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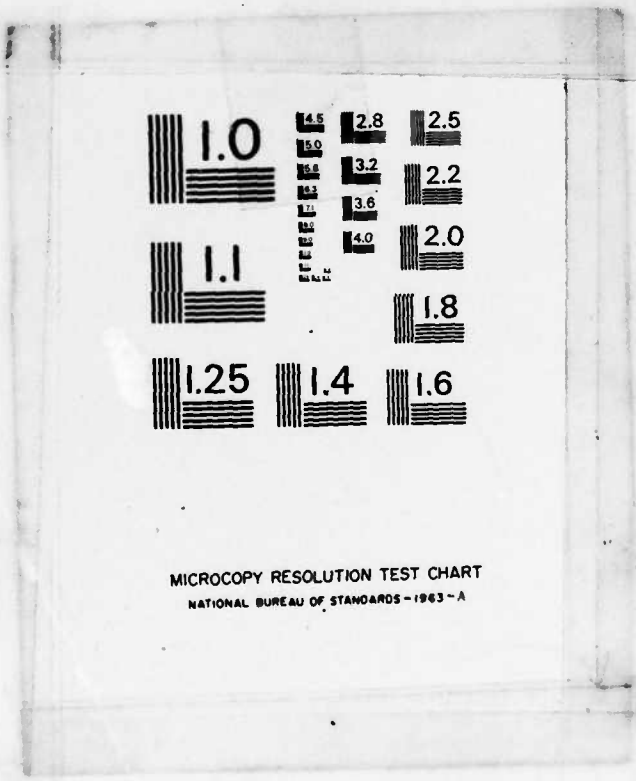

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18. SUPPLEMENTARY NOTES

The plan consists of 4 sections and 53 historic building portfolios. This report consists of: Section I, Introduction; Section II, Maintenance Recommendations; Section III, Details and Illustrations for Repairs; Section IV, Appendix (which includes: Building Types list of buildings included in the plan , List (cont'd)

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Historic Preservation
Maintenance Plan
Architectural Conservation
Facilities Engineering
Historic Buildings
National Register of Historic Places
National Historic Landmark
Historic District
Historic American Buildings Survey
National Park Service
Historic Structures

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Primary objective of this project was to develop a comprehensive historic structures maintenance plan for the historic buildings located within the Presidio of San Francisco National Historic Landmark District. The Plan provides specific recommendations to the Presidio Facility Engineer for the long-term maintenance of the historic structures.

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18. of previously existing Architectural Drawings, Preservation and Conservation Organizations, Secretary of the Interior's Standards, Suppliers of Hard to Get Materials and Paints, Annotated References, Treatment of Historic Batteries, and Treatment of Historic Interiors); and, 3 representative examples of the 53 individual historic building portfolios.

20. The plan addresses 89 primary and 48 secondary historic structures. The identification of the historic structures and their relative importance had been determined in a prior survey and analysis by the Historic American Buildings Survey of the National Park Service.

The contractor completed the following tasks.

1. Studied maintenance records and inspected each building, analyzed present condition, determined remaining historic fabric, identified problems with the historic and functional integrity of the buildings.
2. Developed solutions to identified problems that would protect the historic integrity of the structure.
3. Determined historic appearance of primary structures, determined and recommended appropriate appearance of existing facades.
4. Developed instructions for future maintenance and repair work that would result in appropriate appearances for the buildings.
5. Assessed the capability of staff and maintenance facilities, developed recommendations for tasks which could be accomplished in-house.

The major accomplishments of this maintenance plan are a format for the systematic presentation of information, a comprehensive identification and analysis of existing problems, and recommendations that realistically address the abilities and commitment of the Army to "historic preservation" on an active military base.

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SECTION I

Maintenance Plan for Historic Buildings within the Presidio of San Francisco Historic Landmark District

Prepared for:

Department of the Army
Headquarters Presidio of San Francisco
San Francisco, California

Administered by:

National Park Service
Western Regional Office
U.S. Department of Interior
San Francisco, California

Contract No.: 8000-1-0041

Prepared by:

Charles Hall Page & Associates, Inc.
364 Bush Street
San Francisco, California 94104

10 December 1982

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1. INTRODUCTION

1.1 CONTRACT INFORMATION

In September of 1981 the United States National Park Service, acting as contracting agent to the United States Army, awarded to Charles Hall Page & Associates, Inc., San Francisco, CA, Contract #8000-1-0041 to provide a Maintenance Plan for Historic Buildings within the Presidio of San Francisco Historic Landmark District. The primary goal of this document is to develop a comprehensive maintenance plan that will provide specific recommendations to the Presidio Facilities Engineer for the long-term, preservation-based maintenance of designated historic buildings located within the Presidio National Historic Landmark District.

The issues involved in historic building maintenance cover a broad and complex spectrum. An attempt to develop a truly comprehensive maintenance plan for over two-hundred thirty-five historic structures could easily result in a "monster" plan that would be so complex and intimidating that it would spend its life on the shelf.

The format of this Maintenance Plan for Historic Buildings has been specifically developed by the consultants, with guidance from The National Park Service and the Facilities Engineers' staff, to result in a Plan that is easy to understand, easy to reference and easy to use. The format as developed is simple but not simplistic, consisting of five separate but interrelated sections. These five sections are: I.) Introduction, II.) Maintenance Recommendations and Procedures, III.) Drawings and Illustrations, IV.) Appendix, and V.) Historic Building Portfolios. Complete instructions for the use of each section are provided in 1.5.3 of the INTRODUCTION. Briefly summarized the sections are:

The INTRODUCTION, consisting of five subsections that describe what the Plan is and how it is to be used. As the major text of the report, it should be read by everyone who is to use or refer to the Maintenance Plan For Historic Buildings.

The second part, MAINTENANCE RECOMMENDATIONS AND PROCEDURES contains the written recommendations (organized by division according to the appropriate Construction Specifications Institute number), which respond to the preservation problems identified at The Presidio.

The third part, DRAWINGS AND ILLUSTRATIONS FOR REPAIRS, contains the drawings necessary to illustrate the recommendations and procedures section.

The APPENDIX is the fourth section and contains all the Plan reference materials.

The fifth and final major portion of the plan consists of the HISTORIC BUILDING PORTFOLIOS. There are 53 individual dossiers, one for each building type covered in the plan. These dossiers are separate from the text portion of the report, however they are to be used in conjunction with the text, therefore these and all portions of the plan need to be kept together as a unit to insure proper referencing and coordination between the parts.

All five sections of the plan are indexed by a multiple decimal point system for quick referencing and cross referencing between sections.

1.2 HISTORIC BUILDING MAINTENANCE

Historic Building Maintenance combines many of the "hands on" problems of daily building maintenance with the more technical and aesthetic concerns of historic preservation. Some of these similarities and differences are explained in the following section.

1.2.1 SPECIAL PROBLEMS AND SOLUTIONS RELATED TO HISTORIC BUILDINGS

Historic buildings often require a different system of identifying, evaluating and correcting maintenance related problems than contemporary structures. This is generally because of their age but often it is because of their archaic building technologies. The tremendous changes in building technology through the years have quite naturally resulted in the loss of a general working knowledge of various building techniques and materials that were once very common. At the same time, many materials and building practices that were once considered either impossible or prohibitively expensive are now routine. Central plumbing, air conditioning and wall-to-wall carpeting are just a few examples of how our changing technology has changed our way of building.

Even those materials which appear to be identical to their ancestors are often composed of completely different chemicals and are applied in a manner unheard of only 30 years ago. (e.g., painting houses with acrylic latex paint applied with spray guns.)

The result of this continuing change in building techniques and materials is that as a building grows older, fewer and fewer of the personnel responsible for its well-being are familiar with the basic materials (or fabric) of the building's construction. These personnel are usually even less familiar with the techniques that were used in the application of the historic material or its day to day maintenance. For ordinary buildings which have a limited anticipated "life expectancy", this often results in the replacement (where possible) of unfamiliar "historic" materials with more contemporary materials which are more familiar and therefore more easily accommodated. A typical example of this would be hardwood floors covered first with linoleum, then covered with asphalt or vinyl tile, and finally covered with carpeting. Each of these modifications requires progressively less and less labor intensive maintenance on a day-to-day basis.

Historic building materials are frequently of better, more lasting quality than many contemporary materials. However, due to continually rising labor costs, they are generally subjected to neglect and abuse which often accelerates their natural rate of attrition or decay. Decreasing the amount of regular maintenance hours spent on each building (usually intended to compensate for increased labor costs) can result in 1) material failure through neglect (e.g. less frequent surface cleaning resulting in the build-up of moisture holding soil resulting in the development of destructive fungi), or 2) material failure through abuse caused by the use of either physically and/or chemically destructive maintenance procedures (e.g. many new "time saving" cleaning techniques) which are not sensitive to older materials. This destructive process is acceptable for those buildings of general utility which will be replaced when they are no longer of economic value. For recognized historic and/or culturally significant buildings which merit preservation, this process is obviously unsatisfactory. For these buildings it is necessary to develop a sensitive program of building maintenance that will prevent this systematic abuse.

To do this it is necessary to identify when these buildings were constructed, what materials were used and what methods were employed. In addition, it is necessary to know the present condition of the building fabric itself. Once this analysis has been made and the building fabric is understood, then actions can be recommended and implemented that will begin to preserve the building fabric for future generations. This is the purpose of historic building maintenance.

1.2.2 WHAT IS HISTORIC BUILDING MAINTENANCE

Maintenance priorities vary considerably with the particular age, occupancy and use requirements of a given structure. Generally, the maintenance objective of historic structures is to make the building fabric last as long as possible; that is, it has PRESERVATION as its goal. The methods used in historic building maintenance also vary considerably depending on the scale, historic importance, sensitivity of the building fabric, and the resources (both economic and technical) available to the maintenance staff.

Is not always feasible to duplicate historic building materials, construction techniques, or maintenance methods. Furthermore, even when it is possible to duplicate these procedures it is not always desirable to do so. Some historically correct building techniques have proven to be defective in both their use of materials and in their design of construction. It is necessary therefore in the process of historic building maintenance also to correct these built-in deficiencies.

1.2.3 WHAT HISTORIC BUILDING MAINTENANCE CAN ACCOMPLISH

A good understanding of the general philosophy of historic building maintenance, coupled with the necessary technical information will lead to the adoption of an ongoing program that will not only correct past mistakes and check deterioration but will also prevent future problems that would result from inattention or the inappropriate use of methods and materials. It is, of course, impossible to foresee all potential problems that may arise, and coping with maintenance emergencies in historic buildings is especially difficult. However, a general background knowledge of historic building maintenance will enable personnel to deal both with the day-to-day care and unanticipated crises in a manner that is least destructive to the historic building fabric.

1.2.4 WHAT HISTORIC BUILDING MAINTENANCE CANNOT ACCOMPLISH

Many problems that afflict historic buildings are by necessity beyond the scope of historic building maintenance. Issues directly relating to major changes in occupany and use, which may have drastic effects on historic building fabric, are best addressed in resource master planning where decisions regarding overall cause and effect are discussed.

Strictly speaking, historic building maintenance cannot address directly either building code or life safety issues. While all methods and materials recommended within this plan comply with standard code requirements, historic building issues of structural stability, egress, plumbing, electrical, etc. need to be studied by professionals in their respective fields. Buildings with severely settled foundations, steeply sloped stairs or overloaded floors cannot be repaired through historic building maintenance alone.

1.3 PROJECT BACKGROUND

1.3.1 PROJECT INITIATION

During the summer of 1981, the Western Regional Office of the National Park Service conducted a project to identify and evaluate historic structures at the Presidio of San Francisco, National Historic Landmark (NHL). This project was part of an ongoing effort by the National Park Service to assist the United States Army in integrating Federal guidelines for historic preservation with overall land use planning at military bases nationwide. At the Presidio, the first phase of this effort was the inventory. Its goal was to identify which of the buildings within the boundaries of the Presidio contribute to the historic architectural integrity of the NHL district. The National Park Service assigned numerical valuations to the structures, according to the Army's historic preservation categories (1-5), to establish the level of contribution each building makes to the overall historic resource. These categories are:

Category I: Directly contributing to the National Historic Landmark; of particularly strong integrity. Restoration or rehabilitation is a realistic possibility and would be very beneficial to integrity and interpretation of the historic resource.

Category II: Contributing to the National Historic Landmark but more supportive to the National Historic Landmark themes than of direct significance; of good integrity. Restoration of lesser importance at this time.

Category III: Contributing to the National Register Historic District, but not to the National Historic Landmark.

Category IV: Pertaining to the National Register Historic District but may be of insufficient age or integrity to contribute to historical significance. This includes structures that are neutral, but may in time become Category III, and buildings that require further research to verify significance. World War II structures generally fall into this category, as well as more modern structures.

Category V: Intrusions to either the National Historic Landmark or National Register Historic District. In rare cases, structures that might ordinarily be judged contributing or neutral are judged to be intrusions to a particularly significant and intact part of the district with which they do not conform.

This inventory, then, is the basis for the development of this long-range, preservation-based maintenance program for the historic buildings at the Presidio.

In order that this preservation-based maintenance program might be maximally useful and still manageable in scope it was agreed that the recommendations within the the Maintenance Plan should be specific to only a segment of the most highly ranked buildings, those in Category I and selected buildings in Category II. However, the general philosophy of the plan does apply to all categories of historic structures at the Presidio. The recommendations provided here to conserve and rehabilitate the historic properties recognize a requirement for their continued use in the contemporary world.

1.4 PROJECT METHODOLOGY

1.4.1 DEVELOPMENT OF PROJECT FOCUS

The goal of this project, as stated above, is to provide recommendations to the Presidio Facilities Engineer for long-term, preservation-based maintenance of the designated historic buildings at The Presidio. It was determined from the outset that it would be necessary to work closely with the National Park Service Western Regional Office and the U. S. Army Facilities Engineer at the Presidio to ascertain what criteria would be used in developing the recommendations. The National Park Service felt it was important that the manual closely reflect the concepts set forth in the Secretary of the Interior's STANDARDS FOR HISTORIC PRESERVATION PROJECTS. The Army's primary concerns were that the manual also be easily integrated into their standard operating procedures and that the preservation maintenance recommendations not be beyond the capabilities or severely strain the already enormous burden of the Facilities Engineer's staff at the Presidio.

1.4.2 DEVELOPMENT OF PROJECT FORMAT

Preliminary on-site inspection and review of the draft architectural survey cards for Category I and II buildings indicated that although there were a large number of structures involved (99 Category I and 136 Category II) many of the individual buildings could be grouped together as examples of a repetitive "type" of building. All buildings of one type share similar if not identical design, materials and dates of construction. This categorization effectively reduced the number of buildings to 49 types within the Category I buildings, much closer to the number anticipated in the original contract proposal. Later, more detailed on-site inspections revealed that, with few exceptions, preservation maintenance and design problems evident on an individual building were also evident on others of the same type.

The type of Category II structures to be included in the plan were selectively chosen by the contractor according to criteria jointly agreed upon by the Facilities Engineer and the National Park Service. Generally the criteria established that the selected Category II buildings should:

1. Be residential occupancy.
2. Have more than one building per type.

3. Exhibit preservation-maintenance problems similiar to the Category I buildings.

The criteria resulted in identification of seven (7) Category II types containing 48 structures.

1.4.3 DEVELOPMENT OF RECOMMENDATION FORMAT

Individual, detailed inspections were conducted initially on several major types of Category I buildings, #5-16 frame, #100-106 brick, and #1202-1218 reinforced concrete structures. From these inspections three initial findings became apparent concerning the designated historic structures:

1. In general, the building fabric of the structures is in good condition, particularly considering their 50 to 110 year age and continuous daily use.

2. The number of major design problems is limited to a few particular issues which are broad in their application and relate to many of the Category I structures.

3. Major preservation maintenance problems number only five or six, are generally applicable to numerous structures, and are not particularly related to inadequate cyclical maintenance. Rather, they are the result of natural weathering and exposure (e.g., broken roof tiles) or specific improper maintenance actions (e.g., sandblasted masonry).

Following these initial inspections, meetings were held with the National Park Service and the Facilities Engineer's staff to discuss the findings and develop conclusions which directly affect the format and content of The Plan. Briefly summarized the major issues raised were:

1. The designated historic structures at The Presidio are not "museum structures" in the traditional sense, but rather "living" buildings in which the historical component plays a major but not singular role.

2. The Facilities Engineer, charged with the maintenance of the entire Presidio Facility (over 1,700 structures) could not realistically be expected to perform frequently scheduled, highly labor-intensive maintenance procedures on a large number of buildings.

3. The condition of the buildings inspected indicates that on the whole, general life-sustaining maintenance procedures were being carried out, however specific guidance was needed to properly address the more technical issues of preservation maintenance.

The Facilities Engineer has available in-house voluminous, detailed trade specifications to cover virtually all types of building and construction issues. It was agreed that a repetition of these specifications would not provide the needed information for planning and achieving historic building maintenance. As a result this Maintenance Plan for Historic Buildings is neither a schedule for cyclical maintenance nor detailed specifications for construction. Instead it provides specific recommendations for the correction of existing, technically and aesthetically difficult preservation problems including the long-term conservation of the 235 designated historic structures.

Integral with the preservation maintenance recommendations this Maintenance Plan also contains specific recommendations for limited exterior design improvements that are not maintenance oriented. Although they could be called "restoration" recommendations, they do not comprise a comprehensive restoration scheme. Rather, they are intended to encourage the development and realization of long-range exterior design improvements to the designated historic structures at The Presidio. Recommended design improvements to these structures have been developed using the available original drawings (elevations, plans and details), historic data, historic photographs and the results of contemporary on-site investigation as the basic reference material. These resources were used to determine as nearly as possible the original appearance, major evolutionary changes in appearance, and the appearance at its most significant time in history for the designated buildings.

The recommendations are general in nature and are similar to design guidelines, sometimes providing more than one alternative solution to the same problem. Although they are not "restoration" schemes, the guidelines identify the exterior changes that would be necessary to bring the historic structures into substantial compliance with the Secretary of the Interior's STANDARDS FOR PRESERVATION PROJECTS (see Appendix ff.). Consultation with the National Park Service staff determined that design intrusions that were identified either as being threatening to the life of the building fabric, or substantial enough

to disrupt visually the overall building form, or as unsympathetic to the original architectural design of the building should be recommended for removal or alteration. However, other design intrusions which illustrate the evolution of the building through time and enhance the historical value of the building should be retained.

1.5 HOW TO USE THIS HISTORIC BUILDING MAINTENANCE PLAN

1.5.1 WHO SHOULD READ THE PLAN

All members of the facilities engineers staff who in any manner work with or are responsible for the work performed on the designated historic buildings at the Presidio would benefit by being familiar with this document.

An understanding of the basic philosophy of the report and the problems that it addresses will be adequate background for those who do not work directly with the historic buildings. In this way, the report can serve as an educational tool for personnel who are unfamiliar with or new to the field of preservation maintenance.

Other personnel more directly related with the building programs need a solid working knowledge of the document. This would include personnel in the Engineering Plans and Services (EPS), Operations and Maintenance (O & M), and Engineering Resources Management Division (ERMD).

These personnel will need to know not only what the Plan does and does not address but also where it is located, how to use it, and how it is to be integrated with the standard operating procedures of the Presidio Facilities Engineer. To simplify and encourage use of the Historic Building Maintenance Plan, there should be a designated member of the staff in charge of the document, who will be available to assist others in its use and make sure that the plan documents and the files are not lost, separated or otherwise rendered unusable.

1.5.2 EXPECTED LIFE OF PLAN

As this document is not a schedule for the regular janitorial and cyclical maintenance at the Presidio but rather a recommended plan for rectifying historic preservation maintenance problems it will in time become somewhat obsolete. Specific design problems relating to restoration and reconstruction will be corrected and no longer need direct attention while other issues related to materials preservation and conservation will become more prominent. It is impossible to determine exactly how long the Plan will be, useful since many of the problems identified and addressed in the Plan cannot be "solved" by traditional conservation and maintenance methods now in

use. Some problems will be in continual need of professional attention. As specific architectural and maintenance problems are corrected, stabilized or treated, they can be noted in the Historic Building Portfolios. In this way, the Plan will become a device for recording the major problems, design changes and maintenance methods that have occured on each building.

This plan has not been designed to anticipate possible future problems related to historic building maintenance. When new problems develop, whether they are new to a specific building type (i.e., they have been addressed already in the report but for a different type of building), or whether they are completely new and not covered elsewhere in the document, it is recommended that design and/or maintenance actions specified for other similar problems NOT be undertaken without careful identification and analysis of the specific problem and building.

Because the Building Portfolios are bound individually they can be expanded easily either individually or as a group. Any further review or expansion of the portfolios should be clearly identified by date and objective so that their future use will not be hindered by possibly conflicting inspections and recommendations. Sections I, II, III, and IV of the plan would require a centrally organized effort to update in order to take advantage of the existing information and to present the new information in the proper location. New recommendations or drawings should be inserted into the proper section and division within the Plan. Again, the new information should be clearly identified by date and objective.

1.5.3 INSTRUCTIONS FOR USING THE PLAN

Following are complete descriptions of and instructions for using each section, numbers I through V of this Maintenance Plan for Historic Buildings. These instructions will act to clarify the intent of each section and its relationship to the other sections. As stated earlier, all five sections of the plan are closely interrelated and should be maintained together in the plan file. If any portion of the plan needs to be referenced seperately for administrative or other purposes it should be removed, reproduced and returned to its location in the plan file.

1.5.3.1 I INTRODUCTION

Section I, Introduction, is the general text portion of the Maintenance Plan. Its purpose is to familiarize the staff of the Presidio Facilities Engineer with historic building maintenance in general, the reasons for development of this plan, and to act as an instructional guide for persons using the plan.

1.5.3.2 II MAINTENANCE RECOMMENDATIONS

Section II, Maintenance Recommendations and Procedures, contains the technical instructions for the recommended preservation, restoration, and reconstruction procedures to be performed on the designated historic structures at the Presidio. These technical instructions provide information on the nature of the historic materials used at the Presidio, their composition, fabrication, installation and maintenance over time.

The Maintenance Recommendations are outlined and referenced similiarly to the rest of the plan, by a multiple decimal point system. The section is divided into sixteen major Divisions which generally correspond to the sixteen Construction Specifications Institute (CSI) Divisions for materials and labor (e.g. Division 3-Concrete, Division 4-Masonry, etc.). Further subdivisions within each Division are made for specific materials, building elements and recommended techniques for cleaning, repair, and replacement.

The Maintenance Recommendations are designed to be used primarily in conjunction with the Historic Building Portfolios (Section V). The various cards within each portfolio refer by number to the appropriate divisions and subdivisions that are applicable to that building. It is important to note that when any one division or subdivision number is referenced all of the subdivisions contained within and/or below that number are also referenced (i.e., a reference to division 3.2 includes all subdivisions prefaced by 3.2 - 3.°°2.1, 3.2.2, 3.2.3, 3.2.3.1, etc.).

The Maintenance Recommendations are written in a straightforward instructional manner which can and should be used as a guide for developing detailed work

and construction specifications for the preservation or restoration projects undertaken by the Facilities Engineer. Many of the recommendations included here have been designed to address specific maintenance problems and building conditions at the Presidio. Therefore it is NOT advisable for specific Maintenance Procedures that are recommended for one type of building and condition automatically be duplicated on an apparently similar problem on another building. A genuine analysis of the specific condition and its cause must first be conducted.

1.5.3.3 III DRAWINGS AND ILLUSTRATIONS

Section III, DRAWINGS AND ILLUSTRATIONS contains all the necessary graphic instructions to illustrate the recommended solutions to maintenance, preservation and design problems identified at the Presidio. Some illustrations are large-scale detail drawings of specific conditions; others are more general in nature to address design guideline issues.

Each drawing is labeled with a multiple decimal point number, keyed directly to the Maintenance Recommendations (Green) and Photo-Illustration (Blue) cards in the Building Portfolios (Section V).

The drawings included here are intended to indicate primarily the configuration, style and proportion of buildings and their detail elements. They are not intended as working drawings but can and should be used to develop working drawings.

In many cases, the development of working drawings for the repair and replacement of specific missing features can be facilitated by making field measurements of similiar original features on other buildings of the same type. It is important to note that similiar size and/or style stock items are often used in the construction of large architectural features (windows, steps, cornice, eaves, etc.) which vary considerably in overall size. For example, all the window mullions and frames on one type of building may have the same construction profile even though the window size and glazing pattern vary.

1.5.3.4 IV APPENDIX

Section IV, APPENDIX, contains all the reference lists and conservation information that will be useful for implementing the Plan and for directing historic building maintenance at the Presidio. Included here is all the progammatic information on the designated historic buildings, plus other related information such as the Secretary's Standards, material suppliers, associations and technical organizations.

1.5.3.5 V HISTORIC BUILDING PORTFOLIOS

Section V, Historic Building Portfolios, contains fifty three individual portfolios, one for each type of designated historic structure addressed in the Historic Building Maintenance Plan. The portfolios are the primary reference and organizing element of the plan. Only by referring to them is it possible to correctly identify the particular Maintenance Recommendations and/or Drawings that address the problems of a selected building.

The portfolios have permanent fiberboard covers and are held together by expandable metal clips. All cards, photos and data sheets in each portfolio are attached by the clips to prevent loss or misfiling. Each portfolio is identified by a tabbed label showing this information:

Each portfolio contains the following card-forms identified by name and color:

(Green) Preservation Maintenance Recommendations

This is the primary reference card in the building portfolio. It contains a list of all the recommended preservation maintenance actions from Section II and drawings from Section III applicable to the building.

Six vertical columns on each card provide the following information:

Building Elements: identifies the general feature or location of the recommended work (e.g. window, porch etc.).

P (PRIORITY): Identifies the type of work action recommended and its specified priority. Four priorities are identified:
M1 = PRIMARY MAINTENANCE ACTION; life threatening to the integrity of the historic fabric, if left unattended will lead to continued deterioration of the property.
M2 = SECONDARY MAINTENANCE ACTION; to be corrected at the earliest possible date or when planning other work actions which will affect that area.
D1 = PRIMARY DESIGN ACTION; Major design problem which seriously disrupts the historic architectural integrity of the property.
D2 = SECONDARY DESIGN ACTION; to be corrected at the earliest possible date or when planning other work actions in that area.

Recommendation Number: indicates the division(s) and paragraph(s) in Section II to be referenced for detailed information and instructions on the recommended work.

Drawing Number: indicates the drawing(s) in Section III to be referenced for information regarding size, configuration, scale or design of recommended work. (Note: Not all maintenance recommendations are accompanied by drawings.)

Explanatory Notes: provides a brief description of the action to be undertaken.

(Blue) Photo-Illustration

These cards identify and illustrate some of the specific design and preservation issues of the building type. Included is one general facade view with additional detail views as necessary. Where possible, specific problems are referenced by number to the appropriate Section II or Section III subdivision relative to the problem.

Additional Historic Photo-Illustration cards are supplied for those buildings for which good historic photographs were available. These cards illustrate various aspects of the buildings' past appearance which are directly related to specific maintenance and design recommendations.

(Orange) Preservation Maintenance Actions Performed

This card should be filled out in the field immediately after any corrective maintenance or design actions are performed on the structure. This will record, for Building Portfolio use only, the specific nature of preservation maintenance actions that have been performed. Documenting these actions will: 1) prevent unnecessary repetition of procedures accomplished, 2) provide an easy reference log for the frequency of preservation actions, 3) help determine the effectiveness of the actions and, 4) create a chronological compilation of materials and techniques used on the historic fabric of the buildings.

(Brown) Exterior Maintenance Survey/Inspection

This card was used by the architect and conservator during on-site visual inspection of the building to identify major problems and issues related to historic building maintenance. The actual working life of this card is over; however, it is included as part of the historical record and for reference purposes.

SECTION II

Maintenance Plan for Historic Buildings within the Presidio of San Francisco Historic Landmark District

Prepared for:

Department of the Army
Headquarters Presidio of San Francisco
San Francisco, California

Administered by:

National Park Service
Western Regional Office
U.S. Department of Interior
San Francisco, California

Contract No.: 8000-1-0041

Prepared by:

Charles Hall Page & Associates, Inc.
384 Bush Street
San Francisco, California 94104

10 December 1982

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2. SITEWORK

2.1 SELECTIVE DEMOLITION FOR REMODELING

Demolition work on historic structures does not call for a "wrecking ball" approach. Proceed with demolition only after a careful analysis of any salvagable materials has been made. Care must be exercised to insure that only work and materials that are non-historic are removed or destroyed. Remove all pieces in the reverse order in which they were applied, salvage and retain all intact historic pieces for use in patching or restoration.

2.1.1 SALVAGING OF MATERIALS

- Demolition procedures should be undertaken under supervision of an architect, contractor or person fully familiar with the building and its structure.
- Conduct a survey of salvageable historic materials before demolition begins in order to ascertain which building materials can be reused. These materials should include bricks and stones, woodwork including siding, doors and windows, cast iron and metal parts, fixtures and door and window hardware.
- Photograph any structure or part of a structure to be demolished before demolition. Photographs should include interior and exterior views.
- Carefully remove, clean, store and label all salvagable material in a dry place for reuse.

2.1.2 DEMOLITION PROCESS

- Identify all salvageable materials and carefully remove them from the structure in a manner that does as little damage to them and other materials as possible.
- Cover window and door openings with plywood on parts of the structure contiguous with the area to be demolished if there is potential danger of damaging woodwork, glass or other materials to remain. Plywood should be affixed so as not to damage woodwork or other building surfaces.
- Regular demolition procedures can begin after all salvageable materials have been removed. Care must be taken to insure that no damage to other parts of the structure is incurred.

- Seal any openings to the foundation or building uncovered by demolition against water and moisture entry, except vents for crawl spaces.
- No building debris should be left against the building after demolition.
- After the area has abeen cleared and demolition is completed, a survey should be taken to ascertain the need for both immediate and long range water and moisture protection.

2.2 SITE PREPARATION AND LANDSCAPING

Shrubs, trees and vines have a negative impact on building foundations and surfaces if improperly placed and cared for. Root systems destroy foundations, branches can cause abrasion on walls and roofs, and dense growth can foster dampness.

2.2.1 TREE PRUNING

- Tree and shrub branches should not touch building surfaces.
- Cut tree branches so as not to touch building walls or to severly overhang roof surfaces.
- Trim trees and shrubs in a manner that does not grossly deform them.
- Trees planted away from building foundations may remain if there is no apparent damage to foundation.
- Historic landscaping elements should be retained and maintained as such, with restoration where possible.

2.2.2 SHRUB AND TREE REMOVAL

- Remove shrubs and trees of any size when located directly against building foundations.
- When removal of a shrub creates a "gap" within the landscaping scheme, a new replacement shrub should be planted at a distance of 3'-5' from the building foundation.
- No new trees should be planted within ten feet of building foundations.

2.2.3 VINE REMOVAL

- Remove all ivy and creeping vegetation from wall, roof and foundation areas.
- DO NOT allow ivy or creeping vegetation to grow at building piers or at foundational lattices.
- Destroy ivys and vines six months to one year before any painting or building repair is begun in order that all vines and suckers be completely dead.

2.2.4 VEGETATION CONTROL

- Use commercial soil sterilizers to kill and control vegetation at or near foundations.
- DO NOT use salt to kill vegetation at or near foundations.

2.3 UNDERPINNING

- Underpinning procedures should not be conducted without investigation and supervision by an architect, contactor or person fully familiar with the building and its structure.
- Inspect piers bi-annually for material disintegration or settling soil conditions.
- If settling conditions are noticeable, check the underpinning to ascertain if it extends to the subsoil level (about 10-12 inches).
- If new underpinning is necessary, adequately support the structure by a temporary system while the foundation or piers are removed, taking care to insure that the building fabric is not damaged.
- Any new underpinning should be made in soil with sufficient bearing capacity to support the structural load.
- Monitor cracks and investigate those moving more than 1/16 inch within 6 to 9 months.

2.3.1 BRICK UNDERPINING

- Coat brick bearing walls set directly into the ground with a heavy waterproof coating if damage to the brickwork is minimal.
- Insert concrete pads beneath brick piers, where none exist, to a subsoil level with sufficient bearing capacity.
- Mortar joints should not be exposed to ground. They should be a minimum distance of 3" above finished grade.

2.3.2 WOOD UNDERPINNING

- DO NOT use wooden pier supports. Replace existing wooden piers with either brick on concrete pads or poured concrete piers depending upon the load and their visual exposure.

2.4 EARTHWORK AND DRAINAGE

2.4.1 SITE GRADING

- Slope earthwork away from building walls and foundations.
- Fill depressions, holes or shallow areas at building walls and foundations with clean top soil. allow it to settle and re-fill.
- Every precaution should be taken to insure that there is no standing water at building edges or beneath buildings raised on piers and that water drains away from the building.

2.4.2 STORM SEWERS AND DRY WELLS

- Leaders should be conducted into storm sewers or drywells located a sufficient distance from the building to prevent water from seeping into the building foundation.
- If drywells are used, each major downspout should drain into one drywell.
- Test existing drywells with running water from a garden hose, at least once a year.
- Reconstruct drywells if no longer useful.

2.5 SITE IMPROVEMENTS

2.5.1 PARKING BUMPERS

- Protect building edges at roadways or driveways from moving and parked vehicles by installing parking bumpers, guards, curbs and/or bollards.
- Parking bumpers should not touch or be affixed to any building.
- Install laminated bumpers on wood posts at vulnerable areas.

2.3 CONCRETE

3. CONCRETE

3.1 CONCRETE ANALYSIS

- Analysis of concrete should be conducted by specialists and should include a determination of structural stability based upon compressive strength (in psi) of the test samples.
- Test and analyse each building individually.
- Take several samples for analysis from each building.
- If any concrete unit has been subject to fire, aggregates and reinforcing steel may be damaged beyond apparent corrosion. Tests to determine the tensile strength of reinforcement bars are essential in these instances.

3.1.1 INSPECTION

- Conduct yearly inspections as part of the ongoing maintenance record for each structure.
- VISUAL INSPECTION: Make photographic and graphic records to record and identify problems and the patterns of deterioration. Records will be important in analyzing probable future decay as well as methods and costs of repairs. No repairs should be undertaken until the entire building is inspected.
- DOCUMENT INSPECTION: Consult original building plans, construction documents and the accumulation of photographic and graphic records in order to ascertain constructional methods that have contributed to decay or those which can be used to alleviate its continuation.

3.1.2 TESTING

- Test structural concrete layed between 1900-1940 for compostion and strength both in-situ and under laboratory conditions before repairs are considered.

  LABORATORY TESTS:
  These will include a determination of the compressive strength of sample bores, determination of concrete composition through x-ray diffraction, and microscopic analysis and tests for aggregate activity. The latter is important in ascertaining potential reactions between cement pastes and aggregates which could encourage material deterioration. Tests for absorption and specific gravity are important additional checks which will indicate porosity and density of the original concrete.

OTHER RECOMMENDED TESTS:
Sonic Tests- A process involving pulse velocity to determine discontinuity or voids in the concrete.
Pachometer Tests- A metal-detecting process to determine the placement, size and condition of re-bars.

3.2 COMPOSITION

- Determine composition of structural concrete by analysis of the areas to be patched. (3.1 ff)
- Materials specified for use in concrete shall conform to the specifications of the American Society for Testing Materials (ASTM) or comparable federal specifications.
- Composition of new or patching mixes must have the same ultimate compressive strength (in psi) as the existing, surrounding material.

3.2.1 SAND

- Sand must be of salt-free composition.
- Sand should be of sharp-grain composition.
- Sand must conform to ASTM C-144 to assure proper gradation and freedom from impurities.
- When aggregates are exposed, sand should match the original as closely as possible in texture, grain size and color.

3.2.2 PORTLAND CEMENT

- All cement used must conform to ASTM specifications.
- ASTM Type 1 Portland Cement should be used in standard work. Specific types to be used shall be determined after testing proceedures. (3.1.1 ff)
- Use Type V Portland Cement in walls or units that are exposed to water or dampness.
- DO NOT use cement with more that a .60% alkali content.
- DO NOT use Portland Cement for repairs in structures where lime concrete was originally used. A small amount of Portland Cement may be added to lime concrete if early strength is desired.

3.2.3 AGGREGATE

- Wall units subjected to fire may be damaged beyond visual inspection. Specialists must be made aware of areas exposed in this manner, and tests taken to determine damage to steel and aggregates.
- All aggregates must be non-alkali.
- When aggregates are exposed, they should match the original aggregates as closely as possible in size and color.

3.2.4 WATER

- Use clean, potable, non-alkaline and non-acidic water to prevent salts and destructive chemicals from entering the wall unit.

3.2.5 COLOR ADDITIVES

- Match new concrete color to existing concrete color using natural materials only.
- Compare color matching to clean, original samples only.
- If colors cannot be matched naturally, use only chemically-pure mineral oxides, alkali-proof and sun-fast pigments.
- DO NOT use pigments that are premixed with concrete.
- Add white portland cement to concrete patching mixes when lighter patches are desired. In older structures where lime was mixed with Portland Cement, this procedure will be necessary

3.2.6 CHEMICAL ADDITIVES

- Use chemical or other additives such as air-entraining additives or bonding agents only after approval of a concrete specialist.

3.3 MIXING

- Any concrete work, whether new or patching work should be undertaken only under the supervision of an architect or contractor.
- When small areas are to be patched, the concrete must be mixed at the site.
- Measure all dry ingredients, including aggregate, by volume and thoroughly mix before adding water. Half of the water should be added, followed by mixing for about five minutes.
- Add the remaining water in small proportions until concrete of the desired consistency is reached.
- Carefully mix concrete to obtain a uniformity of visual and physical characteristics.
- DO NOT add water after the final mix is prepared.
- Use concrete within 30 minutes of the final mixing.

3.4 FORMWORK

- Forms will be necessary when larger areas are to be filled with concrete. For surfaces exposed in imitation of existing textures, the material used to construct the inner face of the form should be chosen accordingly.
- Patch any new bolt holes or other disturbances to the surrounding concrete surface.

3.5 REPAIRS TO CONCRETE

- Investigate and correct water and moisture entry before any repairs are carried out.

3.5.1 GENERAL REPAIRS

- Structural repairs made to reinforced concrete must only be carried out under the direction of an architect or structural engineer.
- Remove only deteriorated concrete from all wall surface.
- Remove all loose and deteriorated concrete around cracks or spalls with small or light hand-held hammers.
- The full circumference of any steel reinforcement must be exposed within the area of deterioration.
- If mechanical tools such as saws and hammers are used to remove deteriorated concrete, care must be taken to insure that no damage is done to any materials that are to be retained (especially reinforcing bars).
- Edges of all concrete cuts should be perpendicular to the concrete surface.

3.5.1.1 CRACKS

- Surface cracks are the result of several types of actions. Cracks due to natural material shrinkage and building settlement do not generally threaten the fabric of the building unless they are allowing water to enter the concrete and corrode the reinforcing or cause spalling.
- Cracks running in the direction of reinforcing bars, those accompained by rust stains, those located at building corners or openings and those accompanied by buckling are serious.
- Inspect and monitor cracks every 2 years.
- Fill cracks that move over 1/8" in 9 to 12 months. If cracks are moving that much, establish cause and correct the situation.
- DO NOT fill cracks that are seasonal or potentially serious.
- MINOR CRACKS:
  Alternative treatments for non-structural cracks:

  Painting
  - Seasonal or hairline surface cracks may be treated by painting.
  - Paint cracks only when painting entire building.

  Epoxy Treatment
  - Only fill cracks with epoxy when they are of sufficient size to allow the epoxy to flow.
  - Cracks must be free of dust, debris and obstructions.
  - Cut a trough at top edges of cracks to permit easier flow when obstructions are present.
  - Cracks must be completely dry before filling.
  - Epoxy injections should reach the full depth of the crack to assure complete bondage.
  - Follow manufacturers instructions for mixing and handling of epoxy.

  Drypack Method
  - Large cracks composed of hollow spaces may be successfully filled with a drypack application.
  - Follow manufacturers instructions carefully.

3.5.1.2 SPALLS

- Spalls often indicate serious problems and irreparable damage. In these cases consolidation to prolong building life is necessary.
- All major spalls must be inspected by concrete specialists.
- Monitoring BEFORE and AFTER repair work is essential to determine the progression of concrete decay.

SHALLOW SPALLS: (no re-bars exposed, less than 2" deep)

- Remove all loose material with small or light hand held hammers.
- Paint the cleared area with two coats of paint of the same color as the surrounding wall surfaces as a check against moisture entry.
- Inspect these areas once a year and repaint as necessary.
- If further treatment is required, treat as major spall.

MAJOR SPALLS: (w/exposed re-bar)

- Remove all loose material with small or light hand held hammers.
- Treat re-bars against corrosion (3.5.1.3 ff)
- Cut out deteriorated concrete so edges are sharp and perpendicular to the surface.
- Key surfaces and apply a bonding agent if necessary.
- Fill w/ appropriate concrete mix. (3.2 ff.)
- Finish to match texture and workmanship of surrounding wall.

3.5.1.3 EXPOSED REINFORCING BARS

Cleaning

- Use small or light hand held hammers to remove concrete from around reinforcing bars.
- If 1/2 the circumference of any bar is exposed, expose the entire circumference to insure maximum encasement and bond.
- All steel and surrounding areas must be free of dust, debris, grease and moisture.
- Sandblasting, water spraying (not to exceed 100 PSI) and vacuum cleaning are effective treatments for clearing debris. Direct water runoff away from building foundations.
- Dry reinforcement steel with hand held blowers and paint immediately with corrosion inhibiting primers.

Replacement

- Severly rusted reinforcing bars must be cut out and replaced.
- New steel should be inserted with lap lengths appropriate to the individual field conditions as determined by an architect or engineer.
- Welding shall conform to the Welding Code for Reinforcing Steel.

3.5.2 CONCRETE PORCH SLABS

- Replace porch slabs that have sagged due to loss of tensile strength in the steel, and/or heavy spalling and cracking.
- Reinforcement sizes for any replacement bars and mix proportions must be specified by an architect or structural engineer.
- ON GRADE (or near grade): Pour slabs in a conventional manner on compacted sub-bases. In all cases, expansion and control joints must be included.
- ABOVE GRADE: Construct concrete supporting walls at the leading edge and at structural intervals perpendicular to it as specified. Pour the new slab over steel decking.
- Under no circumstances pour or resurface any slabs so that existing wooden lintels or wooden/cast iron column bases are partially or entirely encased in concrete.

3.5.3 CONCRETE STEPS

- Repair all cracks and spalls (see 3.5 ff.).
- Replace concrete steps that have failed due to loss of tensile strength in the steel, and/or heavy spalling and cracking.
- Adequate expansion and control joints must be provided in new work.

3.5.4 CONCRETE CORNICES AND INTRICATE SECTIONS

- Consult a concrete specialist before begining work.
- Repair all cracks and spalls (see 3.5 ff.)
- Replace concrete work that has failed due to loss of tensile strength in the re-bars, and/or heavy spalling and cracking.
- New work must match existing/original work when possible or approximate profiles.
- Areas to be repaired shall be photographed, measured and recorded for reference before any work is begun.

2.4 MASONRY

4. MASONRY

4.1 MORTAR

Mortar used in repointing historic masonry is a critical part of building maintenance. It must always be softer (having a lower compressive strength) than the surrounding masonry units and mortar to prevent breaking up the existing work. Portland cement should never be used in repointing work on historic buildings. Portland Cement is very hard, has a tendency to shrink after setting and is subject to large thermal movements.

4.1.1 HISTORIC MORTAR ANALYSIS

- Remove three or four unweathered mortar samples from several locations on the wall surface.
- Determine the "mean" mortar sample and set aside the largest piece for comparison with new repointing mortar.
- Break apart the remaining samples with a wooden mallet to determine composition.
- Carefully blow away any powdery materials (lime or cement matrix). Examine the residue under a ten power magnifying glass.
- Record the residue composition noting the range of color, textures and the various sizes of sand (or shells) in the mortar.
- Under no circumstances should new mortar mixes immitate historic mortar when analysis indicates that it contains material detrimental to ultimate strength. In these cases, a structural engineer must be consulted for the appropriate mortar mix to be used.

4.1.2 MORTAR COMPOSITION

- Mortar used in repointing historic buildings should always have a lower compressive strength than the existing masonry units.
- Modern materials specified for use in repointing mortar should conform to the specifications of the American Society for Testing Materials (ASTM) or comparable federal specifications.

4.1.2.1 SAND

- Match grain sizes to that found in the historic mortar mix.
- Use natural sand of salt-free content rather than crushed sand.
- Sand should conform to ASTM C-144 to assure proper gradation and freedom from impurities.

4.1.2.2 LIME AND PORTLAND CEMENT

- Use High Lime as the principal binder in all historic repointing projects.
- DO NOT use Portland Cement exclusively in historic mortar mixtures since it can be extremely hard, resist water movement, shrink upon setting and undergo relatively large thermal movements.
- Use Portland Cement in historic applications only when increased workability or plasticity is desired and then do not exceed 1 part white Portland Cement for more than 4 parts lime.
- Cement should conform to ASTM C-150, Type II (white, non-staining) Portland Cement. It should not have more than .60% alkali content.
- For surfaces of extreme weathering such as parapet walls or water tables, a harder mortar may be used (6 parts sand, 3 parts lime, 2 parts white Portland Cement).

4.1.2.3 WATER

- Use clean, potable, non-alkaline and non-acidic water in order to prevent salts and destructive chemicals from entering the masonry wall unit.

4.1.2.4 COLOR ADDITIVES

- Use natural materials to match the color of existing mortar.
- Existing mortar of unweathered exposure (found under porches, eaves) should be matched with the new, cured sample. Samples should be allowed to cure a minimum of 3-6 months in unweathered exposure.
- If a proper color match is impossible through the use of natural materials, modern mortar pigments may be used.
- Use only chemically pure mineral oxides, alkali-proof and sun-fast pigments.
- Do not use pigments that are premixed with mortar.

4.1.3 MORTAR MIXING

- Mix mortar carefully to obtain a uniformity of physical and visual characteristics.
- Measure dry ingredients by volume and thoroughly mix before adding any water. Add half of the water, followed by mixing for about five minutes.
- Add the remaining water in small proportions until mortar of the desired consistency is reached.
- NO additional water should be added after the final mix is prepared.
- Use mortar within 30 minutes of the final mixing.

4.2 REPOINTING

This is a skilled craft and requires the expertise of an experienced mason.

4.2.1 TEST PANELS

- Masons should be selected only after their skills have been demonstrated on a test panel of approximately three feet by six feet.
- DO NOT make demonstrations on the actual wall unit to be restored.
- After a mason is selected, panels used to test mortar weathering should be located in an inconspicuous area of the wall to be restored. Panel areas should not exceed four bricks or stones in area.

4.2.2 REMOVING OLD MORTAR

- Use hand tools to remove old mortar. NEVER use power tools to remove mortar.
- Remove old mortar to a minimum depth of 2 1/2 times the width of the joint. One inch is common.
- Remove any additional loose or disintegrated mortar beyond this minimum depth, leaving square corners at the back of the cut.

4.2.3 FILLING JOINTS

- Rinse joints with a jet of potable water (not to exceed 50 PSI) to remove all loose particles and dust. Provide tarpaulins at the foundation to deflect water.
- Joints should be damp but with no standing water present.
- Fill areas cleaned to a depth of greater than one inch first.
- Fill the back of the entire joint in successive layers by applying approximately 1/4 inch of mortar, packing it well into the back corners.
- Extend this application for several feet. When the mortar has reached thumbprint hardness, another 1/4 inch of mortar should be applied.
- Additional layers will be needed to fill the joint flush with the outer surface of the brick.
- Allow each layer to harden sufficiently before application of the next layer.
- Hardening can be controlled by dampening the brick and the old mortar before beginning to fill the joint. Free water or excessive dampness in the joint must be avoided.
- DO NOT use coating, slurr coating, or slurry coating in place of traditional repointing techniques.

4.2.4 JOINT TOOLING

- Tool mortar to match existing historic jointwork.
- DO NOT match jointwork that encourages masonry deterioration.
- Tool the joint when the final layer of mortar is thumb print hard.
- Recess the mortar slightly from the face of the masonry if the masonry has rounded and worn edges.
- After tooling, remove excess mortar from the joint edges by brushing with a soft bristle brush.

4.2.5 CLEANING AFTER REPOINTING

- Clean excess mortar from the wall surface with a stiff, clean bristle brush after the mortar has dried, but before it has fully hardened (1-2 hours).
- Remove hardened mortar with a wooden paddle.
- Additional cleaning should be accomplished with non-alkaline, non-acidic water and bristle brushes.

4.3 CLEANING

Use the gentlest method possible to clean masonry surfaces.
DO NOT SANDBLAST MASONRY
DO NOT USE CAUSTIC SODA ON MASONRY
DO NOT USE MODERN DETERGENTS ON MASONRY

4.3.1 WATER CLEANING

- Use water cleaning processes only when all joints, are sound, in order that water penetration into the interior of the wall unit is minimized.
- DO NOT use water cleaning methods during periods of cold, damp weather, since walls take up to one week to dry.
- Cover all door, window and other opening points at which water entry is possible.
- Provide tarpaulins at the foundations for water deflection if washing will be extensive.
- Start water cleaning procedures at the top of the area that is to be cleaned.
- Clean walls in small areas, approx. 10 feet by 20 feet at a time.

4.3.2 CHEMICAL CLEANING

- DO NOT consider chemical cleaning without the opinion of an architect, contractor or other experienced person familiar with the particular problems and conditions of the masonry surface.
- Test the chemical cleaning method first on an area selected for that purpose. This area, of at least one square yard, should be in a location that is exposed to weathering and yet not in a highly visible section of the wall surface. The cleaning budget should include any testing procedures.
- Allow test areas to weather between six months and one year. The degree of cleanliness desired should be considered.
- Clean walls in small areas, no larger than 10 feet by 20 feet.
- BRICK: Use soft natural bristle brushes only.
- GRANITE: Use natural bristle brushes only.
- If freshly pointed mortar joints are to be cleaned, it is essential that a period of at least 30 days elapse before cleaning is begun.

4.3.3 PAINT REMOVAL

- Remove paint with organic strippers.
- DO NOT use the caustic variety on masonry surfaces.
- DO NOT use lye solutions to remove paint.
- DO NOT use muriatic acid to remove paint.
- Damage to plant and animal life should be considered when rinsing the residue from the masonry face and steps taken to allow its deflection.
- Follow the manufacturer's directions when using any paint remover.
- Provide workers with protective clothing and equipment as necessary.

4.3.4 REMOVAL OF IRON STAINS (Brown Rust)

- Apply a solution of 1 lb. oxalic acid and 1/2 lb. of ammonium biflouride per gallon to the area of the stain. Apply the solution hot. Repeat if necessary.
- In extreme cases, apply a poultice of Sodium Citrate, Glycerine, and water in a 1:7:6 proportion directly to the stained surface. This should be a thick paste with a filler such as whitting. It should be left on the stain for a few days (minimum of three) and then brushed away.

4.3.5 REMOVAL OF COPPER AND BRONZE STAINS (Blue-Green Stains)

- Use a poultice prepared from one part ammonium chloride (sal ammoniac) to four parts talc or diatomaceous earth.
- Add household ammonia to the mixture to make a paste.
- Apply to the masonry and brush off when dry.

4.3.6 REMOVAL OF BITUMEN AND TAR STAINS

- Scrape off as much of the tar stains as possible using a wooden paddle.
- Remove the remainder by applying a poultice composed of a talc or whiting with a solvent such as xylene, toluene, trichloroethylene or mineral spirits.
- Apply the poultice to the masonry and brush off when dry.
- Make a second application, if necessary.
- A commercially prepared agent may be used only after careful testing and weathering procedures are allowed (minimum 6 months). In these cases, manufacturer's directions must be carefully followed.

4.3.7 REMOVAL OF EFFLORESCENCE

- Remove new construction or "bloom efflorescence" by dry brushing with stiff natural or nylon bristle brushes and non-alkaline, non-acidic water if it has not been removed through the natural weathering process.
- DO NOT use Hydrochloric (muriatic) Acid to remove efflorescence.
- Remove green efflorescence by brushing on a solution of Sodium Hydroxide (12 oz./qt. water). This treatment will produce a white salt deposit on the wall which can be easily washed off with clean water three or four days after it appears.

4.3.8 REMOVAL OF PLANT GROWTH

- Remove all lichens, mosses, ivys and other plant materials from brick wall units.
- Destroy ivy and vines six months to one year before masonry repairs are begun in order to insure that all vines and suckers be completely dead.
- DO NOT use salts to kill and control vegetation at or near foundations.

4.4 PROTECTIVE COATINGS

- The use of protective coatings on masonry is not reccommended.
- If necessary brick chimneys can be painted with lead and oil based paint to stop further deterioration of existing masonry, (see 4.2 and 4.3 for repairs before painting).
- When sandblasted brick is severely deteriorated, painting with lead and oil based paints should be considered. This treatment is the only proven method of consolidating exterior brickwork over extended periods of time.

4.5 REPAIR WORK

4.5.1 BRICK

- Investigate water and moisture entry and correct before any repairs are carried out.
- If damaged or badly spalled bricks are to be removed from the wall, extreme care must be taken to insure that none of the surrounding bricks are damaged in the process. Bricks should be chiseled out by hand.
- DO NOT use power tools for brick removal.
- Replacement brick must match the historic brick in color, size and texture, bearing strength, porosity and permeability and grade.
- If the historic wall unit displays a range of brick color, size and texture, replacement should match the full range of historic brick.
- Do not use wire cut brick to replace sand molded brick.
- Do not use sand molded brick to replace wire cut brick.
- When old bricks are to be used within the historic wall unit, they should be thoroughly scraped of old mortar and washed in non-alkaline, non-acidic water and allowed to dry thoroughly before placement. Keep stored bricks in a clean condition and in a dry location.
- DO NOT use sandblasted brick replacements unless repaired wall has been sandblasted.
- Bricks should be soaked a few minutes before layihg to prevent the excessive absorption of water from the mortar.

4.5.2 TERRA COTTA HOLLOW TILE

- Investigate and correct water and moisture entry before repairs are carried out.
- If the damaged area is extensive, the anchoring system and the condition of contiguous units should be checked and reinforced as necessary.
- Remove broken tiles and blocks and clean the area of dust and debris. The area to be infilled must have squared corners.
- DO NOT use mechanical cutters.
- Use new mortar of lime content with no admixture of Portland Cement. The new mortar must have a lower compressive strength (in psi) than the adjacent masonry unit.

- Infill as necessary with terra cotta block or tile of a similar weight and density as the original material or with hollow bricks. In all cases, materials must be clean and free of old mortar.
- Finish to match surrounding wall.

4.5.3 CAST STONE

- Check all joints abutting masonry and wood for moisture entry. Correct before repairs are carried out.
- Repoint joints as necessary.
- Joints on horizontal surfaces may be caulked with a waterproofed mastic.
- Repair minor cracks (3.5.1.1 ff.)
- Replace extensively cracked or spalled units, match original unit.

4.5.4 GRANITE

Granite is hard, dense and virtually impervious to chemical decay. If improperly laid, it can exhibit a high degree of fissuring, which encourages water seepage.

- Investigate and correct water and moisture entry at joints before any repairs are carried out.
- When necessary, replace stones that have structurally failed due to severe fissuring, cracking or spalling.
- Use only professional stone masons to accomplish this work.
- Replacement stone must match the existing historic stone in color, size, profile texture, bearing strength, porosity and permeability as far as is possible. Stone from the same quarry is ideal, though rarely available. In these cases, stone of the same geological type is essential.
- When securing new stones, survey future replacement needs and secure a sufficient number of additional stones for projected work. Store new stones in a clean condition and dry location.

4.5.5 LIMESTONE

Limestone is a sedimentary rock largly composed of calcium carbonate. Water containing carbon dioxide or sulphur dioxide in solution washing over the stone dissolves the calcium carbonate and causes exfoliation and/or blistering.

REPAIR (EXFOLIATION)

- Remove loose pieces that trap water. Deterioration due to moisture in the stone is generally the primary cause of the exfoliation.
- Slope all ground away from building foundation to avoid water standing next to wall.
- DO NOT use protective surface treatments as these tend to entrap moisture and accelerate exfoliation.

REPLACEMENT

- Replace stones that have structurally failed due to severe exfoliation or fissuring.

2.5 METALS

5. METALS

5.1 ALUMINUM

5.1.1 REPAIRS

- Any details which allow the introduction of water or moisture into crevices and pockets must be corrected before any repairs are undertaken.
- Solders should never be used because of the potential for galvanic action. Only rivets and other mechanical connections which are non-soldered and non-welded should be employed.
- Use oxy-gas or acetylene welding, brazing, resistance welding, intert-gas-shielded arc processes, adhesive bonding, bolting and riveting to join aluminum pieces.

5.1.2 CLEANING

- The gentlest cleaning method should be attempted first, with the more severe being attempted only if the others fail to work.
- Use mild soaps, detergents and non-etching cleaners, solvent and emulsion cleaners, abrasive cleaners, etching cleaners or heavy-duty cleaners.
- Solvent and emulsion cleaners, which are quite mild, can be used to remove dirts and stains which the milder detergents will not remove.
- Polishes, cleaners, cleaner-polishes, wax cleaners, scouring powders and metal brighteners which include abrasive particles, water, oil, wax, silicones, soap, acids or alkalis can remove most dirt and corrosive stains from aluminum.
- Abrasive cleaners should be used with caution. Pumice powder and fine steel wool (graded 0000-00) can be used with a fine abrasive cleaner, although they can dull highly polished aluminum.
- Etching cleaners should only be used on metals that are highly corroded or stained since they can remove metal. It is important to rinse these cleaners thoroughly since they are very acidic and alkaline. Pumice powder and fine steel wool can be used with these cleaning agents.

5.1.3 PAINTING AND PROTECTIVE COATINGS

- Aluminum should be protected against corrosion by a non-absorptive, insulative coating.
- Heavy bituminous paints, covered with two coats of aluminum metal and masonry paint should be applied to aluminum when it touches masonry.
- Seperate aluminum from masonry mortar with 1 coat of aluminum metal paint and 1 coat of masonry paint.
- A primer of zinc chromate and finish coats of compatible paints from the same manufacturer should be applied to the aluminum when it is being painted for cosmetic reasons and there is no danger of incompatibility with other building materials.
- Varnish, lacquer or other suitable paints can be used when there is minor damage on aluminum due to abrasion or erosion.

5.2 CAST IRON AND WROUGHT IRON

Historically cast iron is a hard, brittle metal generally used decoratively. Cast iron produced after 1949 is malleable and composed of alloys of nickel and magnesium. Malleable cast iron is distinguished by its white color, whereas historic cast iron is generally gray. Cast iron is composed of more than 1.7% carbon.

Wrought iron is anvil or machine worked. It is very malleable and usually used in decorative work. It is almost pure iron with less than 1% carbon content.

5.2.1 REPAIRS

- Employ an experienced welder for all ironwork repairs.
- Correct details which allow the introduction of water or moisture into crevices or pockets. If these areas are impossible to alter, they should be cleaned periodically and painted against oxidation. (Once a year)
- If footings at fences, gates and/or railings have deteriorated, weld supports of a similar configuration to the posts and sink into the concrete to a depth of 2-3 feet. Construct footings so as to discourage water entry and retention. As an additional precaution against moisture entry, legs may be set into molten lead.
- DO NOT fill voids in hollow cast iron with concrete since this will shrink and eventually leave voids which will trap and hold water.

CRACKS:

Seal all cracks in cast iron to prevent any water entry.

CAULKING: Use either a plumbing epoxy or an auto body putty.

JOINING: Join fractured sections with epoxy resin cements, brazing with brass rods or welding with special nickle-alloy welding rods. (Ni-rods) Conventional welding techniques are appropriate for welding wrought iron and steel.

LOOSE FITTINGS:

Fix railings and other elements by tightening the bolts and screws. If this fails to work, check threads and bolts. The diameter of the bolts and screws can be increased to compensate for the deterioration of the metal due to rusting.

STRUCTURAL ELEMENTS:

DO NOT replace structural elements which have failed with mechanical connections using iron bars, screws or bolts.

Replace entirely or reinforce with iron or steel.

DO NOT use aluminum as a substitute for missing cast iron pieces unless it is isolated by non-porous, neoprene gaskets and/or butyl rubber caulking to avoid galvanic corrosion. The gasket should never extend beyond the covered surface.

RAILINGS AND OTHER ARCHITECTURAL WORK:

When attached directly into masonry wall units or stone or brick steps, etc., clean iron of rust, paint and pack the pocket with lead.

Cover railing and bar ends attached directly into masonry wall units with bronze or copper to discourage further rusting.

5.2.2 CLEANING/PAINT REMOVAL

- Hand clean with stiff wire brushes if possible.
- Putty knives, wire brushes and emery cloth are useful in cleaning cast iron if rusting is minor.
- Use a wire cupbrush attached to an electric drill for removal of heaver scale and rust.
- Cast and wrought iron can be cleaned by dry, grit blasting when scale and rust is heavy.
- Naval jelly can be used when rusting is severe. Rinse thoroughly and dry.
- Strip ironwork if it is heavily painted and details are obscured, especially if the piece is in a highly visible location.
- Commercial paint removers are acceptable on ironwork. Chemical cleaning methods, which include acid pickling and phosphate dipping should be done in a shop setting. Workers, building elements and landscaping must be protected if this process is accomplished on the site.
- Prime all cleaned ironwork immediately (same day) after processes are accomplished.

5.2.3 PAINTING AND PROTECTIVE COATINGS

- Paint is the best protective coating for both wrought and cast iron.
- Scrape, prime and repaint areas of minor scaling or blistering.
- It is not necessary to expose bare iron since the new paint coat will more easily adhere to old, sound paint.
- Thoroughly clean and prepare (5.2.2 ff) seriously rusted or deteriorated surfaces for the applicaton of a new paint coating.
- Brush on a primer coat containing a corrosion resisting agent such as Rust-O-leum immediately (same day) after cleaning.
- Apply finish coats of laquers, varnishes, enamels, or other special coatings after the primer coat is completely dry.
- Brush or spray on second finish coat.
- Use high gloss enamel for all finish coats.

5.3 COPPER

5.3.1 REPAIRS

- Correct details which allow the introduction of water or moisture into crevices or pockets before repairs are undertaken.

PATCHING:
- Patch copper with copper to prevent galvanic action.
- Use duct tape for temporary patching of damaged copper.

SOLDER:
- Use only solder of 50% pig lead and 50% block tin on new or repaired copper.
- Apply solder using a non-corrosive flux.
- DO NOT use soldered patches to repair fatigue damage.
- DO NOT use solder to fill stress cracks. coefficients of expansion for copper and solder are different.

REPLACEMENT:
- Use new copper of the same weight or greater as original.
- Use new copper of the same temper as original.
- Use only copper rivets to connect large sheets of copper.
- Use copper clips and tabs held with copper nails or brass screws for small pieces.
- If replacements of copper elements are necessary, these should be made with new copper of the same weight, configuration and temper (hardness) as the original material.
- Separate copper roofing sheets from wooden sheathing with rosin building paper.

5.3.2 CLEANING

- Mechanical cleaning methods, including dry, grit blasting should never be used on copper surfaces.

5.3.3 PAINTING AND PROTECTIVE COATINGS

- When needed, clean surface of all dirt, oxides, flux and corrosion prior to painting.
- As a preliminary to painting, apply a solution of 4 oz. copper sulfate, 1/2 gallon water and 1/8 oz. nitric acid to roughen surface.
- Immediately after cleaning, apply an oil-base primer coat of corrosion resistant pigment.
- Apply finish coats after primer is thoroughly dry.

- Use lacquer, varnish, or enamel for finish coats.
- Coat with clear lacquer or three coats of Incralac to maintain natural copper color. All surfaces should be free of dirt, oxides and flux before these applications.
- (see 9.2.2 ff for related information)

5.4 LEAD

5.4.1 REPAIRS

- DO NOT use solder to repair lead.
- DO NOT use bituminous or asphaltic roofing mastics or compounds near lead flashing.
- Remove lichens growing on roofing materials near lead flashing.

5.4.2 CLEANING

- Remove crusts which form on lead surfaces by soaking in Versene powder (Tetrasodium salt of enediaminetetra-acidic acid), Versene acid, and water.
- When the crust is removed the metal is free from exposure to acetic and formic acids, and will stabilize.
- DO NOT use mechanical methods involving blasting or abrasion.

5.4.3 PAINTING AND PROTECTIVE COATINGS

- Paint lead that is partially deteriorated from erosion, abrasion, or corrosion.
- Paint copper, zinc or iron that are in contact with lead.
- Paint iron before inserted into masonry walls when lead is used as a packing for waterproofing the socket.
- DO NOT use paints containing acidic, asphaltic or bituminous compounds.

5.5 STAINLESS STEEL

Stainless steel is an alloy of chromium and nickel. It is highly resistant to corrosion, oxidation and heat. It can be attacked by chlorides in mortar and salts.

5.5.1 REPAIRS USING STAINLESS STEEL

- DO NOT use stainless steel in direct contact with aluminum, aluminum alloys, steel, copper and zinc.
- Stainless steels used as reinforcement bar replacements, can corrode when under tension in chloride-containing (salt air) environments.

5.5.2 CLEANING

- Commercially prepared stainless steel cleaners are recommended for the removal of most grime, dirt or stains.
- Manufacturer's directions should be carefully followed.

5.6 STEEL

Strength and corrosion resistance varies according to composition. Steel is highly corrosive when exposed to moisture and salts. Acids, soil, certain cements, certain metals (lead, copper, stainless steel) and soft solders are also highly destructive.

5.6.1 REPAIRS

- Damaged steel can be welded by conventional welding methods.
- Use rounded contours when welding, to prevent the breakdown of protective coatings.

5.6.2 CLEANING

- Use wire brushes and emory paper for minor rusting.
- Use sand or grit blasting (80-100 PSI) to remove heavy rust and paint. Mask surrounding building areas when blasting.
- Replace all caulking or putty displaced by grit blasting.
- Use chemical paint and rust removers for hard to reach areas.
- DO NOT use rust removers containing hydrochloric acid.
- Rinse and dry all surfaces after any treatment.
- Apply rust inhibiting primers immediately after cleaning.

5.6.3 PAINTING

- Proper surface preparation and undercoating is important and should be selected according to the finish coat to be applied.
- Apply paints and primers when air temperature is above 50 F and relative humidity is below 80%.
- Dry all surfaces before painting.
- Use oil base red-lead primers on new and existing steel.
- Apply second primer coat containing carbon black or lamp black.
- DO NOT use fast drying primers on existing steel.
- Apply finish coat of oil-base paint.

5.7 TIN

5.7.1 REPAIRS

- Use only tinplate or terne-plate to patch tinplate.
- Replace roofing or sheets that have rusted through with new material of similiar composition, size, shape and construction.
- Use only tin-plate cleats, galvanized iron, or steel nails to attach tin-plate sheets.
- Clean and solder all nail punctures and open joints.
- Use solder of 50% pig lead and 50% block tin applied with rosin flux.
- DO NOT use asphaltic or bituminous roofing compounds or building papers.
- DO NOT use copper on or near tin.
- Inspect lead coated roofing every 3-5 years for surface scratches and broken plating. Paint to match existing roof.

SUBSTITUTIONS:

- Lead coated copper or terne-coated stainless steel have greater durability and may be used for replacement of tin roof areas in areas hard to inspect, paint, and maintain.

5.7.2 PAINTING AND PROTECTIVE COATINGS

- Shopcoat new tin-plating or terne-plating on both sides with two coats of linseed oil iron oxide primer except areas to be soldered.
- Paint both sides with high gloss exterior paint before installation.
- Apply a non-acidic vapor barrier to the underside of the roofing.
- Apply second finish coat immediately after installation.
- Apply third finish coat two weeks later.
- DO NOT use paints containing bitumen, asphalt aluminum, or acids.

6. WOOD

6.1 FASTENERS

6.1.1 NAILS

- Use only anti-corrosive nails.
- Countersink and putty all nails that are driven with visible exposure.

6.1.2 BOLTS

- Use only anti-corrosive bolts.
- All bolts should be utilized so that they are able to be affixed without being noticed from visible facades unless originally exposed to view.

6.1.3 REINFORCEMENT

- Use only anti-corrosive angles, braces or other fasteners when metalic reinforcement is desired.
- All reinforcement angles, braces and other fasteners should be used in areas that are invisible to view, unless originally exposed to view.

6.2 FINISH CARPENTRY/ARCHITECTURAL WOODWORK

6.2.1 WOOD FLOORING

REPAIRS:

- Discard deteriorated joists and other members. Remove from the site to discourage transference of decay and insects to sound wood.
- Replace old work with new of locust, redwood or similar wood. Match original dimensions.
- Apply a wood preservative to the porch timbers. Orthal phenolphenol (OPP) is one recommended variety.

- Remove deteriorated floor boards and install new ones of vertical grain fir. Investigate existing boards to determine the size of new boards and any special cuts (such as tongue and groove) that may be necessary.
- Apply wood preservative to both sides and edges of the new floor boards before insallation. If saw cuts are made, brush preservative on end grain.
- Apply wood preservative to existing floor boards which have been cleaned of paint and sanded.
- Apply a coat of paint to the underside of floorboards and in any grooves so a watertight fit is assured.
- Minor rotting conditions must be treated with a low viscosity epoxy resin to stabilize the wood and keep moisture out. All rot must be arrested before any treatment is applied or decay will continue.
- Use putty consisting of epoxy resins and fillers such as fiberglass, superfine sawdust or glass microballoons to patch and fill damaged areas. Fillers should be somewhat flexible so that they can adapt to the swelling anc contraction within wooden flooring members.

WARNING: Expoxies can be very toxic and their use requires special safety precautions. Specialists should be consulted when epoxies are considered or to be applied.
- Fill small holes and cracks with common window putty or glazing compound.
- Soak exposed end grains of decking with a low viscosity epoxy to completely seal against any capillary action.
- Use a half-round molding of vertical grain fir to cover all exposed edges of flooring. Cut drip along bottom edge.

6.2.2 STEPS

REPAIRS:

- Inspect and repair step footings before any work on the steps is begun. (2.3 ff)
- Discard deteriorated stringers or bearing blocks. Replacements should be made to conform with the original types used on the building.
- Any conditions which encourage the retention of water and moisture should be corrected with as little change to the original design as possible.

- Replace deteriorated treads with hardwood, redwood or yellow pine to conform with the historic examples.
- Apply a wood preservative to all step members. Orthal Phenolphenol (OPP) is commonly used. Tributyl Tin Oxide (TBTO) in a mineral spirits solvent is also used and commercially available under the trade name of "Osmose".
- Apply wood preservative to both sides of the new treads before installation.
- Apply a coat of paint to the underside of treads and along each edge.
- DO NOT allow any wooden member to come into contact with the finished grade. Wooden members must rest on concrete foundations and all ground must slope away from foundational work.

6.2.3 RAILINGS

REPAIRS:

- Inspect all porch railings for soundness. Discard rotted or deteriorated members.
- Construct replacements of vertical grain fir to match originals.
- Apply wood preservative to all sides of new work before installation.
- Apply wood preservative to all existing work that has been sanded or cleaned of paint.
- Treat minor rotting on existing wood by impregnating with low viscosity resin to stabilize wood and keep out moisture.
- Use putty consisting of epoxy resins and a filler such as fiberglass, superfine sawdust or glass microballoons to patch and fill damaged areas. Any filler used should be flexible enough so that it will adapt to swelling and contraction within the wooden flooring members.
  WARNING: Epoxies can be very toxic and their use requires special safety precautions. Specialists should be consulted when epoxies are considered or to be applied.
- Use common window putty or glazing compound to fill small holes and cracks.
- Back prime and paint end grain exposed by sawcuts.

6.2.4 CORNICES AND EAVES

REPAIRS:

- All cornices and eaves should be inspected for soundness. Any rotted or deteriorated members should be discarded.
- All closure boards should be inspected to insure that they are securely in place and that no moisture or water entry is present at any point.
- Holes or breaks which allow the entry of birds or rodents should be patched and sealed with wooden plugs to form a tight, flush seal.
- Any replacements should be of clear vertical grain fir and should be of the same design and construction as the originals, unless the original designs encourage water entry. In these cases, modifications should be made to designs that are as close to the originals as possible.
- Inspect boxed gutter to insure that the metal linings are properly seated and that no surfaces are punctured or broken.
- Reproduce all molding details to conform with original work.
- DO NOT use stock or reused moldings unless they match exactly those originally used on the building.
- Back prime and paint end grain exposed by saw cuts.

6.2.5 DECORATIVE WOODWORK

REPAIRS:

- Inspect all decorative woodwork for soundness.
- Discard rotted or deteriorated pieces only after they are photographed and drawings are made to insure accurate reproduction.
- Construct replacements of clear vertical grain fir to match originals.
- Unless specified, new work should be of the same design and configuration as the originals.
- Modifications made for functional reasons should match the original appearance as closely as possible. Overall dimensions must not be increased.
- DO NOT use stock or reused pieces unless they match exaxctly those originally used on the building.

- Where minor rotting conditions are apparent on existing woodwork, a low viscosity epoxy resin should be used to impregnate the wood (in-situ) for stabilization and to keep out moisture. (See Warning: 6.2.1.1 ff)
- A putty consisting of epoxy resins and a filler such as fiberglass, superfine sawdust or glass microballoons should be used to patch and fill damaged areas. Any filler used should be flexible enough so that it will adapt to swelling and contraciton within the woodwork.
- Use common window putty or glazing compound to fill small holes or cracks.
- Caulk all edges and joints.
- Back prime and paint end grain exposed by saw cuts.

6.2.6 WOOD SIDING

REPAIRS:

- Inspect wooden siding for soundness.
- Remove rotten, split or badly warped boards.
- Use clear white pine for replacement boards and match with original wood.
- Inspect old boards to ascertain the manner in which they were affixed to the sheathing, their thickness, exposure, and general configuration.
- Reuse old boards only if they match exactly the boards within the wall in which they are to be placed.
- Set and putty all nail heads used on clapboards and wood siding whether or not they are exposed.
- Treat all knots and puttied areas with a coat of gum shellac cut in pure alcohol.
- Affix all new work to the sheathing in the same manner as the other clapboards or siding. Problem areas observable behind the siding that is exposed after old material is removed should be repainted as necessary before any new work is begun.

EXTENSIVE REPAIRS:

- Photograph the siding while still in place.
- Number and key the siding so that the pieces can be replaced in their exact, original locations.
- Remove paint by either a chemical or a heat process.
- Use only galvanized or corrosion resistant nails.
- Stablize minor cracks and cuts temporarily with a common window putty or glazing compound.

- Attach wooden siding over sheathing using only one nail driven through the bottom of the piece at least one inch from the bottom edge.
- DO NOT nail boards at the top. Expansion will be impeded in this matter and removal will be difficult.
- Treat new boards or newly cleaned boards with wood preservative.
- Back prime and paint end grain exposed by saw cuts.

REMOVING WOODEN SIDING

Follow these steps to remove wooden siding:

- Cut the damaged board with a backsaw as closely as possible to the board above without cutting into it.
- Remove the damaged board with a chisel, being especially careful not to rip any building paper beneath.
- If the boarding has been nailed at the top and the bottom it will be necessary to cut the top nail with a hacksaw. The top board should be carefully wedged out and the blade inserted beneath it.
- Using a chisel, make small cuts in order to remove the remainder of the board so that square corners exist.
- The new boarding may now be tapped into positon and nailed into place.

6.2.7 SHUTTERS

- New wooden shutters equal to 1/2 the width of the window openings and the exact height of the sash should be used where appropriate.
- Units should be affixed to window frames as originally and proper hardware used.
- Units do not have to be operable. If shutters appeared on original facade, do not alter frames to allow operation if conditions will destroy original building fabric.

2.7 THERMAL AND MOISTURE PROTECTION

7. THERMAL AND MOISTURE PROTECTION

7.1 WATER PROOFING AND DAMP PROOFING

7.1.1 FLASHING

- All usual and required places must be flashed and counterflashed with clean roofing-temper 16-ounce copper. Sufficient metal must be used to assure tightness.
- Through flashing must be used on chimneys, with 1" turned up between the flue lining and brickwork. Flashing must be carried 6" up walls and thoroughly counterflashed where roofs form a junction with brick walls.
- All roof rakes must be flashed over edges of roof boarding. Flashing must begin 2" in from upper edges of roof boarding, bent around and run under edges with hemmed edges and properly secured to underside of roof boarding.

7.1.2 MASONRY WALLS

- DO NOT use chemical waterproofing treatments on masonry walls.

7.2 BUILDING INSULATION

- When building insulation is considered, any program which has the potential of causing damage to the historic building fabric should be avoided.
- DO NOT use insulation containing ammonium, aluminum sulfate, urea-formaldehyde or cellulose.
- DO NOT use spray-type insulation.
- Before insulation is considered or selected, the building should be thoroughly inspected to ascertain if any insulation is present, its condition and type, sources of air infiltration (i.e. at doors, windows and at the junction of floor and ceiling systems), the condition of exterior wall materials and the roof.
- DO NOT insulate buildings to the point where moisture migration through walls is totally impossible.
- In residential structures, insulation should be applied to areas behind the weatherboards and a vapor barrier installed on the heated side of the wall.
- Insulate attic areas first.
- If the attic area is unheated, the insulation should be

placed between the floor joists with the vapor barrier facing downward. If the attic is floored or heated, the insulation must be placed between the roof rafters with the vapor barrier facing inward.

- Vent unheated attic areas so that the net area of the vent is approximately 1/300 of the attic floor area. If louvers are not in place or a sufficient number do not exist, vents must be installed or added to correspond with existing or historic prototypes.
- DO NOT insulate moist basement and crawl space areas.
- When basement areas are to be insulated, the insulation should be placed between the first floor joists and the vapor barrier installed facing upward. DO NOT use staples in damp areas. Use only special anchors developed for this procedure.
- When basement areas are heated or contain heating apparatus, place either batt or rigid insulation against the foundation walls. Begin within the first floor joists and continue downward to a point that is at least three feet below the exterior ground level. The vapor barrier must face inward.
- It is essential that unheated areas be adequately ventilated.
- The insulation of walls in wood frame buildings is generally costly and not recommended. The potential damage to historic materials is often great and in most cases, attic insulation is sufficient.
- In all cases, insulation must be installed according to the manufacturer's directions.

7.3 ROOFING

7.3.1 ASPHALT SHINGLES

REPAIR:
- Check and repair all flashing.
- Inspect roofs every two years for cracks and damaged pieces.

REPLACEMENT:
- Replacement should be considered a high priority and accomplished by using shingles of the same variey, color and configuration as the others on the roof.
- DO NOT USE asphalt shingles on roofs where the pitch is less than four inches to the foot.
- Use new asphalt shingles that do not mimic other types of roofing materials, such as wood or slate.
- Remove all previous shingles more than four layers thick.
- Inspect and photograph any early and possibly original roof coverings. Note the materials, manner of affixing and the variety of color range.
- Cover the surface to be shingled with waterproofed roofing paper.
- Expose shingles according to the manufacturer's directions or according to specified pattern.
- Cut asphalt shingles squarely without special cut-outs or marks that give them the appearance of handmade shakes.

7.3.2 SLATE SHINGLES

REPAIR:
- Check and repair all flashing.
- During roofing repairs or removal procedures, it is essential that no direct weight be placed upon the slate surface. Special ladders or supports are necessary for any slate roof work.

REPLACEMENT:
- Employ craftspersons familiar wtih slate roofing procedures.
- Match any existing historic roof configuration and style of application.
- Insure that cant stripping at eaves is of sufficient thickness to provide starter course with same slant as subsequent courses with respect to roof survaces.
- Use copper, copper alloy or zinc-coated nails only.
- Be careful to drive nail heads flush with slate surface.
- Employ sufficient flashing and elastic cement to insure that all hip details are water tight.

SLATE REMOVAL:
- Remove broken slates with a slate ripper and insert replacements according to the following steps:

  Method One:
  - Remove the broken slate.
  - Drill a hole into the replacement slate that aligns with the joint of the two slates under the slate to be repaired.
  - Insert the slate, nail with corrosion-resistant slate-roofing nails and cover the hole with roofing cement, being careful not to dribble or smear cement on other slates.

  Method Two:
  - Remove the broken slate.
  - Nail a strip of copper or galvanized iron to the joint under the slate to be repaired.
  - Round the end of the strip and extend it 1/4 inch below the line of the bottom couse to be repaired.
  - Apply roofing cement to the metal strip and slip the new slate into place.
  - Bend the metal strip up over the slate, and form a hook to hold it in place.
  - This method eliminates the need for drilling and no roofing cement is visible.

7.3.3 CLAY TILES

INSPECTION:

- Inspect tile roofs for missing, broken, or cracked tiles, missing tile or wooden cant strips under eaves, deteriorated underlayment and broken cement.
- Inspect flashing at valleys, chimneys and dormers.

REPAIR:

- DO NOT begin roof repairs until proper replacement tiles have been secured.
- Order replacement tiles (see Appendix) in excess for emergency and future repair work. Stor in a cool dry location on wood slats.
- Lift up tile and cut wire "hinge" at top.
- Remove tile.
- If area to be repaired is of unusual design, mark all removed tiles with crayon on underside and key to roof plan for easy replacement.
- Carefully chip away cement from tiles affixed by cement.
- Reuse existing tile, if possible.
- Use epoxy to repair broken tile, if salvagable.
- Use flashing cement or roofing compound to fix cracks and holes in flashing, and to repoint areas where cement is missing.

REPLACEMENT:

- Remove and key all tiles.
- Sweep roof surface broom clean.
- Inspect underlayment for deterioration. To replace:
- Cover knot holes with tin plate (terneplate) or galvanized steel.
- If pitch is less than 4 in 12: Nail two layers of 30# felt at right angles to roof surface. Apply roofing tar.
- If pitch is more than 4 in 12: Nail one layer of 30# or 40# felt with 4" head lap and 6" side lap.
- Replace deteriorated flashing with primed copper flashing 20" wide. (5.2 ff.)
- Lay tile to conform with original installation unless original installation encourages water entry.
- Tile to be in contact with cement mortar should be immersed in water for at least two minutes before laying.

- Use 14 gauge copper wire or nails for fastening tiles.
- Nails (if used) must provide 3/4" penetration.
- Match new cement mortar to original mortar. (5.2 ff.)
- When tiles are wall hung, repairs and replacements should follow recommendations for slate 7.3.3 ff and tile 7.3.4 ff procedures and include uniform weather exposure.

7.3.4 TIN ROOFING

REPAIR: (see 5.7 ff.)

REPLACEMENT:
- Match historic roof configuration and style of application.
- Use batten and standing seam tin on roofs with a slope of 2-1/2" in 12" or greater.
- Use flat seam tin on roofs with a slope of 1/4" in 12" or greater.
- Use an underlayment of Rosin roofing paper.
- Use terne-plated (copper alloy steel coated on two sides with a lead tin alloy) steel only.
- Paint and coat before installation. DO NOT paint edges to be soldered.

2.8 DOORS AND WINDOWS

8. DOORS AND WINDOWS

8.1 DOORS - WOOD

8.1.1 PHYSICAL EVALUATION

- Prepare a door schedule listing all parts of historic doors and their condition. Note: door location, condition of frame and sill, condition of the door and all its parts, glazing characteristics, hardware (with notice taken concerning replacements), condition of paint and overall condition (poor to excellent).

8.1.2 ROUTINE MAINTENANCE

- Caulk joints and seams if water is entering the door frame around its edges.
- Replace sills if warped or excessively worn.
- Inspect and correct sills so that they slope outwards and downward.
- Apply weatherstripping where needed if door frame and system is sound. This should be done prior to painting.

8.1.3 STABILIZATION

SPLITTING, CHECKING OR ROTTING:

- Dry any damp areas and treat with a fungicide. Waterproof bare wood with 2-3 applications of boiled linseed oil applied every 24 hours.
- Putty all cracks and holes.
- Paint after putty hardens (2-3 days).
- Strengthen and stabilize weak wood members with semi-rigid epoxies which harden after penetrating porous and decayed wood. This procedure will require expertise.
- Replace severely deteriorated parts with new work using existing members as a patterns. Where no original work exists, consult similar extant examples.

8.1.4 SPLICES AND PARTS REPLACEMENT

- This technique requires expertise.
- Use splices and parts with the same porosity and density as original work.

8.1.5 WEATHERIZATION

- Felt weatherstripping should be avoided since it tends to retain moisture.
- Modern synthetic weatherstripping is an acceptable concession and should be employed where weather exposure and water retention is eminent. If possible attach with screws.

8.1.6 REPLACEMENT

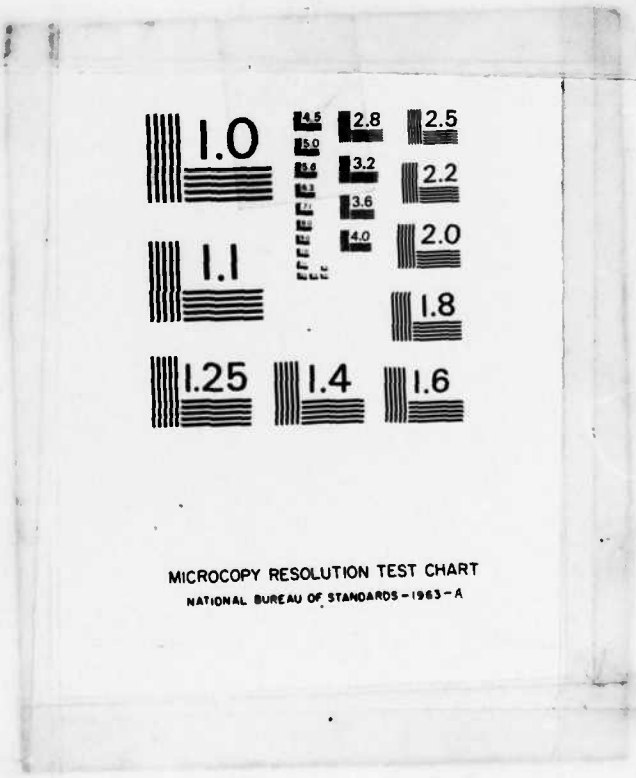
- Replace only those doors that are irreparable.
- Replacement doors may be historic if of similar configuration with original.
- New doors should be fabricated to conform with original examples.
- Visible hardware should conform with historic examples.

8.1.7 PAINT REMOVAL

- Remove paint from historic woodwork when paint has failed or paint buildup prevents smooth operation.
- Remove piece to be treated from building, if possible.
- DO NOT use sharp putty knives, chisels, or rough sandpaper during paint removal.
- Use: 1. Chemical paint removers that are water soluble and non-flammable, or 2. Heat processes to soften paint. (Hot air and heat plates are acceptable.)
- Personnel involved in paint removal processes should take safety precautions including the use of gloves, goggles and respirators as necessary.
- Manufacturer's directions for chemical paint removal procedures should be carefully followed.

AD-A139 044 MAINTENANCE PLAN FOR HISTORIC BUILDINGS WITHIN THE PRESIDIO OF SAN FRANCISCO HISTORIC LANDMARK DISTRICT (U) PAGE (CHARLES HALL) AND ASSOCIATES INC SAN FRANCISCO CA 10 DEC 82 2/3

UNCLASSIFIED F/G 13/2 NL



8.2 SCREEN AND STORM DOORS - WOOD

8.2.1 REPAIR

- Where any original storm or screen doors exist, they should be stabilized and rebuilt, as necessary.
- If storm and screen doors have been modified in any manner, the additions should be carefully removed and the doors returned to their original appearances.
- Glass in storm doors should match the thickness and configuration of glass in the historic prototypes.
- Appropriate historic hardware must be used.

8.2.2 REPLACEMENT

- When replacement is necessary, screen and storm doors should be fabricated by comparison with extant historic examples.
- Aluminum or metal screen or storm doors should never be used.

8.3 WINDOWS - WOOD

8.3.1 PHYSICAL EVALUATION

- Prepare a window schedule listing all parts of the historic windows and their condition. Note: location, condition of frame and sill, condition of sash and its parts, glazing problems and characteristics, hardware, condition of paint, and overall condition (poor to excellent).

8.3.2 ROUTINE MAINTENANCE

- Caulk joints and seams if water is entering the window frame around its edges.
- Replace loose, cracked, or missing glazing putty.
- Inspect interior putty and replace if there is evidence that it has failed and is allowing water to condense and enter into the joinery.
- Window sill must slope outward and downward, and shed all water, replace if warped.
- Cut dripline on front underside of wood sill where none exists to allow for proper water drainoff, especially if the sill is flat. This treatment will not effect the appearance of the sill.
- Check windows for material soundness according to the following steps:
  - Step One: Begin at the lower part of frame and sash, inspecting sill, joints between sill and jamb, corners of bottom rails and muntin joints.
  - Step Two: Using an ice pick or a small auger to check for other deterioration, carefully jab it into any wet wood surface at an angle and pry up a small section of the wood. Decayed wood will come up in short, irregular pieces.
  - Step Three: Check the underside of a sill by pushing an ice pick or small auger into the wood perpendicular to the face. Gentle pressure on the pick can force it beneath an apparently sound surface into severly decayed wood beneath.
- Repaint only sound window frames.

8.3.3 STABILIZATION

SPLITTING, CHECKING OR ROTTING:

- Dry any damp areas and treat with fungacide. Waterproof bare wood with 2-3 applications of boiled linseed oil applied every 24 hours.
- Putty all cracks and holes.
- Strengthen and stabilize weak wood members with semi-rigid epoxies which harden after penetrating porous and decayed wood. This procedure will require expertise.
- Paint after putty hardens.(2-3 days)
- Replace severely deteriorated parts with new work using existing work as patterns. Where no original work exists, consult similar extant examples.

8.3.4 SPLICES AND PARTS REPLACEMENT

- This technique requires expertise.
- Use splices and parts with the same porosity and density as the original work.

8.3.5 WEATHERIZATION

- Felt weatherstripping should be avoided since it tends to retain moisture.
- Modern synthetic weatherstripping is an acceptable concession and should be employed where weather exposure and water retention is eminent.
- Additional thermal protection will be insured by the installation of sash locks on each window meeting rail.

8.3.6 REPLACEMENT

- Replace only those windows that are irreparable.
- Match replacement window to existing or original historic window.
- Hardware should conform to historic examples.

8.3.7 PAINT REMOVAL

- Remove paint from windows when paint has failed or paint build-up prevents smooth operation.
- Remove window sash from frame when removing paint.
- Use:
  1. Chemical paint removers that are water soluble and non-flamable, or
  2. Heat processes to soften paint and putty. Hot air and heat plates are acceptable.
- DO NOT use sharp putty knives, chisels, or rough sandpaper during paint removal.
- DO NOT use torches to remove paint.
- Personnel involved in paint removal processes should take safety precautions including the use of gloves, goggles and respirators as necessary.
- Manufacturer's directions for chemical paint removal procedures should be carefully followed.

8.4 SCREEN/STORM WINDOWS - WOOD

8.4.1 REPAIR

- Where any original storm or screen windows exist, they should be stabilized and rebuilt, as necessary.
- If storm and screen windows have been modified in any manner, the additions should be carefully removed and the windows returned to their original appearances.
- Glass in storm windows should match the thickness and configuration of glass in the historic prototypes.
- Plexiglass should not be used in place of glass in any door sash.
- Appropriate historic hardware must be used.

8.4.2 REPLACEMENT

- When replacement is necessary, screen and storm windows should be fabricated by comparison with extant examples.
- Aluminum or metal screens or storm windows should never be used.

8.5 WINDOWS - STEEL

8.5.1 PHYSICAL EVALUATION

- Prepare a schedule listing all parts of the historic windows and their condition. Note: location, condition of frame, condition of sash, glazing problems and characteristics, hardware, and condition of paint.

8.5.2 ROUTINE MAINTENANCE

- Caulk joints and seams between window unit and building.
- Replace any loose, cracked or missing glazing putty.
- Window sill must slope outward and downward and shed all water.
- Inspect hinges and other moving parts for smooth operation.
- Paint only if necessary.

8.5.3 STABILIZATION

- Repair all sources of water and moisture intrusion.
- Remove all loose paint and visible rust by:
  1. Hand scraping,
  2. Wire brushing with hand or power tools, or
  3. Sand blasting with powder or expanded beads.
- Paint (5.6 ff.)

8.5.4 WEATHERIZATION

- Felt weatherstripping should be avoided since it tends to retain moisture.
- Modern synthetic weatherstripping is an acceptable concession and should be employed where weather exposure and water retention is eminent.

8.5.5 REPLACEMENT

- Replace metal frame and sash when metal is severely rusted, brittle and/or sagging from age, or otherwise deteriorated beyond repair.
- Match replacement window to existing or historic window.
- Match replacement glazing to existing or historic glazing.

8.5.6 CLEANING AND PAINTING

- Clean surfaces of oil, grease and rust.
- Remove all loose paint and visible rust by:
  1. Hand scraping.
  2. Wire brushing with hand or power tools.
  3. Acid pickling.
  4. Phosphate dipping.
  5. Dry grit blasting with powder or expanded beads.
- Prime bare metal (5.6 ff.)
- Finish metal with lacquer, varnish or enamel as soon as primer coat is dried. (5.6 ff.)

8.6 GLAZING

- Glass used to replace cracked or broken units must conform with original glass in thickness, texture and color.
- Obscured glass should be used when it is desirable to prevent views into the interiors of buildings while still maintaining light penetration.
- Black-out paint should be applied to the interior surface of glass when it is necessary to stop transmission of light and create a blind window.(e.g. new interior construction does not conform with window openings)
- All glass in skylights must be wireglass.
- Wireglass can be used in doors systems when heavy use is usual.

2.9 FINISHES

9. FINISHES

9.1 CONCRETE

9.1.1 CLEANING

- Apply poultice of talc or whiting with a solvent of xylene, toluene, trichloroethylene, or mineral spirits.
- Brush off when dry.
- Repeat if necessary.
- DO NOT use benzine on concrete surfaces.

9.1.2 PAINT REMOVAL

- Remove paint that is :
  1. Severely built-up in layers.
  2. Built-up of incompatible paint layers.
  3. Non-adhering to base concrete.
- Remove small areas of loose or deteriorated paint with wire brushing.
- Remove paint from larger areas using:
  1. Organic paint strippers, or
  2. Wet grit blasting (50-100 psi)
- It is not necessary to remove all paint layers exposing base concrete.

9.1.3 PAINTING

- Use soft brushes and mild soaps to remove chalking and dirt from surfaces to be painted.
- After brushing, rinse surfaces with gentle water spray to remove all soap residues completely taking care to exhaust water run-off from building foundations.
- Do not apply paint until all surfaces are completely dry.
- Remove all loose, peeling or severely built-up paint layers.
- Treat all cracks (see 3.5 ff.)
- Brush only one coat of concrete masonry primer.
- Apply 2 coats of oil base top-coat.
- Final top coat may be sprayed on.
- DO NOT paint new concrete until 60 days after placement.

9.2 STUCCO

9.2.1 REPAIR

- Strip and re-stucco large areas if cracking and spalling are widespread.
- When tapped, defective areas will sound hollow.
- Brush all cracks with a stiff bristle brush to remove any loose or deteriorated stucco.
- Lightly wet all cracks.
- Fill all cracks with several coats of cement mastic.
- Repair and clean all concrete or tile backing before applying new stucco.
- Provide a keyed surface for stucco application.
  CONCRETE: Drill 3/4" holes, 3/4"deep, 3" o.c.
  TILE: Rake out mortar joints by hand.
  OTHER: Install welded wire mesh only if wire mesh already exists in current stucco.
- Thoroughly wet keyed surfaces before stuccoing.
- Apply portland cement plaster (1 part cement, 3 parts sand, 1/4 part lime). An alternative of lime stucco may be applied (20% cement, 80% lime).
- Allow 24 hrs. min. between coats.
- Tool and finish exposed surfaces to match existing originals.

9.2.3 PAINT REMOVAL

- Remove paint that is:
  1. Severly built up in layers.
  2. Built-up of incompatable paint layers.
- Remove all loose paint by wire brushing or scraping.
- Remove paint with organic strippers.
- If necessary, use LOW pressure (50 psi) wet grit blasting to remove paint.
- It is not necessary to expose bare stucco by removing all paint layers.

9.2.4 PAINTING

- Use soft brushes and mild soaps to remove chalking and dirt from surfaces to be painted.
- After brushing, rinse surfaces with gentle water spray to remove all soap residues completely taking care to exhaust water run-off from building foundations.
- Do not apply paint until all surfaces are completely dry.
- Remove all loose peeling or severely built-up paint layers.
- Fill all cracks before painting.
- Apply 1 coat of oil base primer.
- Apply 2 coats of oil base top-coat.
- DO NOT paint new stucco until 30 days (min.) after installation.

9.3 WOOD

9.3.1 PAINT REMOVAL

- Remove paint that is cracking, flaking, peeling or bubbling.
- Use water soluable, non-flamable paint removers.
- Heat processes (plates and blowers only) can be used on oil-base paints. DO NOT EXCEED 350 F
- Brushing with hot water and bristle brushes can be used to remove some non-oil-base paints, though not all.
- DO NOT use chemical paint removers on profiled woodwork because of potential damage to intricate detailing.
- DO NOT use sharp putty knives, chisels, or other tools which will scar wood surfaces.
- DO NOT use mechanical belt or wheel sanders (hand held vibrating sanders are acceptable)
- Hand sand all treated surfaces before applying new finish.

9.3.2 PAINTING

- Use soft brushes and mild soaps to remove chalking and dirt from surfaces to be painted.
- After brushing, rinse surfaces with gentle water spray to remove all soap residues completely taking care to exhaust water run-off from building foundations.
- Do not apply paint until all surfaces are completely dry.
- All paint should be of the highest quality and be of the same manufacturer throughout the entire work.
- All surfaces not to be painted must be adequately masked or covered.
- All landscaping elements vulnerable to paint damage should be covered
- Priming coats are advisable. Manufacturer's directions and recommendations should be followed concerning these applications.
- All new exterior woodwork must be given two coats.

9.3.3 SPECIAL CONDITIONS

PAINTING
- Apply 1 coat of primer by hand.
- Apply 2 coats of oil base top-coat by hand.
- Spray painting should be avoided.

2.10 SPECIALTIES

10. SPECIALTIES

10.1 LOUVERS AND VENTS

10.1.1 REPAIR

- Any repairs to louvers and vents should be carried out so as to conform with existing louver and vent design.
- At no time should wooden louvers and vents be replaced by aluminum or other metal parts.
- Where vents are located within window system, they should be removed and relocated to a solid wall surface and the window returned to its original operable condition.

10.1.2 PAINTING

- Modern louvers and vents may be "painted out" by painting them with the same color used on the surrounding wall areas. Historic louvers and vents should be painted original color.

10.2 PEST CONTROL

10.2.1 SCREENS

- Screen all louver, vent and grill openings with aluminum screens.
- Place screening behind (inside) ornamental grilles and louvers.

10.2.2 LATTICE AND SKIRTING UNDER PORCHES

- Construct lattice on seperate wood frame before installing.
- Install wood frame with lattice in a manner that allows independent removal. Hinging at the top is acceptable.
- DO NOT allow lattice or frame to touch finished grade.
- Paint to coordinate with building paint scheme.

10.3 IDENTIFYING DEVICES

- Signs and identifying devices on historic structures of the same type should be of uniform design, color, shape and size.
- Signs identifying ONLY building name and number should be attached to the structure.
- If possible signs should be attached to wood members only.
- Any signs which do not indicate building name and number should be free standing from the building.

10.4 AWNINGS

- Use only canvas awnings color-keyed to building colors on historic structures.
- DO NOT use fiberglass, plastic or aluminum awnings.
- Awning installation hardware should be affixed to historic building materials in a manner that does as little damage as possible.

10.5 TELEPHONE BOOTHS

- DO NOT locate public telephones on major facades or front porches of historic buildings.
- Install public phones near historic buildings on free-standing poles.

2.11 EQUIPMENT

11. EQUIPMENT

11.1 VENDING EQUIPMENT

- DO NOT locate vending machines on major facades or front porches of historic building.

11.2 WASTE HANDLING EQUIPMENT

- Locate bins and cans for garbage collection at the rear of all buildings or where their regular servicing will not cause damage to the building fabric, architectural elements or landscape features.

11.3 MAINTENANCE EQUIPMENT

- Store all cleaning and maintenance equipment away from historic building walls and surfaces.
- DO NOT dry or shake wet mops or brooms from windows of historic buildings.

2.12 FURNISHINGS

12. FURNISHINGS

12.1 PARTITIONS IN FRONT OF WINDOWS

- Use black paint to paint-out all visible interior partitions, barriers, splashboards or other constructions that partially or entirely blocks clear-glazed windows openings

12.2 EXTERIOR CARPETING

- DO NOT use indoor-outdoor coverings on exterior step or porch areas.

13. SPECIAL CONSTRUCTION

NOT APPLICABLE

14. CONVEYING SYSTEMS

NOT APPLICABLE

2.15 MECHANICAL

15. MECHANICAL

15.1 PLUMBING SYSTEMS

15.1.1 EXTERIOR SOIL AND WASTE PIPES

- Paint all exterior pipes the same color as the adjacent wall area. (unless otherwise specified)
- Flash and seal all wall openings for pipes.
- Paint all flashing the same color as adjacent pipes.
- Consolidate as many exterior pipes as possible or insert into wall when replacements are necessary.

15.1.2 ROOF DRAINAGE

- All gutters and leaders must be checked annualy to insure that all sections are properly fitted, that no breaks or tears are present and that they are free of debris.
- Inspection should insure that any replacement is large enough to handle water discharge and that the pitch is sufficient in order to carry off the water adequately.
- All gutter outlets must be fitted with appropriate copper wire strainers of the basket-type set into the leaders loosely.

2.16 ELECTRICAL

16. ELECTRICAL

16.1 EXPOSED WIRING ON BUILDING SURFACES

- Remove all unnecessary exterior mounted electrical service conduits.
- Attach electrical service wires to buildings as unobtrusively as possible.
- Attach exterior conduit on masonry buildings at mortar joints only, using twice the recommended number of hangers.
- DO NOT attach any hangers to masonry units.

16.2 EXTERIOR BUILDING LIGHTING

- Mount exterior security and flood lights on poles or inconspicuous areas of historic buildings (Under eaves, behind porch columns or fascias, etc.)
- DO NOT attach exterior security or flood lights to historic building walls.

16.3 ANTENNAS (T.V.- RADIO - CB)

- Mount all antennas in interior locations (attics, crawl spaces etc.), on freestanding poles, or on non-historic buildings (garages, etc.).
- DO NOT attach antennas to roofs or chimneys of historic buildings.
- DO NOT attach antenna guy wires to roof or wall areas of historic buildings.

SECTION III

Maintenance Plan for Historic Buildings within the Presidio of San Francisco Historic Landmark District

Prepared for:

Department of the Army
Headquarters Presidio of San Francisco
San Francisco, California

Administered by:

National Park Service
Western Regional Office
U.S. Department of Interior
San Francisco, California

Contract No.: 8000-1-0041

Prepared by:

Charles Hall Page & Associates, Inc.
364 Bush Street
San Francisco, California 94104

10 December 1982

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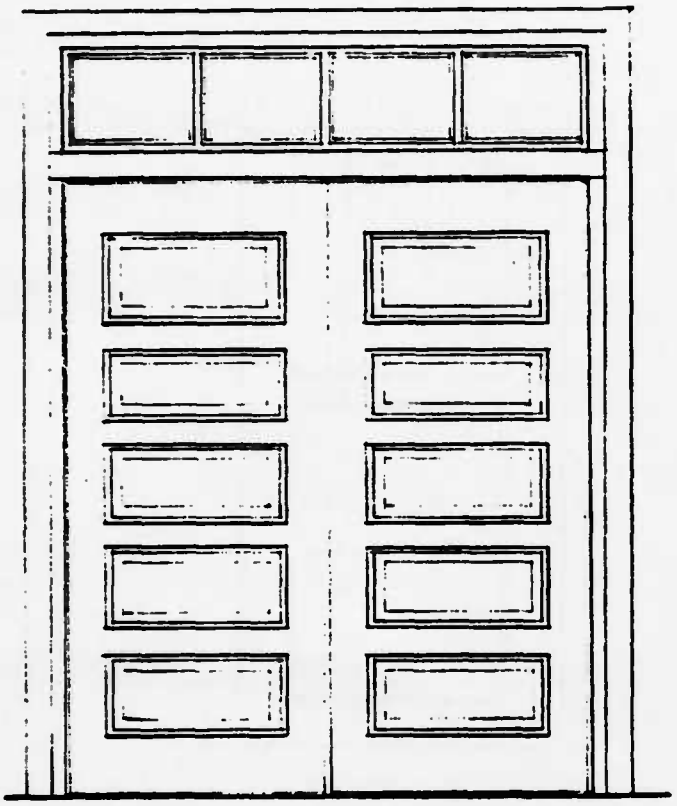
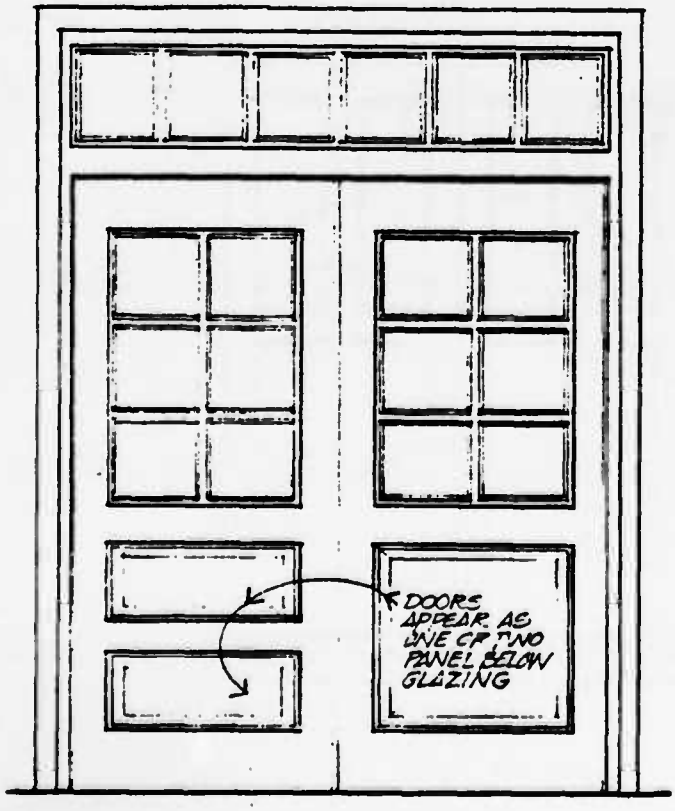


3.1.1

NOTE! 4 OR 6 LITE TRANSOM LITES MAY BE USED ON EITHER DOOR OR TO CONFORM W/ ORIGINAL.
5 PANEL DOORS MAY BE USED AS SINGLE OR DOUBLE.



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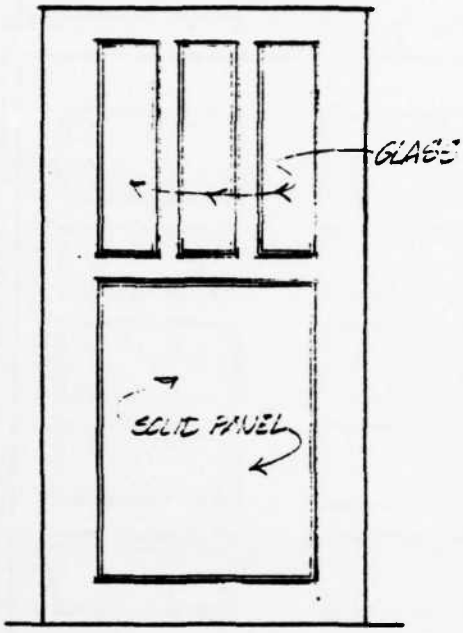
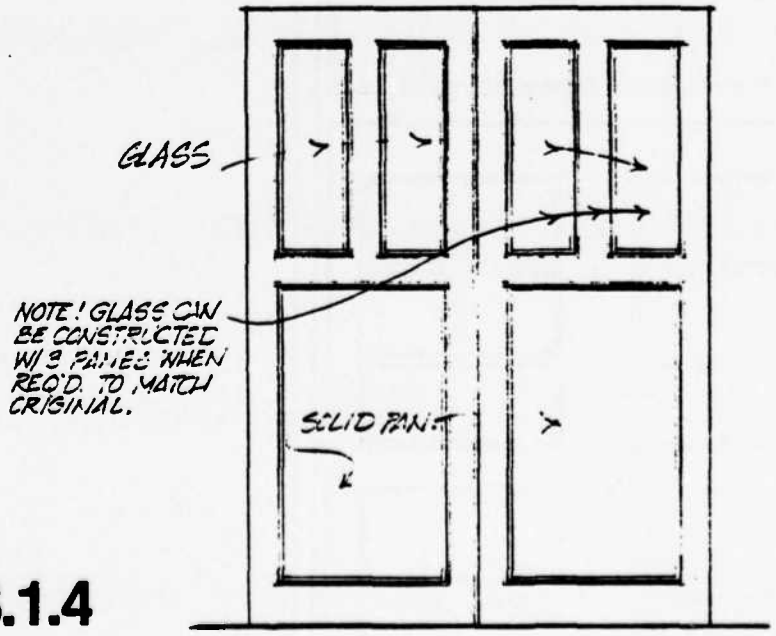
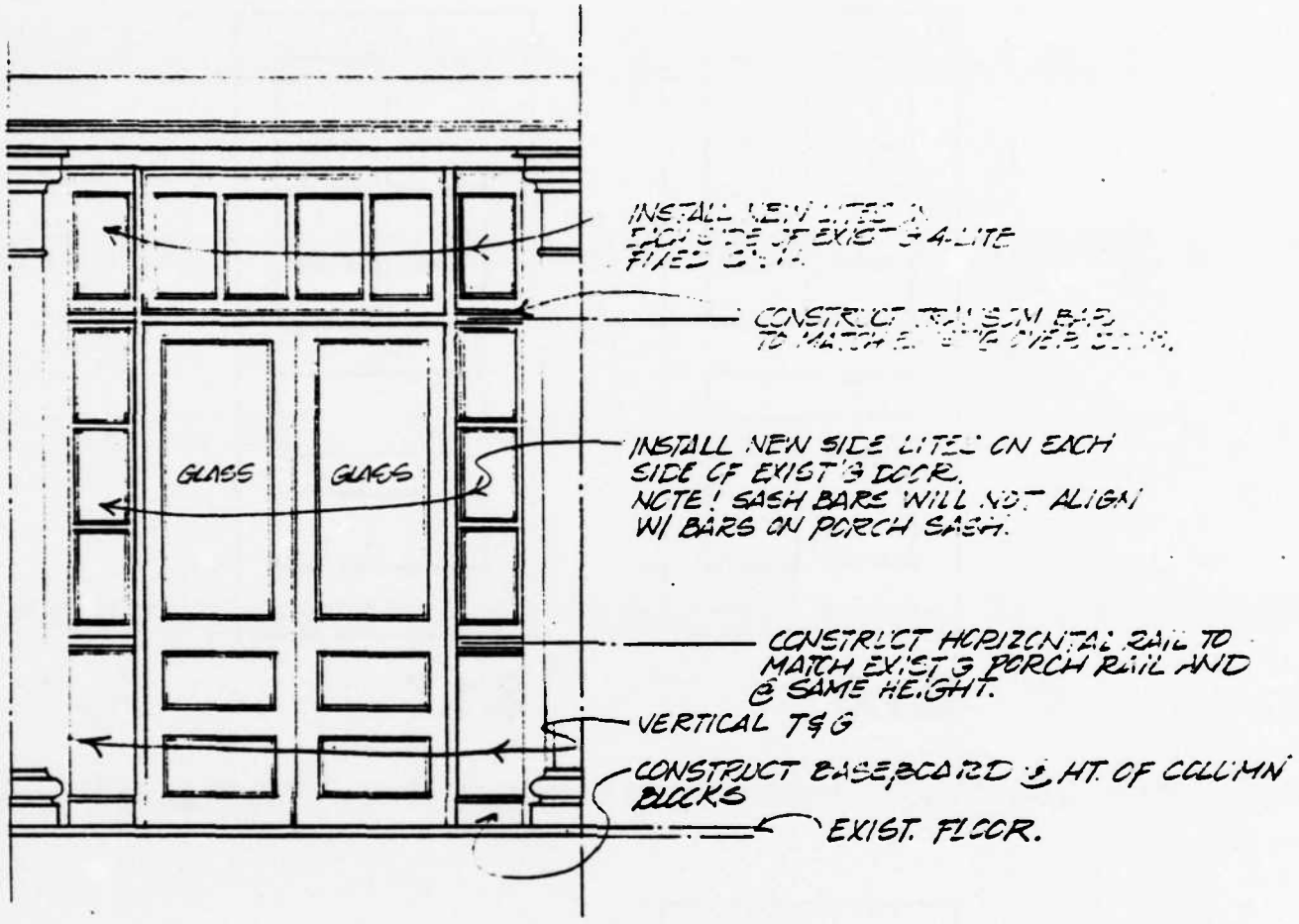

GLASS
SOLID PANEL

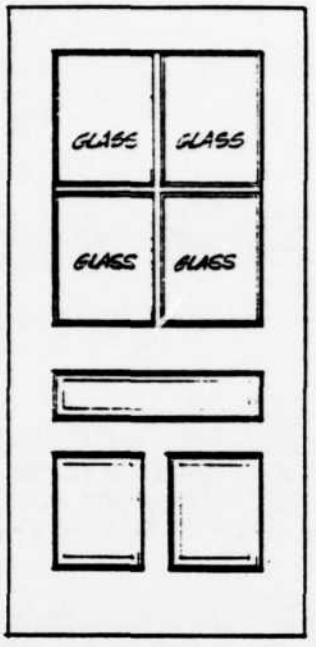
3.1.3


GLASS
NOTE! GLASS CAN BE CONSTRUCTED W/ 3 PANES WHEN REQ'D. TO MATCH CRIGINAL.
SOLID PANEL

3.1.4


INSTALL NEW SIDE LITE ON EACH SIDE OF EXIST'G 4-LITE FIXED SASH.
CONSTRUCT TRANSOM BAR TO MATCH EXIST'G SIDE LITE SASH.
INSTALL NEW SIDE LITE ON EACH SIDE OF EXIST'G DOOR. NOTE! SASH BARS WILL NOT ALIGN W/ BARS ON PORCH SASH.
GLASS
GLASS
CONSTRUCT HORIZONTAL RAIL TO MATCH EXIST'G PORCH RAIL AND @ SAME HEIGHT.
VERTICAL T&G
CONSTRUCT BASEBOARD @ HT. OF COLUMN BLOCKS
EXIST. FLOOR.

3.1.5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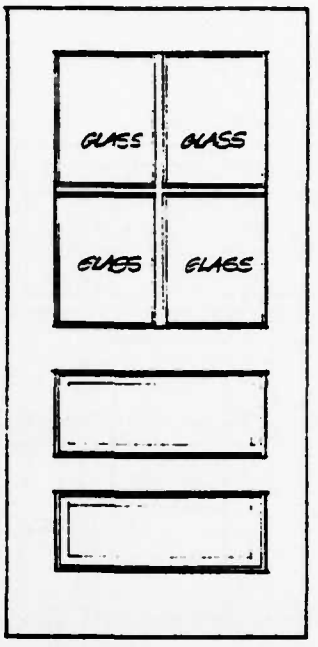
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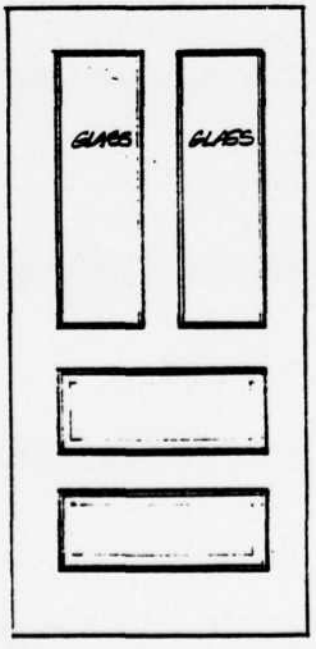
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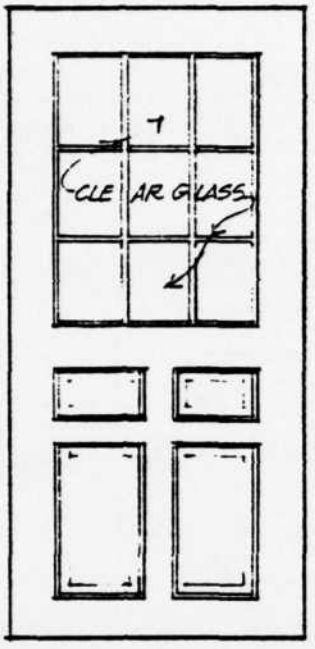

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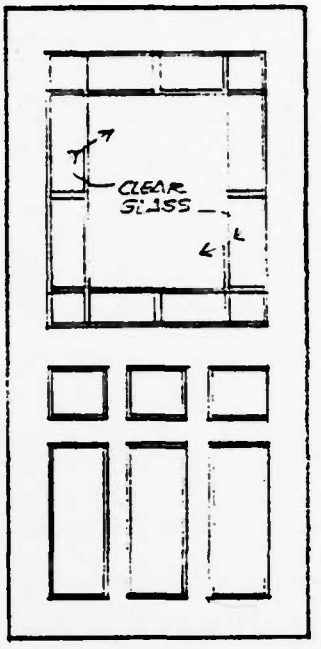

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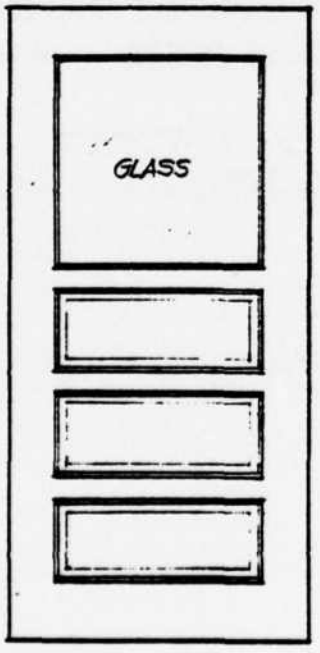

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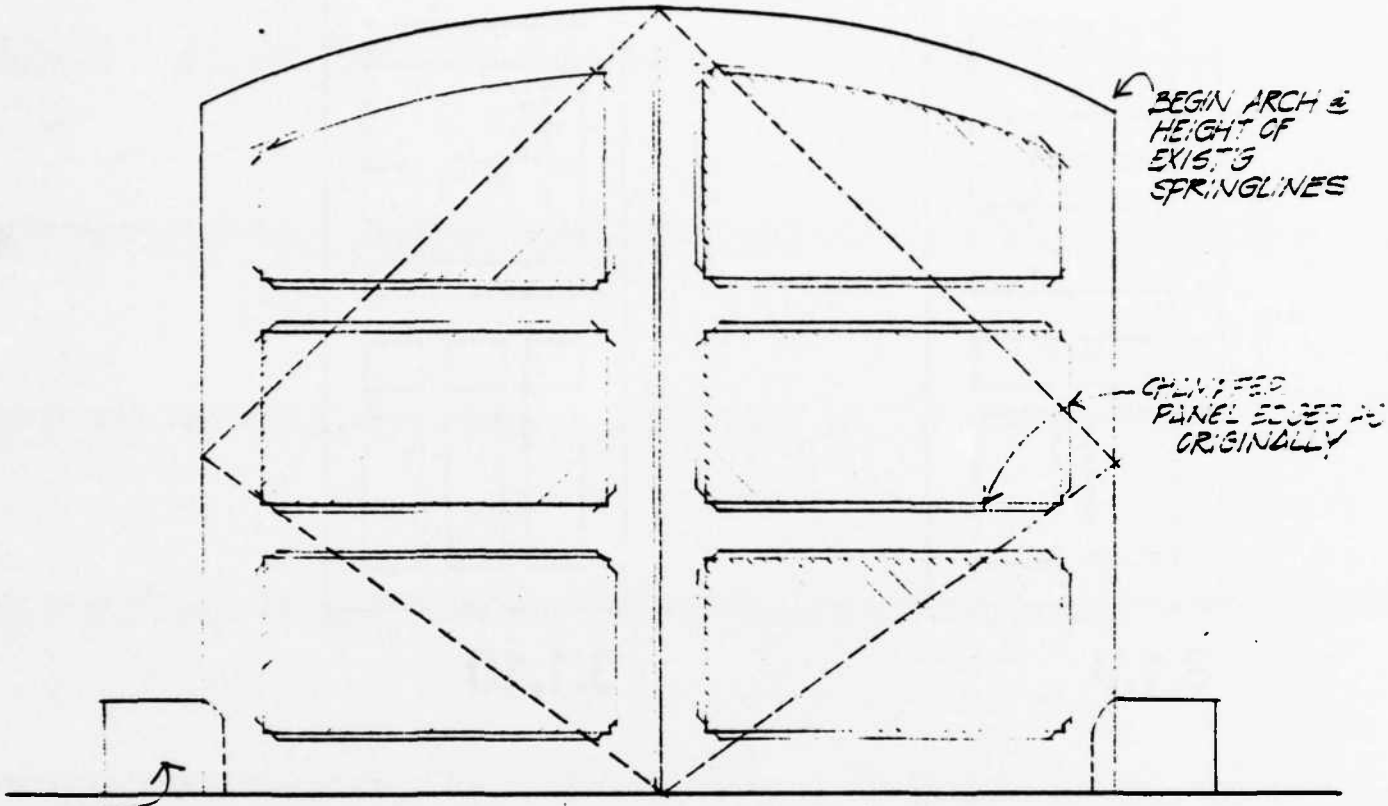
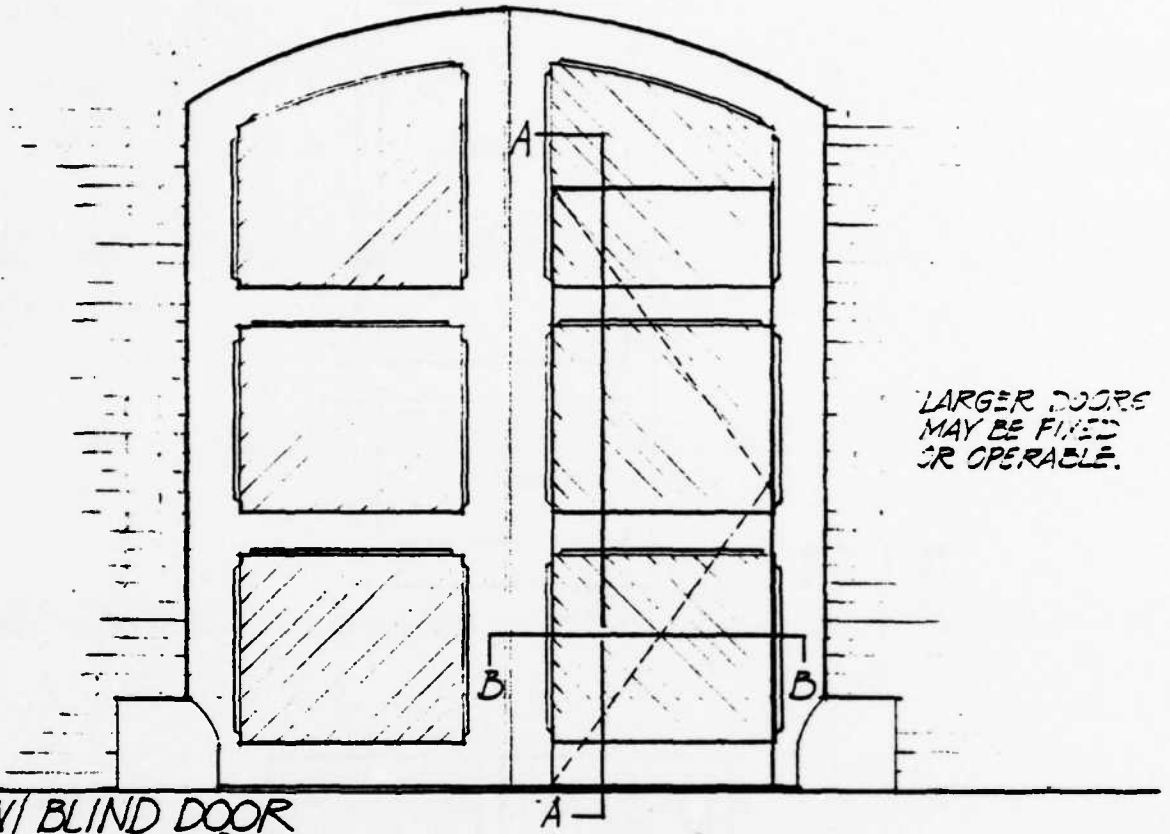


FOR LARGE DOOR OPENINGS: SWINGING DOORS SHOULD BE CONSTRUCTED TO FIT OPENINGS AND DETAILS COPIED FROM EXTANT DOORS.

ELEVATION OF NEW DOORS

DO NOT SCALE

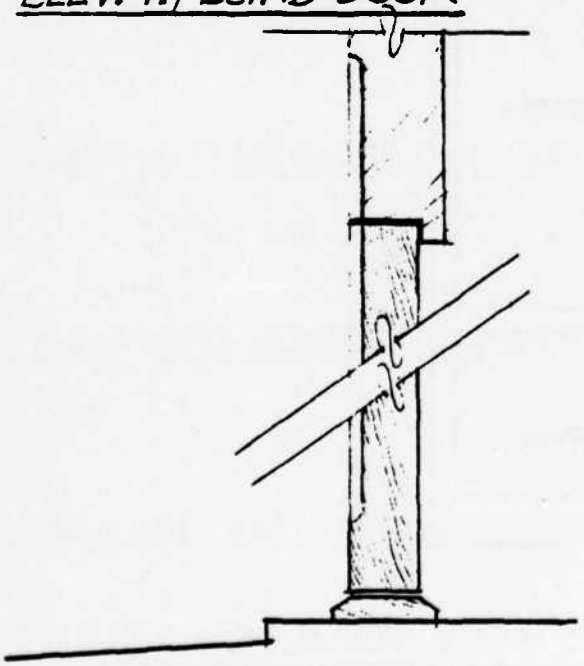
3.1.12

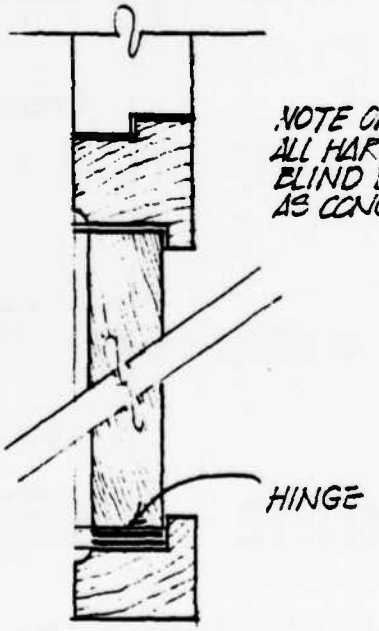


LARGER DOORS MAY BE FIXED OR OPERABLE.

ELEV. W/ BLIND DOOR

NOTE ON HARDWARE: ALL HARDWARE USED FOR BLIND DOORS SHOULD BE AS CONCEALED AS POSSIBLE.

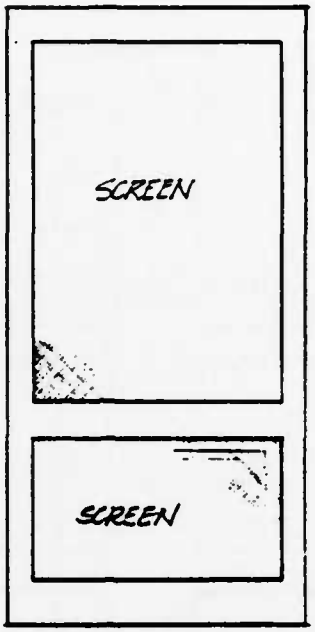




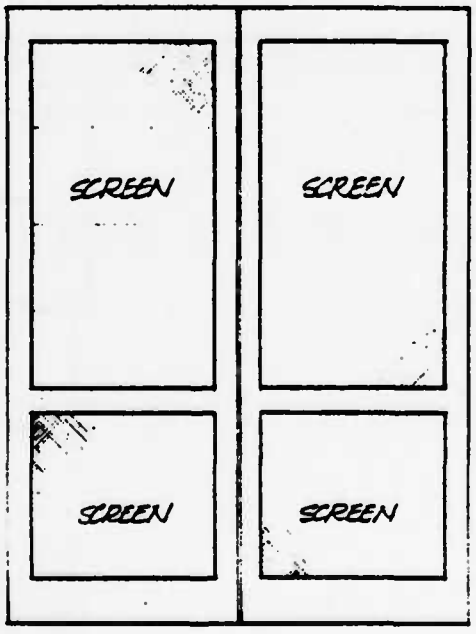
SECTION A-A HEAD AND SILL
DO NOT SCALE

SECTION B-B JAMBS

3.1.13

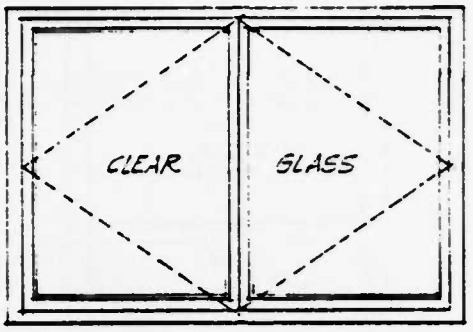


3.1.14

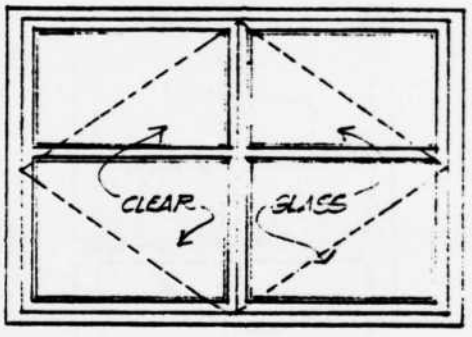


3.1.15

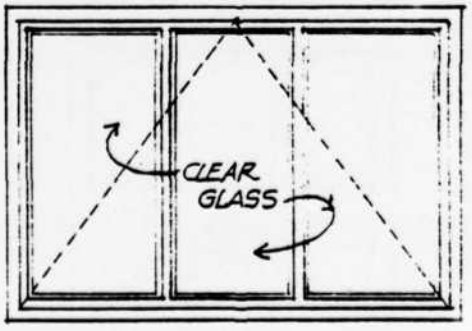
NOTE: ALL MEASUREMENTS FOR SCREEN DOORS MUST BE MADE ACCORDING TO INDIVIDUAL DOOR CONFIGURATIONS IN FIELD SO THAT RAILS AND STILES ON SCREEN DOORS ALIGN W/ RAILS AND STILES ON DOORS IN PLACE.



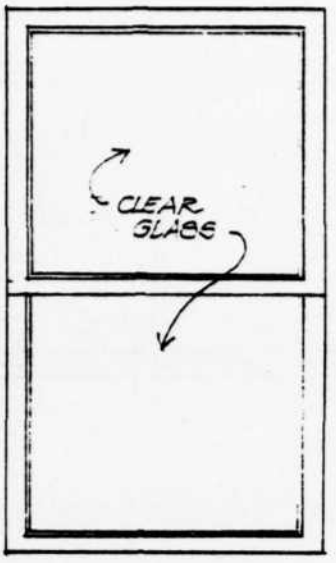
3.2.1



3.2.2



3.2.3



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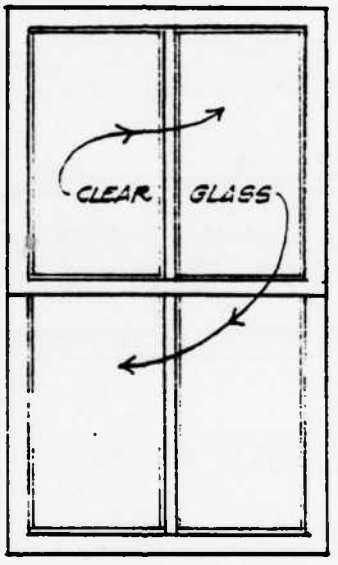

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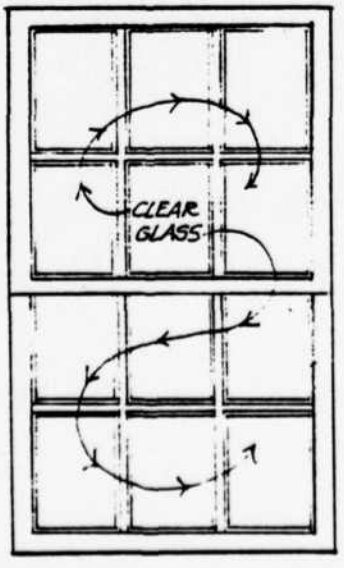
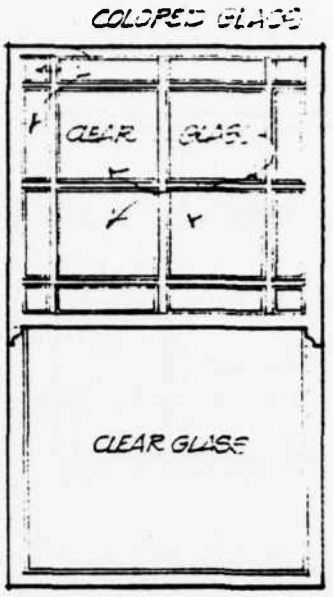
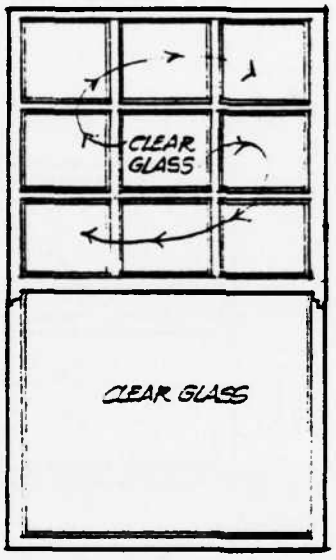


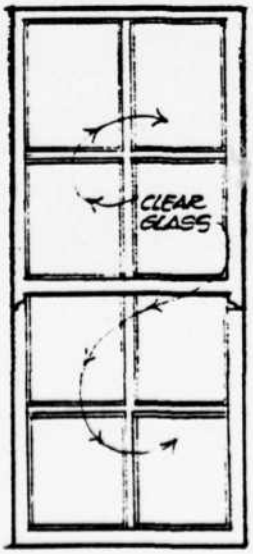
3.2.6


COLORED GLASS
CLEAR GLASS
CLEAR GLASS

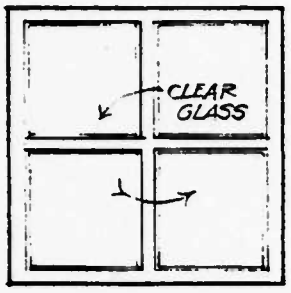
3.2.7


CLEAR GLASS
CLEAR GLASS

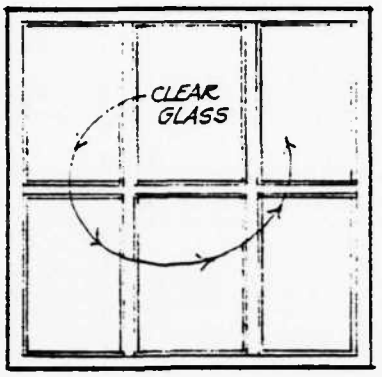
3.2.8


CLEAR GLASS

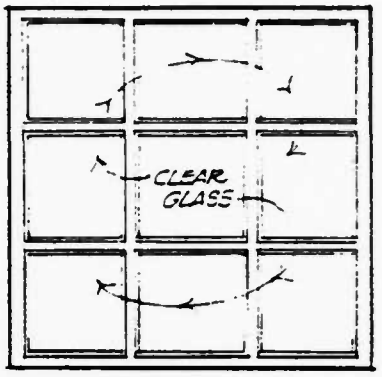
3.2.9



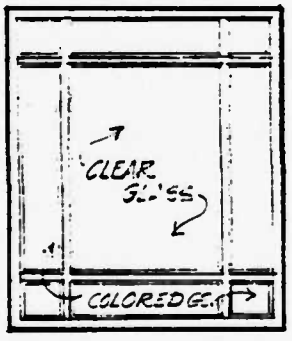
3.2.10



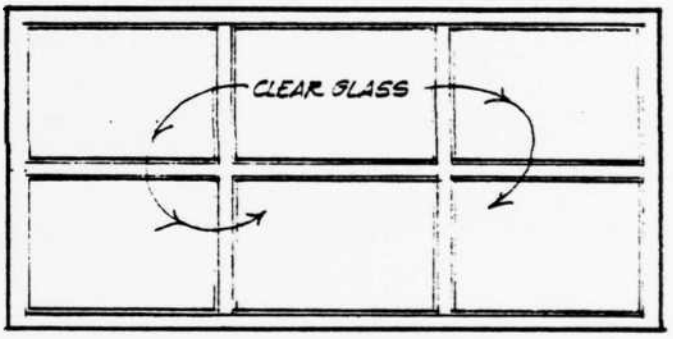
3.2.11



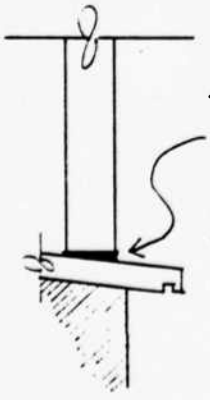
3.2.12



3.2.13

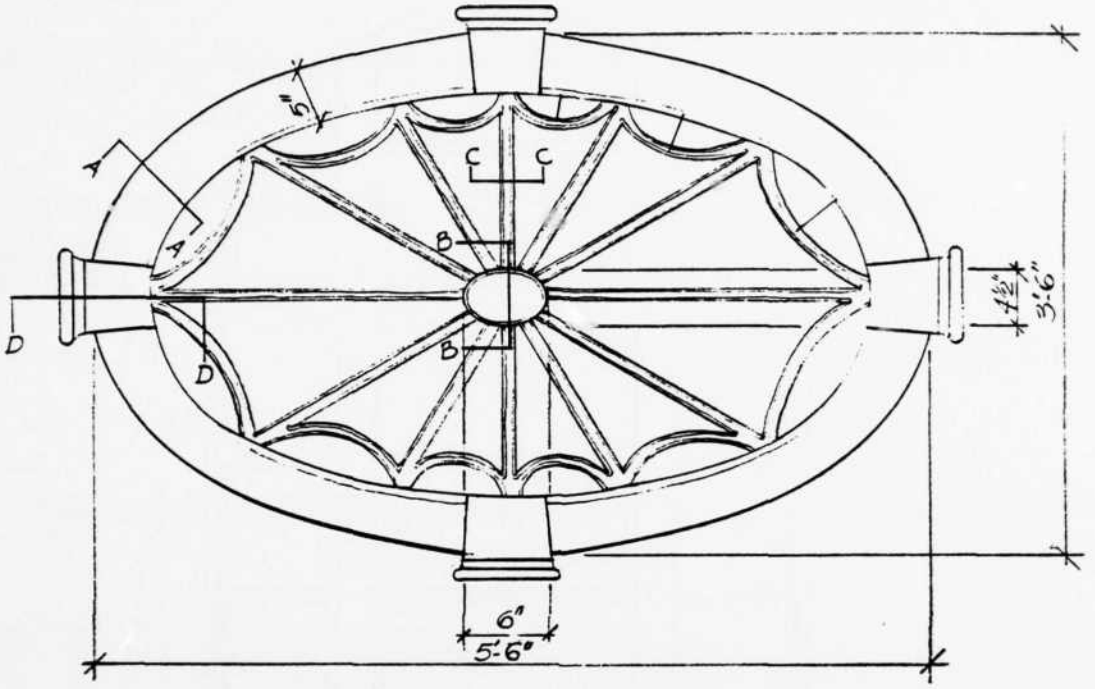


3.2.14



NOTE ON NEW WINDOW INSERTS

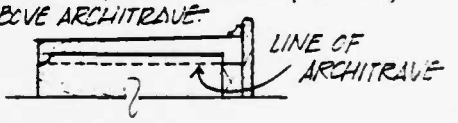
WHEN INSERTING NEW WINDOW UNITS INTO EXISTING FRAMES, INSERT PIECE TO SEAL BASE OF FRAME OR CUT FRAME BASE TO CONFORM W/ SILL SLOPE.



NOTE: WINDOW CAN BE MADE OPERABLE BY INSERTION OF PIVOT BAR @ CENTER.

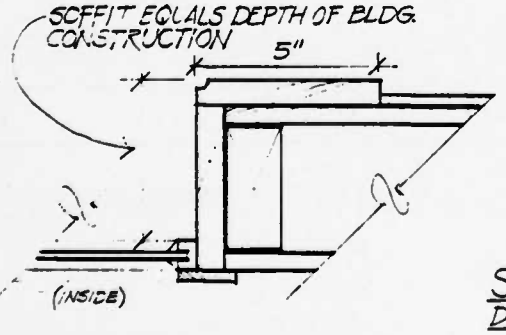
ALL PANES ARE CLEAR GLASS

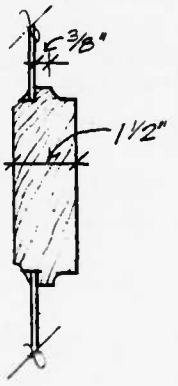
NOTE ON KEYSTONES: "KEYSTONES" SHOULD EXTEND SLIGHTLY (½" MIN.) ABOVE ARCHITRAVE.



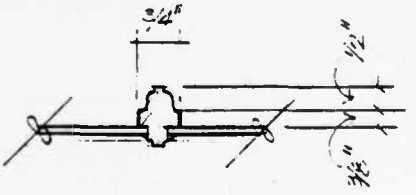
SECTION D-D
DO NOT SCALE

SECTION A-A
DO NOT SCALE





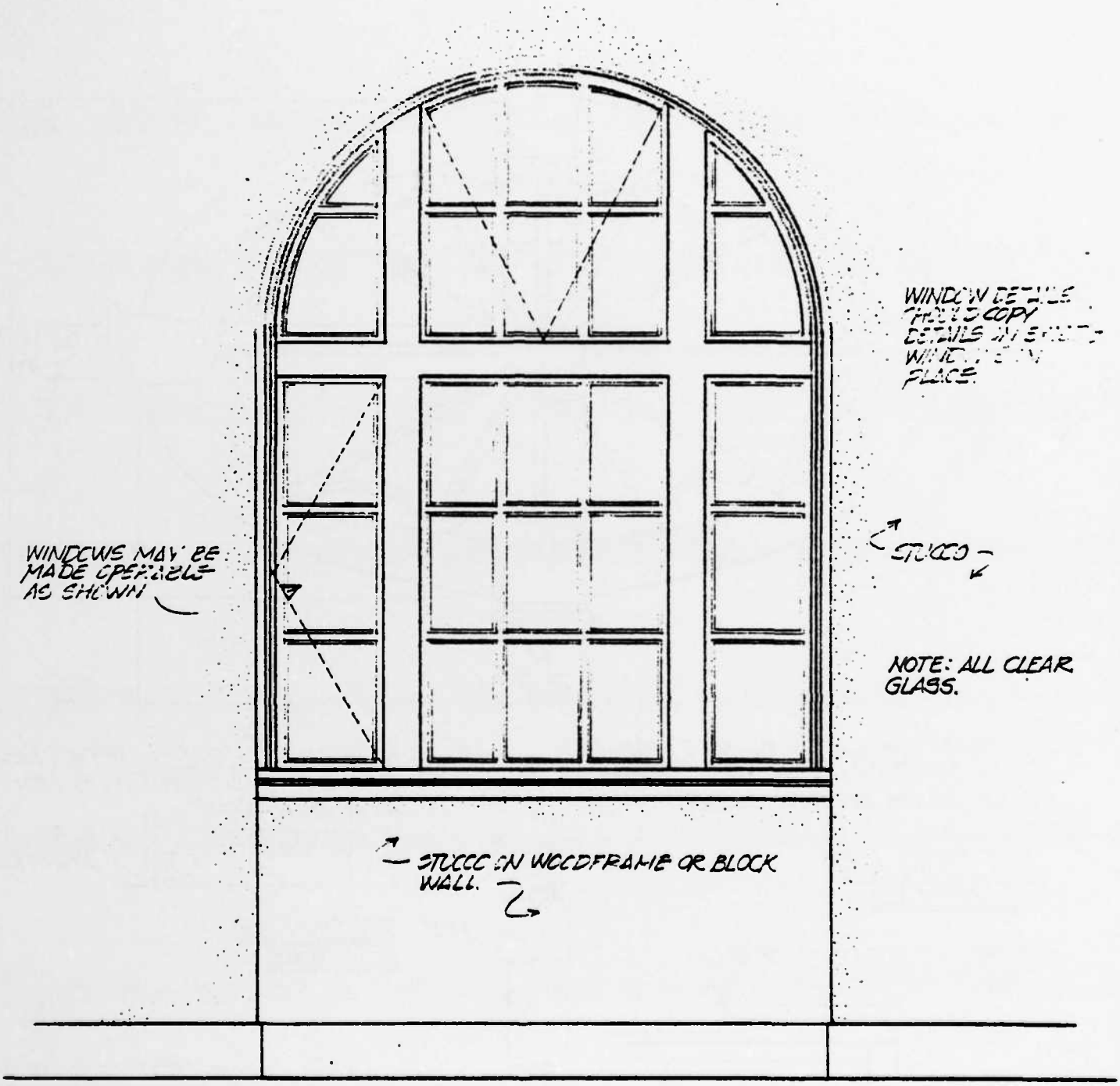
SECTION B-B
DO NOT SCALE



SECTION C-C
DO NOT SCALE

ELLIPTICAL-GABLE WINDOW

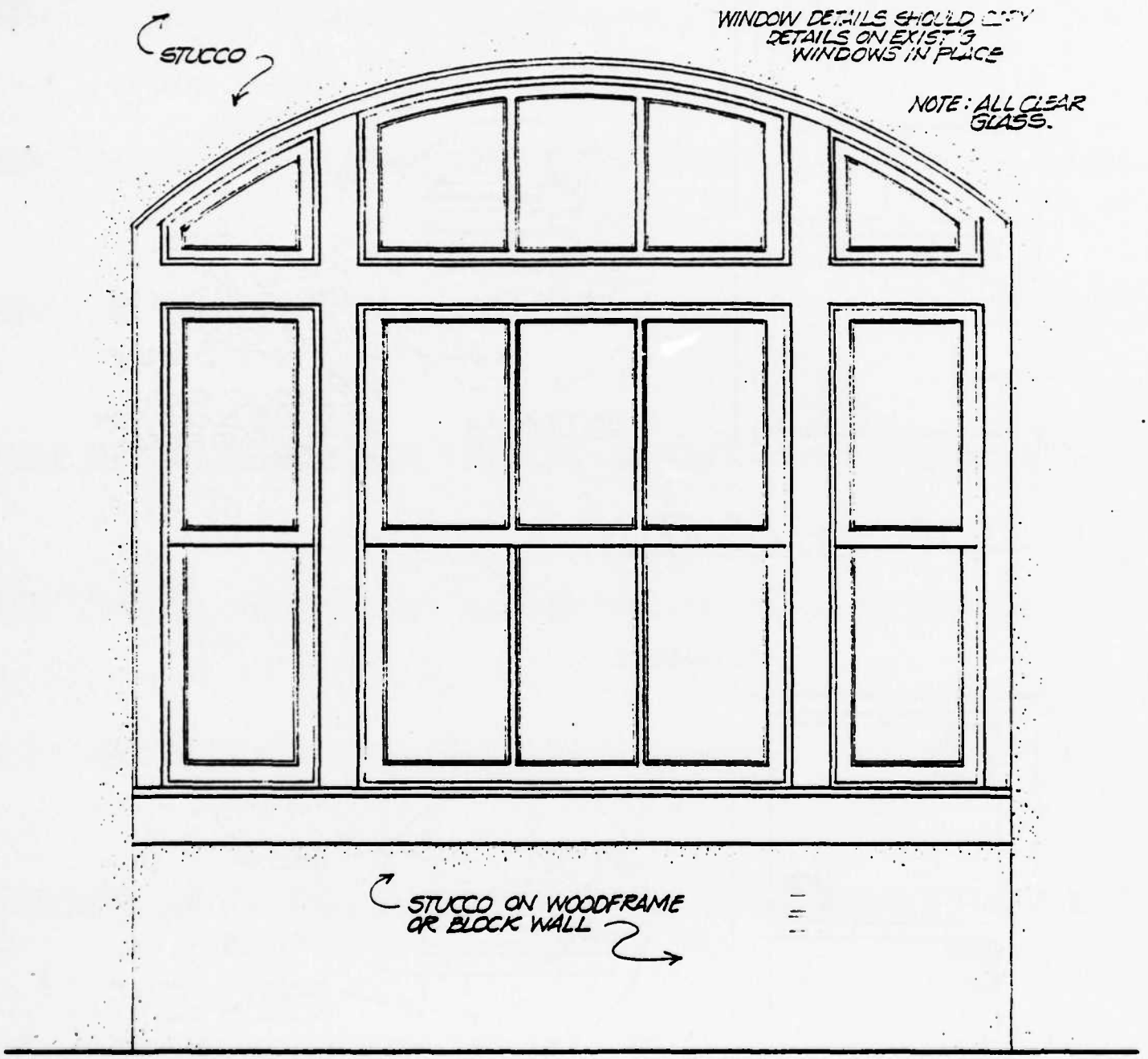
3.2.15



ARCADE WINDOW INFILL

DO NOT SCALE

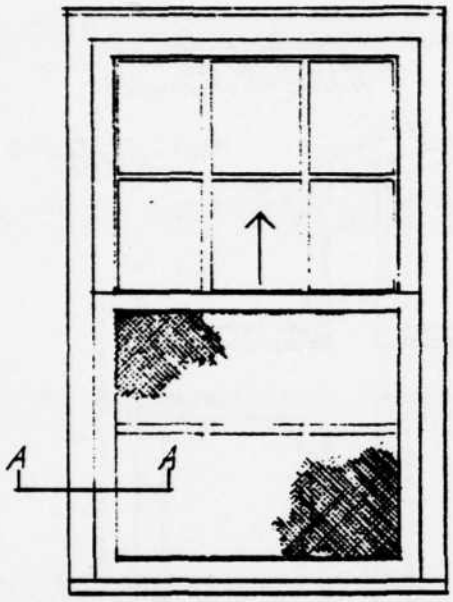
3.2.16

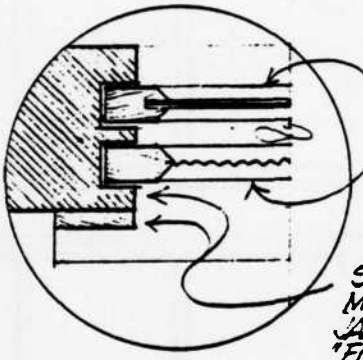


ARCADE WINDOW INFILL

DO NOT SCALE

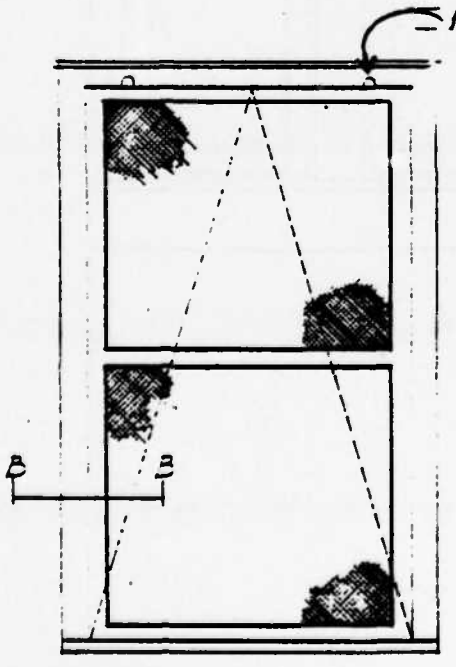
3.2.17

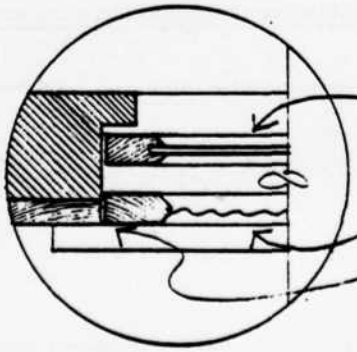




SECTION A-A

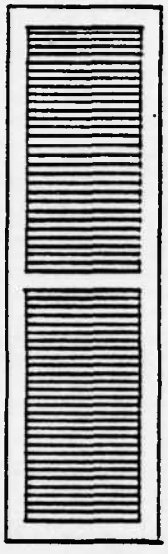
3.2.18 HALF SCREEN





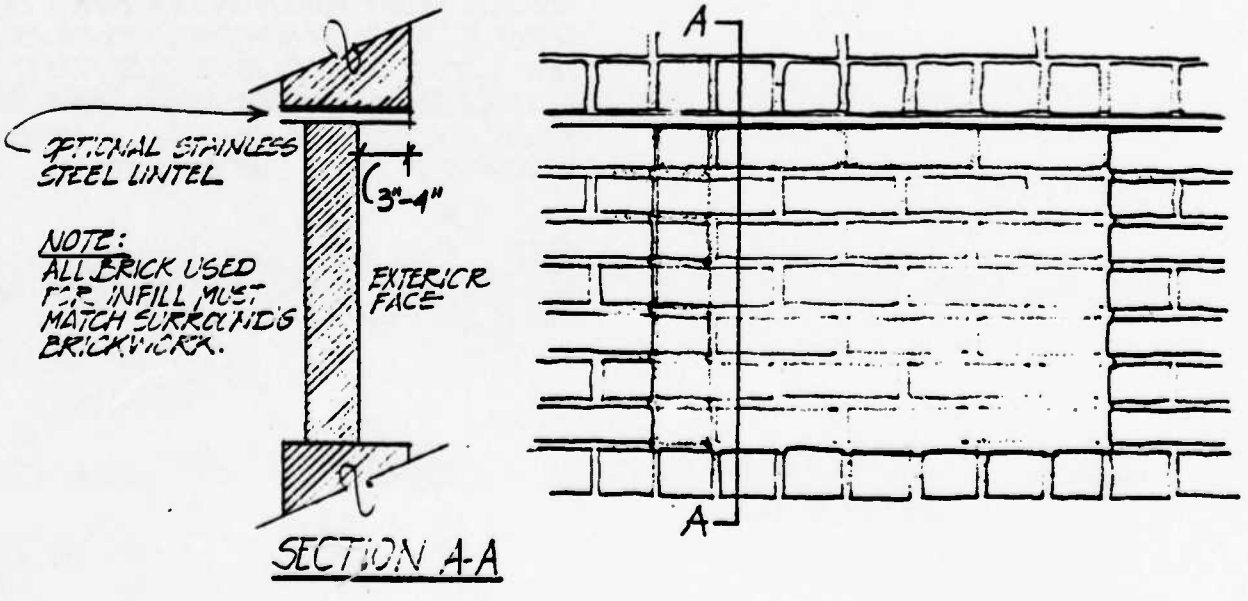
SECTION B-B

3.2.19 FULL SCREEN



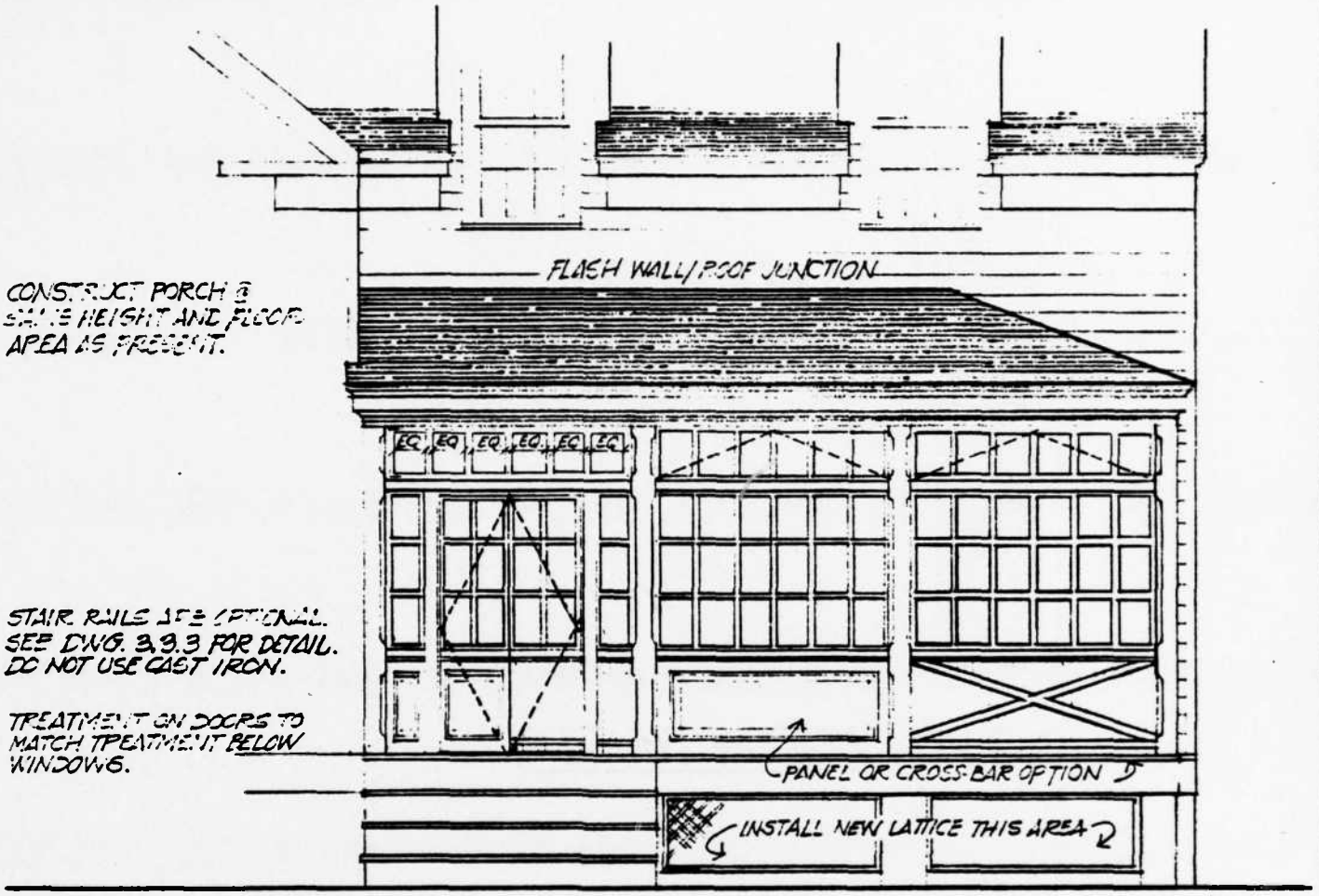
NEW WOODEN LOUVERED SHUTTER 1/2 WIDTH OF SASH.
RAILS MUST ALIGN W/ RAILS ON WINDOW.

3.2.20 WINDOW SHUTTER



SECTION A-A

3.2.21 BLIND WINDOW



REBUILD FRONT PORCH ON NEW PIERS. DIVIDE INTO THREE EQ. PARTS BY NEW PORCH POSTS AS SHOWN. NEW GLAZING BETWEEN POSTS TO BE FIXED. TRANSOM GLAZING CAN BE OPERABLE BY HINGING AT TOP. PANELS BELOW GLAZING TO BE IDENTICAL W/ PANELS IN EX. BAY WINDOWS OR CROSS-BARS BACKED W/ T&G SIDING.

NOTE ON PORCH GLAZING:
GLAZING IS OPTIONAL. IF DESIRED, AREAS BETWEEN PORCH POSTS CAN REMAIN OPEN.

3.3.1 PORCH INFILL

DO NOT SCALE

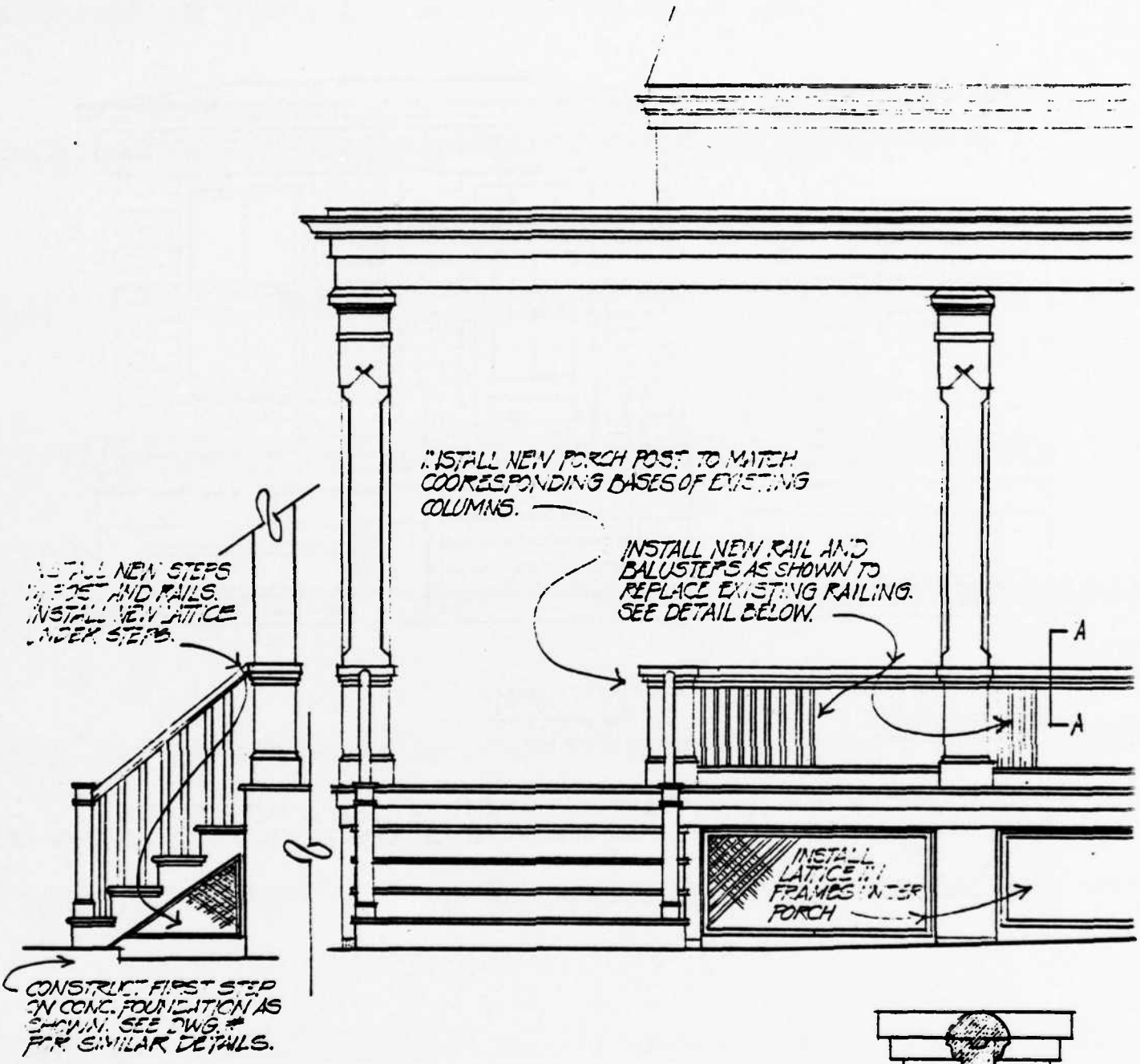
SIDE VIEW
DO NOT SCALE

FRONT VIEW
DO NOT SCALE

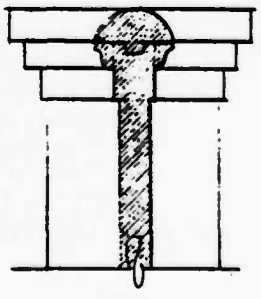
DOOR: FABRICATE NEW DOOR TO COPY EXISTING DOOR @ SECOND FLOOR FRONT.
RAILS: PIPE RAILS OF APPROVED ORIG. DESIGN MAY BE SUBSTITUTED FOR WOODEN RAILS.
SIDING: NEW SHIP-LAP SIDING
SIDE WINDOW: OPTIONAL

PORCH

3.3.2



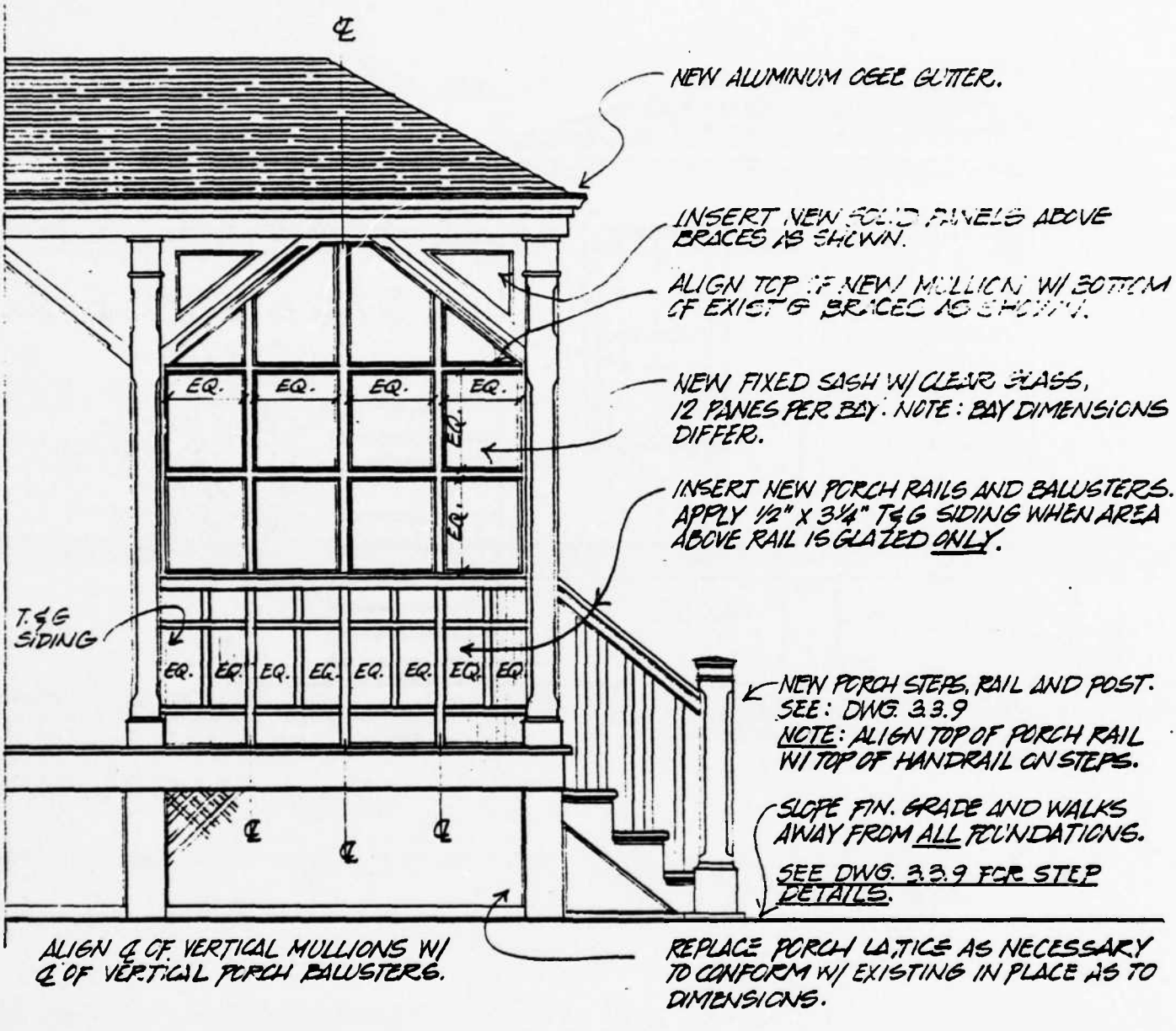
NOTE:
DETAILS FOR PORCH RAILS, STEPS AND UNDER PORCH LATTICE SHOULD FOLLOW DETAILS FOR FRONT PORCH.



SECTION A-A
DO NOT SCALE

3.3.3 PORCH

DO NOT SCALE



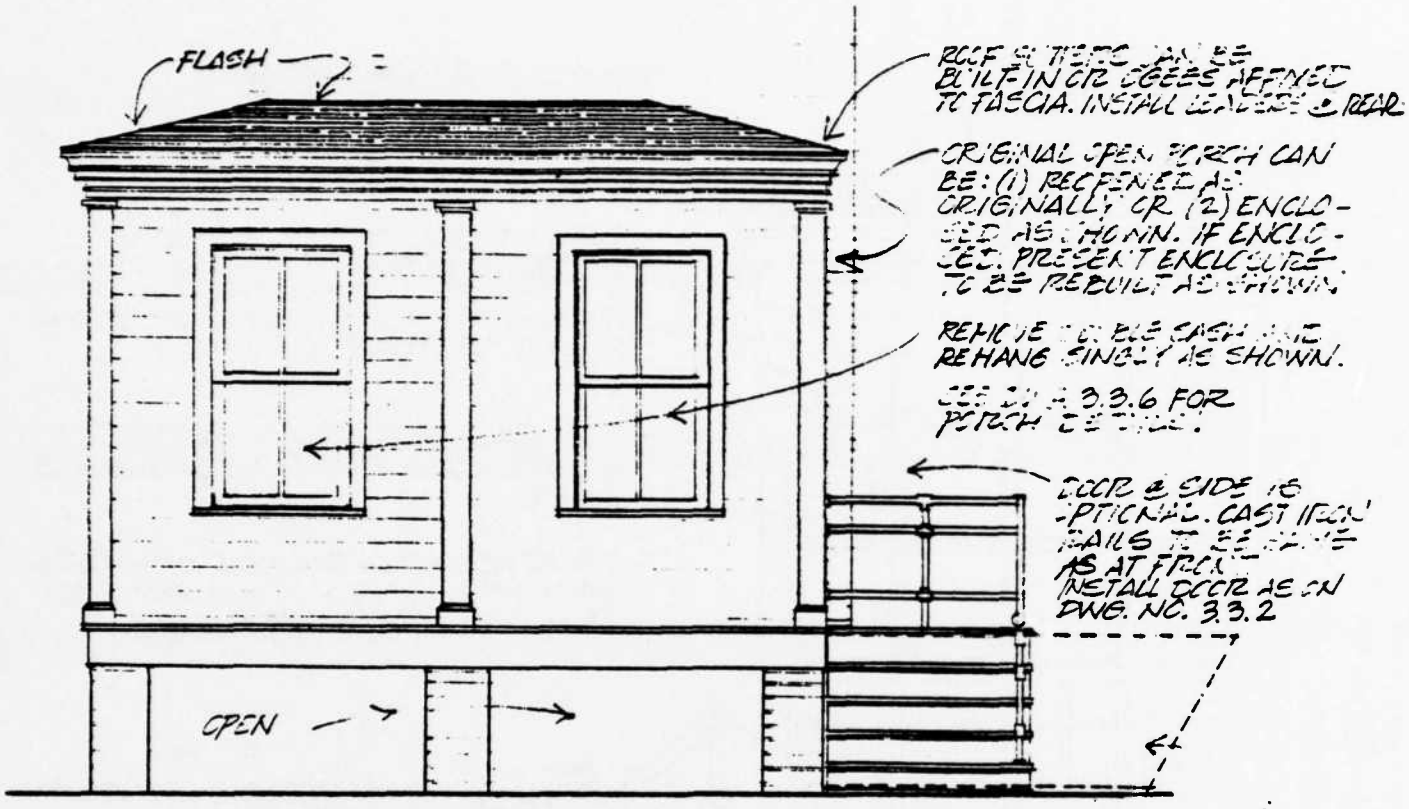
PORCH WINDOW REPLACEMENTS

DO NOT SCALE

PORCH

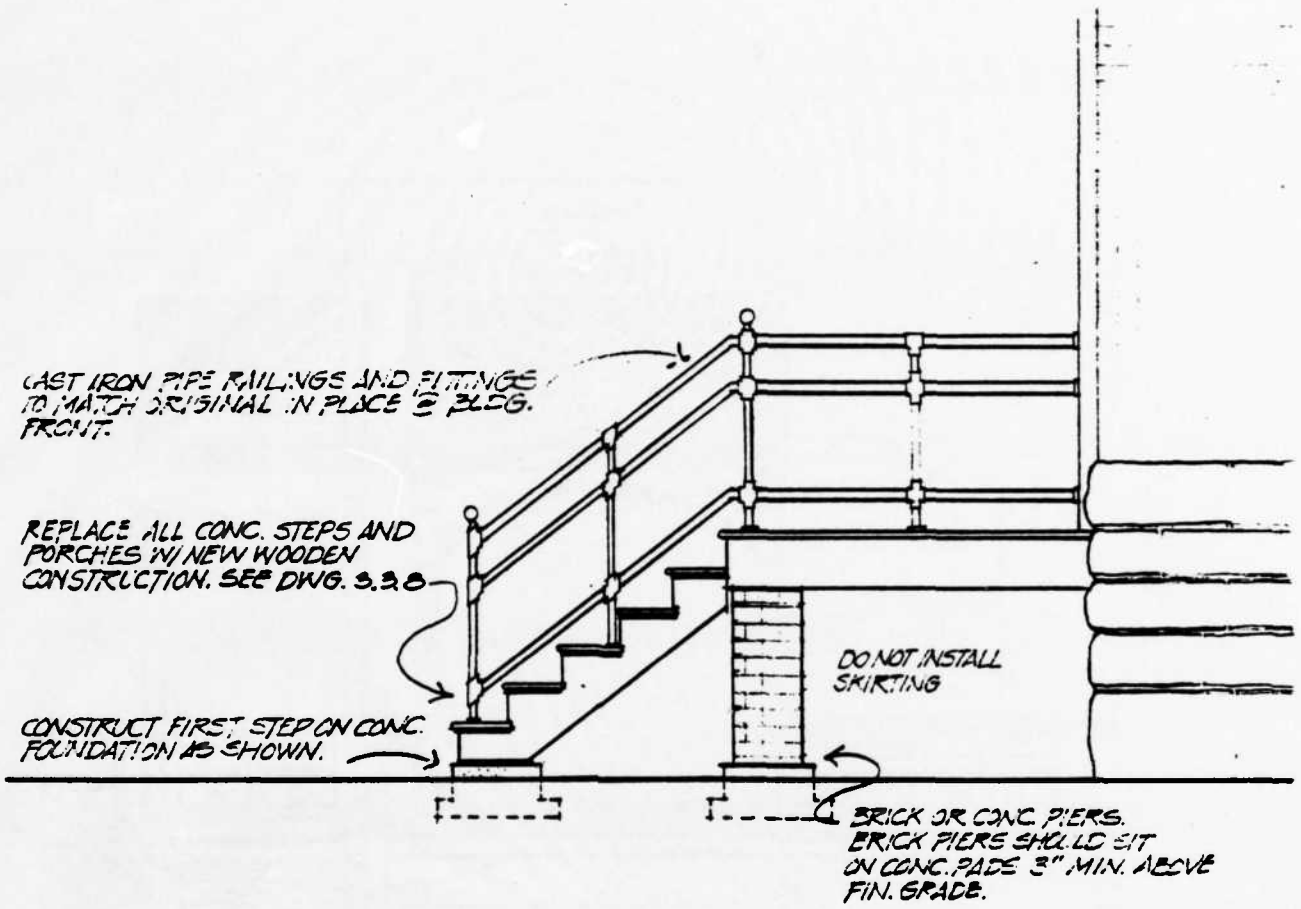
DO NOT SCALE

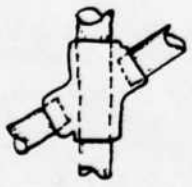
3.3.4



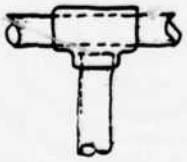
3.3.5 PORCH

DO NOT SCALE

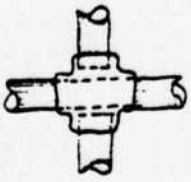




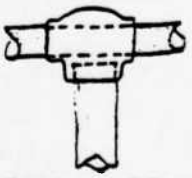
FOR RAMP AND STAIR RAIL CONSTRUCTION. USED W/ TEES, ELBOWS AND SIDE OUTLET FITTINGS.



PLAIN PATTERN TEE



CROSS FOR HORIZONTAL CONSTRUCTION

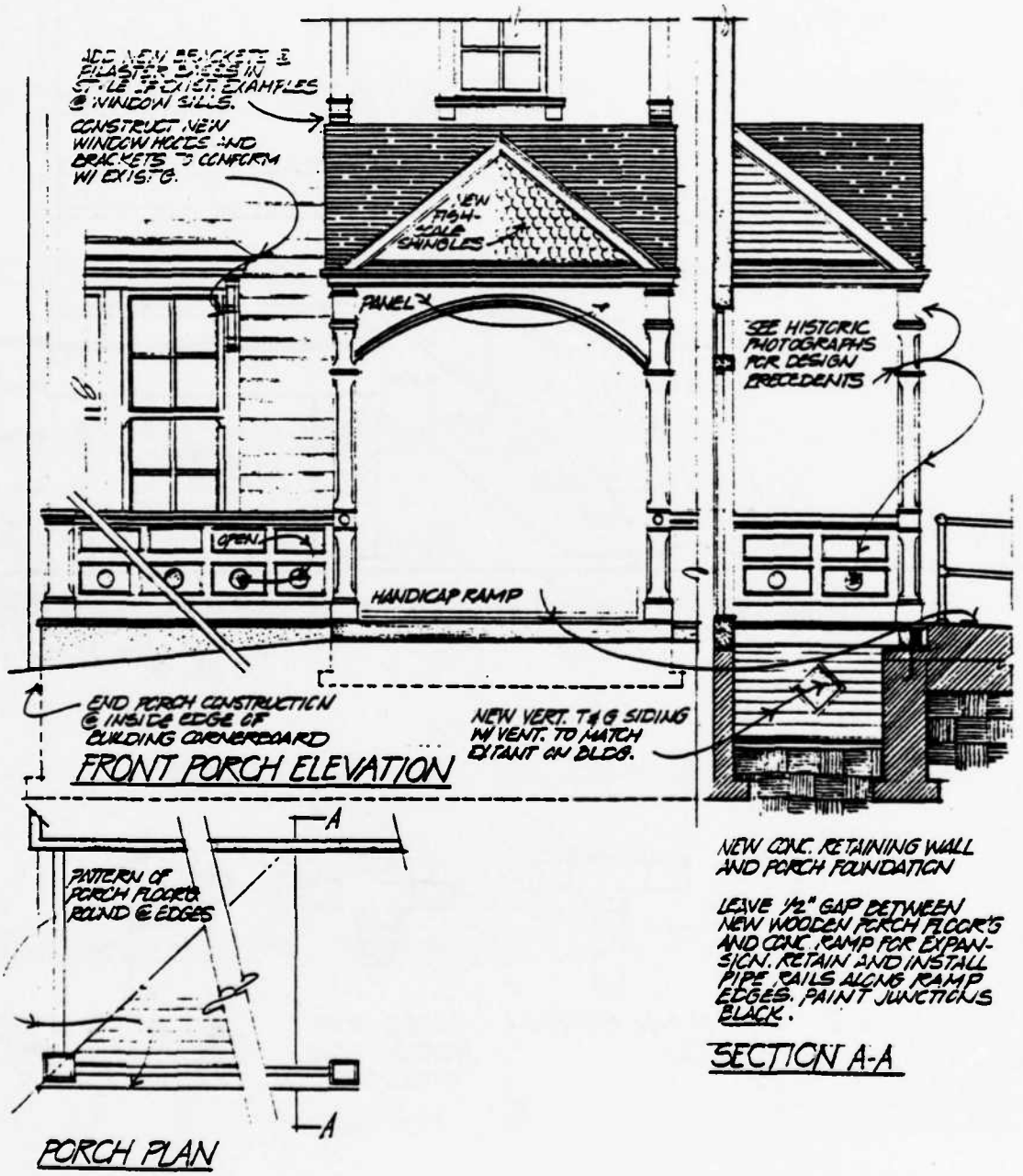


BALL PATTERN TEE W/ HORIZ. PIPE EXTENDING THROUGH FITTING.

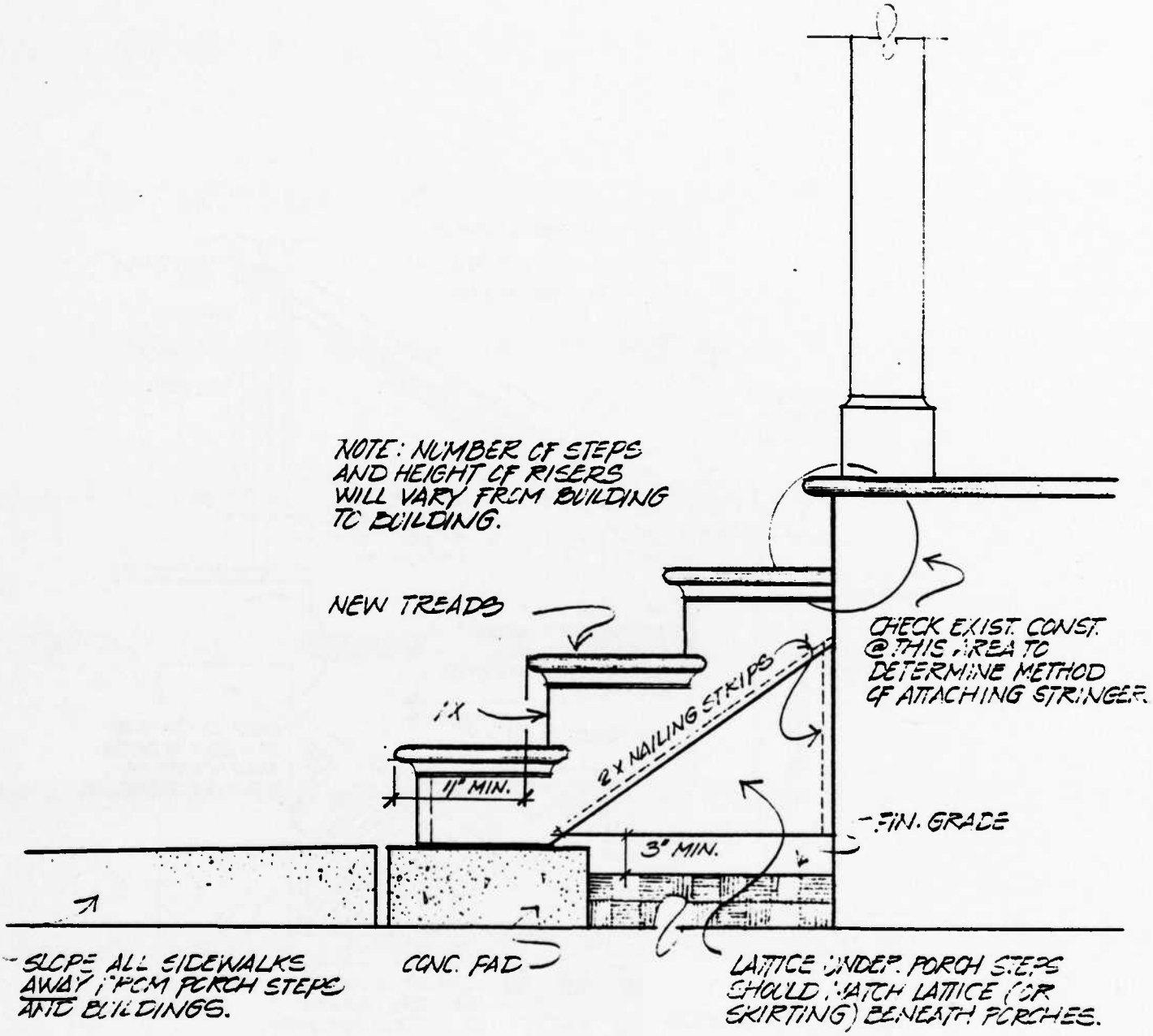
PORCH W/ CAST IRON FITTINGS

DO NOT SCALE

3.3.6

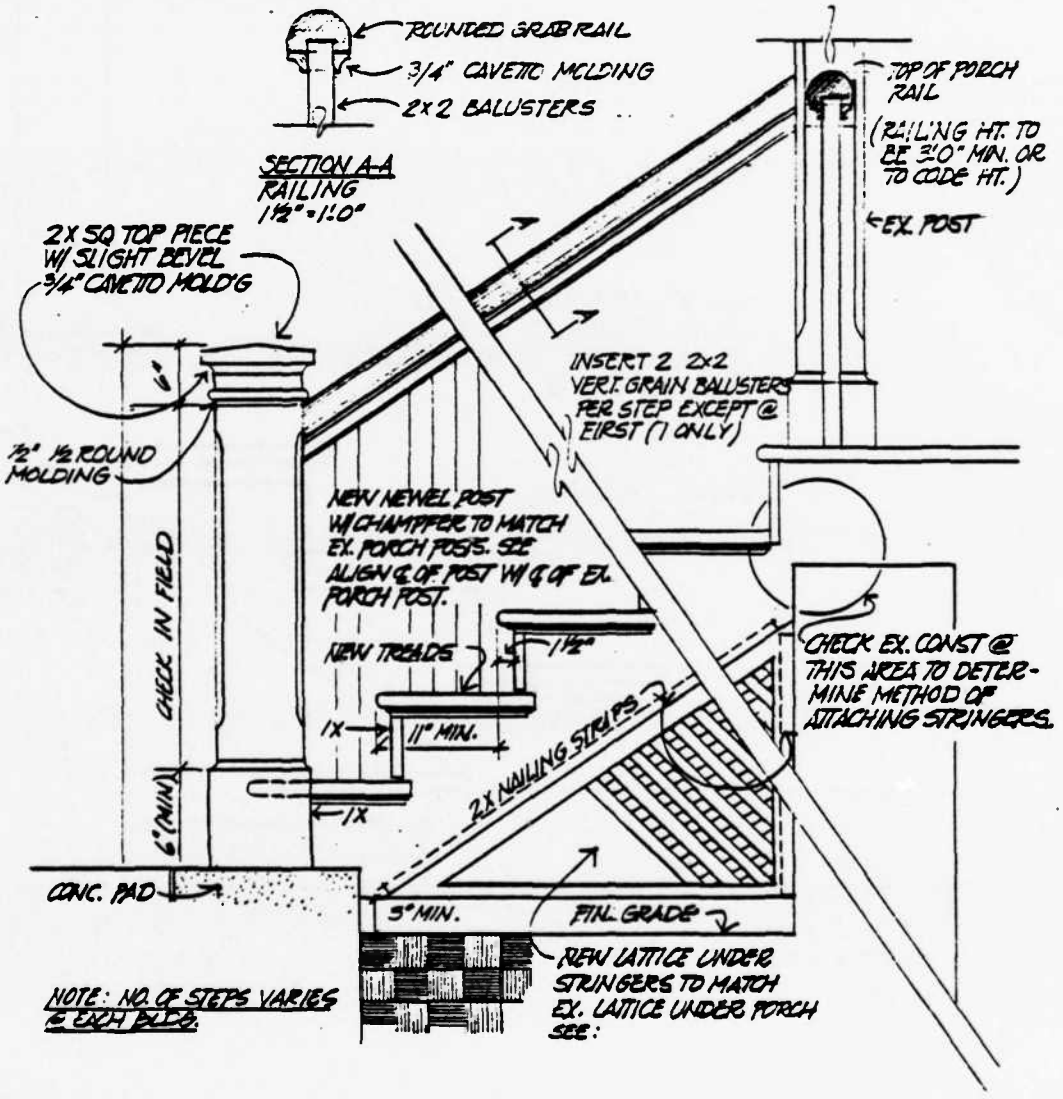

ADD NEW BRACKETS & PLASTER DISCS IN STYLE OF EXIST. EXAMPLES @ WINDOW SILLS.
CONSTRUCT NEW WINDOW HOODS AND BRACKETS TO CONFORM W/ EXIST'G.
NEW FISH-SCALE SHINGLES
PANEL
SEE HISTORIC PHOTOGRAPHS FOR DESIGN PRECEDENTS
OPEN
HANDICAP RAMP
END PORCH CONSTRUCTION @ INSIDE EDGE OF BUILDING CORNERBOARD
NEW VERT. T&G SIDING W/ VENT. TO MATCH EXTANT ON BLDG.
FRONT PORCH ELEVATION
A
PATTERN OF PORCH FLOORS ROUND @ EDGES
A
PORCH PLAN
NEW CONC. RETAINING WALL AND PORCH FOUNDATION
LEAVE 1/2" GAP BETWEEN NEW WOODEN PORCH FLOOR'G AND CONC. RAMP FOR EXPANSION. RETAIN AND INSTALL PIPE RAILS ALONG RAMP EDGES. PAINT JUNCTIONS BLACK.
SECTION A-A

3.3.7



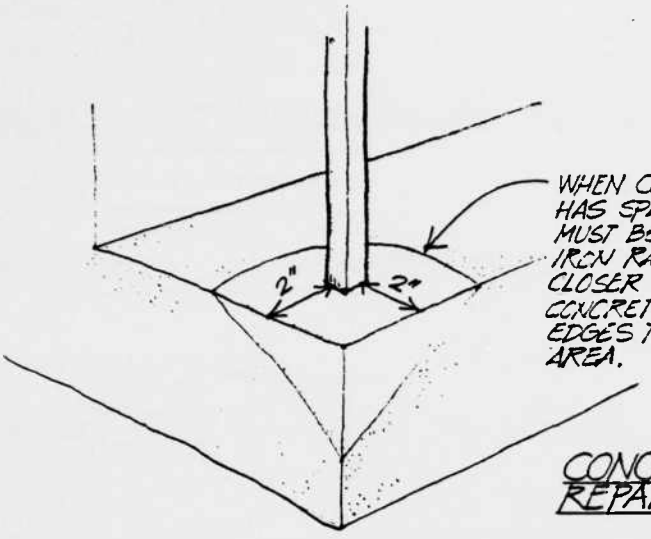
PORCH STEPS

3.3.8



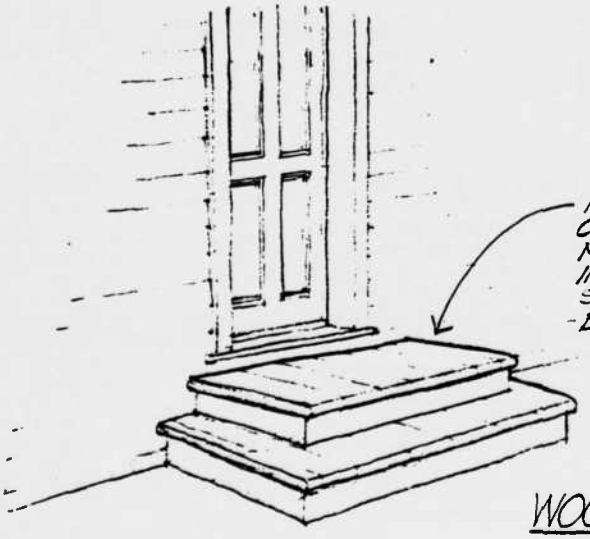
3.3.9 PORCH STEPS

DO NOT SCALE



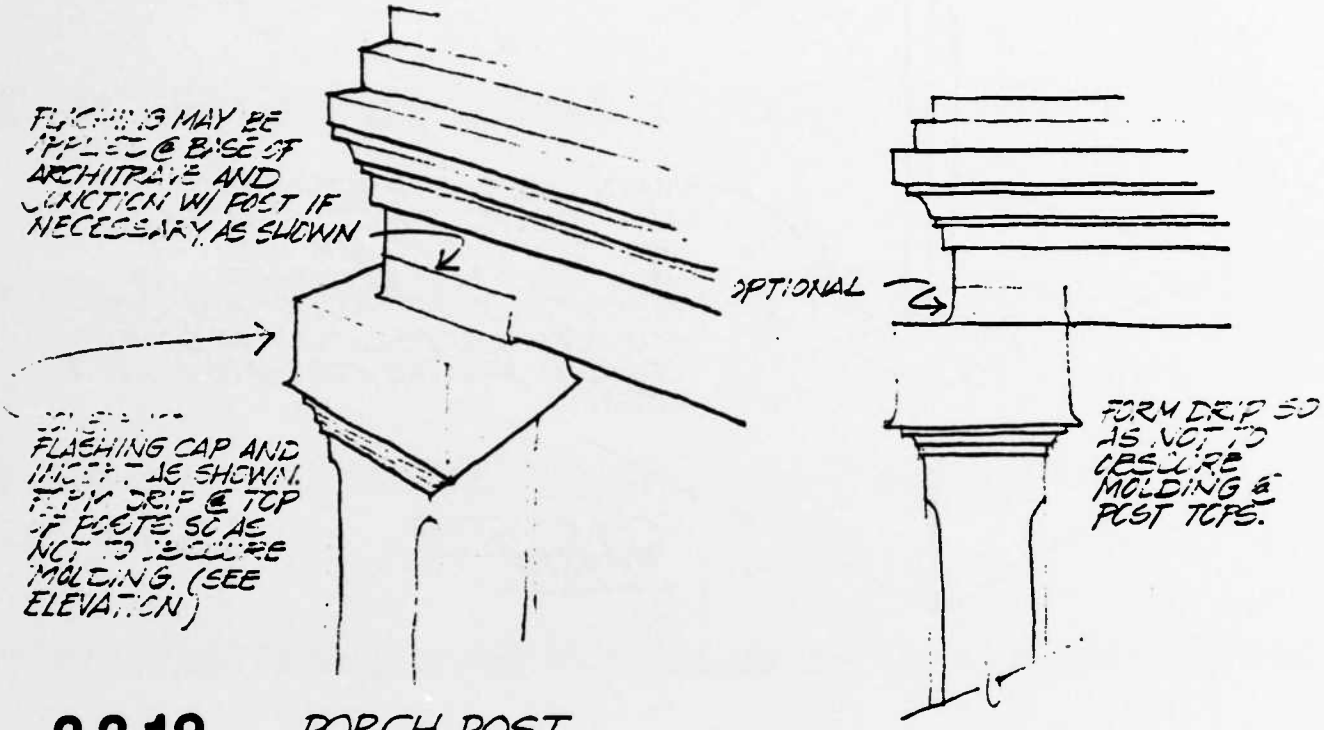
WHEN CONCRETE @ STEP EDGES HAS SPALLED. DEFECTIVE MATERIAL MUST BE REMOVED. NEW WROUGHT IRON RAILS MUST BE INSERTED NO CLOSER TO EDGES THAN 2" MIN. OLD CONCRETE MUST BE CUT OUT W/ SHARP EDGES TO PROVIDE ADEQUATE BOND'G. AREA.

CONC. STEP REPAIR **3.3.10**

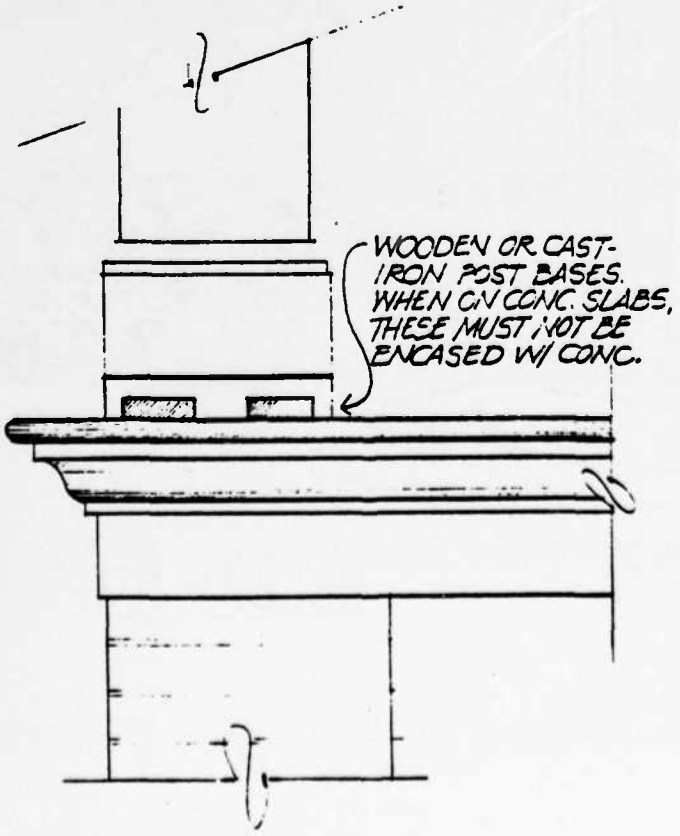


REPLACE EXIST'G STEP-UPS W/ NEW CONSTRUCTION OF VARIETY SHOWN. MATCH ALL DETAILS W/ DETAILS INDICATED FOR NEW PORCH WORK. SLOPE "STEP-UPS" AWAY FROM BUILDING FACADE.

WOODEN STEP **3.3.11**

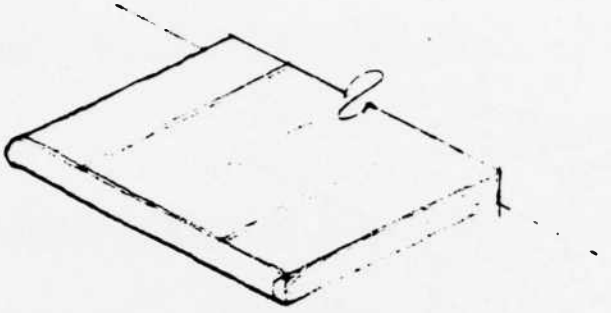


3.3.12 PORCH POST FLASHING

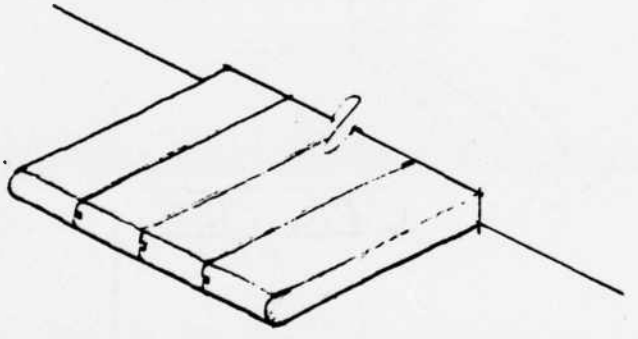


3.3.13

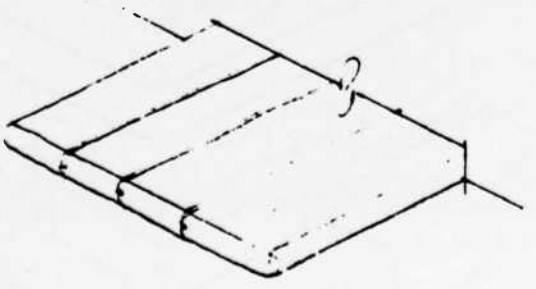
TYPICAL PORCH POST BASE



APPLIED ½ ROUND @ EDGES **3.3.14**

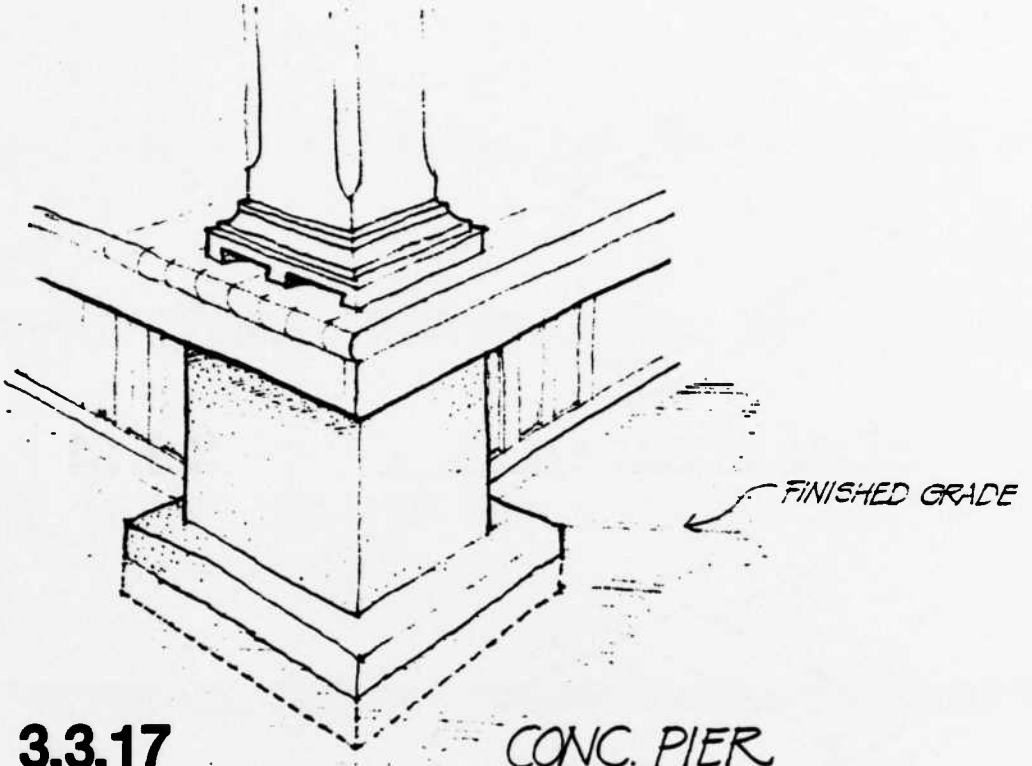


ROUNDED EDGE T&G **3.3.15**

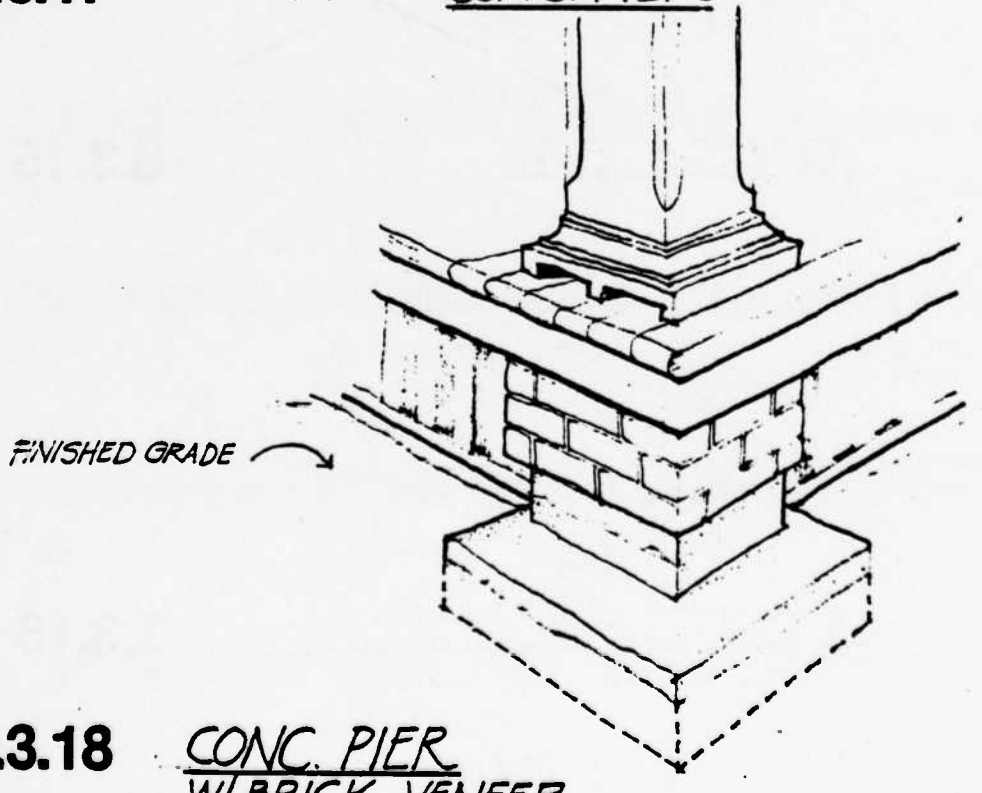


ROUNDED EDGE AND CORNER T&G **3.3.16**

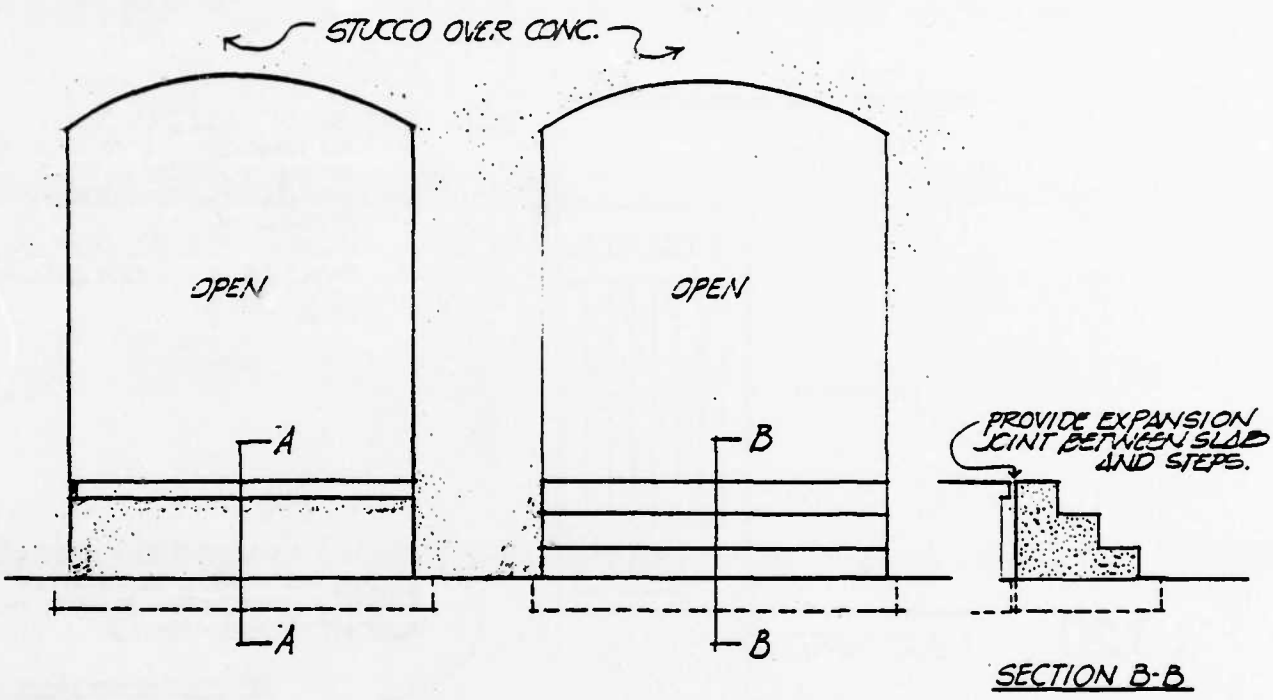
PORCH FLOORING



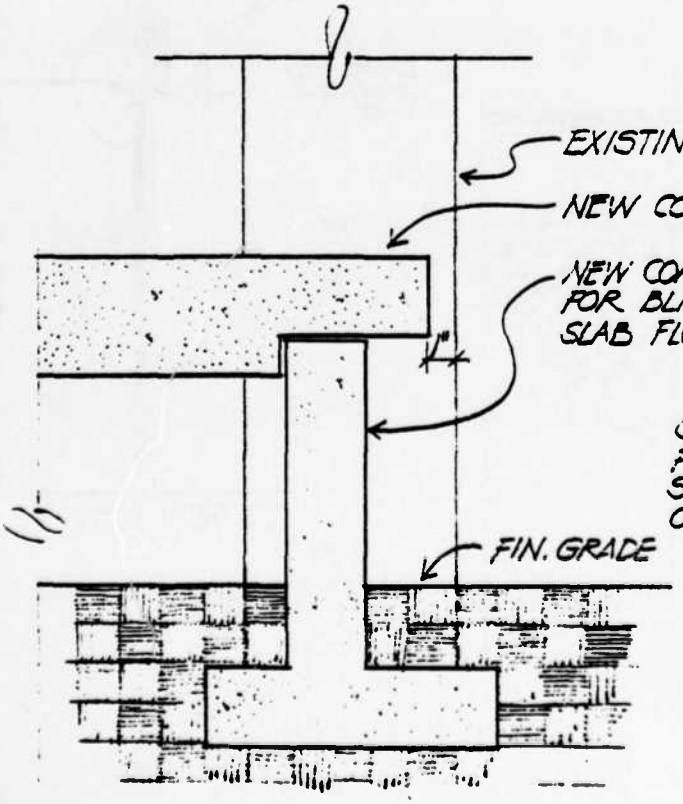
3.3.17 CONC. PIER



3.3.18 CONC. PIER W/ BRICK VENEER



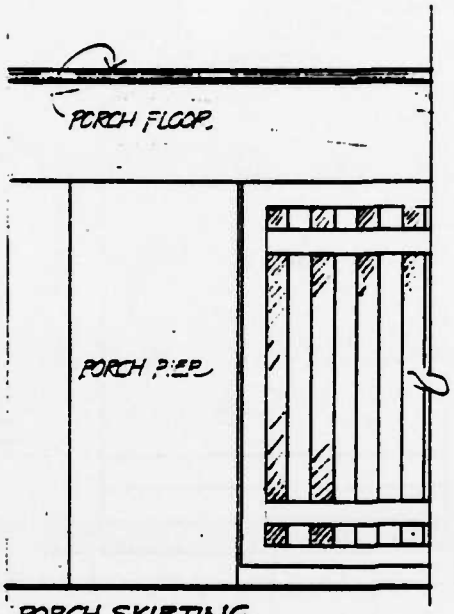
SECTION B-B



CONC. FLOORS SHOULD BE FINISHED TO PROVIDE NON-SLIP SURFACE. PROVIDE ADEQUATE CONTROL AND EXPANSION JOINTS

SECTION A-A

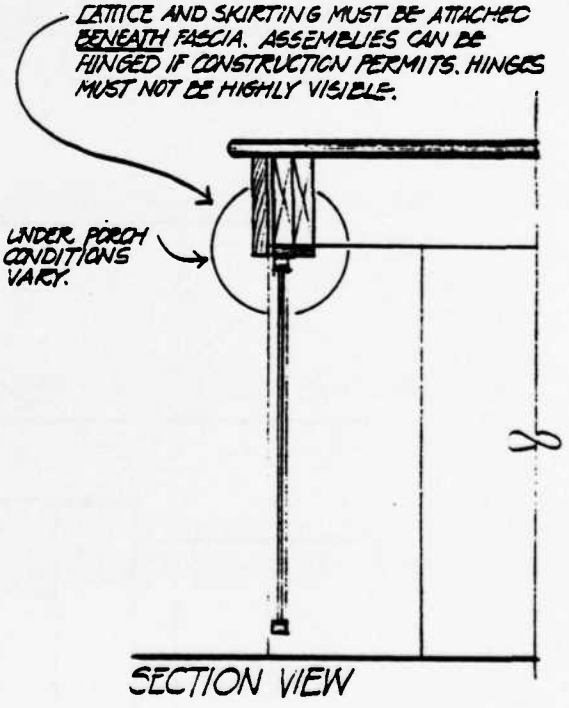
3.3.19



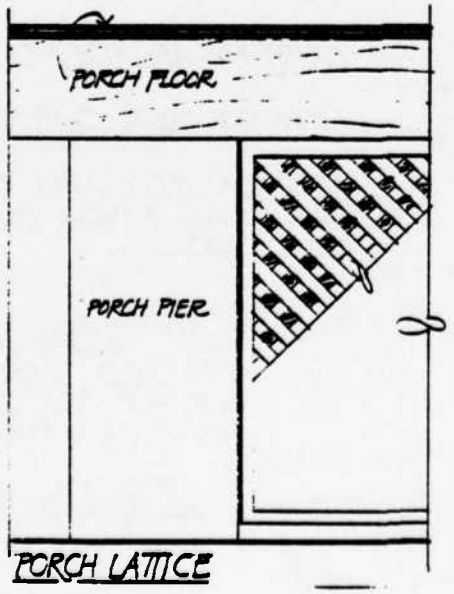
NOTE: DO NOT SCALE DRAWINGS.
- ALL DIMENSIONS TO BE TAKEN FROM EXTANT EXAMPLES IN FIELD.
- DIMENSIONS MAY VARY FROM BUILDING TO BUILDING.
- SKIRTING OR LATTICE MUST BE OF SINGLE DESIGN ON EACH BUILDING.

3.3.20

PORCH SKIRTING



SECTION VIEW

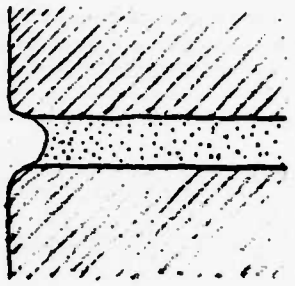


3.3.21

PORCH LATTICE

RECESSED OR TOOLED

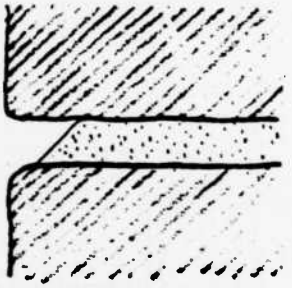
THE IDEAL POINTING STYLE
LESS SUSCEPTIBLE TO DAMAGE



3.4.1

STRUCK W/ DRIP

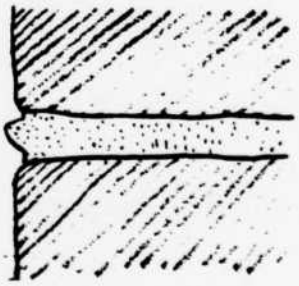
DONE W/ POINT OF A TROWEL



3.4.2

RAISED

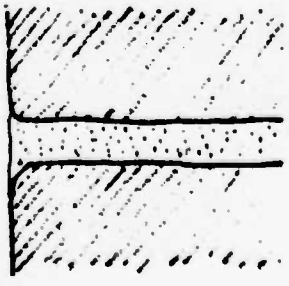
COMMONLY SEEN ON STONE.



3.4.3

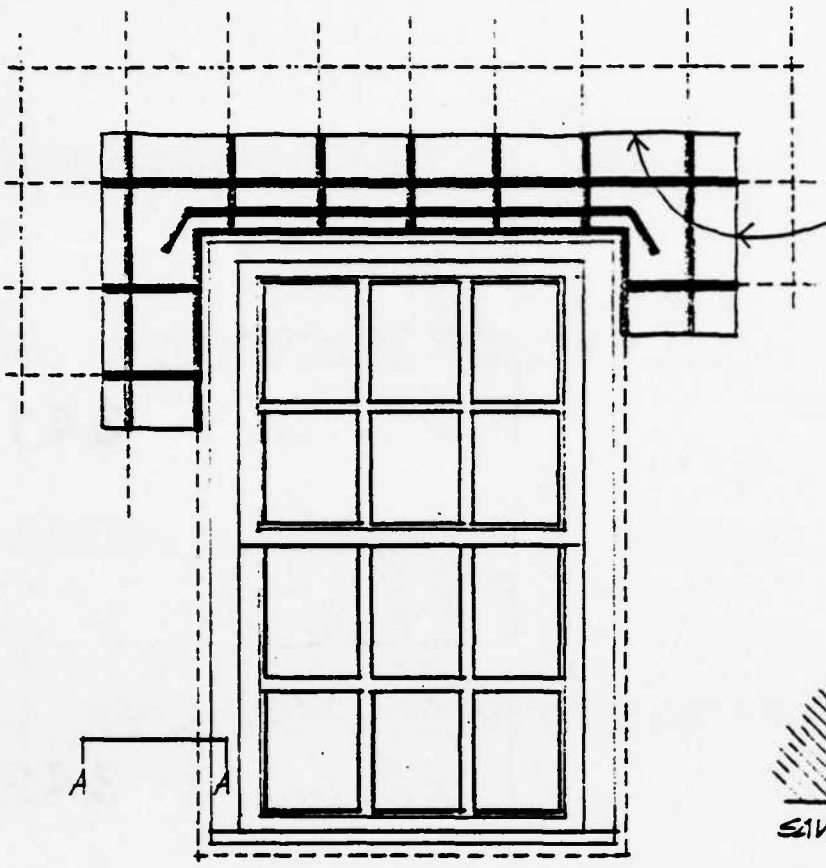
FEATHERED OR FLUSH

EDGES OF MORTAR TEND TO BREAK OFF
TAKING BRICK EDGES AS WELL.
NEVER RECOMMENDED



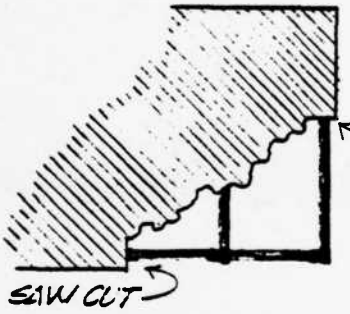
3.4.4

COMMONLY SEEN MORTAR JOINTS IN BRICK



SAW-CUT CONCRETE CUT TO MAINTAIN SHARP EDGE @ SURFACE

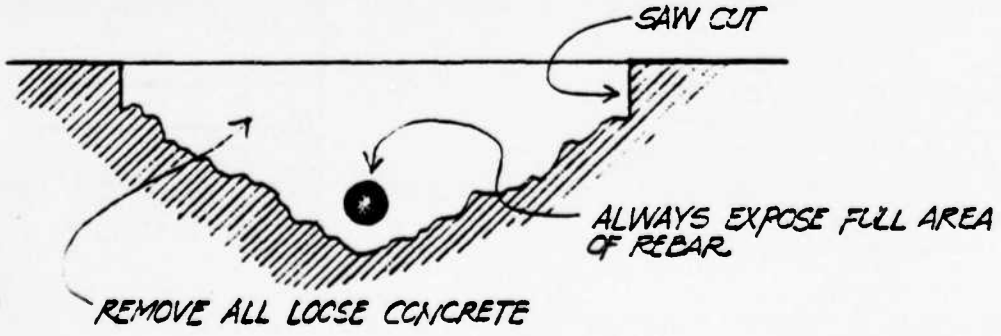
REMOVE DETERIORATED CONCRETE ONLY.



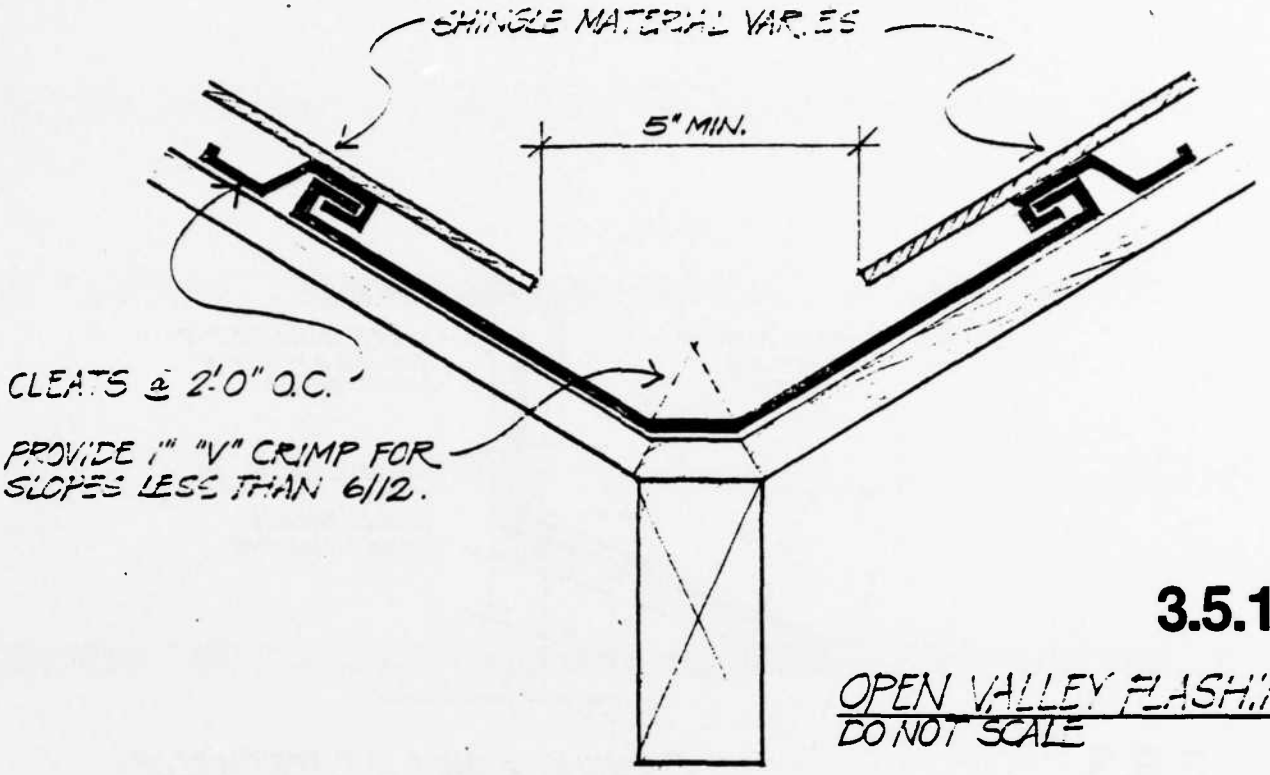
SAW CUT TO MAKE SHARP EDGE @ SURFACE.

REMOVE ALL LOOSE AND DETERIORATED CONCRETE AROUND CRACK OR SPALL W/ SMALL OR LIGHT HAND HELD HAMMERS.
EXPOSE FULL SURFACE OF ANY REBARS.

SECTION A-A

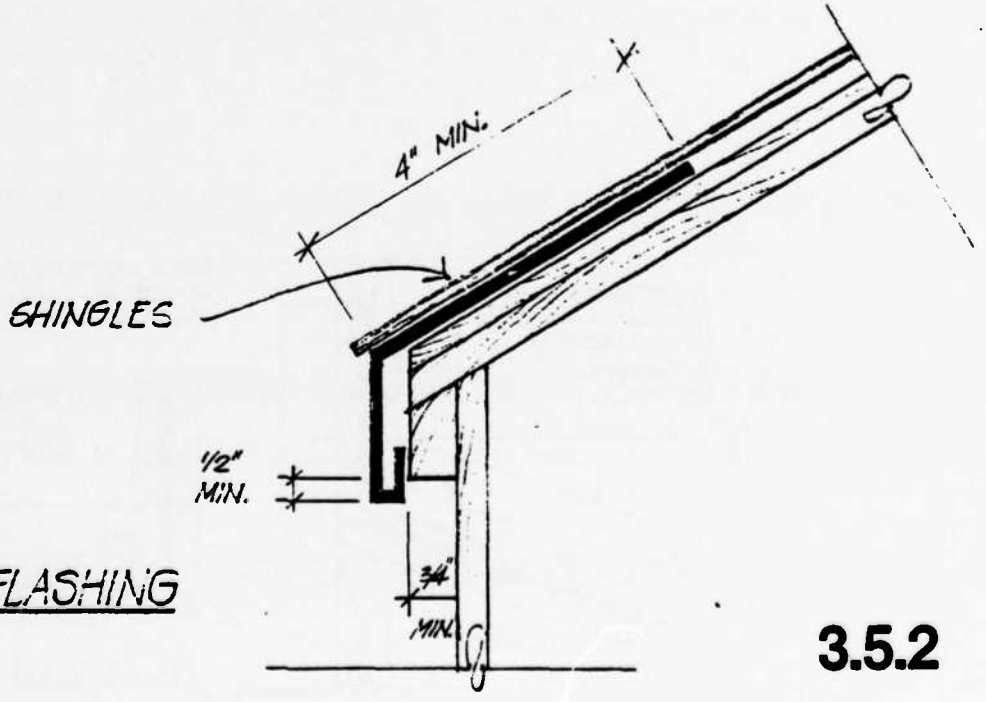


3.4.5



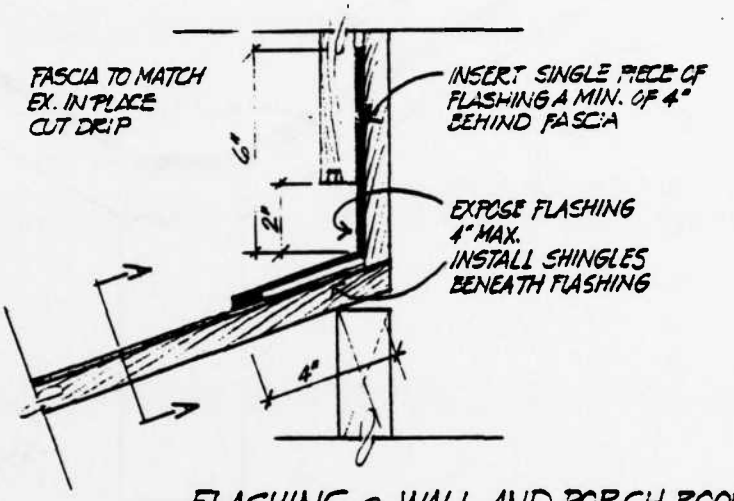
3.5.1

OPEN VALLEY FLASHING
DO NOT SCALE



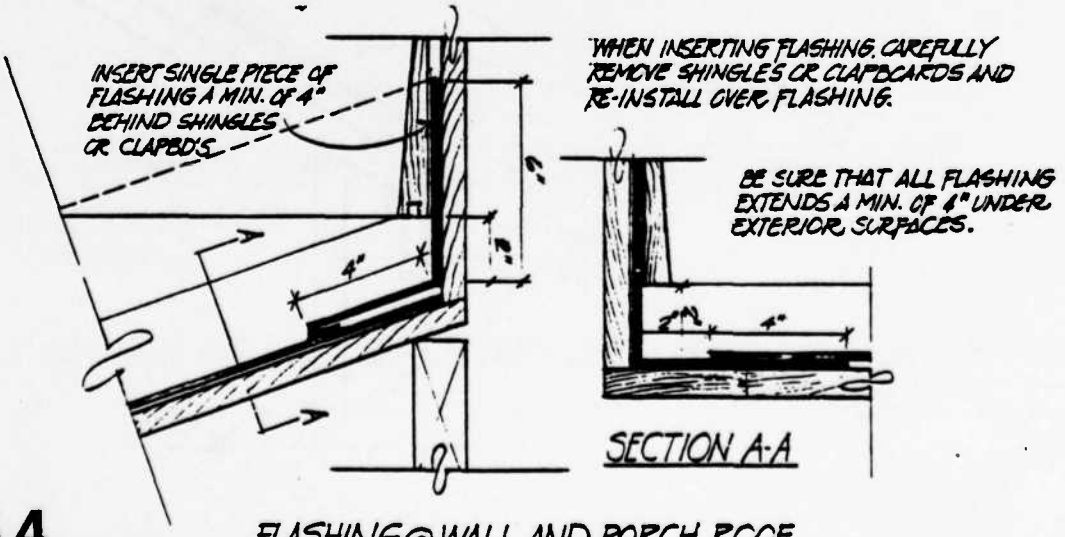
ROOF EDGE FLASHING
DO NOT SCALE

3.5.2



3.5.3

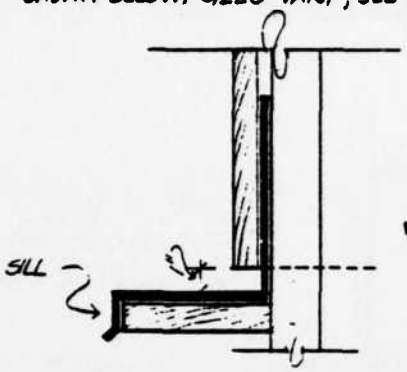
FLASHING @ WALL AND PORCH ROOF
DO NOT SCALE



3.5.4

FLASHING @ WALL AND PORCH ROOF
DO NOT SCALE

WHEN PILASTER/CORNER BOARDS HAVE DETERIORATED, CONSTRUCT NEW TO MATCH ORIGINAL AND FLASH AS SHOWN BELOW. SILLS VARY; SEE SECTION A-A.



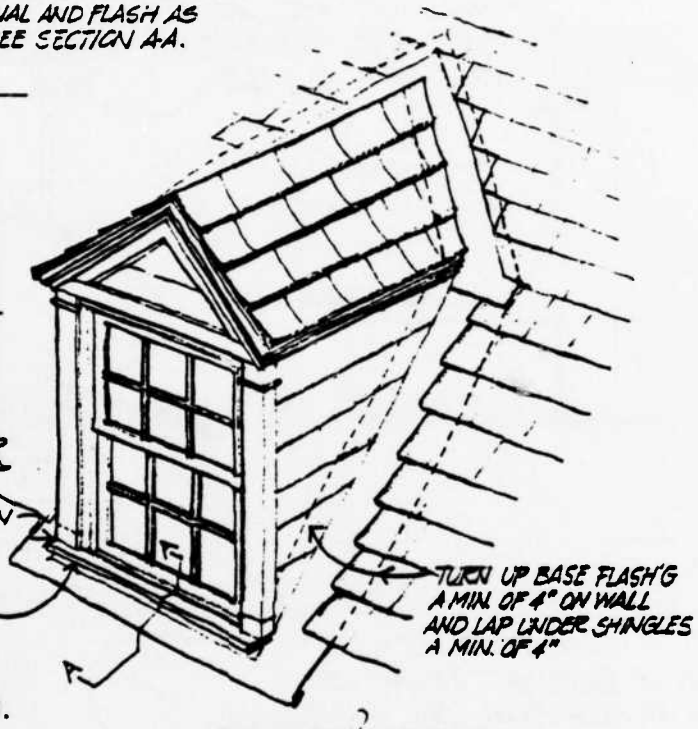
DETAIL, FLASH'G @ PILASTER

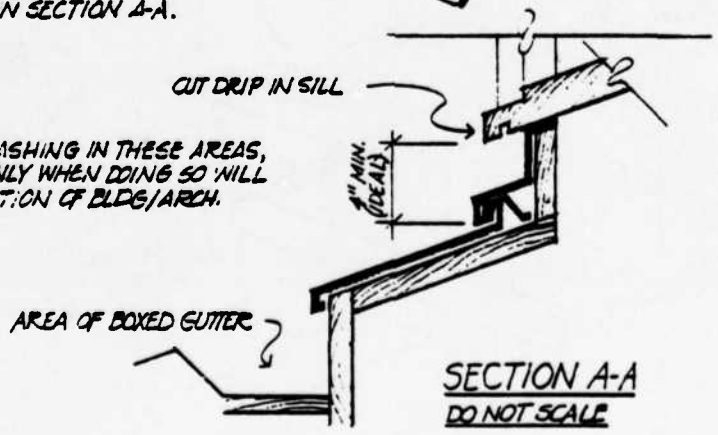
DO NOT SCALE

INSTALL FLASHING BENEATH WOODEN CORNER BOARDS/ PILASTER BASES SEE DETAIL ABOVE

CUT DRIP AT SILL

NOTE: WHEN GUTTERS ARE BOXED AND SILL IS WITHIN 12", FLASH TO GUTTER AS SHOWN IN SECTION A-A.



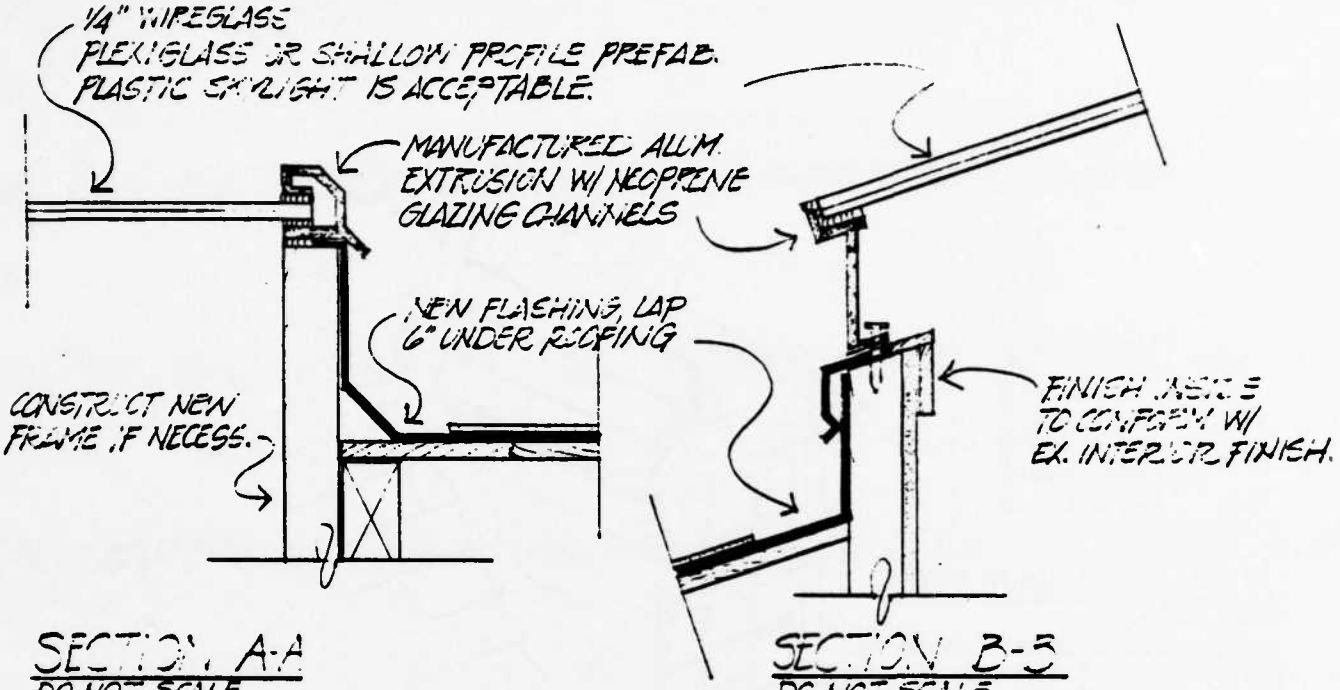


NOTE:
WHEN APPLYING FLASHING IN THESE AREAS, FLASH AS SHOWN ONLY WHEN DOING SO WILL NOT CAUSE DESTRUCTION OF BLDG/ARCH. ELEMENTS.

SECTION A-A

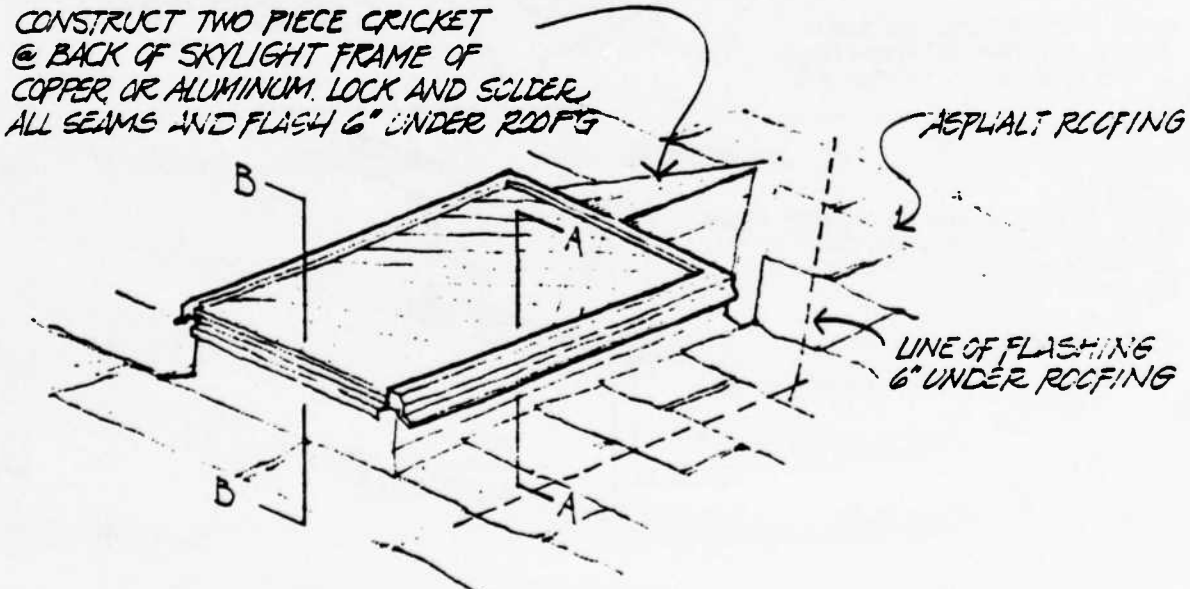
DO NOT SCALE

3.5.5



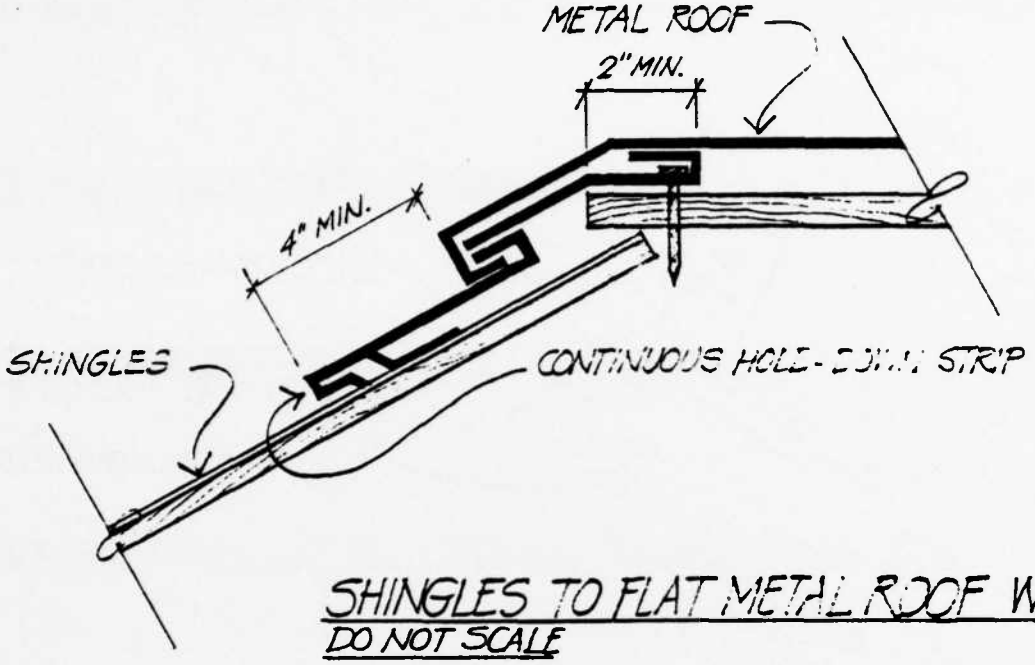
SECTION A-A
DO NOT SCALE

SECTION B-B
DO NOT SCALE

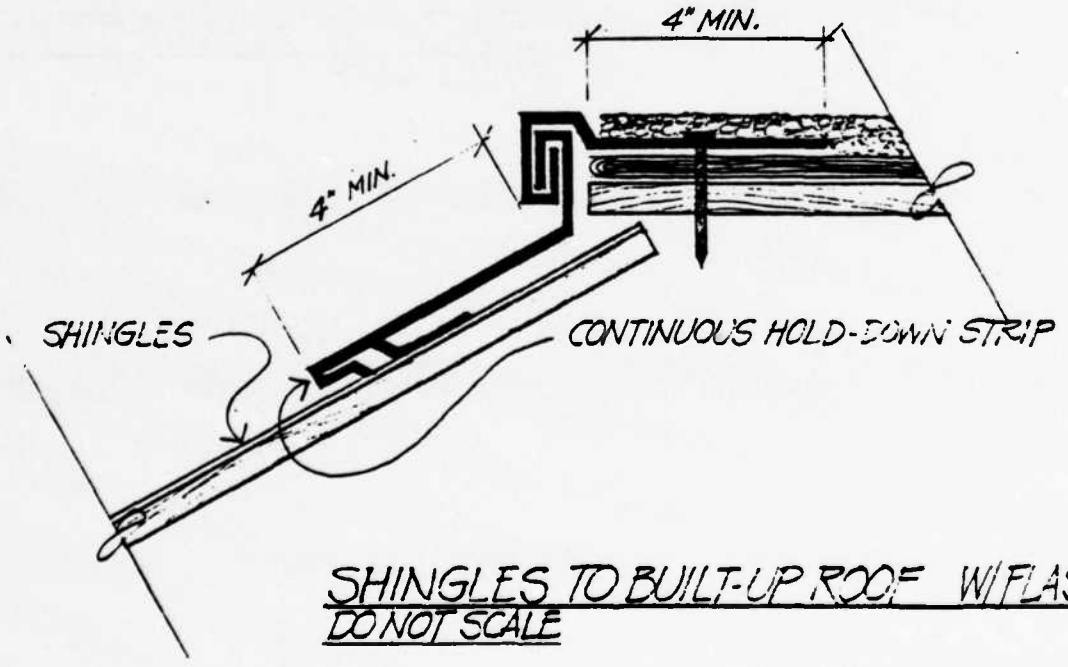


AXONOMETRIC VIEW OF SKYLIGHT

3.5.6

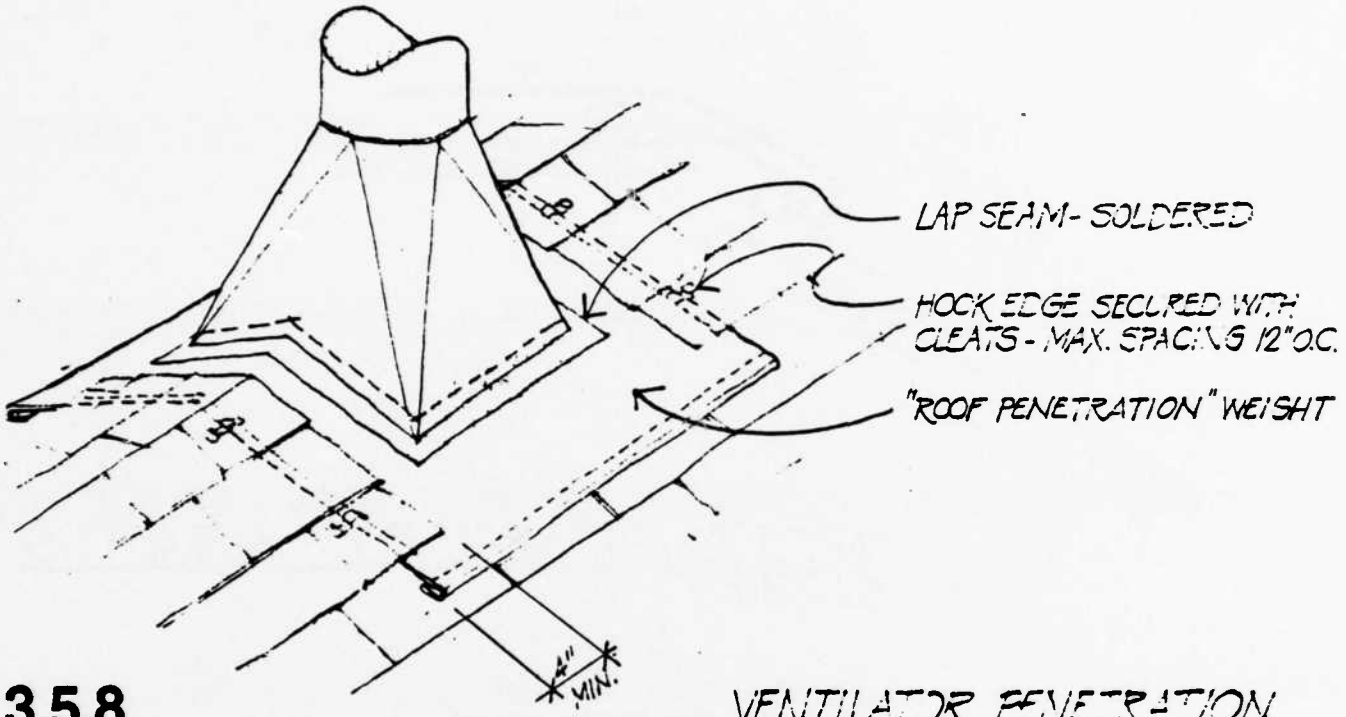


SHINGLES TO FLAT METAL ROOF W/FLASHING
DO NOT SCALE



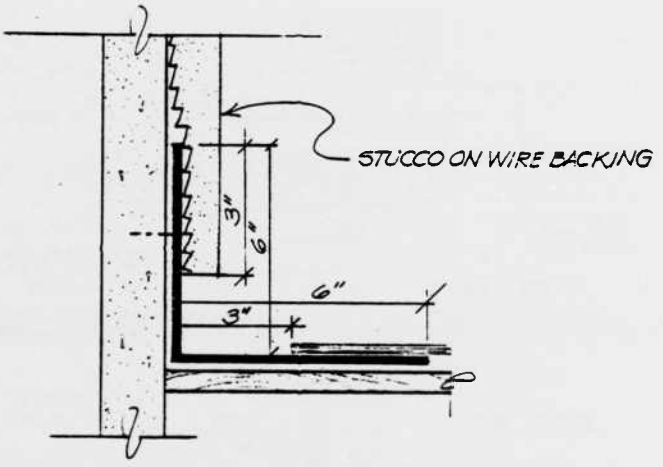
SHINGLES TO BUILT-UP ROOF W/FLASHING
DO NOT SCALE

3.5.7



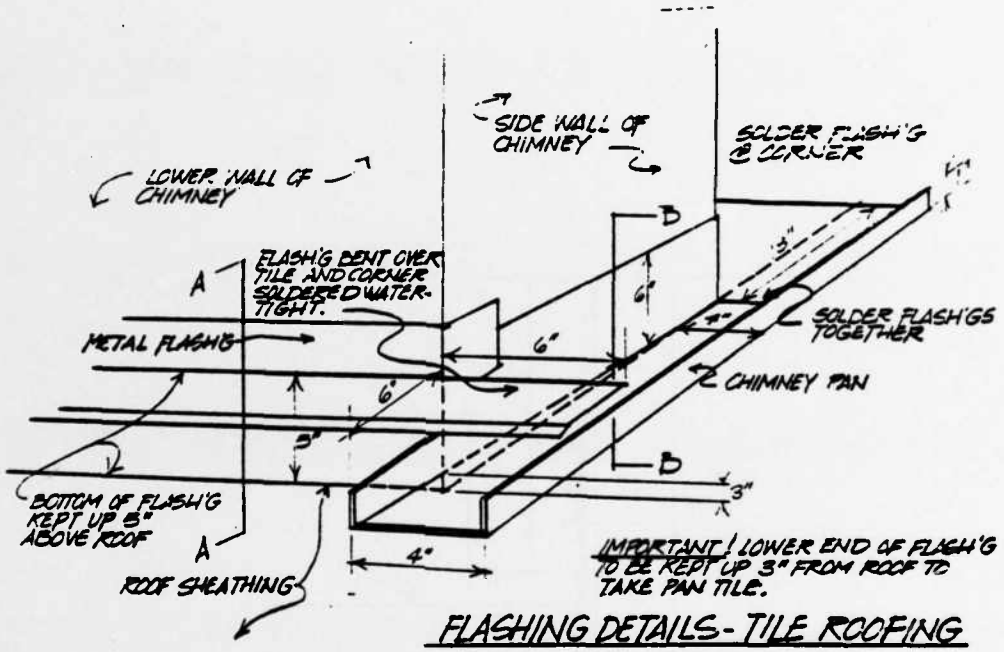
3.5.8

VENTILATOR PENETRATION
STYLES VARY

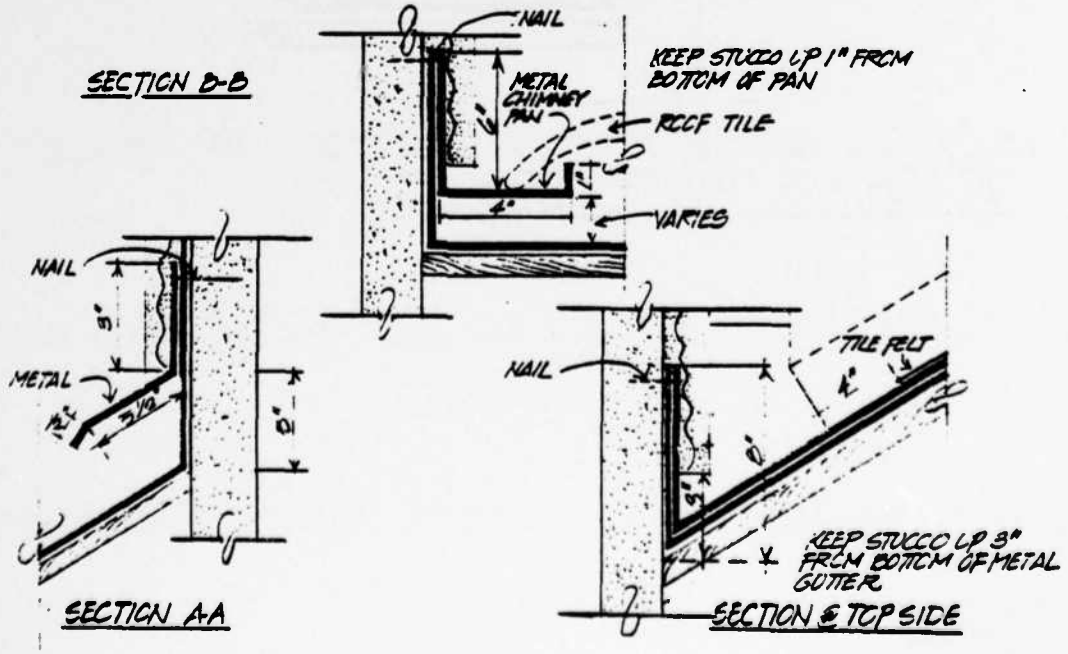


3.5.9

FLASHING UNDER STUCCO

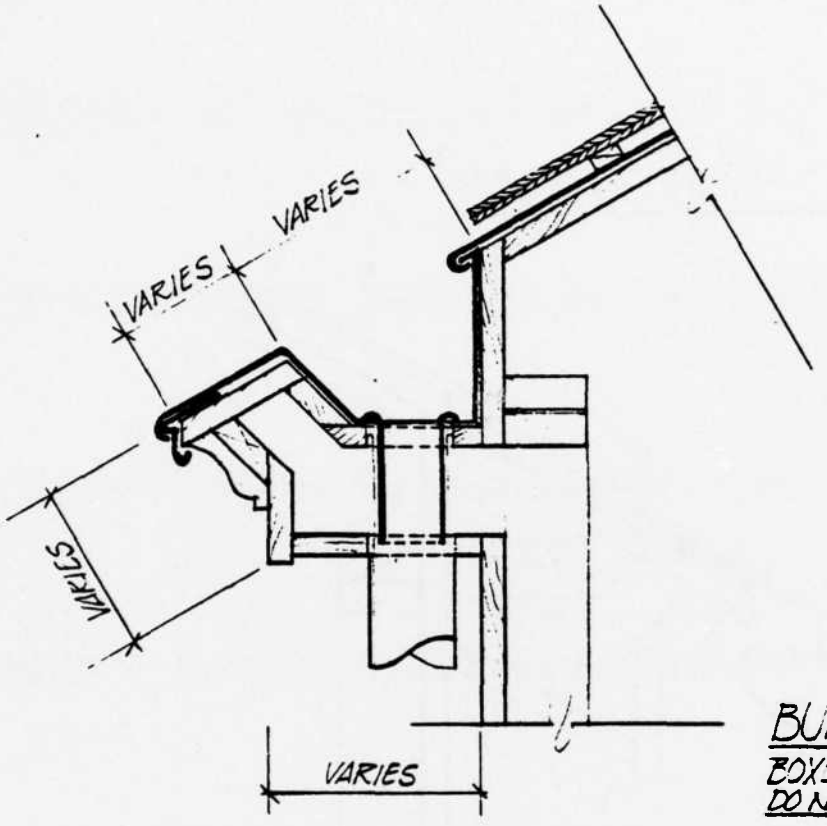


FLASHING DETAILS - TILE ROOFING



3.5.10

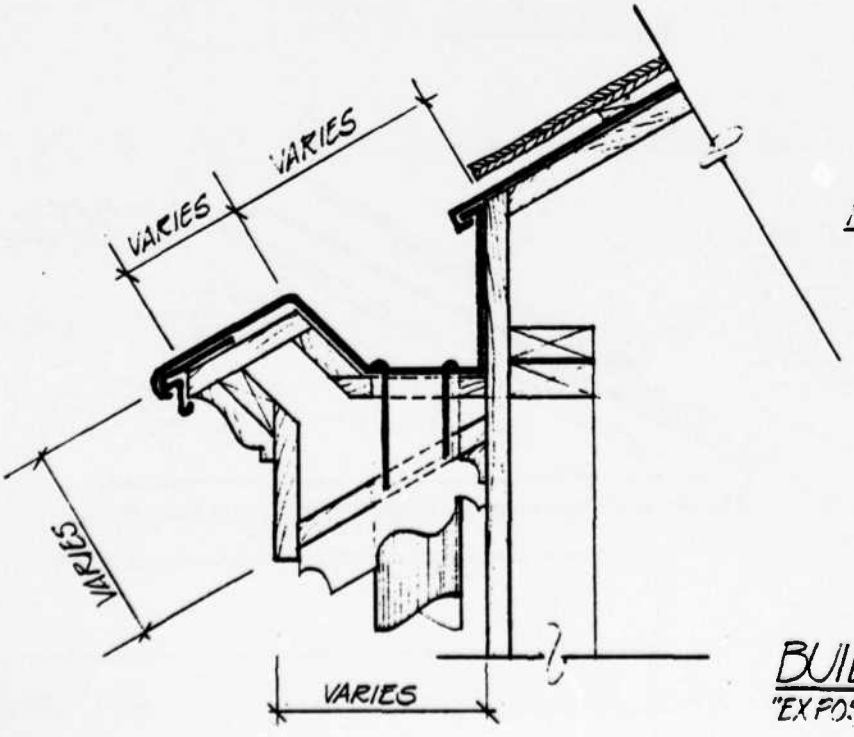
FLASHING DETAILS - TILE @ CHIMNEYS AND ESPADANAS



3.5.11

BUILT-IN GUTTER TYPE 1

BOXED SOFFIT
DO NOT SCALE



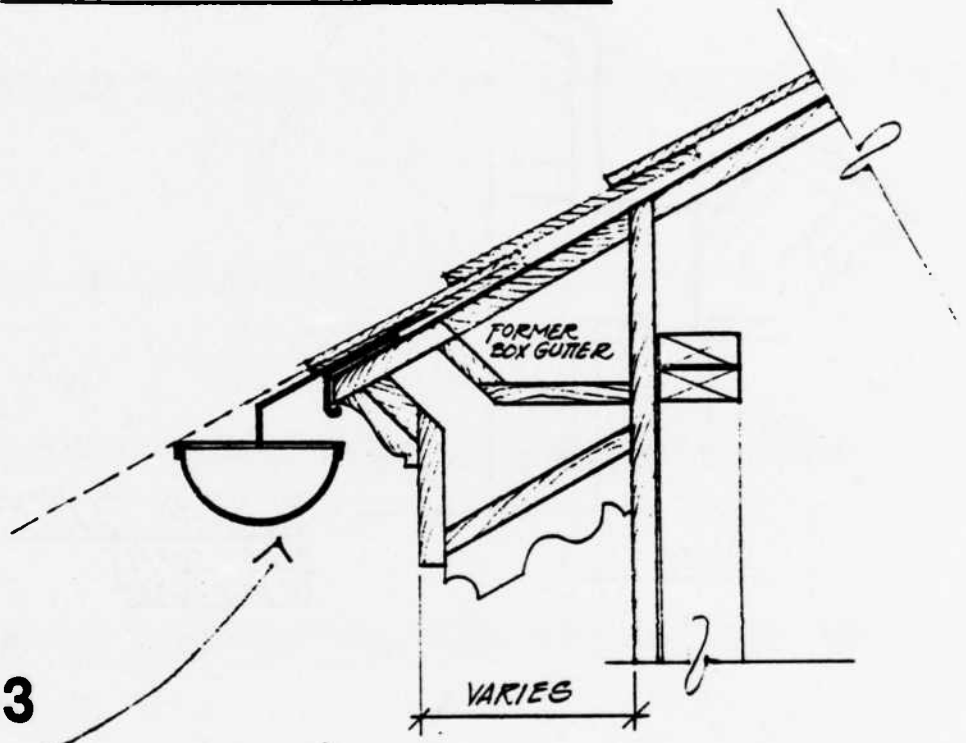
NOTE: ALL FLASHING DETAILS ARE TYPICAL.

3.5.12

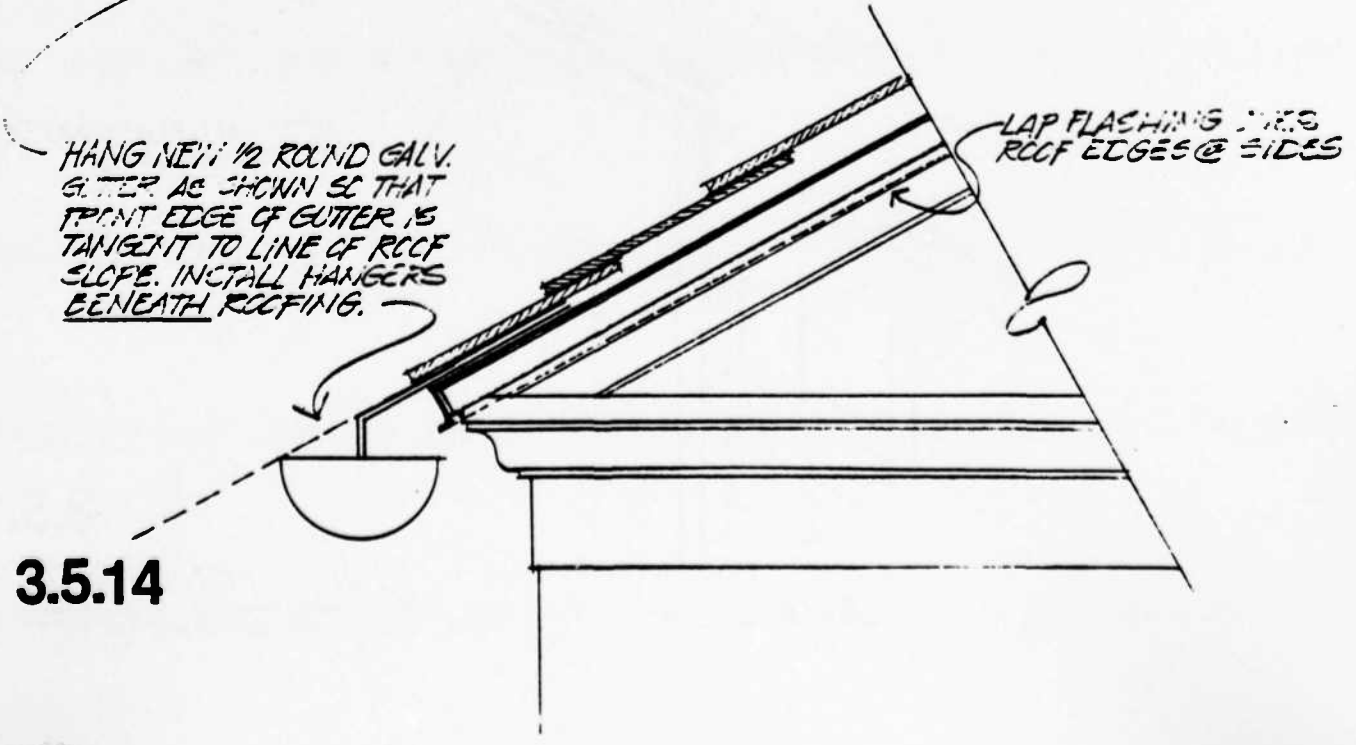
BUILT-IN GUTTER TYPE 2

"EXPOSED RAFTERS" @ SOFFIT

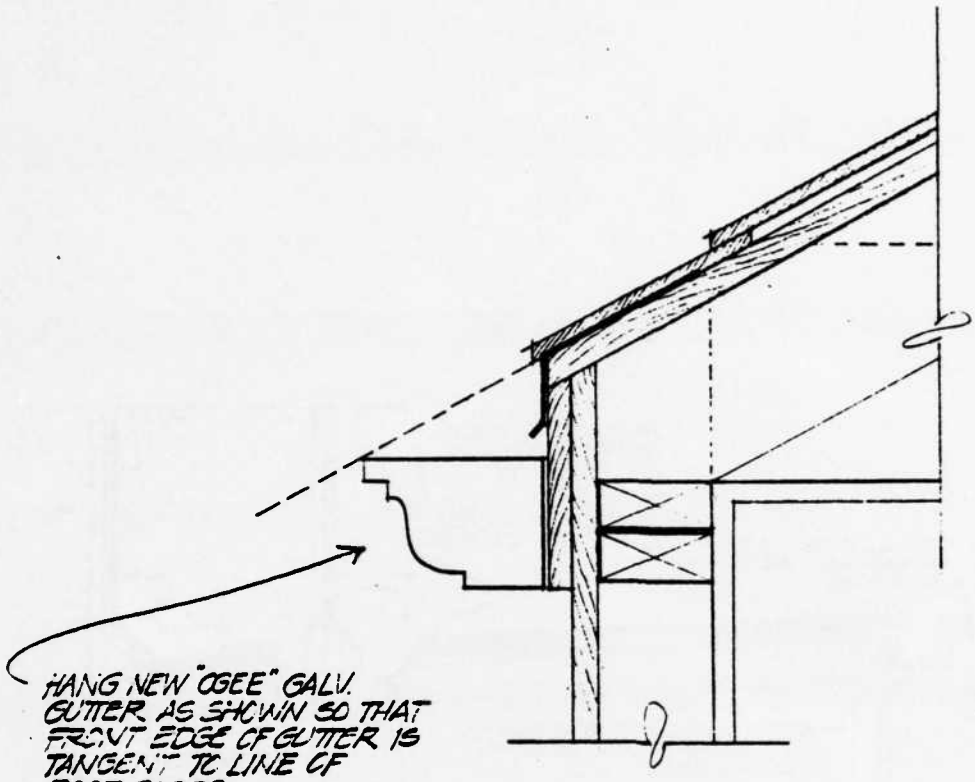
HALF ROUND HUNG GUTTERS



3.5.13

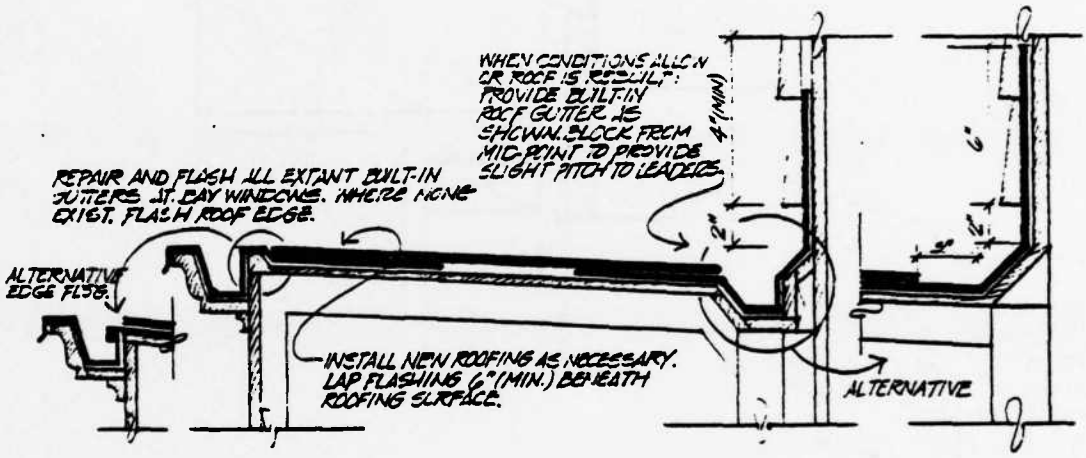


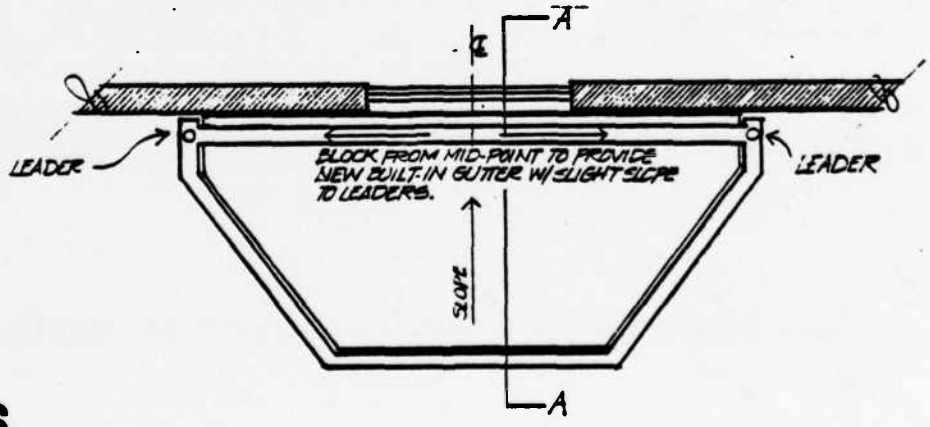
3.5.14



OGEE GUTTER

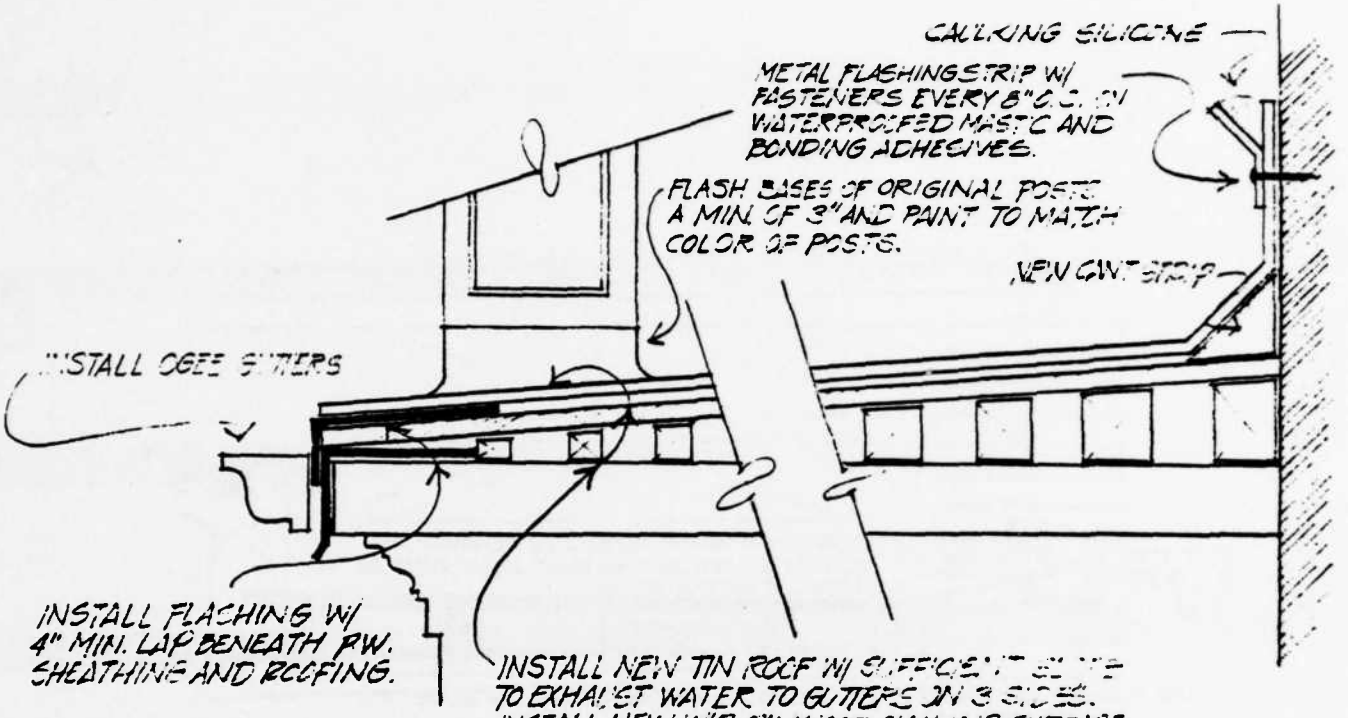
3.5.15



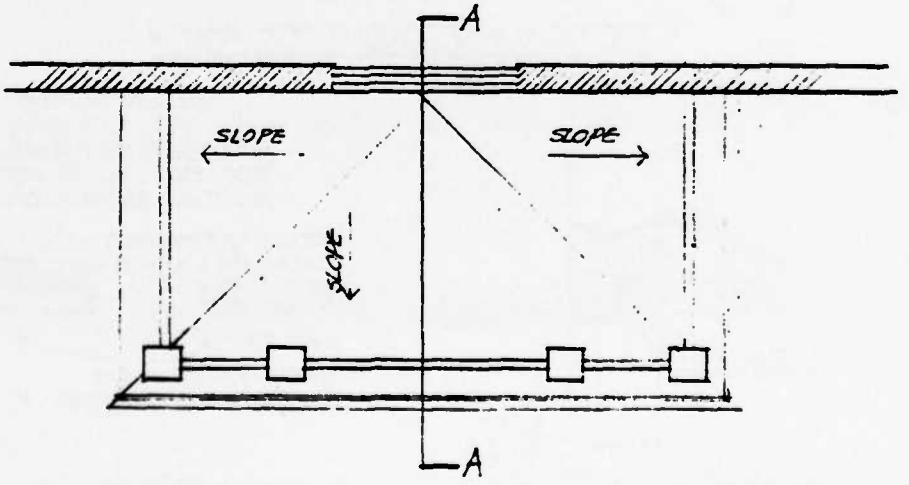


3.5.16

BAY WINDOW DRAINAGE

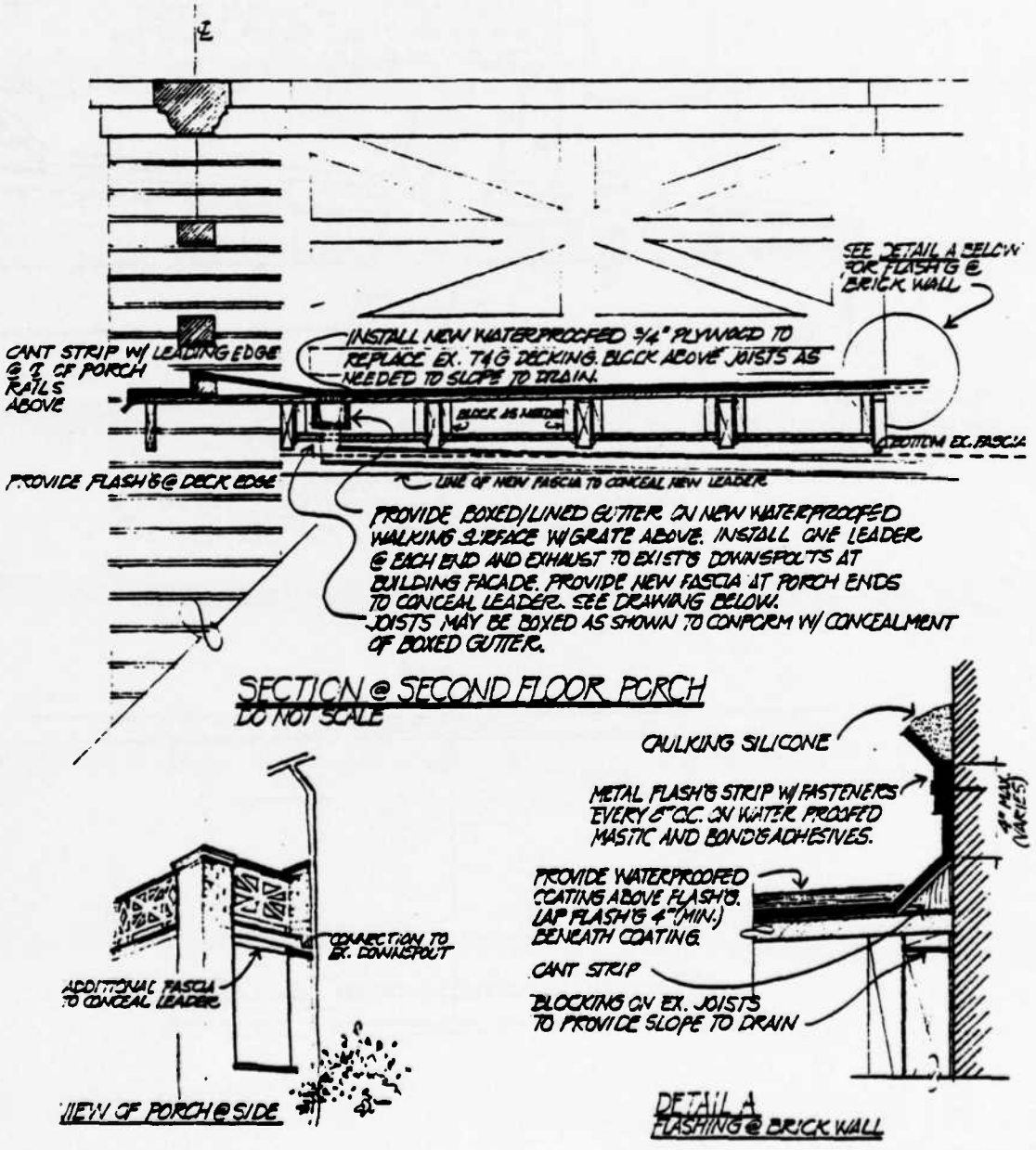


SECTION A-A PORCH ROOF
DO NOT SCALE



PORCH ROOF PLAN W/ SLOPES
DO NOT SCALE

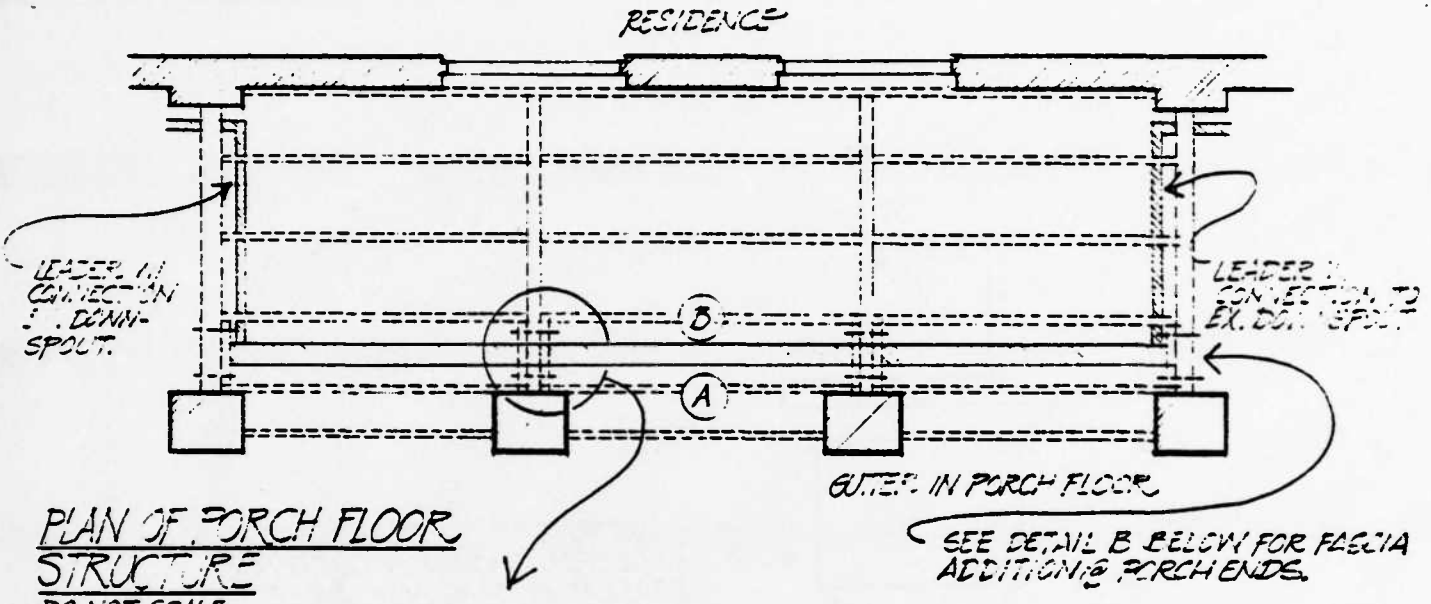
3.5.17



PORCH ROOF DRAINAGE

3.5.18

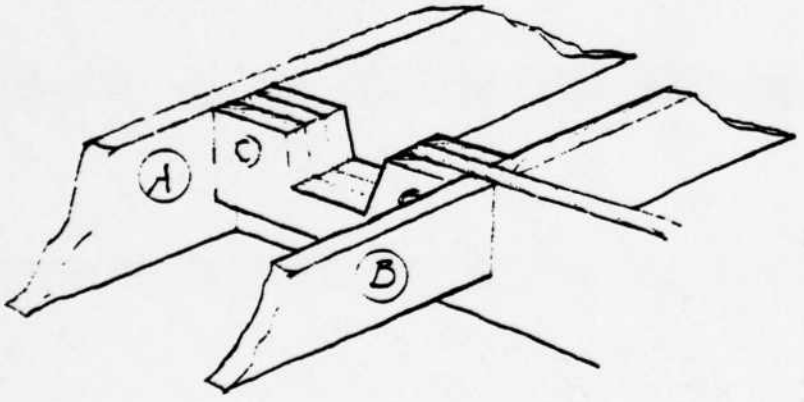
PORCH ROOF DRAINAGE, cont.



SEE DETAIL B BELOW FOR FASCIA ADDITION @ PORCH ENDS.

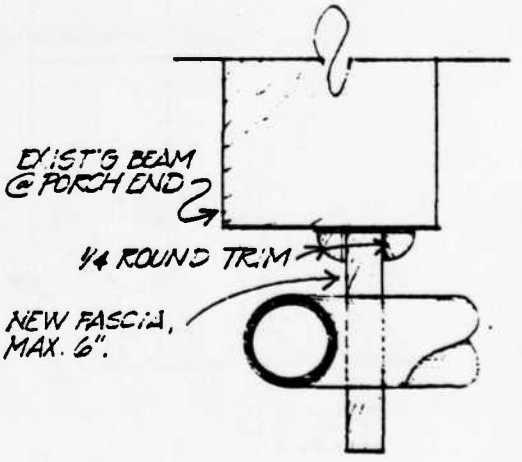
PLAN OF PORCH FLOOR STRUCTURE

DO NOT SCALE



DETAIL A

JOISTS @ OUTSIDE EDGE OF PORCH STRUCTURE MUST BE REINFORCED AND BOLTED AS SHOWN BETWEEN JOISTS A & B. A MIN. OF 2" UNCUT AREA MUST REMAIN BELOW CUT FOR GUTTER.

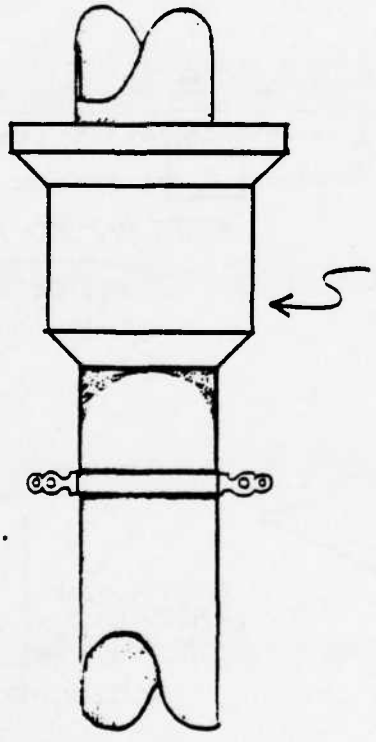


DETAIL B; SECTION

FASCIA @ PORCH ENDS

DO NOT SCALE

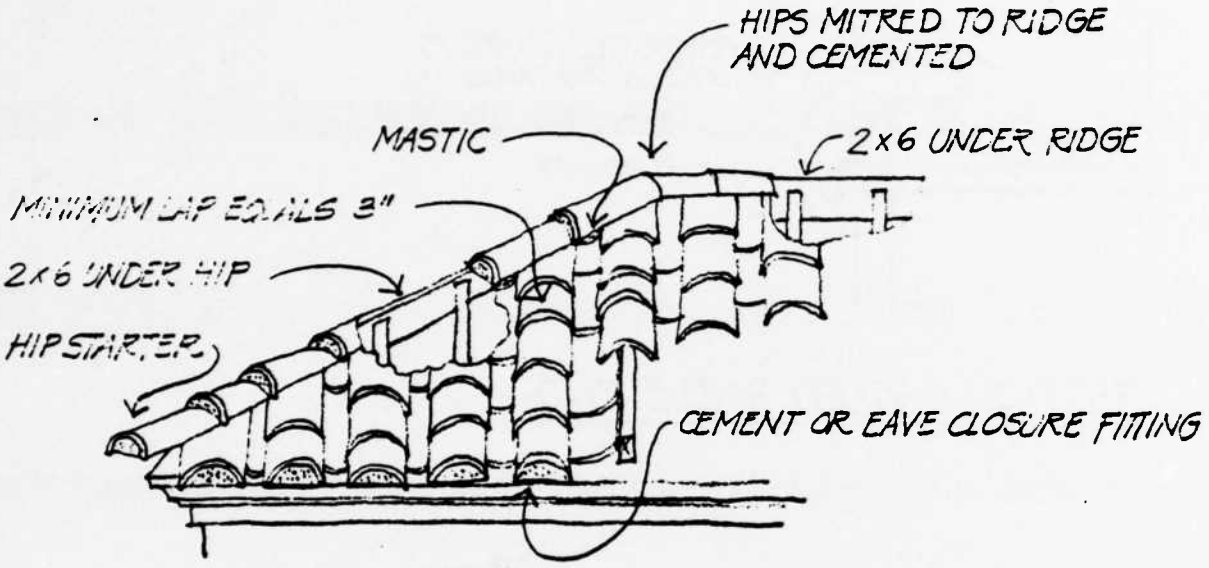
3.5.18



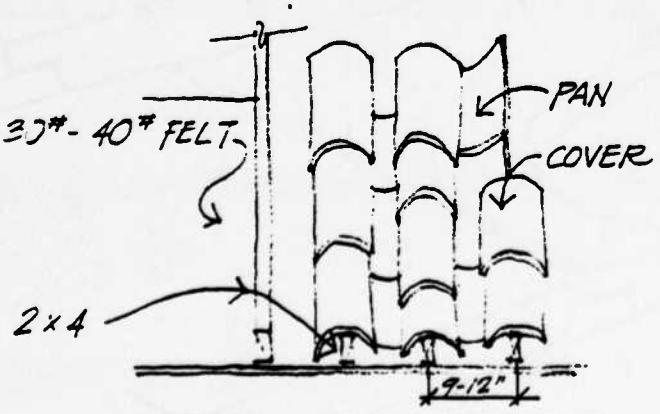
CONSTRUCT ALL LEADER HEADS IN DESIGN SHOWN IN COPPER. LEADER STRAPS MAY BE OF AVAILABLE DESIGNS.

LEADER HEAD

3.5.19



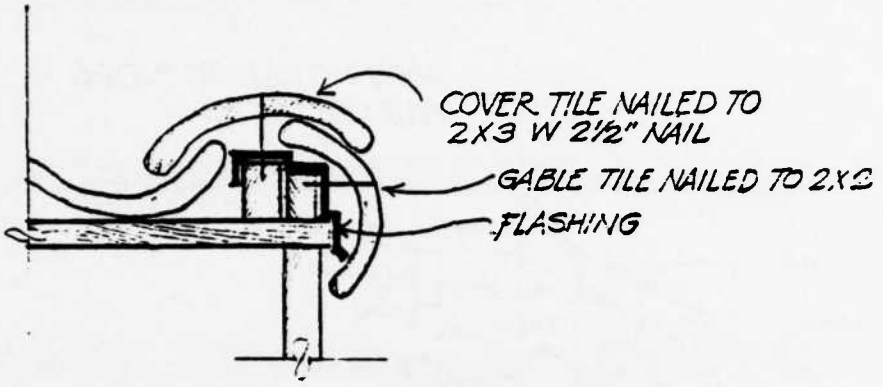
ELEV. OF HIP WITH TILE ROOFING
(TYPICAL)



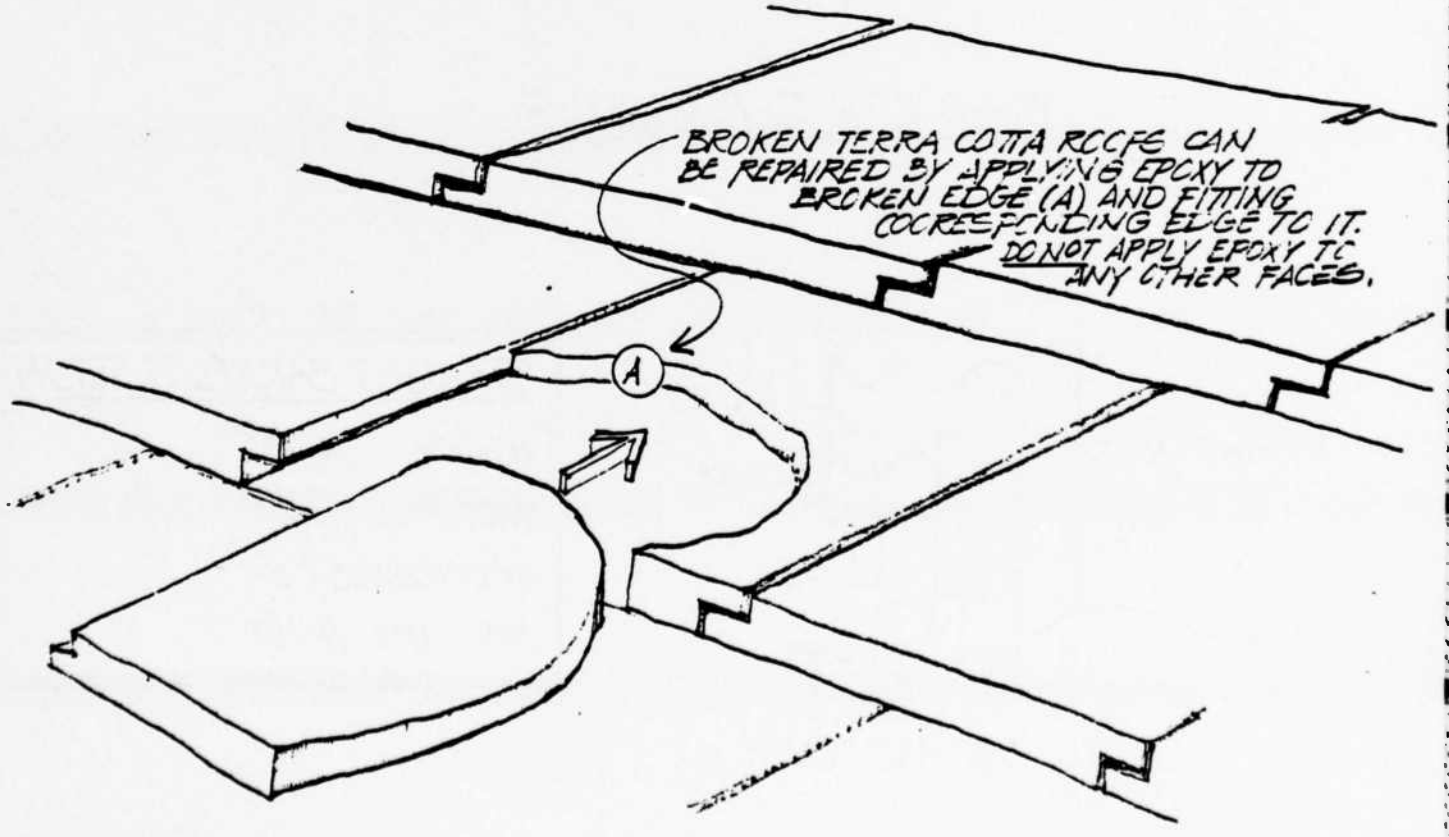
DETAIL, PAN AND COVER
(TYPICAL)

STRAIGHT BARREL MISSION	
LENGTH:	14-18"
WIDTH:	8"
AV. EXPOSURE:	3"
MIN. LAP:	11-15"

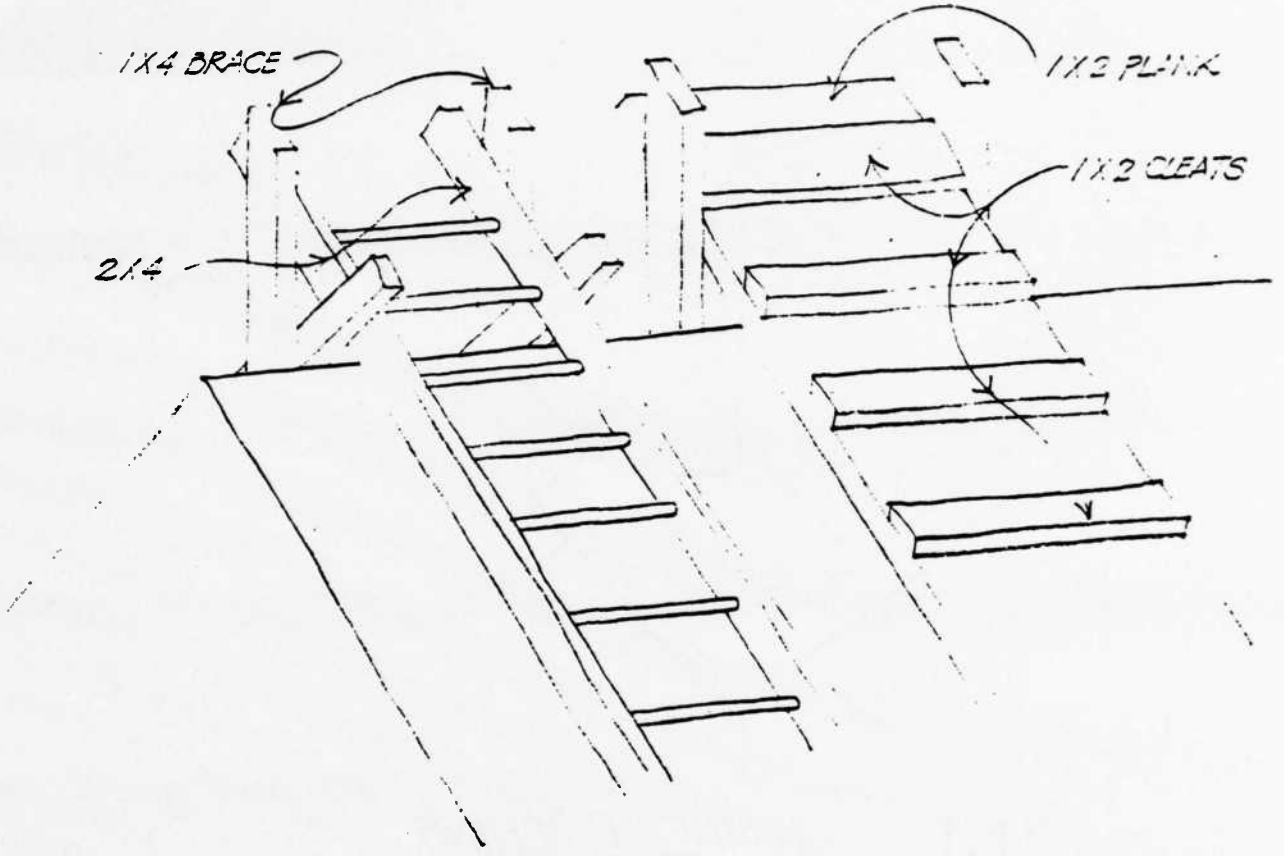
3.5.20



3.5.21 SECTION @ TILED GABLE END

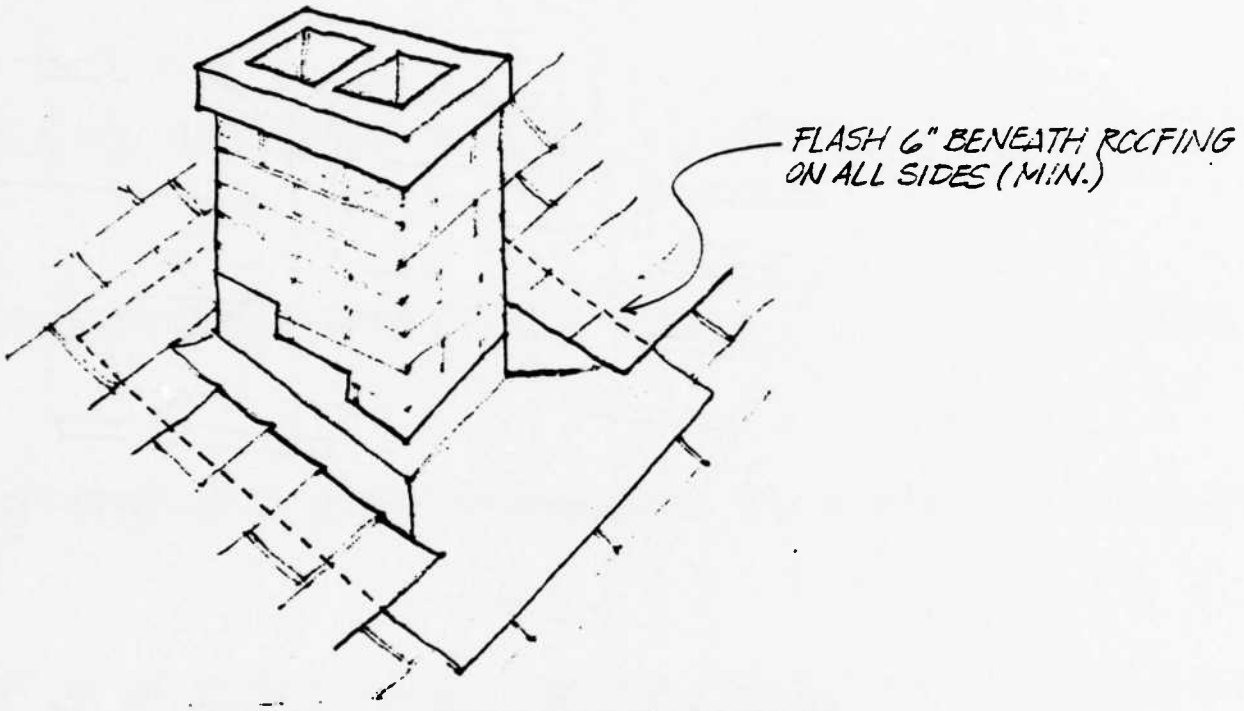


3.5.22 TILE ROOF REPAIRS

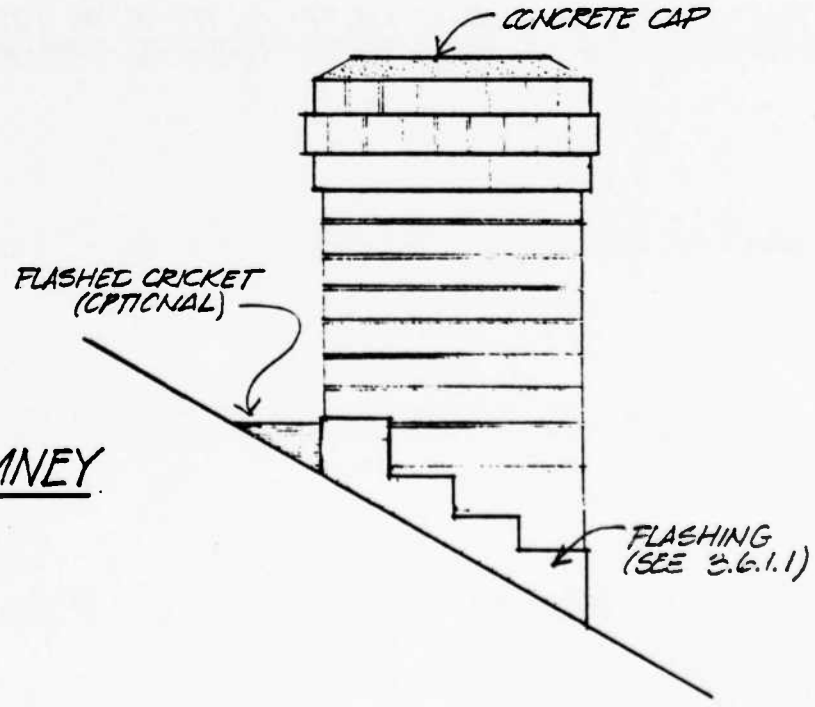


TWO LADDER TYPES USED IN TILE/SLATE ROOFING REPAIRS

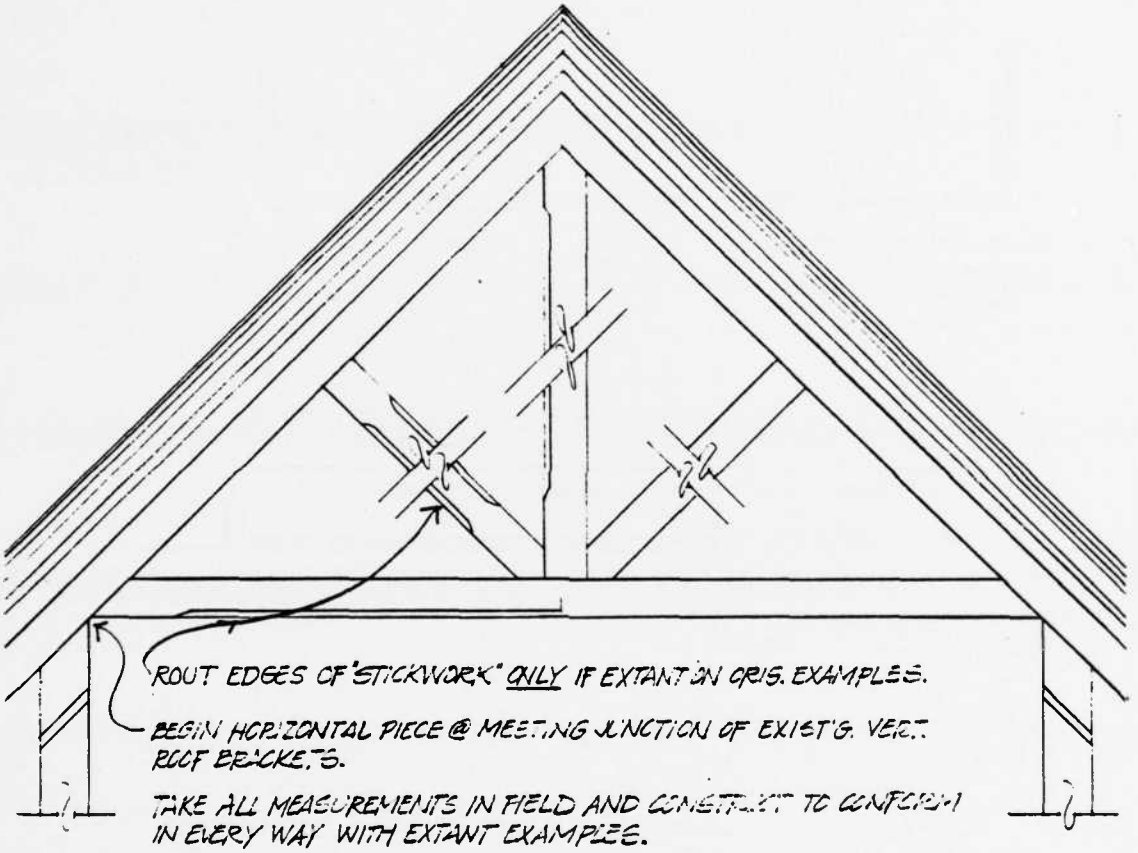
3.5.23



3.6.1 CHIMNEY FLASHING



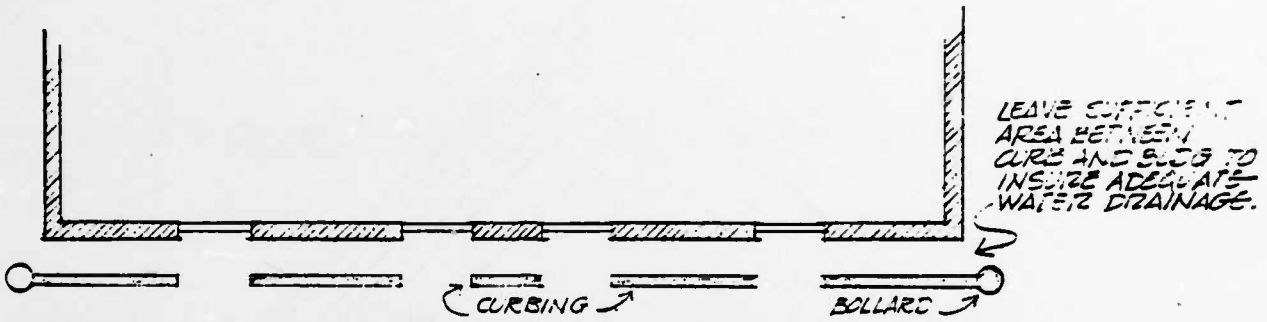
3.6.2 NEW CHIMNEY



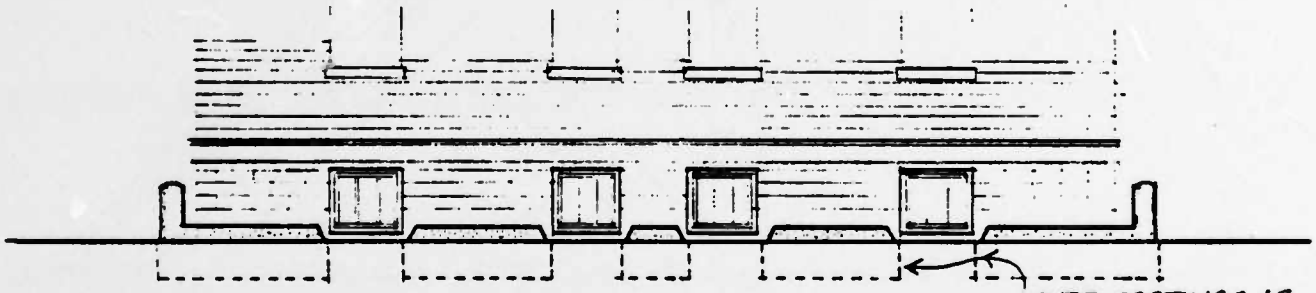
GABLE STICKWORK DETAIL

DO NOT SCALE

3.7.1

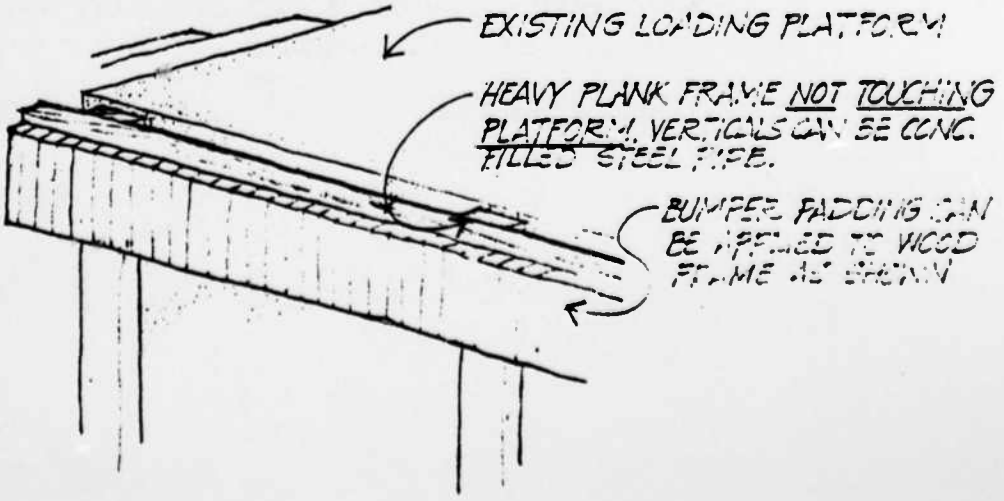


PLAN



PARKING BUMPER/CURB

DO NOT SCALE



DOCK BUMPER

3.7.2

SECTION IV

Maintenance Plan for Historic Buildings within the Presidio of San Francisco Historic Landmark District

Prepared for:

Department of the Army
Headquarters Presidio of San Francisco
San Francisco, California

Administered by:

National Park Service
Western Regional Office
U.S. Department of Interior
San Francisco, California

Contract No.: 8000-1-0041

Prepared by:

Charles Hall Page & Associates, Inc.
364 Bush Street
San Francisco, California 94104

10 December 1982

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4.1 BUILDING TYPES

4.1.1 CATEGORY I STRUCTURES

TYPE	UNITS	BUILDING NUMBER(S)	HISTORIC NAME (Common Name)
2	-1-	2	Wright Army Hospital (Presidio Army Museum)
4	-1-	4	Officer Family Housing
5/16	-12-	5,6,7,8,9,10,11,12 13,14,15,16	Officer Family Housing
42	-1-	42	Pershing Hall (Officer's Guest House)
51/64	-2-	51,64	Officer Family Housing
56/59	-4-	56,57,58,59	Officer Family Housing
65	-1-	65	Officer Family Housing
100	-1-	100	Enlisted Men's Barracks
101/105	-5-	101,102,103,104,105	Enlisted Men's Barracks W/Mess
106	-1-	106	Band Barracks W/O Mess (Administration Building)
116	-1-	116	Sutler's House (Relig. Ed. Bldg.)
563/572	-5-	563,566,567,569,572	Enlisted Men's Barracks W/O Mess (Thrift Shop, Nursery, Kindergarten, Day Care Center, Nursery)
643	-1-	643	Aircraft Hanger (Electrical Maintenance Shop)
650	-1-	650	Enlisted Men's Barracks W/Mess (Stillwell Hall)
651	-1-	651	Administration Building
654	-1-	654	Guard House (Procurement Building)

661/668	-5-	661,662,663,667,668	Stables (Warehouse, Autoshop, Warehouse, Storage/Guest House, Animal Hospital)
682	-1-	682	Enlisted Men's Barracks W/Mess (Religious Facility)
920	-1-	920	Motor Repair Shop (Parachute Rigging Shop)
926/937	-2-	926,937	Hangers (Maintenance Shops)
933	-1-	933	Shop W/Dope and Boiler Houses (Storage Shed)
934	-1-	934	Motor Test Building (Maintenance Shop)
935	-1-	935	Aero Storehouse (Administration Building)
1000	-1-	1000	Officer Family Housing
1001	-1-	1001	Officer Family Housing
1002	-1-	1002	Officer Family Housing
1003/1004	-2-	1003,1004	Officer Family Housing
1201	-1-	1201	Headquarters - Ft. Scott (Military Intelligence)
1202/1218	-10-	1202,1203,1204,1205 1206,1207,1208,1216 1217,1218	Enlisted Men's Barracks (Enlisted Men's Barracks, Education Center, Administration)
1213	-1-	1213	Post Stockade - Ft. Scott (Postal)
1214	-1-	1214	Band Barracks - Ft. Scott (Orderly Room)
1219	-1-	1219	Quartermaster's Storehouse/ Bowling Alley - Ft. Scott (Classroom)
1220	-1-	1220	Quartermaster's Office - Ft. Scott (Military Intelligence)

1224	-1-	1224	Infirmary - Ft. Scott
1226	-1-	1226	Gymnasium Assembly Hall, Post Exchange (PX and Assembly Hall)
1300/1310	-2-	1300,1310	Officer Family Housing
1302	-1-	1302	Officer Family Housing
1304	-1-	1304	Officer Family Housing
1308	-1-	1308	Officer Family Housing
1314/1322	-2-	1314,1322	Officer Family Housing
1320/1328	-4-	1320,1324,1326,1328	Officer Family Housing
1330	-1-	1330	Bachelor Officer Quarters (Barnard Hall)
1334	-1-	1334	Officer Family Housing
1337	-1-	1337	Officer Family Housing
1344	-1-	1344	Fire Control Station
1398	-1-	1398	Battery Dynamite Powerhouse (Telephone Exchange)

4.1.2 CATEGORY II STRUCTURES

TYPE	UNITS	BUILDING NUMBER(S)	HISTORIC NAME (Common Name)
325/345	-10-	325,326,327,328,329 330,335,338,344,345	Officer Family Housing
331/343	-7-	331,334,336,337,339 340,343	Officer Family Housing
332/342	-3-	332,333,342	Officer Family Housing
540/551	-7-	540,541,542,546,548, 550,551	Officer Family Housing
543/549	-4-	543,545,547,549	Officer Family Housing
952/964	-13-	952,953,954,955,956 957,958,959,960,961 962,963,964	Enlisted Family Housing
1261/1268	-4-	1261,1262,1265,1268	Enlisted Family Housing

4.2 HISTORIC ARCHITECTURAL DRAWINGS

These architectural drawings, on file with the Facilities Engineer (bldg. 283), represent original drawings or prints from the original drawings of the indicated Category I buildings. This listing is not comprehensive in scope but does indicate those in-house drawings which should be referenced during the development of any new working drawings for these buildings.

Category I Structures

Bldg. #	Dwg. Date	Dwg. Type	Dwg. Content
100	1909	blueprint	basement plan
100	1909	blueprint	1st floor plan
100	1909	blueprint	2nd floor plan
100	1909	blueprint	roof plan
100	1909	blueprint	front/side elev.
100	1909	blueprint	rear elev/section
101-05	1893	linen	1st floor plan
101-05	1893	linen	2nd floor plan
106	1907	linen	basement plan
106	1907	blueprint	2nd floor/roof plan
106	1907	blueprint	side elev./section
650	1920	sepia	basement plan
650	1920	sepia	1st floor plan
650	1920	sepia	2nd floor plan
650	1920	sepia	wall section
650	1920	sepia	ext elev/sections
651	1920	sepia	details
651	1920	sepia	exterior elev
654	1920	sepia	exterior elev
662	1907	blueprint	exterior elev
662	1907	blueprint	exterior elev
662	1907	blueprint	details
920	1963	pencil	repairs
1002	1907	blueprint	1st floor plan
1002	1907	blueprint	2nd floor plan
1002	1907	blueprint	attic/roof plan
1002	1907	blueprint	front/rear elev
1002	1907	blueprint	side elev/details
1002	1907	blueprint	details
1003-04	1907	blueprint	details
1003-04	1907	blueprint	elev/details
1003-04	1907	sepia	1st/basement plan
1003-04	1907	sepia	2nd/attic plan
1003-04	1907	blueprint	elevs

1003-04	n.a.	pencil	elevs
1003-04	n.a.	pencil	elev/details
1003-04	n.a.	pencil	1st-2nd plan
1207-10	1910	linen	basement windows
1207-10	1910	linen	stair reinforcement
1202-18	1909	blueprint	rear elev
1202-18	1909	blueprint	section
1202-18	1909	blueprint	details
1202-18	1909	blueprint	foundation plan
1202-18	1909	blueprint	heating
1202-18	1909	blueprint	1st floor plan
1202-18	1909	blueprint	roof plan
1202-18	1909	blueprint	hot water plan
1213	1910	blueprint	plan/section
1213	1910	blueprint	exterior elev
1213	1910	blueprint	details
1213	1963	pencil	modifications
1214	1910	sepia	side/rear elev
1214	1910	sepia	base/1st fl. plan
1214	1910	sepia	elev/2nd fl.plan
1214	1910	sepia	details
1214	1910	sepia	section/elevs
1214	1910	blueprint	front elev/2nd fl.
1214	1910	blueprint	side elev/section
1214	1910	blueprint	details
1214	1910	blueprint	side/rear elev
1033	1910	sepia	exterior elev
1033	1910	sepia	section/details
1302	1900	linen	plans
1302	1900	linen	plans/details
1302	1900	linen	exterior elevs
1308	1901	sepia	plans/details
1308	1901	sepia	basement plumbing
1308	1901	sepia	attic plan
1308	1901	sepia	exterior elevs
1308	1901	sepia	2nd floor plan
1308	1901	sepia	attic plumbing
1302	1901	blueprint	piles
1330	1914	blueprint	basement plan
1330	1914	blueprint	1st floor plan
1330	1914	blueprint	2nd floor plan
1330	1914	blueprint	sections
1330	1914	blueprint	hot water
1330	1914	blueprint	elevs
1330	1914	blueprint	front elev
1330	1914	blueprint	plumbing
1330	1914	blueprint	details

4.3 PRESERVATION AND CONSERVATION ORGANIZATIONS

American Concrete Institute (ACI)
Box 19150 Redford Station
Detroit, Michigan 48219

Association for Preservation Technology (APT)
c/o Anne A. Falkner
Box 2487 Station D
Ottawa, Ontario, K1P 5W6 CANADA
(613) 238-1972

Foundation for Preservation Technology
Suite 301, 1555 Connecticut Avenue N.W.
Washington, D.C. 20036

The Heritage Canada Foundation
P.O. Box 1358 Station B
Ottawa, Ontario K1P 5R4 CANADA
(613) 237-1066

The National Parks Service
(Western Regional Office)
450 Golden Gate Avenue
San Francisco, CA 94102
(415) 556-7741

The National Trust for Historic Preservation
1785 Massachusetts Avenue, N.E.
Washington, D.C. 20036
(202) 673-4000

Smithsonian Institute
Curator of Technology
Washington, D.C. 20560

Society of Industrial Archeology
Room 5020
National Museum of History and Technology
Smithsonian Institute
Washington, D.C. 20560

4.4 SECRETARY OF THE INTERIOR'S STANDARDS

The Secretary of the Interior's Standards for Historic Preservation Projects, reproduced here in total, are used by the Department of Interior as the basis for advising other Federal agencies under Executive Order 11593.

The Secretary of the Interior's STANDARDS FOR HISTORIC PRESERVATION PROJECTS

with

Guidelines for Applying the Standards

Developed by
W. Brown Morton III
Gary L. Hume

U.S. Department of the Interior
Heritage Conservation and Recreation Service
Technical Preservation Services Division

Washington, D. C.
1979

AD-A139 044 MAINTENANCE PLAN FOR HISTORIC BUILDINGS WITHIN THE PRESIDIO OF SAN FRANCISCO HISTORIC LANDMARK DISTRICT (U) PAGE (CHARLES HALL) AND ASSOCIATES INC SAN FRANCISCO CA 10 DEC 82 3/3

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CONTENTS

Stabilization—continued

- Building: Exterior Finishes
- Building: Interior Features
- Building: Interior Finishes
- New Construction
- Safety and Code Requirements

Preservation

- The Environment
- Archeological Sites and Features
- Building Site
- Building: Structural Systems
- Building: Exterior Features
  - Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar
  - Wood: Clapboard, weatherboard, shingles, and other wooden siding
  - Architectural Metals: Cast iron, steel, pressed tin, aluminum, zinc
  - Roofs and Roofing
  - Windows and Doors
  - Entrances, Porches, Porte-cocheres, and Steps
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- The Environment
- Archeological Sites and Features
- Building Site
- Building: Structural Systems
- Building: Exterior Features
  - Masonry: Adobe, brick, stone, terra cotta, concrete, stucco and mortar
  - Wood: Clapboard, weatherboard, shingles, and other wooden siding
  - Architectural Metals: Cast iron, steel, pressed tin, aluminum, zinc
  - Roofs and Roofing
  - Windows and Doors
  - Entrances, Porches, Porte-cocheres, and Steps
- Building: Exterior Finishes
- Building: Interior Features
- Building: Interior Finishes
- New Construction

INTRODUCTION

The Secretary of the Interior is responsible for establishing standards for all programs under his authority that affect cultural resources listed or eligible for listing in the National Register of Historic Places. In fulfillment of this responsibility, the Heritage Conservation and Recreation Service has developed the Secretary of the Interior's Standards for Historic Preservation Projects. These standards define the general and specific treatments that may be applied to registered properties.

The Heritage Conservation and Recreation Service believes that the people who protect, preserve, maintain, and use the Nation's cultural resources deserve standards that make a strong commitment to responsible preservation practices. We are confident that the following standards provide a sound pragmatic framework that allows for both traditional and contemporary techniques for treating historic properties and supports continuing as well as innovative uses of those properties.

The authors wish to acknowledge the vigorous assistance of the division's professional and support staff and the Advisory Council on Historic Preservation in the preparation of the Secretary of the Interior's Standards for Historic Preservation Projects and their accompanying guidelines.

Gary L. Hume
Chief, State Preservation Projects Branch
Technical Preservation Services Division

W. Brown Morton, III
Departmental Consultant for Historic Architecture
Chief, Technical Preservation Services Division

PART I

The Secretary of the Interior's STANDARDS FOR HISTORIC PRESERVATION PROJECTS

The Secretary of the Interior's Standards for Historic Preservation Projects are the required basis for State Historic Preservation Officers and the Heritage Conservation and Recreation Service to evaluate Historic Preservation Fund grant-assisted acquisition and development project work proposals for properties listed in the National Register of Historic Places.

The Secretary of the Interior's Standards for Historic Preservation Projects are used as the basis for advising other Federal agencies under Executive Order 11593 and evaluating reuse proposals submitted with State and local government applications for the transfer of federally-owned surplus properties listed in the National Register.

The Secretary of the Interior's Standards for Historic Preservation Projects (Standards for Rehabilitation) are also the program regulations used by State Historic Preservation Officers and the Heritage Conservation and Recreation Service to determine if a rehabilitation project for a certified historic structure qualifies as a "certified rehabilitation" pursuant to the Tax Reform Act of 1976 and the Revenue Act of 1978.

DEFINITIONS for Historic Preservation Project Treatments

The following definitions are provided for treatments that may be undertaken on historic properties listed in the National Register of Historic Places.

Acquisition

Is defined as the act or process of acquiring fee title or interest other than fee title of real property (including the acquisition of development rights or remainder interest).

Protection

Is defined as the act or process of applying measures designed to affect the physical condition of a property by defending or guarding it from deterioration, loss or attack, or to cover or shield the property from danger or injury. In the case of buildings and structures, such treatment is generally of a temporary nature and anticipates future historic preservation treatment; in the case of archeological sites, the protective measure may be temporary or permanent.

Stabilization

Is defined as the act or process of applying measures designed to reestablish a weather resistant enclosure and the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present.

Preservation

Is defined as the act or process of applying measures to sustain the existing form, integrity, and material of a building or structure, and the existing form and vegetative cover of a site. It may include initial stabilization work, where necessary, as well as ongoing maintenance of the historic building materials.

Rehabilitation

Is defined as the act or process of returning a property to a state of utility through repair or alteration which makes possible an efficient contemporary use while preserving those portions or features of the property which are significant to its historical, architectural, and cultural values.

Restoration

Is defined as the act or process of accurately recovering the form and details of a property and its setting as it appeared at a particular period of time by means of the removal of later work or by the replacement of missing earlier work.

Reconstruction

Is defined as the act or process of reproducing by new construction the exact form and detail of a vanished building, structure, or object, or a part thereof, as it appeared at a specific period of time.

GENERAL STANDARDS for Historic Preservation Projects

The following general standards apply to all treatments undertaken on historic properties listed in the National Register.

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.

SPECIFIC STANDARDS for Historic Preservation Projects

The following specific standards for each treatment are to be used in conjunction with the eight general standards and, in each case, begin with number 9. For example, in evaluating acquisition projects, include the eight general standards plus the four specific standards listed under Standards for Acquisition.

Standards for Acquisition

9. Careful consideration shall be given to the type and extent of property rights which are required to assure the preservation of the historic resource. The preservation objectives shall determine the exact property rights to be acquired.

10. Properties shall be acquired in fee simple when absolute ownership is required to insure their preservation.

11. The purchase of less-than-fee-simple interests, such as open space or facade easements, shall be undertaken when a limited interest achieves the preservation objective.

12. Every reasonable effort shall be made to acquire sufficient property with the historic resource to protect its historical, archeological, architectural, or cultural significance.

Standards for Protection

9. Before applying protective measures which are generally of a temporary nature and imply future historic preservation work, an analysis of the actual or anticipated threats to the property shall be made.

10. Protection shall safeguard the physical condition or environment of a property or archeological site from further deterioration or damage caused by weather or other natural, animal, or human intrusions.

11. If any historic material or architectural features are removed, they shall be properly recorded and, if possible, stored for future study, or reuse.

Standards for Stabilization

9. Stabilization shall reestablish the structural stability of a property through the reinforcement of loadbearing members or by arresting material deterioration leading to structural failure. Stabilization shall also reestablish weather resistant conditions for a property.

10. Stabilization shall be accomplished in such a manner that it detracts as little as possible from the property's appearance. When reinforcement is required to reestablish structural stability, such work shall be concealed wherever possible so as not to intrude upon or detract from the aesthetic and historical quality, of the property, except where concealment would result in the alteration or destruction of historically significant material or spaces.

Standards for Preservation

9. Preservation shall maintain the existing form, integrity, and materials of a building, structure, or site. Substantial reconstruction or restoration of lost features generally are not included in a preservation undertaking.

10. Preservation shall include techniques of arresting or retarding the deterioration of a property through a program of ongoing maintenance.

Standards for Rehabilitation

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

10. Wherever possible, new additions or alterations to structures shall be done in such a manner that if such additions or alterations were to be removed in the future, the essential form and integrity of the structure would be unimpaired.

Standards for Restoration

9. Every reasonable effort shall be made to use a property for its originally intended purpose or to provide a compatible use that will require minimum alteration to the property and its environment.

10. Reinforcement required for structural stability or the installation of protective or code required mechanical systems shall be concealed wherever possible so as not to intrude or detract from the property's aesthetic and historical qualities, except where concealment would result in the alteration or destruction of historically significant materials or spaces.

11. When archeological resources must be disturbed by restoration work, recovery of archeological material shall be undertaken in conformance with current professional practices.

Standards for Reconstruction

9. Reconstruction of a part or all of a property, shall be undertaken only when such work is essential to reproduce a significant missing feature in a historic district or scene, and when a contemporary design solution is not acceptable.

Standards for Reconstruction—continued

10. Reconstruction of all or a part of a historic property shall be appropriate when the reconstruction is essential for understanding and interpreting the value of a historic district, or when no other building, structure, object, or landscape feature with the same associative value has survived and sufficient historical documentation exists to insure an accurate reproduction of the original.

11. The reproduction of missing elements accomplished with new materials shall duplicate the composition, design, color, texture, and other visual qualities of the missing element. Reconstruction of missing architectural features shall be based upon accurate duplication of original features substantiated by historical, physical, or pictorial evidence rather than upon conjectural designs or the availability of different architectural features from other buildings.

12. Reconstruction of a building or structure on an original site shall be preceded by a thorough archeological investigation to locate and identify all subsurface features and artifacts.

13. Reconstruction shall include measures to preserve any remaining original fabric, including foundations, subsurface, and ancillary elements. The reconstruction of missing elements and features shall be done in such a manner that the essential form and integrity of the original surviving features are unimpaired.

PART II

GUIDELINES FOR APPLYING THE STANDARDS

The following guidelines are designed to facilitate the interpretation and application of the Secretary of the Interior's Standards for Historic Preservation Projects and to assist individual property owners formulate plans for the acquisition, development, and continued use of historic properties and buildings in a manner consistent with the intent of the standards. The guidelines may be applied to buildings of all occupancy and structures, objects, and buildings of all construction types, sizes, and materials.

Separate guidelines are given for each of the seven treatments, as defined in the Secretary of the Interior's Standards for Historic Preservation Projects (Part I). Preservation approaches, materials, and methods consistent with the standards are listed in the *Recommended* column on the left. Not all recommendations listed under a treatment will apply to each project proposal. In addition, a project may consist of more than one treatment. Preservation approaches, materials, and methods which may adversely affect a property's architectural, historical, or archeological qualities, and are therefore not consistent with the standards, are listed in the *Not Recommended* column on the right.

Every effort will be made to update and expand the guidelines as additional information becomes available.

Guidelines for Applying
STANDARDS FOR ACQUISITION

Recommended	*Not Recommended*
The Environment	
Developing, whenever possible, plans for the preservation, maintenance and compatible use of the property, prior to purchase of the property.	
Acquiring sufficient property or easements to protect the historic resource and its environment.	Purchasing a structure with the intent of moving it from its original site unless it has been clearly demonstrated that the only feasible way to save the structure is by moving it.
Building Site	
Insuring that all the property to be purchased is included in the property's boundaries as defined in the National Register of Historic Places.	
Establishing the market value by having the property appraised by an independent appraiser recognized by the American Institute of Appraisers. Properties over $100,000 should receive two appraisals.	
Insuring in the purchase of an archeological site that sufficient property is acquired to include all significant aspects of the archeological resource.	

Guidelines for Applying STANDARDS FOR PROTECTION

Recommended	*Not Recommended*
The Environment	
Protecting distinctive features such as the size, scale, mass, color, and materials of buildings (including roofs, porches, and stairways) that give a neighborhood its distinguishing character.	
Introducing security lighting, fencing, walkways, and street signs that are compatible with the character of the neighborhood or provide a minimum intrusion on its size, scale, material, and color.	Introducing security, lighting, fencing, and paving materials that are out of scale or inappropriate to the neighborhood.
Archeological Sites and Features	
Retaining archeological resources intact, whenever possible.	Causing ground disturbances without evaluating the archeological potential of an area.
	Failing to properly monitor all ground disturbances on a property for possible archeological data that could provide information relating to the history or interpretation of the property.
Minimizing disturbance of terrain around the property, thus reducing the possibility of destroying unknown archeological resources.	Introducing heavy machinery or equipment into areas where their presence may disturb archeological resources.
	Installing underground utilities, pavements, and other modern features that disturb archeological resources.
Undertaking archeological investigations in accordance with the Recovery of Scientific, Prehistoric, and Archeological Data: Methods, Standards, and Reporting Requirements (36 CFR 1210, formerly 36 CFR 66 Proposed Guidelines published in the Federal Register, Vol. 42, No. 19, Friday, January 28, 1977).	Undertaking an archeological investigation without professional guidance, or without utilizing professional curatorial techniques.
Building Site	
Protecting plants, trees, fencings, walkways, outbuildings, and other elements that might be an important part of the property's history and development.	Making changes to the appearance of the site such as removing trees, walls, fencing, and other elements unless these elements pose a threat to the physical condition or environment of a property which could cause further deterioration.

Recommended	*Not Recommended*
Building Site—continued	
Using nonhistoric protective features such as security chain link fencing or other forms of cordoning that are of a temporary nature and imply future more compatible solutions to security problems.	
Providing proper site and roof drainage to assure that water does not splash against building or foundation walls nor drain toward the building.	
Building: Structural Systems	
Recognizing the special problems inherent in the structural systems of historic buildings especially where there are visible signs of cracking deflection or failure.	Disturbing existing foundations with new excavations that undermine the structural stability of the building.
Building: Exterior Features	
Roofs and Roofing	
Retaining the original roofing material wherever possible.	
Safeguarding by temporary protective measures all architectural features that give the roof its essential character such as dormer windows cupolas cornices brackets chimneys cresting weather vanes gutters downspouts and lightning rods.	Removing damaging or altering architectural features that give the roof its essential character when applying temporary protective measures.
Utilizing temporary roofing such as plastic tar paper inappropriate shingles *etc.* to temporarily protect the extant roof and the structure from damage by water wind or animal intrusion. This treatment implies a future more permanent compatible treatment.	

Recommended | *Not Recommended*

Building: Exterior Features—continued

Windows and Doors

Installing storm or insulating windows that protect important historic fabric such as carved or panelled doors, antique glass, or art glass in such a manner as to cause minimal intrusion on the windows or doors.

Installing inappropriate new window or door features such as aluminum storm and screen window combinations that require the removal of original windows and doors.

New Construction

New Construction is not an appropriate undertaking in a protection project.

Mechanical Systems: Heating, Air Conditioning, Electrical, Plumbing, Fire Protection

Causing unnecessary damage to the appearance of the building when correcting deficient electrical or mechanical systems or installing temporary protective systems.

Installing temporary security and fire protection systems in such a manner that no damage is caused to the historic fabric.

Repairing or installing temporary electrical service to prevent damage from hazardous conditions such as faulty wires.

Guidelines for Applying
STANDARDS FOR STABILIZATION

Recommended	*Not Recommended*
The Environment	
Retaining distinctive features such as the size, scale, mass, color, and materials of buildings (including roofs, porches, and stairways) that give a neighborhood its distinguishing character.	Introducing new structural systems, buttresses, or steel frames that are incompatible with the character of the district because of size, scale, color, and materials.
Archeological Sites and Features	
Retaining archeological resources intact, whenever possible.	Causing ground disturbances without evaluating the archeological potential of an area. Failing to properly monitor all ground disturbances on a property for possible archeological data that could provide information relating to the history of the property.
Minimizing disturbances of terrain around the structure, thus reducing the possibility of destroying unknown archeological resources.	Introducing heavy machinery or equipment into areas where their presence may disturb archeological resources. Installing underground utilities, pavements, and other modern features that disturb archeological resources.
Arranging for an archeological survey of all terrain that must be disturbed by the project. If the survey reveals sites or features that might be adversely affected, the area should be avoided or an archeological investigation conducted in accordance with the Recovery of Scientific, Prehistoric, and Archeological Data: Methods, Standards, and Reporting Requirements (36 CFR 1210, formerly 36 CFR 66 Proposed Guidelines published in the Federal Register, Vol. 42, No. 19, Friday, January 28, 1977).	Undertaking an archeological investigation without professional guidance, or without utilizing professional curatorial techniques.
Building Site	
Retaining plants, trees, fencings, walkways, street lights, signs, and benches that reflect the property's history and development.	Making changes to the appearance of the site by removing old trees, wall fencings, walkways, and other elements unless these elements endanger the building's structural stability.

Recommended	*Not Recommended*
Building: Structural Systems	
Recognizing the special problems inherent in the structural systems of historic buildings, especially where there are visible signs of cracking, deflection, or failure.	Disturbing existing foundations with new excavations that undermine the structural stability of the building.
Undertaking stabilization and repair of weakened structural members and systems.	Leaving known structural problems untreated that will cause continuing deterioration and will shorten the life of the structure.
Supplementing existing structural systems when damaged or inadequate. Replace historically important structural members only when necessary.	
Building: Exterior Features	
Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar	
Retaining original masonry and mortar, whenever possible, without the application of any surface treatment.	Applying waterproof or water repellent coatings or other treatments unless required to solve a specific technical problem that has been studied and identified. Coatings are frequently unnecessary, expensive, and do not stabilize masonry by preventing further deterioration.
Duplicating old mortar in composition, color, and texture.	Repointing with mortar of high Portland cement content, thus creating a bond that can often be stronger than the building material. This can cause deterioration as a result of the differing coefficient of expansion and the differing porosity of the material and the mortar.
Duplicating old mortar in joint size, method of application, and joint profile.	Repointing with mortar joints of a differing size or joint profile, texture, or color.
Repairing stucco with a stucco mixture that duplicates the original as closely as possible in appearance and texture.	

Recommended	Not Recommended

Building: Exterior Features

Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar—continued

Cleaning masonry only when necessary to stabilize the brickwork by halting deterioration. Always use the gentlest method possible, such as low pressure water and soft natural bristle brushes.*	Sandblasting brick or stone surfaces; this method of cleaning should never be considered when the objective is the stabilization of a masonry surface. Sandblasting erodes the surface of the material and accelerates deterioration.
	Using chemical products that could have an adverse chemical reaction with the masonry materials, i.e., acid on limestone or marble.
Repairing deteriorated material with new material that duplicates the old as closely as possible.	Using visible new material, which is inappropriate or was unavailable when the building was constructed, such as artificial brick siding, artificial cast stone, or brick veneer.
Retaining the original or early color and texture of masonry surfaces, wherever possible. Brick or stone surfaces may have been painted or whitewashed for practical and aesthetic reasons.	Removing paint from masonry surfaces indiscriminately. This may subject the building to damage and change its historical appearance.

Wood: Clapboard, weatherboard, shingles, and other wooden siding

Retaining original material, whenever possible.	
Repairing or replacing, when necessary, to reestablish structural stability of deteriorated material with new material that duplicates in size, shape, texture, and appearance of the old.	Resurfacing frame buildings with new material, which is inappropriate or was unavailable when the building was constructed, such as artificial stone, brick veneer, asbestos or asphalt shingles, and plastic or aluminum siding. Such material can also contribute to the deterioration and eventual structural failure of building material resulting from moisture and insects.

*For more information consult Preservation Briefs 1, "The Cleaning and Waterproof Coating of Masonry Buildings" and Preservation Briefs 2, "Repointing Mortar Joints in Historic Brick Buildings." Both are available from Technical Preservation Services Division, Heritage Conservation and Recreation Service, Washington, D.C. 20243.

Recommended	Not Recommended
Building: Exterior Features—continued	
Architectural Metals: Cast iron, steel, pressed tin, aluminum, zinc	
Retaining original material, whenever possible.	Removing architectural features that are an essential part of a building's character and appearance and thus illustrate the continuity of growth and change.
Cleaning, when necessary, with the appropriate method to prevent deterioration leading to structural failure. Cast iron and steel are usually not affected by mechanical cleaning methods while pressed tin, zinc, and aluminum should be cleaned by the gentlest method possible.	Exposing metals originally intended to be protected from the environment and thus encouraging structural failure. Do not use cleaning methods that alter the color or texture of the metal.
Roofs and Roofing	
Preserving the original roof shape when introducing structural reinforcement.	Changing the original roof shape or adding features inappropriate to the essential character of the roof as a part of reestablishing structural stability.
Retaining the original roofing material, whenever possible, when reestablishing structural stability.	
Replacing deteriorated roof coverings with new material that matches the old in composition, size, shape, color, and texture after reestablishing the structural stability of the roof.	Replacing deteriorated roof coverings with new materials that differ to such an extent from the old in composition, size, shape, color, and texture that the appearance of the building is altered after the roof has been stabilized.
Windows and Doors	
Retaining existing window and door openings including window sash, glass, lintels, sills, architraves, shutters, doors, pediments, hoods, steps, and all hardware that may be affected in reestablishing structural stability.	Using inappropriate new windows or doors such as aluminum storm and screen window combinations when the removal of original windows and doors is required as a part of reestablishing the structural stability of the wall.
Duplicating the material, design, and the hardware of the older window sash and doors if new sash and doors are required after structural repairs are completed.	

Recommended	*Not Recommended*
Building: Exterior Features—continued	
Entrances, Porches, Porte-cocheres, and Steps	
Retaining and reestablishing the structural stability of porches and steps that are appropriate to the building and its development. Porches or additions reflecting later architectural styles are often important to the building's historical integrity and, wherever possible, should be retained.	Removing or altering porches and steps when they become structurally unstable.
Repairing or replacing, where necessary, deteriorated wooden members and architectural features of wood, iron, cast iron, terra cotta, tile, and brick when they begin to fail structurally as a result of age or deterioration.	Stripping porches and steps of original material and architectural features, such as handrails, balusters, columns, brackets, and roof decorations of wood, iron, cast iron, terra cotta, tile, and brick, or replacing structurally deteriorated members such as porch columns with inappropriate new material such as aluminum or wrought iron.
Building: Exterior Finishes	
Preserving existing paint color and finishes, or repainting to match existing conditions.	Removing existing paint color and finishes.
Building: Interior Features	
Retaining original material, architectural features, and hardware, whenever possible, such as stairs, elevators, handrails, balusters, ornamental columns, cornices, baseboards, doors, doorways, windows, mantel pieces, paneling, lighting fixtures, and parquet or mosaic flooring that may be affected when reestablishing structural stability.	Removing original material, architectural features, and hardware, except where essential to reestablish structurally safe conditions.
Repairing or replacing, where necessary, deteriorated material with new material that duplicates the old as closely as possible.	
Retaining original plaster, whenever possible.	Destroying original plaster except where necessary to reestablish structurally safe conditions.

Recommended	*Not Recommended*
Building: Interior Features—continued	
Retaining the basic plan of a building and the relationship and size of rooms, corridors, and other spaces when adding structural reinforcement.	Altering the basic plan of a building by introducing new load bearing walls or partitions.
Building: Interior Finishes	
Retaining and protecting original paint colors, finishes, wallpapers, and other decorative motifs or, where necessary, replacing them with colors, wallpapers, or decorative motifs based on the original.	
New Construction	
Keeping required structural work to a minimum, making it compatible in scale, building materials, and texture.	
Designing required structural work to be compatible in materials, size, scale, color, and texture with the other buildings in the neighborhood.	Designing new work required for structural stability that is incompatible with the other buildings in the neighborhood in materials, size, scale, and texture.
Protecting architectural details and features that contribute to the building's character, when undertaking required structural work.	
Safety and Code Requirements	
Installing adequate fire prevention equipment in a manner that does minimal damage to the appearance or structure of a property.	

Guidelines for Applying
STANDARDS FOR PRESERVATION

Recommended	*Not Recommended*
The Environment	
Retaining distinctive features such as the size, scale, mass, color, and materials of buildings (including roofs, porches, and stairways) that give a neighborhood its distinguishing character.	
Retaining extant light fixtures and devices, signs, telephone poles, and other street furniture that may possess associative value with the historic scene.	Removing signs, wires, and street furniture that possess associative value with the historic scene.
Retaining landscape features such as parks, gardens, street lights, signs, benches, walkways, streets, alleys, and building set-backs that have traditionally linked buildings to their environment.	
Archeological Sites and Features	
Retaining archeological resources intact, whenever possible.	Causing ground disturbances without evaluating the archeological potential of an area.
	Failing to properly monitor all ground disturbances on a property for possible archeological data that could provide information relating to the history or interpretation of the property.
Minimizing disturbance of terrain around the property, thus reducing the possibility of destroying unknown archeological resources.	Introducing heavy machinery or equipment into areas where their presence may disturb archeological resources.
	Installing underground utilities, pavements, and other modern features that disturb archeological resources.
Undertaking archeological investigations in accordance with the Recovery of Scientific, Prehistoric, and Archeological Data: Methods, Standards, and Reporting Requirements (36 CFR 1210, formerly 36 CFR 66 Proposed Guidelines published in the Federal Register, Vol. 42, No. 19, Friday, January 28, 1977).	Undertaking an archeological investigation without professional guidance, or without utilizing professional curatorial techniques.

Recommended	*Not Recommended*
Building Site	
Identifying plants, trees, fencings, walkways, outbuildings, and other elements that might be an important part of the property's history and development.	
Retaining plants, trees, fencings, walkways, street lights, signs, and benches that reflect the property's history and development.	Making changes to the appearance of the site by removing old plants, trees, fencings, walkways, outbuildings, and other elements before evaluating their importance in the property's history and development.
Providing proper site and roof drainage to assure that water does not splash against building or foundation walls, nor drain toward the building.	
Building: Structural Systems	
Recognizing the special problems inherent in the structural systems of historic buildings, especially where there are visible signs of cracking, deflection, or failure.	Disturbing existing foundations with new excavations that undermine the structural stability of the building.
Undertaking stabilization and repair of weakened structural members and systems.	Leaving known structural problems untreated that will cause continuing deterioration and will shorten the life of the structure.
Supplementing existing structural systems when damaged or inadequate. Replace historically important structural members only when necessary.	
Building: Exterior Features	
Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar	
Retaining existing masonry and mortar, whenever possible, without the application of any surface treatment.	Applying waterproof or water repellent coatings or other treatments unless required to solve a specific technical problem that has been studied and identified. Coatings are frequently unnecessary, expensive, and can accelerate deterioration of the masonry.

Recommended	*Not Recommended*

Building: Exterior Features

Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar —continued

Repointing only those mortar joints where there is evidence of moisture problems or when sufficient mortar is missing to allow water to stand in the mortar joint.	Repointing mortar joints that do not need repointing. Using electric saws and hammers to remove mortar can seriously damage the adjacent brick.
Duplicating old mortar in composition, color, and texture.	Repointing with mortar of high Portland cement content, thus creating a bond that can often be stronger than the building material. This can cause deterioration as a result of the differing coefficient of expansion and the differing porosity of the material and the mortar.
Repairing stucco with a stucco mixture that duplicates the original as closely as possible in appearance and texture.	
Cleaning masonry only when necessary to halt deterioration and always with the gentlest method possible, such as low pressure water and soft natural bristle brushes.*	Sandblasting, including dry and wet grit and other abrasives, brick, or stone surfaces; this method of cleaning erodes the surface of the material and accelerates deterioration. Do not use chemical cleaning products that would have an adverse chemical reaction with the masonry materials, i.e., acid on limestone or marble.
Repairing or replacing, where necessary, deteriorated material with new material that duplicates the old as closely as possible.	Applying new material which is inappropriate or was unavailable when the building was constructed, such as artificial brick siding, artificial cast stone, or brick veneer.
Replacing missing architectural features, such as cornices, brackets, railings, and shutters.	Removing architectural features such as cornices, brackets, railings, shutters, window architraves, and doorway pediments.
Retaining the extant or early color and texture of masonry surfaces, wherever possible. Brick or stone surfaces may have been painted or whitewashed for practical and aesthetic reasons.	Removing paint from masonry surfaces indiscriminately. This may subject the building to damage and may change its historical appearance.

*For more information consult Preservation Briefs 1: "The Cleaning and Waterproof Coating of Masonry Buildings" and Preservation Briefs 2: "Repointing Mortar Joints in Historic Brick Buildings." Both are available from Technical Preservation Services Division, Heritage Conservation and Recreation Service, Washington, D.C. 20243.

Recommended	*Not Recommended*
Building Exterior Features—continued	
Wood: Clapboard, weatherboard, shingles, and other wooden siding	
Retaining existing material, whenever possible	Removing architectural features such as siding, cornices, brackets, window architraves, and doorway pediments. These are, in most cases, an essential part of a building's character and appearance that illustrates the continuity of growth and change
Repairing or replacing, where necessary, deteriorated material with new material that duplicates in size, shape, and texture the old as closely as possible	Resurfacing frame buildings with new material, which is inappropriate or was unavailable when the building was constructed, such as artificial stone, brick veneer, asbestos or asphalt shingles, and plastic or aluminum siding. Such material can also contribute to the deterioration of the structure from moisture and insects
Architectural Metals: Cast iron, steel, pressed tin, aluminum, zinc	
	Removing architectural features that are an essential part of a building's character and appearance and thus illustrate the continuity of growth and change
Cleaning, when necessary, with the appropriate method. Cast iron and steel are usually not affected by mechanical cleaning methods while pressed tin, zinc, and aluminum should be cleaned by the gentlest method possible	Exposing metals that were intended to be protected from the environment. Do not use cleaning methods that alter the color or texture of the metal
Roofs and Roofing	
Preserving the existing roof shape	
Retaining the existing roofing material, whenever possible	Applying new roofing material that is inappropriate to the style and period of the building and neighborhood
Replacing deteriorated roof coverings with new material that matches the old in composition, size, shape, color, and texture	Replacing deteriorated roof coverings with new materials that differ to such an extent from the old in composition, size, shape, color, and texture that the appearance of the building is altered

Recommended	*Not Recommended*

Building: Exterior Features

Roofs and Roofing—continued

Preserving or replacing, where necessary, all architectural features that give the roof its essential character, such as dormer windows, cupolas, cornices, brackets, chimneys, crestings, and weather vanes, gutters, downspouts, and lightning rods.	Stripping the roof of architectural features important to its character.

Windows and Doors

Retaining existing window and door openings, including window sash, glass, lintels, sills, architraves, shutters, doors, pediments, hoods, steps, and all hardware.	
Installing storm or insulating windows when old glass, art glass, or fragile sash require protection from the weather. Protective windows should be as unobtrusive as possible and should be removable without damaging original fabric.	Altering the size of window panes or sash. Such changes destroy the scale and proportion of the building.
	Installing inappropriate new window or door features such as aluminum storm and screen window combinations that require the removal of or cause damage to original windows and doors.
Using existing doors and door hardware when they can be repaired and used in place.	Discarding original doors and door hardware when they can be repaired and reused in place.

Entrances, Porches, Porte-cocheres, and Steps

Retaining porches and steps that are appropriate to the building and its development. Porches or additions reflecting later architectural styles are often important to the building's historical integrity and, wherever possible, should be retained.	Removing or altering porches and steps that are appropriate to the building's development and style.

Recommended	*Not Recommended*
Building: Exterior Features	
Entrances, Porches, Porte-cocheres, and Steps—continued	
Repairing or replacing, where necessary, deteriorated architectural features of wood, iron, cast iron, terra cotta, tile, and brick.	Stripping porches and steps of original material such as handrails, balusters, columns, brackets, and roof decorations of wood, iron, cast iron, terra cotta, tile, and brick. Enclosing porches and steps in a manner that destroys their intended appearance.
Building: Exterior Finishes	
Preserving existing paint color and finishes, or repainting to match existing conditions.	Removing existing paint color and finishes.
Building: Interior Features	
Retaining existing material, architectural features, and hardware, whenever possible, such as stairs, elevators, handrails, balusters, ornamental columns, cornices, baseboards, doors, doorways, windows, mantel pieces, paneling, lighting fixtures, and parquet or mosaic flooring. Repairing or replacing, where necessary, deteriorated material with new material that duplicates the old as closely as possible.	Removing existing material, architectural features, and hardware, except where essential for safety or efficiency.
Retaining existing plaster, whenever possible.	Destroying original plaster, except where necessary for safety and efficiency.
Building: Interior Finishes	
Preserving and retaining existing paint colors, finishes, wallpapers, and other decorative motifs or, where necessary, replacing them with colors, wallpapers, or decorative motifs that duplicate the existing decorative scheme.	

Recommended *Not Recommended*

New Construction

New Construction is not an appropriate undertaking in a preservation project.

Mechanical Systems: Heating, Air Conditioning, Electrical, Plumbing, Fire Protection

Installing new mechanical systems or additional mechanical services in areas and spaces that will require the least possible alteration to the plan, materials, and appearance to the building.

Causing unnecessary damage to the plan, materials, and appearance of the building when installing new mechanical systems or additional mechanical services that are required to preserve important historic fabric.

Selecting suitable mechanical systems and the most sensitive method of installation in order to preserve important interior and exterior architectural features.

Rewiring early electrical lighting fixtures.

Installing exterior electrical and telephone cables underground, unless they were part of the historical setting.

Attaching exterior electrical and telephone cables to the principal elevations of the building.

Safety and Code Requirements

Complying with code requirements in such a manner that the essential character of a building is preserved intact.

Investigating variances for historic properties afforded under some local codes.

Installing adequate fire prevention equipment in a manner that does minimal damage to the appearance or fabric of a property.

Providing access for the handicapped without damaging the essential character of a property.

Guidelines for Applying
STANDARDS FOR REHABILITATION

Recommended	*Not Recommended*
The Environment	
Retaining distinctive features such as the size, scale, mass, color, and materials of buildings, including roofs, porches, and stairways that give a neighborhood its distinguishing character.	Introducing new construction into neighborhoods that is incompatible with the character of the district because of size, scale, color, and materials.
Retaining landscape features such as parks, gardens, street lights, signs, benches, walkways, streets, alleys, and building set-backs that have traditionally linked buildings to their environment.	Destroying the relationship of buildings and their environment by widening existing streets, changing paving material, or by introducing inappropriately located new streets and parking lots that are incompatible with the character of the neighborhood.
Using new plant materials, fencings, walkways, street lights, signs, and benches that are compatible with the character of the neighborhood in size, scale, material, and color.	Introducing signs, street lighting, benches, new plant materials, fencings, walkways, and paving materials that are out of scale or inappropriate to the neighborhood.
Archeological Sites and Features	
Retaining archeological resources intact, whenever possible.	Causing ground disturbances without evaluating the archeological potential of an area.
	Failing to properly monitor all ground disturbances on a property for possible archeological data that could provide information relating to the history of the property.
Minimizing disturbances of terrain around the structure, thus reducing the possibility of destroying unknown archeological resources.	Introducing heavy machinery or equipment into areas where their presence may disturb archeological resources.
	Installing underground utilities, pavements, and other modern features that disturb archeological resources.
Arranging for an archeological survey of all terrain that must be disturbed by the project. If the survey reveals sites or features that might be adversely affected, the area should be avoided or an archeological investigation conducted in accordance with the Recovery of Scientific, Prehistoric, and Archeological Data: Methods, Standards, and Reporting Requirements (36 CFR 1210, formerly, 36 CFR 66, Proposed Guidelines published in the Federal Register Vol. 42, No. 19, Friday, January 28, 1977).	Undertaking an archeological investigation without professional guidance, or without utilizing professional curatorial techniques.

Recommended	*Not Recommended*
Building Site	
Identifying plants, trees, fencings, walkways, outbuildings, and other elements that might be an important part of the property's history and development.	
Retaining plants, trees, fencings, walkways, street lights, signs, and benches that reflect the property's history and development.	Making changes to the appearance of the site by removing old plants, trees, fencings, walkways, outbuildings, and other elements before evaluating their importance in the property's history and development.
Basing decisions for new site work on actual knowledge of the past appearance of the property found in photographs, drawings, newspapers, and tax records. If changes are made, they should be carefully evaluated in light of the past appearance of the site.	Leaving plant materials and trees in close proximity to the building that may be causing deterioration of the historic fabric.
Providing proper site and roof drainage to assure that water does not splash against building or foundation walls, nor drain toward the building.	
Building: Structural Systems	
Recognizing the special problems inherent in the structural systems of historic buildings, especially where there are visible signs of cracking, deflection, or failure.	Disturbing existing foundations with new excavations that undermine the structural stability of the building.
Undertaking stabilization and repair of weakened structural members and systems.	Leaving known structural problems untreated that will cause continuing deterioration and will shorten the life of the structure.
Supplementing existing structural systems when damaged or inadequate. Replace historically important structural members only when necessary.	

Recommended	Not Recommended
Building Exterior Features	
Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar	
Retaining original masonry and mortar whenever possible without the application of any surface treatment.	Applying waterproof or water repellent coatings or surface consolidation treatments unless required to solve a specific technical problem that has been studied and so identified. Coatings are frequently unnecessary, expensive, and can accelerate deterioration of the masonry.
Repointing only those mortar joints where there is evidence of moisture problems or when sufficient mortar is missing to allow water to stand in the mortar joint.	Repointing mortar joints that do not need repointing. Using electric saws and hammers to remove mortar can seriously damage the adjacent brick.
Duplicating old mortar in composition, color, and texture.	Repointing with mortar of high Portland cement content, thus creating a bond that can often be stronger than the building material. This can cause deterioration as a result of the differing coefficient of expansion and the differing porosity of the material and the mortar.
Duplicating old mortar in joint size, method of application, and joint profile.	Repointing with mortar joints of a differing size or joint profile, texture, or color.
Repairing stucco with a stucco mixture that duplicates the original as closely as possible in appearance and texture.	
Cleaning masonry only when necessary to halt deterioration or to remove graffiti and stains and always with the gentlest method possible, such as low pressure water and soft natural bristle brushes.*	Sandblasting, including dry and wet grit and other abrasives, brick or stone surfaces; this method of cleaning erodes the surface of the material and accelerates deterioration. Do not use chemical cleaning products that would have an adverse chemical reaction with the masonry materials, i.e., acid on limestone or marble.

*For more information consult Preservation Briefs 1: The Cleaning and Waterproof Coating of Masonry Buildings and Preservation Briefs 2: Repointing Mortar Joints in Historic Brick Buildings. Both are available from Technical Preservation Services Division, Heritage Conservation and Recreation Service, Washington, D.C. 20243.

Recommended	Not Recommended
Building: Exterior Features	
Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar—continued	
Repairing or replacing, where necessary, deteriorated material with new material that duplicates the old as closely as possible	Applying new material which is inappropriate or was unavailable when the building was constructed, such as artificial brick siding, artificial cast stone, or brick veneer
Replacing missing significant architectural features, such as cornices, brackets, railings, and shutters	Removing architectural features such as cornices, brackets, railings, shutters, window architraves, and doorway pediments
Retaining the original or early color and texture of masonry surfaces, including early signage, wherever possible. Brick or stone surfaces may have been painted or whitewashed for practical and aesthetic reasons	Removing paint from masonry surfaces indiscriminately. This may subject the building to damage and change its appearance
Wood: Clapboard, weatherboard, shingles, and other wooden siding	
Retaining and preserving significant architectural features whenever possible	Removing architectural features such as siding, cornices, brackets, window architraves, and doorway pediments. These are, in most cases, an essential part of a building's character and appearance that illustrates the continuity of growth and change
Repairing or replacing, where necessary, deteriorated material that duplicates in size, shape, and texture the old as closely as possible	Resurfacing frame buildings with new material which is inappropriate or was unavailable when the building was constructed, such as artificial stone, brick veneer, asbestos or asphalt shingles, and plastic or aluminum siding. Such material can also contribute to the deterioration of the structure from moisture and insects
Architectural Metals: Cast iron, steel, pressed tin, aluminum, zinc	
Retaining original material, whenever possible	Removing architectural features that are an essential part of a building's character and appearance and thus illustrate the continuity of growth and change
Cleaning, when necessary, with the appropriate method. Metals should be cleaned by methods that do not abrade the surface	Exposing metals that were intended to be protected from the environment. Do not use cleaning methods which alter the color or texture of the metal

Recommended	Not Recommended
Building: Exterior Features—continued	
Roofs and Roofing	
Preserving the original roof shape.	Changing the essential character of the roof by adding inappropriate features such as dormer windows, vents, or skylights.
Retaining the original roofing material, whenever possible.	Applying new roofing material that is inappropriate to the style and period of the building and neighborhood.
Providing adequate roof drainage and insuring that the roofing materials provide a weathertight covering for the structure.	
Replacing deteriorated roof coverings with new material that matches the old in composition, size, shape, color, and texture.	Replacing deteriorated roof coverings with new materials that differ to such an extent from the old in composition, size, shape, color, and texture that the appearance of the building is altered.
Preserving or replacing, where necessary, all architectural features that give the roof its essential character, such as dormer windows, cupolas, cornices, brackets, chimneys, cresting, weather vanes, gutters, downspouts, and lightning rods.	Stripping the roof of architectural features important to its character.
Windows and Doors	
Retaining and repairing existing window and door openings, including window sash, glass, lintels, sills, architraves, shutters, doors, pediments, hoods, steps, and all hardware.	Introducing new window and door openings into the principal elevations, or enlarging or reducing window or door openings to fit new stock window sash or new stock door sizes.
	Altering the size of window panes or sash. Such changes destroy the scale and proportion of the building.
Duplicating the material, design, and hardware of the older window sash and doors if new sash and doors are used.	Installing inappropriate new window or door features, such as aluminum storm and screen window insulating glass combinations that require the removal of original windows and doors or the installation of plastic, canvas, or metal strip awnings or fake shutters that detract from the character and appearance of the building.

Recommended	*Not Recommended*
Building: Exterior Features	
Windows and Doors —continued	
Installing visually unobtrusive storm windows and doors that do not damage existing frames and that can be removed in the future.	
Using original doors and door hardware when they can be repaired and reused in place.	Discarding original doors and door hardware when they can be repaired and reused in place.
Entrances, Porches, Porte-cocheres, and Steps	
Retaining porches and steps that are appropriate to the building and its development. Porches or additions reflecting later architectural styles are often important to the building's historical integrity and, wherever possible, should be retained.	Removing or altering porches and steps that are inappropriate to the building's development and style.
Repairing or replacing, where necessary, deteriorated architectural features of wood, iron, cast iron, terra cotta, tile, and brick.	Stripping porches and steps of original material and architectural features such as handrails, balusters, columns, brackets, and roof decorations of wood, iron, cast iron, terra cotta, tile, and brick.
	Enclosing porches and steps in a manner that destroys their intended appearance.
Building: Exterior Finishes	
Discovering the historic paint colors and finishes of the structure and repainting with those colors to illustrate the distinctive character of the property.	Removing paint and finishes down to the bare surface; strong paint strippers, whether chemical or mechanical, can permanently damage the surface. Also, stripping obliterates evidence of the historical paint finishes.
	Repainting with colors that cannot be documented through research and investigation to be appropriate to the building and neighborhood.

Recommended	*Not Recommended*
Building Interior Features	
Retaining original material, architectural features and hardware whenever possible, such as stairs, elevators, handrails, balusters, ornamental columns, cornices, baseboards, doors, doorways, windows, mantel pieces, paneling, lighting fixtures, parquet or mosaic flooring.	Removing original material, architectural features and hardware, except where essential for safety or efficiency.
	Replacing interior doors and transoms without investigating alternative fire protection measures or possible code variances.
Repairing or replacing, where necessary, deteriorated material with new material that duplicates the old as closely as possible.	Installing new decorative material and paneling which destroys significant architectural features or was unavailable when the building was constructed, such as vinyl, plastic, or imitation wood wall and floor coverings, except in utility areas such as bathrooms and kitchens.
Retaining original plaster, whenever possible.	Removing plaster to expose brick to give the wall an appearance it never had.
Enclosing an important interior stairway, where required by code, in such a way as to retain its character. In many cases, glazed fire-rated walls may be used.	Enclosing important stairways with ordinary fire-rated construction which destroys the architectural character of the stair and the space.
Retaining the basic plan of a building, the relationship and size of rooms, corridors, and other spaces.	Altering the basic plan of a building by demolishing principal walls, partitions, and stairways.
Building Interior Finishes	
Discovering and retaining original paint colors, finishes, wallpapers, and other decorative motifs or, where necessary, replacing them with colors, wallpapers, or decorative motifs based on the original.	Changing the texture and patina of exposed wooden architectural features (including structural members) and masonry surfaces through sandblasting or use of other abrasive techniques to remove paint, discoloration, and plaster, except in certain industrial and warehouse buildings where the interior masonry or plaster surfaces do not have significant design detailing, tooling, or finish, and where wooden architectural features are not finished, molded, beaded, or worked by hand.*

*In cases where abrasive cleaning is contemplated, it is strongly recommended that prior approval be obtained from the U.S. Department of the Interior if the rehabilitation involves any Federal funds or where the owner intends to apply for the tax benefits for rehabilitation work under the Tax Reform Act of 1976.

Recommended	Not Recommended
Building Interior Finishes—continued	
	Removing paint from wooden architectural features that were never intended to be exposed
New Construction	
Keeping new additions and adjacent new construction to a minimum, making them compatible in scale, building materials, and texture	
Designing new work to be compatible in materials, size, scale, color, and texture with the other buildings in the neighborhood	Designing new work which is incompatible with the other buildings in the neighborhood in materials, size, scale, and texture
Using contemporary designs compatible with the character and mood of the building or the neighborhood	Imitating an earlier style or period of architecture in new additions, except in rare cases where a contemporary design would detract from the architectural unity of an ensemble or group. Especially avoid imitating an earlier style of architecture in new additions that have a completely contemporary function such as a drive-in bank or garage
	Adding new height to the building that changes the scale and character of the building. Additions in height should not be visible when viewing the principal facades
	Adding new floors or removing existing floors that destroy important architectural details, features, and spaces of the building
Protecting architectural details and features that contribute to the character of the building	
Placing television antennae and mechanical equipment, such as air conditioners, in an inconspicuous location	Placing television antennae and mechanical equipment, such as air conditioners, where they can be seen from the street

Recommended	*Not Recommended*
Mechanical Systems: Heating, Air Conditioning, Electrical, Plumbing, Fire Protection	
Installing necessary mechanical systems in areas and spaces that will require the least possible alteration to the structural integrity and physical appearance of the building.	Causing unnecessary damage to the plan, materials and appearance of the building when installing mechanical systems.
Utilizing early mechanical systems, including plumbing and early lighting fixtures, where possible.	Attaching exterior electrical and telephone cables to the principal elevations of the building.
Installing the vertical runs of ducts, pipes, and cables in closets, service rooms, and wall cavities.	Installing vertical runs of ducts, pipes, and cables in places where they will be a visual intrusion.
	Concealing or "making invisible" mechanical equipment in historic walls or ceilings. Frequently, this concealment requires the removal of historic fabric.
	Installing "dropped" acoustical ceilings to hide mechanical equipment. This destroys the proportions and character of the rooms.
Insuring adequate ventilation of attics, crawlspaces and cellars to prevent moisture problems.	
Installing thermal insulation in attics and in unheated cellars and crawlspaces to conserve energy.	Installing foam, glass fiber, or cellulose insulation into wall cavities of either wooden or masonry construction. This has been found to cause moisture problems when there is no adequate moisture barrier.
Safety and Code Requirements	
Complying with code requirements in such a manner that the essential character of a building is preserved intact.	
Working with local code officials to investigate alternative life safety measures that preserve the architectural integrity of the building.	
Investigating variances for historic properties allowed under some local codes.	

Recommended	Not Recommended
Safety and Code Requirements—continued	
Installing adequate fire prevention equipment in a manner that does minimal damage to the appearance or fabric of a property.	
Adding new stairways and elevators that do not alter existing exit facilities or other important architectural features and spaces of the building.	Adding new stairways and elevators that alter existing exit facilities or important architectural features and spaces of the building.

Guidelines for Applying
STANDARDS FOR RESTORATION

Recommended	Not Recommended
The Environment	
Retaining distinctive features such as the size, scale, mass, color, and materials of buildings, including roofs, porches, and stairways that give a neighborhood its distinguishing character.	Removing lighting devices, telephone poles, painted signs, or other street furniture that may be important to the historic setting.
Retaining early lanterns, light standards, telephone poles, utility poles, painted signs, and other street furniture that may be important to the historic setting.	
Retaining landscape features such as parks, gardens, street lights, signs, benches, walkways, streets, alleys, and building set-backs that have traditionally linked buildings to their environment.	
Archeological Sites and Features	
Retaining archeological resources intact, whenever possible.	Causing ground disturbances without evaluating the archeological potential of an area.
	Failing to properly monitor all ground disturbances on a property, for possible archeological data that could provide information relating to the history of the property.
Minimizing disturbances of terrain around the structure, thus reducing the possibility of destroying unknown archeological resources.	Introducing heavy machinery or equipment into areas where their presence may disturb archeological resources.
	Installing underground utilities, pavements, and other modern features that disturb archeological resources.
Arranging for an archeological survey, of all terrain that must be disturbed by the project. If the survey reveals sites or features that might be adversely affected, the area should be avoided or an archeological investigation conducted in accordance with the Recovery of Scientific, Prehistoric, and Archeological Data: Methods, Standards, and Reporting Requirements (36 CFR 1210, formerly, 36 CFR 66, Proposed Guidelines published in the Federal Register, Vol. 42, No. 19, Friday, January 28, 1977).	Undertaking an archeological investigation without professional guidance, or without utilizing professional curatorial techniques.

Recommended	Not Recommended
Building Site	
Identifying plants, trees, fencings, walkways, outbuildings, and other elements that might be an important part of the property's history and development.	
Retaining plants, trees, fencings, walkways, street lights, signs, and benches that reflect the property's history and development.	Making changes to the appearance of the site by removing old plants, trees, fencings, walkways, outbuildings, and other elements before evaluating their importance in the property's history and development.
Basing decisions for new site work on actual knowledge of the past appearance of the property, found in photographs, drawings, newspapers, and tax records. If changes are made, they should be carefully evaluated in light of the past appearance of the site.	Giving the site an appearance it never had.
Providing proper site and roof drainage to assure that water does not splash against building or foundation walls, nor drain toward the building.	
Building: Structural Systems	
Recognizing the special problems inherent in the structural systems of historic buildings, especially where there are visible signs of cracking, deflection, or failure.	Disturbing existing foundations with new excavations that undermine the structural stability of the building.
Undertaking stabilization and repair of weakened structural members and systems.	Leaving known structural problems untreated that will cause continuing deterioration and will shorten the life of the structure.
Supplementing existing structural systems when damaged or inadequate. Replace historically important structural members only when necessary.	

Recommended	*Not Recommended*
Building: Exterior Features	
Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar	
Retaining original masonry and mortar whenever possible without the application of any surface treatment.	Applying waterproof or water repellent coatings or other treatments unless required to solve a specific technical problem that has been studied and identified. Coatings are frequently unnecessary, expensive, and can accelerate deterioration of the masonry.
Repointing only those mortar joints where there is evidence of moisture problems or when sufficient mortar is missing to allow water to stand in the mortar joints.	Repointing mortar joints that do not need repointing. Using electric saws and hammers to remove mortar can seriously damage the adjacent brick.
Duplicating old mortar in composition, color, and texture.	Repointing with mortar of high Portland cement content, thus creating a bond that can often be stronger than the building material. This can cause deterioration as a result of the differing coefficient of expansion and the differing porosity of the material and the mortar.
Duplicating old mortar in joint size, method of application, and joint profile.	Repointing with mortar joints of a differing size or joint profile, texture, or color.
Repairing stucco with a stucco mixture that duplicates the original as closely as possible in appearance, color, and texture.	
Cleaning masonry only when necessary to halt deterioration and always with the gentlest method possible, such as low pressure water and soft bristle brushes.*	Sandblasting, including dry and wet grit and other abrasives, brick, or stone surfaces; this method of cleaning erodes the surface of the material and accelerates deterioration. Do not use chemical cleaning products that would have an adverse chemical reaction with the masonry materials, i.e., acid on limestone or marble.
Repairing or replacing, where necessary, deteriorated material with new material that duplicates the old as closely as possible in bond, pattern, shape, and coursing.	Applying new material which is inappropriate or was unavailable when the building was constructed, such as artificial brick siding, artificial stone, or brick veneer to simulate a historic appearance.

*For more information consult Preservation Briefs 1: The Cleaning and Waterproof Coating of Masonry Buildings and Preservation Briefs 2: Repointing Mortar Joints in Historic Brick Buildings. Both are available from Technical Preservation Services Division, Heritage Conservation and Recreation Service, Washington, D.C. 20243.

Recommended	Not Recommended
Building: Exterior Features	
Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar—continued	
Replacing missing architectural features, such as cornices, brackets, and railings.	Removing architectural features such as cornices, brackets, railings, window architraves, and doorway pediments.
Retaining the original or early color and texture of masonry surfaces, wherever possible. Brick or stone surfaces may have been painted or whitewashed for practical and aesthetic reasons.	Removing paint from masonry surfaces indiscriminately. This may subject the building to damage and may change its appearance.
Wood: Clapboard, weatherboard, shingles, and other wooden siding	
Retaining original material, whenever possible.	Removing architectural features such as siding, cornices, brackets, window architraves, and doorway pediments. These are, in most cases, an essential part of a building's character and appearance that illustrates the continuity of growth and change.
Repairing or replacing, where necessary, deteriorated material with new material that duplicates in size, shape, and texture the old as closely as possible.	Resurfacing frame buildings with new material which is inappropriate or was unavailable when the building was constructed, such as artificial stone, brick veneer, asbestos or asphalt shingles, and plastic or aluminum siding. Such material can also contribute to the deterioration of the structure from moisture and insects.
Architectural Metals: Cast iron, steel, pressed tin, aluminum, zinc	
Retaining original material, whenever possible.	Removing architectural features that are an essential part of a building's character and appearance and thus illustrate the continuity of growth and change.
Cleaning, when necessary, with the appropriate method. Cast iron and steel are normally not affected by mechanical cleaning methods while pressed tin, zinc, and aluminum should be cleaned by the gentlest method possible.	Exposing metals which were intended to be protected from the environment. Do not use cleaning methods which alter the color or texture of the metal.

Recommended	Not Recommended

Building: Exterior Features—continued

Roofs and Roofing

Preserving the original roof shape.	
Retaining the original roofing material, wherever possible.	
Replacing deteriorated roof coverings with new material that matches the old in composition, size, shape, color, and texture.	Replacing deteriorated roof coverings with new materials which differ to such an extent from the old in composition, size, shape, color, and texture that the appearance of the building is altered.
Preserving or replacing, where necessary, all architectural features which give the roof its essential character, such as dormer windows, cupolas, cornices, brackets, chimneys, cresting, weather vanes, gutters, downspouts, and lightning rods.	Stripping the roof of architectural features important to its character.

Windows and Doors

Retaining existing window and door openings, including window sash, glass, lintels, sills, architraves, shutters, doors, pediments, hoods, steps, and all hardware.	
Installing storm or insulating windows when old glass, art glass, or fragile sash require protection from the weather. Protective windows should be removable without damaging original fabric.	
Duplicating the material, design, and the hardware of the older window sash and doors, if new sash and doors are used.	Installing inappropriate new window or door features such as aluminum storm and screen window combinations that require the removal of original windows and doors.
Using original doors and door hardware when they can be repaired and reused in place.	Discarding original doors and door hardware when they can be repaired and reused in place.

Recommended	*Not Recommended*
Building: Exterior Features—*continued*	
Entrances, Porches, Porte-cocheres, and Steps	
Retaining steps and porches that are appropriate to the building and its development. Porches or additions reflecting later architectural styles are often important to the building's historical integrity and, wherever possible, should be retained.	Removing or altering porches and steps that are inappropriate to the building's development and style.
Repairing or replacing, where necessary, deteriorated architectural features of wood, iron, cast iron, terra cotta, tile, and brick.	Stripping porches and steps of original material and architectural features such as handrails, balusters, columns, brackets, and roof decorations of wood, iron, cast iron, terra cotta, tile, and brick.
Building: Exterior Finishes	
Discovering original paint colors and finishes, repainting with colors based on the original, when appropriate, to illustrate the distinctive character of the property.	Stripping down to the bare surface without some evidence of original exterior surface.
	Repainting with colors that cannot be documented through research and investigation to be appropriate to the building and the neighborhood.
Building: Interior Features	
Retaining original material, architectural features, and hardware, whenever possible, such as stairs, elevators, handrails, balusters, ornamental columns, cornices, baseboards, doors, doorways, windows, mantel pieces, panelling, lighting fixtures, and parquet or mosaic flooring.	
Repairing or replacing, where necessary, deteriorated material with new material that duplicates the old as closely as possible.	Installing new decorative material that is inappropriate or was unavailable when the building was constructed, such as vinyl, plastic, or imitation wood wall and floor coverings.
Retaining original plaster, whenever possible.	Destroying original plaster except where necessary for safety.
Retaining the basic plan of a building, the relationship and size of rooms, corridors, and other spaces.	

Recommended	*Not Recommended*

Building: Interior Finishes

Discovering and retaining original paint colors, finishes, wallpapers, and other decorative motifs or, where necessary, replacing them with colors, wallpapers or decorative motifs based on the original.	

New Construction

New Construction is not an appropriate undertaking in a restoration project.

Mechanical Systems: Heating, Air Conditioning, Electrical, Plumbing, Fire Protection

Installing necessary building services in areas and spaces that will require the least possible alteration to the plan, materials, and appearance of the building.	Causing unnecessary damage to the plan, materials, and appearance of the building when installing mechanical systems that are required to preserve important historic fabric.
Selecting mechanical systems that best suit the restored building and are as inconspicuous as possible.	Installing heat pumps, compressors, etc., so that they intrude upon the historic appearance of the resource.
Rewiring early lighting fixtures to comply with safety codes.	
Installing exterior electrical and telephone cables underground to preserve the historic setting, unless they were part of the historic scene.	Attaching exterior electrical and telephone cables to the principal elevations of the building, unless they were part of the historic scene.

Safety and Code Requirements

Complying with code requirements in such a manner that the essential character of a building is preserved intact.	
Investigating variances for historic properties allowed under some local codes.	
Installing adequate fire prevention equipment in a manner that does minimal damage to the appearance or fabric of a property.	
Providing access for the handicapped without damaging the essential character of a property.	

Guidelines for Applying
STANDARDS FOR RECONSTRUCTION

Recommended	*Not Recommended*

The Environment

Retaining landscape features such as parks gardens street lights signs benches walkways streets alleys and building set-backs which have traditionally linked buildings to their environment.	

Archeological Sites and Features

Retaining archeological resources intact whenever possible.	Causing ground disturbances without evaluating the archeological potential of an area.
	Failing to properly monitor all ground disturbances on a property for possible archeological data that could provide information relating to the history of the property.
Minimizing disturbance of terrain around the structure thus reducing the possibility of destroying unknown archeological resources.	Introducing heavy machinery or equipment into areas where their presence may disturb archeological resources.
	Installing underground utilities pavements and other modern features that disturb archeological resources.
Undertaking archeological investigations in accordance with the Recovery of Scientific Prehistoric and Archeological Data: Methods Standards and Reporting Requirements (36 CFR 1210 formerly 36 CFR 66 Proposed Guidelines published in the Federal Register Vol. 42 No. 19 Friday January 28 1977).	Undertaking an archeological investigation without professional guidance or without utilizing professional curatorial techniques.

Building Site

Identifying plants trees fencings walkways outbuildings and other elements that might be an important part of the property's history and development.	
Retaining plants trees fencings walkways street lights utility poles signs and benches that reflect the property's history and development.	Making changes to the appearance of the site by removing old plants trees fencings walkways outbuildings and other elements before evaluating their importance in the property's history and development.

Recommended	Not Recommended
Building Site—continued	
Basing decisions for reconstructing the site on actual knowledge of the past appearance of the property found in photographs, drawings, newspapers, and tax records.	Giving the site an appearance it never had.
Providing proper site and roof drainage to assure that water does not splash against building or foundation walls, nor drain toward the building.	
Plan	
Reproducing the basic plan of a building, the relationship and size of rooms, corridors, and other spaces.	Altering the basic plan of a building by failing to reconstruct principal walls, partitions, and stairways.
Building: Exterior Features	
Masonry: Adobe, brick, stone, terra cotta, concrete, stucco, and mortar	
Duplicating the original mortar in composition, color, and texture.	Reconstructing with mortar of high Portland cement content, thus creating a bond that can often be stronger than the new building material. This can cause deterioration as a result of the differing coefficient of expansion and the differing porosity of the material and the mortar.
Duplicating old mortar in joint size, method of application, and joint profile.	Repointing with mortar joints of a differing size of joint profile, texture or color.
Reconstructing stucco with a stucco mixture that duplicates the original as closely as possible in appearance, texture, and color.	
Replacing, where necessary, missing material with new material that duplicates the old as closely as possible in size, color, and texture.	Utilizing new materials for reconstruction which are inappropriate or were unavailable when the building was constructed, such as artificial brick siding, artificial stone, or brick veneer.
Replacing missing architectural features, such as cornices, brackets, and railings.	
Duplicating the original or early color and texture of masonry surfaces, wherever possible. Brick or stone surfaces may have been painted or whitewashed for practical and aesthetic reasons.	Applying waterproofing or water repellent coatings. They are frequently unnecessary, expensive, and can accelerate deterioration of new masonry.

Recommended	*Not Recommended*

Building: Exterior Features—continued

Wood: Clapboard, weatherboard, shingles, and other wooden siding

Duplicating original material, whenever possible.	
Reconstructing missing material with new material that duplicates in size, pattern, shape, and texture the old as closely as possible.	

Architectural Metals: Cast iron, steel, pressed tin, aluminum, zinc

Reproducing the original form, design, and texture of the missing element, wherever possible.	

Roofs and Roofing

Reconstructing the original roof shape.	Changing the original roof shape or adding features inappropriate to the essential character of the roof such as oversized dormer windows or picture windows.
	Applying new roofing material that is inappropriate to the style and period of the building and neighborhood.
Replacing missing roof coverings with new material that matches the old in composition, size, pattern, shape, color, and texture.	Replacing missing roof coverings with new materials which differ to such an extent from the old in composition, size, shape, color, and texture that the appearance of the building is altered.
Reproducing, where necessary, all architectural features that give the roof its essential character such as dormer windows, cupolas, cornices, brackets, chimneys, cresting, weather vanes, gutters, downspouts, and lightning rods.	Omitting architectural features important to the character of a reconstructed building.

Windows and Doors

Reproducing original window and door openings, including window sash, glass, lintels, sills, architraves, shutters, doors, pediments, hoods, steps, and all hardware.	Reproducing new window and door openings in the principal elevations which are inaccurate in size or shape; or enlarging or reducing window or door openings to fit new stock window sash or new stock door sizes.

Recommended	Not Recommended
Windows and Doors—continued	
	Altering the size of the original window panes or sash. Such changes destroy the scale and proportion of the building.
Duplicating the material, design, and hardware of the older window sash and doors in the new sash and doors.	Using inappropriate designs for new window or door features such as aluminum storm and screen window combinations.
Entrances, Porches, Porte-cocheres, and Steps	
Reproducing porches and steps that are appropriate to the building and its development.	Omitting or altering the design of porches and steps that are appropriate to the building's style.
Replacing missing architectural features of wood, iron, cast iron, terra cotta, tile, and brick.	Omitting porches and steps and other architectural features such as handrails, balusters, columns, brackets, and roof decorations of wood, iron, cast iron, terra cotta, tile, and brick from the reconstruction.
Building: Exterior Finishes	
Discovering original paint colors and finishes. Reproducing the colors based on the original evidence when appropriate, to illustrate the distinctive character of the property.	
	Painting with colors that cannot be documented through research and investigation to be appropriate to the building and neighborhood or using nondocumented finishes other than paint.
Building: Interior Features	
Reproducing original material, architectural features and hardware, whenever possible, such as stairs, elevators, handrails, balusters, ornamental columns, cornices, baseboards, doors, doorways, windows, mantel pieces, panelings, lighting fixtures, and parquet or mosaic flooring.	

Recommended	Not Recommended
Building: Interior Features—continued	
Replacing missing material with new material that duplicates the old as closely as possible	Installing new decorative material that is inappropriate or was unavailable when the building was constructed, such as vinyl, plastic, or imitation wood wall floor coverings
Duplicating original plaster, whenever possible	
Building: Interior Finishes	
Discovering and reproducing original paint colors, finishes, graining, wallpapers, and other decorative motifs where necessary	
Mechanical Systems: Heating, Air Conditioning, Electrical, Plumbing, Fire Protection	
Installing necessary building systems in areas and spaces that will require the least possible alteration to the plan, materials, and appearance of the building	Causing unnecessary damage to the plan and appearance of the building when installing mechanical services
Installing the vertical runs of ducts, pipes, and cables in closets, service rooms, and wall cavities	Installing vertical runs of ducts, pipes, and cables in places where they will be a visual intrusion
Selecting mechanical systems that best suit the building and are as inconspicuous as possible	
Installing exterior electrical and telephone cables underground, unless they were part of the historic scene	Attaching exterior electrical and telephone cables to the principal elevations of the building
Safety and Code Requirements	
Complying with code requirements in such a manner that the essential character of a building is preserved intact	
Investigating variances for historic properties allowed under some local codes	
Installing adequate fire prevention equipment in a manner that does minimal damage to the appearance or fabric of a property	
Providing access for the handicapped without damaging the essential character of a property	

4.5 SUPPLIERS OF HARD TO FIND MATERIALS AND PAINTS

The Old House Journal Catalog: A Buyer's Guide

Lists hundreds of companies that supply products and materials for buildings constructed before 1920. Published by:

The Old House Journal Corp.
69A Seventh Avenue
Brooklyn, N.Y. 11217
(212) 636-4514

Asphalt Roofing Materials:

Bird and Son
Pacific Division Office
2555 Flores Street
San Mateo, Ca 94403
(415) 573-8181

Owens-Corning Fiberglass Corp.
Residential Roofing Division
Toledo, Ohio 43659
San Francisco Office:
(415) 873-7950

Cast Iron Fabrications:

Lawler Machine and Foundry
West Coast Representative
Pat Nelson
501 York Street
San Francisco, CA 94110
(415) 861-9944

Clay Roofing Tile:

Generally the historic buildings at the Presidio that have terra-cotta tile roofs use tile manufactured by:

Gladding, McBean and Co.
P.O. Box 97
Lincoln, CA 95648
(916) 645-3341

Heritage Paint Colors:

The Sherwin-Williams Company
101 Prospect Avenue
Cleveland, OH 44115
1-(800) 321-8194

Masonry Cleaners:

ProSoCo, Inc.
P.O. Box 4040
1040 Parallel Parkway
Kansas City, KS 66104
(913) 281-2700

Slate Roofing Materials:

Buckingham-Virginia Slate Corp.
West coast rep.:
H.C.Brandt and Co.
2057 Figueroa Street
Los Angeles, Ca. 90065

Victorian Building Materials

Restoration Hardware
320 Second Street, 2-C
Eureka, CA. 95501
(707) 443-3152

San Francisco Victoriana
2245 Palou Avenue
San Francisco, CA 94124
(415) 648-0313

Wooden Roofing Materials:

Fire retardant shakes and shingles, including butt shakes, for use on historic buildings.

Koppers
P.O. Box 407
3016 Beacon Blvd.
West Sacramento, CA 95691
(916) 372-6920

4.6 ANNOTATED REFERENCES

4.6.1 BOOKS

Gayle, Margot; Look, David W., and Waite, John G. Metals in America's Historic Buildings: Uses and Preservation Treatments. Washington: U.S. Government Printing Office, 1980.

Valuable information on all of the major metals used in American building. Part One discusses metals historically, Part Two considers their deterioration and preservation. The photographs are especially valuable. Table III, "Methods for Surface Preparation of Iron and Steel for Painting" and Table IV, "Types of Paint Used for Painting Metal" are informative.

Insall, Donald. The Care of Old Buildings Today. London: The Architectural Press, LTD., 1975.

While this book's major concern is with English conservation that is not applicable to American examples, the information on stonework and its restoration is valuable.

Melville, Ian A. and Gordon, Ian A. The Repair and Maintenance of Houses. London: The Estates Gazette Limited, 1973.

This exceptionally detailed book is an encyclopedia of building conservation and, while concerned with British examples, presents a great deal of universal and helpful information. Information on brick and stone walls and foundations is especially valuable.

Moss, Roger. Century & Color: Exterior Decoration for American Buildings - 1820/1920. Watkins Glen: American Life Foundation, 1981.

Century of Color offers practical, well documented information concerning documentary colors for buildings within the Presidio's stylistic time span. Its coordination with the Sherwin-Williams "Heritage-Color" system is practical and applies to the color schemes suggested for several buildings within this project.

Prudon, Theodore. "Confronting Concrete Realities," Progressive Architecture, November 1981, pp. 131-138.

Prudon's article is highly readable and replete with practical suggestions for the repair of the most commonly seen concrete deterioration. The photographs and captions are informative by themselves.

4.6.2 PRESERVATION BRIEFS

The Cleaning and Waterproof Coating of Masonry Buildings. Preservation Brief No. 1. Robert C. Mack, A.I.A. U.S. Government Printing Office. Washington: 1978.

This report discusses all of the major concerns and presents a general outline for the cleaning of masonry structures. Processes involving water cleaning, chemical cleaning and mechanical procedures are addressed.

Repointing Mortar Joints in Historic Brick Buildings. Preservation Brief No. 2. Robert C. Mack, A.I.A., de Teel Patterson Tiller, James S. Askins, 1980.

Brief No. 2 is a thorough analysis of the preservation of brick structures. Photographs and simple drawings are instructive as to techniques which should be employed in brick conservation.

Conserving Energy in Historic Buildings. Preservation Brief No. 3. Baird M. Smith, A.I.A., 1978.

Methods of conserving energy are discussed in detail and include passive measures, retrofitting, insulation of building and mechanical systems, and doors and windows as thermal units.

Roofing for Historic Buildings. Preservation Brief No. 4. Sarah M. Sweetser, 1978.

After a summary of historic roof treatments, Sweetser treats specific problems and the procedures for their correction. Valuable information is given concerning alternative materials, temporary stabilization and roof maintenance.

Dangers of Abrasive Cleaning to Historic Buildings. Preservation Brief No. 6. Anne E. Grimmer, 1979.

Preservation Brief No. 6 is a comprehensive treatment of the problems incurred by abrasive cleaning methods to brick, stone, wood and metals. Acdeptable methods are discussed.

The Preservation of Historic Glazed Architectural Terra-Cotta. Preservation Brief No. 7. de Teel Patterson Tiller, 1979.

While there are no instances of architectural terra cotta at the Presidio beyond hollow tiles, this report's mention of the material as a load bearing unit in masonry construction is important. Comments concerning deterioration and maintenance procedures are generally applicable to these structural units.

Aluminum and Vinyl Sidings on Historic Buildings. Preservation Brief No. 8. John H. Myers, 1979.

The Secretary of the Interior recommends against the resurfacing of any frame building with inappropriate sidings. This report is instructive because of its persuasive arguments and accompanying photographs showing the destruction of architectural character when this course is followed.

The Repair of Historic Wooden Windows. Preservation Brief No. 9. John H. Myers, 1981.

The importance of preserving and repairing original windows is well discussed in this report. Informaiton for evaluation, maintenance and rwpairs are among the topics covered.

4.7 BIBLIOGRAPHY

4.7.1 BOOKS

Boaz, Joseph N., ed. Architectural Graphics Standards: Sixth Edition. New York: John Wiley and Sons, 1970.

Condit, Carl W. American Building: Materials and Techniques from the First Colonial Settlements to the Present. Chicago: University of Chicago Press, 1960.

Dietz, Albert G.H. Dwelling House Construction. Cambridge, Mass., The M.I.T. Press, 1974.

———. Exterior Decoration: Victorian Colors for Victorian Houses. Philadelphia: The Athenaeum of Philadelphia, 1976.

Gayle, Margot, Look, David W., and Waite, John G. Metals in America's Historic Buildings: Uses and Preservation Treatments. Washington: U.S. Government Printing Office, 1980.

Insall, Donald. The Care of Old Buildings Today. London: The Architectural Press, LTD., 1975.

Melville, Ian A. and Gordon, Ian A. The Repair and Maintenance of Houses. London: The Estates Gazette Limited, 1973.

Moss, Roger. Century of Color: Exterior Decoration for American Buildings - 1820/1920. Watkins Glen: American Life Foundation, 1981.

———. The Old House Journal Catalog 1981. Brooklyn: The Old House Journal Corporation, 1980.

Timmons, Sharon, ed. Preservation and Conservation: Principles and Practices. Washington: The Preservation Press of the National Trust for Historic Preservation, 1976.

4.7.2 PERIODICALS

Bryant, Terry. "Protecting Exterior Masonry from Water Damage: Moisture Control Procedures and Products." Technology and Conservation of Art, Architecture and Antiquities, Spring, 1978, pp. 38-42.

———. "Early Roofing Materials." Bulletin of the Association for Preservation Technology (APT), Vol. II, No. 1-2, 1970, pp. 18-89.

Ferro, Maximillian L. "The Russack System for Brick and Mortar Description: A Field Method for Assessing Masonry Hardness." Technology and Conservation of Art, Architecture and Antiquities, Summer 1980, pp. 32-35.

Firth, M. and Williams, W.M. "An Architectural Example of Oxide Jacking." Bulletin of the Association for Preservation Technology (APT), Vol. XIII, No. 1, 1981, pp. 3-6.

———. "Care and Repair of Ornamental Iron." The Old House Journal, December 1974, p. 11.

———. "Preserving Exterior Woodwork." The Old House Journal, November 1975, pp. 6-8.

———. "Specifying the Correct ... Masonry Sealers." The Old House Journal, February 1975, pp. 6-7.

Prudon, Theodore. "Confronting Concrete Realities." Progressive Architecture, November 1981, pp. 131-138.

4.7.3 TECHNICAL REPORTS

Anderson, A.H., Jr. "Investigation, Rehabilitation, and Maintenance to Prevent Deterioration of a Concrete Building." American Concrete Institute. Concrete Repair Compilation No. 5, pp. 17-25.

Conserving Energy in Historic Buildings. Preservation Brief No. 3. U.S. Government Printing Office. Washington: 1978.

de Lange, Gerard. "Structural Repair of Fire Damaged Concrete." Concrete Repair and Restoration, Compilaton No. 5, pp. 9-11. American Concrete Institute.

Epoxies for Wood Repairs in Historic Buildings. Morgan W. Phillips, Judith E. Selwyn. U.S. Government Printing Office. Washington: N.D.

Exterior Cleaning of Historic Masonry Buildings. Norman Weiss. U.S. Government Printing Office. Washington: 1977.

------. "Guide for Repair of Concrete Bridge Superstructures." Report No. ACI 546. IR-80. American Concrete Institute, Concrete Repair and Restoration, Compilation No. 5, pp. 51-70.

Historic Paint. Dossier No. 7. The Heritage Canada Foundation: Ottawa, N.D.

Masonry. Dossier No. 6. The Heritage Canada Foundation: Ottawa, N.D.

Paint Color Research and Restoration of Historic Paint. Compiled by Kevin R. Miller, The Association for Preservation Technology, Publication Supplement. Ottawa, N.D.

Repairing Slate Roofs. The Structural Slate Company. Pen Argyl, Pennsylvania: N.D.

Waddell, Joseph J. "Basic Steps of a Concrete Repair Program." American Concrete Institute, Concrete Repair and Rest, Compilation No. 5, pp. 12-15.

X-Ray Examination of Historic Structures. David M. Hart. U.S. Government Printing Office. Washington: N.D.

4.8 TREATMENT OF HISTORIC BATTERIES

Six batteries, constructed at the turn of the century, have been classified as Category I structures. As historic structures they will require preservation maintenance actions to slow their deterioration. The unique function of these structures, combined with their monolithic application of reinforced concrete dictates the use of simple maintenance actions to preserve and stabilize the structures in their present condition. The following recommendations have been developed to stabilize existing, and prevent future deterioration to the basic structural fabric of the batteries. Though some serious deterioration may exist in isolated areas, no major restorative actions are recommended. The recommendations focus on preserving the batteries while altering the historic fabric as little as possible.

MAINTENANCE RECOMMENDATIONS:

1. Remove silt and soil that has washed down into corners, crevices, and openings. Earth placed on top of or around batteries for defensive or camouflage purposes should remain, however earth that has collected in other areas should be removed. This will slow the chemical deterioration of the concrete and the rusting of iron rebars due to moisture held within the soil.

2. Check and repair all "passive" maintenance systems to assure their operation. These systems would include any gutters, valleys and channels for directing rainwater around and through the structure as well as the ground drainage system used to direct water away from the site.

3. Remove any large trees and bushes growing on or near the superstructure. Two types of deterioration can be caused by this condition:

   A. Root damage (primarily by trees) to the concrete resulting in cracking, spalling, and structural failure.

   B. Cement deterioration caused by constant surface moisture (rainwater, dew, condensation) which cannot evaporate because of the surrounding cover of shrubs and bushes.

4.9 TREATMENT OF HISTORIC INTERIORS

This Historic Building Maintaince Plan does not specifically address the interior finishes and fabric of the designated historic structures at the Presidio. Guidelines contained in the Secretary's Standards (APPENDIX 4.5) should be applied to projects which involve all interior spaces and hardware. In addition, many of the recommendations in Section II specified for use on the exterior historic fabric of these structures, will also apply to the remaining interior historic fabric.

Most interior historic fabric of the Category I buildings exists within the residential structures. It consists primarily of original woodwork, hardware, mantelpieces, light and plumbing fixtures. Though control and monitoring of significant interior spaces is considerably more difficult than similiar exterior areas a program to survey, inspect, document and, most importantly, inventory historically significant interior elements should be initiated. Such a program would begin with the most significant and/or vulnerable interiors and progress to those that are less threatened or those with less significant fabric.

Interior inspection of several residential building types was conducted during the development of the plan. This inspection revealed that, at present, the most significant threat to the existing historic fabric was the repeated "clean-up/fix-up" operations which occur every time a structure is to be newly occupied. The following general recommendations have been developed to address the treatment of these building during this transition phase, as this is the time that any type of comprehensive interior maintenance and/or restoration work should be performed.

RECOMMENDATIONS:

1. DO NOT PAINT UNPAINTED INTERIOR SURFACES.

2. DO NOT repaint interior woodwork unless condition of the existing paint makes it absolutely necessary. Chips or minor cracks should be hand-sanded smooth and then touched-up to match existing paint.

3. To retain or restore a clean "like new" appearance of interior woodwork it should be washed with mild soap and water instead of being repainting.

4. Severe paint build-up on many pieces of interior wood work now prevents smooth operation (e.g. drawers, doors, window sash and moveble shelves). These pieces should not be repainted in this condition as further paint build-up will cause stress and strain on hinges, drawer pulls and the structural integrity of the piece.

5. Develop a program to systematically strip (repaint or refinish if necessary) interior woodwork that is functionally threatened by paint build-up. A paint removal program should be structured to treat the entire piece at one time and could also include all or part of the remaining interior woodwork (doors and frames, baseboards, window frames, mantels etc.)(See Section II, Divisions 6- WOOD and Division 9- FINISHES).

6. Remove all paint from non-woodwork surfaces such as ceramic tile, porcelain, and glass.

7. Remove all paint or paint build-up from metal surfaces when it effects the smooth operation of the piece (window and door latches, hinges, etc.). Restore original finish.

In addition to the maintenance actions to be performed by the Facilities Engineers staff, occupants of designated historic structures should be made aware of the unique properties of the buildings in which they reside. They should have available instructions on how to perform the routine maintenance functions for which they are responsible. Also they should be instructed on what maintenance functions they are not to perform, to prevent well meaning but improper "do it yourself" treatments on historic interior finishes.

4.10 MAPS

PRESERVATION MAINTENANCE RECOMMENDATION

Building type 116 Date 1982

BUILDING ELEMENT	P	RECOMMENDATION NUMBER	DRAWING NUMBER	EXPLANATORY NOTES
116				
foundation	M2	2.4.1	-	Slope ground away from foundation.
"	D1	-	3.3.7	Construct concrete retaining wall at porch.
"	D2	-	photo	Replace foundation skirting with uniform vertical design.
walls	D2	-	-	Remove all metal patches from siding and replace with wood siding.
glazing	D2	-	3.2.9	Maintain existing, replace non-conforming:
			3.2.4	Double hung sash; main house, 4/4; rear addition 1/1.
doors	M2	8.1.2 ff.	-	Repair and maintain existing 1st floor doors.
"	D2	-	3.1.8	Replace 2nd fl. rear door with panel door.
trim	D1	-	-	Replace missing window hoods on 1st fl. SE elevation (see NW elev. for original design).
"	D1	-	photo	Install new window hoods over double windows 1st fl. front elev. similiar to existing side window hoods.
chimney	M1	4.1/4.2/4.5.1	3.6.2	Inspect, repair/rebuild brick chimneys.
"	M1	7.7.1	3.6.1	Reflash brick chimney.
downspouts	M1	2.4.2	-	Exhaust all downspouts into drywells or storm sewers.
vents	D2	13.1.1	-	Consolidate exterior vent pipes; eliminate as many straps, hangers and other penetrations of wall surface as possible.
porch	D1	-	3.3.7	Construct entry porch with side verandas on front facade.
"	M1	-	-	Establish expansion joint between concrete entrance ramp and wood building materials.

PHOTO-ILLUSTRATION

Building type 116 Date 1982

16-1

1 - Replace all non-conforming sash with 4/4 light sash.

2 - Window hoods identical to those on the north elevation (first floor) should be restored on the south elevation. Construct similiar hoods, two sash wide, over front windows to compensate for missing full width porch.

3 - Small porch structure should be constructed at front door to compensate for missing full width porch.

4 - Replace wood retaining wall with low concrete wall, grade earth to slope gently down and around bldg., or reconstruct building foundation along front elevation to match new grade level.

5 - Replace non-conforming foundation skirting to match horizontal skirting.

6 - Remove exterior conduit, seal openings.

- Foundation skirting should be kept a few inches above grade.

PHOTO-ILLUSTRATION

Building type 116 Date 1982

16-2

Post Plan No. _____ Main Post

O.Q.M.G.: Plan No. _____ Building No. 98 A & E

1 Rebuild or remove exterior portion of masonry chimneys.

2 Existing flush mounted gutter duplicate appearance of original molding profile and should be retained.

3 Rear addition is not well integrated with structure. If emergency egress is necessary metal escapes should be used.

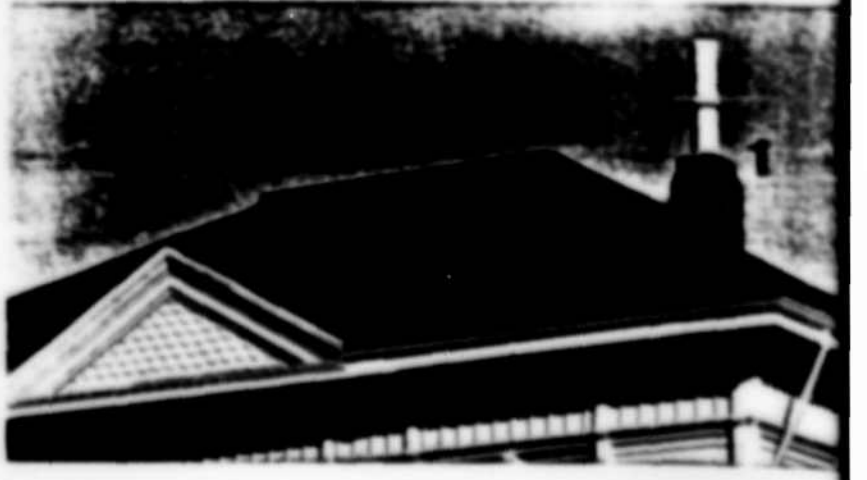
4 Remove exterior mounted condu and pipe, patch and seal hole

APPROPRIATE PAINT SCHEME:

Dark- Sash and doors

Medium- Clapboard and shingle siding
Skirting (grey)

Light- All trim, cornice, window frames



EXTERIOR MAINTENANCE SURVEY/INSPECTION

Building number 111 Date of Inspection 8/20/82

Year of construction 1885 Inspected by L. Smith

	MATERIAL	FINISH	KEY	CONDITION	PROBLEMS/ISSUES
foundation	Bldg. stone pads -				Wall has shrubbery to be changed.
	Wood siding to Library part of E.N.W. -				Hd. damage - rot &
walls N E S W	WOOD	PAINT		GOOD	
	Some boards - some replacements needed - esp. E				
windows-frame -glazing -hardware -trim -sill/lintel	STATE	Uppers 1/1 Lowers 6/6			
doors-frame -hardware -trim -sill/lintel	Front - panel double w/ glass - 2 lite transom (door worn in ends)				
trim	Orig trim @ cornice/fascia -				
roof	Flat topped pyramidal Shingles - asp. (red.)				
dormers	none -				
chimney	Five cast Stacks (-) brick chimney @ E end - needs to be rebuilt				
downspouts/drainage	Two by gutter too close to Bldg. foundation - leader leaders improper				
waste/vent	Stacks - vents + two pipes attached to exterior of Bldg.				
porches/stoops -columns/walls -floor -ceiling -rails	Orig Front porch removed - (new iron railings on pipe rails) ghost lines of orig porch roof. + iron railing @ front				

cont. on reverse

→ and @ rear - leads around to @ staircase tower - and too steel to front.

	MATERIAL	FINISH	KEY	CONDITION	PROBLEM/ISSUES

removed @ front -

steps open wood steps 2 story @ rear -

vegetation none -
grass directly up to bldg edge.

notable alterations
front porch removed
evidence @ rear that porch was removed @ earlier time.
@ front - ramp (conc.) butts directly against wood porch deck and wall indicating potential prob - bldg settlement - [illegible] repair etc...
- rear addition is old but diff. added
- inappropriate wooden retaining wall @ front.

energy considerations
[redacted]

other

orig. or old glass transom @ rear now covered over by exterior staircase - double door now single. Thus may have once been @ what is now inside face before this add. was added.
- all sash wood prob orig 4/4 - evidence of bottom sash seen on W facade.
- redwood (?) retaining wall @ front inappropriate
- vertical boarding @ E "water table area" needs replacement H₂O damage noticeable.
- some boarding (horiz. V drop) needs replacement - minor.
- conc. landing pad @ rear staircase ground level butts directly against wood siding -
- conc. drainage @ bldg. W elev - broken in spots - grooved indicate water wash - onto beneath - this is sloped area + natural H₂O raceway.

note - poss. flashing probs @ area where back add meets comble (N)
- roofing probs on top roof deck (flat area?)

PRESERVATION MAINTENANCE ACTIONS PERFORMED

Building type 116

DATE PERFORMED	PERFORMED BY	DESCRIPTION OF WORK	MATERIALS USED

NAER INVENTORY

U.S. Department of the Interior
Heritage Conservation and Recreation Service

1 SITE I.D. NO

2 INDUSTRIAL CLASSIFICATION

3 PRIORITY 1

4 DANGER OF DEMOLITION? (SPECIFY THREAT) ☒ YES ☐ NO ☐ UNKNOWN

5 DATE 1885, 1897

6 GOVT SOURCE OF THREAT OWNER ADMIN

7 OWNER/ADMIN Presidio of San Francisco
US Department of Defense, US Army

8 NAME(S) OF STRUCTURE Building 116: Sutler's House

9 OWNER'S ADDRESS Commander, 6th Army
Presidio of San Francisco
San Francisco, CA 94129

10 STATE COUNTY CA — COUNTY NAME San Francisco — CITY/VICINITY San Francisco — CONG DIST 05

STATE COUNTY CA — COUNTY NAME San Francisco — CITY/VICINITY San Francisco — CONG DIST 05

11 SITE ADDRESS (STREET & NO.) Ord Street
San Francisco, CA 94129

12 EXISTING SURVEYS ☒ NR ☐ DOE ☐ HABS ☐ HAER-I ☐ HAER ☐ NPS ☐ CLR
☐ CONF ☐ STATE ☐ COUNTY ☐ LOCAL ☐ OTHER

13 SPECIAL FEATURES (DESCRIBE BELOW) ☐ INTERIOR INTACT ☐ EXTERIOR INTACT ☐ ENVIRONS INTACT

14 UTM ZONE 10 — EASTING 5 4 7 6 0 0 — NORTHING 4 1 8 3 6 0 0 — SIGN — SCALE ☒ 1:24 ☐ 1:62.5 ☐ OTHER — QUAD NAME San Francisco North

UTM ZONE — EASTING — NORTHING — SIGN — SCALE ☐ 1:24 ☐ 1:62.5 ☐ OTHER — QUAD NAME

15 CONDITION 16 ☐ EXCELLENT 17 ☒ GOOD 18 ☐ FAIR 19 ☐ DETERIORATED 20 ☐ RUINS 21 ☐ UNEXPOSED 22 ☒ ALTERED L ☐ DESTROYED M ☐ REMOVED/MOVED

16 INVENTORIED BY Mark Brack, James P. Delgado — AFFILIATION NAER — DATE August 1981

17 DESCRIPTION AND BACKGROUND HISTORY (INCLUDING CONSTRUCTION DATES, HISTORICAL DATES, PHYSICAL DESCRIPTION, ARCHITECTURAL STYLE, ALTERATIONS, ETC.)

Built in 1885, at an estimated cost of $4400, for Italian immigrant Angelo Barreta, operator of the Presidio's sutler's store. Sutler operated contract service constituting forerunner of modern post exchange and commissary. In 1891 the Army acquired the building for $3000, adapting it for use as an enlisted mens' barracks by 1897. Architecturally, displays elements of Italianate and Stick Style in mixed vernacular expression. Simple symmetrical two-story structure with hip roof and small central pedimental element above main cornice. Originally displayed a finely detailed, single-level, full-front veranda (glazed), now removed. Building measures roughly 36'x44'. Wood-frame construction with shiplap siding and concrete foundation. Truncated hip roof with asphalt shingles. Cornice and overhanging eaves with sloping soffit. Broad frieze-like area under eaves composed of decorative vertical boarding and decoratively shaped, attenuated brackets extending from corners and window sides, through frieze area, and support eaves (similar decorative

(CONT OVER)

18 ORIGINAL USE sutler's house — PRESENT USE chaplain office, offices — ADAPTIVE USE

19 REFERENCES - HISTORICAL REFERENCES PERSONAL CONTACTS AND/OR OTHER

Building Information Schedule (AR 210-20), Presidio of San Francisco (31 March 1980).
Photographic Archives, Presidio Army Museum.
John Langellier, Outpost of Empire: The Presidio of San Francisco (1980). Typescript at Presidio Army Museum.

(CONT OVER)

20 URBAN AREA 10,000 POP OR MORE? ☒ YES ☐ NO — 21 — 22 PUBLIC ACCESSIBILITY ☐ YES LIMITED ☒ YES UNLIMITED ☐ NO ☐ UNKNOWN — 23 EDITOR INDEXER

24 LOCATED IN AN HISTORIC DISTRICT? ☒ YES ☐ NO — NAME Presidio of San Francisco — DISTRICT I.D. NO

GPO 911 981

vertical boarding appears on Bldgs. 36 and Bldgs. 56-59, all erected that same year). Central pedimental element has decorative fish-scale shingling and supporting brackets in aforementioned frieze-like area. Windows and doors in general have attenuated proportions. Doorway in antis; double doors with heavily molded panels and trim, glazing and transom. Double hung sash windows, one-over-one and four-over-four, with sloping decorated lug sills. Double windows on facade. Side elevation has highly decorated first-floor windows, decorative surround includes bracketed hoods. Two-story north side addition, with shed roof and exterior wooden stairway. Shed ell at rear. Interior largely intact; includes stairways, plaster work, rosettes, and molded wood paneling.

Significance

Sutler's store served vital function at any military post, providing soldiers an opportunity to purchase supplies not furnished by government. Only structure on post constructed for civilian commercial purposes. Along with Bldgs. 56-59, represents best example among the Presidio buildings of the highly decorative woodwork and workmanship characteristic of 1880s and 1890s. Associated with important period of Presidio expansion during Indian Wars.

PRESERVATION MAINTENANCE RECOMMENDATIONS

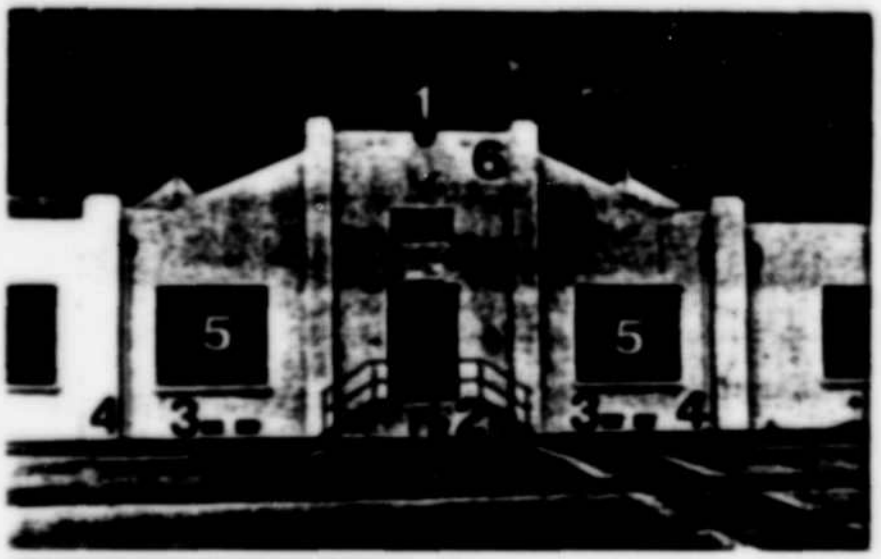
Building type 643 Date 1982

BUILDING ELEMENT	P	RECOMMENDATION NUMBER	DRAWING NUMBER	EXPLANATORY NOTES
643				
walls	M2	9.2	-	Inspect and repair deteriorated stucco.
	M2	-	3.7.2	Install protective bollards or curbing along ends of bldg.
windows	M1/D1	8.5 ff	-	Initiate a program of evaluation, stabilization and replacement of existing metal sash.
glazing	D1	-	photo	Maintain existing multi-pane glazing pattern.
doors	D1	8.1 ff	-	Inspect and repair existing double front doors and transom.
downspouts	M1	2.4.2	-	Direct all downspouts into storm sewers.

PHOTO ILLUSTRATION

Building type 643 Date 1982

643



1 - Remove lighting fixtures from exterior walls, mount on near poles or in less visible area

2 - Paint end wall of porch to match bldg.

3 - Inspect/replace deteriorated missing foundation vents.

4 - Empty downspouts into storm sewers or drywells.

5 - Many existing metal sash are deteriorated and should be repaired or replaced with similiar new units.

6 - Inspect/repair parapet wall f cracks and deterioration due moisture. Staining would indicate that run-off from t ledge contains impurities probably from overlapping roofing material.

7 - Install bollards or permanent curbing along bldg. ends to protect walls from vehicular damage.

8 - Slope ground at rear of bldg. away from walls to prevent moisture damage from ground run-off.

APPROPRIATE PAINT SCHEME:

Dark- All window sash, doors, downspouts, railings.

Light- All wall vents, stucco a concrete exterior walls and trim.

PRESERVATION MAINTENANCE ACTIONS PERFORMED

Building type 643

DATE PERFORMED	PERFORMED BY	DESCRIPTION OF WORK	MATERIALS USED

EXTERIOR MAINTENANCE SURVEY/INSPECTION

Building number 243 Date of Inspection 2/12/92

Year of construction ____ Inspected by CM

	MATERIAL	FINISH	KEY	CONDITION	PROBLEMS/ISSUES
foundation					
walls N E S W					
windows -frame -glazing -hardware -trim -sill/lintel					
doors -frame -hardware -trim -sill/lintel					
trim					
roof					
dormers					
chimney					
downspouts/drainage					
waste/vent					
porches/stoops -columns/walls -floor -ceiling -rails					

cont. on reverse

	MATERIAL	FINISH	KEY	CONDITION	PROBLEM/ISSUES
steps					
vegetation					
notable alterations					
energy considerations					
other					

NAER INVENTORY

U.S. Department of the Interior
Heritage Conservation and Recreation Service

1. SITE I.D. NO:

2. INDUSTRIAL CLASSIFICATION:

3. PRIORITY: 1

4. DANGER OF DEMOLITION? (SPECIFY THREAT): YES ☐ NO ☐ UNKNOWN ☐
Considered semi-permanent by Army

5. DATE: 1923

6. GOVT SOURCE OF THREAT:

7. OWNER/ADMIN: Presidio of San Francisco
US Dept. of Defense, US Army

8. NAME(S) OF STRUCTURE:
Building 643: Aircraft Hanger - Crissy Field

9. OWNER'S ADDRESS:
Commander 6th Army
Presidio of San Francisco
San Francisco, CA 94129

10. STATE: CA COUNTY: San Francisco CITY/VICINITY: San Francisco CONG. DIST: 05

STATE: CA COUNTY: San Francisco CITY/VICINITY: San Francisco CONG. DIST: 05

11. SITE ADDRESS (STREET & NO.):
Mason Street
San Francisco, CA 94129

12. EXISTING SURVEYS: NPS ☐ HAER ☐ HABS ☐ HAER-I ☐ HAER ☐ NPS ☐ CLR ☐ COMP ☐ STATE ☐ COUNTY ☐ LOCAL ☐ OTHER

13. SPECIAL FEATURES (DESCRIBE BELOW): INTERIOR INTACT ☐ EXTERIOR INTACT ☐ ENVIRONS INTACT ☐

14. UTM ZONE: 10 EASTING: 547550 NORTHING: 4183900 SCALE: 24 ☐ 1:62.5 ☐ OTHER ☐ QUAD NAME: San Francisco North

UTM ZONE: EASTING: NORTHING: SCALE: 1:24 ☐ 1:62.5 ☐ OTHER ☐ QUAD NAME:

15. CONDITION: EXCELLENT ☐ GOOD ☐ FAIR ☐ DETERIORATED ☐ RUINS ☐ UNEXPOSED ☐ ALTERED ☐ DESTROYED ☐ UNKNOWN ☐

16. INVENTORIED BY: Mark Brack, James P. Delgado
AFFILIATION: NAER
DATE: August 1981

17. DESCRIPTION AND BACKGROUND HISTORY, INCLUDING CONSTRUCTION DATES, HISTORICAL DATES, PHYSICAL DIMENSIONS, MATERIALS, EXTANT EQUIPMENT AND IMPORTANT BUILDERS, ENGINEERS, ETC.

Built in 1923, for $47,200, as an aircraft hanger for Army's air base at Crissy Field. Part of early expansion of field's facilities. During WWII housed Defense Language Institute, first school of its type in nation, presently located at Presidio of Monterey. Utilitarian structure measuring 68'x332', with architectural character mildly related to both 1920s "modern" design elements and stripped-down Spanish Colonial Revival features. One and one-half story, stucco covered, concrete and hollow tile structure with concrete slab foundation. Bays articulated by pier/pilaster vertical members with stepped tops extending slightly above roofline. Entrances marked by raking roofline forming taller entrance bay; central vent and raised diamond motif set above door. Straight approach concrete stoop with tubular metal railings. Gambreled composition paper roof with skylights. Flat doorways with opaque glass transoms and wood-paneled and glazed sliding overhead doors. Fixed windows with metal sash and concrete lug sills.

(CONT OVER)

18. ORIGINAL USE: aircraft hanger
PRESENT USE: electronics maintenance shop
ADAPTIVE USE:

19. REFERENCES: HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Building Information Schedule (AR 210-20), Presidio of San Francisco (31 March 1980).
Presidio Building Book Fort Winfield Scott (1900-1983). At Presidio Army Museum.

(CONT OVER)

20. URBAN AREA SCORE (FOR QUADRANGLE): YES ☐ NO ☐

21.

22. PUBLIC ACCESSIBILITY: YES - LIMITED ☐ YES - UNLIMITED ☐ NO ☐ UNKNOWN ☐

23. EDITOR INITIALS:

24. LOCATED IN AN HISTORIC DISTRICT? YES ☐ NO ☐ NAME: Presidio of San Francisco NHL DISTRICT I.D. NO:

Major Base Crissy Field and

Significance

Significant as early addition to Crissy Field, and as first site of Defense Language School. Architecturally, shows compatibility of 1920s "modern" and Spanish Colonial Revival design elements, thus relating to architectural coherence of Crissy Field and continuity of Spanish Colonial style at Presidio.

PRESERVATION MAINTENANCE RECOMMENDATIONS

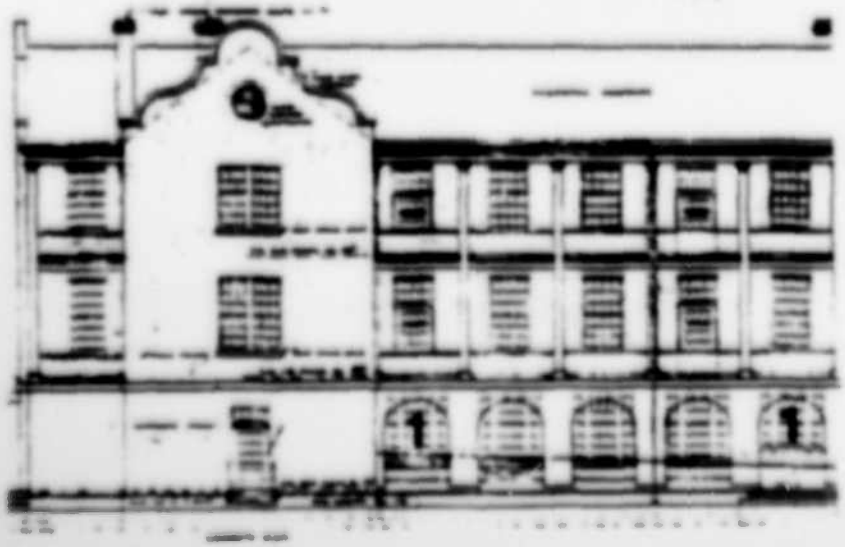
Building type 650 Date 1982

BUILDING ELEMENT	P	RECOMMENDATION NUMBER	DRAWING NUMBER	EXPLANATORY NOTES
650				
foundation	M2	2.2.2	-	Remove large shrubs and bushes at foundation wall.
windows	M2	8.3 ff.	-	Initiate an evaluation and repair program.
glazing	D1	-	3.2.16	Replace ground floor arcade infill glazing with more appropriate design.
			photo	Maintain existing configuration of double hung sash.
doors	M2	8.1 ff.	-	Initiate an evaluation and repair program.
trim	M1	4.5.3	-	Repoint or caulk jointwork in cast stone parapet caps.
	M1	9.1.3	-	Repaint parapet cap and surrounding area to counteract severe exposure in this location.
roof	M2	7.3.3	-	Inspect, repair/replace broken or missing tiles.
	M2	7.3.4	-	Inspect, repair metal roofing.
		5.7 ff.		
gutters	D1	-	3.5.14	Inspect/repair existing gutters. Replace using half-round gutters as existing.
downspouts	D1	-		Replace downspouts using round profile only.
mechanical	D1	-		Exterior located mechanical equipment should be enclosed or screened from view on the principle elevations.

PHOTO-ILLUSTRATION

Building type 650 Date 1982

650-1



- Major alterations have significantly changed the original appearance of this structure. It should not be "restored" to its original configuration, but prominent elements of the design should be preserved.

- Original glazing consisted of multi-pane sash, this has been replaced in part by 2/2 sash some windows, this should remain.

APPROPRIATE PAINT SCHEME:

Dark- all wood and metal trim.

Medium- all stucco/stone.

1 This original drawing indicates the original appearance of the balconies and the ground floor arcade interior glazing. If the arcade is to remain permanently enclosed the glazing within the arches should be changed to a design resembling this glazing

PHOTO-ILLUSTRATION

Building type 650 Date 1982

650-2

1 - Large, exterior mechanical units should be screened from view by using either shrubbery or stucco covered screen walls.

- Ensure that all pipe attachments to the exterior wall are carefully sealed and that mounts do not do irreperable damage historic wall fabric.

2 - Inspect cast stone parapet capping for loose or missing mortar and anchoregee, cracks in the stone and deterioration of the flashing along the joint with the tile roof.

3 - "Blind" windows and doors at the basement level is an appropriate way to close openings while disturbing the character of the building as little as possible.

4 - A more unified landscaping plan should be developed for this building to enhance its symmetrical appearance.

PRESERVATION MAINTENANCE ACTIONS PERFORMED

Building type L50

DATE PERFORMED	PERFORMED BY	DESCRIPTION OF WORK	MATERIALS USED

EXTERIOR MAINTENANCE SURVEY/INSPECTION

Building number 650 Date of inspection 7/9/82

Year of construction ____ Inspected by CM

	MATERIAL	FINISH	KEY	CONDITION	PROBLEMS/ISSUES
foundation	stucco over poured concrete	[illegible]		good	
walls N E S W	stucco over [illegible]	[illegible]		good	
windows-frame -glazing -hardware -trim -sill/lintel	wood	[illegible]		fair	
doors-frame -hardware -trim -sill/lintel	wood glass	[illegible]		fair	
trim		[illegible]			
roof	shed & dbl over porches	[illegible]			
dormers					
chimney	stucco	[illegible]		good	
downspouts/drainage		[illegible]			
waste/vent					
porches/stoops -columns/walls -floor -ceiling -rails	stucco over concrete wood	[illegible]		fair	

metal pipe at top

cont. on reverse

	MATERIAL	FINISH	KEY	CONDITION	PROBLEM/ISSUES
steps	conc.	paint			minor chip at interior
vegetation	grass; foundation planting			good	
notable alterations	original open porches have been closed in with stucco-covered frame walls; windows are still in place at original exterior walls (flush w/ stucco at all elevations); minor additions have been made to walls and roof; substantial enclosed duct runs were added around exterior windows around sides of ground floor; have been filled in				
energy considerations					
other	review historical photographs to determine original appearance of porches and type railings used				

NAER INVENTORY

U.S. Department of the Interior
Heritage Conservation and Recreation Service

1 SITE I.D. NO

2 HISTORICAL CLASSIFICATION

3 PRIORITY: 1

4 DANGER OF DEMOLITION? (SPECIFY THREAT): ☐ YES ■ NO ☐ UNKNOWN

5 DATE: 1921

6 GOVT SOURCE OF THREAT: OWNER ADMIN

7 OWNERSHIP: Presidio of San Francisco
US Dept. of Defense, US Army

8 TYPE(S) OF STRUCTURE: Building 650: Enlisted Mens' Barracks W/ Mess - Crissy Field (Stillwell Hall)

9 OWNER'S ADDRESS: Commander, 6th Army
Presidio of San Francisco
San Francisco, CA 94129

10 STATE: C A | COUNTY/PARISH: San Francisco | CITY/VICINITY: San Francisco | CONG. DIST: 0 5

11 SITE ADDRESS (STREET & NO.): Mason Street
San Francisco, CA 94129

12 EXISTING SURVEYS: ☐ NR ☒ NHL ☐ HABS ☐ HAER-I ☐ HAER ☐ NPS ☐ CLR
☐ CCHP ☐ STATE ☐ COUNTY ☐ LOCAL ☐ OTHER

13 SPECIAL FEATURES (DESCRIBE BELOW): ☐ INTERIOR INTACT ☐ EXTERIOR INTACT ☐ ENVIRONS INTACT

14 UTM ZONE: 10 | EASTING: 547100 | NORTHING: 4183350 | DATUM:
SCALE: ☒ 1:24 ☐ 1:62.5 ☐ OTHER | QUAD NAME: San Francisco North
SCALE: ☐ 1:24 ☐ 1:62.5 ☐ OTHER | QUAD NAME:

15 CONDITION: ☐ EXCELLENT ☒ GOOD ☐ FAIR ☐ DETERIORATED | 16 ☐ RUINS ☐ UNEXPOSED ☒ ALTERED ☐ DESTROYED ☐ DEMOLISHED

18 INVENTORIED BY: Mark Brack, James P. Delgado | AFFILIATION: NAER | DATE: August 1981

17 DESCRIPTION AND BACKGROUND HISTORY, INCLUDING CONSTRUCTION DATES, HISTORICAL DATES, PHYSICAL DIMENSIONS, MATERIALS, EXTANT EQUIPMENT AND IMPORTANT BUILDERS, ENGINEERS, ETC.

Built in 1921, for $165,100, as enlisted mens' barracks for air base at Crissy Field. In 1986 named Stillwell Hall after General Joseph Stillwell, who had no known historical ties to structure. Interior modified for use as offices. Architecturally, simplified version of Spanish Colonial Revival, common in institutional buildings of period. Three-story; central cross-axial rectangular portion 27'x109', two large rectangular 37'x125' and wings perpendicular to central portion, a 58'x90' wing in center of rear elevation. Stucco-covered brick structure with concrete foundation. Elevation articulated in module-like, square recessed panels, formed by surrounding raised members relating to piers, in each bay, beltcourse and watertable. Three-level front gallery on central portion composed of first-level arcade, partially enclosed, piers with molded handrail on second-level, and enclosed top-level. Gable roof with Spanish tile and stuccoed chimneys. Six espandanas, or shaped gable ends, most with oeil-de-boeuf windows. Wood-paneled doors with

19 ORIGINAL USE: enlisted mens' barracks w/ mess | PRESENT USE: offices | ADAPTIVE USE:

20 REFERENCES - HISTORICAL REFERENCES, PERSONAL CONTACTS, AND/OR OTHER

Building Information Schedule (AR 210-20), Presidio of San Francisco (31 March 1980).
Presidio Building Book Fort Winfield Scott (1900-1943). At Presidio Army Museum.
*hotographic Archives, Presidio Army Museum.

(CONT OVER)

21 URBAN AREA 50,000 POP OR MORE? ☐ YES ☐ NO | 22 | 23 PUBLIC ACCESSIBILITY: ☐ YES LIMITED ☐ NO ☒ YES UNLIMITED ☐ UNKNOWN | 24 EDITOR INDEXER

25 LOCATED IN AN HISTORIC DISTRICT? ☒ YES ☐ NO NAME: Presidio of San Francisco Hill | DISTRICT I.D. NO

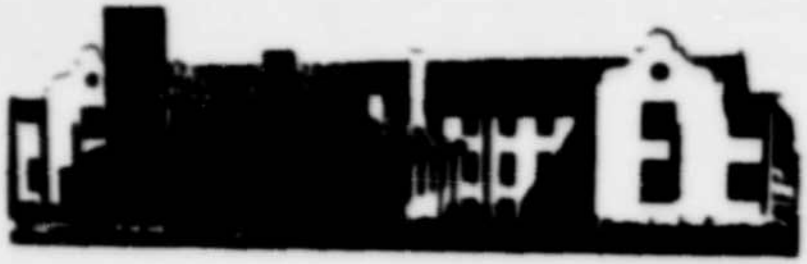


Photo: Show Crissy Field and

glazing, sidelights, and transoms. Double-hung sash windows, twelve-over-twelve, two-over-two, and eight-over-twelve, with wooden lug sills. Two bronze panish cannon on concrete mounts in front of building.

Significance

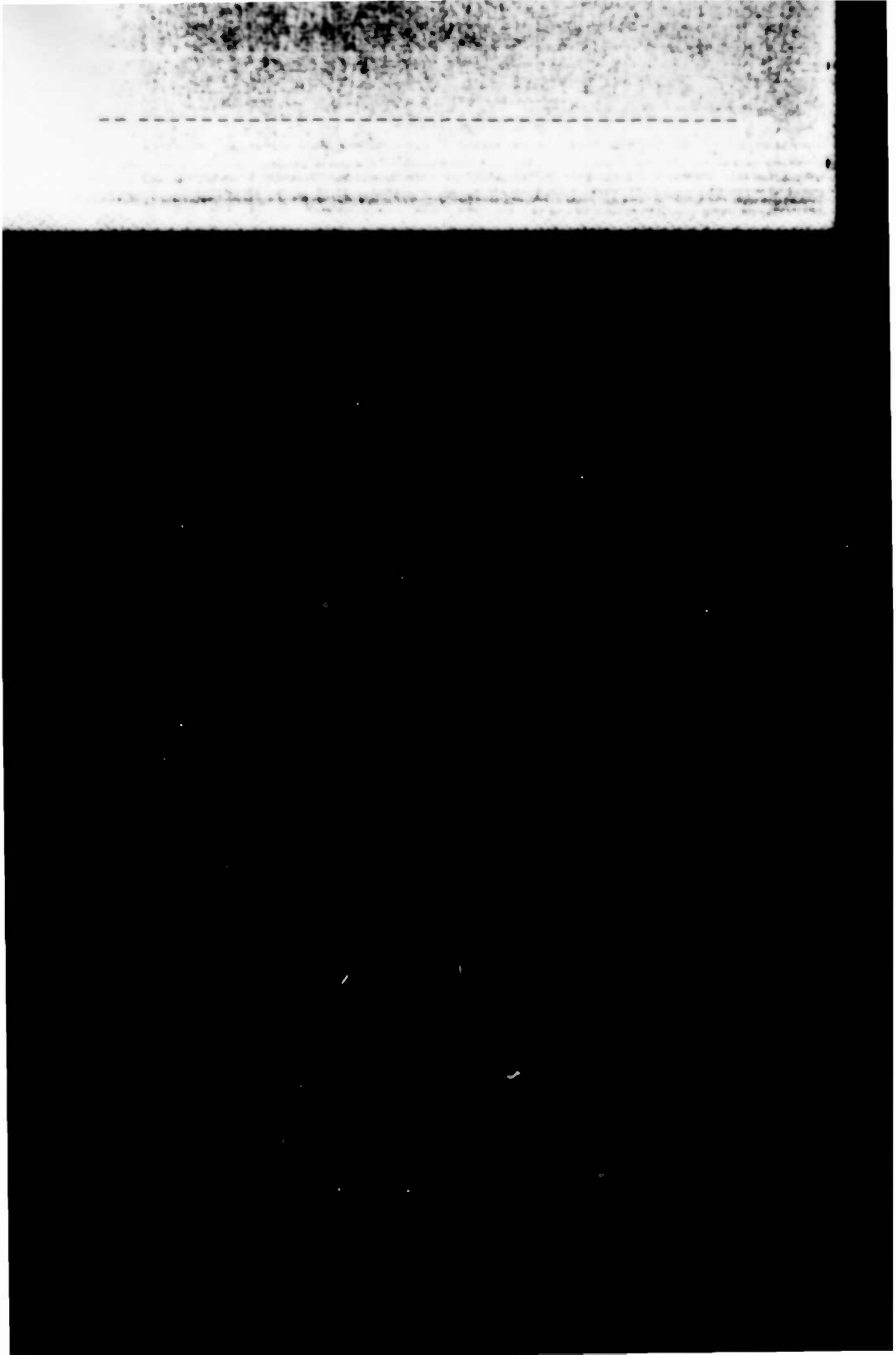
Part of original Crissy Field complex and associated with its significance as early Army air base. Relates to large scale adoption following 1910 of overlapping stylistic phases--Mission, Spanish Colonial, and Mediterranean--derived primarily from Hispanic architectural heritage. Adoption helps account for magnificent stylistic and material uniformity in Presidio architecture.

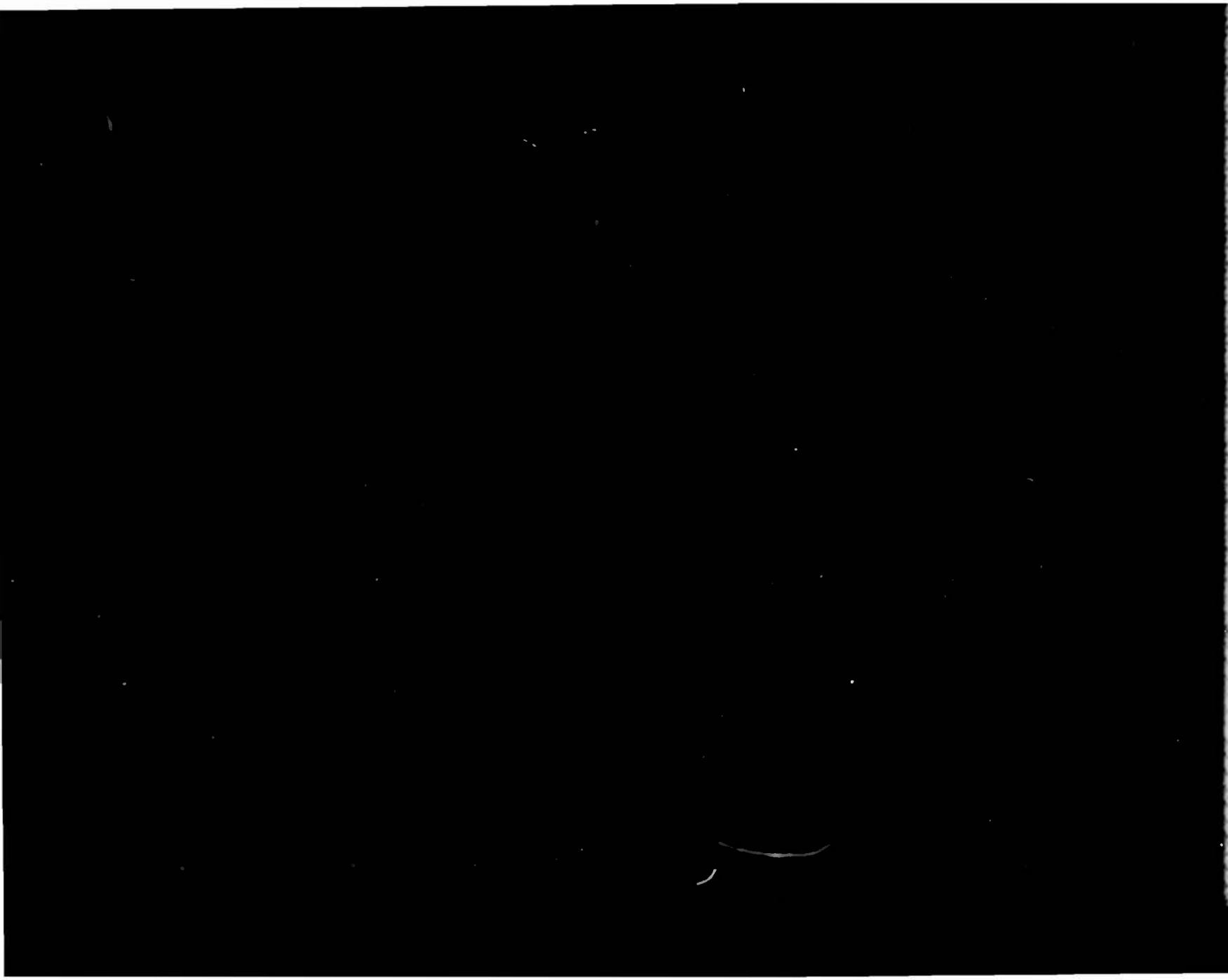
San Francisco Progress (14 October 1977).

Nat'l Archives, Record Group ", Box 4, Army Air Force, Annual Reports, 1918-26,.

porches/stoops
-columns/walls
-floor
-ceiling
-walls

cont. on reverse





Building 643:

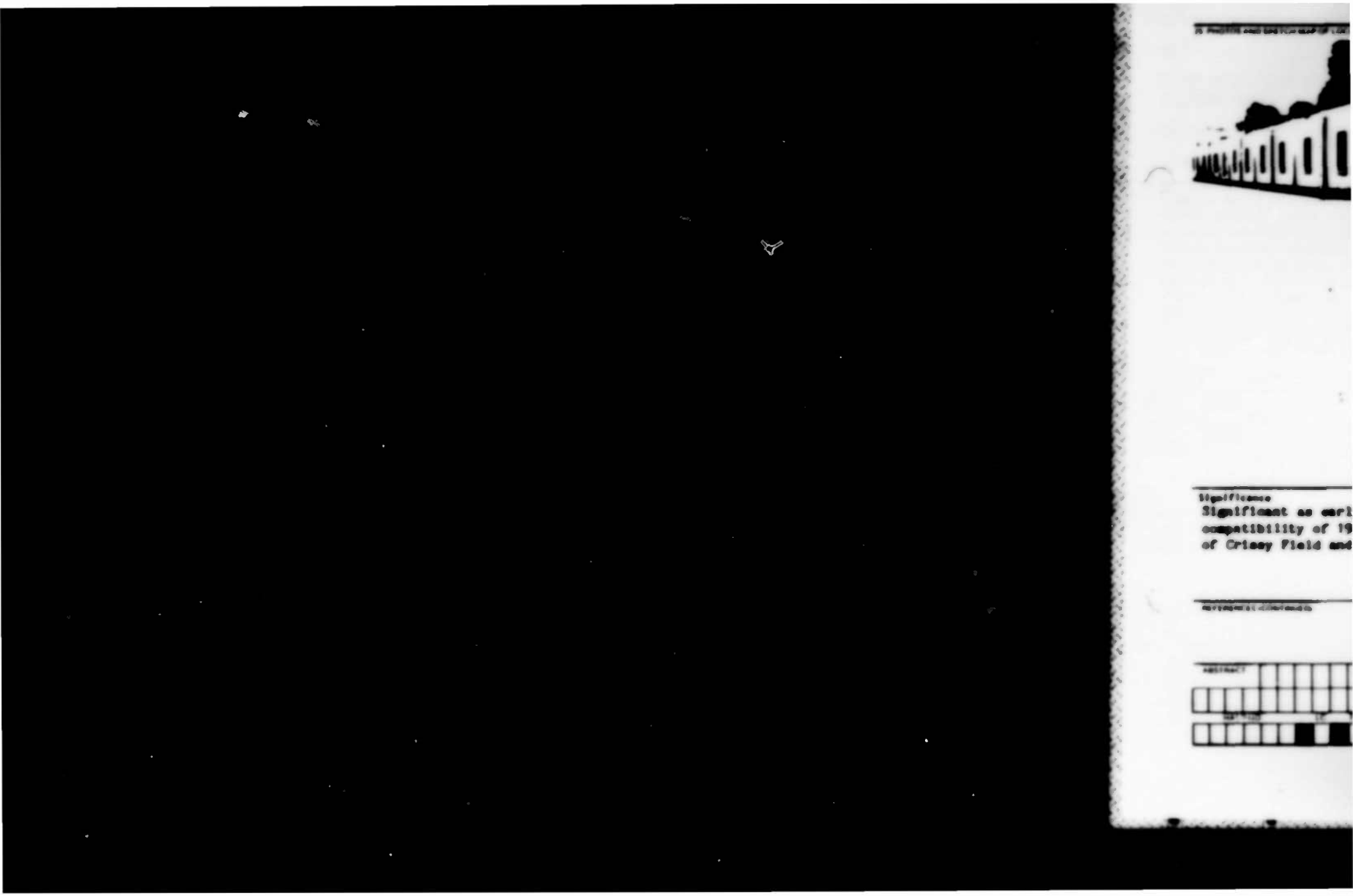
Mason Street
San Francisco, CA

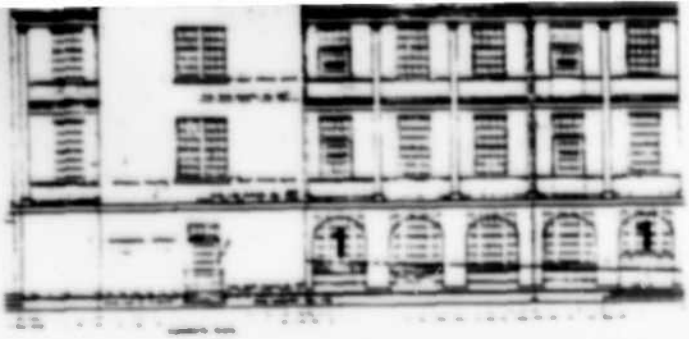
Mark Brack, James

Built in 1923, for $87,
field's facilities. Du
located at Presidio of
to both 1920s "modern"
stucco covered, concrete
vertical members with
taller entrance bay; co
tubular metal railings.
wood-paneled and glazed

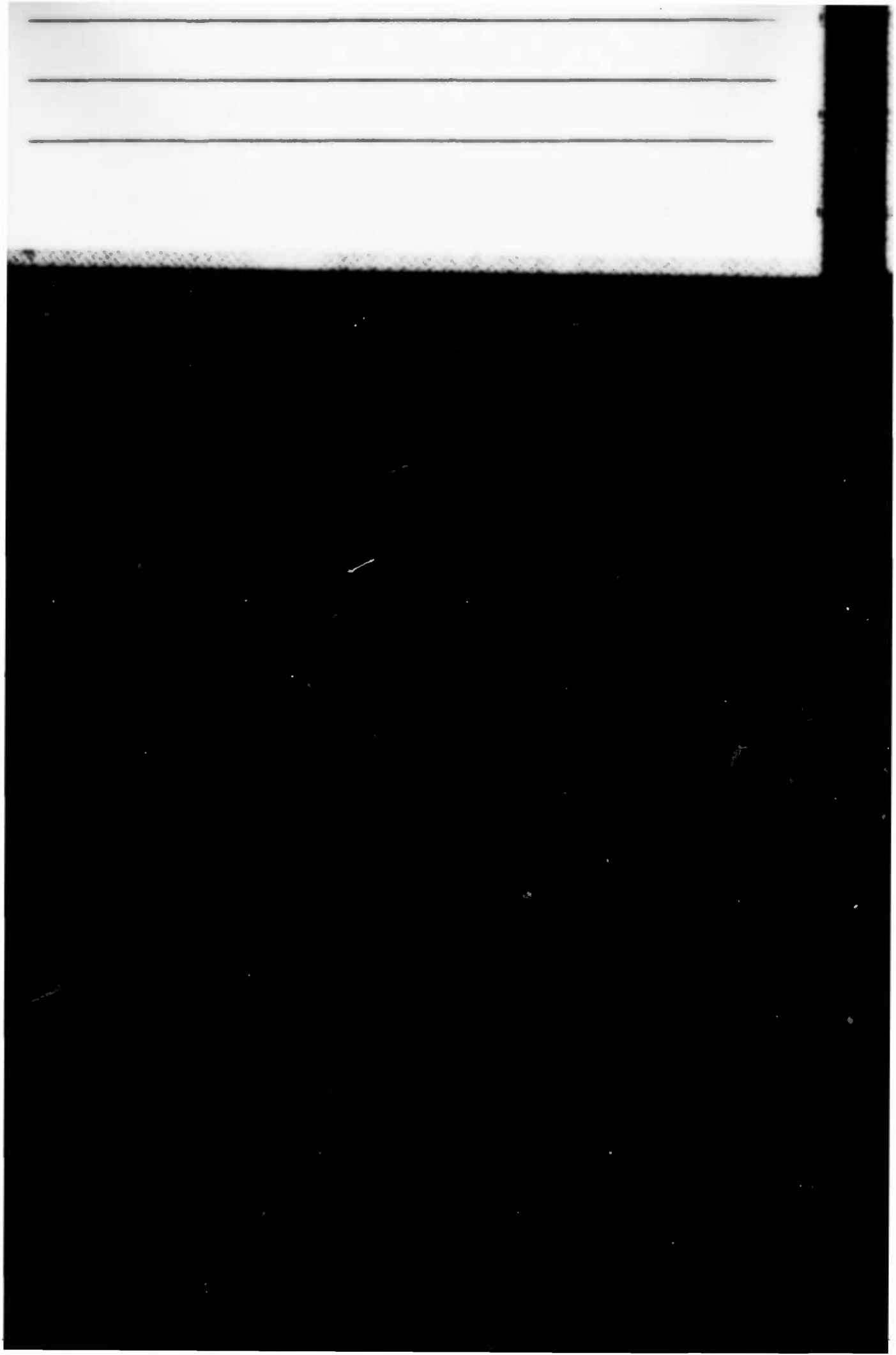
aircraft hange

Building Information So
Presidio Building Book






4
3



porches/stoops

-columns/walls

-floor

-ceiling

-rails

cont. on reverse