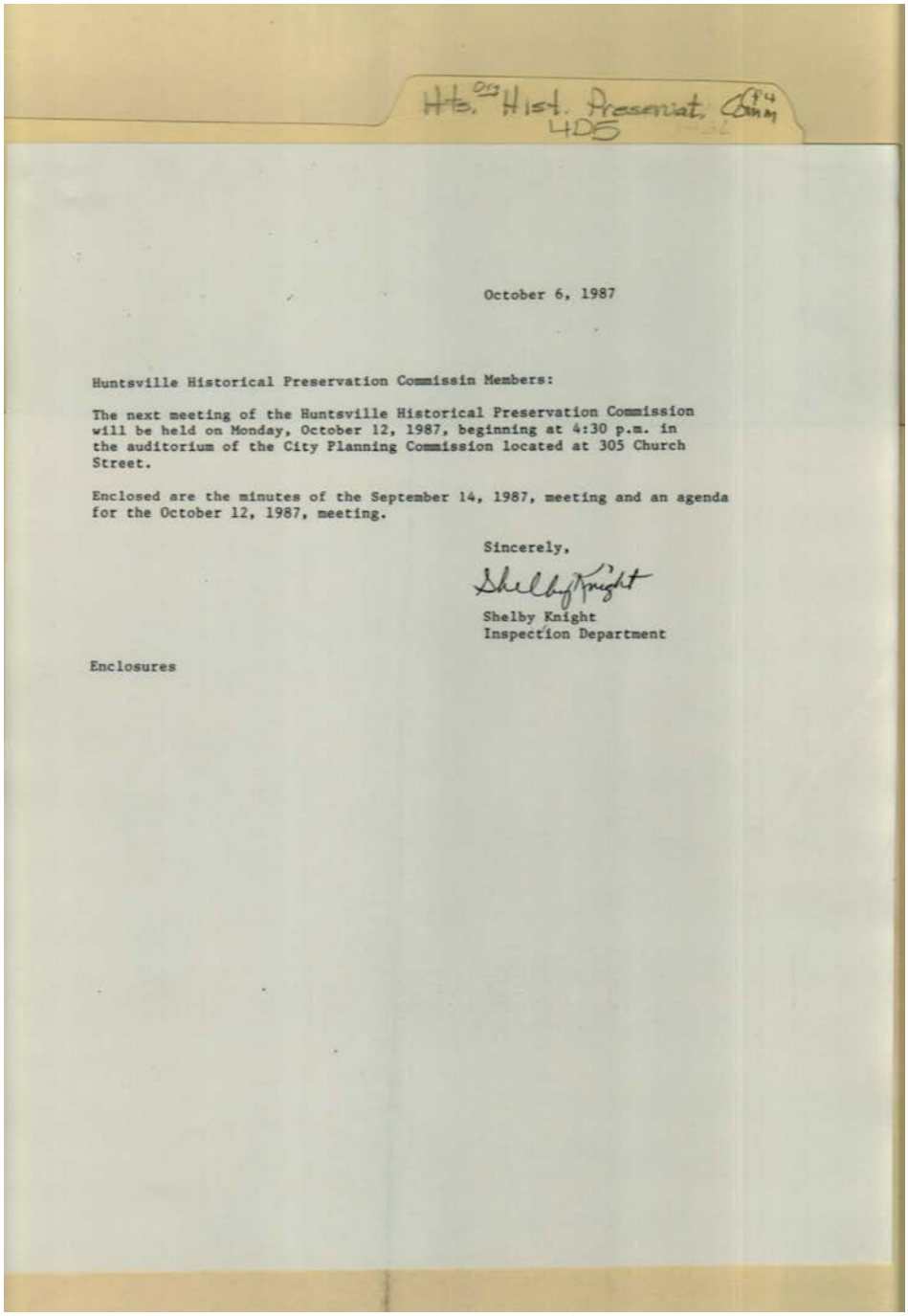
Replace slab and cover with limestone and brick;
Cover deteriorated concrete steps with limestone;
Replace concrete terrace-wall caps with limestone if cost and technical considerations allow;
Replace broken concrete walks with brick. Brick to be Bickerstaff Woodmould Regency to match existing walks at the service wing;
Rewire existing 1920's cast-iron terrace lights.

Names:
Lowe, Peter

Places:
Huntsville, AL

Types:
agenda

Dates:
Oct 12, 1987



Hts. Hist. Preservat. Comm
405

October 6, 1987

Huntsville Historical Preservation Commissin Members:

The next meeting of the Huntsville Historical Preservation Commission will be held on Monday, October 12, 1987, beginning at 4:30 p.m. in the auditorium of the City Planning Commission located at 305 Church Street.

Enclosed are the minutes of the September 14, 1987, meeting and an agenda for the October 12, 1987, meeting.

Sincerely,

Shelby Knight

Shelby Knight
Inspection Department

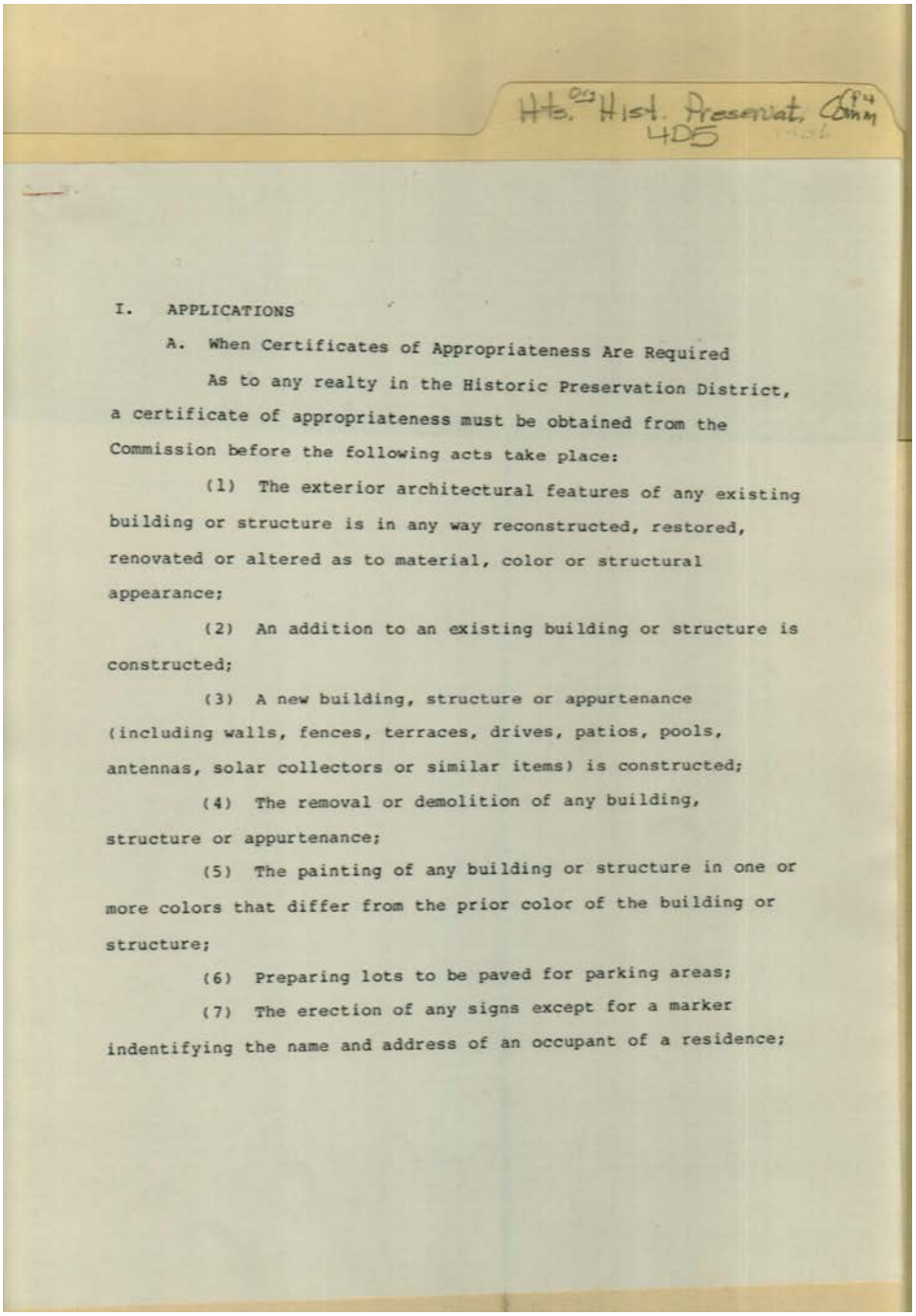
Enclosures

Names:
Knight, Shelby

Places:
Huntsville, AL

Types:
correspondence

Dates:
Oct 06, 1987



Hts. Hist. Preservat. Comm
4D5

I. APPLICATIONS

A. When Certificates of Appropriateness Are Required

As to any realty in the Historic Preservation District, a certificate of appropriateness must be obtained from the Commission before the following acts take place:

(1) The exterior architectural features of any existing building or structure is in any way reconstructed, restored, renovated or altered as to material, color or structural appearance;

(2) An addition to an existing building or structure is constructed;

(3) A new building, structure or appurtenance (including walls, fences, terraces, drives, patios, pools, antennas, solar collectors or similar items) is constructed;

(4) The removal or demolition of any building, structure or appurtenance;

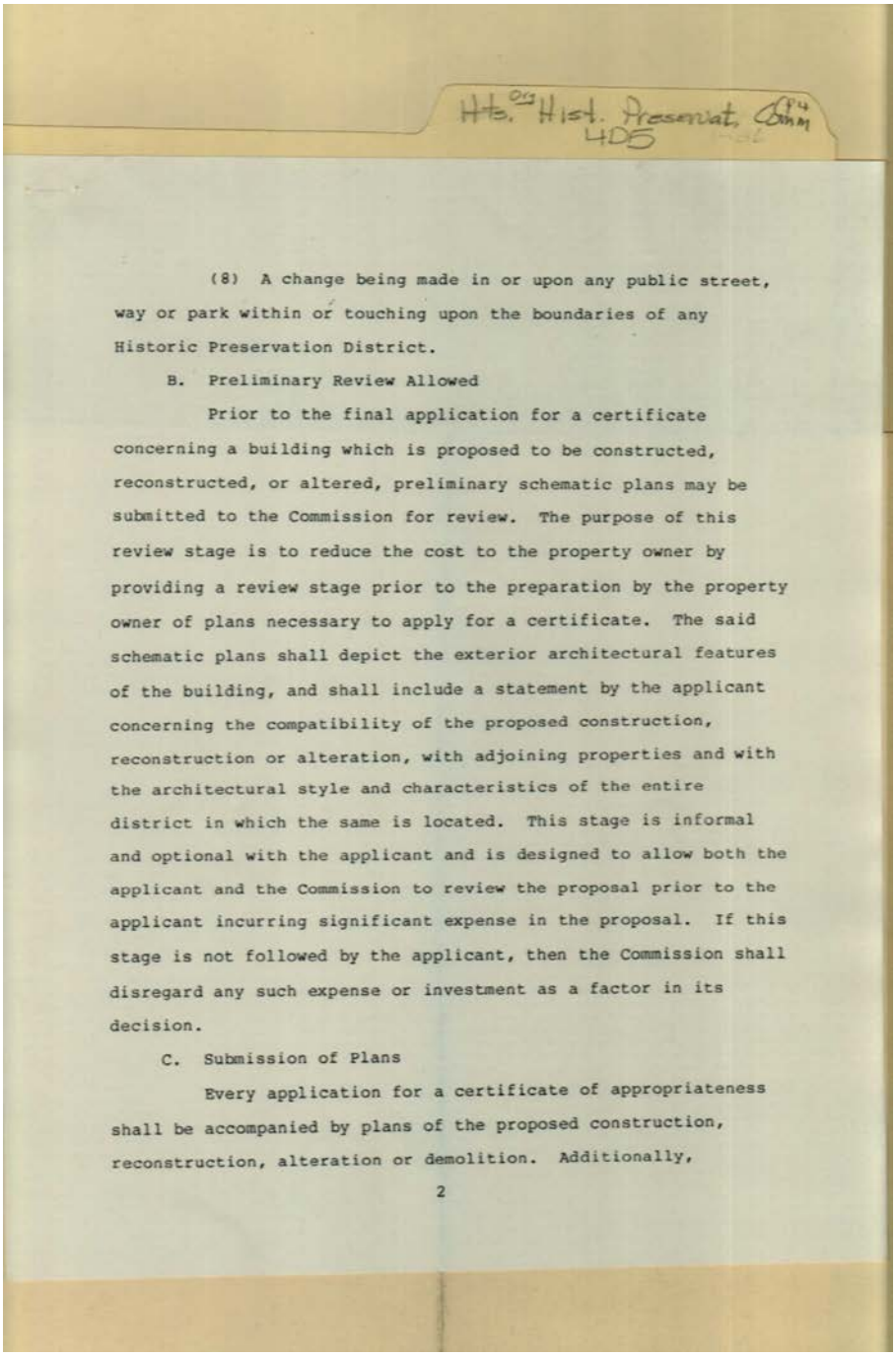
(5) The painting of any building or structure in one or more colors that differ from the prior color of the building or structure;

(6) Preparing lots to be paved for parking areas;

(7) The erection of any signs except for a marker indentifying the name and address of an occupant of a residence;

Names:
Applications

Types:
regulations



Hts. Org. Hist. Preservat. Comm
4D5

(8) A change being made in or upon any public street, way or park within or touching upon the boundaries of any Historic Preservation District.

B. Preliminary Review Allowed

Prior to the final application for a certificate concerning a building which is proposed to be constructed, reconstructed, or altered, preliminary schematic plans may be submitted to the Commission for review. The purpose of this review stage is to reduce the cost to the property owner by providing a review stage prior to the preparation by the property owner of plans necessary to apply for a certificate. The said schematic plans shall depict the exterior architectural features of the building, and shall include a statement by the applicant concerning the compatibility of the proposed construction, reconstruction or alteration, with adjoining properties and with the architectural style and characteristics of the entire district in which the same is located. This stage is informal and optional with the applicant and is designed to allow both the applicant and the Commission to review the proposal prior to the applicant incurring significant expense in the proposal. If this stage is not followed by the applicant, then the Commission shall disregard any such expense or investment as a factor in its decision.

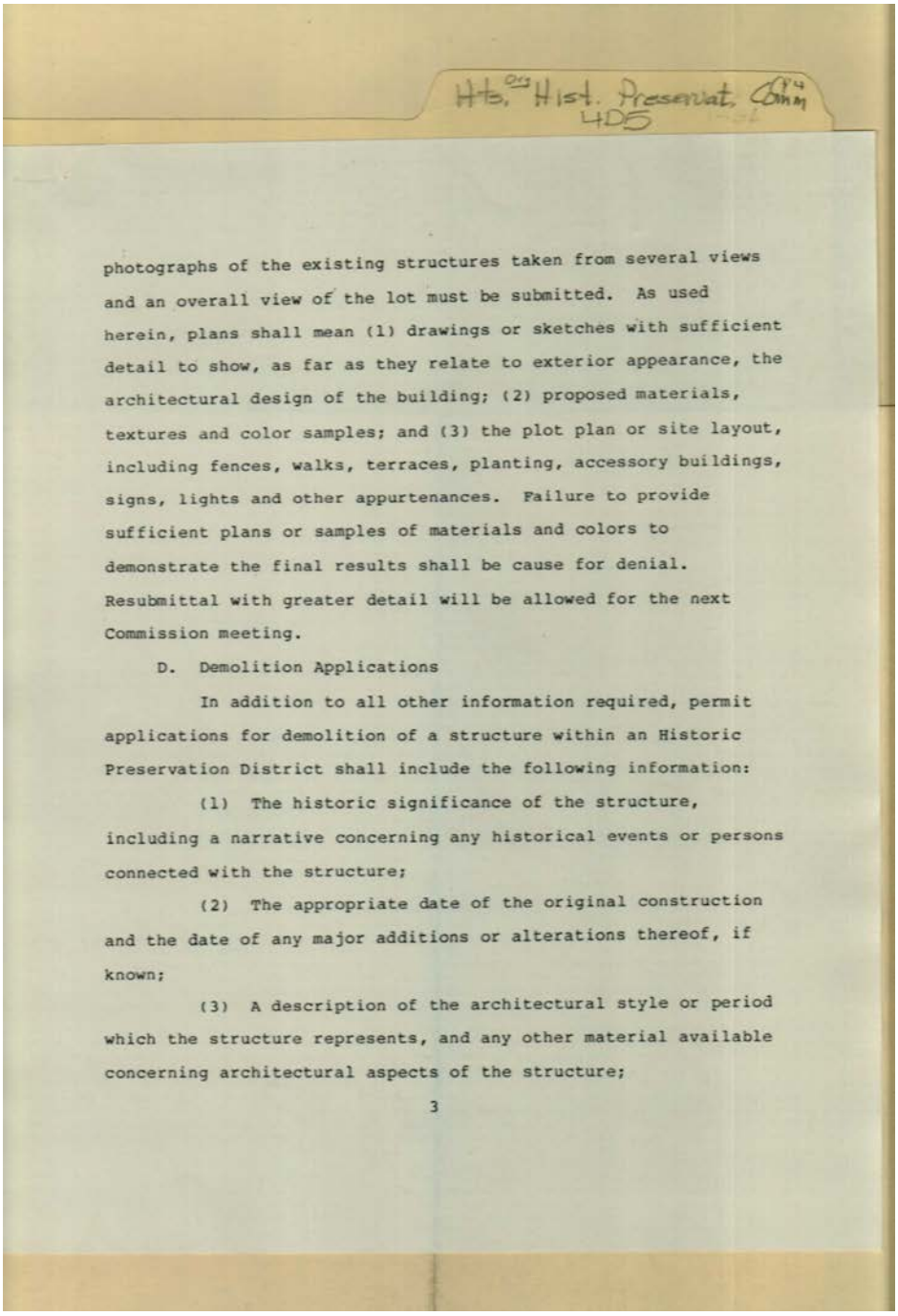
C. Submission of Plans

Every application for a certificate of appropriateness shall be accompanied by plans of the proposed construction, reconstruction, alteration or demolition. Additionally,

2

Names:
Applications

Types:
regulations



Hts. Dev Hist. Preservat. Comm '94
4D5

photographs of the existing structures taken from several views and an overall view of the lot must be submitted. As used herein, plans shall mean (1) drawings or sketches with sufficient detail to show, as far as they relate to exterior appearance, the architectural design of the building; (2) proposed materials, textures and color samples; and (3) the plot plan or site layout, including fences, walks, terraces, planting, accessory buildings, signs, lights and other appurtenances. Failure to provide sufficient plans or samples of materials and colors to demonstrate the final results shall be cause for denial. Resubmittal with greater detail will be allowed for the next Commission meeting.

D. Demolition Applications

In addition to all other information required, permit applications for demolition of a structure within an Historic Preservation District shall include the following information:

(1) The historic significance of the structure, including a narrative concerning any historical events or persons connected with the structure;

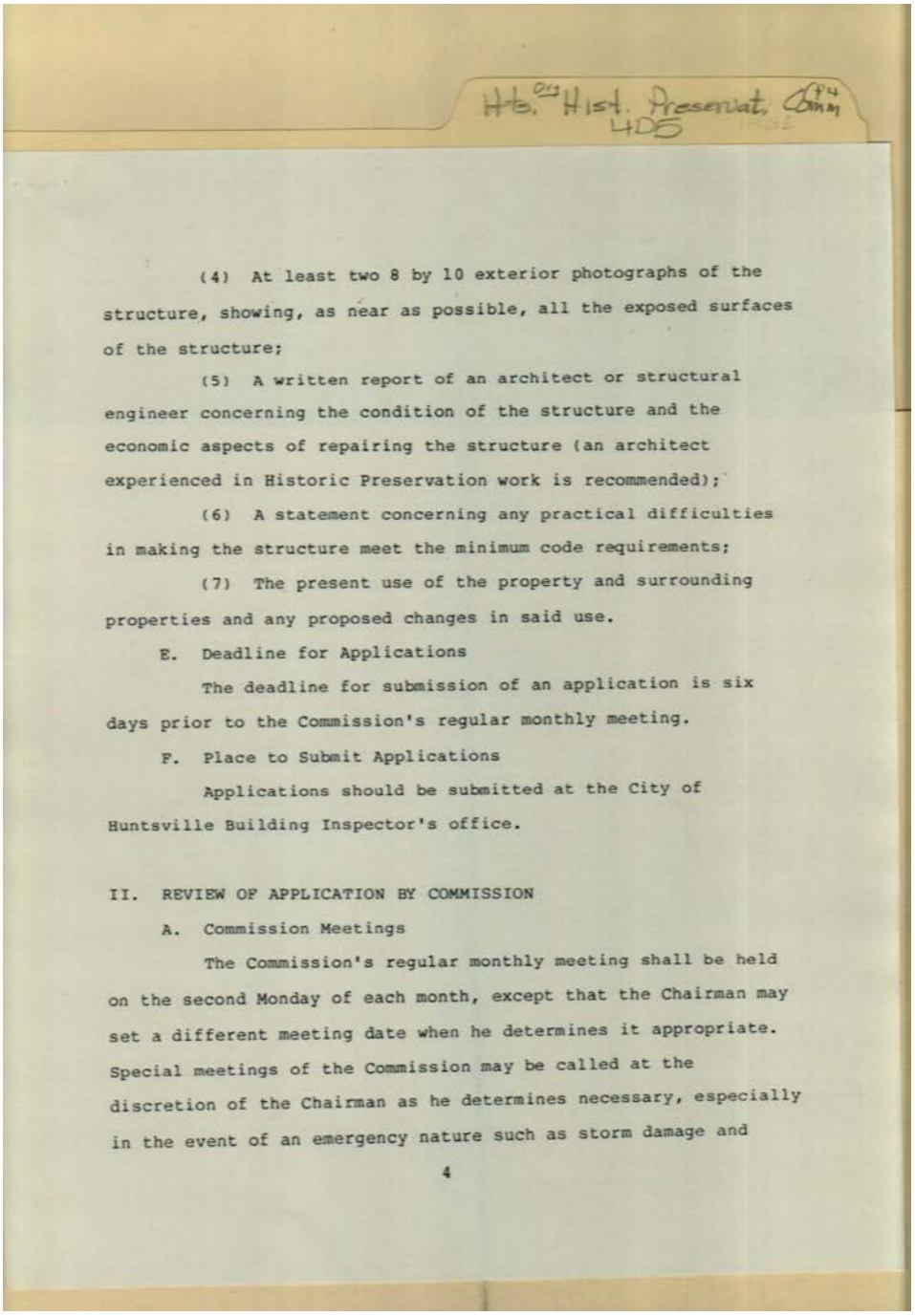
(2) The appropriate date of the original construction and the date of any major additions or alterations thereof, if known;

(3) A description of the architectural style or period which the structure represents, and any other material available concerning architectural aspects of the structure;

3

Names:
Applications

Types:
regulations



Hts. City Hist. Preservat. Comm
4D5

(4) At least two 8 by 10 exterior photographs of the structure, showing, as near as possible, all the exposed surfaces of the structure;

(5) A written report of an architect or structural engineer concerning the condition of the structure and the economic aspects of repairing the structure (an architect experienced in Historic Preservation work is recommended);

(6) A statement concerning any practical difficulties in making the structure meet the minimum code requirements;

(7) The present use of the property and surrounding properties and any proposed changes in said use.

E. Deadline for Applications

The deadline for submission of an application is six days prior to the Commission's regular monthly meeting.

F. Place to Submit Applications

Applications should be submitted at the City of Huntsville Building Inspector's office.

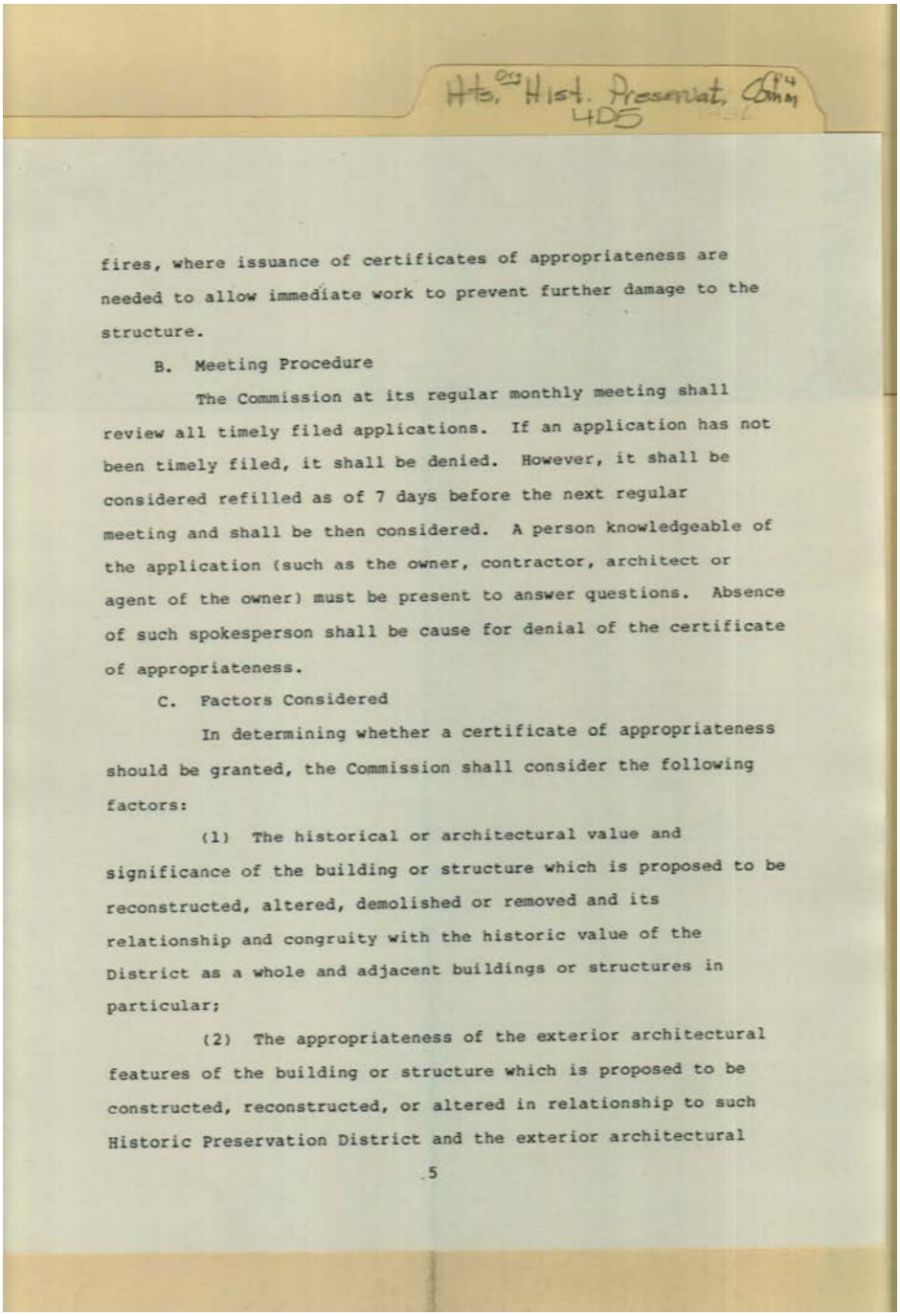
II. REVIEW OF APPLICATION BY COMMISSION

A. Commission Meetings

The Commission's regular monthly meeting shall be held on the second Monday of each month, except that the Chairman may set a different meeting date when he determines it appropriate. Special meetings of the Commission may be called at the discretion of the Chairman as he determines necessary, especially in the event of an emergency nature such as storm damage and

Names:
Applications

Types:
regulations



fires, where issuance of certificates of appropriateness are needed to allow immediate work to prevent further damage to the structure.

B. Meeting Procedure

The Commission at its regular monthly meeting shall review all timely filed applications. If an application has not been timely filed, it shall be denied. However, it shall be considered refilled as of 7 days before the next regular meeting and shall be then considered. A person knowledgeable of the application (such as the owner, contractor, architect or agent of the owner) must be present to answer questions. Absence of such spokesperson shall be cause for denial of the certificate of appropriateness.

C. Factors Considered

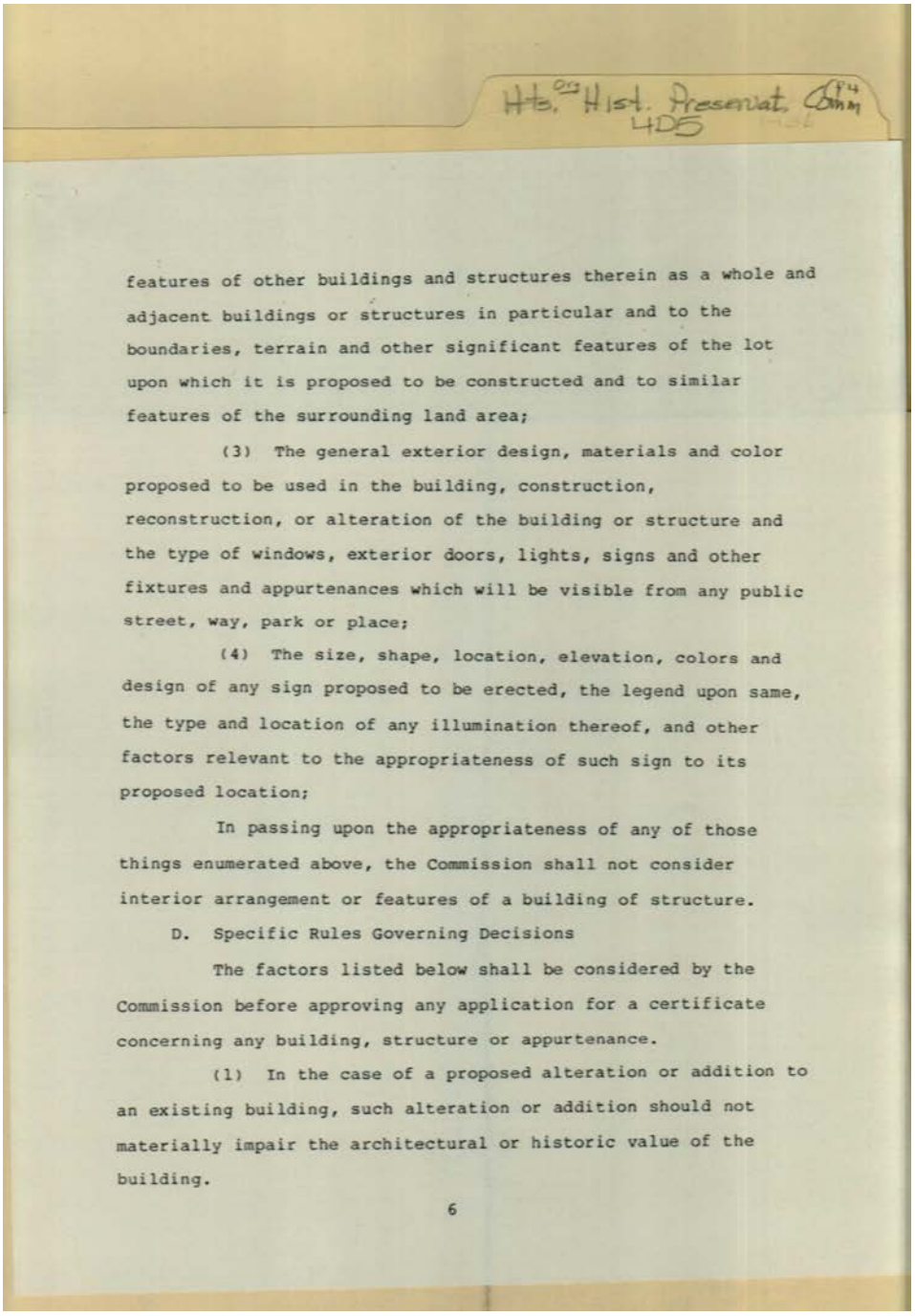
In determining whether a certificate of appropriateness should be granted, the Commission shall consider the following factors:

(1) The historical or architectural value and significance of the building or structure which is proposed to be reconstructed, altered, demolished or removed and its relationship and congruity with the historic value of the District as a whole and adjacent buildings or structures in particular;

(2) The appropriateness of the exterior architectural features of the building or structure which is proposed to be constructed, reconstructed, or altered in relationship to such Historic Preservation District and the exterior architectural

Names:
Applications

Types:
regulations



features of other buildings and structures therein as a whole and adjacent buildings or structures in particular and to the boundaries, terrain and other significant features of the lot upon which it is proposed to be constructed and to similar features of the surrounding land area;

(3) The general exterior design, materials and color proposed to be used in the building, construction, reconstruction, or alteration of the building or structure and the type of windows, exterior doors, lights, signs and other fixtures and appurtenances which will be visible from any public street, way, park or place;

(4) The size, shape, location, elevation, colors and design of any sign proposed to be erected, the legend upon same, the type and location of any illumination thereof, and other factors relevant to the appropriateness of such sign to its proposed location;

In passing upon the appropriateness of any of those things enumerated above, the Commission shall not consider interior arrangement or features of a building of structure.

D. Specific Rules Governing Decisions

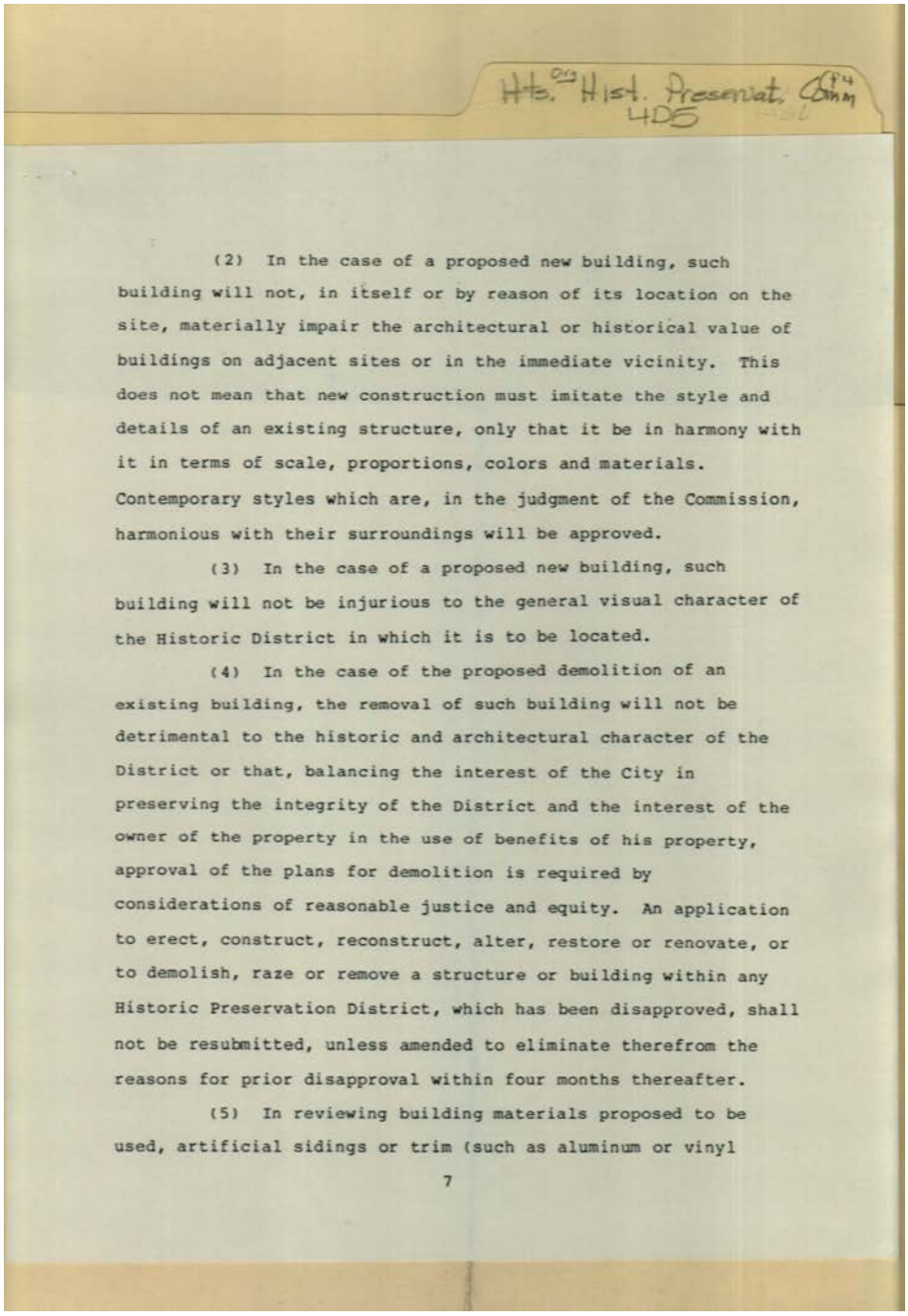
The factors listed below shall be considered by the Commission before approving any application for a certificate concerning any building, structure or appurtenance.

(1) In the case of a proposed alteration or addition to an existing building, such alteration or addition should not materially impair the architectural or historic value of the building.

6

Names:
Applications

Types:
regulations



Hts. Hist. Preservat. Comm
4D5

(2) In the case of a proposed new building, such building will not, in itself or by reason of its location on the site, materially impair the architectural or historical value of buildings on adjacent sites or in the immediate vicinity. This does not mean that new construction must imitate the style and details of an existing structure, only that it be in harmony with it in terms of scale, proportions, colors and materials. Contemporary styles which are, in the judgment of the Commission, harmonious with their surroundings will be approved.

(3) In the case of a proposed new building, such building will not be injurious to the general visual character of the Historic District in which it is to be located.

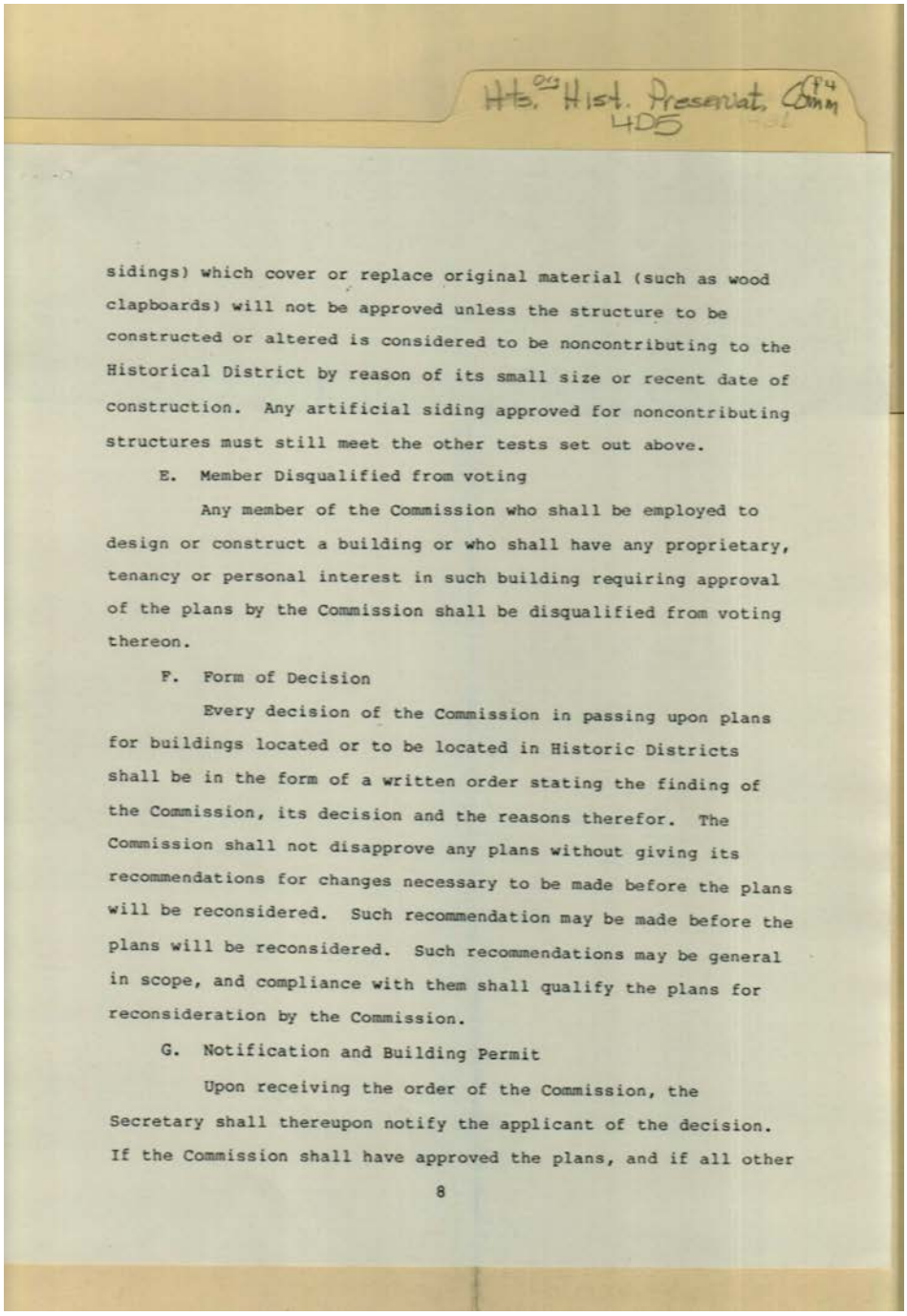
(4) In the case of the proposed demolition of an existing building, the removal of such building will not be detrimental to the historic and architectural character of the District or that, balancing the interest of the City in preserving the integrity of the District and the interest of the owner of the property in the use of benefits of his property, approval of the plans for demolition is required by considerations of reasonable justice and equity. An application to erect, construct, reconstruct, alter, restore or renovate, or to demolish, raze or remove a structure or building within any Historic Preservation District, which has been disapproved, shall not be resubmitted, unless amended to eliminate therefrom the reasons for prior disapproval within four months thereafter.

(5) In reviewing building materials proposed to be used, artificial sidings or trim (such as aluminum or vinyl

7

Names:
Applications

Types:
regulations



sidings) which cover or replace original material (such as wood clapboards) will not be approved unless the structure to be constructed or altered is considered to be noncontributing to the Historical District by reason of its small size or recent date of construction. Any artificial siding approved for noncontributing structures must still meet the other tests set out above.

E. Member Disqualified from voting

Any member of the Commission who shall be employed to design or construct a building or who shall have any proprietary, tenancy or personal interest in such building requiring approval of the plans by the Commission shall be disqualified from voting thereon.

F. Form of Decision

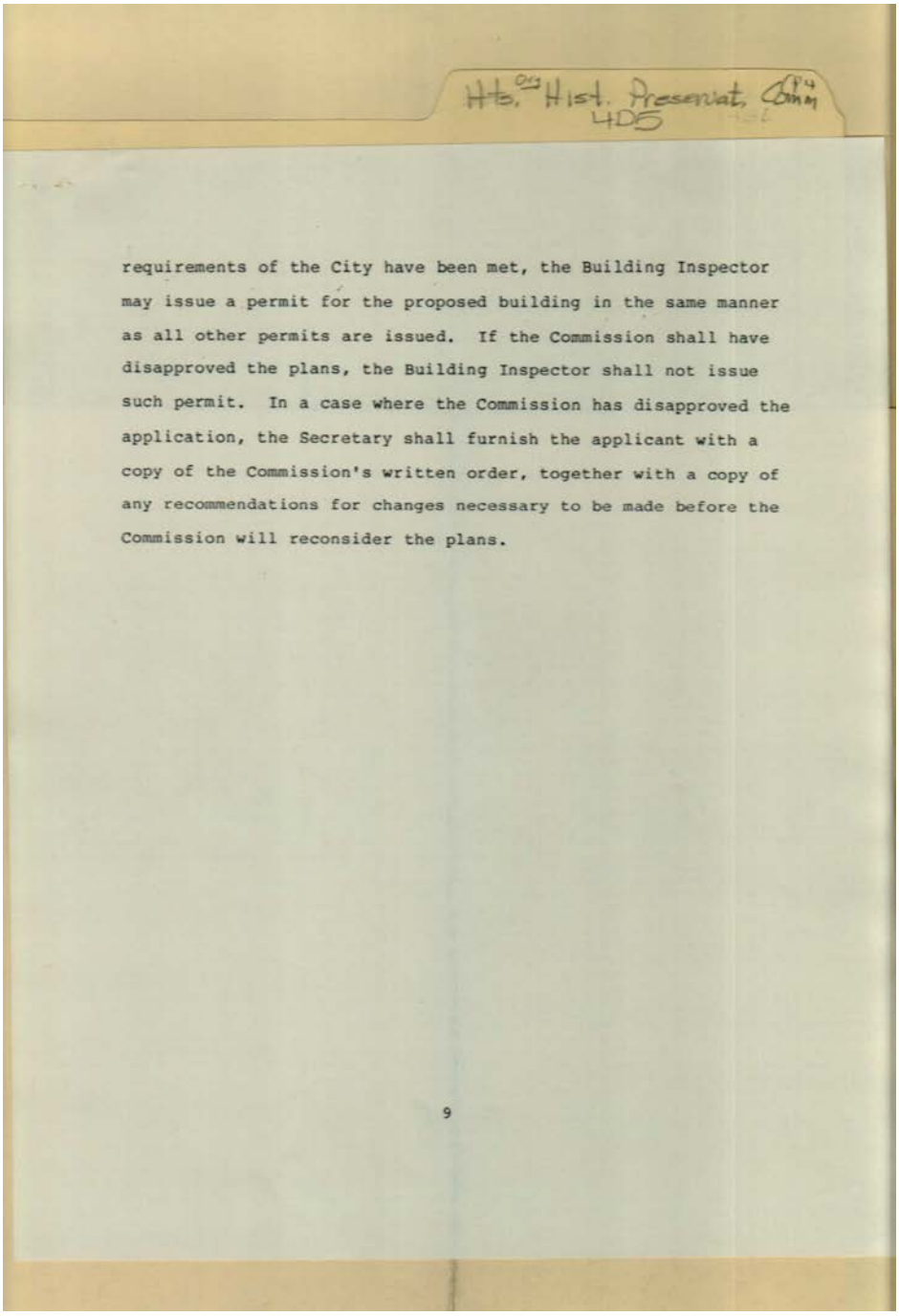
Every decision of the Commission in passing upon plans for buildings located or to be located in Historic Districts shall be in the form of a written order stating the finding of the Commission, its decision and the reasons therefor. The Commission shall not disapprove any plans without giving its recommendations for changes necessary to be made before the plans will be reconsidered. Such recommendation may be made before the plans will be reconsidered. Such recommendations may be general in scope, and compliance with them shall qualify the plans for reconsideration by the Commission.

G. Notification and Building Permit

Upon receiving the order of the Commission, the Secretary shall thereupon notify the applicant of the decision. If the Commission shall have approved the plans, and if all other

Names:
Applications

Types:
regulations

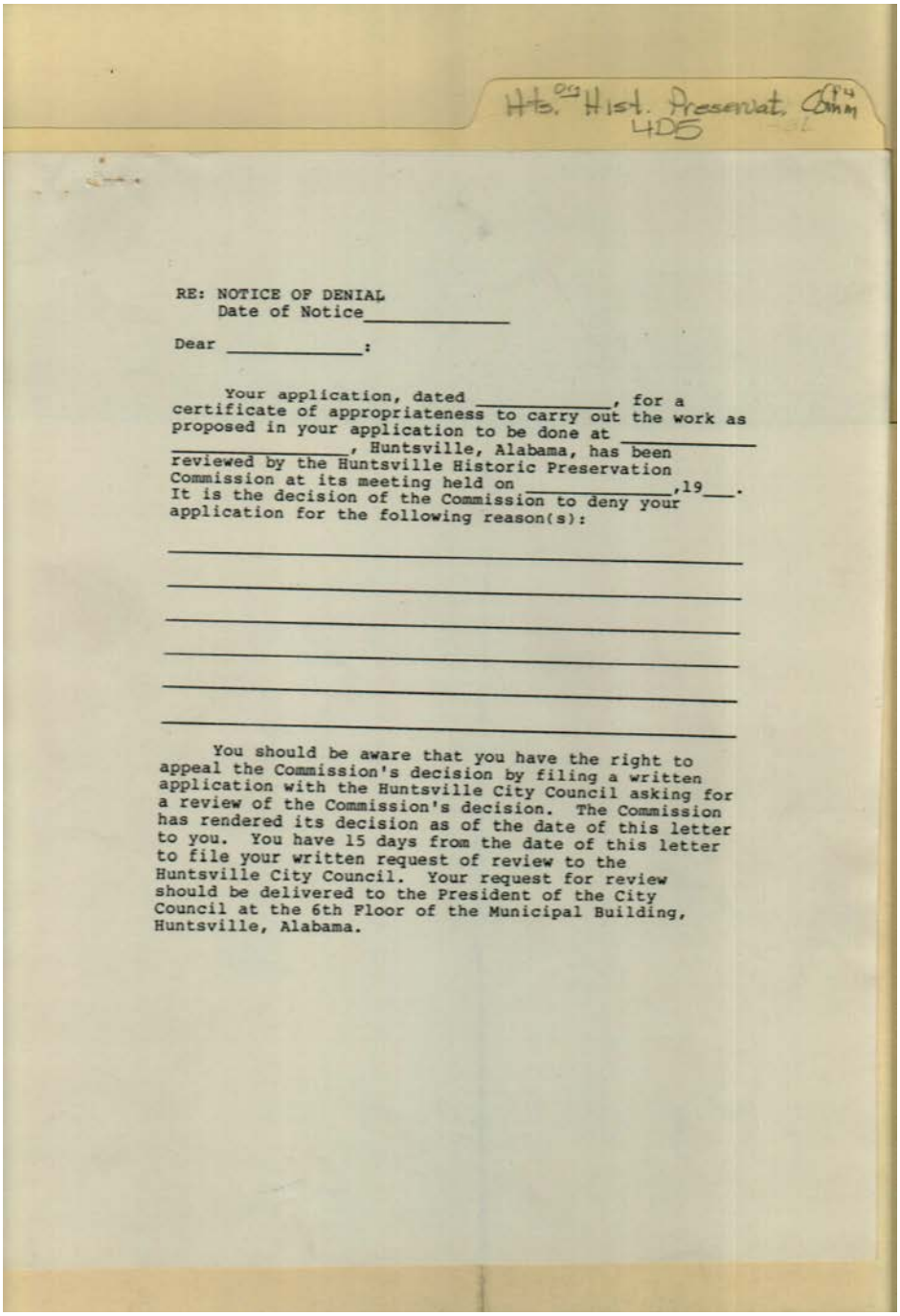


requirements of the City have been met, the Building Inspector may issue a permit for the proposed building in the same manner as all other permits are issued. If the Commission shall have disapproved the plans, the Building Inspector shall not issue such permit. In a case where the Commission has disapproved the application, the Secretary shall furnish the applicant with a copy of the Commission's written order, together with a copy of any recommendations for changes necessary to be made before the Commission will reconsider the plans.

9

Names:
Applications

Types:
regulations



Hts. Hist. Preservat. 4D5

RE: NOTICE OF DENIAL
Date of Notice_____

Dear _____:

Your application, dated _____, for a certificate of appropriateness to carry out the work as proposed in your application to be done at _____, Huntsville, Alabama, has been reviewed by the Huntsville Historic Preservation Commission at its meeting held on _____,19___. It is the decision of the Commission to deny your application for the following reason(s):

_____

_____

_____

_____

_____

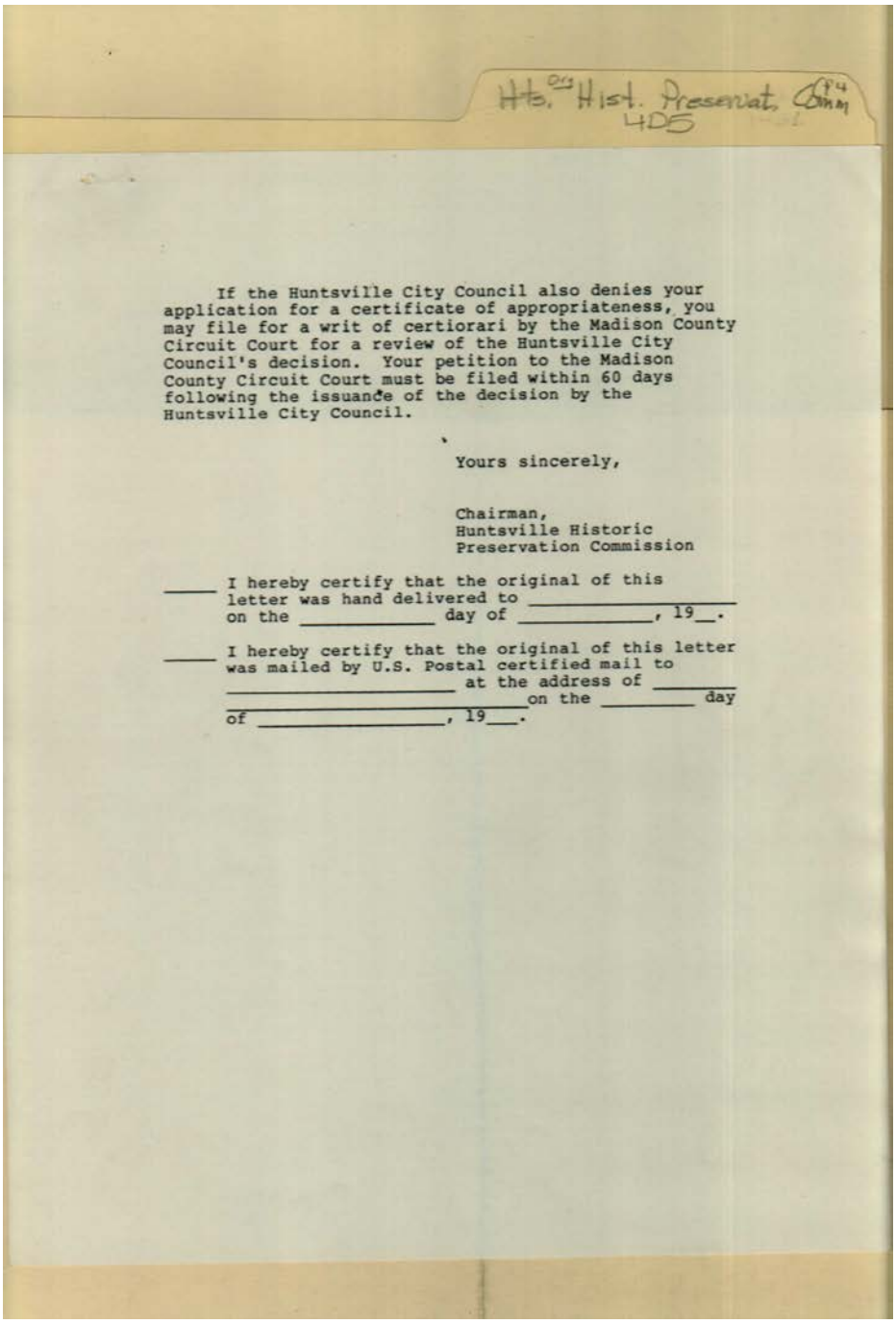
_____

You should be aware that you have the right to appeal the Commission's decision by filing a written application with the Huntsville City Council asking for a review of the Commission's decision. The Commission has rendered its decision as of the date of this letter to you. You have 15 days from the date of this letter to file your written request of review to the Huntsville City Council. Your request for review should be delivered to the President of the City Council at the 6th Floor of the Municipal Building, Huntsville, Alabama.

Names:
Denial Notice

Places:
Huntsville, AL

Types:
form



Hts. Org. Hist. Preservat. Comm
4D5

If the Huntsville City Council also denies your application for a certificate of appropriateness, you may file for a writ of certiorari by the Madison County Circuit Court for a review of the Huntsville City Council's decision. Your petition to the Madison County Circuit Court must be filed within 60 days following the issuance of the decision by the Huntsville City Council.

Yours sincerely,

Chairman,
Huntsville Historic
Preservation Commission

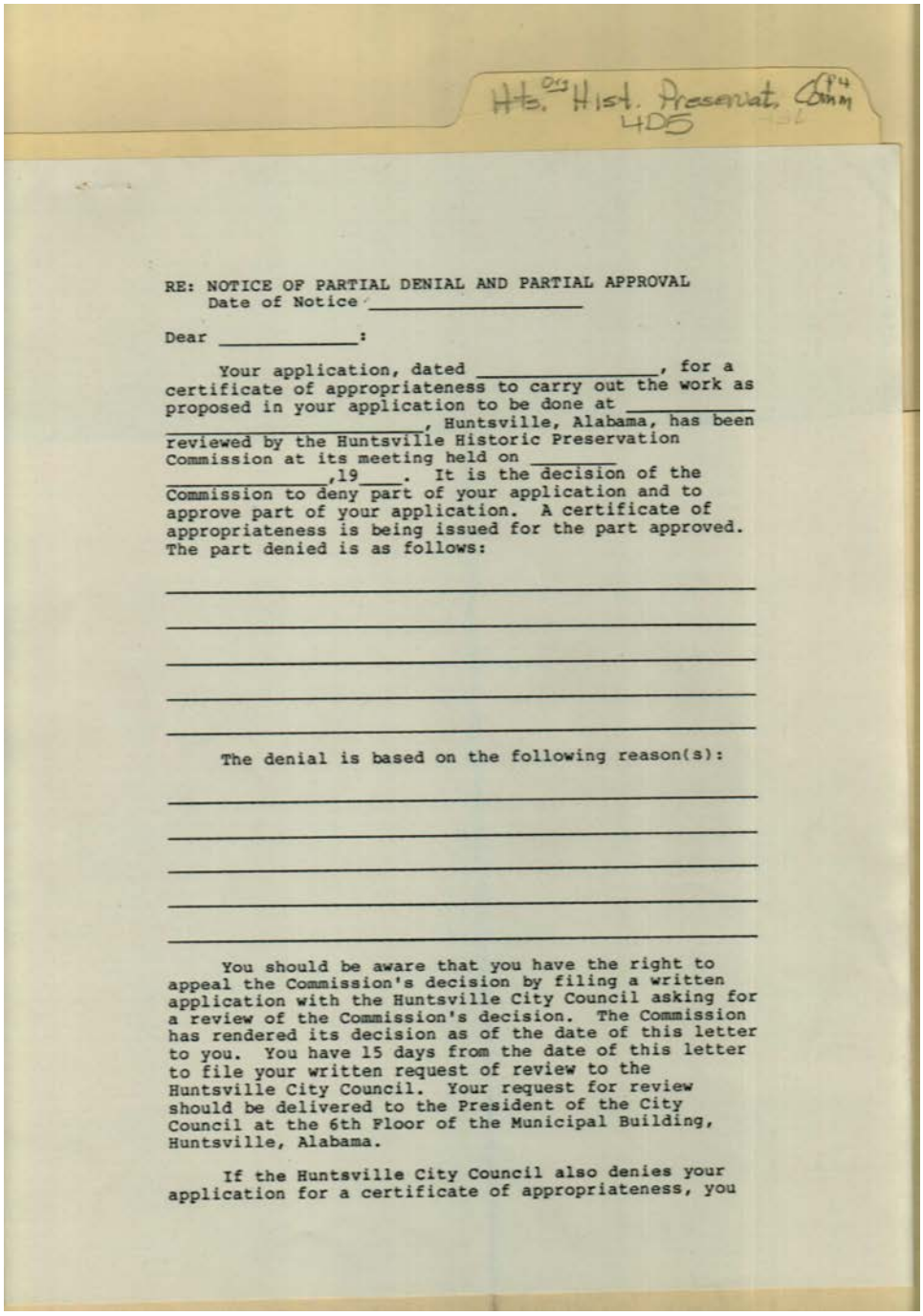
_____ I hereby certify that the original of this letter was hand delivered to _____ on the _____ day of _____, 19__.

_____ I hereby certify that the original of this letter was mailed by U.S. Postal certified mail to _____ at the address of _____ on the _____ day of _____, 19__.

Names:
Denial Notice

Places:
Huntsville, AL

Types:
form



Hts. Dev Hist. Preservat. Comm 84
405

RE: NOTICE OF PARTIAL DENIAL AND PARTIAL APPROVAL
Date of Notice _____

Dear _____:

Your application, dated _____, for a certificate of appropriateness to carry out the work as proposed in your application to be done at _____ _____, Huntsville, Alabama, has been reviewed by the Huntsville Historic Preservation Commission at its meeting held on _____ _____,19____. It is the decision of the Commission to deny part of your application and to approve part of your application. A certificate of appropriateness is being issued for the part approved. The part denied is as follows:

_____

_____

_____

_____

_____

The denial is based on the following reason(s):

_____

_____

_____

_____

_____

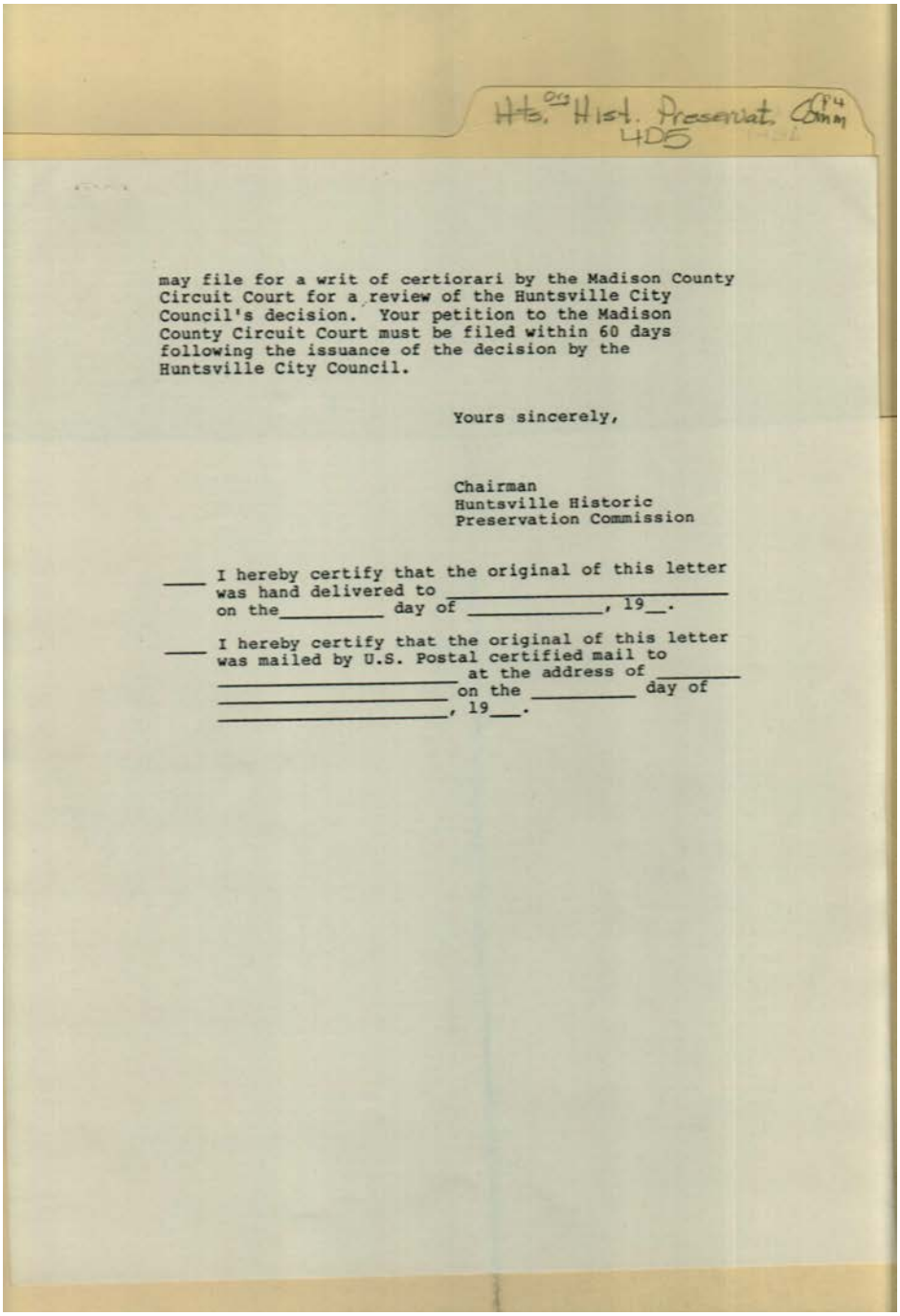
You should be aware that you have the right to appeal the Commission's decision by filing a written application with the Huntsville City Council asking for a review of the Commission's decision. The Commission has rendered its decision as of the date of this letter to you. You have 15 days from the date of this letter to file your written request of review to the Huntsville City Council. Your request for review should be delivered to the President of the City Council at the 6th Floor of the Municipal Building, Huntsville, Alabama.

If the Huntsville City Council also denies your application for a certificate of appropriateness, you

Names:
Partial Denial Notice

Places:
Huntsville, AL

Types:
form



Hts. Dis Hist. Preservat. F4
4D5

may file for a writ of certiorari by the Madison County Circuit Court for a review of the Huntsville City Council's decision. Your petition to the Madison County Circuit Court must be filed within 60 days following the issuance of the decision by the Huntsville City Council.

Yours sincerely,

Chairman
Huntsville Historic
Preservation Commission

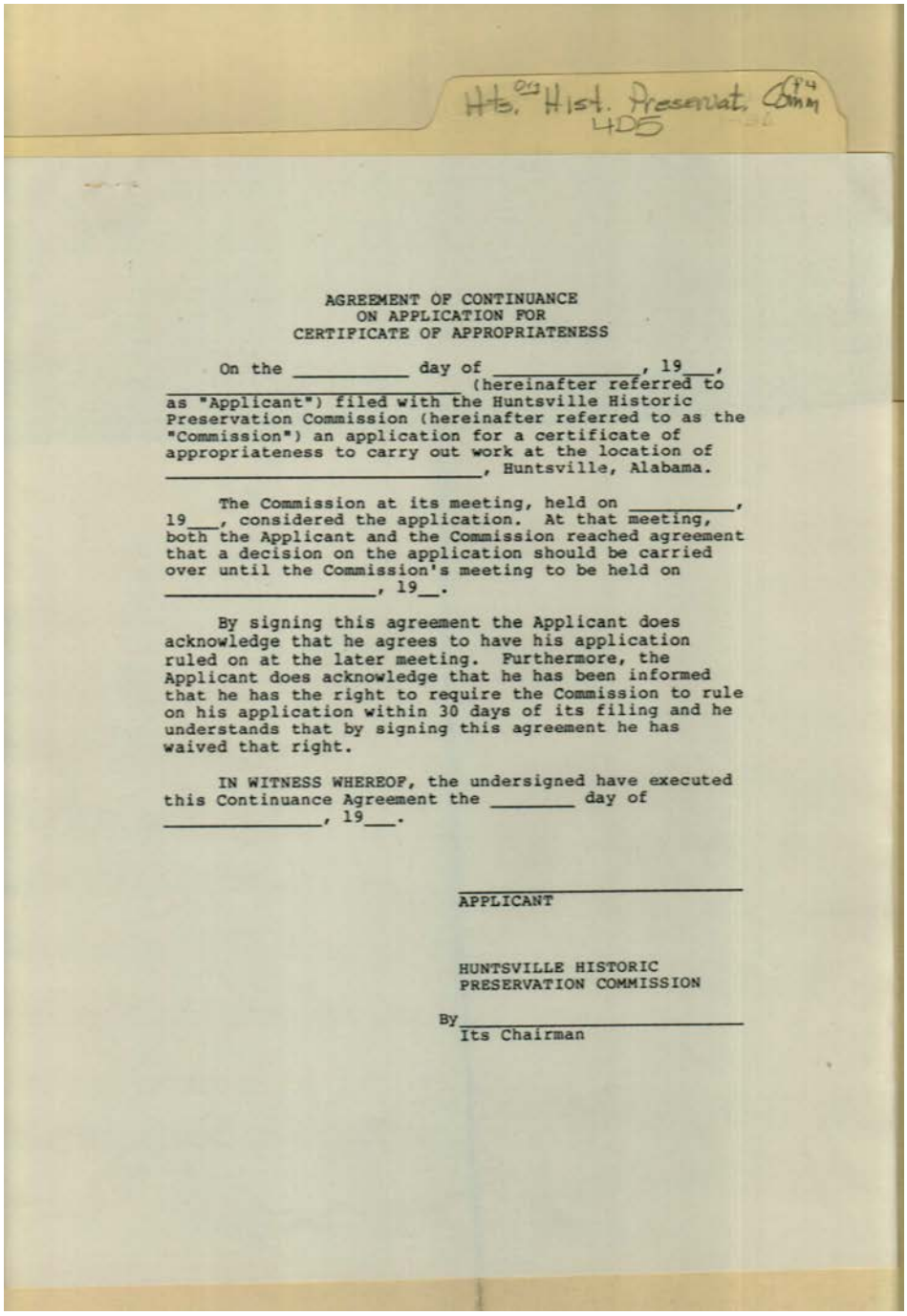
____ I hereby certify that the original of this letter was hand delivered to _____ on the_____ day of _____, 19__.

____ I hereby certify that the original of this letter was mailed by U.S. Postal certified mail to _____ at the address of _____ _____ on the _____ day of _____, 19___.

Names:
Partial Denial Notice

Places:
Huntsville, AL

Types:
form



Hts. Hist. Preservat. Comm
405

AGREEMENT OF CONTINUANCE
ON APPLICATION FOR
CERTIFICATE OF APPROPRIATENESS

On the _____ day of _____, 19___, _____ (hereinafter referred to as "Applicant") filed with the Huntsville Historic Preservation Commission (hereinafter referred to as the "Commission") an application for a certificate of appropriateness to carry out work at the location of _____, Huntsville, Alabama.

The Commission at its meeting, held on _____, 19___, considered the application. At that meeting, both the Applicant and the Commission reached agreement that a decision on the application should be carried over until the Commission's meeting to be held on _____, 19__.

By signing this agreement the Applicant does acknowledge that he agrees to have his application ruled on at the later meeting. Furthermore, the Applicant does acknowledge that he has been informed that he has the right to require the Commission to rule on his application within 30 days of its filing and he understands that by signing this agreement he has waived that right.

IN WITNESS WHEREOF, the undersigned have executed this Continuance Agreement the _____ day of _____, 19___.

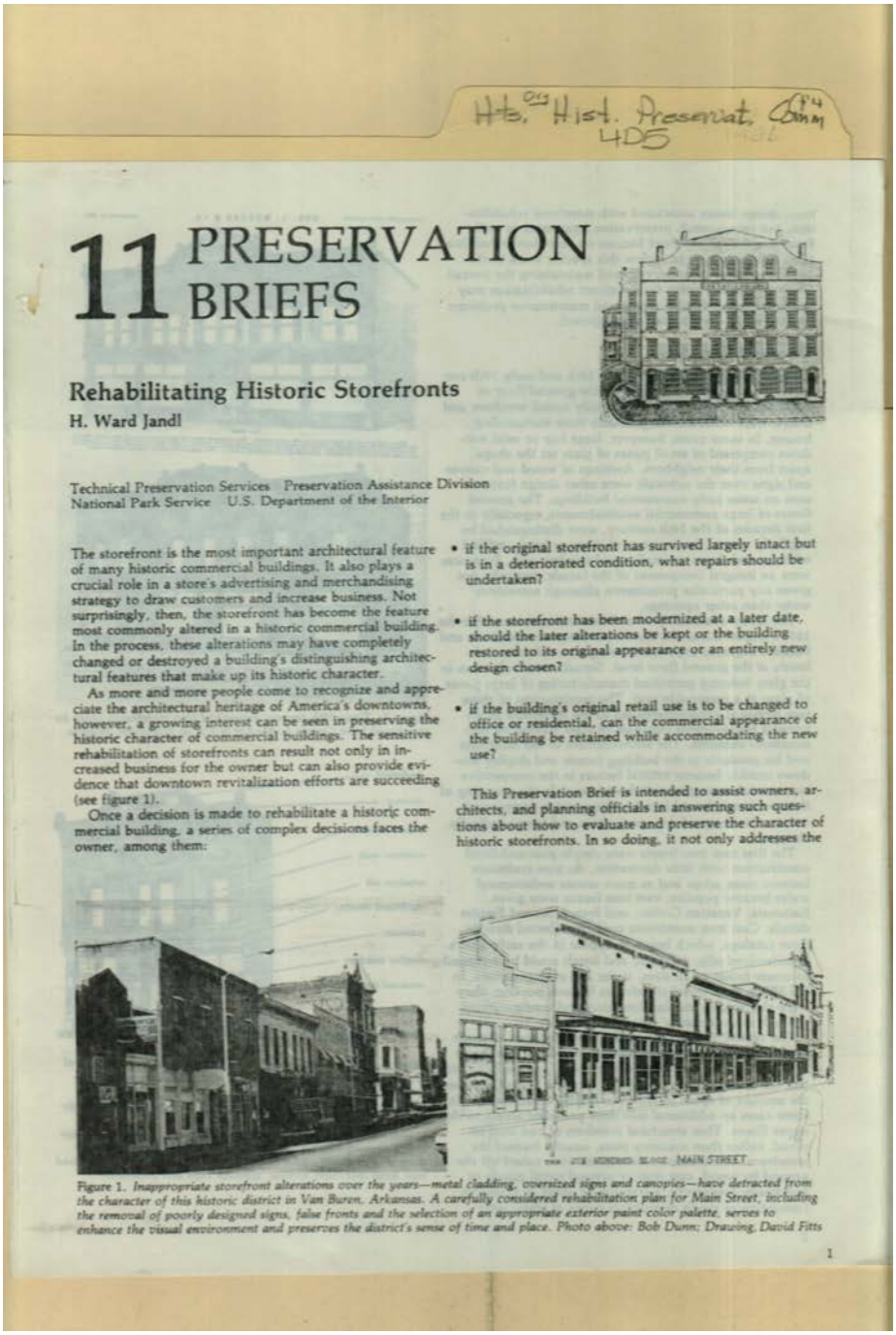
_____
APPLICANT

HUNTSVILLE HISTORIC
PRESERVATION COMMISSION

By_____
Its Chairman

Places:
Huntsville, AL

Types:
form



Hts. Hist. Preservat. Comm
4D5

11 PRESERVATION BRIEFS

Rehabilitating Historic Storefronts

H. Ward Jandl

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

The storefront is the most important architectural feature of many historic commercial buildings. It also plays a crucial role in a store's advertising and merchandising strategy to draw customers and increase business. Not surprisingly, then, the storefront has become the feature most commonly altered in a historic commercial building. In the process, these alterations may have completely changed or destroyed a building's distinguishing architectural features that make up its historic character.

As more and more people come to recognize and appreciate the architectural heritage of America's downtowns, however, a growing interest can be seen in preserving the historic character of commercial buildings. The sensitive rehabilitation of storefronts can result not only in increased business for the owner but can also provide evidence that downtown revitalization efforts are succeeding (see figure 1).

Once a decision is made to rehabilitate a historic commercial building, a series of complex decisions faces the owner, among them:

- if the original storefront has survived largely intact but is in a deteriorated condition, what repairs should be undertaken?
- if the storefront has been modernized at a later date, should the later alterations be kept or the building restored to its original appearance or an entirely new design chosen?
- if the building's original retail use is to be changed to office or residential, can the commercial appearance of the building be retained while accommodating the new use?

This Preservation Brief is intended to assist owners, architects, and planning officials in answering such questions about how to evaluate and preserve the character of historic storefronts. In so doing, it not only addresses the

Figure 1. *Inappropriate storefront alterations over the years—metal cladding, oversized signs and canopies—have detracted from the character of this historic district in Van Buren, Arkansas. A carefully considered rehabilitation plan for Main Street, including the removal of poorly designed signs, false fronts and the selection of an appropriate exterior paint color palette, serves to enhance the visual environment and preserves the district's sense of time and place. Photo above: Bob Dunn; Drawing, David Fitts*

1

Names:
Jandl, H. Ward

Types:
article

Storefront
Rehabilitation

Hts. Hist. Preservat. Comm
4D5

basic design issues associated with storefront rehabilitation, but recommends preservation treatments as well. Finally, although the Brief focuses on storefront rehabilitation, it is important to review this specific work in the broader context of preserving and maintaining the overall structure. Money spent on storefront rehabilitation may be completely wasted if repair and maintenance problems on the rest of the building are neglected.

Historical Overview

Commercial establishments of the 18th and early 19th centuries were frequently located on the ground floor of buildings and, with their residentially scaled windows and doors, were often indistinguishable from surrounding houses. In some cases, however, large bay or oriel windows comprised of small panes of glass set the shops apart from their neighbors. Awnings of wood and canvas and signs over the sidewalk were other design features seen on some early commercial buildings. The ground floors of large commercial establishments, especially in the first decades of the 19th century, were distinguished by regularly spaced, heavy piers of stone or brick, infilled with paneled doors or small paned window sash. Entrances were an integral component of the facade, typically not given any particular prominence although sometimes wider than other openings.

The ready availability of architectural cast iron after the 1840's helped transform storefront design as architects and builders began to experiment using iron columns and lintels at the ground floor level. Simultaneous advances in the glass industry permitted manufacturing of large panes of glass at a reasonable cost. The combination of these two technical achievements led to the storefront as we know it today—large expanses of glass framed by thin structural elements. The advertisement of the merchant and his products in the building facade and display windows quickly became critical factors in the competitive commercial atmosphere of downtowns. In the grouping of these wide-windowed facades along major commercial streets, the image of America's cities and towns radically changed.

The first cast iron fronts were simple post-and-lintel construction with little decoration. As iron craftsmen became more adept and as more ornate architectural styles became popular, cast iron fronts were given Italianate, Venetian Gothic, and French Second Empire details. Cast iron storefronts could be selected directly from catalogs, which began to appear in the early 1850's. Standardized sills, columns, and lintels could be arranged to create fronts of all sizes, styles and configurations. In the 1870's sheet metal storefronts became popular; they were also sold in standardized sizes and configurations through manufacturers' catalogs (see figure 2).

The typical 19th century storefront consisted of single or double doors flanked by display windows (see figure 3). The entrance was frequently recessed, not only to protect the customer from inclement weather but to increase the amount of space in which to display merchandise. In some cases an additional side door provided access to the upper floors. Thin structural members of cast iron or wood, rather than masonry piers, usually framed the storefront. The windows themselves were raised off the ground by wood, cast iron or pressed metal panels or bulkheads; frequently, a transom or series of transoms (consisting of single or multiple panes of glass) were

Figure 2. *These 19th century galvanized iron storefronts could be purchased from George L. Mesker & Co. in Evansville, Indiana.*

Figure 3. *Become familiar with the architectural features typical of historic commercial buildings. A close look at a storefront's construction materials, features and relationship to the upper stories will help in determining how much of the original facade remains.*

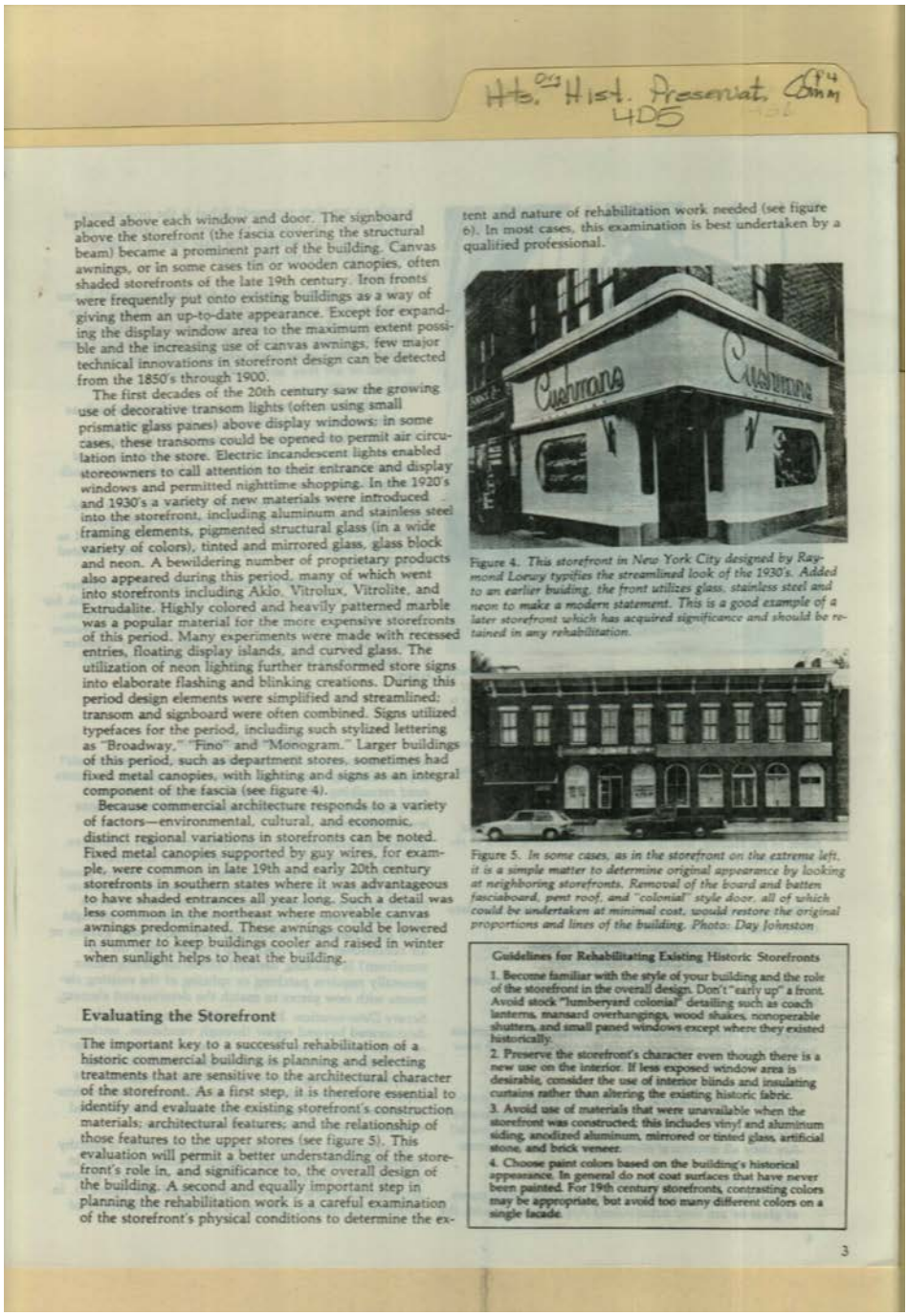
This particular storefront is No. 4016 in the George L. Mesker and Company catalog of 1905. One of Mesker's most popular designs, it featured cast-iron sills, columns and lintels, galvanized iron lintel and main cornice, window caps and pediment.

Names:

Storefront
Rehabilitation

Types:

article



Hts. Dis. Hist. Preservat. Comm
4D5

placed above each window and door. The signboard above the storefront (the fascia covering the structural beam) became a prominent part of the building. Canvas awnings, or in some cases tin or wooden canopies, often shaded storefronts of the late 19th century. Iron fronts were frequently put onto existing buildings as a way of giving them an up-to-date appearance. Except for expanding the display window area to the maximum extent possible and the increasing use of canvas awnings, few major technical innovations in storefront design can be detected from the 1850's through 1900.

The first decades of the 20th century saw the growing use of decorative transom lights (often using small prismatic glass panes) above display windows; in some cases, these transoms could be opened to permit air circulation into the store. Electric incandescent lights enabled storeowners to call attention to their entrance and display windows and permitted nighttime shopping. In the 1920's and 1930's a variety of new materials were introduced into the storefront, including aluminum and stainless steel framing elements, pigmented structural glass (in a wide variety of colors), tinted and mirrored glass, glass block and neon. A bewildering number of proprietary products also appeared during this period, many of which went into storefronts including Aklo, Vitrolux, Vitrolite, and Extrudalite. Highly colored and heavily patterned marble was a popular material for the more expensive storefronts of this period. Many experiments were made with recessed entries, floating display islands, and curved glass. The utilization of neon lighting further transformed store signs into elaborate flashing and blinking creations. During this period design elements were simplified and streamlined; transom and signboard were often combined. Signs utilized typefaces for the period, including such stylized lettering as "Broadway," "Fino" and "Monogram." Larger buildings of this period, such as department stores, sometimes had fixed metal canopies, with lighting and signs as an integral component of the fascia (see figure 4).

Because commercial architecture responds to a variety of factors—environmental, cultural, and economic, distinct regional variations in storefronts can be noted. Fixed metal canopies supported by guy wires, for example, were common in late 19th and early 20th century storefronts in southern states where it was advantageous to have shaded entrances all year long. Such a detail was less common in the northeast where moveable canvas awnings predominated. These awnings could be lowered in summer to keep buildings cooler and raised in winter when sunlight helps to heat the building.

Evaluating the Storefront

The important key to a successful rehabilitation of a historic commercial building is planning and selecting treatments that are sensitive to the architectural character of the storefront. As a first step, it is therefore essential to identify and evaluate the existing storefront's construction materials; architectural features; and the relationship of those features to the upper stores (see figure 5). This evaluation will permit a better understanding of the storefront's role in, and significance to, the overall design of the building. A second and equally important step in planning the rehabilitation work is a careful examination of the storefront's physical conditions to determine the extent and nature of rehabilitation work needed (see figure 6). In most cases, this examination is best undertaken by a qualified professional.

Figure 4. *This storefront in New York City designed by Raymond Loewy typifies the streamlined look of the 1930's. Added to an earlier building, the front utilizes glass, stainless steel and neon to make a modern statement. This is a good example of a later storefront which has acquired significance and should be retained in any rehabilitation.*

Figure 5. *In some cases, as in the storefront on the extreme left, it is a simple matter to determine original appearance by looking at neighboring storefronts. Removal of the board and batten fascia board, pent roof, and "colonial" style door, all of which could be undertaken at minimal cost, would restore the original proportions and lines of the building. Photo: Day Johnston*

Guidelines for Rehabilitating Existing Historic Storefronts

1. Become familiar with the style of your building and the role of the storefront in the overall design. Don't "early up" a front. Avoid stock "lumberyard colonial" detailing such as coach lanterns, mansard overhangings, wood shakes, nonoperable shutters, and small paned windows except where they existed historically.
2. Preserve the storefront's character even though there is a new use on the interior. If less exposed window area is desirable, consider the use of interior blinds and insulating curtains rather than altering the existing historic fabric.
3. Avoid use of materials that were unavailable when the storefront was constructed; this includes vinyl and aluminum siding, anodized aluminum, mirrored or tinted glass, artificial stone, and brick veneer.
4. Choose paint colors based on the building's historical appearance. In general do not coat surfaces that have never been painted. For 19th century storefronts, contrasting colors may be appropriate, but avoid too many different colors on a single facade.

3

Names:
Storefront
Rehabilitation

Types:
article

Hts. Hist. Preservat. Comm
4D5

facade or are they recessed? What is the proportion of area between the display windows and transom? Are there window openings in the base panels to allow natural light into the basement?

- Entrances:
  Are the entrances centered? Are they recessed? Is one entrance more prominent than the others? How is the primary retail entrance differentiated from other entrances? Is there evidence that new entrances have been added or have some been relocated? Are the doors original or are they later replacements?
- Decorative Elements:
  Are there any surviving decorative elements such as molded cornices, column capitals, fascia boards, brackets, signs, awnings or canopies? Is there a belt-course, cornice, or fascia board between the first and second floor? Are some elements older than others indicating changes over time?

Storefront's Relationship to Upper Stories: Is there a difference in materials between the storefront and upper stories? Were the storefront and floors above it created as an overall design or were they very different and unrelated to each other?

It is also worthwhile to study the neighboring commercial buildings and their distinctive characteristics to look for similarities (canopies, lighting, signs) as well as differences. This can help determine whether the storefront in question is significant and unique in its own right and/or whether it is significant as part of an overall commercial streetscape.

Figure 6. *Storefronts of the 1940's, 50's, and 60's were frequently installed by attaching studs or a metal grid over an early front and applying new covering materials. If the existing storefront is a relatively recent addition with little or no architectural merit, begin by removing the covering materials in several places as was done here. If this preliminary investigation reveals evidence of an earlier front, such as this cast-iron column, carefully remove the later materials to assess the overall condition of the historic storefront. The black mastic visible on the lower masonry panels was used for installing pigmented structural glass. Some attachment methods for modern facings, such as mastic or metal lath, may have seriously damaged the original fabric of the building, and this must be taken into account in the rehabilitation process. Photo: Bob Dunn*

The following questions should be taken into consideration in this two-part evaluation:

Construction Materials, Features, and Design Relationships

Storefront's Construction Materials: What are the construction materials? Wood? Metal? Brick or other masonry? A combination?

Storefront's Architectural Features: What are the various architectural features comprising the storefront and how are they arranged in relationship to each other?

- Supporting Columns/Piers:
  What do the columns or piers supporting the storefront look like? Are they heavy or light in appearance? Are they flush with the windows or do they protrude? Are they all structural elements or are some columns decorative?
- Display Windows and Transoms:
  Are the display windows and transoms single panes of glass or are they subdivided? Are they flush with the

Physical Condition

Mild Deterioration: Do the surface materials need repair? Is paint flaking? Are metal components rusting? Do joints need recaulking where materials meet glass windows? Mild deterioration generally requires only maintenance level treatments.

Moderate Deterioration: Can rotted or rusted or broken sections of material be replaced with new material to match the old? Can solid material (such as Carrara glass) from a non-conspicuous location be used on the historic facade to repair damaged elements? Do stone or brick components need repointing? Is the storefront watertight with good flashing connections? Are there leaky gutters or air conditioner units which drip condensation on the storefront? Is caulking needed? Moderate deterioration generally requires patching or splicing of the existing elements with new pieces to match the deteriorated element.

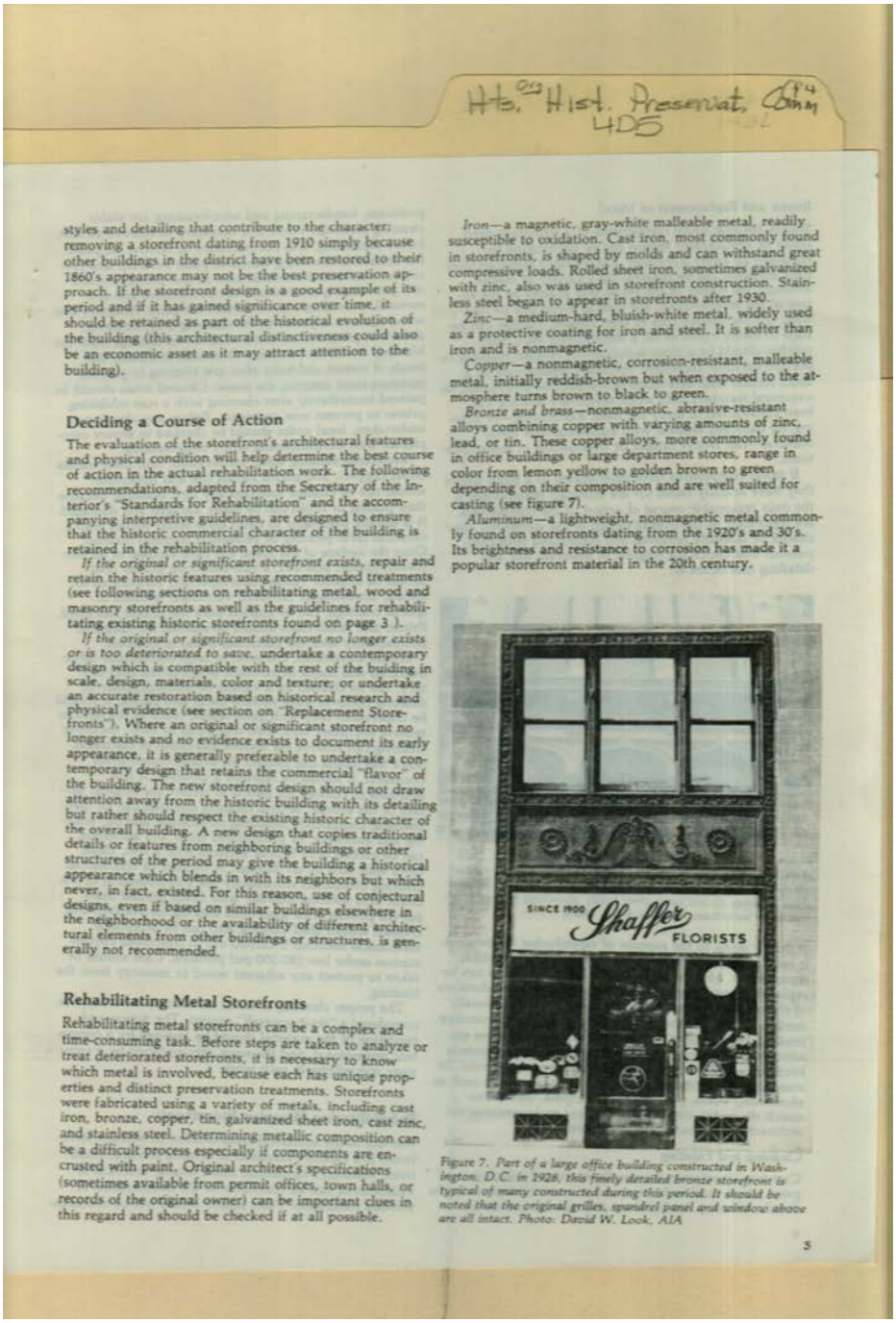
Severe Deterioration: Have existing facing materials deteriorated beyond repair through vandalism, settlement, or water penetration? Is there a loss of structural integrity? Is the material rusted through, rotted, buckling, completely missing? Are structural lintels sagging? Are support columns settled or out of alignment? Severe deterioration generally requires replacement of deteriorated elements as part of the overall rehabilitaton.

In evaluating whether the existing storefront is worthy of preservation, recognize that good design can exist in any period: a storefront added in 1930 *may* have greater architectural merit than what is replaced (see figure 4). In commercial historic districts, it is often the diversity of

4

Names:
Storefront
Rehabilitation

Types:
article



Hts. Hist. Preservat. Comm
4D5

styles and detailing that contribute to the character; removing a storefront dating from 1910 simply because other buildings in the district have been restored to their 1860's appearance may not be the best preservation approach. If the storefront design is a good example of its period and if it has gained significance over time, it should be retained as part of the historical evolution of the building (this architectural distinctiveness could also be an economic asset as it may attract attention to the building).

Deciding a Course of Action

The evaluation of the storefront's architectural features and physical condition will help determine the best course of action in the actual rehabilitation work. The following recommendations, adapted from the Secretary of the Interior's "Standards for Rehabilitation" and the accompanying interpretive guidelines, are designed to ensure that the historic commercial character of the building is retained in the rehabilitation process.

If the original or significant storefront exists, repair and retain the historic features using recommended treatments (see following sections on rehabilitating metal, wood and masonry storefronts as well as the guidelines for rehabilitating existing historic storefronts found on page 3).

If the original or significant storefront no longer exists or is too deteriorated to save, undertake a contemporary design which is compatible with the rest of the building in scale, design, materials, color and texture; or undertake an accurate restoration based on historical research and physical evidence (see section on "Replacement Storefronts"). Where an original or significant storefront no longer exists and no evidence exists to document its early appearance, it is generally preferable to undertake a contemporary design that retains the commercial "flavor" of the building. The new storefront design should not draw attention away from the historic building with its detailing but rather should respect the existing historic character of the overall building. A new design that copies traditional details or features from neighboring buildings or other structures of the period may give the building a historical appearance which blends in with its neighbors but which never, in fact, existed. For this reason, use of conjectural designs, even if based on similar buildings elsewhere in the neighborhood or the availability of different architectural elements from other buildings or structures, is generally not recommended.

Rehabilitating Metal Storefronts

Rehabilitating metal storefronts can be a complex and time-consuming task. Before steps are taken to analyze or treat deteriorated storefronts, it is necessary to know which metal is involved, because each has unique properties and distinct preservation treatments. Storefronts were fabricated using a variety of metals, including cast iron, bronze, copper, tin, galvanized sheet iron, cast zinc, and stainless steel. Determining metallic composition can be a difficult process especially if components are encrusted with paint. Original architect's specifications (sometimes available from permit offices, town halls, or records of the original owner) can be important clues in this regard and should be checked if at all possible.

Iron—a magnetic, gray-white malleable metal, readily susceptible to oxidation. Cast iron, most commonly found in storefronts, is shaped by molds and can withstand great compressive loads. Rolled sheet iron, sometimes galvanized with zinc, also was used in storefront construction. Stainless steel began to appear in storefronts after 1930.

Zinc—a medium-hard, bluish-white metal, widely used as a protective coating for iron and steel. It is softer than iron and is nonmagnetic.

Copper—a nonmagnetic, corrosion-resistant, malleable metal, initially reddish-brown but when exposed to the atmosphere turns brown to black to green.

Bronze and brass—nonmagnetic, abrasive-resistant alloys combining copper with varying amounts of zinc, lead, or tin. These copper alloys, more commonly found in office buildings or large department stores, range in color from lemon yellow to golden brown to green depending on their composition and are well suited for casting (see figure 7).

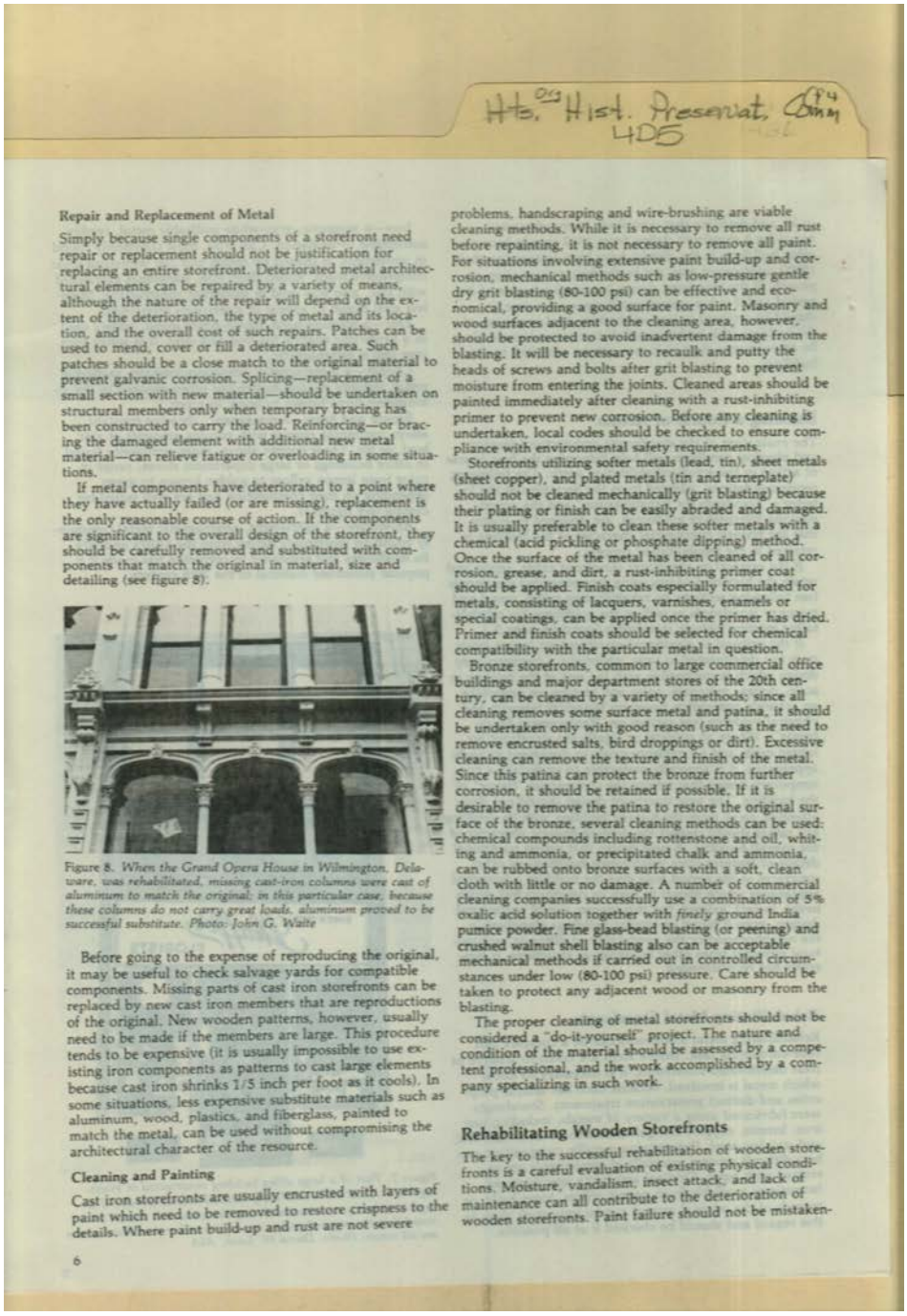
Aluminum—a lightweight, nonmagnetic metal commonly found on storefronts dating from the 1920's and 30's. Its brightness and resistance to corrosion has made it a popular storefront material in the 20th century.

Figure 7. Part of a large office building constructed in Washington, D.C. in 1928, this finely detailed bronze storefront is typical of many constructed during this period. It should be noted that the original grilles, spandrel panel and window above are all intact. Photo: David W. Look, AIA

5

Names:
Storefront
Rehabilitation

Types:
article



Hts. Dis Hist. Preservat. Comm
4D5

Repair and Replacement of Metal

Simply because single components of a storefront need repair or replacement should not be justification for replacing an entire storefront. Deteriorated metal architectural elements can be repaired by a variety of means, although the nature of the repair will depend on the extent of the deterioration, the type of metal and its location, and the overall cost of such repairs. Patches can be used to mend, cover or fill a deteriorated area. Such patches should be a close match to the original material to prevent galvanic corrosion. Splicing—replacement of a small section with new material—should be undertaken on structural members only when temporary bracing has been constructed to carry the load. Reinforcing—or bracing the damaged element with additional new metal material—can relieve fatigue or overloading in some situations.

If metal components have deteriorated to a point where they have actually failed (or are missing), replacement is the only reasonable course of action. If the components are significant to the overall design of the storefront, they should be carefully removed and substituted with components that match the original in material, size and detailing (see figure 8).

Figure 8. *When the Grand Opera House in Wilmington, Delaware, was rehabilitated, missing cast-iron columns were cast of aluminum to match the original: in this particular case, because these columns do not carry great loads, aluminum proved to be successful substitute. Photo: John G. Waite*

Before going to the expense of reproducing the original, it may be useful to check salvage yards for compatible components. Missing parts of cast iron storefronts can be replaced by new cast iron members that are reproductions of the original. New wooden patterns, however, usually need to be made if the members are large. This procedure tends to be expensive (it is usually impossible to use existing iron components as patterns to cast large elements because cast iron shrinks 1/5 inch per foot as it cools). In some situations, less expensive substitute materials such as aluminum, wood, plastics, and fiberglass, painted to match the metal, can be used without compromising the architectural character of the resource.

Cleaning and Painting

Cast iron storefronts are usually encrusted with layers of paint which need to be removed to restore crispness to the details. Where paint build-up and rust are not severe problems, handscraping and wire-brushing are viable cleaning methods. While it is necessary to remove all rust before repainting, it is not necessary to remove all paint. For situations involving extensive paint build-up and corrosion, mechanical methods such as low-pressure gentle dry grit blasting (80-100 psi) can be effective and economical, providing a good surface for paint. Masonry and wood surfaces adjacent to the cleaning area, however, should be protected to avoid inadvertent damage from the blasting. It will be necessary to recaulk and putty the heads of screws and bolts after grit blasting to prevent moisture from entering the joints. Cleaned areas should be painted immediately after cleaning with a rust-inhibiting primer to prevent new corrosion. Before any cleaning is undertaken, local codes should be checked to ensure compliance with environmental safety requirements.

Storefronts utilizing softer metals (lead, tin), sheet metals (sheet copper), and plated metals (tin and terneplate) should not be cleaned mechanically (grit blasting) because their plating or finish can be easily abraded and damaged. It is usually preferable to clean these softer metals with a chemical (acid pickling or phosphate dipping) method. Once the surface of the metal has been cleaned of all corrosion, grease, and dirt, a rust-inhibiting primer coat should be applied. Finish coats especially formulated for metals, consisting of lacquers, varnishes, enamels or special coatings, can be applied once the primer has dried. Primer and finish coats should be selected for chemical compatibility with the particular metal in question.

Bronze storefronts, common to large commercial office buildings and major department stores of the 20th century, can be cleaned by a variety of methods; since all cleaning removes some surface metal and patina, it should be undertaken only with good reason (such as the need to remove encrusted salts, bird droppings or dirt). Excessive cleaning can remove the texture and finish of the metal. Since this patina can protect the bronze from further corrosion, it should be retained if possible. If it is desirable to remove the patina to restore the original surface of the bronze, several cleaning methods can be used: chemical compounds including rottenstone and oil, whiting and ammonia, or precipitated chalk and ammonia, can be rubbed onto bronze surfaces with a soft, clean cloth with little or no damage. A number of commercial cleaning companies successfully use a combination of 5% oxalic acid solution together with *finely* ground India pumice powder. Fine glass-bead blasting (or peening) and crushed walnut shell blasting also can be acceptable mechanical methods if carried out in controlled circumstances under low (80-100 psi) pressure. Care should be taken to protect any adjacent wood or masonry from the blasting.

The proper cleaning of metal storefronts should not be considered a "do-it-yourself" project. The nature and condition of the material should be assessed by a competent professional, and the work accomplished by a company specializing in such work.

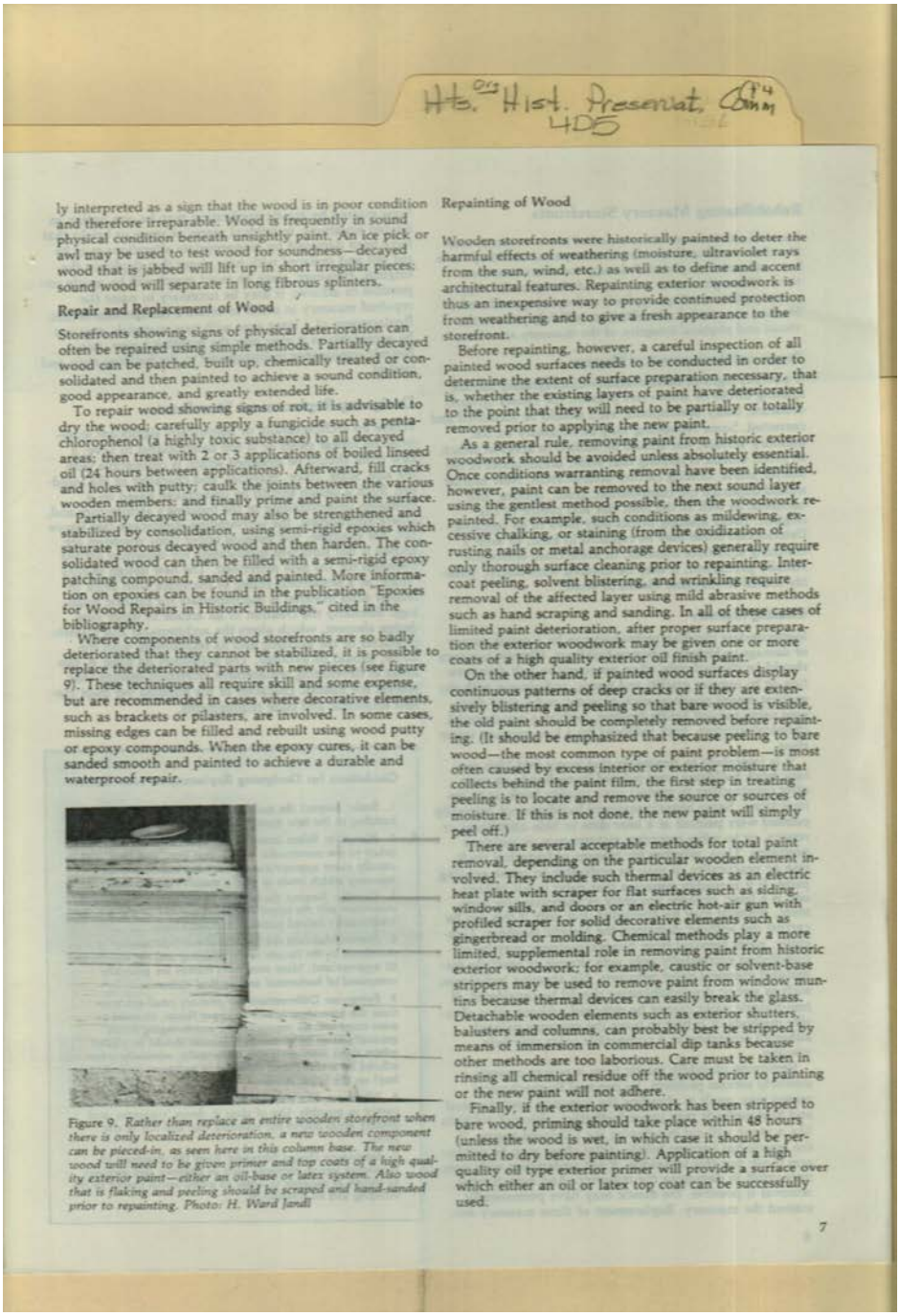
Rehabilitating Wooden Storefronts

The key to the successful rehabilitation of wooden storefronts is a careful evaluation of existing physical conditions. Moisture, vandalism, insect attack, and lack of maintenance can all contribute to the deterioration of wooden storefronts. Paint failure should not be mistaken-

6

Names:
Storefront
Rehabilitation

Types:
article



Hts. Hist. Preservat. Comm
4D5

ly interpreted as a sign that the wood is in poor condition and therefore irreparable. Wood is frequently in sound physical condition beneath unsightly paint. An ice pick or awl may be used to test wood for soundness—decayed wood that is jabbed will lift up in short irregular pieces; sound wood will separate in long fibrous splinters.

Repair and Replacement of Wood

Storefronts showing signs of physical deterioration can often be repaired using simple methods. Partially decayed wood can be patched, built up, chemically treated or consolidated and then painted to achieve a sound condition, good appearance, and greatly extended life.

To repair wood showing signs of rot, it is advisable to dry the wood; carefully apply a fungicide such as pentachlorophenol (a highly toxic substance) to all decayed areas; then treat with 2 or 3 applications of boiled linseed oil (24 hours between applications). Afterward, fill cracks and holes with putty; caulk the joints between the various wooden members; and finally prime and paint the surface.

Partially decayed wood may also be strengthened and stabilized by consolidation, using semi-rigid epoxies which saturate porous decayed wood and then harden. The consolidated wood can then be filled with a semi-rigid epoxy patching compound, sanded and painted. More information on epoxies can be found in the publication "Epoxies for Wood Repairs in Historic Buildings," cited in the bibliography.

Where components of wood storefronts are so badly deteriorated that they cannot be stabilized, it is possible to replace the deteriorated parts with new pieces (see figure 9). These techniques all require skill and some expense, but are recommended in cases where decorative elements, such as brackets or pilasters, are involved. In some cases, missing edges can be filled and rebuilt using wood putty or epoxy compounds. When the epoxy cures, it can be sanded smooth and painted to achieve a durable and waterproof repair.

Figure 9. Rather than replace an entire wooden storefront when there is only localized deterioration, a new wooden component can be pieced-in, as seen here in this column base. The new wood will need to be given primer and top coats of a high quality exterior paint—either an oil-base or latex system. Also wood that is flaking and peeling should be scraped and hand-sanded prior to repainting. Photo: H. Ward Jandl

Repainting of Wood

Wooden storefronts were historically painted to deter the harmful effects of weathering (moisture, ultraviolet rays from the sun, wind, etc.) as well as to define and accent architectural features. Repainting exterior woodwork is thus an inexpensive way to provide continued protection from weathering and to give a fresh appearance to the storefront.

Before repainting, however, a careful inspection of all painted wood surfaces needs to be conducted in order to determine the extent of surface preparation necessary, that is, whether the existing layers of paint have deteriorated to the point that they will need to be partially or totally removed prior to applying the new paint.

As a general rule, removing paint from historic exterior woodwork should be avoided unless absolutely essential. Once conditions warranting removal have been identified, however, paint can be removed to the next sound layer using the gentlest method possible, then the woodwork repainted. For example, such conditions as mildewing, excessive chalking, or staining (from the oxidization of rusting nails or metal anchorage devices) generally require only thorough surface cleaning prior to repainting. Intercoat peeling, solvent blistering, and wrinkling require removal of the affected layer using mild abrasive methods such as hand scraping and sanding. In all of these cases of limited paint deterioration, after proper surface preparation the exterior woodwork may be given one or more coats of a high quality exterior oil finish paint.

On the other hand, if painted wood surfaces display continuous patterns of deep cracks or if they are extensively blistering and peeling so that bare wood is visible, the old paint should be completely removed before repainting. (It should be emphasized that because peeling to bare wood—the most common type of paint problem—is most often caused by excess interior or exterior moisture that collects behind the paint film, the first step in treating peeling is to locate and remove the source or sources of moisture. If this is not done, the new paint will simply peel off.)

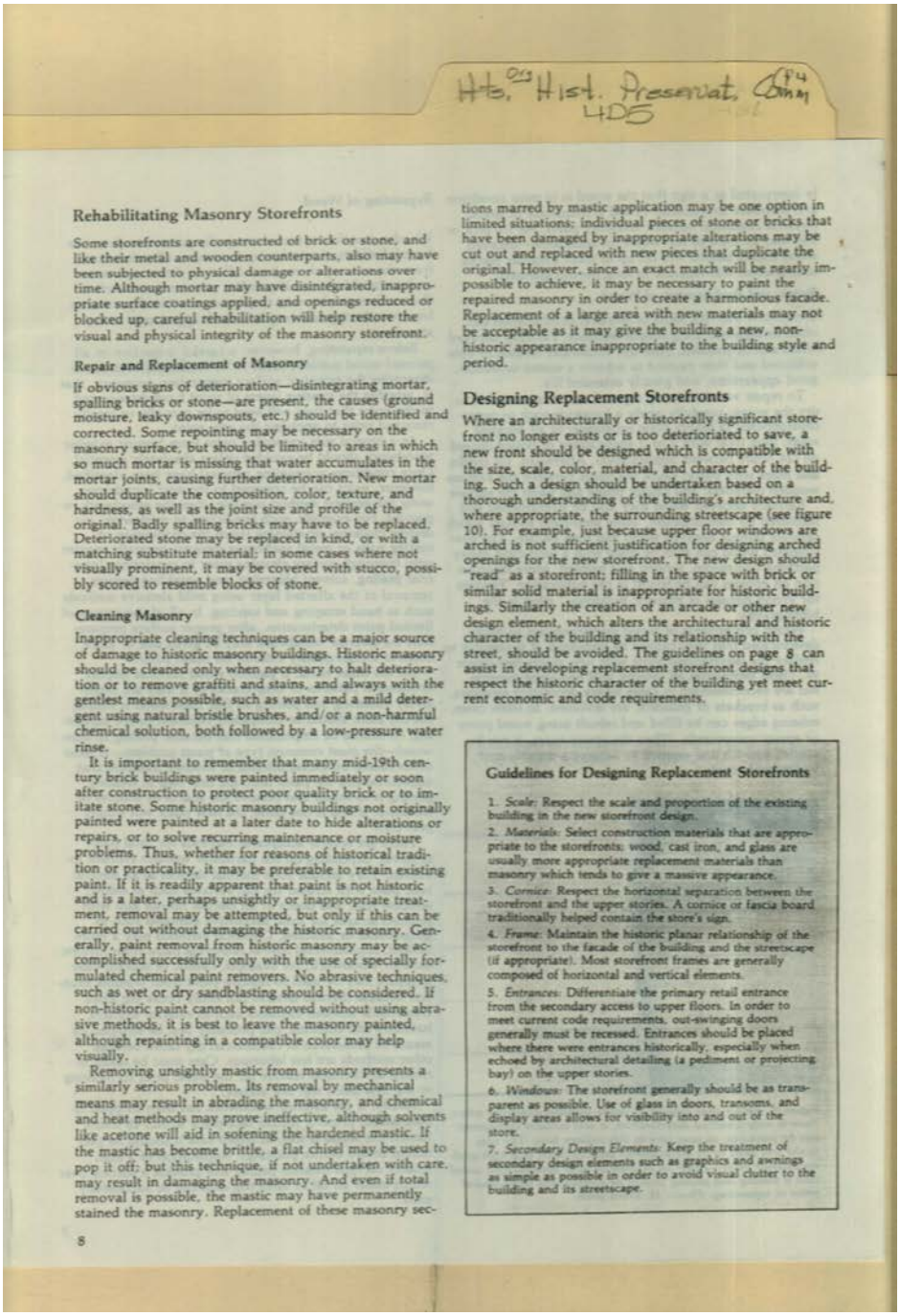
There are several acceptable methods for total paint removal, depending on the particular wooden element involved. They include such thermal devices as an electric heat plate with scraper for flat surfaces such as siding, window sills, and doors or an electric hot-air gun with profiled scraper for solid decorative elements such as gingerbread or molding. Chemical methods play a more limited, supplemental role in removing paint from historic exterior woodwork; for example, caustic or solvent-base strippers may be used to remove paint from window muntins because thermal devices can easily break the glass. Detachable wooden elements such as exterior shutters, balusters and columns, can probably best be stripped by means of immersion in commercial dip tanks because other methods are too laborious. Care must be taken in rinsing all chemical residue off the wood prior to painting or the new paint will not adhere.

Finally, if the exterior woodwork has been stripped to bare wood, priming should take place within 48 hours (unless the wood is wet, in which case it should be permitted to dry before painting). Application of a high quality oil type exterior primer will provide a surface over which either an oil or latex top coat can be successfully used.

7

Names:
Storefront
Rehabilitation

Types:
article



Hts. Ors Hist. Preservat. Comm
4D5

Rehabilitating Masonry Storefronts

Some storefronts are constructed of brick or stone, and like their metal and wooden counterparts, also may have been subjected to physical damage or alterations over time. Although mortar may have disintegrated, inappropriate surface coatings applied, and openings reduced or blocked up, careful rehabilitation will help restore the visual and physical integrity of the masonry storefront.

Repair and Replacement of Masonry

If obvious signs of deterioration—disintegrating mortar, spalling bricks or stone—are present, the causes (ground moisture, leaky downspouts, etc.) should be identified and corrected. Some repointing may be necessary on the masonry surface, but should be limited to areas in which so much mortar is missing that water accumulates in the mortar joints, causing further deterioration. New mortar should duplicate the composition, color, texture, and hardness, as well as the joint size and profile of the original. Badly spalling bricks may have to be replaced. Deteriorated stone may be replaced in kind, or with a matching substitute material; in some cases where not visually prominent, it may be covered with stucco, possibly scored to resemble blocks of stone.

Cleaning Masonry

Inappropriate cleaning techniques can be a major source of damage to historic masonry buildings. Historic masonry should be cleaned only when necessary to halt deterioration or to remove graffiti and stains, and always with the gentlest means possible, such as water and a mild detergent using natural bristle brushes, and/or a non-harmful chemical solution, both followed by a low-pressure water rinse.

It is important to remember that many mid-19th century brick buildings were painted immediately or soon after construction to protect poor quality brick or to imitate stone. Some historic masonry buildings not originally painted were painted at a later date to hide alterations or repairs, or to solve recurring maintenance or moisture problems. Thus, whether for reasons of historical tradition or practicality, it may be preferable to retain existing paint. If it is readily apparent that paint is not historic and is a later, perhaps unsightly or inappropriate treatment, removal may be attempted, but only if this can be carried out without damaging the historic masonry. Generally, paint removal from historic masonry may be accomplished successfully only with the use of specially formulated chemical paint removers. No abrasive techniques, such as wet or dry sandblasting should be considered. If non-historic paint cannot be removed without using abrasive methods, it is best to leave the masonry painted, although repainting in a compatible color may help visually.

Removing unsightly mastic from masonry presents a similarly serious problem. Its removal by mechanical means may result in abrading the masonry, and chemical and heat methods may prove ineffective, although solvents like acetone will aid in sofening the hardened mastic. If the mastic has become brittle, a flat chisel may be used to pop it off; but this technique, if not undertaken with care, may result in damaging the masonry. And even if total removal is possible, the mastic may have permanently stained the masonry. Replacement of these masonry sections marred by mastic application may be one option in limited situations: individual pieces of stone or bricks that have been damaged by inappropriate alterations may be cut out and replaced with new pieces that duplicate the original. However, since an exact match will be nearly impossible to achieve, it may be necessary to paint the repaired masonry in order to create a harmonious facade. Replacement of a large area with new materials may not be acceptable as it may give the building a new, non-historic appearance inappropriate to the building style and period.

Designing Replacement Storefronts

Where an architecturally or historically significant storefront no longer exists or is too deterioriated to save, a new front should be designed which is compatible with the size, scale, color, material, and character of the building. Such a design should be undertaken based on a thorough understanding of the building's architecture and, where appropriate, the surrounding streetscape (see figure 10). For example, just because upper floor windows are arched is not sufficient justification for designing arched openings for the new storefront. The new design should "read" as a storefront; filling in the space with brick or similar solid material is inappropriate for historic buildings. Similarly the creation of an arcade or other new design element, which alters the architectural and historic character of the building and its relationship with the street, should be avoided. The guidelines on page 8 can assist in developing replacement storefront designs that respect the historic character of the building yet meet current economic and code requirements.

Guidelines for Designing Replacement Storefronts

1. *Scale:* Respect the scale and proportion of the existing building in the new storefront design.
2. *Materials:* Select construction materials that are appropriate to the storefronts; wood, cast iron, and glass are usually more appropriate replacement materials than masonry which tends to give a massive appearance.
3. *Cornice:* Respect the horizontal separation between the storefront and the upper stories. A cornice or fascia board traditionally helped contain the store's sign.
4. *Frame:* Maintain the historic planar relationship of the storefront to the facade of the building and the streetscape (if appropriate). Most storefront frames are generally composed of horizontal and vertical elements.
5. *Entrances:* Differentiate the primary retail entrance from the secondary access to upper floors. In order to meet current code requirements, out-swinging doors generally must be recessed. Entrances should be placed where there were entrances historically, especially when echoed by architectural detailing (a pediment or projecting bay) on the upper stories.
6. *Windows:* The storefront generally should be as transparent as possible. Use of glass in doors, transoms, and display areas allows for visibility into and out of the store.
7. *Secondary Design Elements:* Keep the treatment of secondary design elements such as graphics and awnings as simple as possible in order to avoid visual clutter to the building and its streetscape.

8

Names:
Storefront
Rehabilitation

Types:
article

Hts. Dis. Hist. Preservat. Comm
4D5

Figure 10. *(A) This existing storefront, added in the 1950's to a late 19th century brick building, extends beyond the plane of the facade; faced with anodized aluminum and permastone, it does not contribute to the architectural and historic character of the building. (B) This replacement design uses "lumberyard colonial" detailing, such as barn-type doors, shutters, small paned windows, and a wood shake pent roof. The design, detailing, and choice of materials are clearly inappropriate to this commercial building. (C) This replacement design retains the 1950's projecting canopy but symmetrical placement of the doors relates well to the second floor windows above; this contemporary design is compatible with the scale and character of the building. (D) This replacement design accurately restores the original appearance of the building; based on historical research and physical evidence, it too is an acceptable preservation approach. Drawings: Sharon C. Park, AIA*

A restoration program requires thorough documentation of the historic development of the building prior to initiating work. If a restoration of the original storefront is contemplated, old photographs and prints, as well as physical evidence, should be used in determining the form and details of the original. Because storefronts are particularly susceptible to alteration in response to changing marketing techniques, it is worthwhile to find visual documentation from a variety of periods to have a clear understanding of the evolution of the storefront. Removal of later additions that contribute to the character of the building should not be undertaken.

Other Considerations

Pigmented Structural Glass

The rehabilitation of pigmented structural glass storefronts, common in the 1930's, is a delicate and often frustrating task, due to the fragility and scarcity of the material. Typically the glass was installed against masonry walls with asphaltic mastic and a system of metal shelf angles bolted to the walls on three-foot centers. Joints between the panels were filled with cork tape or an elastic joint cement to cushion movement and prevent moisture infiltration.

The decision to repair or replace damaged glass panels should be made on a case-by-case basis. In some instances, the damage may be so minor or the likelihood of finding replacement glass so small, that repairing, reanchoring and/or stabilizing the damaged glass panel may be the only prudent choice. If the panel is totally destroyed or missing, it may be possible to replace with glass salvaged from a demolition; or a substitute material, such as "spandrel glass," which approximates the appearance of the original. Although pigmented structural glass is no longer readily available, occasionally long-established glass "jobbers" will have a limited supply to repair historic storefronts.

Awnings

Where based on historic precedent, consider the use of canvas awnings on historic storefronts (see figure 11). Awnings can help shelter passersby, reduce glare, and conserve energy by controlling the amount of sunlight hitting the store window, although buildings with northern exposures will seldom functionally require them. Today's canvas awnings have an average life expectancy of between 4 and 7 years. In many cases awnings can disguise, in an inexpensive manner, later inappropriate alterations and can provide both additional color and a strong store identification. Fixed aluminum awnings and awnings simulating mansard roofs and umbrellas are generally inappropriate for older commercial buildings. If awnings are added, choose those that are made from soft canvas or vinyl materials rather than wood or metal; be certain that they are installed without damaging the building or visually impairing distinctive architectural features and can be operable for maximum energy conservation effect.

Figure 11. *Try to locate old photographs or prints to determine what alterations have been made to the storefront and when they were undertaken. Awnings were common elements of storefronts at the turn of the century. They can be equally useful today.*

9

Names:

Storefront
Rehabilitation

Types:

article

Hts. Dis Hist. Preservat. Com 84
4D5

Signs

Signs were an important aspect of 19th and early 20th century storefronts and today play an important role in defining the character of a business district. In examining historic streetscape photographs, one is struck by the number of signs—in windows, over doors, painted on exterior walls, and hanging over (and sometimes across) the street. While this confusion was part of the character of 19th century cities and towns, today's approach toward signs in historic districts tends to be much more conservative. Removal of some signs can have a dramatic effect in improving the visual appearance of a building: these include modern backlit fluorescent signs, large applied signs with distinctive corporate logos, and those signs attached to a building in such a way as to obscure significant architectural detailing. For this reason, their removal is encouraged in the process of rehabilitation. If new signs are designed, they should be of a size and style compatible with the historic building and should not cover or obscure significant architectural detailing or features. For many 19th century buildings, it was common to mount signs on the lintel above the first story. Another common approach, especially at the turn of the century, was to paint signs directly on the inside of the display windows. Frequently this was done in gold leaf. New hanging signs may be appropriate for historic commercial buildings, if they are of a scale and design compatible with the historic buildings. Retention of signs and advertising painted on historic walls, if of historic or artistic interest (especially where they provide evidence of early or original occupants), is encouraged.

Paint Color

Paint analysis can reveal the storefront's historic paint colors and may be worth undertaking if a careful restoration is desired. If not, the paint color should be, at a minimum, appropriate to the style and setting of the building. This also means that if the building is in a historic district, the color selection should complement the building in question as well as other buildings in the block. In general, color schemes for wall and major decorative trim or details should be kept simple: in most cases the color or colors chosen for a storefront should be used on other painted exterior detailing (windows, shutter, cornice, etc.) to unify upper and lower portions of the facade.

Windows

Glass windows are generally the most prominent features in historic storefronts, and care should be taken to ensure that they are properly maintained. For smaller paned windows with wooden frames, deteriorated putty should be removed manually, taking care not to damage wood along the rabbet. To reglaze, a bead of linseed oil-based putty should be laid around the perimeter of the rabbet: the glass pane pressed into place: glazing points inserted to hold the pane; and a final seal of putty beveled around the edge of the glass. For metal framed windows, glazing compound and special glazing clips are used to secure the glass: a final seal of glazing compound then is often applied. If the glass needs replacing, the new glass should match the original in size, color and reflective qualities. Mirrored or tinted glass are generally inappropriate replacements for historic storefronts. The replacement of cracked or missing glass in large windows should be undertaken by professional glaziers.

Code Requirements

Alterations to a storefront called for by public safety, handicapped access, and fire codes can be difficult design problems in historic buildings. Negotiations can be undertaken with appropriate officials to ensure that all applicable codes are being met while maintaining the historic character of the original construction materials and features. If, for instance, doors opening inward must be changed, rather than replace them with new doors, it may be possible to reverse the hinges and stops so that they will swing outward.

Summary

A key to the successful rehabilitation of historic commercial buildings is the sensitive treatment of the first floor itself (see figure 12). Wherever possible, significant storefronts (be they original or later alterations), including windows, sash, doors, transoms, signs and decorative features, should be repaired in order to retain the historic character of the building. Where original or early storefronts no longer exist or are too deteriorated to save, the commercial character of the building should nonetheless be preserved—either through an accurate restoration based on historic research and physical evidence or a contemporary design which is compatible with the scale, design, materials, color and texture of the historic building. The sensitive rehabilitation of historic storefronts will not only enhance the architectural character of the overall building but will contribute to rejuvenating neighborhoods or business districts as well.

Figure 12. *This photograph of three late 19th century commercial buildings clearly shows the impact of preserving and rehabilitating storefronts. The one on the right has been totally obscured by a "modern" front added in the 1950's. Although inappropriate alterations have taken place on the left storefront, it is still possible to determine the original configuration of the doors and display windows. The storefront in the middle has remained intact. Although in need of some minor maintenance work, the appeal of the original design and materials is immediately apparent.*

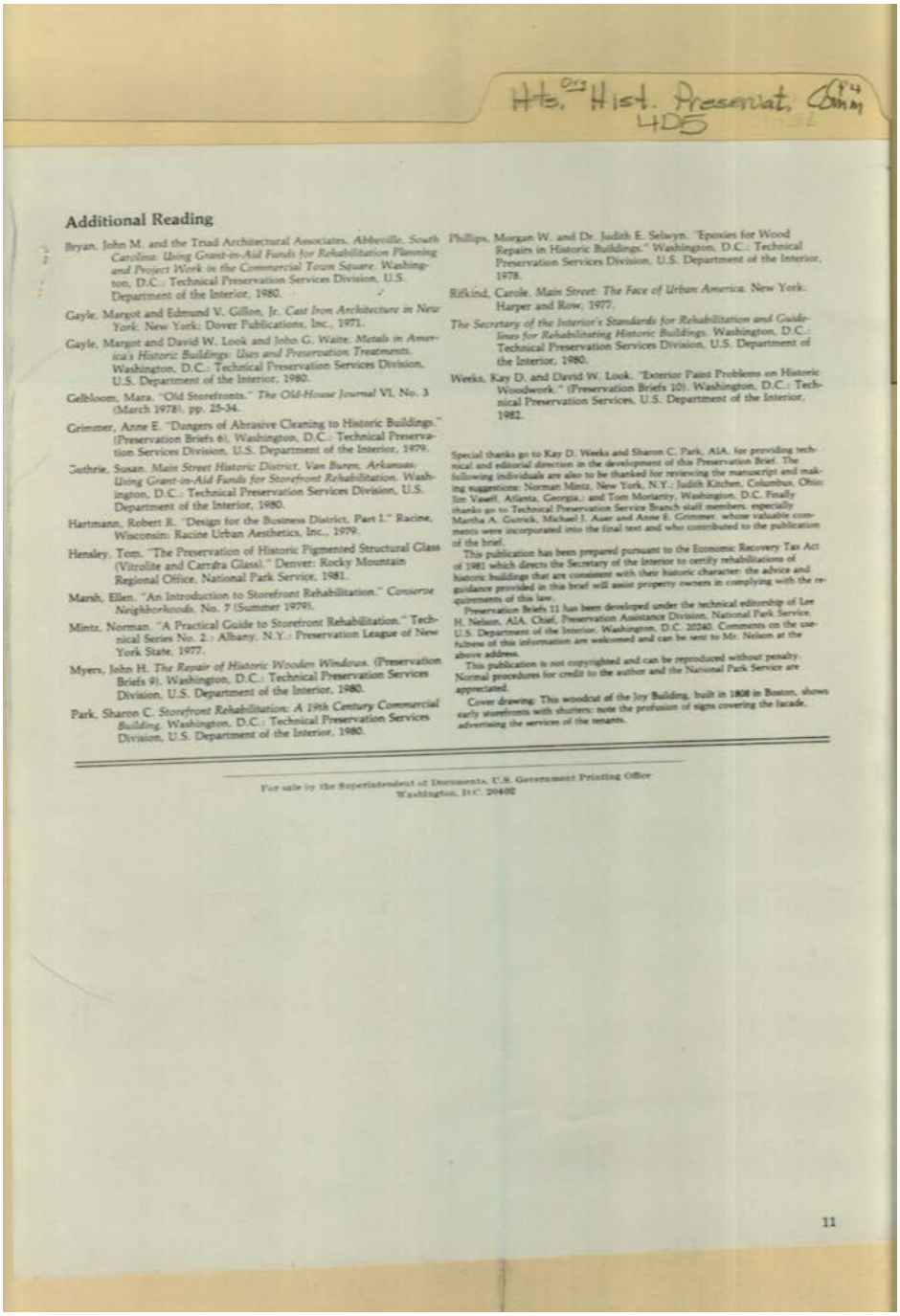
10

Names:

Storefront
Rehabilitation

Types:

article



Hts. Dis Hist. Preservat. Comm 84
405

Additional Reading

Bryan, John M. and the Triad Architectural Associates. *Abbeville, South Carolina: Using Grant-in-Aid Funds for Rehabilitation Planning and Project Work in the Commercial Town Square.* Washington, D.C.: Technical Preservation Services Division, U.S. Department of the Interior, 1980.

Gayle, Margot and Edmund V. Gillon, Jr. *Cast Iron Architecture in New York.* New York: Dover Publications, Inc., 1971.

Gayle, Margot and David W. Look and John G. Waite. *Metals in America's Historic Buildings: Uses and Preservation Treatments.* Washington, D.C.: Technical Preservation Services Division, U.S. Department of the Interior, 1980.

Gelbloom, Mara. "Old Storefronts." *The Old-House Journal* VI, No. 3 (March 1978), pp. 25-34.

Grimmer, Anne E. "Dangers of Abrasive Cleaning to Historic Buildings." (Preservation Briefs 6). Washington, D.C.: Technical Preservation Services Division, U.S. Department of the Interior, 1979.

Guthrie, Susan. *Main Street Historic District, Van Buren, Arkansas: Using Grant-in-Aid Funds for Storefront Rehabilitation.* Washington, D.C.: Technical Preservation Services Division, U.S. Department of the Interior, 1980.

Hartmann, Robert R. "Design for the Business District, Part I." Racine, Wisconsin: Racine Urban Aesthetics, Inc., 1979.

Hensley, Tom. "The Preservation of Historic Pigmented Structural Glass (Vitrolite and Carrara Glass)." Denver: Rocky Mountain Regional Office, National Park Service, 1981.

Marsh, Ellen. "An Introduction to Storefront Rehabilitation." *Conserve Neighborhoods.* No. 7 (Summer 1979).

Mintz, Norman. "A Practical Guide to Storefront Rehabilitation." Technical Series No. 2.: Albany, N.Y.: Preservation League of New York State, 1977.

Myers, John H. *The Repair of Historic Wooden Windows.* (Preservation Briefs 9). Washington, D.C.: Technical Preservation Services Division, U.S. Department of the Interior, 1980.

Park, Sharon C. *Storefront Rehabilitation: A 19th Century Commercial Building.* Washington, D.C.: Technical Preservation Services Division, U.S. Department of the Interior, 1980.

Phillips, Morgan W. and Dr. Judith E. Selwyn. "Epoxies for Wood Repairs in Historic Buildings." Washington, D.C.: Technical Preservation Services Division, U.S. Department of the Interior, 1978.

Rifkind, Carole. *Main Street: The Face of Urban America.* New York: Harper and Row, 1977.

The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. Washington, D.C.: Technical Preservation Services Division, U.S. Department of the Interior, 1980.

Weeks, Kay D. and David W. Look. "Exterior Paint Problems on Historic Woodwork." (Preservation Briefs 10). Washington, D.C.: Technical Preservation Services, U.S. Department of the Interior, 1982.

Special thanks go to Kay D. Weeks and Sharon C. Park, AIA, for providing technical and editorial direction in the development of this Preservation Brief. The following individuals are also to be thanked for reviewing the manuscript and making suggestions: Norman Mintz, New York, N.Y.; Judith Kitchen, Columbus, Ohio; Jim Vaself, Atlanta, Georgia.; and Tom Moriarity, Washington, D.C. Finally thanks go to Technical Preservation Service Branch staff members, especially Martha A. Gutrick, Michael J. Auer and Anne E. Grimmer, whose valuable comments were incorporated into the final text and who contributed to the publication of the brief.

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 provided in this brief will assist property owners in complying with the requirements of this law.

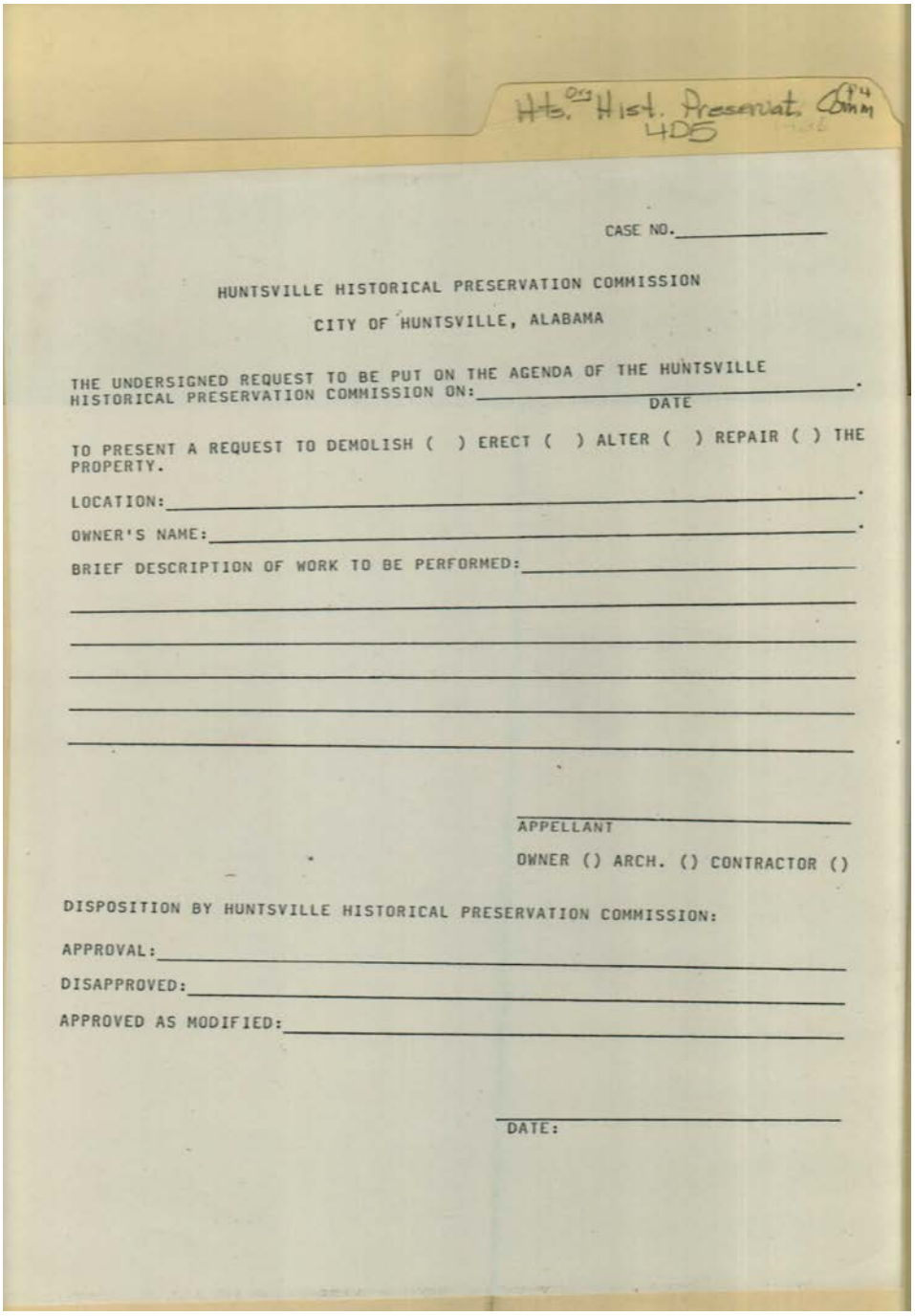
Preservation Briefs 11 has been developed under the technical editorship of Lee H. Nelson, AIA, Chief, Preservation Assistance Division, National Park Service, U.S. Department of the Interior, Washington, D.C. 20240. Comments on the usefulness of this information are welcomed and can be sent to Mr. Nelson at the above address.

Cover drawing: This woodcut of the Joy Building, built in 1808 in Boston, shows early storefronts with shutters; note the profusion of signs covering the facade, advertising the services of the tenants.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Names:
Storefront
Rehabilitation

Types:
article



Hts. Org. Hist. Preservat. Comm
4D5

CASE NO._____

HUNTSVILLE HISTORICAL PRESERVATION COMMISSION

CITY OF HUNTSVILLE, ALABAMA

THE UNDERSIGNED REQUEST TO BE PUT ON THE AGENDA OF THE HUNTSVILLE HISTORICAL PRESERVATION COMMISSION ON:_____.
DATE

TO PRESENT A REQUEST TO DEMOLISH ( ) ERECT ( ) ALTER ( ) REPAIR ( ) THE PROPERTY.

LOCATION:_____.

OWNER'S NAME:_____.

BRIEF DESCRIPTION OF WORK TO BE PERFORMED:_____

_____

_____

_____

_____

_____

_____
APPELLANT

OWNER () ARCH. () CONTRACTOR ()

DISPOSITION BY HUNTSVILLE HISTORICAL PRESERVATION COMMISSION:

APPROVAL:_____

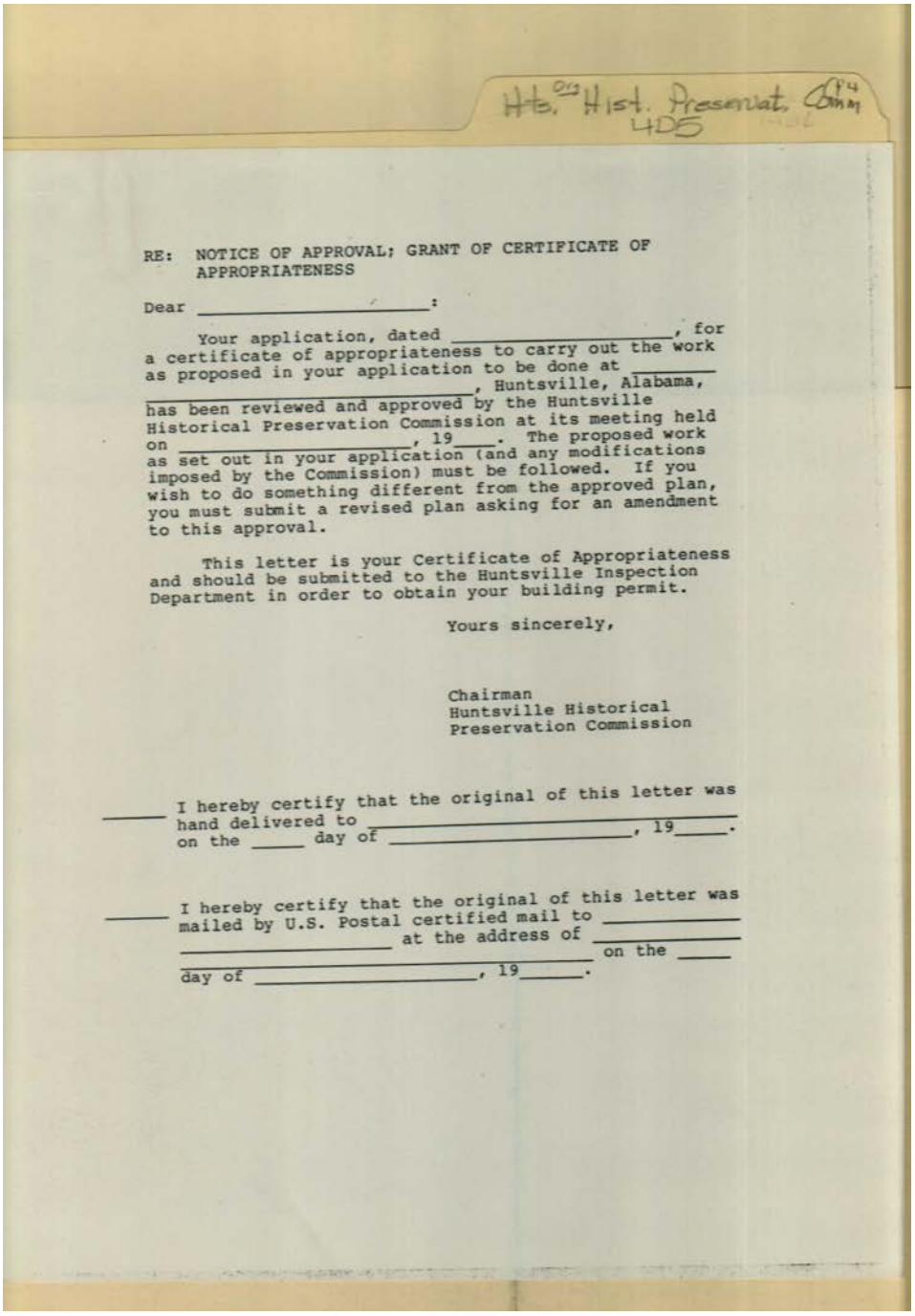
DISAPPROVED:_____

APPROVED AS MODIFIED:_____

_____
DATE:

Names:
Applications

Types:
form



Hts. Ors Hist. Preservat. Comm
4D5

RE: NOTICE OF APPROVAL; GRANT OF CERTIFICATE OF APPROPRIATENESS

Dear _____:

Your application, dated _____, for a certificate of appropriateness to carry out the work as proposed in your application to be done at _____ _____, Huntsville, Alabama, has been reviewed and approved by the Huntsville Historical Preservation Commission at its meeting held on _____, 19____. The proposed work as set out in your application (and any modifications imposed by the Commission) must be followed. If you wish to do something different from the approved plan, you must submit a revised plan asking for an amendment to this approval.

This letter is your Certificate of Appropriateness and should be submitted to the Huntsville Inspection Department in order to obtain your building permit.

Yours sincerely,

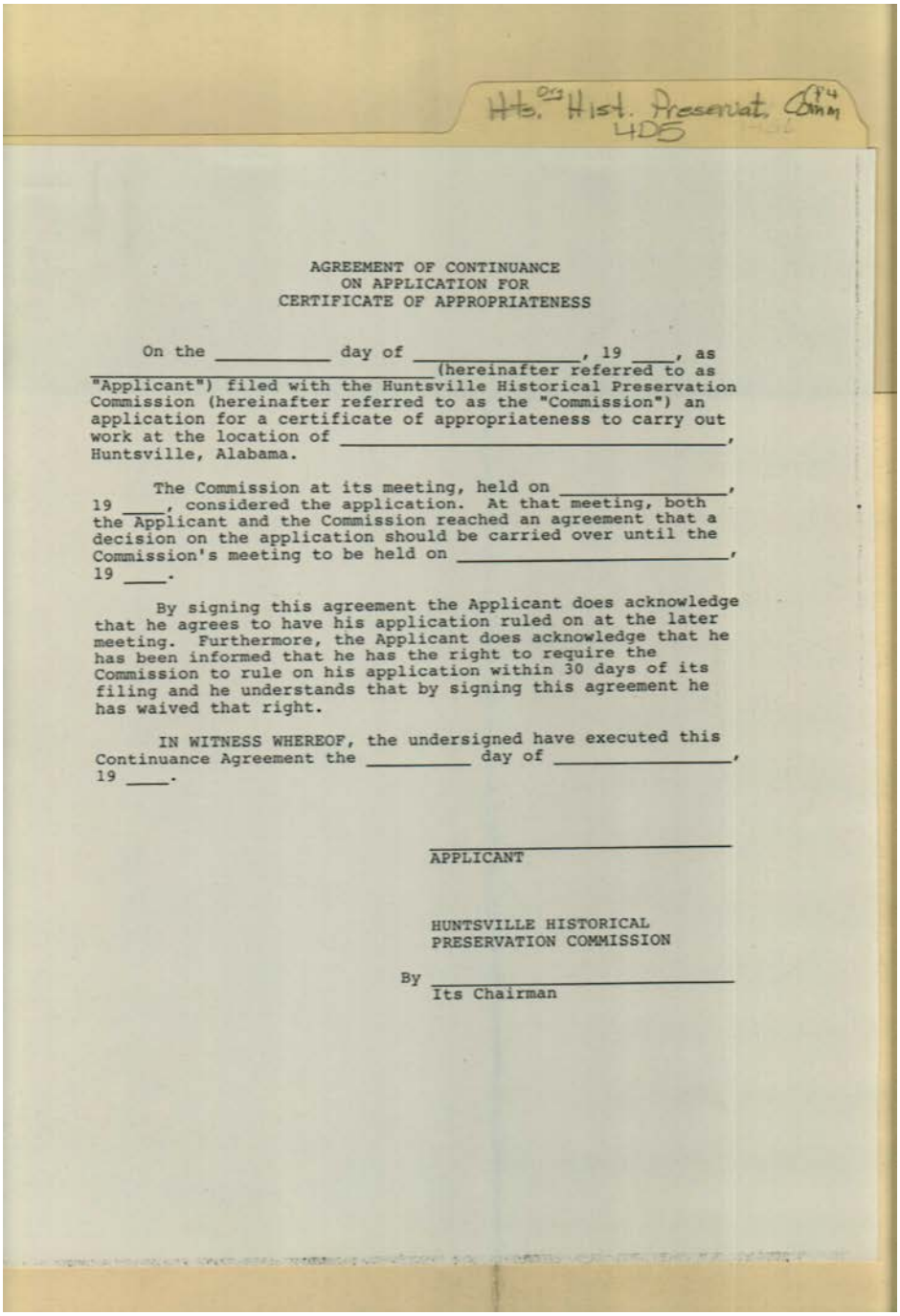
Chairman
Huntsville Historical
Preservation Commission

_____ I hereby certify that the original of this letter was hand delivered to _____ on the _____ day of _____, 19_____.

_____ I hereby certify that the original of this letter was mailed by U.S. Postal certified mail to _____ _____ at the address of _____ _____ on the _____ day of _____, 19_____.

Names:
Approval

Types:
form



Hts. Org Hist. Preservat. Comm
4D5

AGREEMENT OF CONTINUANCE
ON APPLICATION FOR
CERTIFICATE OF APPROPRIATENESS

On the _____ day of _____, 19 ____, as _____(hereinafter referred to as "Applicant") filed with the Huntsville Historical Preservation Commission (hereinafter referred to as the "Commission") an application for a certificate of appropriateness to carry out work at the location of _____, Huntsville, Alabama.

The Commission at its meeting, held on _____, 19 ____, considered the application. At that meeting, both the Applicant and the Commission reached an agreement that a decision on the application should be carried over until the Commission's meeting to be held on _____, 19 ____.

By signing this agreement the Applicant does acknowledge that he agrees to have his application ruled on at the later meeting. Furthermore, the Applicant does acknowledge that he has been informed that he has the right to require the Commission to rule on his application within 30 days of its filing and he understands that by signing this agreement he has waived that right.

IN WITNESS WHEREOF, the undersigned have executed this Continuance Agreement the _____ day of _____, 19 ____.

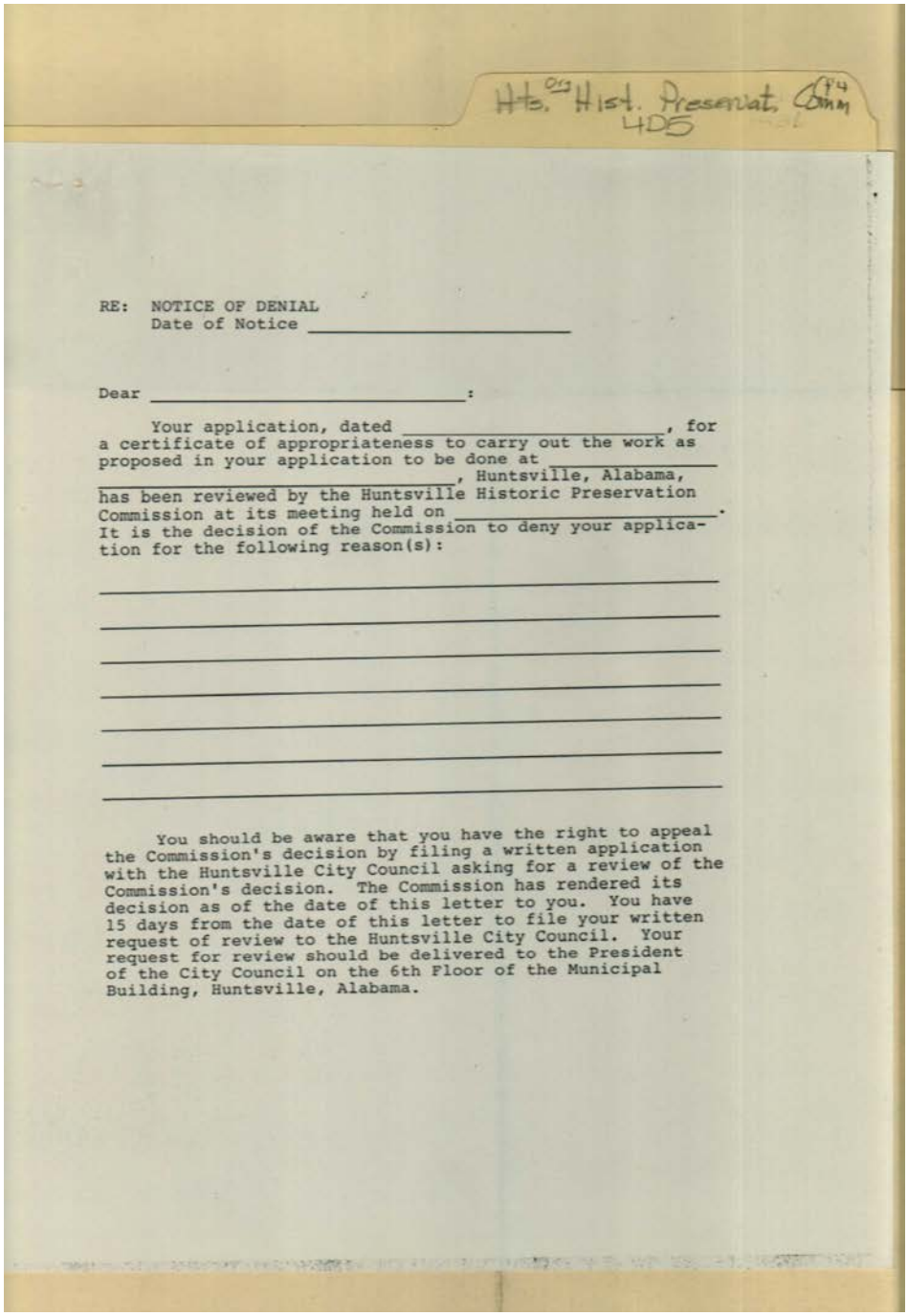
_____
APPLICANT

HUNTSVILLE HISTORICAL
PRESERVATION COMMISSION

By _____
Its Chairman

Names:
Continuance

Types:
form



Hts. Dis Hist. Preservat. Comm
4D5

RE: NOTICE OF DENIAL
Date of Notice _____

Dear _____:

Your application, dated _____, for a certificate of appropriateness to carry out the work as proposed in your application to be done at _____ _____, Huntsville, Alabama, has been reviewed by the Huntsville Historic Preservation Commission at its meeting held on _____. It is the decision of the Commission to deny your application for the following reason(s):

_____

_____

_____

_____

_____

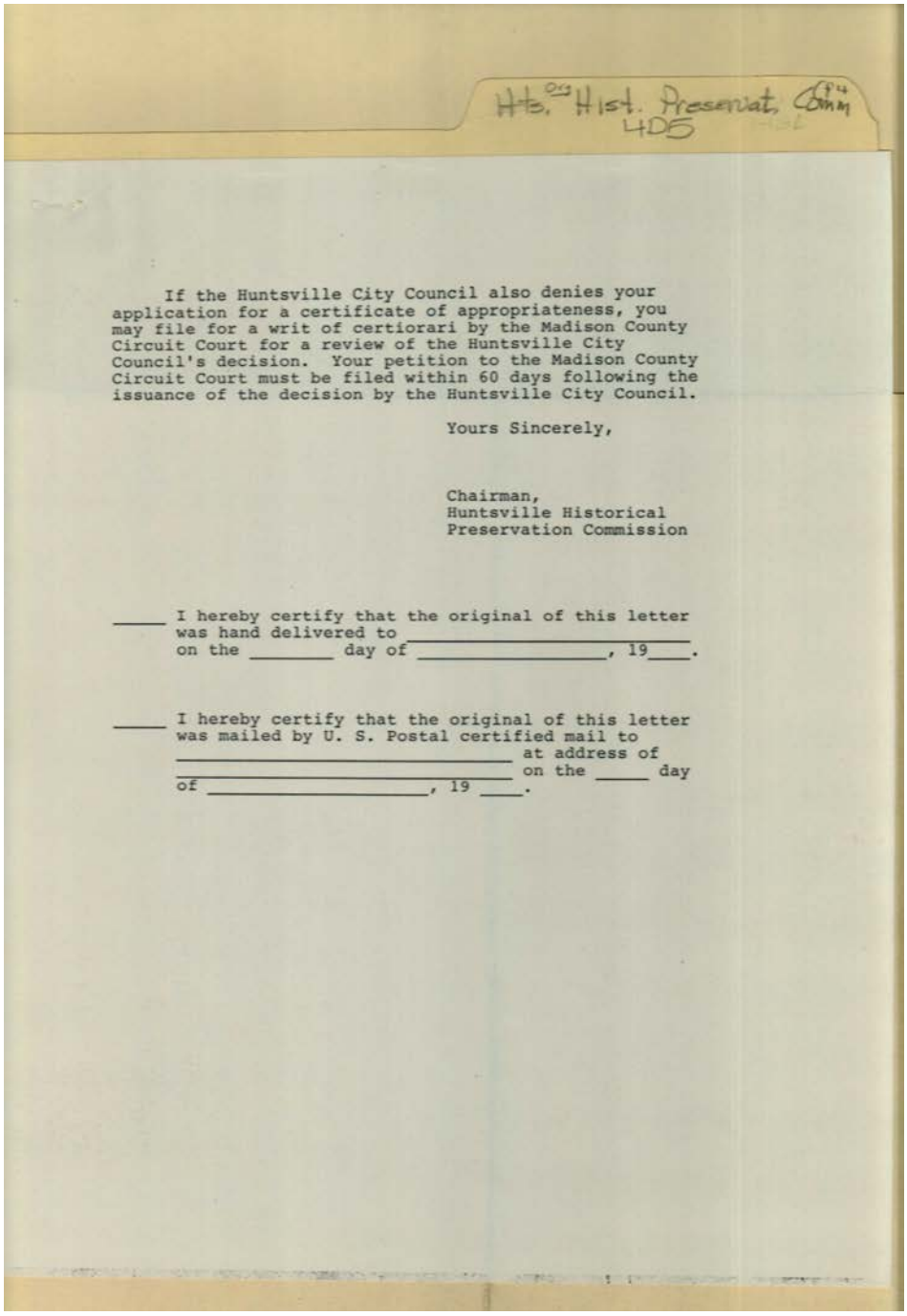
_____

_____

You should be aware that you have the right to appeal the Commission's decision by filing a written application with the Huntsville City Council asking for a review of the Commission's decision. The Commission has rendered its decision as of the date of this letter to you. You have 15 days from the date of this letter to file your written request of review to the Huntsville City Council. Your request for review should be delivered to the President of the City Council on the 6th Floor of the Municipal Building, Huntsville, Alabama.

Names:
Denial Notice

Types:
form



Hts. Dis Hist. Preservat. Comm
4D5

If the Huntsville City Council also denies your application for a certificate of appropriateness, you may file for a writ of certiorari by the Madison County Circuit Court for a review of the Huntsville City Council's decision. Your petition to the Madison County Circuit Court must be filed within 60 days following the issuance of the decision by the Huntsville City Council.

Yours Sincerely,

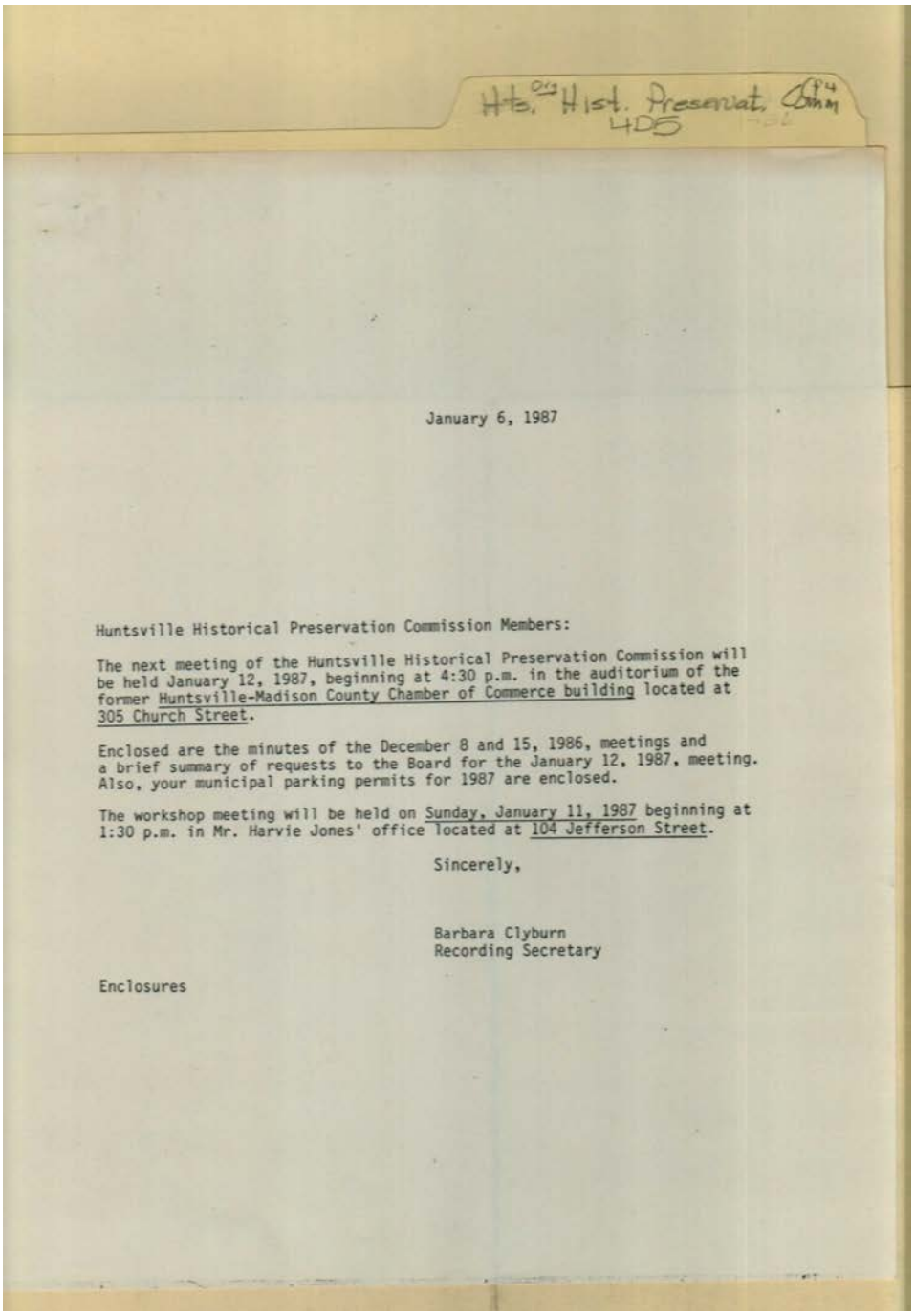
Chairman,
Huntsville Historical
Preservation Commission

_____ I hereby certify that the original of this letter was hand delivered to _____ on the _____ day of _____, 19____.

_____ I hereby certify that the original of this letter was mailed by U. S. Postal certified mail to _____ at address of _____ on the _____ day of _____, 19 ____.

Names:
Denial Notice

Types:
form



Hts. Hist. Preservat. Comm
4D5

January 6, 1987

Huntsville Historical Preservation Commission Members:

The next meeting of the Huntsville Historical Preservation Commission will be held January 12, 1987, beginning at 4:30 p.m. in the auditorium of the former Huntsville-Madison County Chamber of Commerce building located at 305 Church Street.

Enclosed are the minutes of the December 8 and 15, 1986, meetings and a brief summary of requests to the Board for the January 12, 1987, meeting. Also, your municipal parking permits for 1987 are enclosed.

The workshop meeting will be held on Sunday, January 11, 1987 beginning at 1:30 p.m. in Mr. Harvie Jones' office located at 104 Jefferson Street.

Sincerely,

Barbara Clyburn
Recording Secretary

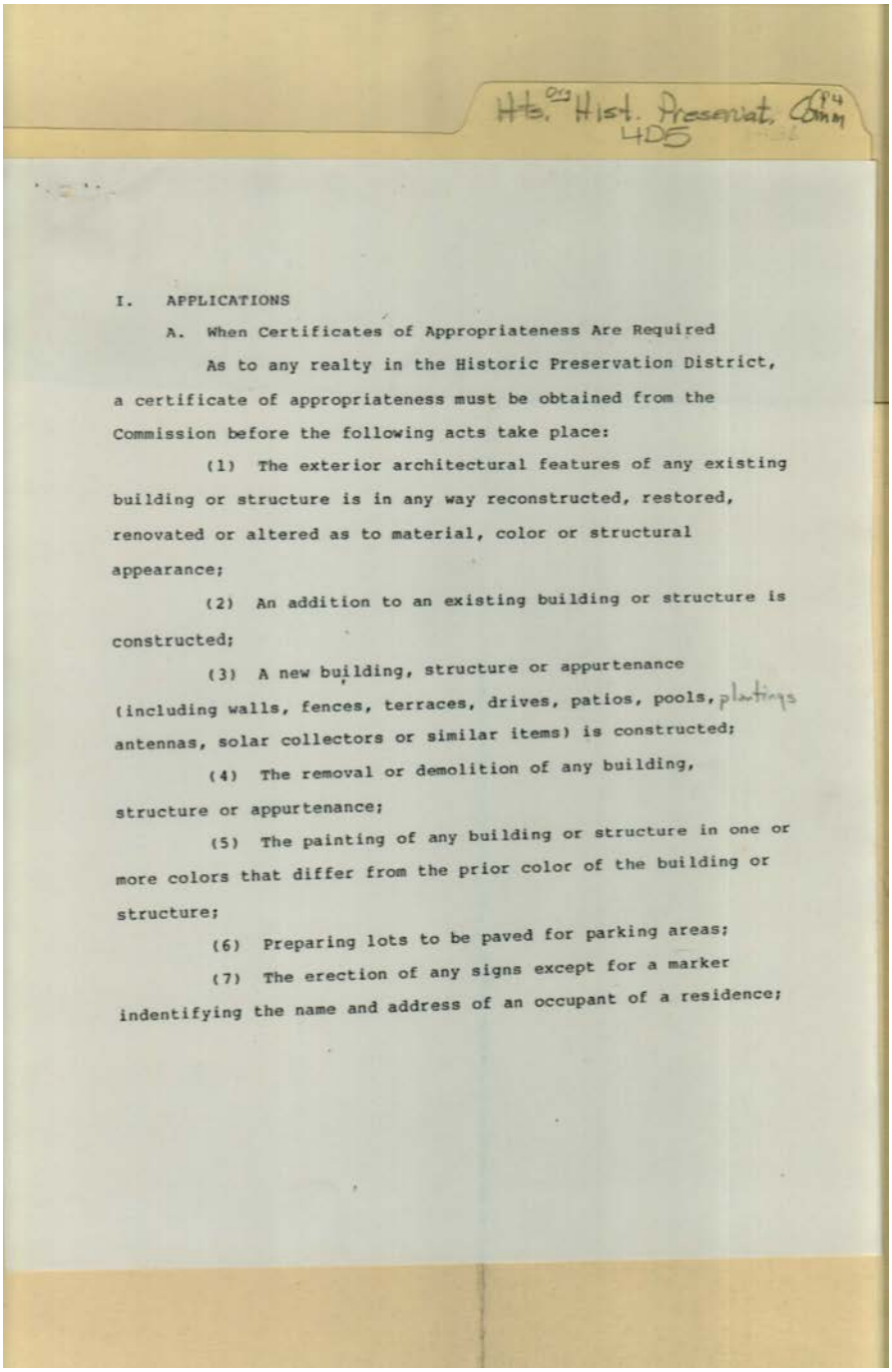
Enclosures

Names:
Clyburn, Barbara Jones, Harvie

Places:
Huntsville, AL

Types:
correspondence

Dates:
Jan 06, 1987



Hts. Ord. Hist. Preservat. Comm
4D5

I. APPLICATIONS

A. When Certificates of Appropriateness Are Required

As to any realty in the Historic Preservation District, a certificate of appropriateness must be obtained from the Commission before the following acts take place:

(1) The exterior architectural features of any existing building or structure is in any way reconstructed, restored, renovated or altered as to material, color or structural appearance;

(2) An addition to an existing building or structure is constructed;

(3) A new building, structure or appurtenance (including walls, fences, terraces, drives, patios, pools, plantings antennas, solar collectors or similar items) is constructed;

(4) The removal or demolition of any building, structure or appurtenance;

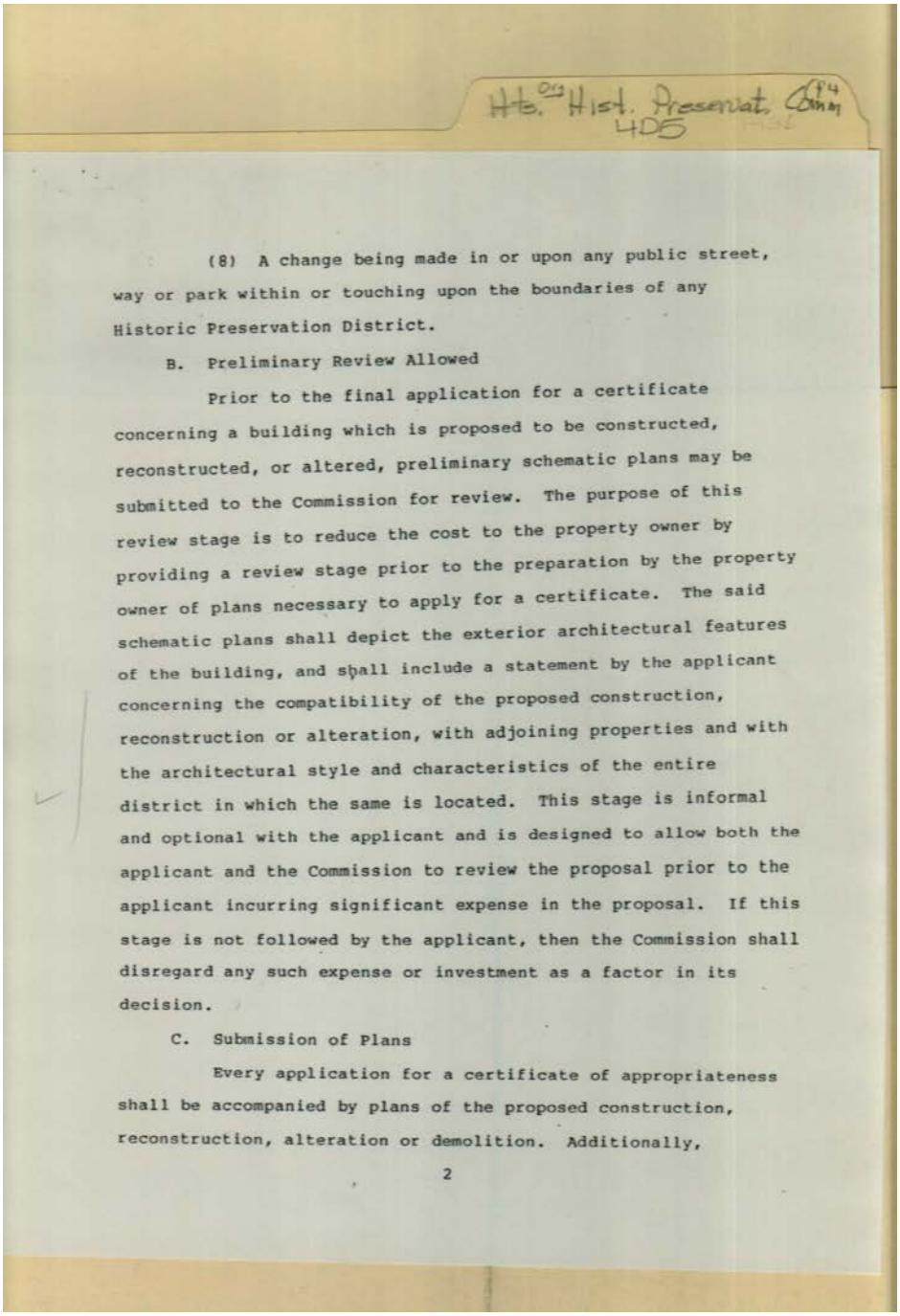
(5) The painting of any building or structure in one or more colors that differ from the prior color of the building or structure;

(6) Preparing lots to be paved for parking areas;

(7) The erection of any signs except for a marker indentifying the name and address of an occupant of a residence;

Names:
Applications

Types:
regulations



Hts. Dis Hist. Preservat. Comm
4D5

(8) A change being made in or upon any public street, way or park within or touching upon the boundaries of any Historic Preservation District.

B. Preliminary Review Allowed

Prior to the final application for a certificate concerning a building which is proposed to be constructed, reconstructed, or altered, preliminary schematic plans may be submitted to the Commission for review. The purpose of this review stage is to reduce the cost to the property owner by providing a review stage prior to the preparation by the property owner of plans necessary to apply for a certificate. The said schematic plans shall depict the exterior architectural features of the building, and shall include a statement by the applicant concerning the compatibility of the proposed construction, reconstruction or alteration, with adjoining properties and with the architectural style and characteristics of the entire district in which the same is located. This stage is informal and optional with the applicant and is designed to allow both the applicant and the Commission to review the proposal prior to the applicant incurring significant expense in the proposal. If this stage is not followed by the applicant, then the Commission shall disregard any such expense or investment as a factor in its decision.

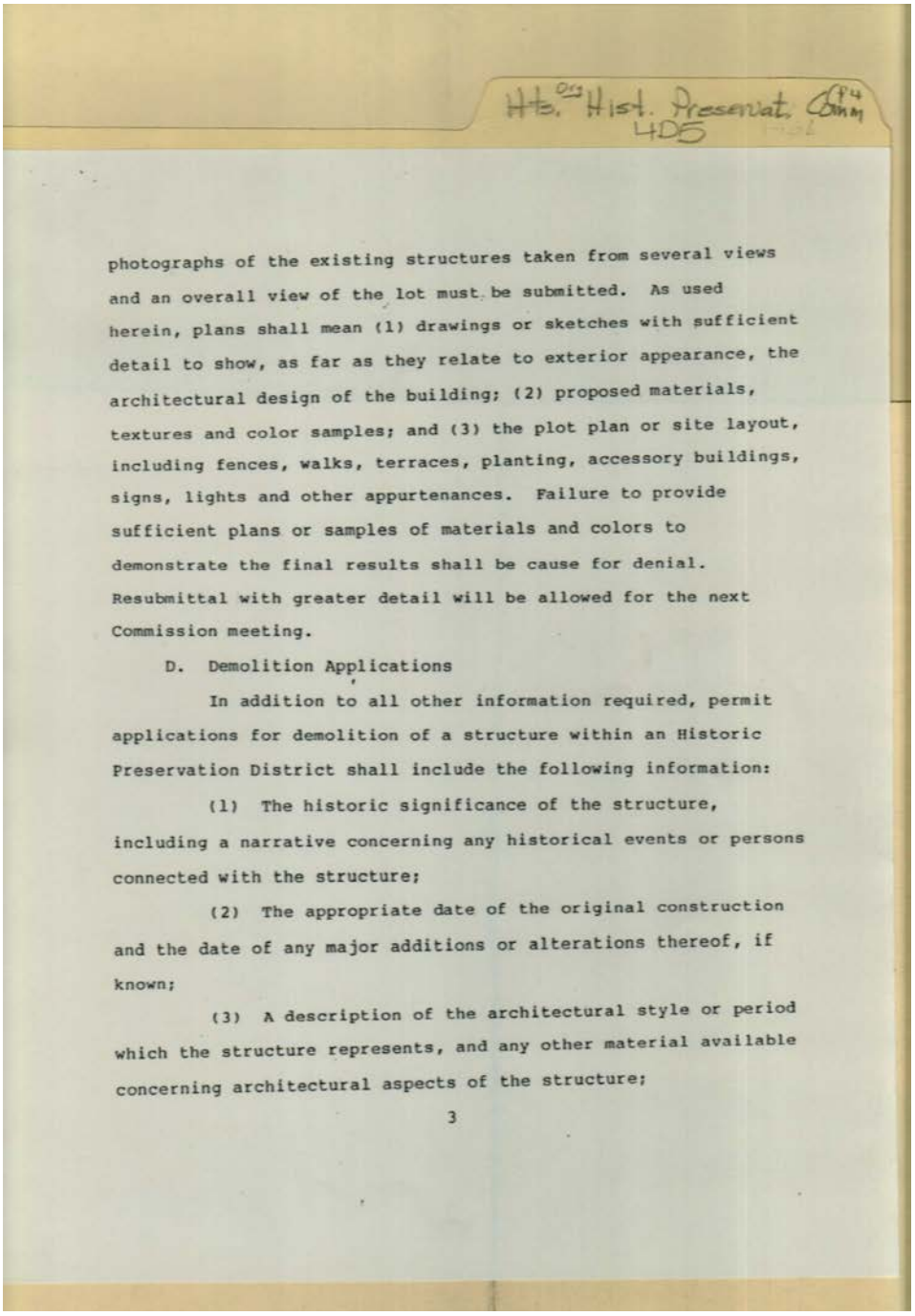
C. Submission of Plans

Every application for a certificate of appropriateness shall be accompanied by plans of the proposed construction, reconstruction, alteration or demolition. Additionally,

2

Names:
Applications

Types:
regulations



Hts. Org. Hist. Preservat. Comm
4D5

photographs of the existing structures taken from several views and an overall view of the lot must be submitted. As used herein, plans shall mean (1) drawings or sketches with sufficient detail to show, as far as they relate to exterior appearance, the architectural design of the building; (2) proposed materials, textures and color samples; and (3) the plot plan or site layout, including fences, walks, terraces, planting, accessory buildings, signs, lights and other appurtenances. Failure to provide sufficient plans or samples of materials and colors to demonstrate the final results shall be cause for denial. Resubmittal with greater detail will be allowed for the next Commission meeting.

D. Demolition Applications

In addition to all other information required, permit applications for demolition of a structure within an Historic Preservation District shall include the following information:

(1) The historic significance of the structure, including a narrative concerning any historical events or persons connected with the structure;

(2) The appropriate date of the original construction and the date of any major additions or alterations thereof, if known;

(3) A description of the architectural style or period which the structure represents, and any other material available concerning architectural aspects of the structure;

3

Names:
Applications

Types:
regulations

Hts. Hist. Preservat. Comm 405

(4) At least two 8 by 10 exterior photographs of the structure, showing, as near as possible, all the exposed surfaces of the structure;

(5) A written report of an architect or structural engineer concerning the condition of the structure and the economic aspects of repairing the structure (an architect experienced in Historic Preservation work is recommended);

(6) A statement concerning any practical difficulties in making the structure meet the minimum code requirements;

(7) The present use of the property and surrounding properties and any proposed changes in said use.

E. Deadline for Applications

The deadline for submission of an application is six days prior to the Commission's regular monthly meeting.

F. Place to Submit Applications

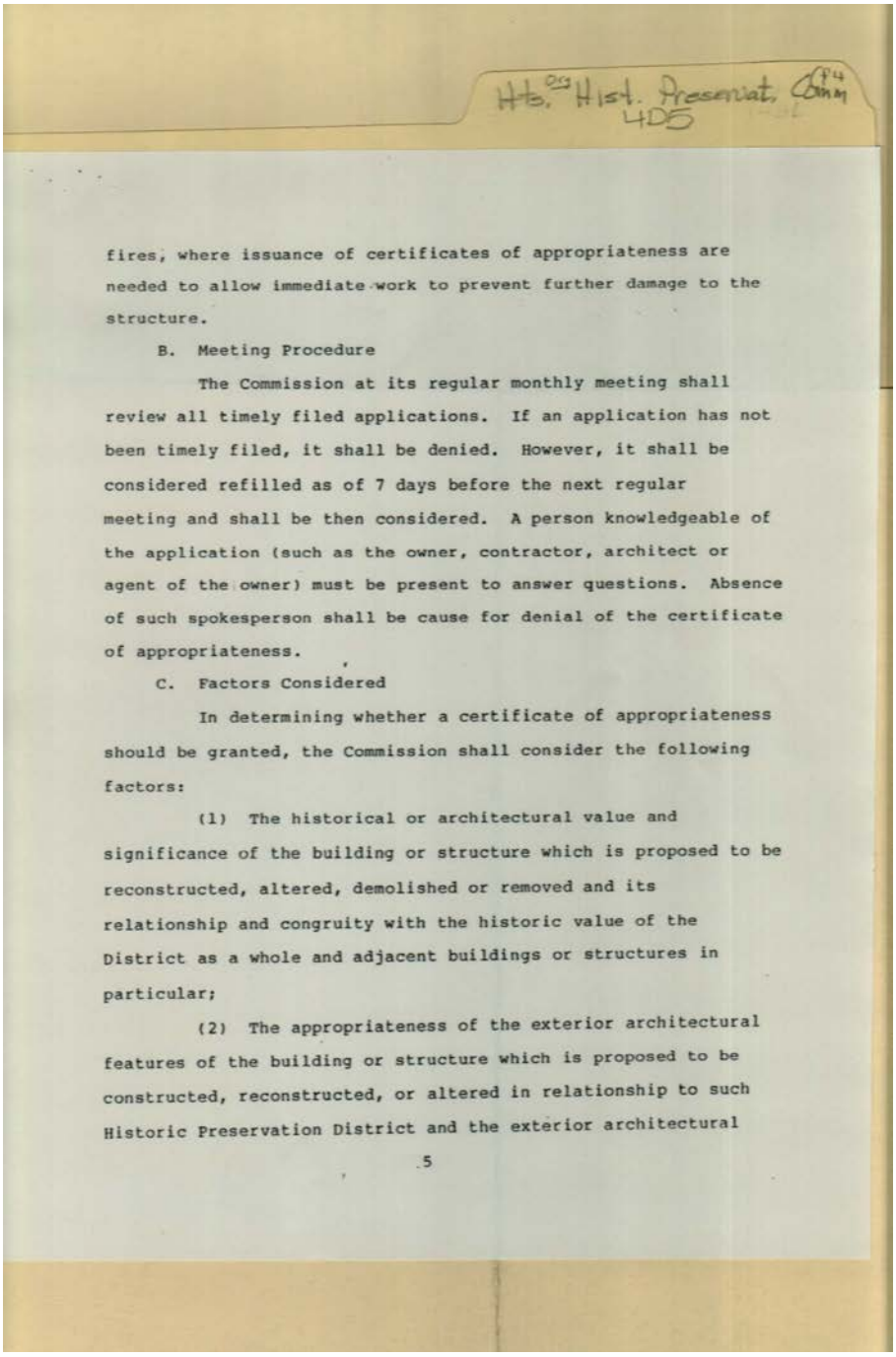
Applications should be submitted at the City of Huntsville Building Inspector's office.

II. REVIEW OF APPLICATION BY COMMISSION

A. Commission Meetings

The Commission's regular monthly meeting shall be held on the second Monday of each month, except that the Chairman may set a different meeting date when he determines it appropriate. Special meetings of the Commission may be called at the discretion of the Chairman as he determines necessary, especially in the event of an emergency nature such as storm damage and

Names:
Applications
Types:
regulations



Hts. Dis. Hist. Preservat. Com. 4D5

fires, where issuance of certificates of appropriateness are needed to allow immediate work to prevent further damage to the structure.

B. Meeting Procedure

The Commission at its regular monthly meeting shall review all timely filed applications. If an application has not been timely filed, it shall be denied. However, it shall be considered refilled as of 7 days before the next regular meeting and shall be then considered. A person knowledgeable of the application (such as the owner, contractor, architect or agent of the owner) must be present to answer questions. Absence of such spokesperson shall be cause for denial of the certificate of appropriateness.

C. Factors Considered

In determining whether a certificate of appropriateness should be granted, the Commission shall consider the following factors:

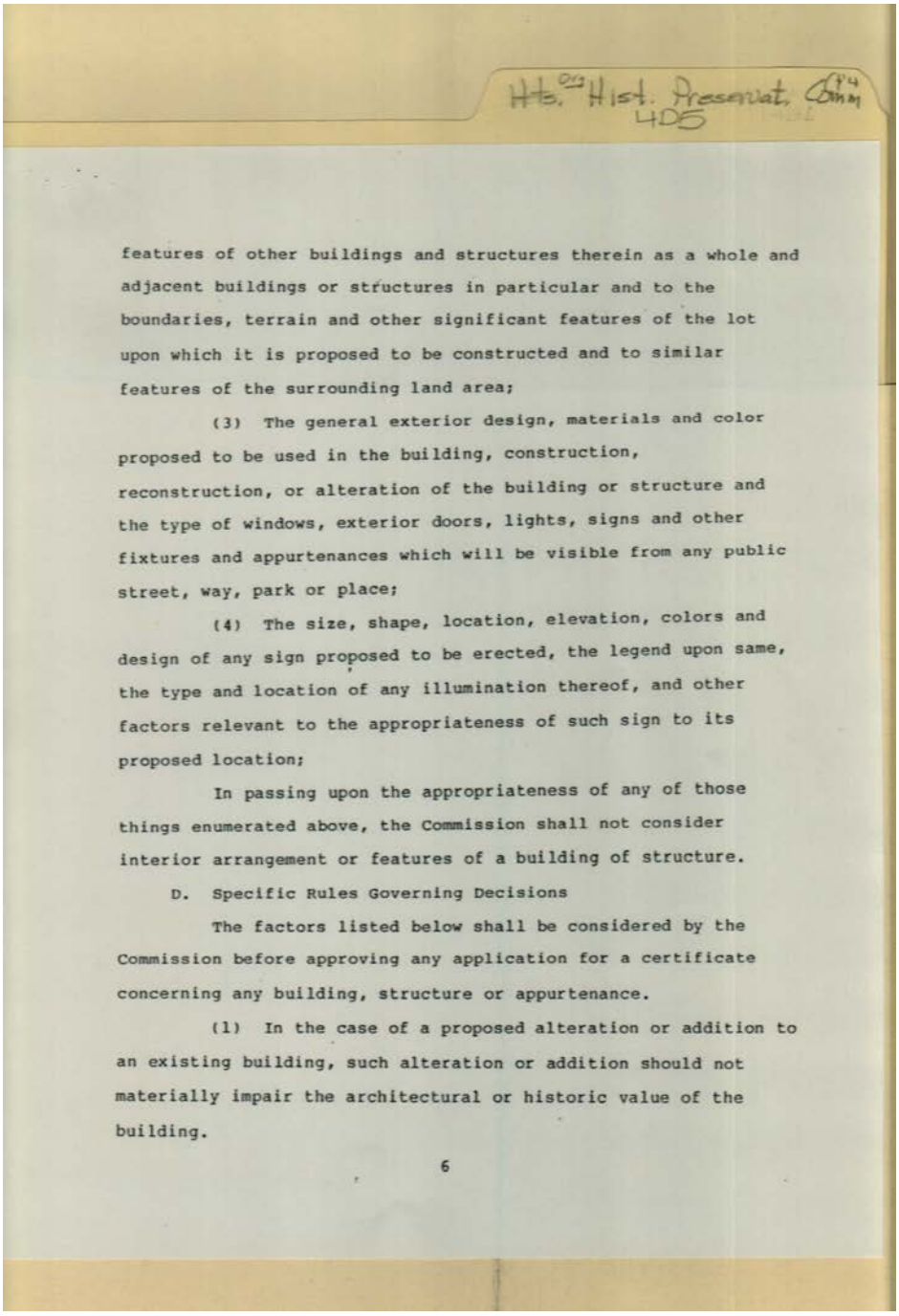
(1) The historical or architectural value and significance of the building or structure which is proposed to be reconstructed, altered, demolished or removed and its relationship and congruity with the historic value of the District as a whole and adjacent buildings or structures in particular;

(2) The appropriateness of the exterior architectural features of the building or structure which is proposed to be constructed, reconstructed, or altered in relationship to such Historic Preservation District and the exterior architectural

5

Names:
Applications

Types:
regulations



Hts. Dis Hist. Preservat. Comm
4D5

features of other buildings and structures therein as a whole and adjacent buildings or structures in particular and to the boundaries, terrain and other significant features of the lot upon which it is proposed to be constructed and to similar features of the surrounding land area;

(3) The general exterior design, materials and color proposed to be used in the building, construction, reconstruction, or alteration of the building or structure and the type of windows, exterior doors, lights, signs and other fixtures and appurtenances which will be visible from any public street, way, park or place;

(4) The size, shape, location, elevation, colors and design of any sign proposed to be erected, the legend upon same, the type and location of any illumination thereof, and other factors relevant to the appropriateness of such sign to its proposed location;

In passing upon the appropriateness of any of those things enumerated above, the Commission shall not consider interior arrangement or features of a building of structure.

D. Specific Rules Governing Decisions

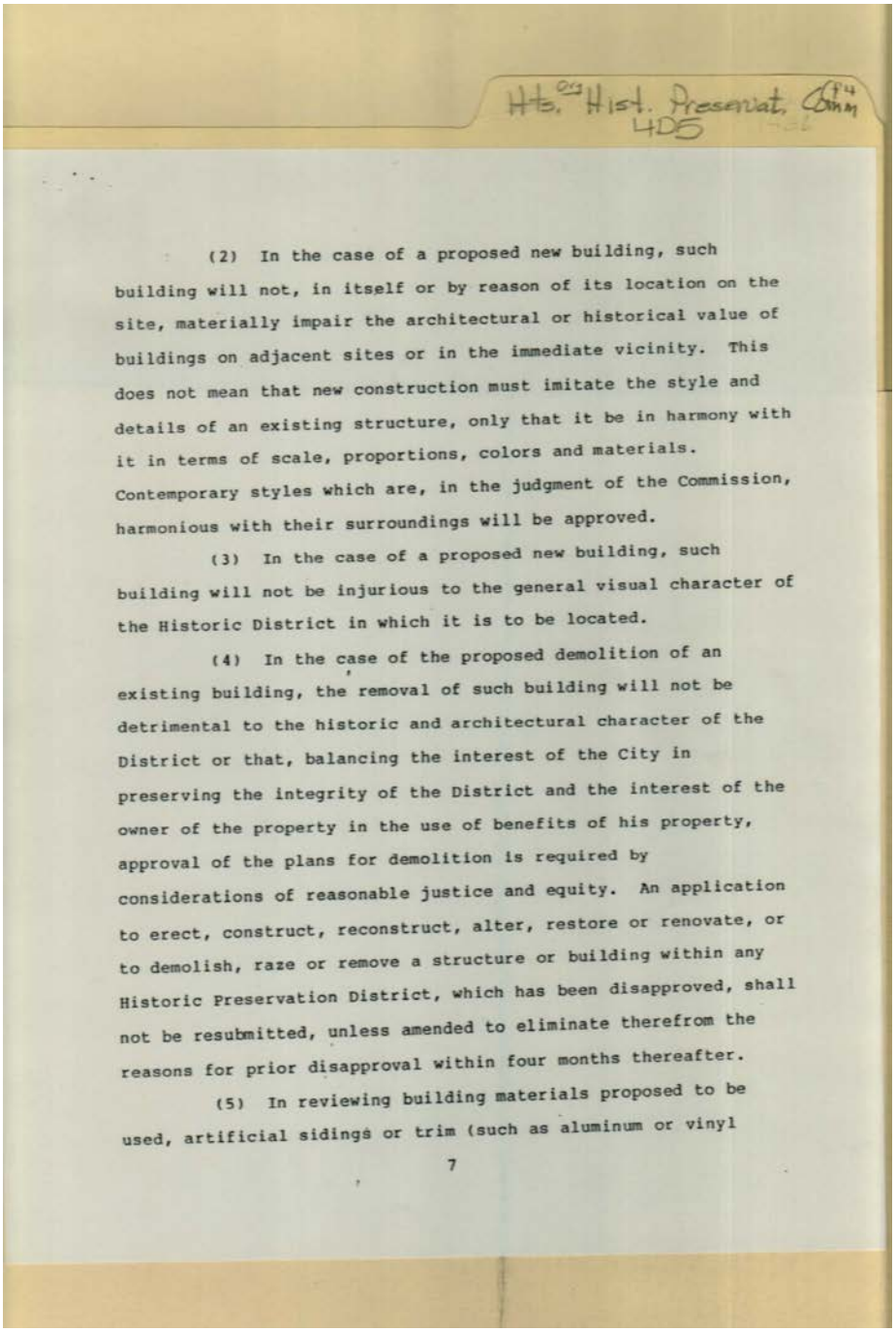
The factors listed below shall be considered by the Commission before approving any application for a certificate concerning any building, structure or appurtenance.

(1) In the case of a proposed alteration or addition to an existing building, such alteration or addition should not materially impair the architectural or historic value of the building.

6

Names:
Applications

Types:
regulations



Hts. Hist. Preservat. Comm
4D5

(2) In the case of a proposed new building, such building will not, in itself or by reason of its location on the site, materially impair the architectural or historical value of buildings on adjacent sites or in the immediate vicinity. This does not mean that new construction must imitate the style and details of an existing structure, only that it be in harmony with it in terms of scale, proportions, colors and materials. Contemporary styles which are, in the judgment of the Commission, harmonious with their surroundings will be approved.

(3) In the case of a proposed new building, such building will not be injurious to the general visual character of the Historic District in which it is to be located.

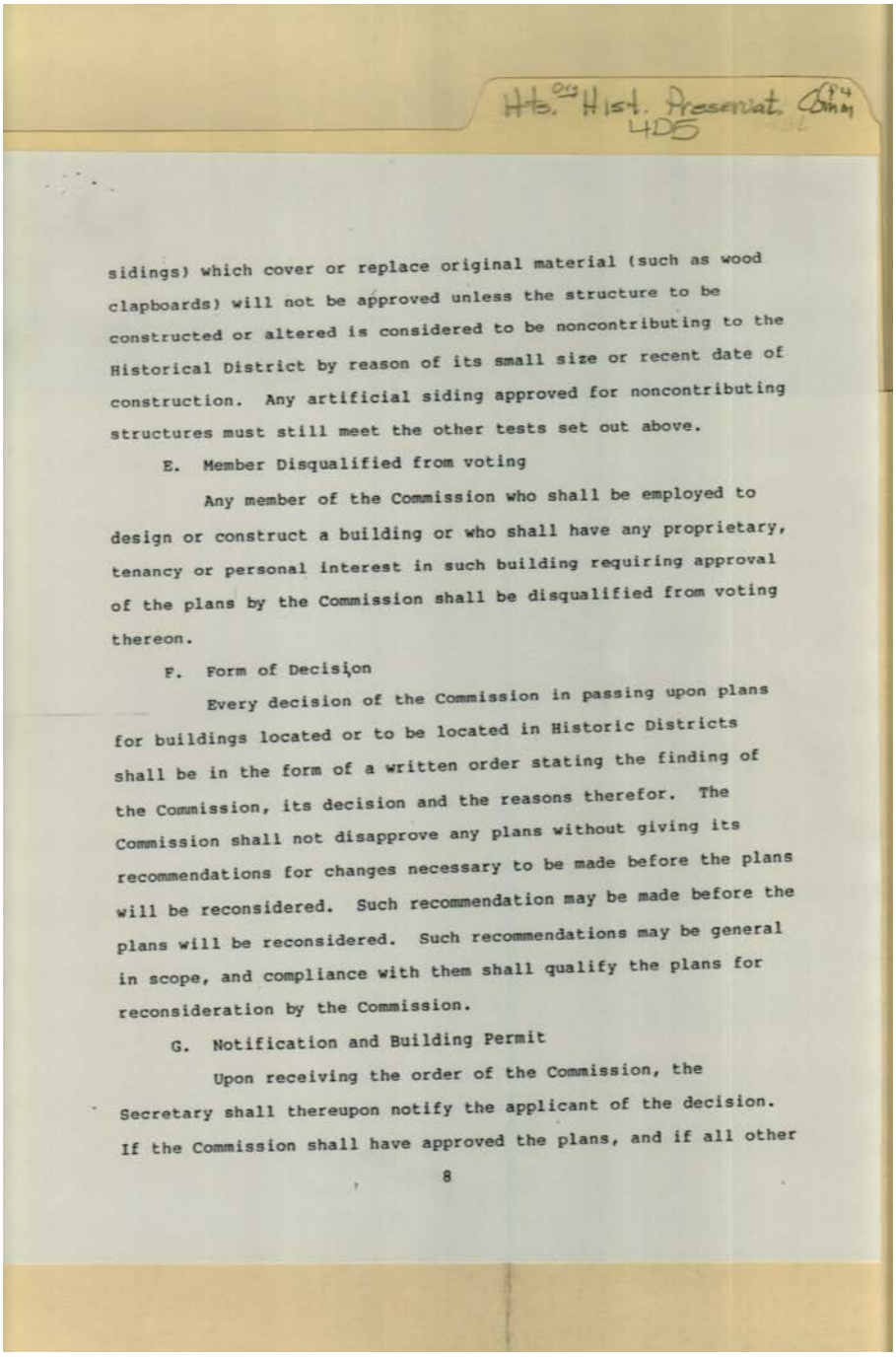
(4) In the case of the proposed demolition of an existing building, the removal of such building will not be detrimental to the historic and architectural character of the District or that, balancing the interest of the City in preserving the integrity of the District and the interest of the owner of the property in the use of benefits of his property, approval of the plans for demolition is required by considerations of reasonable justice and equity. An application to erect, construct, reconstruct, alter, restore or renovate, or to demolish, raze or remove a structure or building within any Historic Preservation District, which has been disapproved, shall not be resubmitted, unless amended to eliminate therefrom the reasons for prior disapproval within four months thereafter.

(5) In reviewing building materials proposed to be used, artificial sidings or trim (such as aluminum or vinyl

7

Names:
Applications

Types:
regulations



Hts. Ord. Hist. Preservat. 84
4D5

sidings) which cover or replace original material (such as wood clapboards) will not be approved unless the structure to be constructed or altered is considered to be noncontributing to the Historical District by reason of its small size or recent date of construction. Any artificial siding approved for noncontributing structures must still meet the other tests set out above.

E. Member Disqualified from voting

Any member of the Commission who shall be employed to design or construct a building or who shall have any proprietary, tenancy or personal interest in such building requiring approval of the plans by the Commission shall be disqualified from voting thereon.

F. Form of Decision

Every decision of the Commission in passing upon plans for buildings located or to be located in Historic Districts shall be in the form of a written order stating the finding of the Commission, its decision and the reasons therefor. The Commission shall not disapprove any plans without giving its recommendations for changes necessary to be made before the plans will be reconsidered. Such recommendation may be made before the plans will be reconsidered. Such recommendations may be general in scope, and compliance with them shall qualify the plans for reconsideration by the Commission.

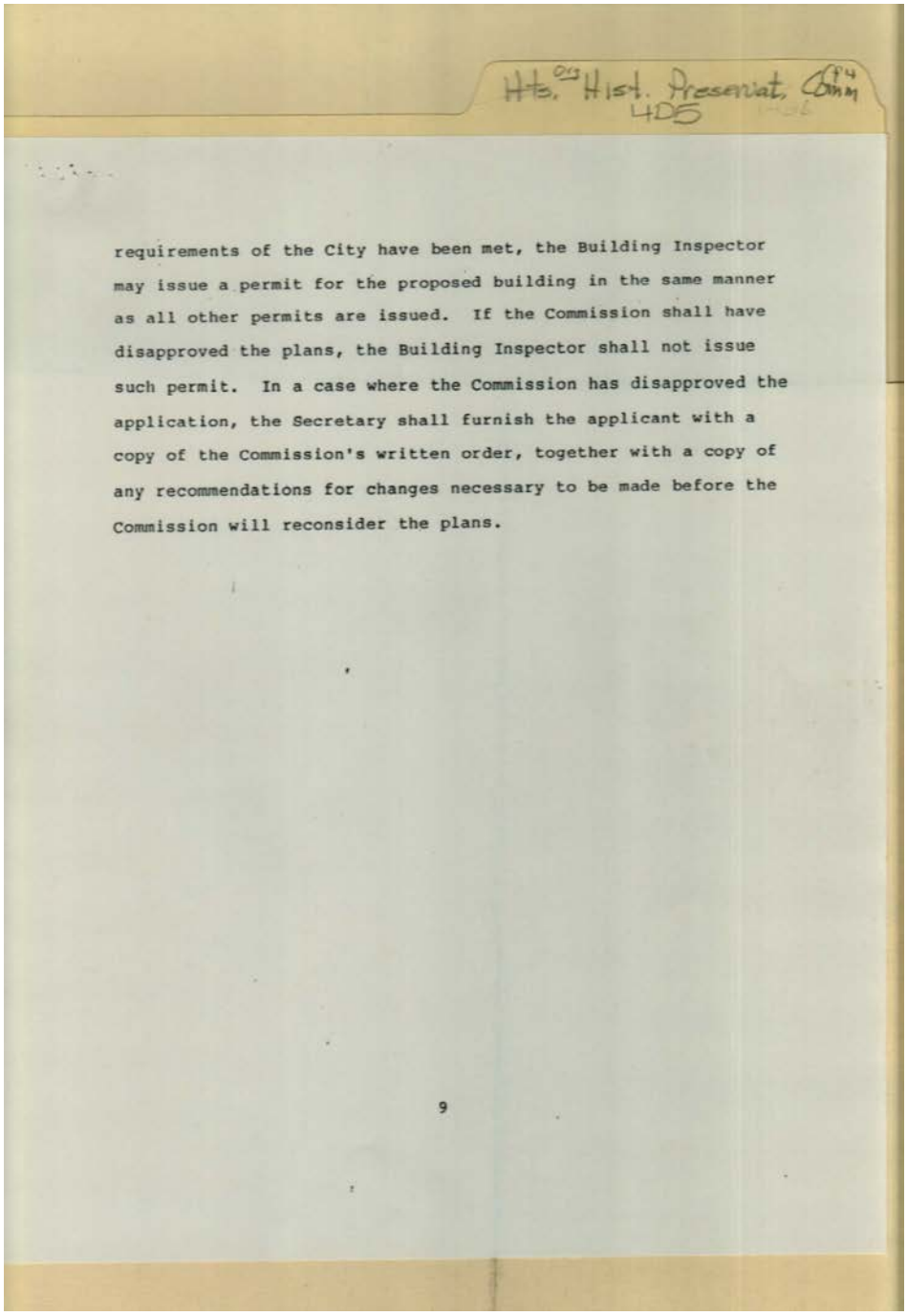
G. Notification and Building Permit

Upon receiving the order of the Commission, the Secretary shall thereupon notify the applicant of the decision. If the Commission shall have approved the plans, and if all other

8

Names:
Applications

Types:
regulations

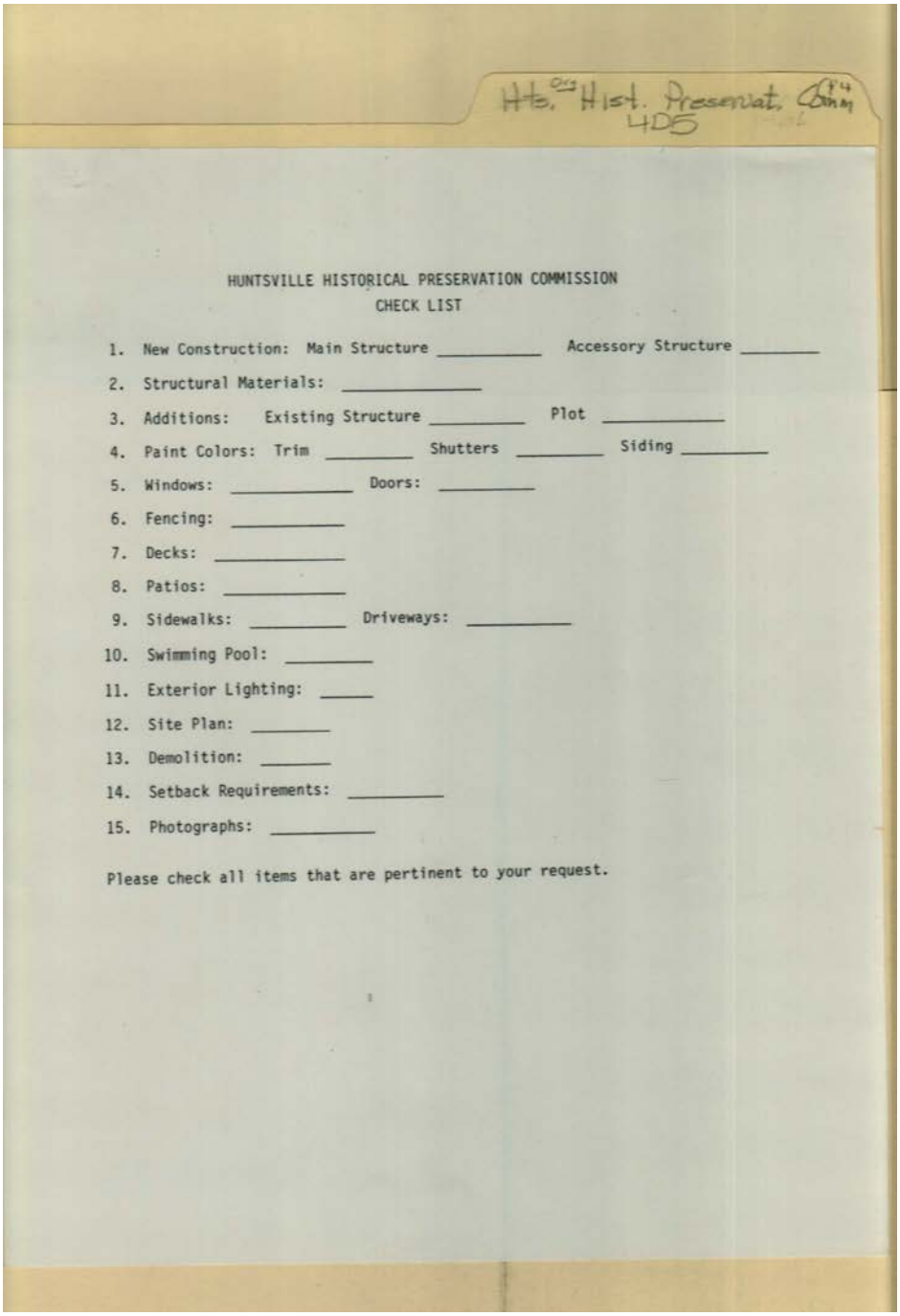


requirements of the City have been met, the Building Inspector may issue a permit for the proposed building in the same manner as all other permits are issued. If the Commission shall have disapproved the plans, the Building Inspector shall not issue such permit. In a case where the Commission has disapproved the application, the Secretary shall furnish the applicant with a copy of the Commission's written order, together with a copy of any recommendations for changes necessary to be made before the Commission will reconsider the plans.

9

Names:
Applications

Types:
regulations



Hts. Hist. Preservat. Comm
4D5

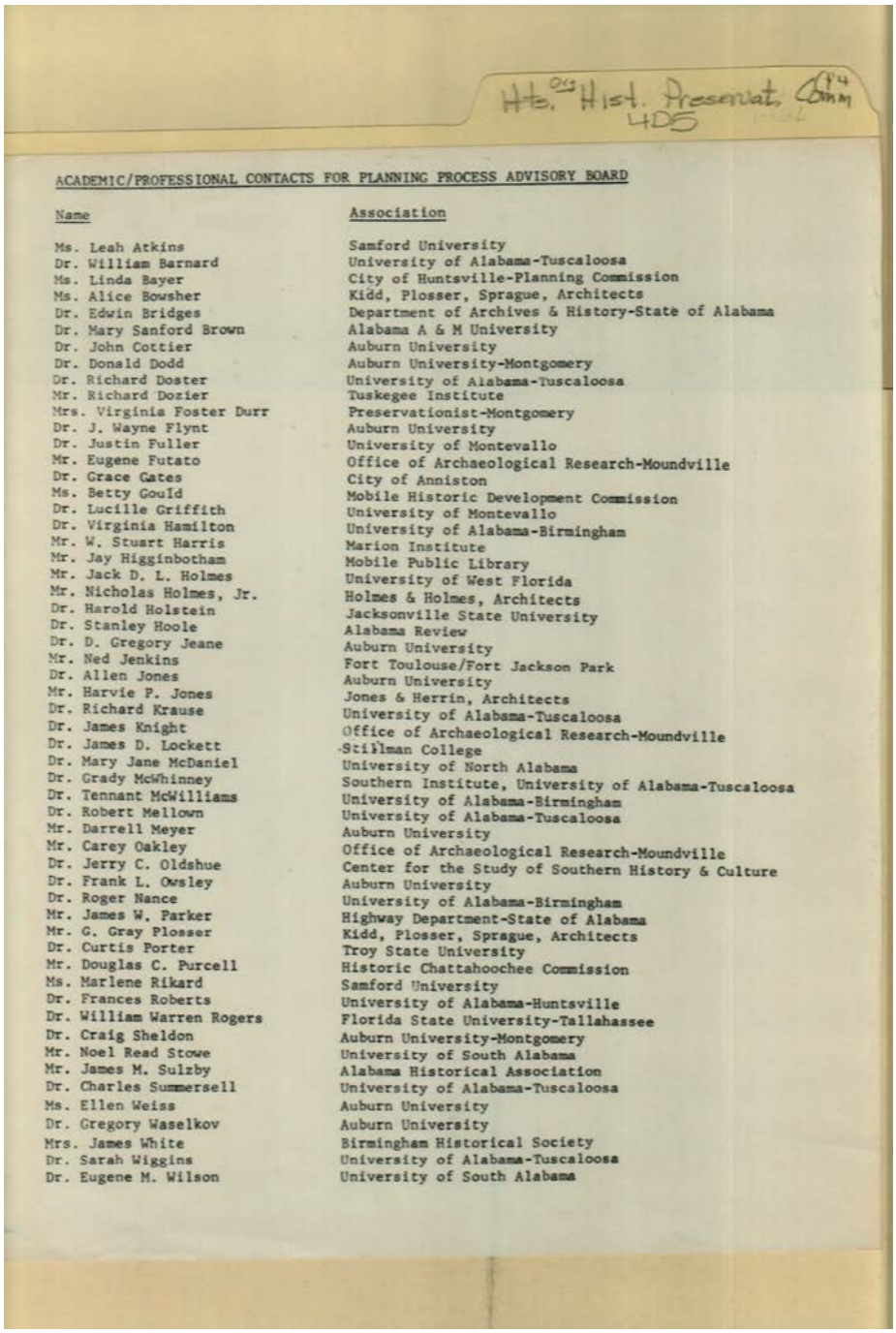
HUNTSVILLE HISTORICAL PRESERVATION COMMISSION
CHECK LIST

1. New Construction: Main Structure _____ Accessory Structure _____
2. Structural Materials: _____
3. Additions: Existing Structure _____ Plot _____
4. Paint Colors: Trim _____ Shutters _____ Siding _____
5. Windows: _____ Doors: _____
6. Fencing: _____
7. Decks: _____
8. Patios: _____
9. Sidewalks: _____ Driveways: _____
10. Swimming Pool: _____
11. Exterior Lighting: _____
12. Site Plan: _____
13. Demolition: _____
14. Setback Requirements: _____
15. Photographs: _____

Please check all items that are pertinent to your request.

Names:
Submittal Checklist

Types:
form



Hts. Hist. Preservat. Comm
4D5

ACADEMIC/PROFESSIONAL CONTACTS FOR PLANNING PROCESS ADVISORY BOARD

Name	Association
Ms. Leah Atkins	Samford University
Dr. William Barnard	University of Alabama-Tuscaloosa
Ms. Linda Bayer	City of Huntsville-Planning Commission
Ms. Alice Bowsher	Kidd, Plosser, Sprague, Architects
Dr. Edwin Bridges	Department of Archives & History-State of Alabama
Dr. Mary Sanford Brown	Alabama A & M University
Dr. John Cottier	Auburn University
Dr. Donald Dodd	Auburn University-Montgomery
Dr. Richard Doster	University of Alabama-Tuscaloosa
Mr. Richard Dozier	Tuskegee Institute
Mrs. Virginia Foster Durr	Preservationist-Montgomery
Dr. J. Wayne Flynt	Auburn University
Dr. Justin Fuller	University of Montevallo
Mr. Eugene Futato	Office of Archaeological Research-Moundville
Dr. Grace Gates	City of Anniston
Ms. Betty Gould	Mobile Historic Development Commission
Dr. Lucille Griffith	University of Montevallo
Dr. Virginia Hamilton	University of Alabama-Birmingham
Mr. W. Stuart Harris	Marion Institute
Mr. Jay Higginbotham	Mobile Public Library
Mr. Jack D. L. Holmes	University of West Florida
Mr. Nicholas Holmes, Jr.	Holmes & Holmes, Architects
Dr. Harold Holstein	Jacksonville State University
Dr. Stanley Hoole	Alabama Review
Dr. D. Gregory Jeane	Auburn University
Mr. Ned Jenkins	Fort Toulouse/Fort Jackson Park
Dr. Allen Jones	Auburn University
Mr. Harvie P. Jones	Jones & Herrin, Architects
Dr. Richard Krause	University of Alabama-Tuscaloosa
Dr. James Knight	Office of Archaeological Research-Moundville
Dr. James D. Lockett	Stillman College
Dr. Mary Jane McDaniel	University of North Alabama
Dr. Grady McWhinney	Southern Institute, University of Alabama-Tuscaloosa
Dr. Tennant McWilliams	University of Alabama-Birmingham
Dr. Robert Mellown	University of Alabama-Tuscaloosa
Mr. Darrell Meyer	Auburn University
Mr. Carey Oakley	Office of Archaeological Research-Moundville
Dr. Jerry C. Oldshue	Center for the Study of Southern History & Culture
Dr. Frank L. Owsley	Auburn University
Dr. Roger Nance	University of Alabama-Birmingham
Mr. James W. Parker	Highway Department-State of Alabama
Mr. G. Gray Plosser	Kidd, Plosser, Sprague, Architects
Dr. Curtis Porter	Troy State University
Mr. Douglas C. Purcell	Historic Chattahoochee Commission
Ms. Marlene Rikard	Samford University
Dr. Frances Roberts	University of Alabama-Huntsville
Dr. William Warren Rogers	Florida State University-Tallahassee
Dr. Craig Sheldon	Auburn University-Montgomery
Mr. Noel Read Stowe	University of South Alabama
Mr. James M. Sulzby	Alabama Historical Association
Dr. Charles Summersell	University of Alabama-Tuscaloosa
Ms. Ellen Weiss	Auburn University
Dr. Gregory Waselkov	Auburn University
Mrs. James White	Birmingham Historical Society
Dr. Sarah Wiggins	University of Alabama-Tuscaloosa
Dr. Eugene M. Wilson	University of South Alabama

Names:

Advisory Board
Atkins, Leah
Barnard, William, Dr.
Bayer, Linda
Bowsher, Alice
Bridges, Edwin, Dr.
Brown, Mary Sanford, Dr.
Cottier, John, Dr.
Dodd, Donald, Dr.
Doster, Richard, Dr.
Dozier, Richard
Durr, Virginia Foster, Mrs.
Flynt, J. Wayne, Dr.
Fuller, Justin, Dr.
Futato, Eugene
Gates, Grace, Dr.
Gould, Betty
Griffith, Lucille, Dr.
Hamilton, Virginia Dr.
Harris, W. Stuart
Higginbotham, Jay
Holmes, Jack D. L.
Holmes, Nicholas, Jr.
Holstein, Harold, Dr.
Hoole, Stanley, Dr.
Jeane, D. Gregory, Dr.
Jenkins, Ned
Jones, Allen, Dr.
Jones, Harvie P.
Knight, James, Dr.
Krause, Richard , Dr.
Lockett, James D., Dr.
McDaniel, Mary Jane, Dr.
McWhinney, Grady, Dr.
McWilliams, Tennant, Dr.
Mellown, Robert, Dr.
Meyer, Darrell
Nance, Roger, Dr.
Oakley, Carey

Oldshue, Jerry C., Dr.
Owsley, Frank L., Dr.
Parker, James W.
Plosser, G. Gray
Porter, Curtis, Dr.
Purcell, Douglas C.
Rikard, Marlene
Roberts, Frances, Dr.
Rogers, William Warren, Dr.
Sheldon, Craig, Dr.
Stowe, Noel Read
Sulzby, James M.
Summersell, Charles, Dr.
Waselkov, Gregory, Dr.
Weiss, Ellen
White, James, Mrs.
Wiggins, Sarah, Dr.
Wilson, Eugene M., Dr.

Types:

list

Table of Contents

Name & Place Index

Frances Cabaniss Roberts Collection

Preferred Citation: Frances Cabaniss Roberts Collection, Archives and Special Collections, M. Louis Salmon Library, University of Alabama in Huntsville, Huntsville, AL.

Collection Scope and Content: The Collection of 114 Linear ft. includes a total of 156 Archival Boxes. The Frances Cabaniss Roberts collection covers the historical records of the Cabaniss Roberts family. This collection contains extensive correspondence records of the Cabaniss Roberts family circa 1830 to 1930.

Archives/Special Collections Access Restrictions: None

Conditions Governing Use: This material may be protected under U. S. Copyright Law (Title 17, U.S. Code) which governs the making of photocopies or reproductions of copyrighted materials. You may use the digitized material for private study, scholarship, or research. Though the University of Alabama in Huntsville Archives and Special Collections has physical ownership of the material in its collections, in some cases we may not own the copyright to the material. It is the patron's obligation to determine and satisfy copyright restrictions when publishing or otherwise distributing materials found in our collections.

Provenance: Gift of Johanna Shields on October 28, 2006.

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

The UAH Archives and Special Collections
M. Louis Salmon Library