

# HISTORIC LANDMARK COMMISSION STAFF REPORT

## Lalouel Renovation PLNHLC2010-00546 Capitol Hill Historic District 163 West Clinton Avenue October 6, 2010



Planning Division  
Department of Community and  
Economic Development

**Applicant:** Jean-Marc Lalouel

**Staff:** Katia Pace, 535-6354,  
[katia.pace@slcgov.com](mailto:katia.pace@slcgov.com)

**Tax ID:** 08-36-228-005

**Current Zone:** SR-1A  
Special Development Pattern  
Residential

**Master Plan Designation:**  
Capitol Hill Master Plan, Low  
Density Residential

**Council District:**  
District 3, Stan Penfold

**Community Council:**  
Capitol Hill Community  
Council, Katherine Gardner

**Lot Size:** 4,356 square feet

**Current Use:**  
▪ Single Family Residence

**Applicable Land Use  
Regulations:**  
▪ 21A.34.020  
▪ 21A.24.080  
▪ Design Guidelines for  
Residential Historic Districts

**Notification:**  
▪ Notice mailed 9/24/10  
▪ Agenda posted on the  
Planning Division and Utah  
Public Meeting Notice  
websites 9/24/10

**Attachments:**  
A. Petitioner's Letter  
B. Photos  
C. Historic Information  
D. Preservation Brief 22

### ***Request***

This is a request by Jean-Marc Lalouel for a Certificate of Appropriateness approval for synthetic stucco, or Exterior Insulation Finishing System (EIFS) application on the exterior of the property located at 163 West Clinton Avenue. This property is located in the Capitol Hill Historic District and in the SR1-A (Special Development Pattern Residential) zoning district.

Planning Staff determined that the application could not be approved administratively because the proposed siding material does not meet the standards found on the *Design Guidelines for Residential Historic Districts*. Therefore, Planning Staff is forwarding this application to the Historic Landmark Commission for consideration.

### ***Staff Recommendation***

#### **Potential Motions**

Based on the analysis and findings of the staff report, it is the Planning staff's opinion that the project fails to substantially meet the standards pertaining to application PLNHLC2010-00546 and therefore, recommends the following:

That the Historic Landmark Commission denies the request to approve the use of synthetic stucco or Exterior Insulation Finishing System (EIFS) on the exterior wall of the property located at 163 West Clinton Avenue. The project does not meet standards 2, 3, 4, 5, 6, 9, 10 and 12 of Section 21A.34.020(G) of the Zoning Ordinance. The proposal is consistent with standard 2.1, 2.2, 2.5, 2.8, 2.9, and 13.20 of the *Design Guidelines for Residential Historic Districts*.

Should the Commission determine that synthetic stucco is an appropriate material in this case; staff requests that the Commission make alternative findings and approve a Certificate of Appropriateness for the use of synthetic stucco or Exterior Insulation Finishing System (EIFS) on the exterior wall of the property located at 163 West Clinton Avenue.

## VICINITY MAP



### **Background**

#### **Project Description**

The house located at 163 W. Clinton Avenue is listed as a contributory structure in the Capitol Hill Historic District. The title of this property suggest that this house and the one next to it, 153 Clinton Avenue, were built in the late 1880's, possibly by James J. Wyatt, a plasterer who built the apartment building on the southeast corner of this block. Research indicates that this structure was built in the late 1880's. However, the overall exterior flavor, style, massing and detail, indicates a much later date (ca. 1910 – 1930). The conclusion is that the structure was extensively altered from its original form. The structure currently is a one story hipped roof cottage with a rear hipped roof extension, and it is 1,355 square feet.

At the time the applicant purchased this property, on October 2, 2009, the house was in a state of advanced disrepair and decay. Rain had run from the roof onto the exterior walls, and at times had reached the interior layer of unbaked bricks. The applicant has had inside work done to the structure including renovation of walls, painting, and new flooring. Exterior repairs and improvements are needed such as repair to the exterior stucco and fascia, new rain gutters, new portion of the roof, and proper drainage. The applicant started renovation of the exterior wall without a building permit; wall work was halted after the installation of exterior insulation board over the exterior walls of the building.

The fact that the property was part of the Capitol Hill Historic District was not known to the applicant due to a failure in the Title Report. Furthermore, according to the applicant, after years of considerable alterations and inadequate maintenance, the subject structure has lost any potential "historic" qualification.

Specifically, the applicant is requesting approval for the following exterior work to be completed:

- Finishing exterior walls with BASF Senerflex Classic FB Wall System, a type of synthetic stucco, or Exterior Insulation Finishing System (EIFS), including adhesive layer, insulation coat, reinforcing mesh, base coat and high-resistance exterior acrylic/elastomeric finish coat, this on all exterior walls and the south chimney.

The following are additional repairs that the applicant has requested:

- Repair of fascia and addition of new rain gutters and collector drains where necessary;
- Sanding, curing and caulking all areas, including window sills;
- Coarse sanding and painting with the same finishing material all foundation walls above ground;
- Grading ground areas where drainage does not occur properly;
- Changing the South small door to the garage;

## ***Comments***

### **Public Comments**

No public comments have been received at the time of this writing.

### ***Project Review***

### **Zoning Considerations**

This request does not include any alteration to the footprint or height of the building, therefore, there are no zoning considerations related to this request.

## ***Analysis and Findings***

### **Options**

The Historic Landmark Commission has the following options regarding this proposal:

- The Historic Landmark Commission may approve the proposal by finding that the proposal substantially complies with all applicable ordinances, design guidelines and adopted policies;
- The Historic Landmark Commission may deny the proposal by finding that the proposal does not substantially comply with applicable ordinances, design guidelines and adopted policies; or
- The Historic Landmark Commission may table the item and request additional information from the applicant and/or staff.

### **Standards of Review**

21A.34.020(H)(G). **Standards For Certificate Of Appropriateness For Alteration Of A Landmark Site Or Contributing Structure:** In considering an application for a certificate of appropriateness for alteration of a landmark site or contributing structure, the historic landmark commission, or the planning director, for administrative decisions, shall find that the project substantially complies with all of the following general standards that pertain to the application and that the decision is in the best interest of the city:

**Standard 1:** A property shall be used for its historic purpose or be used for a purpose that requires minimal change to the defining characteristics of the building and its site and environment;

**Analysis:** The use of the structure will not change.

**Finding:** The building was constructed as a single family home, and has remained continuously in use as a single family home ever since. No change of use is proposed.

**Standard 2:** The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided;

### **Applicable Design Guidelines**

**2.1 Preserve the historic appearance of original materials.** Preservation includes proper maintenance of the material to prevent deterioration.

**13.20 Use building materials that are similar to those used historically.** Appropriate primary building materials include brick, stucco and painted wood.

**Analysis:** The photos taken of this property prior to the application of the foam insulation show many signs that the existing stucco finish is deteriorating. Foam boards have already been adhered to the exterior wall, making it a challenge to remove the foam without additional extensive damage to the wall. The applicant chose to re-clad the building with EIFS instead of repairing the damaged stucco.

**Finding:** Staff finds that reasons for not using synthetic stucco are:

1. Covering the historic material can obscure the original character and change the dimensions of walls, which is particularly noticeable around door and wood openings.
2. This covering may conceal continuing deterioration. The extra layer may in fact cause additional decay, both by its method of attachment and because it may trap moisture inside the historic wall.

**Standard 3:** All sites, structure and objects shall be recognized as products of their own time. Alterations that have no historical basis and which seek to create a false sense of history or architecture are not allowed.

**Analysis:** Research indicates that this structure was built in the late 1880's. However, the overall exterior flavor, style, massing and detail, indicates a much later date (ca. 1910 – 1930). The conclusion is that the structure was extensively altered from its original form.

**Finding:** Synthetic stucco is an alteration that creates a false sense of history.

**Standard 4:** Alterations or additions that have acquired historic significance in their own right shall be retained and preserved.

**Analysis:** The stucco wall has been there since the 1940's as seen on the Tax Assessment photo from 1947. Therefore, even if questions come up on the original material of the exterior of the house, the stucco wall has acquired historic significance on its own.

**Finding:** Planning Staff finds that the stucco wall should be retained and preserved.

**Standard 5:** Distinctive features, finishes and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

## **Applicable Design Guidelines**

**2.2 Covering original building materials with new materials is not allowed.** Covering original building materials with new materials is not allowed. Vinyl or aluminum siding is prohibited on historic buildings, as well as any other imitation siding material that may be designed to look like wood siding but that is fabricated from other materials.

**Analysis:** Although this structure has been significantly altered throughout the years, it is important to recognize that all materials weather over time and that a scarred finish reflects the age and character of the building. The stucco finish is historically significant and a major character defining feature of this structure.

**Finding:** Synthetic stucco will cover the construction technique and finishes particularly noticeable around door and wood openings. Preserving original materials that show signs of wear is preferred to their replacement.

**Standard 6:** Deteriorated architectural features shall be repaired rather than replaced wherever feasible. In the event replacement is necessary, the new material should match the material being replaced in composition, design, texture and other visual qualities. Repair or replacement of missing architectural features should be based on accurate duplications of features, substantiated by historic, physical or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other structures or objects.

## **Applicable Design Guidelines**

**2.5 Repair deteriorated primary building materials.** Isolated areas of damage may be stabilized or fixed, using consolidants. Epoxies and resins may be considered for wood repair and special masonry repair components also may be used.

**2.8 Match the original material in composition, scale and finish when replacing materials on primary surfaces.** If the original material was wood clapboard, for example, then the replacement material should be wood. It should match the original in size, the amount of materials exposed, and in finish, traditionally a smooth finish, which was then painted. The amount of exposed lap should match. Replace only the amount required. If a few boards are damaged beyond repair, then only they should be replaced, not the entire wall.

**Analysis:** The exterior wall on this house has suffered major deterioration. Damaged materials should be patched or consolidated. In this situation, however, some portions of the material may be beyond repair and larger surfaces of the wall should be replaced.

**Finding:** Staff finds that in such a case, the replacement of the material should match the original.

**Standard 7:** Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

**Analysis:** The proposed work does not include any cleaning treatments of historic materials.

**Finding:** This standard is not applicable for the project.

**Standard 8:** Contemporary designs for alterations and additions to existing properties shall not be discouraged when such alterations and additions do not destroy significant cultural, historical, architectural or archaeological material, and such design is compatible with the size, scale, color, material and character of the property, neighborhood or environment.

**Analysis:** No design alterations and additions are being proposed.

**Finding:** This standard is not applicable for this project.

**Standard 9:** Additions or alterations to structures and objects shall be done in such a manner that if such additions or alteration were to be removed in the future, the essential form and integrity of the structure would be unimpaired. The new work shall be differentiate from the old and shall be compatible in massing, size, scale and architectural features to protect the historic integrity of the property and its environment.

**Analysis:** Addition of EIFS is a major alteration. Removal of the exterior insulation may cause significant damage to the historically significant stucco and the integrity of this site.

**Finding:** Removal of the exterior insulation system may damage the character defining features and have a significant negative impact on the integrity of the site.

**Standard 10:** Certain building materials are prohibited including the following:

- a. Vinyl or aluminum cladding when applied directly to an original or historic material, and
- b. Any other imitation siding material designed to look like wood siding but fabricated from an imitation material or materials;

### **Applicable Design Guidelines**

**2.9 Do not use synthetic materials, such as aluminum or vinyl siding or panelized brick, as a replacement for primary building materials.** In some instances, substitute materials may be used for replacing architectural details but doing so is not encouraged. If it is necessary to use a new material, such as fiberglass for a replacement column, the style and detail should match that of the historic model. Primary building materials such as masonry, wood siding and asphalt shingles shall not be replaced with synthetic materials. Modular materials may not be used as replacement materials. Synthetic stucco, and panelized brick, for example, are inappropriate.

**Analysis:** Traditional stucco is non-insulating and typically comprised of Portland Cement, sand, and water. The material the applicant is proposing is a type of synthetic stucco generally referred to as Exterior Insulation Finishing System (EIFS), an insulating wall coating that will consist of synthetic layer and foam insulation.

**Finding:** Synthetic stucco or EIFS is a building material that is inappropriate in this context.

**Standard 11:** Any new sign and any change in the appearance of any existing sign located on a landmark site or within the H historic preservation overlay district, which is visible from any public way or open space shall be consistent with the historic character of the landmark site or H historic preservation overlay district and shall comply with the standards outlined in part IV, Chapter 21A.46 of this title;

**Analysis:** No signs are proposed.

**Finding:** This standard is not applicable for this project.

**Standard 12:** Additional design standards adopted by the historic landmark commission and city council.

**Analysis:** In addition to the *Design Guidelines for Residential Historic Districts*, the Historic Landmark Commission adopted in 1980 the following policy: “The use of artificial material in a building which is listed on the Salt Lake City Register of Cultural Resources (either as a landmark site or as part of an historic district) shall not be approved unless it is proven necessary for the preservation of the building.”

**Finding:** The request for synthetic stucco is inconsistent with the policy above as well as with Standards 2.1, 2.2, 2.5, 2.8, 2.9, and 13.20 of the *Design Guidelines for Residential Historic Districts* as noted above.

**Attachment A  
Petitioner's Letter**



## Petition for Exterior Improvements to a Site

First Submitted August 24, 2010

Revised September 13, 2010

by Jean-Marc and Juliet Yoshie Lalouel

### Preamble

The object of this petition is a small, 1,355 Sq. Ft., single housing unit located at *163 W Clinton Ave, SLC 84103* (parcel 08-36-228-005-0000). Further details and illustrations are to be found in the accompanying Powerpoint Presentation. The property was purchased on October 2, 2009 from representatives of the estate of its deceased previous owner. This was a cash purchase by Juliet Yoshie Lalouel and her father, Jean-Marc Lalouel, for the amount of \$159,900. In 2010, it is valued at \$123,500 by the SLC Assessor, the building itself being valued at \$35,700.

This was to become the home of Juliet, 24, as her father terminates his employment as a Professor at the University of Utah and leaves the country at the end of October 2010.

Although the house was listed as "Year Built" 1937, with "Effective Year Built" as 1981, house inspection revealed that a part of the house's foundations consisted of sandstone. Subsequent addition(s), including a garage, were performed at undetermined times thereafter. At the time of purchase, on October 2, 2009, it was in a state of very advanced disrepair and decay due to decades of poor maintenance, as will be documented below. Interior work concerning stripping, resurfacing and

painting all walls and laying new  $\frac{3}{4}$  plank hardwood floors has thus far been completed.

In the present context, we will focus on the object of the petition, namely exterior repairs and improvements to preserve the structural integrity of the house and of the interior renovation by repair of fascia where needed, installation of missing rain gutters along  $\frac{3}{4}$  of the roof, application of new quality stucco to all exterior walls, new painting of all such walls and foundation layers, and ensuring proper drainage in ground areas where it is deficient. In no way will the work lead to any alterations of the overall profile of the house. Rather, it should considerably improve its true function as a shelter against the elements and its overall value and curb appeal.

### **Current status of the house that commands these improvements**

In its present state, the house is in such a state of bad disrepair that its structural integrity is clearly threatened. We do not believe that the advanced and very widespread extent of visible scarring and damage add to the character of the house or to its global appeal in the neighborhood. Specifically:

- (1) While the roof was redone fairly recently,  $\frac{3}{4}$  of the sides of the roof lack rain gutters and fascia need to be repaired before new gutters can even be attached;
- (2) As a result, rain has for many years directly run from the roof onto the exterior walls from very high points of the structure;
- (3) Rain water at multiple points and times has reached the interior layer of unbaked bricks, and no amount of patch-up work inside can prevent this continuing threat due a totally deficient exterior surface;
- (4) Since purchase of the house in October 2009, water has been observed running in the house at various points during the winter season, and purely local corrective measures could be entertained until a dry season that came unusually late in the year of 2010;

- (5) Indeed, the exterior plaster and paint is a patch-up mosaic work reflecting the large number of years (decades) where only limited attempts were made to repair individual injury as each occurred, with water oozing from large paint pockets after rain, highly variable plaster surface in material, thickness, and continuity, and innumerable cracks in either paint or plaster layers, often extending to brick mortar, all around the house;
- (6) Window sills have likewise been subjected to many years of various additions of caulking material, paint, tar, and other substances which together have failed to preserve the integrity of the top wood layer, badly distorted on its horizontal segments and often directly exposed to the elements on sills and on lateral sides;
- (7) A large crack and shift almost as thick as a brick layer on the west wall of the house runs throughout, reflecting an old slip in the foundations that has become stable, but as such stands as a potential entry point for rain water and as a sinister scar adding little character to the house.

In support for the points made above, some copies of pictures taken at the time the house was first viewed by the new owners, in September of 2009, are included in the Powerpoint file.

### **Our current predicament**

The new owners have done best effort to renovate interior walls, painting and flooring with installation of  $\frac{3}{4}$  inch plank hardwood floors while weather did not permit tackling work on the exterior surface. Being of foreign extraction, the senior new owner was not naturally aware of the historic nature of the neighborhood and what it might entail (his mother's house was several centuries old and classified as a *Historic Residence* in France). This fault can only be assigned to ignorance, not to malice. Of note, this information was not communicated to the new owners by any party during and since the time of purchase until a few days ago, as work now under

way to resurface the exterior walls with modern techniques (EIFS) attracted the comments of an insightful, knowledgeable neighbor.

Our Powerpoint presentation clearly documents the fact that this “historic” qualification was not recorded in Purchase Contract, Title Record, or even County “plats” documents. The listing of the parcel in a document as being located in a historic district, The Capitol Hill Historic District, was uncovered by our Title Underwriter upon our questioning on September 7, 2010. It also revealed that half the parcels listed in this document from the Salt Lake City Corporation, including ours, had failed to be transcribed into the plats documents of the County.

This explains everyone’s ignorance at the time of purchase. Furthermore, the mere listing as “location in an historic district” may not imply that any one building is in itself historic in both its built and/or the preservation of its “historic” essence. Indeed, the neighborhood, including Clinton Ave itself, abounds with recent constructions. Apartment complexes are located across from the property, and a sparkling new home with EIFS finish is half a block away on Wall Street. Suffice to say, this is a very diverse neighborhood, with buildings spanning the complete range of date of built, method of construction and quality of maintenance.

Upon receipt of such information, however, and against all good logic, work was voluntarily brought to a halt half-way through, and this petition was drafted. Again, it should be noted that the diversity of the structures on the street, where the house is flanked by a house redone in natural but craked stucco on one side and a house in vinyl siding on the other, and with a rental apartment complex across the street, did not naturally convey the historic nature of the neighborhood.

We respectfully submit that we believe *a historic qualification should not just be inherited by birth, but that it should be earned by demonstration of proper care.*

We would like to stress the urgency with which a solution needs to be reached, given the delays that we are experiencing at this time. First, rain and cold weather are around the corner, threatening both the completion of exterior refinishing and the remodeling work completed inside. Second, the sale of the house of the senior owner, Jean-Marc Lalouel, is imminent, and his departure from the country is scheduled as he reaches retirement age from Utah in October and by necessity must also retire his current lifestyle. The house at 163 W Clinton is to become the primary residence of his daughter, Juliet Yoshie Lalouel, 24 years of age. Third, work under way had to be halted, raising the issue of compensation for the work already performed and the livelihood and the certified workmen involved.

#### **Exterior improvements for which permission is requested in this petition**

The house at 163 W Clinton needs urgent alterations to its rain collection system, its exterior walls and window sidings, and to ground drainage at select points. *The following repairs and improvements would salvage the entire structure for the short and the medium term while remarkably improving the overall appearance and value of the house. It would preserve its outlook at a cost consistent with the depressed market situation of real estate in the few past years and the several years yet to come.* The work proposed would also preserve the investment made in good faith by the new owners, as well as the interior remodeling they have completed thus far. *Of note, the overall cost of remodeling in and out may in time equal or even exceeds the estimated residual value of the house.*

Specifically, we petition approval for the following exterior work to be completed:

- (1) Repair of fascia and addition of new rain gutters and collector drains where necessary;
- (2) Sanding, curing and caulking all areas, including window sills, in preparation for
- (3) Finishing exterior walls with BASF Senerflex Classic FB Wall System, including adhesive layer, insulation coat, reinforcing mesh, base coat and high-resistance exterior acrylic/elastomer finish coat of a general lighter grey color than the sinister one in present use, this on all exterior walls and the south chimney (wall work was halted at the insulation board cover stage, not intended to withstand the elements);
- (4) Coarse sanding and painting with the same finishing material all foundation walls above ground;
- (5) Grading ground areas where drainage does not occur properly;
- (6) Changing the South small door to the garage;
- (7) Sanding and repainting with high-resistance outdoor acrylic/elastomeric paint the North garage door, and a few other very minor repairs.

## Conclusion

We believe that the state of exterior decay and the extent of *ad hoc* patch-up work that has been applied to the structure over decades, with ensuing dramatic exposure to the elements, when further considered in the perspective of the depressed economic situation affecting real estate, precludes restoration of an exterior surface to an original appearance that in any event has been long lost. The exterior home improvements we propose were selected on the basis of their cost-effectiveness in providing quality, good look and durability to an otherwise very compromised structure. *A swift implementation is essential to retain the availability of the work crew that had begun work on the exterior, to protect the owners' investment, including the new interior work just completed, to salvage the structure for the*

*medium- to long-term*, while preserving the integrity and the outlook of this modest constituent of a street with substantial diversity in an otherwise historic district.

Again, it is our humble view that the modest home at 163 W Clinton Ave, of uncertain and hybrid origin, and after years of considerable alterations and inadequate maintenance, *has not earned, but rather actually lost, any potential "historic" qualification*. The future of the neighborhood historical nature hardly rest on whether or not we salvage this modest dwelling with modern, efficient methods that will maintain, and actually enhance, the general appearance it may have once had many decades ago. We respectfully submit that our preference, after careful analysis of the structure and the alternatives at hand, using criteria such as climatology, economics, speed of application, quality of materials, durability, energy efficiency, waterproofing, and flexibility, is for the application of a BASF Senerflex Classic PB Wall System by a certified subcontractor. It is far superior to old Dryvit synthetic stucco that has attracted criticism in the 80's, and evidently much superior to natural stucco over brick as practiced in olden days, when no modern alternative was available. As a parallel in the field of training of this owner, lasers have proven far superior to electrodes as a cauterizing tool in surgery. Other elements of our request meet standard criteria.

Historical natural restoration does not meet these standards and is beyond the means we have at hand. We beg that this project does not get further caught in a doctrinal or regulatory imbroglio, and the human dimension be taken into serious consideration in the decision process.





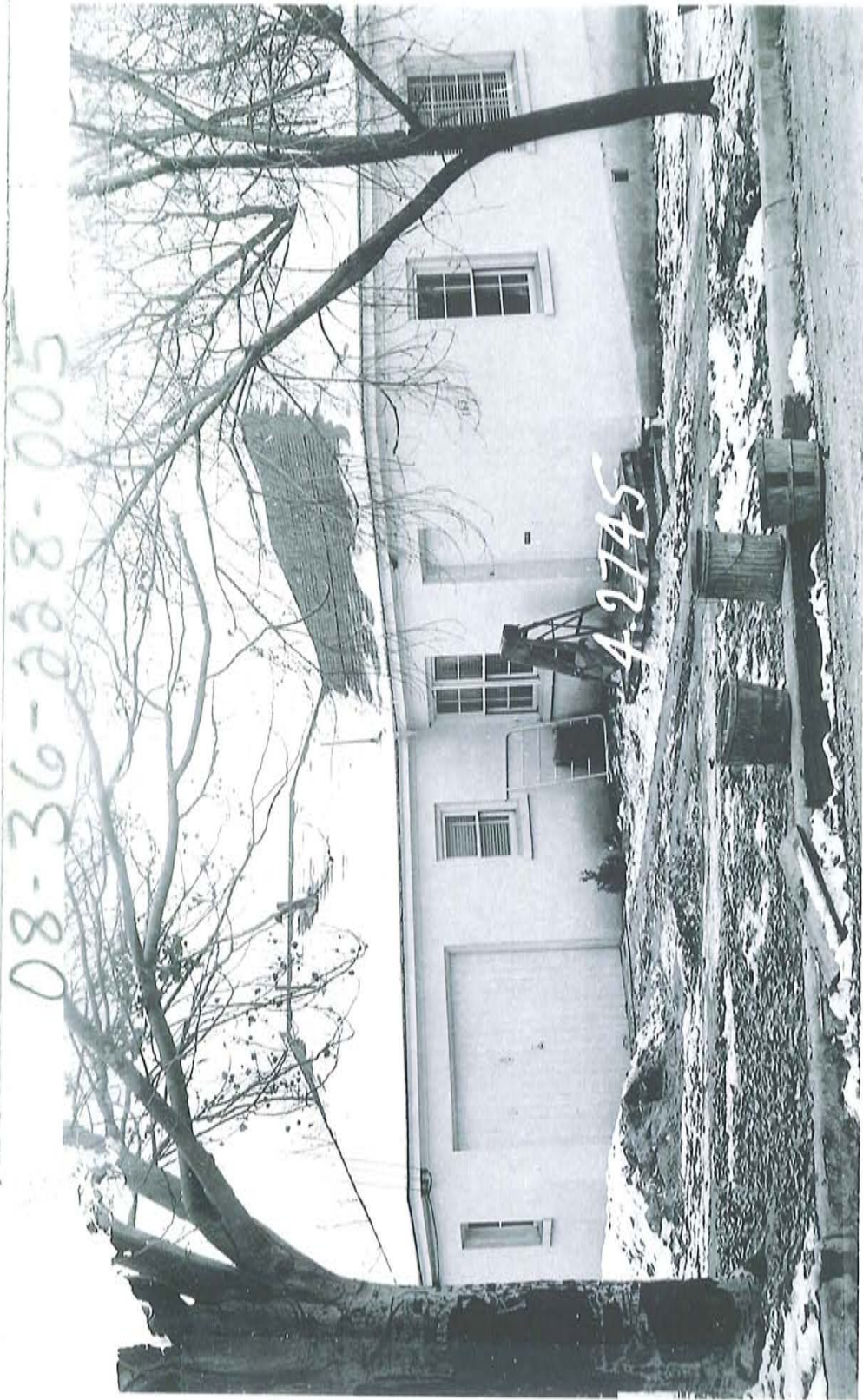
# Photos Before Foam Application



# Photos After Foam Application



Photo taken ca. 1947



**Attachment C**  
**Historic Information**

**Structure/Site Information Form**

IDENTIFICATION 1

Street Address: 163 Clinton Ave UTM: 11558 11559  
 Name of Structure: T. 01.0 N R. 01.0 W S.36  
 Present Owner: Walton, Claud P. & Ava L.  
 163 Clinton Ave  
 Owner Address: S1C, UT 84103  
 Year Built (Tax Record): 1937 Effective Age: 1942 Tax #: 04 2745  
 Legal Description 0 1 Kind of Building: residence  
 com 44 ft W fr NE cor lot 4 blk 28 plat E SLC sur W 77 ft S 31-30' 16" E 106.19  
 ft E to pt due S fr beg N to beg

STATUS/USE 2

Original Owner: James J. Wyatt Construction Date: late 1880's Demolition Date:  
 Original Use: dwelling Present Use: dwelling  
 Building Condition: Integrity: Preliminary Evaluation: Final Register Status:  
 Excellent  Site  Unaltered  Significant  Not of the  National Landmark  District  
 Good  Ruins  Minor Alterations  Contributory  Historic Period  National Register  Multi-Resource  
 Deteriorated  Major Alterations  Not Contributory  State Register  Thematic

DOCUMENTATION 3

Photography: Date of Slides: Slide No.: Date of Photographs: 1980 Photo No.:  
 Views:  Front  Side  Rear  Other Views:  Front  Side  Rear  Other

Research Sources:  
 Abstract of Title  Sanborn Maps  Newspapers  U of U Library  
 Plat Records/Map  City Directories  Utah State Historical Society  BYU Library  
 Tax Card & Photo  Biographical Encyclopedias  Personal Interviews  USU Library  
 Building Permit  Obituary Index  LDS Church Archives  SLC Library  
 Sewer Permit  County & City Histories  LDS Genealogical Society  Other

**Bibliographical References (books, articles, records, interviews, old photographs and maps, etc.):**

Salt Lake County Plat Records, 1860-1940  
 Sanborn Maps, SLC, 1898, 1911, 1930, 1969  
 Stenhouse, SLC Directory, 1892-93  
 Polk, " " " " , 1893-1925  
 "Louis F. Breyham", Deseret News, Dec 17, 1941 p.14

Architect/Builder:

Building Materials: stuccoed brick

Building Type/Style: cottage

## Description of physical appearance &amp; significant architectural features:

(Include additions, alterations, ancillary structures, and landscaping if applicable)

Research has indicated that this structure and its eastern neighbor were built in the late 1880's by the same person and indeed they exhibit similar characteristics. The overall exterior flavor of the two dwellings indicates a much later date, (style, massing, details) however, (ca.1910-1930) and the conclusion has been made that both have been extensively altered from their original forms. The structure at this address is a one story hipped roof cottage with a rear hipped roof extension.

Statement of Historical Significance:

Construction Date:

Evidence in the title suggests this house and the one next east, #153, were built in the late 1880's, possibly by James J. Wyatt, a plasterer who built the tenements on the southeast corner of this block. In 1890 both houses were acquired by Edgar D. Waterman of Waterman Brothers, realtors. The Watermans held the houses as rental properties until 1914 when George P. and Thomas B. Packer bought them to rent. Louis Frederick Breyham occupied the house about 1918 and appears to have bought it shortly thereafter. Breyham was born in Milwaukee, Wisconsin, on November 13, 1860, to Mr. & Mrs. Frederick Breyham. He came to Salt Lake in 1918, a year before his wife, Wilhelmina Breyham, died. Breyham was employed by the Morrison-Merrill Co., construction and lumber. A member of the LDS Church, he lived in this house until his death in 1941.

**Attachment D  
Preservation Brief 22**

# 22 Preservation Briefs

Technical Preservation Services

National Park Service  
U.S. Department of the Interior

## The Preservation and Repair of Historic Stucco

### Anne Grimmer

- » [Historical Background](#)
- » [Repairing Deteriorated Stucco](#)
- » [Mixes for Repair of Historic Stucco](#)
- » [Summary](#)
- » [Selected Reading](#)



**A NOTE TO OUR USERS:** The web versions of the **Preservation Briefs** differ somewhat from the printed versions. Many illustrations are new, captions are simplified, illustrations are typically in color rather than black and white, and some complex charts have been omitted.

The term "stucco" is used here to describe a type of exterior plaster applied as a two-or-three part coating directly onto masonry, or applied over wood or metal lath to a log or wood frame structure. Stucco is found in many forms on historic structures throughout the United States. It is so common, in fact, that it frequently goes unnoticed, and is often disguised or used to imitate another material. Historic stucco is also sometimes incorrectly viewed as a sacrificial coating, and consequently removed to reveal stone, brick or logs that historically were never intended to be exposed. Age and lack of maintenance hasten the deterioration of many historic stucco buildings. Like most historic building materials, stucco is at the mercy of the elements, and even though it is a protective coating, it is particularly susceptible to water damage.

Stucco is a material of deceptive simplicity: in most cases its repair should not be undertaken by a property owner unfamiliar with the art of plastering. Successful stucco repair requires the skill and experience of a professional plasterer. Therefore, this Brief has been prepared to provide background information on the nature and components of traditional stucco, as well as offer guidance on proper maintenance and repairs. The Brief will outline the requirements for stucco repair, and, when necessary, replacement. Although several stucco mixes representative of different periods are provided here for reference, this Brief does not include specifications for carrying out repair projects. Each project is unique, with its own set of problems that require individual solutions.

### Historical Background



Stucco has been used since ancient times. Still widely used throughout the world, it is one of the most common of traditional building materials. Up until the late 1800's, stucco, like mortar, was primarily lime-based, but the popularization of portland cement changed the composition of stucco, as well as mortar, to a harder material. Historically, the term "plaster" has often been interchangeable with "stucco"; the term is still favored by many, particularly when referring to the traditional lime-based coating. By the nineteenth century "stucco," although originally denoting fine interior ornamental plasterwork, had gained wide



**The stucco on the early-19th century Richardson-Owens-Thomas House in Savannah, Georgia, is a type of natural cement. Photo: NPS files.**

acceptance in the United States to describe exterior plastering. "Render" and "rendering" are also terms used to describe stucco, especially in Great Britain. Other historic treatments and coatings related to stucco in that they consist at least in part of a similarly plastic or malleable material include: parging and pargeting, wattle and daub, "cob" or chalk mud, pise de terre, rammed earth, briquete entre poteaux or bousillage, half-timbering, and adobe. All of these are regional variations on traditional mixtures of mud, clay, lime, chalk, cement, gravel or straw. Many are still used today.

### **The Stucco Tradition in the United States**

Stucco is primarily used on residential buildings and relatively small-scale commercial structures. Some of the earliest stucco buildings in the United States include examples of the Federal, Greek and Gothic Revival styles of the eighteenth and the nineteenth centuries that emulated European architectural fashions. Benjamin Henry Latrobe, appointed by Thomas Jefferson as Surveyor of Public Buildings of the United States in 1803, was responsible for the design of a number of important stucco buildings, including St. John's Church (1816), in Washington, D.C.

Nearly half a century later Andrew Jackson Downing also advocated the use of stucco in his influential book *The Architecture of Country Houses*, published in 1850. In Downing's opinion, stucco was superior in many respects to plain brick or stone because it was cheaper, warmer and dryer, and could be "agreeably" tinted. As a result of his advice, stuccoed Italianate style urban and suburban villas proliferated in many parts of the country during the third quarter of the nineteenth century.



**The stucco finish on Arlington House, Arlington, Virginia, was marbled in the 1850s, approximately 30 years after it was built. Photo: NPS files.**

### **Revival Styles Promote Use of Stucco**

The introduction of the many revival styles of architecture around the turn of the twentieth century, combined with the improvement and increased availability of portland cement resulted in a "craze" for stucco as a building material in the United States. Beginning about 1890 and gaining momentum into the 1930s and 1940s, stucco was associated with certain historic architectural styles, including: Prairie; Art Deco, and Art Moderne; Spanish Colonial, Mission, Pueblo, Mediterranean, English Cotswold Cottage, and Tudor Revival styles; as well as the ubiquitous bungalow and "four-square" house. The fad for Spanish Colonial Revival, and other variations on this theme, was especially important in furthering stucco as a building material in the United States during this period, since stucco clearly looked like adobe.

Although stucco buildings were especially prevalent in California, the Southwest and Florida, ostensibly because of their Spanish heritage, this period also spawned stucco-coated, revival-style buildings all over the United States and Canada. The popularity of stucco as a cheap, and readily available material meant that by the 1920s, it was used for an increasing variety of building types. Resort hotels, apartment buildings, private mansions and movie theaters, railroad stations, and even gas stations and tourist courts took advantage of the "romance" of period styles, and adopted the stucco construction that had become synonymous with these styles.

### **A Practical Building Material**

Stucco has traditionally been popular for a variety of reasons. It was an inexpensive material that could simulate finely dressed stonework, especially when



The damage to this stucco appears to be caused by moisture infiltration. Photo: NPS files.

"scored" or "lined" in the European tradition. A stucco coating over a less finished and less costly substrate such as rubblestone, fieldstone, brick, log or wood frame, gave the building the appearance of being a more expensive and important structure. As a weather-repellent coating, stucco protected the building from wind and rain penetration, and also offered a certain amount of fire protection. While stucco was usually applied during construction as part of the building design, particularly over rubblestone or fieldstone, in some instances it was added later to protect the

structure, or when a rise in the owner's social status demanded a comparable rise in his standard of living.

### Composition of Historic Stucco

Before the mid-to-late nineteenth century, stucco consisted primarily of hydrated or slaked lime, water and sand, with straw or animal hair included as a binder. Natural cements were frequently used in stucco mixes after their discovery in the United States during the 1820s. Portland cement was first manufactured in the United States in 1871, and it gradually replaced natural cement. After about 1900, most stucco was composed primarily of portland cement, mixed with some lime. With the addition of portland cement, stucco became even more versatile and durable. No longer used just as a coating for a substantial material like masonry or log, stucco could now be applied over wood or metal lath attached to a light wood frame. With this increased strength, stucco ceased to be just a veneer and became a more integral part of the building structure.

Today, gypsum, which is hydrated calcium sulfate or sulfate of lime, has to a great extent replaced lime. Gypsum is preferred because it hardens faster and has less shrinkage than lime. Lime is generally used only in the finish coat in contemporary stucco work.

The composition of stucco depended on local custom and available materials. Stucco often contained substantial amounts of mud or clay, marble or brick dust, or even sawdust, and an array of additives ranging from animal blood or urine, to eggs, keratin or gluesize (animal hooves and horns), varnish, wheat paste, sugar, salt, sodium silicate, alum, tallow, linseed oil, beeswax, and wine, beer, or rye whiskey.

Waxes, fats and oils were included to introduce water-repellent properties, sugary materials reduced the amount of water needed and slowed down the setting time, and alcohol acted as an air entrainer. All of these additives contributed to the strength and durability of the stucco.

The appearance of much stucco was determined by the color of the sand--or sometimes burnt clay--used in the mix, but often stucco was also tinted with natural pigments, or the surface whitewashed or color-washed after stuccoing was completed. Brick dust could provide color, and other coloring materials that were not affected by lime, mostly mineral pigments, could be added to the mix for the final finish coat. Stucco was also marbled or marbled--stained to look like stone by diluting oil of vitriol (sulfuric acid) with water, and mixing this with a yellow ochre, or another color. As the twentieth century progressed, manufactured or synthetic pigments were added at the factory to some



Caulking is not an appropriate method for repairing cracks in historic stucco. Photo: NPS files.

prepared stucco mixes.

## Methods of Application

Stucco is applied directly, without lath, to masonry substrates such as brick, stone, concrete or hollow tile. But on wood structures, stucco, like its interior counterpart plaster, must be applied over lath in order to obtain an adequate key to hold the stucco. Thus, when applied over a log structure, stucco is laid on horizontal wood lath that has been nailed on vertical wood furring strips attached to the logs. If it is applied over a wood frame structure, stucco may be applied to wood or metal lath nailed directly to the wood frame; it may also be placed on lath that has been attached to furring strips. The furring strips are themselves laid over building paper covering the wood sheathing.



The dry materials must be mixed thoroughly before adding water to make the stucco. Photo: NPS files.

Wood lath was gradually superseded by expanded metal lath introduced in the late-nineteenth and early-twentieth century. When stuccoing over a stone or brick substrate, it was customary to cut back or rake out the mortar joints if they were not already recessed by natural weathering or erosion, and sometimes the bricks themselves were gouged to provide a key for the stucco. This helped provide the necessary bond for the stucco to remain attached to the masonry, much like the key provided by wood or metal lath on frame buildings.

Like interior wall plaster, stucco has traditionally been applied as a multiple-layer process, sometimes consisting of two coats, but more commonly as three. Whether applied directly to a masonry substrate or onto wood or metal lath, this consists of a first "scratch" or "pricking-up" coat, followed by a second scratch coat, sometimes referred to as a "floating" or "brown" coat, followed finally by the "finishing" coat. Up until the late-nineteenth century, the first and the second coats were of much the same composition, generally consisting of lime, or natural cement, sand, perhaps clay, and one or more of the additives previously mentioned. Straw or animal hair was usually added to the first coat as a binder. The third, or finishing coat, consisted primarily of a very fine mesh grade of lime and sand, and sometimes pigment. As already noted, after the 1820s, natural cement was also a common ingredient in stucco until it was replaced by portland cement.

Both masonry and wood lath must be kept wet or damp to ensure a good bond with the stucco. Wetting these materials helps to prevent them from pulling moisture out of the stucco too rapidly, which results in cracking, loss of bond, and generally poor quality stuccowork.

## Traditional Stucco Finishes

Until the early-twentieth century when a variety of novelty finishes or textures were introduced, the last coat of stucco was commonly given a smooth, troweled finish, and then scored or lined in imitation of ashlar. The illusion of masonry joints was sometimes enhanced by a thin line of white lime putty, graphite, or some other pigment. Some nineteenth century buildings feature a water table or raised foundation of roughcast stucco that differentiates it from the stucco surface above, which is smooth and scored. Other novelty or textured finishes associated with the "period" or revival styles of the early-twentieth century include: the English cottage finish, adobe and Spanish, pebble-dashed or dry-dash surface, fan and sponge texture, reticulated and vermiculated, roughcast (or wet dash), and sgraffito.

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## Repairing Deteriorated Stucco

### Regular Maintenance

Although A. J. Downing alluded to stuccoed houses in Pennsylvania that had survived for over a century in relatively good condition, historic stucco is inherently not a particularly permanent or long-lasting building material. Regular maintenance is required to keep it in good condition. Unfortunately, many older or historic buildings are not always accorded this kind of care.

Because building owners knew stucco to be a protective, but also somewhat fragile coating, they employed a variety of means to prolong its usefulness. The most common treatment was to whitewash stucco, often annually. The lime in the whitewash offered protection and stability and helped to harden the stucco. Most importantly, it filled hairline cracks before they could develop into larger cracks and let in moisture. To improve water repellency, stucco buildings were also sometimes coated with paraffin, another type of wax, or other stucco-like coatings, such as oil mastics.

### Assessing Damage

Most stucco deterioration is the result of water infiltration into the building structure, either through the roof, around chimneys, window and door openings, or excessive ground water or moisture penetrating through, or splashing up from the foundation. Potential causes of deterioration include: ground settlement lintel and door frame settlement, inadequate or leaking gutters and downspouts, intrusive vegetation, moisture migration within walls due to interior condensation and humidity, vapor drive problems caused by furnace, bathroom and kitchen vents, and rising damp resulting from excessive ground water and poor drainage around the foundation. Water infiltration will cause wood lath to rot, and metal lath and nails to rust, which eventually will cause stucco to lose its bond and pull away from its substrate.

After the cause of deterioration has been identified, any necessary repairs to the building should be made first before repairing the stucco. Such work is likely to include repairs designed to keep excessive water away from the stucco, such as roof, gutter, downspout and flashing repairs, improving drainage, and redirecting rainwater runoff and splash-back away from the building. Horizontal areas such as the tops of parapet walls or chimneys are particularly vulnerable to water infiltration, and may require modifications to their original design, such as the addition of flashing to correct the problem.



The deteriorated surface of this catch basin is being re-stuccoed. Photo: NPS files.

Previous repairs inexpertly carried out may have caused additional deterioration, particularly if executed in portland cement, which tends to be very rigid, and therefore incompatible with early, mostly soft lime-based stucco that is more "flexible." Incompatible repairs, external vibration caused by traffic or construction, or building settlement can also result in cracks which permit the entrance of water and cause the stucco to fail.

Before beginning any stucco repair, an assessment of the stucco should be undertaken to determine the extent of the damage, and how much must be replaced or repaired. Testing should be carried out systematically on all elevations of the building to determine the overall condition of the stucco. Some areas in need of repair will be clearly evidenced by missing sections of stucco or stucco layers. Bulging or cracked areas are obvious places to begin. Unsound, punky or soft areas that have lost their key will echo with a hollow sound when tapped gently with a wooden or acrylic hammer or mallet.

### Identifying the Stucco Type

Analysis of the historic stucco will provide useful information on its primary ingredients and their proportions, and will help to ensure that the new replacement stucco will

duplicate the old in strength, composition, color and texture as closely as possible. However, unless authentic, period restoration is required, it may not be worthwhile, nor in many instances possible, to attempt to duplicate all of the ingredients (particularly some of the additives), in creating the new stucco mortar. Some items are no longer available, and others, notably sand and lime--the major components of traditional stucco--have changed radically over time. For example, most sand used in contemporary masonry work is manufactured sand, because river sand, which was used historically, is difficult to obtain today in many parts of the country. The physical and visual qualities of manufactured sand versus river sand, are quite different, and this affects the way stucco works, as well as the way it looks. The same is true of lime, which is frequently replaced by gypsum in modern stucco mixes. And even if identification of all the items in the historic stucco mix were possible, the analysis would still not reveal how the original stucco was mixed and applied.

There are, however, simple tests that can be carried out on a small piece of stucco to determine its basic makeup. A dilute solution of hydrochloric (muriatic) acid will dissolve lime-based stucco, but not portland cement. Although the use of portland cement became common after 1900, there are no precise cutoff dates, as stuccoing practices varied among individual plasterers, and from region to region. Some plasterers began using portland cement in the 1880s, but others may have continued to favor lime stucco well into the early twentieth century. While it is safe to assume that a late-eighteenth or early-nineteenth century stucco is lime-based, late-nineteenth or early-twentieth century stucco may be based on either lime or portland cement. Another important factor to take into consideration is that an early lime-stucco building is likely to have been repaired many times over the ensuing years, and it is probable that at least some of these patches consist of portland cement.

### Planning the Repair

Once the extent of damage has been determined, a number of repair options may be considered. Small hairline cracks usually are not serious and may be sealed with a thin slurry coat consisting of the finish coat ingredients, or even with a coat of paint or whitewash.

Commercially available caulking compounds are not suitable materials for patching hairline cracks. Because their consistency and texture is unlike that of stucco, they tend to weather differently, and attract more dirt; as a result, repairs made with caulking compounds may be highly visible, and unsightly. Larger cracks will have to be cut out in preparation for more extensive repair. Most stucco repairs will require the skill and expertise of a professional plasterer.



The stucco will be applied to the wire lath laid over the area to be patched. Photo: NPS files.

In the interest of saving or preserving as much as possible of the historic stucco, patching rather than wholesale replacement is preferable. When repairing heavily textured surfaces, it is not usually necessary to replace an entire wall section, as the textured finish, if well-executed, tends to conceal patches, and helps them to blend in with the existing stucco. However, because of the nature of smooth-finished stucco, patching a number of small areas scattered over one elevation may not be a successful repair approach unless the stucco has been previously painted, or is to be painted following the repair work. On unpainted stucco such patches are hard to conceal, because they may not match exactly or blend in with the rest of the historic stucco surface. For this reason it is recommended, if possible, that stucco repair be carried out in a contained or well-defined area, or if the stucco is scored, the repair patch should be "squared-off" in such a way as to follow existing scoring. In some cases, especially in a highly visible location, it may be preferable to restucco an entire wall section or feature. In this way, any differences between the patched area and the historic surface will not be so readily apparent.

Repair of historic stucco generally follows most of the same principles used in plaster repair. First, all deteriorated, severely cracked and loose stucco should be removed down to the lath (assuming that the lath is securely attached to the substrate), or down to the masonry if the stucco is directly applied to a masonry substrate. A clean surface is necessary to obtain a good bond between the stucco and substrate. The areas to be patched should be cleaned of all debris with a bristle brush, and all plant growth, dirt, loose paint, oil or grease should be removed. If necessary, brick or stone mortar joints should then be raked out to a depth of approximately 5/8" to ensure a good bond between the substrate and the new stucco.

To obtain a neat repair, the area to be patched should be squared-off with a butt joint, using a cold chisel, a hatchet, a diamond blade saw, or a masonry bit. Sometimes it may be preferable to leave the area to be patched in an irregular shape which may result in a less conspicuous patch. Proper preparation of the area to be patched requires very sharp tools, and extreme caution on the part of the plasterer not to break keys of surrounding good stucco by "over-sounding" when removing deteriorated stucco.

To ensure a firm bond, the new patch must not overlap the old stucco. If the stucco has lost its bond or key from wood lath, or the lath has deteriorated or come loose from the substrate, a decision must be made whether to try to reattach the old lath, to replace deteriorated lath with new wood lath, or to leave the historic wood lath in place and supplement it with modern expanded metal lath. Unless authenticity is important, it is generally preferable (and easier) to nail new metal lath over the old wood lath to support the patch. Metal lath that is no longer securely fastened to the substrate may be removed and replaced in kind, or left in place, and supplemented with new wire lath.

When repairing lime-based stucco applied directly to masonry, the new stucco should be applied in the same manner, directly onto the stone or brick. The stucco will bond onto the masonry itself without the addition of lath because of the irregularities in the masonry or those of its mortar joints, or because its surface has been scratched, scored or otherwise roughened to provide an additional key. Cutting out the old stucco at a diagonal angle may also help secure the bond between the new and the old stucco. For the most part it is not advisable to insert metal lath when restuccoing historic masonry in sound condition, as it can hasten deterioration of the repair work. Not only will attaching the lath damage the masonry, but the slightest moisture penetration can cause metal lath to rust. This will cause metal to expand, eventually resulting in spalling of the stucco, and possibly the masonry substrate too.

If the area to be patched is properly cleaned and prepared, a bonding agent is usually not necessary. However, a bonding agent may be useful when repairing hairline cracks, or when dealing with substrates that do not offer a good bonding surface. These may include dense stone or brick, previously painted or stuccoed masonry, or spalling brick substrates. A good mechanical bond is always preferable to reliance on bonding agents. Bonding agents should not be used on a wall that is likely to remain damp or where large amounts of salts are present. Many bonding agents do not survive well under such conditions, and their use could jeopardize the longevity of the stucco repair.

A stucco mix compatible with the historic stucco should be selected after analyzing the existing stucco. It can be adapted from a standard traditional mix of the period, or based on one of the mixes included here. Stucco consisting mostly of portland cement generally will not be physically compatible with the softer, more flexible lime-rich historic stuccos used throughout the eighteenth and much of the nineteenth centuries. The differing expansion and contraction rates of lime stucco and portland cement stucco will normally cause the stucco to crack. Choosing a stucco mix that is durable and compatible with the historic stucco on the building is likely to involve considerable trial and error, and probably will require a number of test samples,



The final finish coat will be applied to this scratch coat. Photo: NPS files.

and even more if it is necessary to match the color. It is best to let the stucco test samples weather as long as possible--ideally one year, or at least through a change of seasons, in order to study the durability of the mix and its compatibility with the existing stucco, as well as the weathering of the tint if the building will not be painted and color match is an important factor.

If the test samples are not executed on the building, they should be placed next to the stucco remaining on the building to compare the color, texture and composition of the samples with the original. The number and thickness of stucco coats used in the repair should also match the original.

After thoroughly dampening the masonry or wood lath, the first, scratch coat should be applied to the masonry substrate, or wood or metal lath, in a thickness that corresponds to the original if extant, or generally about 1/4" to 3/8". The scratch coat should be scratched or crosshatched with a comb to provide a key to hold the second coat. It usually takes 24-72 hours, and longer in cold weather, for each coat to dry before the next coat can be applied. The second coat should be about the same thickness as the first, and the total thickness of the first two coats should generally not exceed about 5/8". This second or leveling coat should be roughened using a wood float with a nail protruding to provide a key for the final or finish coat. The finish coat, about 1/4" thick, is applied after the previous coat has initially set. If this is not feasible, the base coat should be thoroughly dampened when the finish coat is applied later. The finish coat should be worked to match the texture of the original stucco.

### Colors and Tints for Historic Stucco Repair



The new addition on the right is stucco scored to imitate the limestone of the historic building on the left. Photo: NPS files.

The color of most early stucco was supplied by the aggregate included in the mix--usually the sand. Sometimes natural pigments were added to the mix, and eighteenth and nineteenth-century scored stucco was often marbled or painted in imitation of marble or granite. Stucco was also frequently coated with whitewash or a colorwash. This tradition later evolved into the use of paint, its popularity depending on the vagaries of fashion as much as a means of concealing repairs. Because most of the early colors were derived from nature, the resultant stucco tints tended to be mostly earth-toned. This was true until the advent of brightly colored stucco in the early decades of the twentieth century. This was the so-called "Jazz Plaster" developed by O.A. Malone, the "man who

put color into California," and who founded the California Stone Products Corporation in 1927. California Stucco was revolutionary for its time as the first stucco/plaster to contain colored pigment in its pre-packaged factory mix.

When patching or repairing a historic stucco surface known to have been tinted, it may be possible to determine through visual or microscopic analysis whether the source of the coloring is sand, cement, or pigment. Although some pigments or aggregates used traditionally may no longer be available, a sufficiently close color-match can generally be approximately using sand, natural or mineral pigments, or a combination of these. Obtaining such a match will require testing and comparing the color of the dried test samples with the original. Successfully combining pigments in the dry stucco mix prepared for the finish coat requires considerable skill. The amount of pigment must be carefully measured for each batch of stucco. Overworking the mix can make the pigment separate from the lime. Changing the amount of water added to the mix, or using water to apply the tinted finish coat, will also affect the color of the stucco when it dries.

Generally, the color obtained by hand-mixing these ingredients will provide a sufficiently close match to cover an entire wall or an area distinct enough from the rest of the structure that the color differences will not be obvious. However, it may not work for

small patches conspicuously located on a primary elevation, where color differences will be especially noticeable. In these instances, it may be necessary to conceal the repairs by painting the entire patched elevation, or even the whole building.

Many stucco buildings have been painted over the years and will require repainting after the stucco repairs have been made. Limewash or cement-based paint, latex paint, or oil-based paint are appropriate coatings for stucco buildings. The most important factor to consider when repainting a previously painted or coated surface is that the new paint be compatible with any coating already on the surface. In preparation for repainting, all loose or peeling paint or other coating material not firmly adhered to the stucco must be removed by hand-scraping or natural bristle brushes. The surface should then be cleaned.

Cement-based paints, most of which today contain some portland cement and are really a type of limewash, have traditionally been used on stucco buildings. The ingredients were easily obtainable. Furthermore, the lime in such paints actually bonded or joined with the stucco and provided a very durable coating. In many regions, whitewash was applied annually during spring cleaning. Modern, commercially available premixed masonry and mineral-based paints may also be used on historic stucco buildings.

If the structure must be painted for the first time to conceal repairs, almost any of these coatings may be acceptable depending on the situation. Latex paint, for example, may be applied to slightly damp walls or where there is an excess of moisture, but latex paint will not stick to chalky or powdery areas. Oil-based, or alkyd paints must be applied only to dry walls; new stucco must cure up to a year before it can be painted with oil-based paint.

### **Contemporary Stucco Products**

There are many contemporary stucco products on the market today. Many of them are not compatible, either physically or visually, with historic stucco buildings. Such products should be considered for use only after consulting with a historic masonry specialist. However, some of these prepackaged tinted stucco coatings may be suitable for use on stucco buildings dating from the late-nineteenth or early-twentieth century, as long as the color and texture are appropriate for the period and style of the building. While some masonry contractors may, as a matter of course, suggest that a water-repellent coating be applied after repairing old stucco, in most cases this should not be necessary, since color washes and paints serve the same purpose, and stucco itself is a protective coating.

### **Cleaning Historic Stucco Surfaces**

Historic stucco buildings often exhibit multiple layers of paint or limewash. Although some stucco surfaces may be cleaned by water washing, the relative success of this procedure depends on two factors: the surface texture of the stucco, and the type of dirt to be removed. If simply removing airborne dirt, smooth unpainted stucco, and heavily-textured painted stucco may sometimes be cleaned using a low-pressure water wash, supplemented by scrubbing with soft natural bristle brushes, and possibly non-ionic detergents. Organic plant material, such as algae and mold, and metallic stains may be removed from stucco using poultices and appropriate solvents. Although these same methods may be employed to clean unpainted roughcast, pebble-dash, or any stucco surface featuring exposed aggregate, due to the surface irregularities, it may be difficult to remove dirt, without also removing portions of the decorative textured surface. Difficulty in cleaning these surfaces may explain why so many of these textured surfaces have been painted.

### **When Total Replacement is Necessary**

Complete replacement of the historic stucco with new stucco of either a traditional or modern mix will probably be necessary only in cases of extreme deterioration-- that is, a loss of bond on over 40-50 percent of the stucco surface. Another reason for total



removal might be that the physical and visual integrity of the historic stucco has been so compromised by prior incompatible and ill-conceived repairs that patching would not be successful.

When stucco no longer exists on a building there is more flexibility in choosing a suitable mix for the replacement. Since compatibility of old and new stucco will not be an issue, the most important factors to consider are durability, color, texture and finish. Depending on the construction and substrate of the building, in some instances it may be acceptable to use a relatively strong cement-based stucco mortar. This is certainly true for many late-nineteenth and early-twentieth century buildings, and may even be appropriate to use on some stone substrates even if the original mortar would have been weaker, as long as the historic visual qualities noted above have been replicated. Generally, the best principle to follow for a masonry building is that the stucco mix, whether for repair or replacement of historic stucco, should be somewhat weaker than the masonry to which it is to be applied in order not to damage the substrate.

### **General Guidance for Historic Stucco Repair**

A skilled professional plasterer will be familiar with the properties of materials involved in stucco repair and will be able to avoid some of the pitfalls that would hinder someone less experienced. General suggestions for successful stucco repair parallel those involving restoration and repair of historic mortar or plaster. In addition, the following principles are important to remember:

- Mix only as much stucco as can be used in one and one-half to two hours. This will depend on the weather (mortar will harden faster under hot and dry, or sunny conditions); and experience is likely to be the best guidance. Any remaining mortar should be discarded; it should not be retempered.
- Stucco mortar should not be over-mixed. (Hand mix for 10-15 minutes after adding water, or machine mix for 3-4 minutes after all ingredients are in mixer.) Over-mixing can cause crazing and discoloration, especially in tinted mortars. Over-mixing will also tend to make the mortar set too fast, which will result in cracking and poor bonding or keying to the lath or masonry substrate.
- Wood lath or a masonry substrate, but not metal lath, must be thoroughly wetted before applying stucco patches so that it does not draw moisture out of the stucco too rapidly. To a certain extent, bonding agents also serve this same purpose. Wetting the substrate helps retard drying.
- To prevent cracking, it is imperative that stucco not dry too fast. Therefore, the area to be stuccoed should be shaded, or even covered if possible, particularly in hot weather. It is also a good idea in hot weather to keep the newly stuccoed area damp, at approximately 90 per cent humidity, for a period of 48 to 72 hours.
- Stucco repairs, like most other exterior masonry work, should not be undertaken in cold weather (below 40 degrees Fahrenheit, and preferably warmer), or if there is danger of frost.

### **Historic Stucco Textures**

Most of the oldest stucco in the U.S. dating prior to the late-nineteenth century, will generally have a smooth, troweled finish (sometimes called a sand or float finish), possibly scored to resemble ashlar masonry units. Scoring may be incised to simulate masonry joints, the scored lines may be emphasized by black or white penciling, or the lines may simply be drawn or painted on the surface of the stucco. In some regions, at least as early as the first decades of the nineteenth century, it was not uncommon to use a roughcast finish on the foundation or base of an otherwise smooth-surfaced building. Roughcast was also used as an overall stucco finish for some outbuildings, and other less important types of structures.

A wide variety of decorative surface textures may be found on revival style stucco buildings, particularly residential architecture. These styles evolved in the late-nineteenth century and peaked in popularity in the early decades of the twentieth century. Frank



This stucco house has a rough cast finish.  
Photo: NPS files.

Lloyd Wright favored a smooth finish stucco, which was imitated on much of the Prairie style architecture inspired by his work. Some of the more picturesque surface textures include: English Cottage or English Cotswold finish; sponge finish; fan texture; adobe finish; and Spanish or Italian finish. Many of these finishes and countless other regional and personalized variations on them are still in use.

The most common early-twentieth century stucco finishes are often found on bungalow-style houses, and include: spatter or spatterdash (sometimes called roughcast, harling, or wetdash), and pebble-dash or drydash. The spatterdash finish is applied by throwing the stucco mortar against the wall using a whisk broom or a stiff fiber brush, and it requires considerable skill on the part of the plasterer to achieve a consistently rough wall surface. The mortar used to obtain this texture is usually composed simply of a regular sand, lime, and cement mortar, although it may sometimes contain small pebbles or crushed stone aggregate, which replaces one-half the normal sand content. The pebble-dash or drydash finish is accomplished manually by the plasterer throwing or "dashing" dry pebbles (about 1/8" to 1/4" in size), onto a coat of stucco freshly applied by another plasterer. The pebbles must be thrown at the wall with a scoop with sufficient force and skill that they will stick to the stuccoed wall. A more even or uniform surface can be achieved by patting the stones down with a wooden float. This finish may also be created using a texturing machine.

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## Summary

Stucco on historic buildings is especially vulnerable not only to the wear of time and exposure to the elements, but also at the hands of well-intentioned "restorers," who may want to remove stucco from eighteenth and nineteenth century structures, to expose what they believe to be the original or more "historic" brick, stone or log underneath. Historic stucco is a character-defining feature and should be considered an important historic building material, significant in its own right. While many eighteenth and nineteenth century buildings were stuccoed at the time of construction, others were stuccoed later for reasons of fashion or practicality. As such, it is likely that this stucco has acquired significance over time, as part of the history and evolution of a building. Thus, even later, non-historic stucco should be retained in most instances; and similar logic dictates that new stucco should not be applied to a historic building that was not stuccoed previously. When repairing historic stucco, the new stucco should duplicate the old as closely as possible in strength, composition, color and texture.

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## Mixes for Repair of Historic Stucco

Historic stucco mixes varied a great deal regionally, depending as they did on the availability of local materials. There are probably almost as many mixes that can be used for repair of historic stucco as there are historic stucco buildings. For this reason it is recommended that at least a rudimentary analysis of the existing historic stucco be carried out in order to determine its general proportions and primary ingredients. However, if this is not possible, or if test results are inconclusive, the following mixes are provided as reference. Many of the publications listed under "Selected Reading" include a variety of stucco mixes and should also be consulted for additional guidance.

Materials Specifications should conform to those contained in Preservation Briefs 2: Repointing Mortar Joints in Historic Masonry Buildings, and are as follows:

- Lime should conform to ASTM C207, Type S, Hydrated Lime for Masonry Purposes.
- Sand should conform to ASTM C144 to assure proper gradation and freedom from

impurities. Sand, or other type of aggregate, should match the original as closely as possible.

- Cement should conform to ASTM C150, Type II (white, nonstaining), portland cement.
- Water should be fresh, clean and potable.
- If hair or fiber is used, it should be goat or cattle hair, or pure manilla fiber of good quality, ½" to 2" in length, clean, and free of dust, dirt, oil, grease or other impurities.
- Rules to remember: More lime will make the mixture more plastic, but stucco mortar with a very large proportion of lime to sand is more likely to crack because of greater shrinkage; it is also weaker and slower to set. More sand or aggregate, will minimize shrinkage, but make the mixture harder to trowel smooth, and will weaken the mortar.

### **Soft Lime Stucco (suitable for application to buildings dating from 1700-1850)**

#### **A.J. Downing's Recipe for Soft Lime Stucco**

1 part lime

2 parts sand

(A.J. Downing, "The Architecture of Country Houses," 1850)

#### **Vieux Carre Masonry Maintenance Guidelines**

Base Coats (2):

1 part by volume hydrated lime

3 parts by volume aggregate [sand]--size to match original

6 pounds/cubic yards hair or fiber

Water to form a workable mix,

Finish Coat:

1 part by volume hydrated lime

3 parts aggregate [sand]--size to match original

Water to form a workable mix.

Note: No portland cement is recommended in this mix, but if it is needed to increase the workability of the mix and to decrease the setting time, the amount of portland cement added should never exceed 1 part to 12 parts lime and sand.

("Vieux Carre Masonry Maintenance Guidelines," June, 1980.)

#### **"Materials for Soft Brick Mortar and for Soft Stucco "**

5 gallons hydrated lime

10 gallons sand

1 quart white, nonstaining portland cement (1 cup only for pointing)

Water to form a workable mix.

(Koch and Wilson, Architects, New Orleans, Louisiana, February, 1980)

#### **Mix for Repair of Traditional Natural Cement or Hydraulic Lime Stucco**

- 1 part by volume hydrated lime
- 2 parts by volume white portland cement
- 3 parts by volume fine mason's sand

If hydraulic lime is available, it may be used instead of lime-cement blends.  
("Conservation Techniques for the Repair of Historical Ornamental Exterior Stucco,  
January, 1990)

### **Early twentieth century Portland Cement Stucco**

- 1 part portland cement
- 2-1/2 parts sand
- Hydrated lime = to not more than 15% of the cement's volume
- Water to form a workable mix.

The same basic mix was used for all coats, but the finish coat generally contained more lime than the undercoats. ("Illinois Preservation Series No. 2: Stucco," January, 1980)

### **American Portland Cement Stucco Specifications (c. 1929)**

Base Coats:

- 5 pounds, dry, hydrated lime
- 1 bag portland cement (94 lbs.)
- Not less than 3 cubic feet (3 bags) sand (passed through a #8 screen)
- Water to make a workable mix.

Finish Coat:

- Use WHITE portland cement in the mix in the same proportions as above.
- To color the stucco add not more than 10 pounds pigment for each bag of cement contained in the mix.

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*Whitewash & Coldwater Paints*. Bulletin No. 304G. Washington, D.C.: National Lime Association, 1955.

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**Home page logo: Arlington House, Arlington, Virginia. Photo: NPS files.**

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