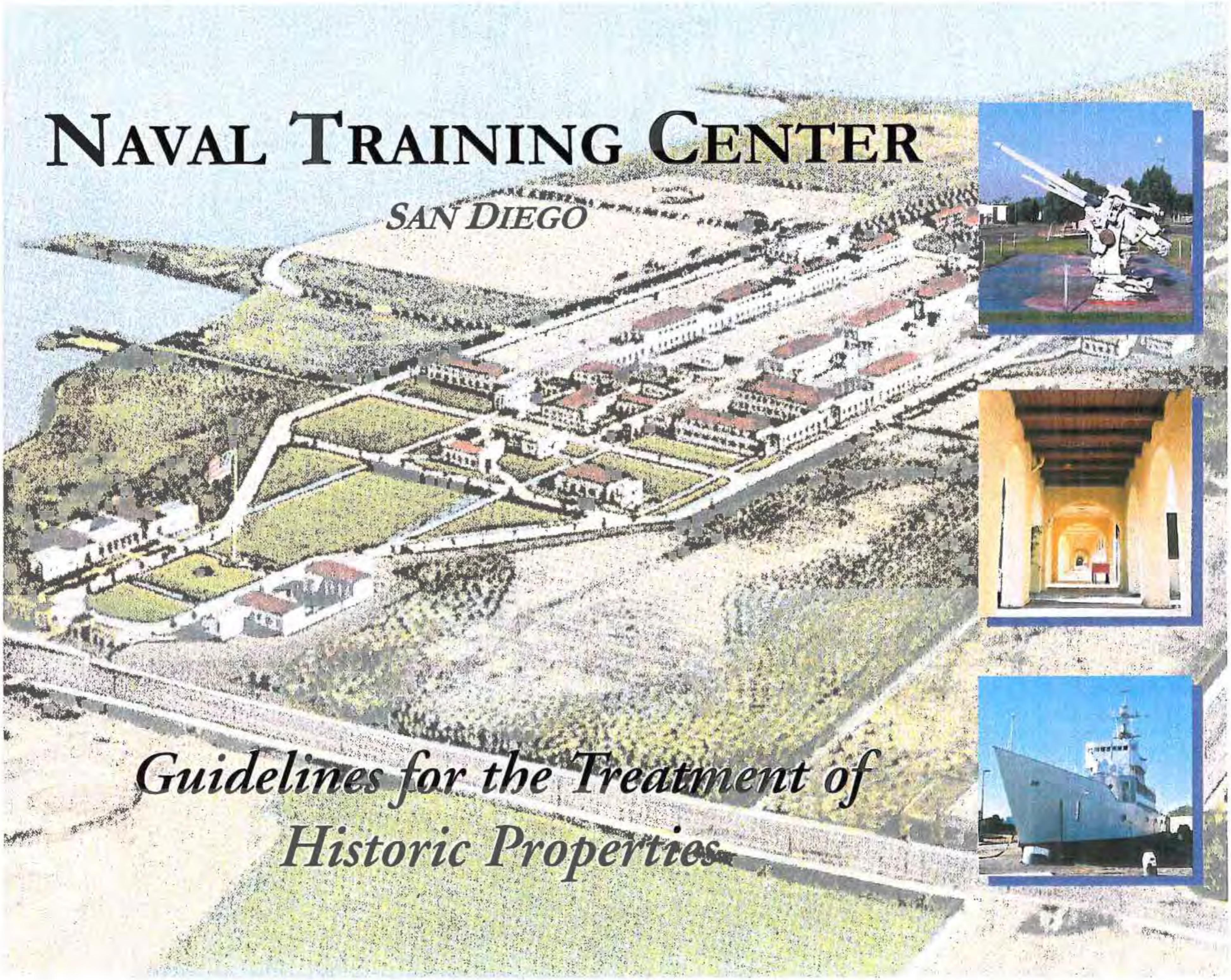
NAVAL TRAINING CENTER

SAN DIEGO



Guidelines for the Treatment of Historic Properties

Cover: Aerial view looking south, ca. 1920s. Inset photographs: Top photograph of Gun Platform #2; middle photograph of the arcade; bottom photograph of the USS Recruit. Historic postcard and photographs courtesy of Architect Milford Wayne Donaldson, FAIA.

Opposite: Recruits standing by for inspection at the Naval Training Station on a Saturday morning. The recruits are mustered in a quadrangle known as John Paul Jones Court, named after their illustrious predecessor, John Paul Jones. Recruits from the western part of the United States were sent to this station before being assigned to the fleet. Historical postcard ca. 1930s courtesy of Architect Milford Wayne Donaldson, FAIA.

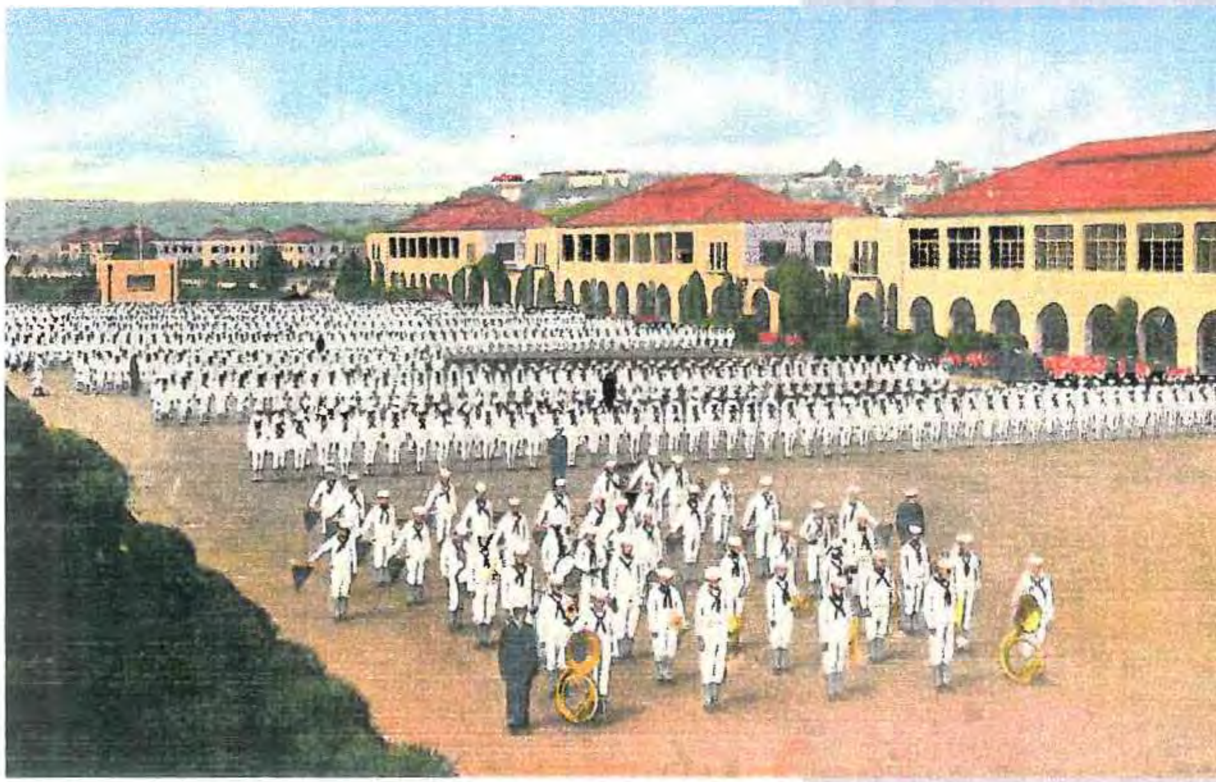
Guidelines for the Treatment of Historic Properties

NAVAL TRAINING CENTER

SAN DIEGO

Prepared for:

McMillin NTC, LLC and
The City of San Diego



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August 1, 2000

Recommended for approval by the San Diego Historical Resources Board on June 22, 2000.
This document is to be reviewed by the Planning Commission and approved by the City Council.

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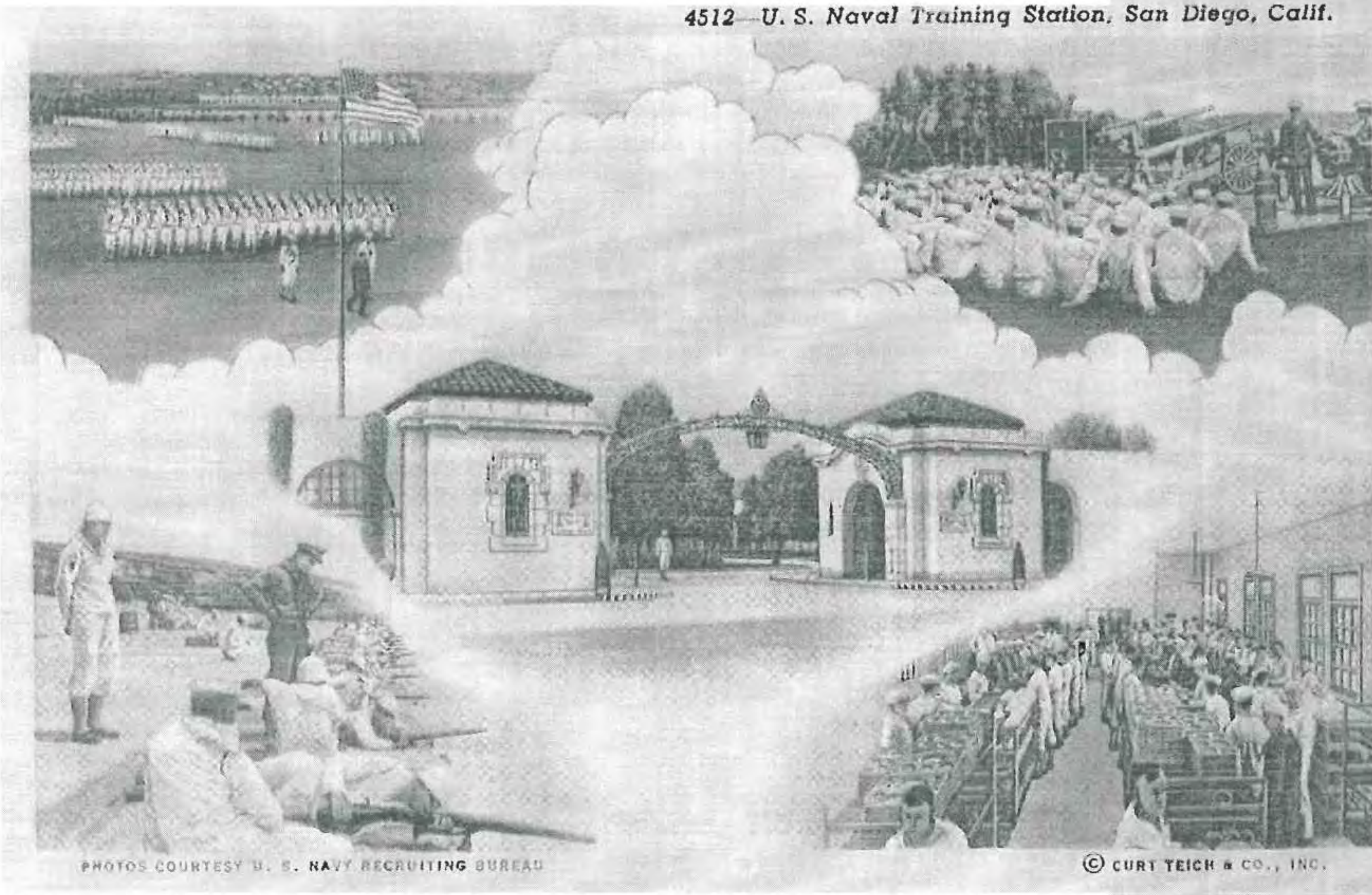

Recruit training at the Naval Training Station, ca. 1930s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

GUIDELINE GOALS AND OBJECTIVES

Forward

The year 2001 will mark the eightieth anniversary of the National Park Service as well as thirty-five years of preservation achievements since passage of the National Preservation Act of 1966, which created the national register programs and established a nationwide federal/state partnership. Publication of *The Secretary of the Interior's Standards for the Treatment of Historic Properties* coincides with the celebration of this important act. Since 1966 over 800,000 properties have been placed on the National Register of Historic Places through joint efforts of State Historic Preservation Offices, federal agencies, Certified Local Governments, and the private sector. Over the past quarter century, historic preservation grants to the states for survey, planning, and rehabilitation have amounted to nearly $600 million—an investment totaling close to $1.2 billion with the inclusion of matching nonfederal funds. Additionally, the Preservation Tax Incentives, now in their twenty-eight year, have contributed to the rehabilitation of nearly 22,000 historic properties, representing an investment of almost $15 billion in private funds.

The Secretary of the Interior's Standards (Standards) have been used to determine the appropriateness of treatments for every grant-in-aid and Tax Act project over a twenty-five year period. By emphasizing repair over replacement, and limited rather than wholesale change to accommodate new uses, the *Standards* and their accompanying *Guidelines* seek to ensure the preservation of those qualities for which each property was listed on the national register.

The Secretary of the Interior's Standards for Rehabilitation are designed to enhance overall understanding of basic preservation principles. Specific examples of appropriate treatments, as well as the consequences of inappropriate treatments, are shown to encourage the most respectful approaches possible in rehabilitating City of San Diego's irreplaceable historic properties at the Naval Training Center.

Purpose of the Naval Training Center Guidelines for the Treatment of Historic Properties

GUIDELINE GOALS AND OBJECTIVES

The *Naval Training Center Guidelines for the Treatment of Historic Properties* (*NTC Guidelines*) has been prepared to establish criteria for treating historic resources within the Naval Training Center Historic District. The *NTC Guidelines* are intended to be a design aid in determining acceptable alterations, additions, and repairs for preserving the character of the historic district. They are based on *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, published in 1995 by the National Park Service.

The Secretary of the Interior's Standards for the Treatment of Historic Properties (*Standards*) provide general information to determine appropriate treatments for historic properties. They are intentionally broad in scope in order to apply to a wide range of circumstances. The *Standards* have been designed to enhance the understanding of basic preservation principles and may be applied to one historic resource or a variety of historic resource types. Historic resource types and examples include:

- District: A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures or objects united historically or aesthetically by plan or physical development. The Naval Training Center has a historic district consisting of fifty-two buildings and landscape features.

- Site: A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.

- Building: A building, such as a dormitory, church or gym, is created to shelter any form of human activity. Buildings may also be used to refer to a historically and functionally related unit, such as a courthouse and jail. The Commandant's Quarters is a building at the Naval Training Center.

- Structure: The term structure is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter such as a bandstand, ship, bridge, power plants, fire towers, irrigation system, fence, and systems of roadways and paths. A gun platform is an example of a structure at the Naval Training Center.

- Object: The term object is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is associated with a specific setting or environment. Examples include fountains, monuments, sculptures, and boundary markers. An anchor is an example of an object at the Naval Training Center.

GUIDELINE GOALS AND OBJECTIVES

Looking west at the USS Recruit. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA. December 1999.

Initially developed by the Secretary of the Interior to determine the appropriateness of proposed project work on registered properties within the Historic Preservation Fund grant-in-aid program, the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (*Standards*) have been widely used over the years—particularly to determine if a rehabilitation qualifies as a Certified Rehabilitation for federal purposes. In addition, the *Standards* have guided federal agencies in carrying out their historic preservation responsibilities for properties in federal ownership or control; and state and local officials in reviewing both federal and nonfederal rehabilitation proposals. They have been adopted by historic districts and planning commissions across the country including the City of San Diego Land Development Code.

The Naval Training Center Guidelines for the Treatment of Historic Properties (*NTC Guidelines*) identifies four primary treatments: preservation, rehabilitation, restoration and reconstruction.

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity and material of an historic property. Improvements generally focus on the ongoing maintenance and repair of historic materials, rather than extensive replacement or new construction.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations and additions while preserving those portions or features which convey its historical or cultural value. The *Standards for Rehabilitation* have been codified in 26 CFR 67.

Restoration is defined as the act or process of accurately depicting the form, features and character of a property as it appeared at a particular time by the removal of features from other periods in its history and reconstruction of missing features from the restoration period.

Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features and detailing of non-surviving site features for the purpose of replicating its appearance at a specific period of time and in its historic location.

Although there are components within the *NTC Guidelines* that include restoration and preservation treatments, it is the *Standards for Rehabilitation* that is emphasized. The ten *Standards for Rehabilitation* are:

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

GUIDELINE GOALS AND OBJECTIVES

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

4. Changes to a property that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Meeting Federal, State, and Local Regulations

It is the intent of the *Naval Training Center Guidelines for the Treatment of Historic Properties* to meet all federal, state, and local regulations. All future projects or projects not addressed within this document should be subject to the review process by the City of San Diego Historical Resources Board and other appropriate City of San Diego agencies. The City of San Diego should consider using the National Park Service Technical Advice Services as a resource on future proposed projects.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) is the primary Federal Statute governing historic resources. Section 106 of the NHPA (16 U.S.C. 470f) requires that federal agencies take into account the effects of their undertakings on historic properties, identify ways to avoid and/or reduce adverse effects, and give the State Historic Preservation Officer (SHPO) and Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on any such undertakings.

The ACHP's regulations, "Protection of Historic Properties," (36 CFR Part 800) implements the requirements set forth in Section 106. In summary, Section 106 requires that the following steps be completed for federal actions which may affect historic resources:

- Identify and evaluate historic properties;
- Assess the effects to these properties of the proposed action;
- Consult with SHPO;
- Consult with the ACHP if the project will have an adverse effect on a historic property; and
- Obtain concurrence on the undertaking and any proposed mitigation of adverse effects to historic resources.

Through the combined efforts of the Department of the Navy (DON), the SHPO, the ACHP, the City of San Diego Planning Department, and Save Our Heritage Organisation (SOHO), a Memorandum of Agreement (MOA) was developed and signed in 1998 in order to comply with Section 106 requirements. The MOA established stipulations for the interim leasing and conveyance of the Naval Training Center Historic District. Under MOA stipulations (Section IV. and VIII.B.), the City of San Diego has the jurisdiction to review projects at a local level as stated:

IV. Conveyance - After the Department of the Navy (DON) has transferred title conveying all or any part of the NTC to a non-federal entity, any effects of proposed actions on the District shall be addressed in accordance with all applicable City codes, ordinances, and regulations.

VIII.B. After conveyance by deed, the City shall handle any previously unidentified property that maybe eligible for inclusion in the National Register or any unanticipated affects to known historic property in accordance with all applicable City Codes, ordinances, or regulations.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.

The impetus for CEQA can be traced to the passage of the first federal environmental protection statute in 1969, the National Environmental Policy Act (NEPA). In response to this federal law, the California State Assembly created the Assembly Select Committee on Environmental Quality to study the possibility of supplementing NEPA through state law. This legislative committee, in 1970, issued a report entitled *The Environmental Bill of Rights*, which called for a California counterpart to NEPA. Later that same year, acting on the recommendations of the select committee, the legislature passed, and Governor Reagan signed, the CEQA statute.

CEQA applies to certain activities of state and local public agencies. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project." A project is an activity undertaken by a public agency or a private activity which must receive some discretionary approval (meaning that the agency has the authority to deny the requested permit or approval) from a government agency which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment.

When a proposed project may adversely affect a historical resource, the CEQA requires the Lead Agency to carefully consider the possible impacts before proceeding (Public Resources Code Sections 21084 and 21084.1). Revisions to the Act made in 1992, particularly Chapter 1075 of the Statutes of 1992, have highlighted the importance of evaluating possible impacts upon historic resources.

Looking southeast over the Officers' Quarters gardens toward the barracks with the San Diego bay and downtown in the background, ca. late 1930s. Photograph courtesy of the U.S. Navy.

GUIDELINE GOALS AND OBJECTIVES

The California Environmental Quality Act (CEQA) exists to ensure that governmental decision-makers consider the potential significant environmental effects of proposed projects before taking action. The Lead Agency is responsible for determining whether a significant adverse environmental impact may occur and whether it can be mitigated to a level of insignificance. Where substantial evidence indicates that a significant adverse effect may occur, the lead decision-making agency is required to prepare an Environmental Impact Report (EIR) which discusses in detail the potential impact and feasible means of avoiding or reducing it. Where such an effect may be mitigated to a level of insignificance through changes in the project or other requirements, a mitigated Negative Declaration should be prepared rather than an EIR.

A project with an effect that may cause substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment, such as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. Generally, a project that follows the *Secretary of the Interior's Standards for the Treatment of Historic Properties* or the *Secretary of the Interior's Standards for Rehabilitating Historic Buildings* (1995), Weeks and Grimmer, shall be considered as mitigated to a level of less than a significant impact on the historical resource. (CEQA 15064.5(b)(1)(3)) The *NTC Guidelines* are developed to meet these requirements found in the *Standards.*

<u>Land Development Code</u>

The City of San Diego Land Development Code (LDC) sets forth the procedures used in the application of land use regulations, the types of review of development, and the regulations that apply to the use and development of land in the City of San Diego. The intent of these procedures and regulations is to facilitate fair and effective decision-making and to encourage public participation.

Chapter 14, Article 3, 7, andDivision 2 are regulations pertaining specifically with historic resources including historic districts such as the Naval Training Center Historic District. These regulations are intended to assure that development occurs in a manner that protects the overall quality of historical resources. It is further the intent of these regulations to protect the educational, cultural, economic, and general welfare of the public, while employing regulations that are consistent with sound historical preservation principles and the rights of private property owners.

Exempted development activities on historic resources, such as the *NTC Guidelines*, are noted in Section 143.0220, because they are based on the *Secretary of the Interior's Standards for the Treatment of Historic Properties* as stated:

(a) Any development that proposes minor alterations or improvements consistent with Section 143.0250(a), to a designated historical resource, or any historical building or historical structure located with a historical district, or any new construction within a historical district that will enhance, restore, maintain, repair, or allow adaptive reuse of the resource and which will not adversely affect the special character or special historical, architectural, archaeological, or cultural value of the resource when all feasible measures to protect and preserve the historical resource are included in the development proposal consistent with the *Secretary of Interior's Standards and Guidelines*.

(b) Interior modifications or repairs or the ordinary maintenance or repair of any exterior architectural feature in, or on, any historical building or historical structure that does not adversely affect the special character or special historical, architectural, or cultural value or designated interior elements of the proper consistent with the *Secretary of Interior's Standards and Guidelines*. Exterior architectural features shall mean the architectural elements embodying style, design, general arrangement and components of all of the outside surfaces of an improvement or structure, including the type of building materials and the type and style of all windows, doors, lights, signs, and other fixtures appurtenant to the improvement or structure.

(c) Substantial alteration of a nonsignificant structure within a historic district consistent with the *Secretary of Interior's Standards and Guidelines*. However, new construction within a historic district is not exempt from the requirement to obtain a Site Development Permit except in accordance with Section 143.0220(a).

The City of San Diego's Land Development Code (§ 143.0250(a)) defines alteration, minor alteration, and substantial alteration as the following:

(1) Alteration means any change or modification, through public or private action, of any historical resource or of any property located with a historical district including changes to designated interior architectural features; exterior changes to or modification of structural details, architectural details, or visual characteristics such as doors, windows, surface materials and texture, grading, or surface paving; addition of new structures; cutting or removal of trees, landscaping, or other historical features; disturbance of archaeological sites; and the placement or removal of any exterior objects such as signs, plaques, light fixtures, *street* furniture, walls, fences, steps, plantings, and landscape accessories affecting the exterior visual qualities of the property.

(2) Minor alteration means improvements that enhance, restore, maintain, repair, or allow adaptive reuse of a historical resource that do not adversely affect the special character or special historical, architectural, archaeological, or cultural value of the resource and will conform to standards embodied in the designation of a historical district when applicable.

(3) Substantial alteration means demolition, destruction, relocation, new construction or alteration activities that would impair the significance of a historical resource.

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Cast stone Navy ornament flanking the main gate on Buildings 20 and 21. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Naval Training Center Guidelines for the Treatment of Historic Properties

The *Naval Training Center Guidelines for the Treatment of Historic Properties* (*NTC Guidelines*) are to help property owners, developers, tenants and the City of San Diego managers apply the *Secretary of the Interior's Standards for Rehabilitation* during the project planning stage by providing general design and technical recommendations. The *NTC Guidelines* are not intended to replace professional judgment or to stifle the creative design process. They are presented to call attention to conditions and solutions that may be encountered while rehabilitating historic resources. Consultation with professional conservators, preservation architects, landscape architects, and engineers is recommended in the planning process.

Users should review all of the introductory sections of the *NTC Guidelines*. Particular emphasis should be placed on becoming familiar with and understanding the general principles outlined in *The Secretary of the Interior's Standards,* which were stated earlier. The landscape guidelines are organized into chapters such as spatial organization, land patterns, vegetations, and site furnishings. The historic building guidelines are organized into chapters on building materials, features, and systems. In some cases applicability may not be obvious and an effort should be made to refer to identical pertinent chapters.

Perhaps the most important step in using these guidelines is identifying the features that are important to a particular resource. Identify, Retain, and Preserve is the first topic listed in the individual chapters under the Recommended column. Once important features are identified, every effort should be made to preserve and maintain them during subsequent improvements. In general, improvements and alterations should be additive in nature. When possible, existing historical features should not be removed but retained in place and improvements added to the existing conditions. Building users should carefully weigh options and alternatives before suggesting removal of significant features.

Recommended and **Not Recommended** guidelines are provided for the following areas:

- **Identify, Retain and Preserve Historic Materials and Features** that are important in defining the historic character of Naval Training Center (NTC). The loss of character can be caused by the cumulative effect of a series of minor actions, such as the removal of individual street trees that contribute to the overall visual effect.

- **Protect and Maintain Historic Materials and Features** includes the maintenance of historic features through treatments such as paint removal on bricks the protection of stucco walls from automobile damage, and maintaining historic plumbing fixtures as appropriate.

- **Repair Historic Materials and Features** includes the least degree of intervention, such as patching or splicing. It also includes the limited replacement of extensively deteriorated or missing parts when there are surviving prototypes with in kind materials or with compatible substitute materials. Although using the same kind of material is always the preferred option, substitute material is acceptable if the form and design as well, as the substitute material itself, convey the visual appearance of the remaining parts of the feature and finish.

- **Replace Deteriorated Historic Materials and Features** when the level of deterioration or damage of materials precludes repair, and the essential form and detailing of the element can be determined. Like repair, substitute materials may need to be utilized.

Entry arch and gate houses. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection. Circa late 1920s.

GUIDELINE GOALS AND OBJECTIVES

- **Design for the Replacement of Missing Historic Materials and Features** when adequate historical, pictorial, and physical documentation exists so that the feature may be accurately reproduced, and if it is desirable to re-establish the feature as part of the historical appearance. A second acceptable option for the replacement feature, however, is a new design that is compatible with the remaining character-defining features in terms of size, scale, and material. Also, the new design should be clearly differentiated so that a false historical appearance is not created.

- **Alterations/Additions for the New Use** are allowed when the alterations do not radically change, obscure, or destroy character-defining spaces, materials, features, or finishes, and when the new uses cannot be accommodated by other alternatives.

- **Sustainable Design or "Sustainability"** is an approach to design that recognizes that every design choice has an impact on the natural and cultural resources of not only the local environment, but also the regional and global environments. As such, these structures may be altered or "rehabilitated" so that they may continue to have viable uses so long as alterations do not degrade important features or characteristics. Indeed, building rehabilitation can be, by its very nature, a form of sustainability. There are many ways that sustainability can be applied to building rehabilitation, such as energy conservation, the reuse of existing materials or components, and the use of new components made from recycled materials.

Cupola with decorative tile and plaster work atop Building 30. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Decorative tile drinking fountain located near the main gate on Building 20 and 21. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

The Goals and Objectives of the Naval Training Center Guidelines for the Treatment of Historic Properties

The most valued assets of the Naval Training Center Historic District are the architecture and overall site design. However, these assets could be jeopardized by inappropriate expansion, renovation, maintenance, and repair work that undermines the original character of the buildings and the grounds. Additionally, new buildings may need to be located within the Historic District, adjacent to historically registered buildings, thereby undermining the site arrangement, architectural integrity, and open space character.

1. Identify and strengthen the original formal site planning elements of the Naval Training Center (NTC), as appropriate, based on the plans developed by architect and planner Lincoln Rodgers in his 1920s design. The five primary elements of his design include the cross axial design of building and courts, the series of buildings linked together by arcades, secondary buildings, incidental buildings, and the officers' quarters.

2. Identify and provide recommendations for the rehabilitation of the historic resources within the NTC Historic District. This section of the *NTC Guidelines* will focus on the exterior visual environment of NTC, of which buildings form the edges of spaces.

3. Improve the wayfinding capabilities for building occupants, their customers and visitors by developing a hierarchy of roadways and pedestrian paths, and establishing visual wayfinding elements.

Historic aerial looking north at the Naval Training Station, ca. late 1920s. Photograph courtesy of the U.S. Navy.

GUIDELINE GOALS AND OBJECTIVES

Open courtyard adjacent to Building 1 and barrack Buildings 2 and 26. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Preservation Planning and Treatment of Historic Properties

Careful planning prior to treatment can help prevent irrevocable damage to a historic resource. The preservation planning process for the Naval Training Center completed to date involves the following:

- Historical research identifies the historic periods of architectural and landscape development from 1923 until the closure of NTC in 1997.
- Inventory of existing conditions provides a record of the historic resources at NTC at it exists at the present time and a baseline to determine historic elements.
- *Final Cultural Landscape Report* by Ogden Environmental and Energy Services in April 1997 identifies the cultural landscape resources, including plant materials, present during their 1996 research period.

This document contributes to the continuation of the preservation planning process by addressing the following:

- An analysis and evaluation of integrity and significance to provide an assessment of the cultural and historic value of the architectural and landscape elements. Spatial arrangement, setting, design, materials, workmanship, relationship to other structures, and association with the original use of NTC for recruit training have been considered in the determination of the character-defining features and their historic integrity.
- Design guidelines that respect the historic value and integrity of architectural and landscape features while recognizing the need to adapt the site for new uses.

Upon completion of the *NTC Guidelines*, it is recommended that the following be prepared as NTC is developed:

- Development of a Historic Structures Report (detailed analysis of each building's architectural features).
- Preparation of a Record of Treatment (on-going record of improvements to the properties).
- Establishment of a Maintenance Manual for each building (guidance through a system of regular inspections and information on maintenance schedules and policies to prevent the decay and loss of historic fabric).

Acknowledgments

The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings was written by W. Brown Morton III and Gary L. Hume, published in 1976. This document contains standards for rehabilitation, acquisition, stabilization, preservation, restoration, and reconstruction. The 1976 guidelines were revised and expanded in 1983 by Kay D. Weeks and Gary L. Hume and issued in a new publication, *The Secretary of the Interior's Standards for Rehabilitation with Guidelines for Applying the Standards.* The 1976 standards were revised in 1990 by Gary L. Hume, Kay D. Weeks, and H. Ward Jandl following a public comment period.

The Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines for Rehabilitating Historic Buildings were codified in 36 CFR 67, and focused on "certified historic structures" as defined by the Internal Revenue Service (IRS) Code of 1986. These regulations have been used in the Preservation Tax Incentives program and should continue to be used when property owners seek certification for federal tax benefits.

In 1992, *The Secretary of the Interior's Standards for Historic Preservation Projects* were revised by Gary L. Hume, H. Ward Jandl, Kay D. Weeks, and E. Blaine Cliver, and republished under the new title, *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, because they may be applied equally to buildings, structures, sites, landscapes, and objects. Treatments include preservation (under which "protection" and "stabilization" are now consolidated), rehabilitation, restoration, and reconstruction. The 1992 *Standards for the Treatment of Historic Properties* replaced the 1983 *Standards for Historic Preservation Projects* (Federal Register Notice Vol. 48, N. 190, September 1983).

In 1995, *The Secretary of the Interior's Standards for the Treatment of Historic Properties* were revised by Kay D. Weeks and Anne E. Grimmer. The treatment *Standards,* developed in 1992, were codified as 36 CFR Part 68 in the July 12, 1995 *Federal Register* (Vol. 60, No. 133). In 1996, *Guidelines for the Treatment of Cultural Landscapes* was edited by Charles A. Birnbaum with Christine Capella Peters. The *Guidelines* have integrated comments received from the landscape architecture and preservation communities over the past few years.

The *Naval Training Center Guidelines for the Treatment of Historic Properties* are based on the text from the *Standards for Rehabilitation* for historic buildings and cultural landscapes. Photographs and drawings are provided by the National Park Service from its files and accessible archives, the United States Navy, the San Diego Historical Society, or have been produced by the staff of Architect Milford Wayne Donaldson, FAIA, and KTU+A. The *NTC Guidelines* are not copyrighted and may be reproduced without penalty, though credit should be given to the National Park Service, the United States Navy, the San Diego Historical Society, McMillin Companies, Architect Milford Wayne Donaldson, FAIA, and KTU+A.

GUIDELINE GOALS AND OBJECTIVES

In May 2000, the City of San Diego Historical Resources Board, the City of San Diego Planning Department, the City of San Diego City Council, the State Historic Preservation Officer, and the National Park Service were provided the opportunity to review and comment on the *NTC Guidelines*. The City of San Diego City Council, with the recommendations from the Historical Resources Board, approved the document. Participants in the review process include:

National Park Service
Pacific West Division
Preservation Assistance Branch
David Look, AIA
Michael Crowe

State Historic Preservation Office
Steade Craigo, FAIA, Senior Restoration Architect

City of San Diego City Council
Susan Golding, Mayor
Harry Mathis, District 1
Byron Wear, District 2
Christine Kehoe, District 3
George Stevens, District 4
Barbara Warden, District 5
Valerie Stallings, District 6
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Larry P. Malone
Ione R. Stiegler, AIA
Jeff Sykes

1.0 INTRODUCTION AND BACKGROUND

GUIDELINE GOALS AND OBJECTIVES

HISTORICAL BACKGROUND

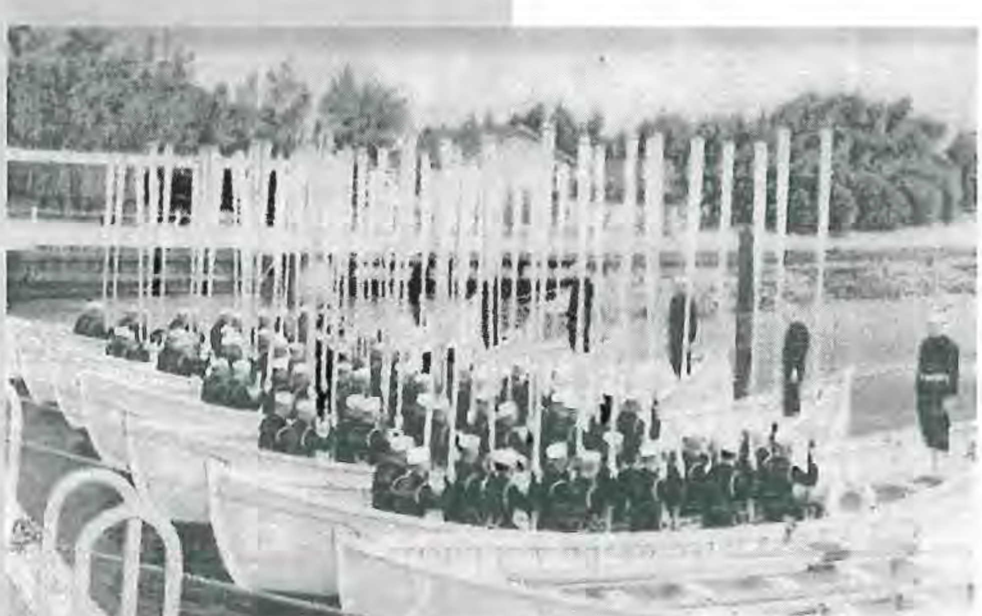
Aerial photograph looking north at the Naval Training Station, ca. early 1930s. Photograph courtesy of the U.S. Navy.

HISTORICAL BACKGROUND

*History of the Naval Training Center**

The history of the development of the Naval Training Center begins with the Panama-California Exposition in 1915-16. Assistant Secretary of the Navy, Franklin D. Roosevelt, visited the exposition on a visit to inspect California for possible sites for a training station. Part of Roosevelt's entourage included California Congressman, William D. Kettner, a staunch supporter and spokesman for San Diego. World War I intervened with the necessities imposed by the war and plans for construction of a permanent base in San Diego were delayed until after the war. The base constructed in Balboa Park was considered to be the wartime solution to training needs in San Diego and construction of Naval Training Station, San Diego in its present location would wait until the early 1920s.

In 1916 Congressman Kettner had approached Roosevelt with a proposal that San Diego would donate the necessary bay and park land if the Navy would locate its recruit training station in San Diego. During the early part of 1917, Congressman Kettner advised the San Diego Chamber of Commerce that he had learned that the Navy Department had decided to abandon the Goat Island Navy Base in San Francisco Bay. He also learned that the Naval Affairs Congressional Committee was considering a location somewhere in southern California for a Naval Training Base.



Boat drill ca. 1920s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

Upon receiving this information a special meeting of the Chamber of Commerce was called. Mr. Rufus Choate was assigned to go to Washington, D.C. to render all assistance possible to Congressman Kettner. The City Council offered the Navy Department the use of the Exposition buildings in Balboa Park for use as a temporary training base. This offer was readily accepted and the Navy maintained this temporary base during World War I.

It soon became apparent that the members of the Naval Affairs Congressional Committee had formed a good opinion of San Diego as a possible site for a Naval Training Station, both on account of its geographic and its climatic conditions. They also realized the necessity of an early decision in securing a site somewhere in southern California for establishing a permanent training station. Mr. Choate was advised that the Naval Affairs Congressional Committee would be willing to make the trip to San Diego conditionally, given that all transportation was provided by the San Diego Chamber of Commerce, and that all their expenses be paid while in San Diego.

**The following history has been edited from the National Register Nomination submission by the U.S. Navy by Architect Milford Wayne Donaldson, FAIA. The Nomination was submitted by the U.S. Navy.*

Mr. Choate wired the Chamber of Commerce requesting them to raise $1,500 and to place the money at his disposal as soon as possible so that he could secure a private railroad car to bring the members of the Naval Affairs Congressional Committee to San Diego. The money was raised quickly. Congressman Kettner and Mr. Choate traveled with the members of the committee, using the travel time to promote the benefits of San Diego. The committee members were taken out several times to inspect the proposed site for the Navy Training Station and to inspect the development of the United States Marine Corps Recruit Depot.

The City Council offered to deed seventy-nine acres of submerged tidelands located between the Mean High Tide Line and the Bulkhead Line. The Chamber of Commerce promised to raise by public subscription the sum of $280,000 to purchase 135 acres of privately owned land located north of the Mean High Tide Line and Rosecrans Street. The Secretary of the Navy accepted these two offers and on October 10, 1919 Congressman Kettner delivered to the Navy Department the deed for the aforementioned 135 acres. On November 29, 1919, the deed to the 79 acres of tideland was signed by the Mayor and City Clerk and mailed to the Secretary of the Navy.

On June 4, 1920, the Sixty-Sixth Congress of the United States appropriated $1,000,000 for the construction of buildings at the new Naval Training Station. The Public Works Department of the Navy at San Diego, the group who would develop the plans for the Station, was organized on October 26, 1917 and soon moved out of its original small office at the Naval Training Camp in Balboa Park. The Public Works Department moved to a rented office in the Timken Building, 6th and "E" Streets, San Diego. In January 1921 the office moved again to the Winchester Building at the corner of Rosecrans and Lytton, and in May, 1922 it was moved to the Naval Supply Depot.

When work began on the Naval Training Station, the Public Works Officer was Commander Norman M. Smith (CEC) USN. The Chief Draftsman throughout the 1920s, 30s, and 40s was F. S. Callendar. Commander Smith, with the assistance of the Bureau of Yards and Docks, recruited and selected a civilian staff of ten, which was augmented from time to time as the workload increased. This work force was attached to the Public Works Office, although they had been assigned by the Bureau of Yards and Docks.

In April 1919 the Public Works office forwarded a contour map to the Bureau of Yards and Docks. The Bureau, under the command of Rear Admiral Charles W. Parks, CEC, USN, prepared preliminary drawings for the Naval Training Station. Mr. Lincoln Rogers, the architect of the New York Water Supply System, was brought into the Civil Engineering Corps with the rank of Commander and made Project Manager for Training Camps. Lincoln Rogers had joined the Bureau in 1917 and remained in service until July 1922. He was stationed in Washington D.C. when Bertram Grosvenor Goodhue's designs for the Naval Air Station and the United States Marine Corps Recruit Depot were being constructed. At the same time, in Washington D.C., the Naval Hospital was being designed.

HISTORICAL BACKGROUND

After the war, Mr. Rogers was retained by the Navy expressly for the purpose of designing the Naval Training Station. The plans were approved in Washington D.C. before Mr. Rogers was transferred to San Diego to supervise construction. About twenty men, among them C. Boone Sadler and Harold Platt, were transferred from the Bureau of Yards and Docks to San Diego to form the team that would continue the work on the Naval Training Station buildings. An office was set up on the site, and work begun on the Station.

The drawings of the first permanent buildings at the Naval Training Station are dated 1921 and 1922. Various photographs taken during this time show the buildings under construction and are useful for determining the design concepts inherent in the construction of the base. The prominent axis and base orientation are evident and the positioning of the base and its relation to the coastal areas are clear. Most of the construction work on the original buildings 1 through 21 and the four Officers' Quarters, was completed during the early 1920s. The buildings were designed by employees of Public Works, many of whom had just finished working on the designs for the Naval Air Station, North Island. A lack of funds due to shifting national priorities called a halt to construction by the mid-1920s.

Aerial view of Review Parade, ca. 1941. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

HISTORICAL BACKGROUND

Design of the Naval Training Station was heavily influenced by the work of Bertram G. Goodhue. Goodhue had designed many significant and important buildings in San Diego, including the 1914 California-Panama Exposition buildings in Balboa Park and the Naval Air Station, North Island. With his architectural designs, Goodhue helped to establish a San Diego genre of architecture that have impacted design concepts in San Diego to the present time. The U.S. Navy established a style of architecture that reflected the character of San Diego and its Hispanic heritage, much the same as the East Coast facilities reflected their origins and local building materials. When the commission for the design of the Naval Air Station, North Island was given to Goodhue, the Navy directed him to provide a "Spanish military style" with little ornamentation. The "stripped down" design Goodhue produced for the Naval Air Station was a major departure from his more elaborate buildings seen in Balboa Park. Goodhue's plans for military sites embodied his basic concepts of symmetry, repetitive elements, and a cohesive visual statement. Throughout his career Goodhue attempted to "reconceive traditional forms in a personal and imaginative way, free of the rules of orthodox styles."

An example of Goodhue's influence on the Spanish Colonial Revival style of architecture at the Naval Training Center. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA dated December 21, 1999.

HISTORICAL BACKGROUND

Goodhue was familiar with a variety of styles as evidenced in many of his most important commissions - the American Gothic Revival St. Thomas' Church, in New York (1906-13); the Romanesque-Byzantine St. Bartholomew's Church in New York (1914-1918); a modified Classical building in the National Academy of Sciences Building in Washington, D.C. (1919-24); the Spanish and Mexican Churrigueresque style of the 1915 Exposition Buildings in Balboa Park in San Diego; and his most important California commission, the conservative Mediterranean classicism of the Los Angeles Public Library. Goodhue's view of architecture was global and contained a strong attachment to medieval and Hispanic sources. Travel to foreign lands was a common occurrence for Goodhue as he sought to incorporate new elements into his designs and further his knowledge of indigenous building styles. Goodhue was searching for two design influences in his travels - the ancient building styles that had weathered the test of time and truly reflected the land in which they had been constructed; and a way to take these time honored styles and blend them with modern materials, new uses and fresh ideas.

Camp Luce Auditorium ca. 1940s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

When Goodhue was given his military commissions in San Diego, he had reached a mature point in his design philosophy. Goodhue brought to these jobs a strong sense of purpose and an understanding of how to create a motif of Hispanic heritage of the region with a 20th century approach to spatial design. The timing of the U.S. Navy's search for a regional look for its bases and the maturing of Goodhue's design philosophy dovetailed well and resulted in an architectural style that gives a unique style to San Diego regional architecture. Simple geometric forms, broad planes of subtly textured stucco, and discreet ornamentation are combined with a careful planning and massing of building siting, elements and roof lines. This approach to architecture influenced subsequent design philosophy throughout San Diego County and the Goodhue legacy is immediately apparent when viewing the Naval Training Center buildings. Men who assisted Goodhue with the design of the Naval Air Station, North Island and the Marine Corps Recruit Depot also worked on the design of the Naval Training Center and brought their ideas and concepts into the planning of the new facility. While Goodhue did not personally design the Naval Training Center, his spirit is abundantly reflected in the buildings that comprise the historic district.

HISTORICAL BACKGROUND

The architect for the Naval Training Center project was Lincoln Rogers, with the assistance of Public Works architect, W. L. Menzies who was transferred from Washington, D.C. to work on the design. Menzies had worked previously on two other San Diego military projects - the Naval Air Station, North Island and the San Diego Naval Hospital. These men created a master plan for the design of the buildings that reflected the European tradition of the Ecôle de Beaux Arts design traditions and the influence of masters such as Goodhue and Irving Gill.

The Beaux Arts tradition dictated a formal approach to design and the resulting plan was a simplified version of the philosophy with two main axis along which buildings were placed to form symmetrical outdoor courts. Symmetry of overall design was important and created a simple, but effective, orderly complex of buildings. The coherence of the design and the interrelationship of the structures give a strong sense of identity to the base. The original concept was to have the north-south axis anchored by an administration building with a tower. This design was never built due to financial constraints and the second axis was never a strong element in the plan until the construction of new buildings in the 1940s.

Looking southwest at Naval Training Center, ca. 1924. Note the symmetry of design. Photograph courtesy of the U.S. Navy.

HISTORICAL BACKGROUND

Moving from the planning and design stages, the base began to take shape. The original appropriation funds were used to begin dredging on the site. In March 1921 construction began on the first thirteen buildings of the approved Master Plan. These buildings were the mess hall (1), the first four barracks (2-5), the dispensary (6), the cubicle building (7), the fire station (8), the information building (9), the guard's quarters (10), the regimental quartermaster's building (11), and the regimental office (12). An ejector house was also included in the contract, but no longer exists. The contractor for this portion of the base was Lange and Bergstrom. These buildings were completed June 15, 1922 except for the south wings of the mess hall. The approved master plan included sixty-five buildings.

On March 29, 1922 work began on eight more buildings, six barracks buildings (14-19) and the two entrance buildings (20 and 21). At the same time, dredging and fill operations continued to increase the usable land area at the Naval Training Station. Work was completed on the buildings on January 21, 1923. The contractor was still Lange and Bergstrom. Now the station was equipped with ten barracks, each with a capacity of one hundred men.

Administration Building ca. 1930. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

On December 18, 1922 contractor R. E. Campbell began construction of four officer's quarters, Pump House (22), Brig and Cook's Barracks Building (23), and Administration Building (24). By this time, the channel, "fifteen feet deep and six hundred feet wide," was completed, linking the Naval Training Station with the bay. There were about one thousand men on the Station, of which six hundred were housed in barracks and the remainder lived in a tent camp at the west end of the Station. This tent camp was intended to be an area of isolation for new recruits, and was capable of housing eight hundred men, who had to eat in the same mess hall as the rest of the Station, a situation which was less than ideal.

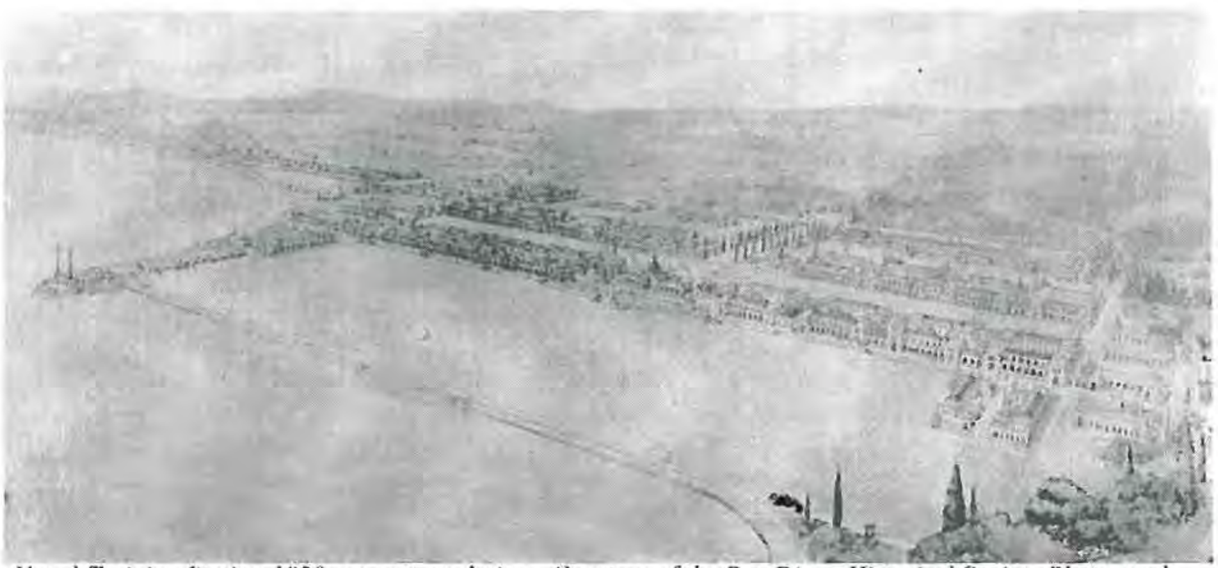
On June 1, 1923 the Navy officially commissioned the U.S. Naval Training Station, San Diego and held a public dedication ceremony on October 27, 1923. A crowd of four thousand gathered at the Naval Training Station on October 27, 1923 for the dedication ceremonies the Honorable William Kettner gave a speech. One hundred school children sang "The Star Spangled Banner," and Miss Maxine Edmonds hoisted the flag up the new flagpole. The Station was manned by ten officers, fifty enlisted men, and had facilities for a maximum recruit population of one thousand, five hundred men. The first commanding officer was Captain D.F. Sellers who directed the Station in its dual mission - train recruits and instruct fleet personnel.

Early Years 1921-1929

The staff of the Naval Training Station consisted of ten officers and fifty enlisted men assigned to train a maximum of one thousand, five hundred recruits in boot camp. The nucleus of the Service School Command consisted of sixty-five instructors and three hundred and fifty students who arrived June 15, 1923 from the Goat Island Training Station in San Francisco. The first four schools were then active: preliminary radio, yeoman, bugler, and band. Recruit training in this period was sixteen weeks long, with the first three weeks spent in the Detention Unit, which consisted of a group of walled tents.

Plans were continually underway to expand the base and augment its land holdings. Sixty-four acres within the Marine Corps Recruit Dept. (part of the original grant) was transferred to the Navy Training Station. In addition, ninety-five acres of submerged tideland, between the Bulkhead and Pierhead lines, were transferred from the Marine Corps Recruit Depot to the Naval Training Station. This parcel was part of the Marine Corps Recruit Depot's original 242-acre grant of submerged tidelands.

Prior to World War I, considerable dredging was performed by the Navy and, as a result of the Corps of Army Engineers extending the Bulkhead line out to the Pierhead line, additional acreage was added to the Naval Training Station. The Naval Training Station eventually covered an area of four hundred and thirty six acres of land and sixty-four acres of water in the lagoon, making the total of five hundred acres.



Naval Training Station 1920 concept rendering. Courtesy of the San Diego Historical Society Photograph Collection.

HISTORICAL BACKGROUND

The landscape plan for the Station was designed by the Superintendent of Balboa Park, Mr. J. G. Morley, who had also been involved in the planning of the 1915 Panama-California Exposition. Trees and shrubs were donated by citizens through a civilian Tree Committee, chaired by Mr. G. A. Davidson. By 1928, some of the shrubs and trees had grown above the height of the buildings at the Naval Training Station.

The development of the base continued and in 1924, the streets, walks, and drill fields were completed. The tent camp used for the three week indoctrination period was renamed Camp Ingram.

Contractor R. E. Campbell completed his contract on September 1, 1923. A new contractor, Robert E. McKee began construction on September 15, 1923 of two more barracks (25 and 26) and the southeast wing of the mess hall (1). The work was completed April 15, 1924. At this time, there were still no separate school buildings, so one of the barracks was designated for use as a Radio School. The new wing of the mess hall was intended to provide isolated dining space for the men from the tent camp.

By the mid 1920s, there were one thousand five hundred men being housed in the twelve permanent barracks buildings, or one hundred twenty-five in each building originally designed to house one hundred. Five hundred men were still housed in the tent camp which was located to the west of the area comprising the proposed historic district. The tent camp included one hundred sixty-eight tents and thirteen temporary buildings. Money was not immediately forthcoming for more than maintenance, so the mess hall remained incomplete. No further building projects were begun. It was not until June 3, 1929 that contractor W. B. Melhorn began construction of the southwest mess hall wing. The painting and plastering of the northwest wing was done at this time. Work was completed on November 26, 1929 in the same style as the original buildings with reinforced concrete structure, hollow tile walls, red tile roofing, and stucco finish.

By 1929 the barracks were severely overcrowded. By using the porches, one hundred fifty personnel could be accommodated in each barracks, and when need arose as many as one hundred seventy-five were housed in each building. By the end of the 1920s the Naval Training Station had grown considerably. Fifty-seven buildings and eleven schools occupied two hundred thirty-five acres of land. The permanent buildings constructed by 1929 formed the most extensive section of the master plan ever completed.

Second Phase 1929-1942

During the early 1930s the Naval Training Station continued to train recruits and expand its facilities, replacing outmoded sections with more modern facilities. The tent camp was phased out in the early 1930s and permanent barracks (buildings 27-29) replaced the tents. Frank L. Stimson Construction Co. began building the three new barracks (27-29) on March 12, 1931 and completed construction by January 19, 1932. These new barracks were referred to as Camp Lawrence. M. H. Golden began construction of the mess halls (30) on May 19, 1931 and completed work on May 13, 1932. In 1932 contractor Jim Kaas added outside staircases to all three barracks, to provide direct access from the scrub rooms to the central courts. In the 1930s the decision was made by the Navy to enclose the second story porches of the barracks buildings in order to provide more sleeping areas. In 1933 the porches on buildings 2, 3, and 14 were enclosed by contractor Milton C. Shedd. In 1934 the porches of buildings 3, 4, 5, and 29 were enclosed. In 1936 the second story porches of buildings 4, 16, 17, 19, 25, 26, and half of 18 were enclosed. Other work completed in the 1930s included the steel arch over the entrance to the Station, completed in 1933 by Standard Iron Works, and a mezzanine floor constructed in the north end of building 30 in 1937.

The completion of Camp Lawrence was one of the first major expansions planned for the Naval Training Station. This program was followed in 1939 by an additional program to expand the capacity of the Naval Training Station fourfold. This expansion was part of a large-scale program of harbor improvements by means of which the channel and anchorages were deepened and one hundred thirty acres of filled land were added to the eastern boundaries of the Station.

From 1936-39, a new mess hall (30), library, ship, Protestant and Catholic Church, medical unit, heating plant and offices were added. The streets were widened at intersections, lawns planted, and tennis courts added. Under President Franklin D. Roosevelt the Naval Training Station continued to expand. A dredging project added two hundred acres to the Station West of Worden Road and South of Decatur. In 1939 seventy permanent buildings provided facilities for five thousand recruits plus one thousand men in trade schools. After World War I, Navy recruitment had declined. By 1933 Navy recruitment had all but ceased. In the following years, a steady increase in recruits occurred due to the changes in the international situation as the world unrest built-up to World War II.

Historic gun platforms ca. 1930s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

HISTORICAL BACKGROUND

In the Service School Department, an additional nineteen schools were placed in operation between June 27, 1924 and October 1, 1941. The Radio, Buglemaster and the Electrical Schools functioned continuously throughout the greater part of the period between 1923 and 1941. The other schools operated intermittently as required. The school program would increase greatly during the years of World War II.

World War II Years 1941-1945

Tensions on the international scene deepened at the end of the 1930s. The invasion of Poland in September 1939 by Adolf Hitler triggered the beginning of World War II in Europe. President Franklin D. Roosevelt recognized the need for continued expansion of the nation's defense system and a new wave of activity commenced at bases around the world and the Naval Training Station. The bombing of Pearl Harbor on December 7, 1941 increased the activity to an all time high as the nation entered World War II. The two-ocean navy was now a reality. The bases on the West Coast became the launching points for the Pacific Theater and assumed major strategic importance.

New recruits swelled the ranks of the military and within a very short time, there were thousands of new sailors to train, house, and send to the war zones. New construction helped to alleviate overcrowding, using funds from the 1941 Appropriation Act passed by Congress to address defense needs.

With the start of World War II, the training services were expanded. Following December 7, 1941 all work schedules were changed to nine-hour day, seven-day week. A new annex was established in Balboa Park with recruits once again living in tents. At the Naval Training Station, a contract was awarded to expand facilities to accommodate 10,000 more men. One hundred forty-nine buildings were constructed of temporary and semipermanent designs using concrete and stucco. Designs using the tile roofs and plaster cornices were confined to the immediate vicinity of the Station. Outlying buildings used stucco on wood frames with mineral surfaced roofs. By the end of the war, nearly 300 temporary wooden frame and stucco buildings were completed, and the size of the Station tripled. The new administration building (200), office buildings (194, 201, and 202), the Gatehouse No. 3 (198), and the North Chapel (208) were all built with wood frame construction covered with stucco exteriors intended to harmonize with the earlier buildings.

During the early years of the war, a total of 41 different schools had been established and/or reactivated to meet the needs of the recruits trained on the Station. The schools provided training for an average on-board population of 5,000 troops. The peak student population was reached in June 1944 with 8,123 students undergoing training in various schools.

By September 1942, the Naval Training Station reached its peak population of 33,000 of whom 25,000 were recruits. Camps Lawrence and Jones were now surrounded by Camps Decatur, Luce, Mahan, and Farragut. Between June 27, 1924 and October 1, 1941 nineteen schools were placed in operation and operated intermittently as needed.

In April 1944, the Secretary of the Navy changed the status of the Naval Training Station to that of a group command and redesignated the facility as the U.S. Naval Training Center, under the command of the Center Commander, with three subordinate commands: Recruit Training Command, Service School Command, and Naval Administration Command.

After the war, the number of recruits decreased rapidly. The Recruit Training Command saw a considerable drop in population after 1945. Camps Luce and Lawrence were closed down and some of the temporary barracks built in the 1940s were converted to classrooms. By 1949 the Station population dropped to its low point of 5,800. The Service School Command continued to train men for the peacetime fleet. Schools were established and disestablished as the nation's changing defense needs shifted to adjust to the changing international conditions created by the Cold War.

In 1950 when the Republic of Korea was invaded by the Communist Regime, the first armed conflict of the Cold War era began. It became immediately apparent that all training activities were necessary to accommodate the rapidly growing Pacific Fleet. The Korean conflict again brought an increase in recruits and soon the Navy made plans to reactivate the Camp Elliott Annex. Camp Elliott had served during World War II as the Marine Corps training camp and the Navy acquired the property during the Korean conflict. On January 15, 1951, Camp Elliott was placed in commission as Elliott Annex of the Naval Training Center for the primary phases of recruit training. The Camp was deactivated in 1953, having trained over 150,000 men.

During the years from 1950-present the Naval Training Center has continued to meet the nation's defense needs. The Recruit Training Command continued to train recruits and the Naval Administrative Command provided all the logistic support necessary for the operation of the other commands on the Station. Camp Nimitz was completed in 1955 which expanded Naval Training Center to a larger boundary area. The Naval Training Center expanded further in 1975 when 61 acres were acquired from Marine Corps Recruit Depot for the area currently referred to as the "South Forty" or the site of the former landfill.

Base Closure and Conveyance

In July 1993, under terms of the Base Closure and Realignment Act of 1990, the U.S. Navy announced its intention to close the Naval Training Center. On April 30, 1997 all active military use of the base concluded ending its seventy year presence. Transfer of the property from the U.S. Navy to of the City of San Diego was accepted on May 30, 2000.

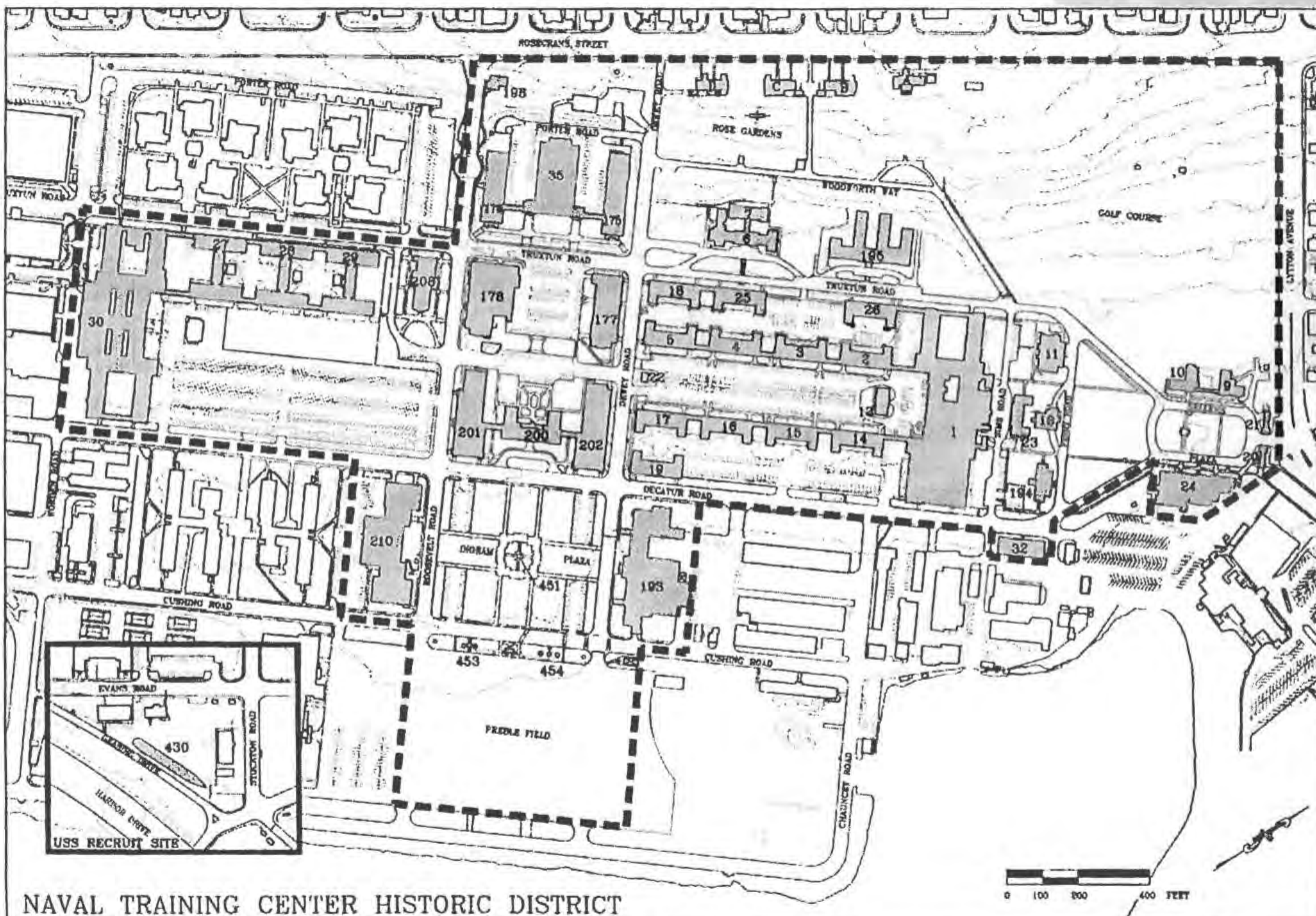
HISTORICAL BACKGROUND

Naval Training Center Historic District

In 2000 the Naval Training Center was nominated to the National Register of Historic Places as a historic district. The Naval Training Center Historic District comprises sixty-three structures. Of these sixty-three buildings, fifty-four or eighty-six percent, contribute to the significance of the Historic District. The remaining nine buildings are considered non-contributors, either because they have lost integrity or were built after the period of significance.

The fifty-four contributing buildings were built during the 1922-1946 and 1949 periods of significance. The structures are unified functionally and they are all built in the Spanish Colonial Revival style; according to the overall site plan and specific building plans developed by architect Lincoln Rogers. The 1949 period of significance allows for the contributing status of the USS Recruit (Building 430). The two gun platforms and the addition of the North Chapel in the place of two barracks are also contributors to the Historic District. The design of the buildings of the Historic District are easily distinguished from newer buildings outside the District.

HISTORICAL BACKGROUND



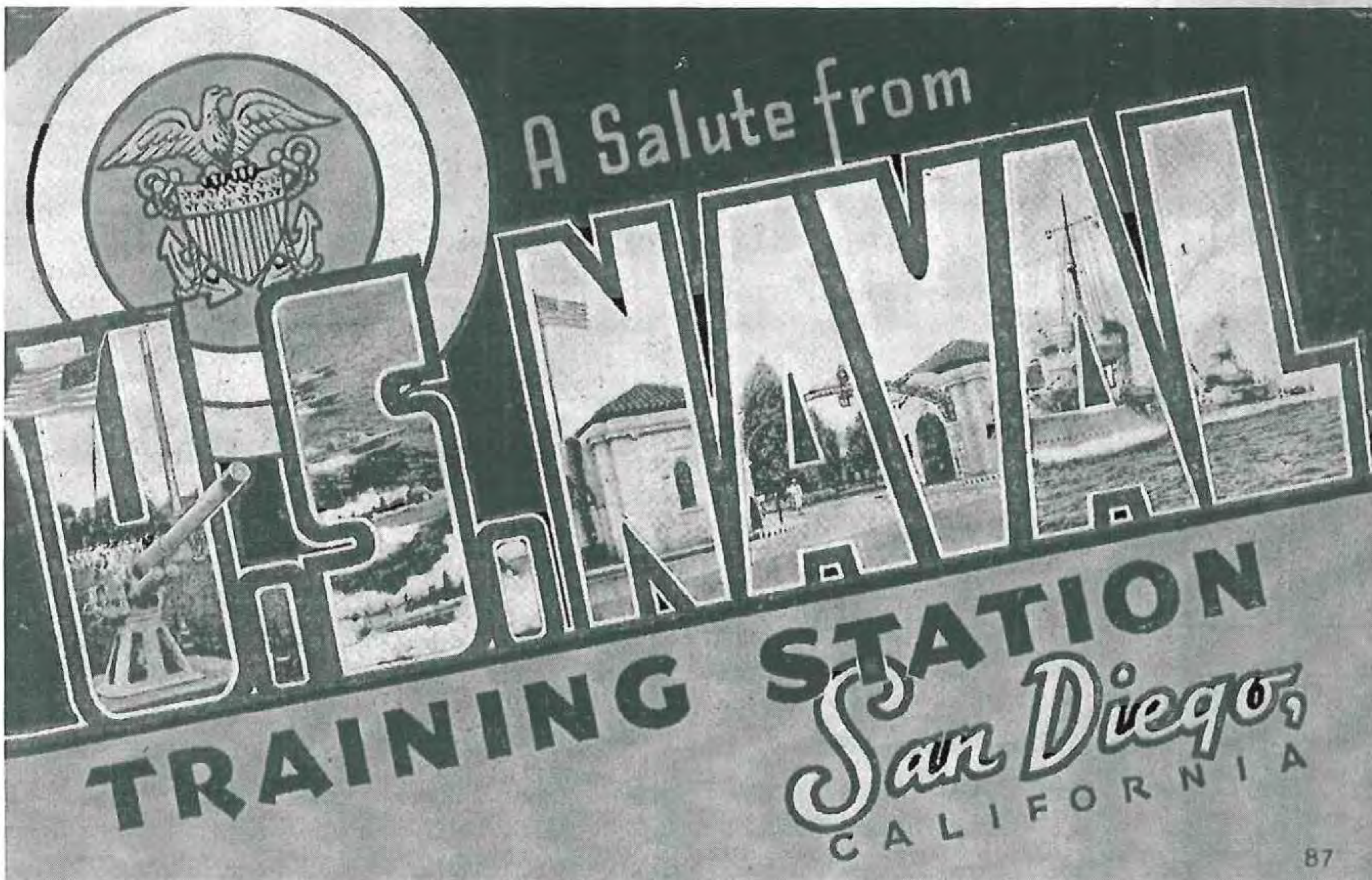
NAVAL TRAINING CENTER HISTORIC DISTRICT

HISTORICAL BACKGROUND

Chronology of Events

1919	Master plan for the Naval Training Station was prepared by the Navy Public Works Center, in collaboration with the U.S. Navy Bureau of Yards and Docks by architect Lincoln Rogers. The master plan included 65 buildings.
1920	Construction began on the first 13 buildings of the master plan (only 12 are remaining).
1923	Construction was completed on the following buildings: mess hall (1); barracks (2-5); dispensary (6); cubicle building (7); fire station (8); information building (9); guard's quarters (10); regimental quartermaster's building (11); and regimental office (12). Construction began on: barracks (14-19); entrance building (21); officer's quarters (A-D); pump house (22) and administration building (24). U.S. Naval Training Station officially commissioned. Dedication ceremony was held in Sellers Plaza, with the flag flying on the new flagpole. J.G. Morley prepared the landscape plan. Construction was started on: barracks (25-26); and the southeast wing of the mess hall (1). Camp Ingram (Ingram Plaza) was used for a tent camp.
1923-1964	August Anderson, landscape architect and gardener, was the head of the four-person gardening staff for the Naval Training Station. He wrote a gardening column for the base newspaper, *The Hoist*, detailing his landscape activities on the base.
1924	Streets, walks and drillfields were named for Navy officers. Construction completed on buildings: gatehouse (20); Brig & Cook's barracks (23); and barracks (25-26).
1929	An expansion was added on the southwest wing of mess hall (1).
1932	Construction was completed on permanent barracks (27-29) to replace the tent camps. Mess hall (30) was constructed.
1936-1939	Streets were widened at intersections, lawns were planted, and tennis courts were constructed.
1937	Construction completed on storehouse 1 (32).
1941	Luce Theater, school buildings (175-176) and library/office (177) were constructed.
1942	Navy exchange office, store and fountain (178); recreation 2 (193) and Waves Quarters (194); medical dispensary (195); gatehouse 3 (198); headquarters building (200); office buildings (201-202), north chapel (208); gym (210) were constructed.
1944	The Secretary of the Navy changed the status of the Naval Training Station to that of a group command and redesignated the facility as the U.S. Naval Training Center, under the command of the Center Commander.
1945	Gun platforms No. 1 and 2 were installed.
1949	USS Recruit was installed.
1964	Navy Public Works Center assumed responsibility for the landscape installation and maintenance at NTC.
1993	The U.S. Navy announces its intention to close NTC under the Base Closure and Realignment Act.
1997	All active military use of the base concluded.
2000	Conveyance of NTC from the U.S. Navy to the City of San Diego.

PREVIOUS STUDIES AND SITE PLANNING



Naval Training Station postcard ca. 1930s courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection, ca. 1930s.

PREVIOUS STUDIES AND SITE PLANNING

Previous Studies

Prior to the base closure, studies were completed about different aspects of Naval Training Center. Historical studies of the existing buildings and landscape lead to the nomination of the Naval Training Center Historic District to the National Register of Historic Places. These studies include: *Architectural Historical Significance of Selected Buildings at the Naval Training Center San Diego, California* prepared by the Terry Group in 1993; *Historic Properties Phase II Eligibility Study of the Naval Training Center San Diego, San Diego County, California* prepared by Ogden Environmental in 1995; *Final Cultural Landscape Report Naval Training Center, San Diego, California* prepared by the Ogden Environmental in 1997; and the *Nomination of the Naval Training Center for the National Register of Historic Places* prepared by the U.S. Navy in January 2000.

Planning Issues

The 550 acre Naval Training Center (NTC), located approximately four miles northwest of downtown San Diego, borders Lytton Avenue and the Gateway Military Family Housing to the north, Marine Crops Recruit Depot (MCRD), an estuary of the San Diego Bay (referred to as the Boat Channel) and the San Diego International Airport to the east, Rosecrans Street and Point Loma neighborhood to the west, and Nimitz Boulevard and the Fleet Anti-Submarine Warfare Training Center to the south.

There are two major external influences which affect the design of the NTC physical environment, either currently or in the future. These include the expansion of Lindbergh International Airport, and the Reuse Plan for NTC.

San Diego Lindbergh International Airport

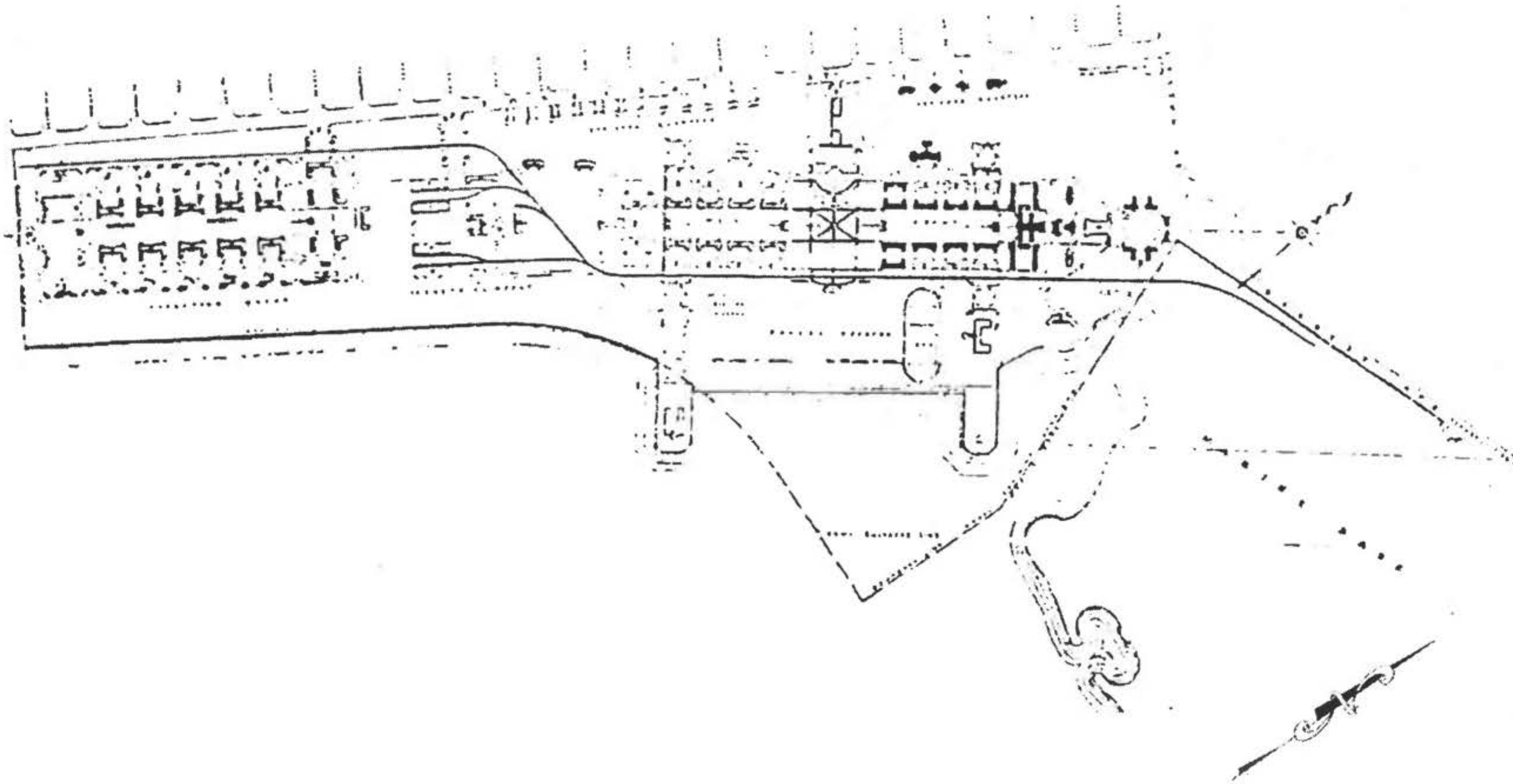
The Lindbergh International Airport continues to play a major role in the development of NTC. Due to the location of the airport runway adjacent to NTC, occupants of many NTC buildings must endure high noise levels caused when aircraft take off and land on the runway. To avoid adversely impacting NTC and its tenant activities, these high noise levels could be mitigated through sound attenuation measures applied to buildings within high noise zones.

Reuse Plan for Naval Training Center

The Reuse Plan prepared by the City of San Diego for the redevelopment of NTC proposes a waterfront park along both sides of the Boat Channel. Construction of this waterfront park would improve pedestrian access from NTC to Harbor Drive, a route frequently used for physical fitness running. Other uses proposed for the NTC property include:

- military and civilian housing;
- waterfront hotels;
- education centers;
- office facilities;
- civic, cultural, and arts facilities;
- additional parking lots for Lindbergh International Airport;
- Metropolitan Wastewater Department Testing Labs; and
- a Public Safety Training Institute.

PREVIOUS STUDIES AND SITE PLANNING



Historic 1921 Master Plan of the Naval Training Station showing Lincoln Rogers' symmetrical axial design. Drawing courtesy of the U.S. Navy.

INTRODUCTION

Looking southwest at Truxtun Road, ca. mid-1920s. Photograph courtesy of the San Diego Historical Society Photograph Collection.

Looking southwest at the anchor feature located at Sellers Plaza. Photography courtesy of KTU+A, February 2000.

GUIDELINES FOR REHABILITATING THE HISTORIC LANDSCAPE AT THE NAVAL TRAINING CENTER

The purpose of the landscape design guidelines is to provide criteria establishing standards for improving the Historic District's physical environment. This section focuses on the landscape, which includes all elements of the site except the primary building structures. Specifically, these guidelines address the spatial arrangement of the Historic District, in addition to the topography, vegetation, circulation, water features, and landscape structures, site furnishings and objects that are present in the Historic District. The guidelines provide a framework for the enhancement of the Historic District's visual setting through the setting, design, style, and color of these landscape elements for all improvements to the physical environment.

Concept Goals Include:

- To protect and enhance the character and detailing that composes the sense of place and image of NTC.
- To strengthen visual character of the landscape areas in order to enhance the Historic District.
- To ensure the compatibility of new construction with the site's historic axial arrangement and landscape elements.
- To facilitate the proper replication of deteriorated landscape design elements and use of appropriate maintenance methods.

INTRODUCTION

Cultural landscapes are composed of features that are organized in space. They include small-scale features such as individual fountains, flagpoles or gun platforms, as well as patterns of open and enclosed spaces that define the spatial character of the landscape. Individual features in the landscape should not be viewed in isolation, but in relationship to the landscape as a whole, in this case, the NTC Historic District. Overall, it is the arrangement and the interrelationship of these character-defining features as they existed during the period of significance that is most critical to consider prior to treatments.

A review of the *Cultural Landscape Report Naval Training Center, San Diego* (Ogden, 1997), the *Naval Training Center Reuse Plan* (Rick Engineering, 1997) and a site review by the design team indicates the rehabilitation potential of the designated historic landscape is high. An organized visual tie between the buildings and grounds persists within a significant segment of the Historic District. Therefore, the design guidelines for the Historic District will address issues related to the rehabilitation of Historic District's site features, to the greatest extent possible, based on the *Secretary of the Interior's Standards for Rehabilitation* and the original site plan for NTC.

Looking southeast over the Naval Training Station, ca. late 1930s. Photograph courtesy of the U.S. Navy.

Garden at the Officers' Quarters, ca. 1930s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

LANDSCAPE ELEMENTS

Site Planning History

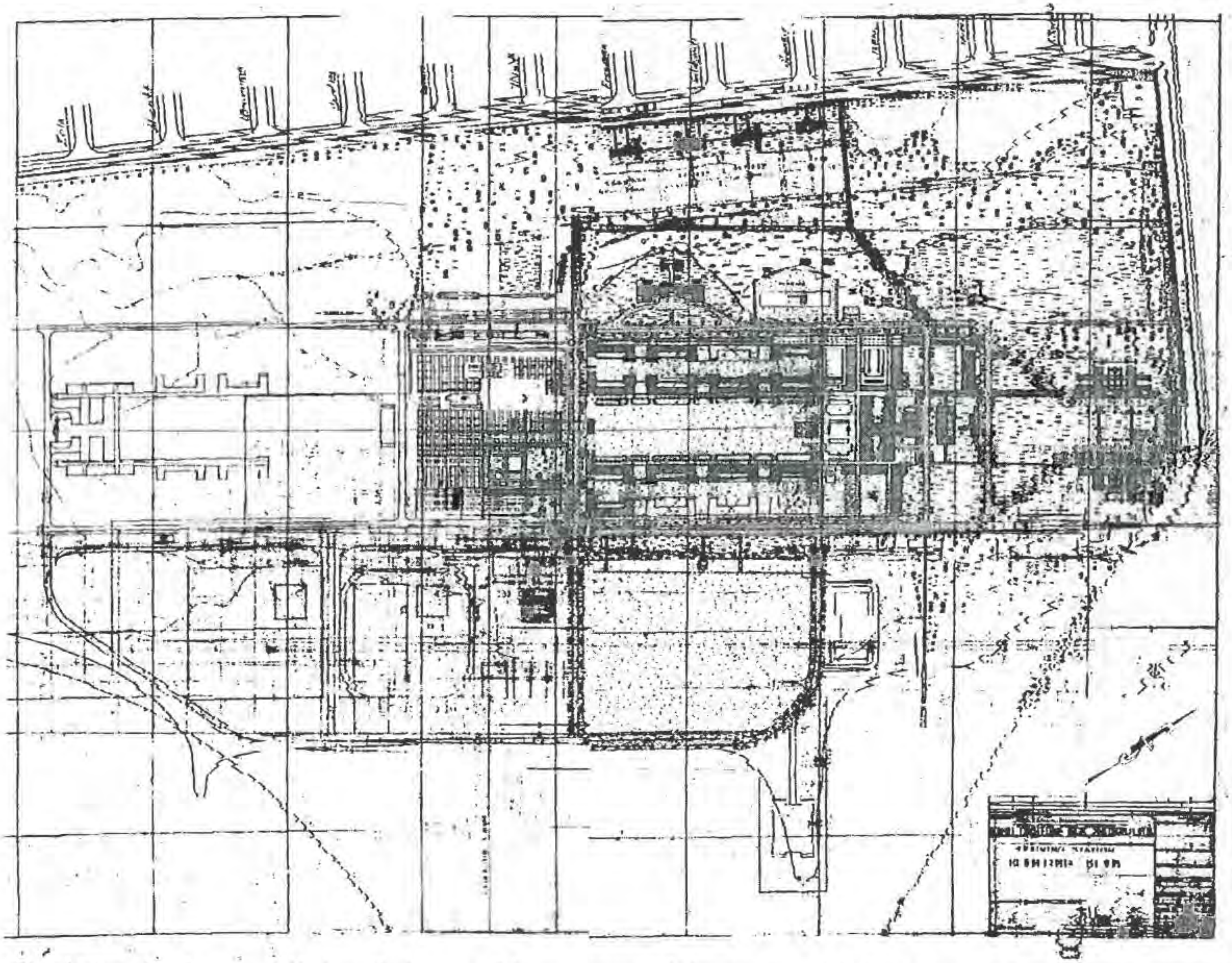
The master plan is a simple and direct interpretation with two main axes along which the buildings are aligned to form symmetrical outdoor courts. The buildings were also planned to be symmetrical, creating mirror images of each other as they face across the courts. This resulted in a comprehensive design plan that exemplified simplicity and coherence and reflected the traditional Beaux Art formal approach to design.

The Spanish Colonial Revival and Southwestern Pueblo architectural styles made a great contribution to the development of architecture in the form of planned groups of buildings that depend on unity of style, human scale and landscape gardening for their effect. The buildings were designed for enhancement by the vegetation that would be planted around the structures. In turn, the simplicity of the buildings would enhance the forms and colors of the vegetation by allowing it to stand out boldly against the bare, light-colored walls of the buildings.

Various courts were designed as open spaces to alternate with the large buildings and provide a human scale to the complex. These courts, Lawrence Court, John Paul Jones Court, Luce Court, Ingram Plaza, and Sellers Plaza were designed for various activities. Assembly, ceremonies, field masses, work activities, and training practices all took place in the outdoor areas. The outdoor areas also added additional living, working and entertainment space, and continued the Spanish Colonial architectural theme of indoor/outdoor living. The courts and plazas, in addition to roads and drill fields, were all named for former naval heroes, a theme that added an element of continuity to the formal training at NTC. The golf course, located at the northeast corner of the base, was the primary informal open space.

Landscape History

In 1923 Captain Sellers championed landscaping to make the base more hospitable. The original landscape plan for NTC was designed by the Superintendent of Balboa Park, J.G. Morley. Trees and shrubs were donated by citizens through a civilian Naval Station Tree Committee chaired by G.A. Davidson. The Department of Agriculture donated 100 Pistache trees, and by December 1923, a range of plants had been donated and planted. Century Plants, Acacias and Palms were some of the earliest species. The first tree planted was a Black Acacia (*Acacia melanoxylon*) in 1923. By 1928, some of the shrubs and trees had grown above building height.



Site planting plan drawn in 1926 shows the location of the street trees and planning around the buildings. Drawing courtesy of the U.S. Navy.

2.0 HISTORIC LANDSCAPE GUIDELINES

INTRODUCTION

Looking northwest from Cushing Road towards the historic flagpole at Ingram Plaza. Photograph courtesy of KTU+A, February 2000.

Looking north at the historic Gun Platforms located at the south side of Cushing Road. Photograph courtesy of KTU+A, February 2000.

Plaque located at Ingram Plaza. Photograph courtesy of KTU+A, February 2000.

The original landscape plan for Naval Training Station followed the same design principles as the buildings and was conceived to enhance and continue the dominant architectural themes. One important design criterion was to take advantage of the mild San Diego climate: mess halls faced open courtyards; barracks contained porches and open arcades; the dispensary featured a solarium; and other buildings were designed with loggias, open air porches and arcades. The buildings were originally an unpainted pale coral stucco finish with green trim and other pastel colors. These colors were chosen to complement the proposed landscape palettes. Without plants to continue these color themes, the buildings would have looked barren. However, the plant materials used variations on these tones, joining the landscape design and site design concepts. The indoor/outdoor theme was continued through every element of Naval Training Station, resulting in a harmonious design plan.

The original landscape design plans included two distinct aspects. Single rows of trees in regular patterns were planted along the streets to emphasize the linear qualities of the axes. The street trees defined the spaces and edges of the base and the Historic District while providing visual uniformity and order. The purpose of the street trees was to draw the eye along the view corridors and emphasize the overall architectural theme. Trees were also utilized to provide shade in the courtyards. The transition areas from the hardscape to the buildings emphasized the repetitive architectural elements through varied height group plantings.

As supervised by landscape architect/head gardener August Anderson, four men were responsible for the maintenance of the landscape at Naval Training Station between the 1920s and 1940s. The landscape gardeners tended to respect the original theory that rows of bushes and flowers at the foundations of buildings were not appropriate for buildings laid out in a monumental group. The variety of plant species utilized at Naval Training Station in 1923 changed over the years, but the basic design intent was retained around many of the buildings constructed during the years preceding World War II.

Periods of Significance in The Landscape Development at the Naval Training Center

The Cultural Landscape Report Naval Training Center, San Diego identifies several landscape elements eligible for nomination to the National Register of Historic Places as both individual elements and/or as contributors to the proposed pre-1945 Naval Training Station, San Diego Historic District. The significance of these elements is based on the contextual relation in appearance and location to the building layout, the creation of the park-like setting, and the overall mission of the base. These elements include:

1921 - 1929

1922 Sellers Plaza is located to the west of Gate 1 on Lytton Avenue. Sellers Plaza was the original entry point for the Station and serves as the origination point for the axial alignments running in an east-west direction along Truxtun Road and Decatur Road.

Looking northeast across John Paul Jones Court. Photograph courtesy of KTU+A, February 2000.

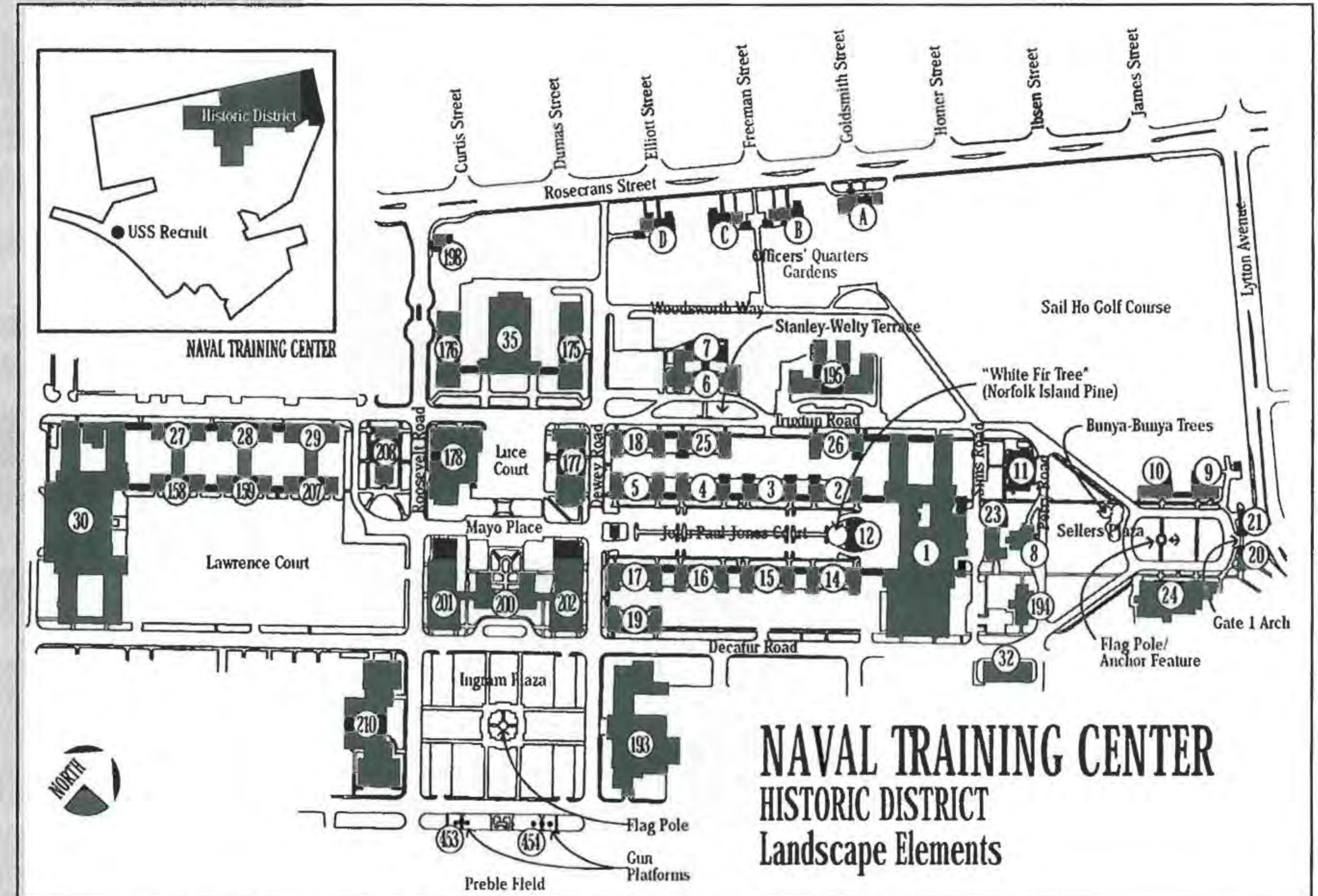
1922 John Paul Jones Court was constructed. This open space court, enclosed by Barracks Buildings 2 to 5 and 14 to 17, contains two of the axial walkways (arcades) originating in Sellers Plaza.

1922 Lawrence Court was constructed.

1923 "Since the early days of his appointment to this command, Captain Sellers has give much attention to a comprehensive plan which is designed, when complete, to create within the station a center of unique beauty which will even rival the attractions of Balboa Park." (Hoist, January 1924).

Looking southwest across Lawrence Court. Photograph courtesy of KTU+A, February 2000.

1923 Planting plan was prepared based on the design by John Morley, Superintendent of Balboa Park. The planting plan, approved in 1926, shows street trees at thirty feet on center, shrub planting areas adjacent to the arcade buildings and at walkway intersections, and groves of trees in the golf course area and along Rosecrans southwest of the Officers' Quarters. Specific plant materials are



Historic district landscape elements courtesy of KTU+A.

not identified. (Eleventh District Naval Operating Base, San Diego, California Training Station Planting Plan, P.W. Drawing No. NM5/N1-2 (1).

1923 The Department of Agriculture donated 100 pistache trees (Ogden, Final Cultural Landscape Report Naval Training Center, 1997).

1923 Trees and shrubs (century plants, acacias, palms) were donated by citizens through the Naval Training Station Tree Committee. Members of this committee included G.A. Davidson, Julius Wagenheim, George Marston, Hugo Klauber, Milton McRae, William Templeton Johnson, William Sallmon, James App, W.S. Dorland, Fred Heilbron, W.E. Kier, Henry Chandler, John Morley, Ed Fletcher, J.G. France, R.R. McLean, C.A. McGrew, Frank Goodman, George Thomas, L.J. Arland, William Van Dusen, Carl Heilbron and J.F. Secton, Jr. (Hoist, January 1924).

1923 Blackwood Acacia street trees were planted. Dedication of the flag pole, October 27, 1923. "It will be noted that the ground is barren of grass or flowers." It was on this date that the first trees were planted and the program for beautifying the base was begun (Hoist, October 1923). Specific roads nominated to the National Register for their contribution to the landscape character at NTC include: Decatur Road, Dewey Road, Perry Road, Roosevelt Road, Truxtun Road, and Sims Road.

1923-1964 August Anderson served as NTC's landscape architect/head gardener (Plaque located on one of the Bunya-Bunya Trees in Sellers Plaza).

Terraced gardens behind the Officers' Quarters. Photograph courtesy of KTU+A, February 2000.

Bunya tree located at Sellers Plaza. Photograph courtesy of KTU+A, February 2000.

Sail Ho Golf Course at the Naval Training Center. Photograph courtesy of KTU+A, February 2000.

1925 Officers' Quarters Gardens are located at the rear of the Officers' Quarters and contain a wide variety of plants. The plant materials and formality of the gardens varied over the years. The gardens are terraced in formal levels with cobblestone or concrete walls dividing each level. Stairs are centered in each level and walkways are located throughout the gardens. The sloped areas were terraced to provide flat areas for large lawns with hedges at the edges of the terraces.

1925 The Sail Ho Golf Course was constructed as a four-hole golf course averaging 250 yards per hole. It was originally built as part of a continuing program of physical fitness and well-being that was included in the recruit training. The golf course has undergone several expansions since 1925, but is still considered a small, short distance course by contemporary standards. (Ogden).

1925 Bunya-Bunya trees, popular in southern California during the 1920s, were planted in Sellers Plaza. Six trees are remaining, however, from their regular spacing, as many as 10-12 trees may have been originally planted (Ogden).

1926 On Sellers relinquishment of command at NTC, "His leadership and resourcefulness has also made it one of the most attractive and beautiful stations under the control of the United States Navy." (Hoist, August 1926)

1926 Stanley/Welty Terrace includes the circular area in front of the old dispensary (Building 6).

1927 Eight varieties of acacia were planted, including Acacia baileyana planted behind the Station library and chaplain's office. Cone-shaped Black Acacia border the streets of the station (Hoist, February 1927).

1927 Hundreds of eucalyptus planted on the station grounds are now measuring 15'-20' in height from seeds planted less than 3 years ago. Australian Peppermint Tree and Eucalyptus amygdalina are growing near the garage. Eucalyptus ficifolia planted across the street from the parking lot. Eucalyptus cornuta planted behind the sound school (Hoist, February 1927).

1927 Italian Cypress used on the station to emphasize entrances to buildings and barracks; Monterey Cypress planted on both sides of the walk leading to the Officers Quarters; Fan Palms were also planted (Hoist, March 1927).

1927 Queen Palms were planted at Camp Ingram; Canary Island Date Palm planted on the east side of the fire station (Hoist, April 1927).

1928 "White Fir" planted in John Paul Jones Court. (Documentation refers to this tree as a "White Fir", however, it is actually a Norfolk Island Pine, Araucaria heterophylla.)

1930-1942

1932 A steel arch in a floral/scroll style pattern as added to the buildings at Gate 1, providing a cohesive design element that framed the opening view into the base.

1941 Located between Building 200 and Preble Field, Ingram Plaza was the original location of Camp Ingram. This plaza creates a view corridor between Building 200 and the waterfront. The flagpole located in the center of Ingram Plaza was constructed in 1923 as part of the original master plan.

1941 Luce Court is the first major courtyard oriented along the north/south axis.

1941 Preble Field constructed to provide additional space for mustering, parades and large-scale events.

1943-Present

1945 Gun Platforms No. 1 and No. 2 and the artillery pieces on the platform form a prominent visual landmark and establish the southern boundary of Ingram Plaza.

1946–1989 There was no cohesive landscape plan during the Cold War years and no attempt was made to create a unified theme around the base (Ogden).

1949 The USS Recruit is a full-size mock-up of a DE Class Navy ship. It is located on Gearing Drive adjacent to Buildings 412 and 378.

1953 Street trees very small, significant difference between street trees and acacias in front of Officer's Quarters (County Aerial Survey, 1953)

1956 Street trees still very small (Aerial on file at NTC Caretakers Office, 1956).

1963 Anchor in Sellers Plaza was created with flowers (Hoist, 1963).

1966 Street tree patterns still fairly consistent (County Aerial Survey, 1966).

1968 Acacia street trees still present. Massing of acacias shown at Officer's Quarters (Topographic Map on file at NTC Caretakers Office, 1968).

1973 Acacia street trees still visible in aerial photograph (Aerial on file at NTC Caretakers Office, 1973).

1975 Many street trees missing (Aerial on file at NTC Caretakers Office, 1975).

The USS Recruit. Photograph courtesy of KTU+A, February 2000.

Looking southwest at Gate 1 note the historic arch. Photograph courtesy of KTU+A, February 2000.

1983 Some street trees are missing on Decatur, other trees have been replaced (County of San Diego Aerial Survey, 1983).

1983 Various sized Black Acacias still present in Sellers Plaza (NTC Base Exterior Architecture Plan, Figure 31, 1983).

1989 Additional street trees missing (County of San Diego Aerial Survey, 1989).

1991 Ficus rubiginosa have replaced most Blackwood Acacias on Truxtun Road; Camphor Trees and Blackwood Acacias intermixed on Decatur Road. (NTC Grounds Development Study, 1991).

Very few original plantings left at the time of the 1996 Ogden survey. Replacement of the Blackwood Acacia street trees has taken place, but the training of the trees into the cone shape has not continued. The acacias have a life-span of approximately 25 years and it is unlikely that any original trees are left. None were noted during the field survey. Some of the eucalyptus trees around the golf course may date to the 1920s, but it was impossible to determine the exact trees due to their rapid growth rate. Some palms and eucalyptus may be original. Trees and shrubs were probably replaced while Anderson was the head gardener, but after 1964 landscape decisions were made by the Public Works Department (Ogden).

The above listing of improvements implemented at NTC indicate that the most significant period occurred between 1921 and 1929. During this time, the framework for the landscape was established, including the street tree patterns and courtyard enhancements.

LANDSCAPE GUIDELINES

The landscape guidelines address the following issues:

- Spatial Organization and Land Patterns – Orientation to an area is based on a viewer's ability to grasp the scale of the area, and organize the visual elements into perceivable units. Cities, communities, neighborhoods, or developments can be viewed on at least four levels: the scale of the entire area, for example, the NTC Historic District; the scale of the street, such as Truxtun Road; the scale of the individual buildings; and the scale of specific architectural elements, such as the water fountain at the Headquarters Building. Elements that contribute to the spatial organization include edges, nodes of activity, landmarks, and entries.

  - Edges include definable elements that separate districts. Edges can include open spaces, streets, walls, fences, rows of trees or shrubs, buildings, or landforms. Edges also include areas that are highly visible to the surrounding community. Exterior edges include Rosecrans Street and Lytton Avenue. The building arcades also form edges, separating the building envelopes from the roadways and open spaces.
  - Nodes represent major concentrations of activities and generally coincide with major landmarks or highly utilized buildings. Nodes can also indicate locations where high levels of vehicular and pedestrian traffic converge. Historically, the nodes were Sellers Plaza and the Headquarters Building.
  - Landmarks are visually significant structures, buildings, landforms or natural features that stand out from other elements of the physical environment. Landmarks are generally prominent because of their bulk, scale, height or unique design characteristics, providing important points of visual reference for wayfinding and orientation. The two flagpoles at NTC serve as landmarks, as do the Bunya bunya trees, the gun platforms and the USS Recruit.
  - Entries are areas that individuals pass through to move from one district to another. These entry areas establish the initial impression of the area. Both Gates 1 and 3 provide good view points from which to see the NTC Historic District.

INTRODUCTION

- Topography - Topography is the shape of the ground plane and its height or depth, and is an important character-defining feature of the landscape. Topography may occur naturally or as a result to human manipulation. For example, topographic features may contribute to the creation of outdoor spaces, serve a functional purpose or provide visual interest.

- Vegetation - Vegetation features include individual plants, as in the case of the Norfolk Island Pine in John Paul Jones Court, or groups of plants such as the eucalyptus trees on Sail Ho Golf Course. Vegetation includes evergreen or deciduous trees, shrubs and groundcovers, and both woody and herbaceous plants. Vegetation may derive its significance from historical associations, horticultural or genetic value, or aesthetic or functional qualities. It is a primary dynamic component of the landscape's character; therefore, the treatment of cultural landscapes must recognize the continual process of germination, growth, seasonal change, aging, decay, and death of plants. The character of individual plants is derived from growth habit (spreading, columnar), color, texture, bloom, fruit, fragrance, scale, and context.

- Circulation - Circulation features at NTC include roads and walkways. Such features may occur individually or be linked to form networks or systems. At NTC the axial grid system of roads and walks is a strong feature of the site plan. The character of circulation features is defined by factors such as alignment, width, surface and edge treatment, grade, materials, and infrastructure.

- Water Features - Water features may be aesthetic, such as the water feature at Headquarters Building, or functional components of the landscape, such as the water fountains at Gate 1. Their associated water supply, drainage and mechanical systems are important components. The characteristics of water features include their cooling, aesthetic, noise deadening, space enlivening, and reflective qualities; and associated plant and animal life, as well as water quality.

- Site furnishings, monuments, lighting, signage, fencing and screening, structures, site furnishings, and other objects often contribute to a landscape's significance and historic character. Structures are non-habitable, constructed features, unlike buildings which have walls and roofs and are generally habitable. Structures may be significant individually or they may simply contribute to the historic character of the loss of a landscape's character-defining features.

Site furnishings and objects generally are small-scale elements in the landscape that may be functional, decorative, or both. They can include benches, lights, signs, drinking fountains, trash receptacles, fences, tree grates, clocks, flagpoles, sculpture, monuments, and memorials. They may be movable, used seasonally, or permanently installed. Site furnishings and objects occur as singular items, in groups of similar or identical features, or as part of a system (signage). They may be designed or built for a specific site, available through a catalog, or created as vernacular pieces associated with a particular region or cultural group. They may be significant in their own right, for example, as works of art or as the work of an important designer.

- Accessibility Considerations - It is often necessary to make modifications to cultural landscapes so that they will be in compliance with current accessibility code requirements. Three specific Federal laws require accessibility to certain cultural landscapes: the Architectural Barriers Act of 1968, Section 504 of the Rehabilitation Act of 1973, and the Americans With Disabilities Act of 1990. Federal and State rules, regulations and standards, such as the 1998 State Historical Building Code, have been developed which provide guidance on how to accomplish access to historic areas for people with disabilities. Work must be carefully planned and undertaken so that it does not result in the loss of character-defining features. The goal is to provide the highest level of access with the lowest level of impact on the integrity of the landscape.

- Health and Safety Considerations - In undertaking work on cultural landscapes, it is necessary to consider the impact that meeting current health and safety codes (for example, life safety, accessibility, and building codes) will have on character-defining features. For example, upgrading the utility systems or removing the steam system at NTC would require trenching that would disturb soils, plants, paving and architectural features.

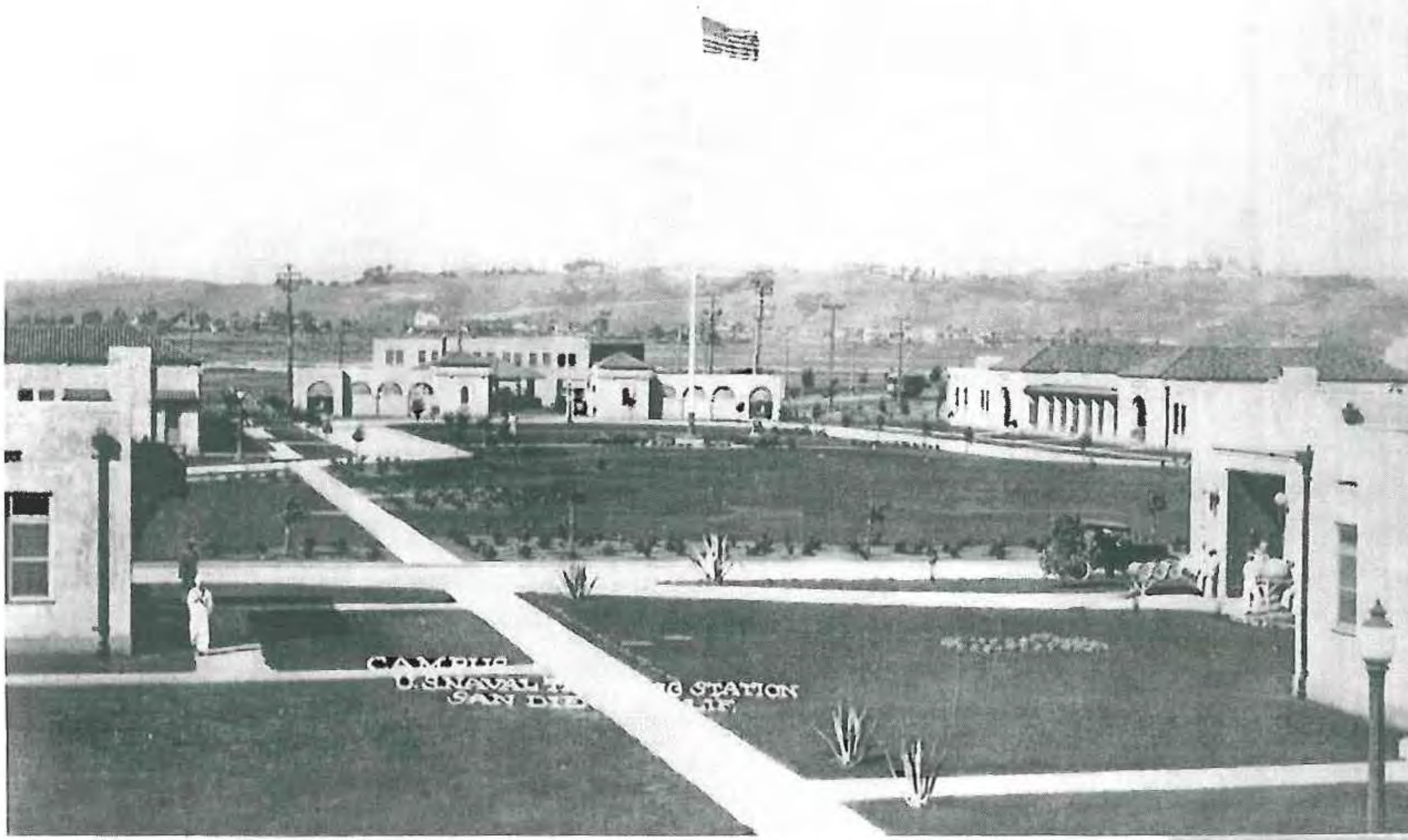
Looking north from Ingram Plaza, ca. 1930s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

- Environmental Protection Requirements - Many cultural landscapes are affected by requirements that address environmental issues. Legislation at the federal, state and municipal level have established rules and regulations for dealing with a variety of natural resources — including water, air, soil, and wildlife. Work predicated on such legislation must be carefully planned and undertaken so that it does not result in the loss of a landscape's character-defining features. Securing required permits and licenses should be considered early in the project work, and special efforts should be made to coordinate with public agencies responsible for overseeing specific environmental concerns.

- Energy Efficiency - Some features of a cultural landscape, such as buildings, structures, vegetation, and furnishings, can play an energy-conserving role. Therefore, prior to undertaking project work to achieve greater energy efficiency, the first step should always be to identify and evaluate existing historic features to assess their inherent energy conserving potential. If it is determined that such work is appropriate, then it needs to be carried out with particular care to insure that the landscape's historic character is retained. They may include walls, terraces and steps. The placement and arrangement of buildings and structures are important to the character of the landscape; these guidelines emphasize the relationship between buildings, structures and other features that comprise the historic landscape.

Italian Cypress were used to define the walkway on the southeast side of Building 35. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

SPATIAL ORGANIZATION AND PLANT PATTERNS



Looking northeast across Sellers Plaza, ca. mid-1920s. Photograph courtesy of the San Diego Historical Society Photograph Collection.

SPATIAL ORGANIZATION AND PLANT PATTERNS

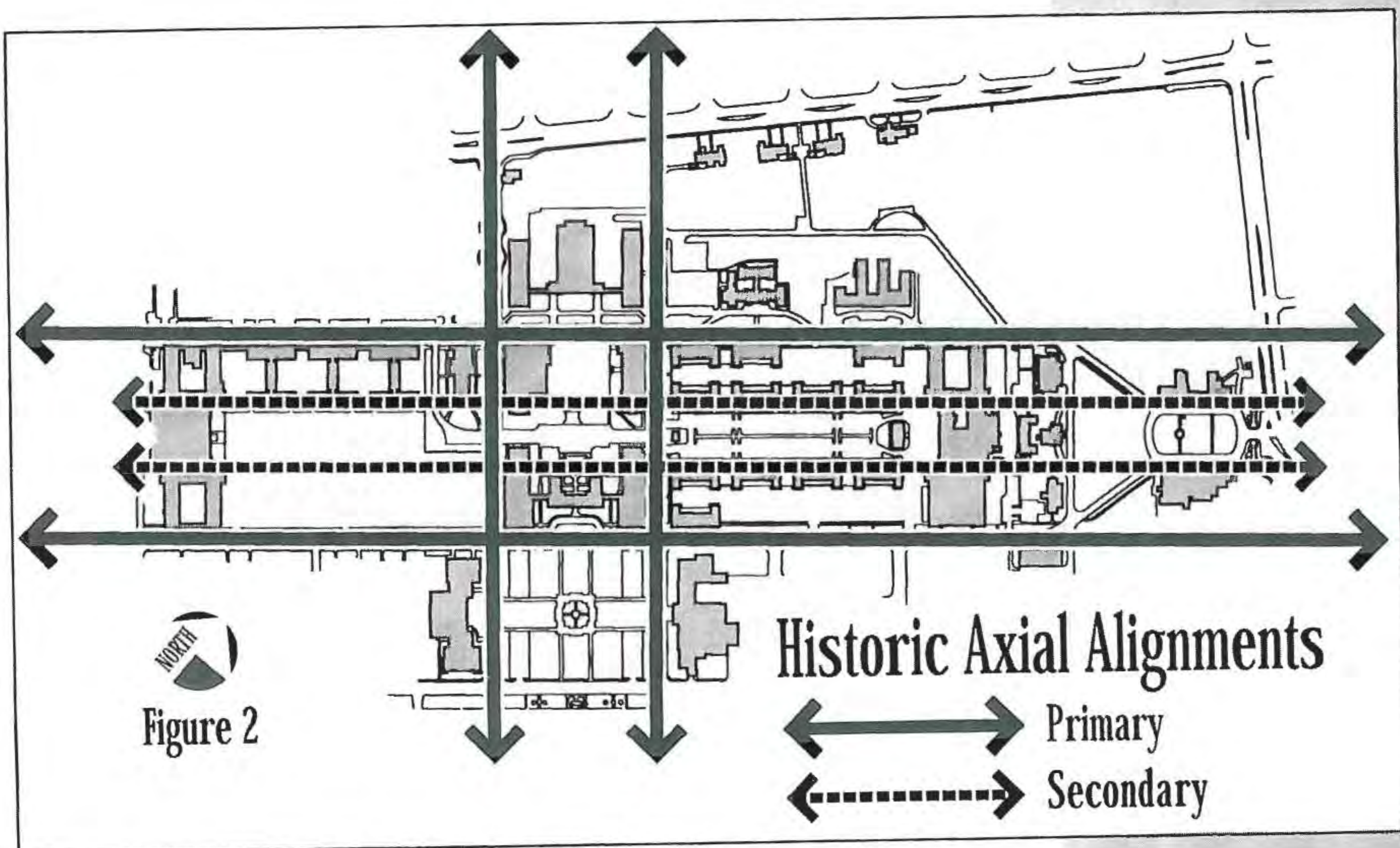
The Historic District is arranged in a grid street pattern, with building facades aligned with a paired primary street network. These buildings further define outdoor space by creating several interior courts that lie along the central axis of the street network. The origination point for the central axis and street pattern is Sellers Plaza. Pedestrian access is provided along these axes through the arcades. Refer to Historic Axial Alignment Map below.

The buildings are arranged to provide two primary views. The historic east-west view originates at Gate 1 and includes Sellers Plaza and the Fire Station (Building 8). The north-south view originates at the south east entry to Building 200 and extends across Ingram Plaza and Preble Field to the waterfront. Secondary viewpoints are located at Gate 3, extending along Roosevelt Road to the waterfront; and from the entry of Luce Theater, Building 35, terminating at the Headquarters Building rose garden.

The conversion of NTC to public facilities will be challenging. The need for improved functionality and increased building, roadway and parking capacities can strongly contrast with the original layout of the facilities. The focus of the concept for the spatial organization should include:

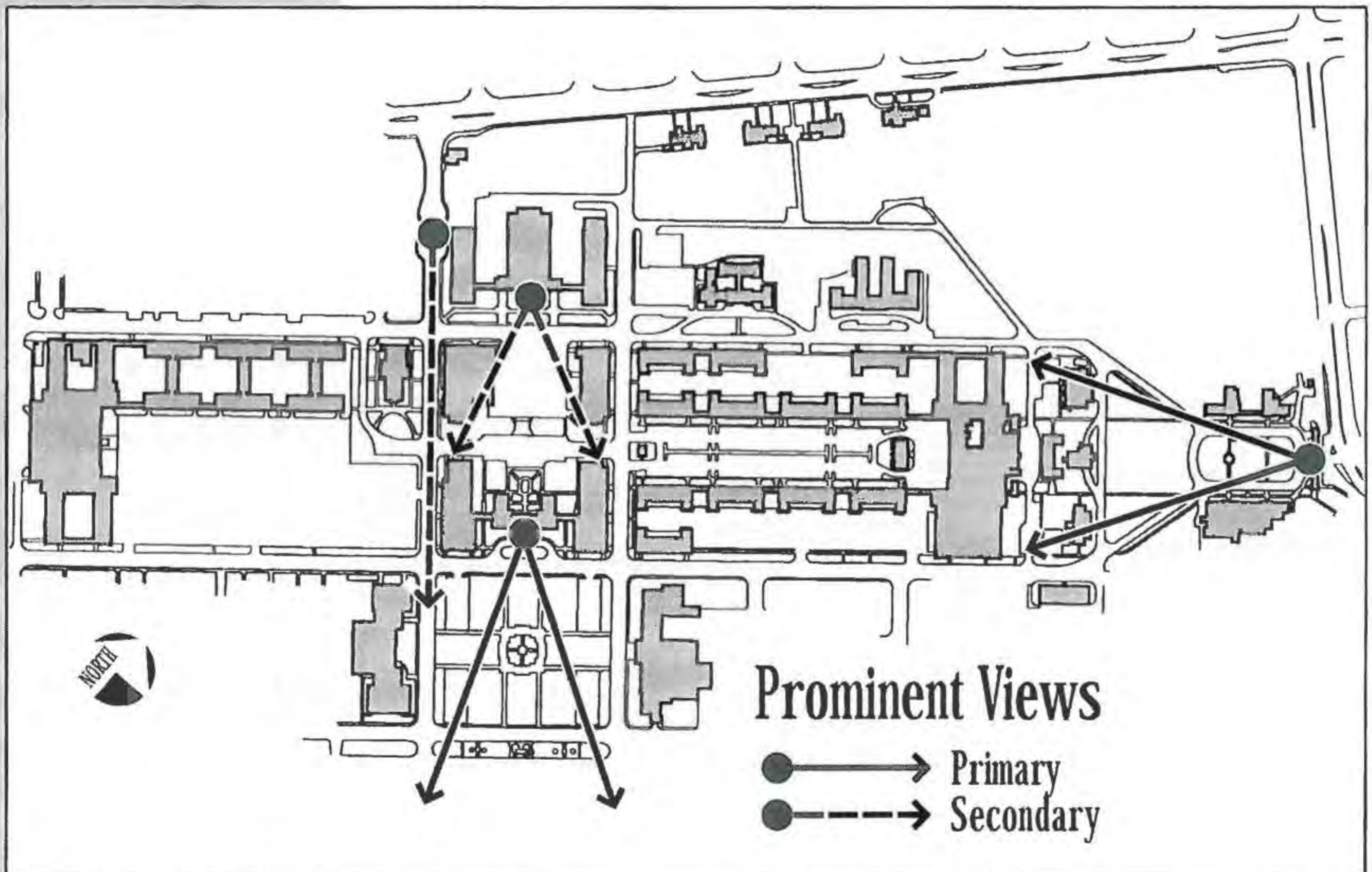
- Preserving, enhancing and rehabilitating the character of the Historic District;
- Providing access to the site and buildings;
- Separating vehicular, pedestrian and service traffic;
- Organizing the functional and visual elements of open spaces;
- Ensuring functional and visual compatibility between buildings and open spaces;
- Establishing a compatible scale with the buildings and the spaces defined by the buildings; and
- Providing for future growth and expansion.

SPATIAL ORGANIZATION AND PLANT PATTERNS



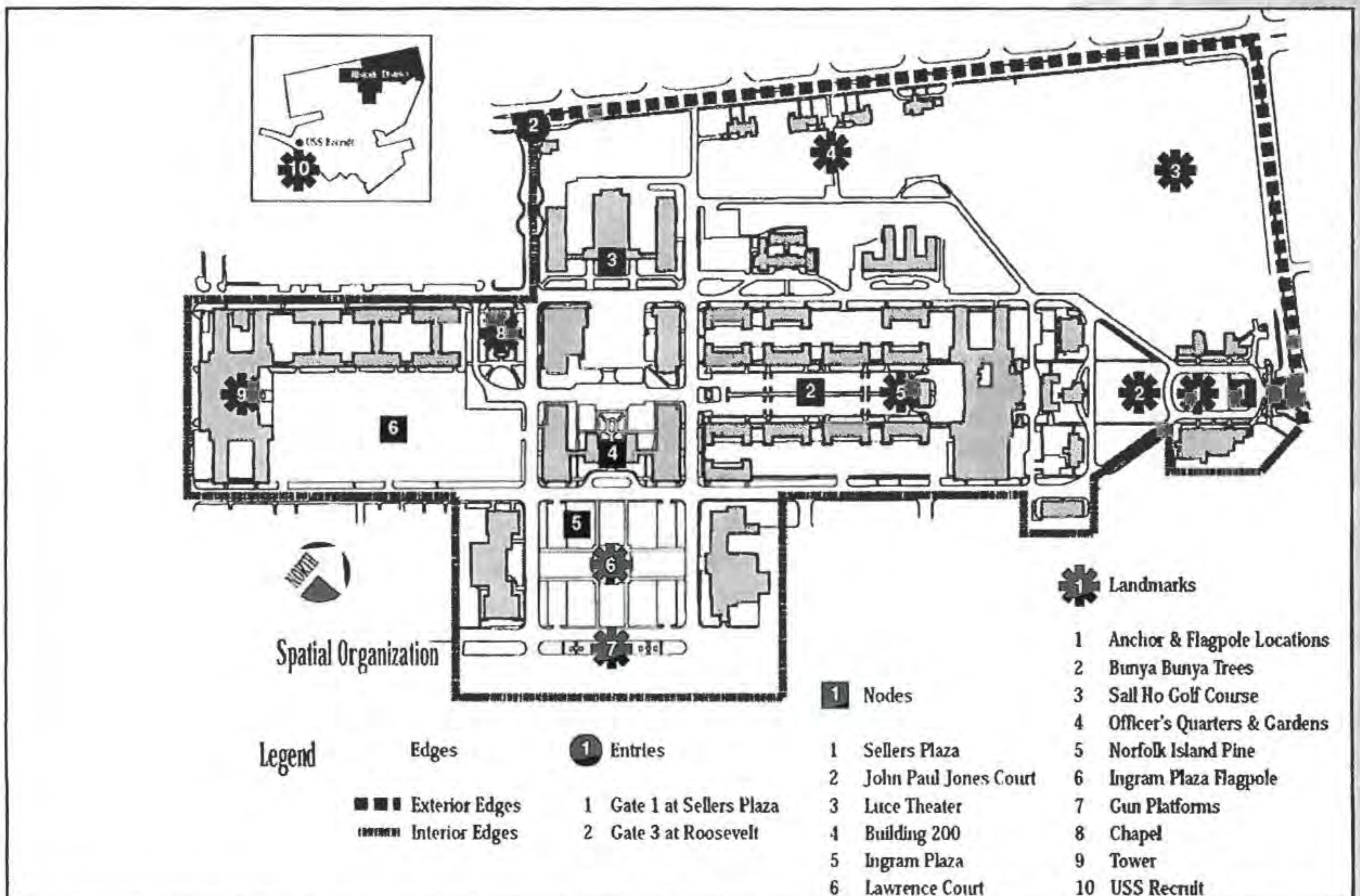
Primary and secondary historic axial alignments courtesy of KTU+A.

SPATIAL ORGANIZATION AND PLANT PATTERNS



Prominent views at the Naval Training Center historic district courtesy of KTU+A.

SPATIAL ORGANIZATION AND PLANT PATTERNS



Spacial Organization of the Naval Training Center historic district courtesy of KTU+A.

SPATIAL ORGANIZATION AND PLANT PATTERNS

Recommended

Identify, Retain and Preserve Historic Materials and Features

Identifying, retaining and preserving the existing spatial organization and land patterns of the landscape as they have evolved between 1923 and 1945, with particular emphasis on the preservation of the axial arrangement of buildings and the pedestrian arcades, grid patterns of roads and view corridors. Prior to beginning project work, review the Cultural Landscape Report, Naval Training Center, San Diego, documenting all features which define those relationships. This includes the size, configuration, proportion, and relationship of component landscapes; the relationship of features to component landscapes; and the component landscapes themselves, such as the arcades, courts and Officers' gardens.

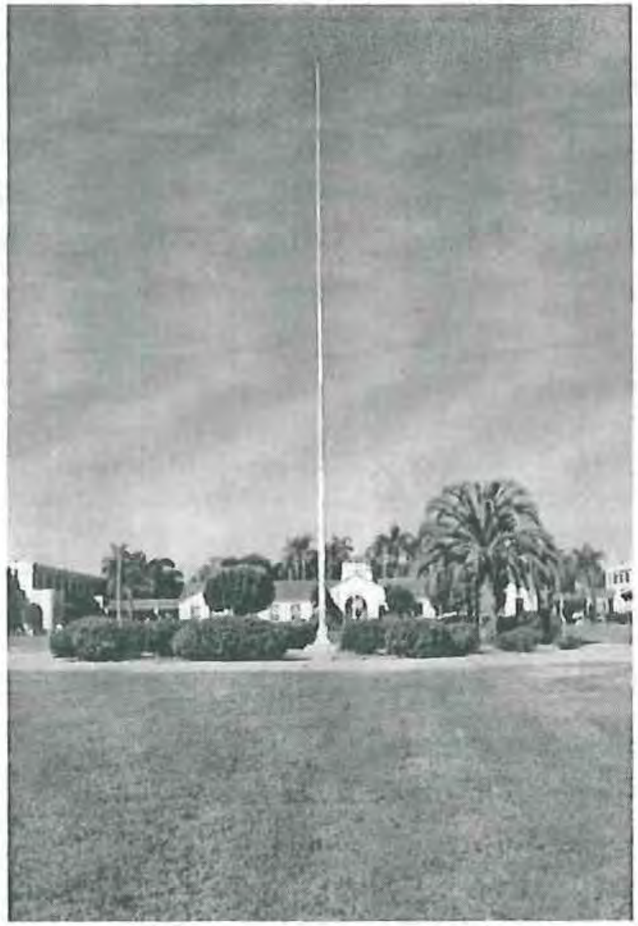
Identifying, retaining and preserving the existing buildings, open spaces and enclosed spaces that contribute to the visual perception and spatial organization of Naval Training Center, including Sellers Plaza, Ingram Plaza, Sail Ho Golf Course, Wiley Pond north of the Headquarters Building, and the Officers' Quarters Gardens.

Not Recommended

Undertaking project work without understanding the effect on existing spatial organization and grid layout of NTC. For example, constructing a structure in the center of Lawrence Court that disrupts the axial arrangement of the Barracks buildings.

Recommended

Identifying, retaining and preserving the existing edges, nodes, landmarks and entries that contribute to the visual quality of the spatial organization of NTC. Edges include Sail Ho Golf Course as viewed from Lytton Avenue and Rosecrans Street and the Officers' Quarters on Rosecrans Street. Nodes include Headquarters Building, the central point of the view corridors. Landmarks include the flagpole and gun platforms in Ingram Plaza, and the anchor in Sellers Plaza. The entry at Gate 1 on Lytton Avenue contributes to the spatial organization of NTC.



Historic flagpole feature at Ingram Plaza. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 1999.

SPATIAL ORGANIZATION AND PLANT PATTERNS

Recommended

Protect and Maintain Historic Features and Materials

Protecting and maintaining features that define the Beaux-Arts' spatial organization and land patterns by nondestructive methods in daily, seasonal and cyclical tasks. For example, maintaining topography, vegetation and structures that comprise the overall pattern of the cultural landscape.

Repair Historic Features and Materials

Repairing materials that define the spatial organization and land patterns by use of nondestructive methods and materials when additional work is required. For example, repairing structures or regenerating vegetation which comprise the individual spaces or overall patterns of the cultural landscape.

Replace Deteriorated Historic Materials and Features

Replacing in kind an entire feature that defines spatial organization and land patterns that are too deteriorated to repair.

Not Recommended

Allowing the Beaux-Arts' spatial organization and land patterns to be altered through incompatible development or neglect.

Utilizing maintenance methods that destroy or obscure the landscape's spatial organization and land patterns.

Failing to undertake necessary repairs resulting in the loss of spatial organization and land patterns.

Replacing a feature that defines spatial organization and land patterns when repair is possible.

Removing a feature that is beyond repair and not replacing it; or, replacing it with a new feature that does not respect the spatial organization and land patterns.

Recommended

Design for the Replacement of Missing Historic Features

Designing and installing new features that respect or acknowledge the historic spatial organization and land patterns. It may be an accurate restoration using historical, pictorial and physical documentation; or be a new design that is compatible with the spatial organization and land patterns. For example, constructing a new series of buildings on the southeast side of Lawrence Court, enclosing the space and continuing the axial arrangement through the incorporation of pedestrian arcades.

Alterations/Additions for the New Use

Designing new features when required by the new compatible use to assure the preservation of the historic spatial organization and land patterns. For example, visually continuing the concept of the pedestrian arcade between Buildings 25 and 26 on Truxtun Road, and between Buildings 1 and 19 on Decatur Road.

Removing nonsignificant features that detract from or have altered the spatial organization and land patterns. For example, removing Building 209 in Lawrence Court, in addition to the existing parking in each court, and returning these to public open spaces that strengthens the view corridor.

Not Recommended

Creating a false historical appearance because the replacement feature is based on insufficient historical, pictorial and physical documentation.

Introducing new features that are incompatible with the spatial organization or land patterns.

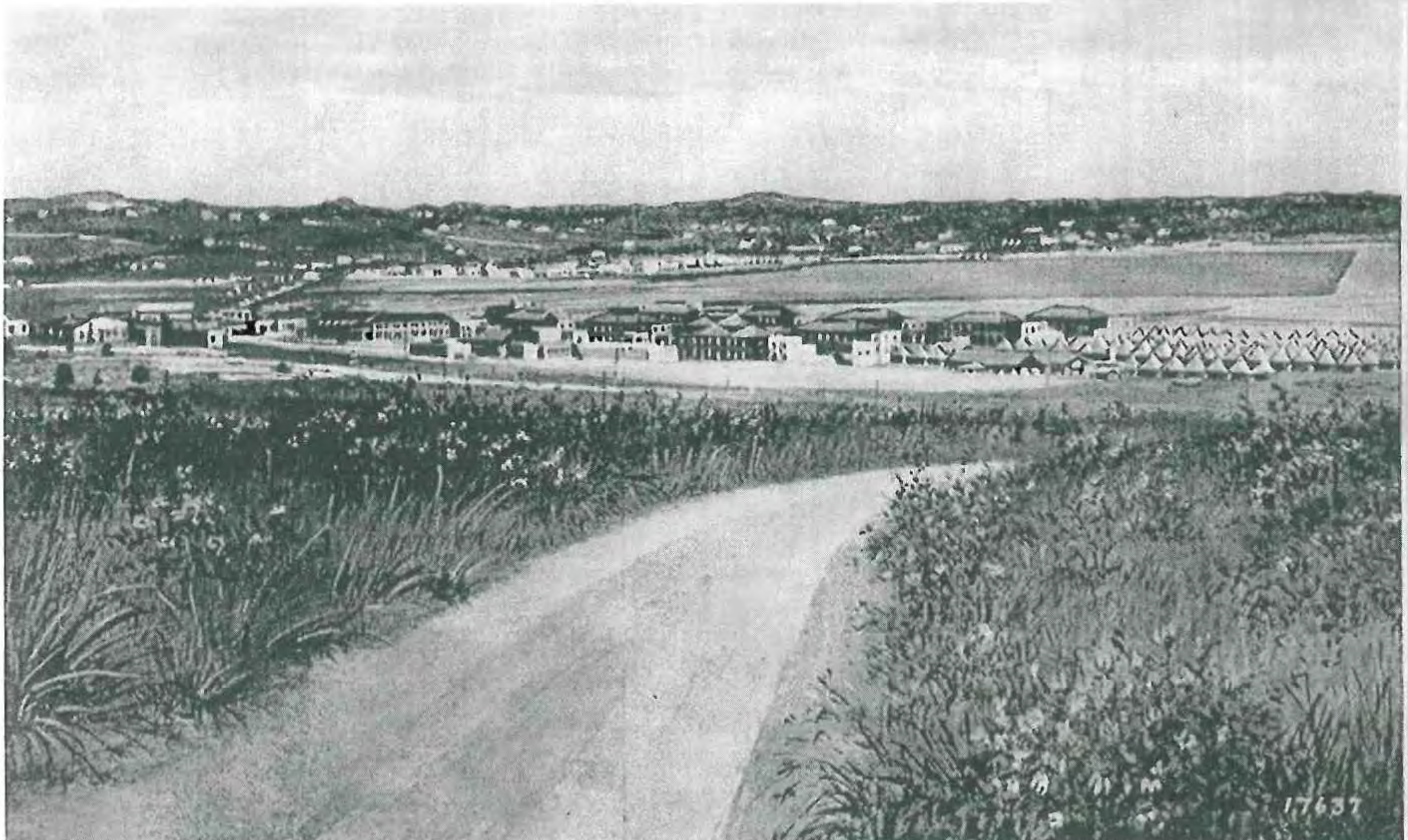
Adding a new feature that detracts from or alters the spatial organization and land patterns.

Placing a new feature where it may cause damage to, or be intrusive in spatial organization and land patterns. For example, inserting a new visitors center that blocks or alters a historic view or vista.

Introducing a new feature that is visually incompatible in size, scale, design materials, color and texture.

Removing historic features that are important in defining spatial organization and land patterns.

TOPOGRAPHY



Looking east towards the Naval Training Center, ca. 1920s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

TOPOGRAPHY

The Historic District's development has minimally affected the underlying topography because the majority of the site is fairly flat. Only the extreme northern edge of the Historic District between Rosecrans Street and Truxtun Road possesses significant slopes. The area includes the slope north of Building 35 and the terraced Officers' gardens.

The focus of the concepts for the site topography include the following:

- Preservation of the existing slope features that contribute to the historic character;
- Maintenance of plant materials and drainage structures to minimize slope failure; and
- Incorporation of new features that do not distract from the historic character.

Aerial view looking south at the Naval Training Station, ca. 1920s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

Recommended

Identify, Retain and Preserve Historic Features and Materials

Identifying, retaining and preserving the existing topography. Preparing a topographic survey for the slope between Rosecrans Street and Truxtun Road to verify the condition and stability of the slopes prior to any work commencing in this area.

Preserving the existing terracing that occurs in the gardens and terraces of the Officers' Quarters.

Terracing at the garden at Officers' Quarters A. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

Not Recommended

Undertaking project work that impacts the slopes between Rosecrans Street and Truxtun Road without undertaking a topographic survey.

Executing project work without understanding its impact on historic topographic resources, for example, the gardens and terraces of the Officers' Quarters.

Recommended

Protect and Maintain Historic Features and Materials

Protecting and maintaining historic topography by use of nondestructive methods and daily, seasonal and cyclical tasks. This may include cleaning drainage systems and removing debris.

Not Recommended

Failing to undertake preventive maintenance.

Utilizing maintenance methods that destroy or degrade topography, such as using heavily weighted equipment on steep or vulnerable slopes.

RECOMMENDED	*NOT RECOMMENDED*

Repair Historic Features and Materials

Recommended: Repair declining topographic features. For example, this may include replacing the plant materials (trees and groundcover) on the slope north of Building 35 that may contribute to future slope failure.

Not Recommended: Destroying the shape, slope, elevation or contour of topography when repair is possible. For example, constructing retaining walls or utilizing other man-made slope protection devices to prevent slope failure.

Landscaped slope northwest of Building 35. Photograph courtesy of KTU+A, February 2000.

Replace Deteriorated Historic Materials and Features

Recommended: Using existing physical evidence of the form and composition to reproduce a deteriorated topographic feature. If using the same kind of material is not technically, economically or environmentally feasible, then a compatible substitute material may be considered. For example, reestablishing eroded terraces in the Officers' gardens with a substitute soil mix supporting improved drainage and health and vigor of plant materials.

Not Recommended: Removing a topographic feature that is deteriorated and not replacing it, or replacing it with a new feature that does not convey the same visual appearance. For example, changing the stepped terracing to a curved slope in the Officers' gardens.

Recommended

Design for the Replacement of Missing Historic Features

Designing and installing new topographic features when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial and physical documentation of a new design that is compatible with the shape, slope, elevation, and contour of the historic topography. For example, utilizing cobblestone or concrete walls to complete the terracing in the Officers' gardens.

Alterations/Additions for the New Use

Designing new topographic features when required by the new use so that they are as unobtrusive as possible and assure the preservation of the historic landscape. For example, the proposed widening of streets such as Truxtun Road may require the regrading of slopes between Truxtun Road and Buildings 35, 6 and 195. It is recommended that all grading occur on the side of the street opposite the arcade. If retaining walls are necessary to protect historic structures or landscapes, the walls should be cast-in-place concrete walls, painted to match existing retailing walls and to tie them into the buildings. Embellishment on the retaining wall is not needed or desirable. Any new retaining walls should be placed behind walkways to ensure continued pedestrian access along existing walkways. Drought-tolerant trailing plant material should be installed immediately behind the retaining walls to further reduce their potential visual impact.

Not Recommended

Creating a false historical appearance because the replacement feature is based on insufficient historical, pictorial and physical documentation.

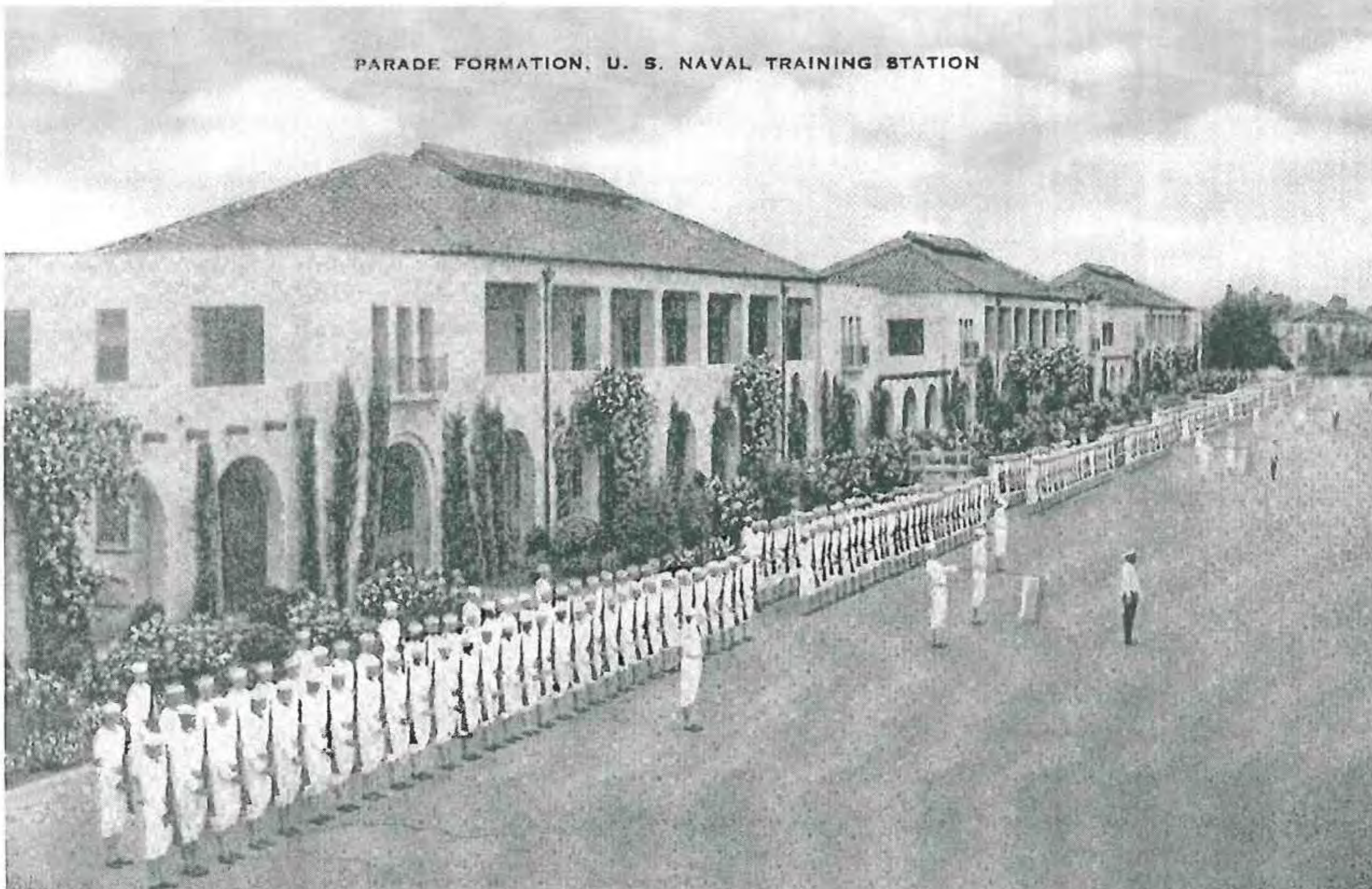
Introducing a new topographic feature that is incompatible in shape, elevation, aspect, and contour.

Placing a new feature where it may cause damage, or is incompatible with historic topography. For example, failing to provide proper drainage for a new retaining walls that results in wall or slope failure.

Locating retaining walls in such a way that they detract from or alters the historic topography.

Introducing a new feature in an appropriate location, but making it visually incompatible in terms of its size, scale, design, materials, color, and texture.

VEGETATION



Parade formation at John Paul Jones Court, ca. 1920s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

VEGETATION

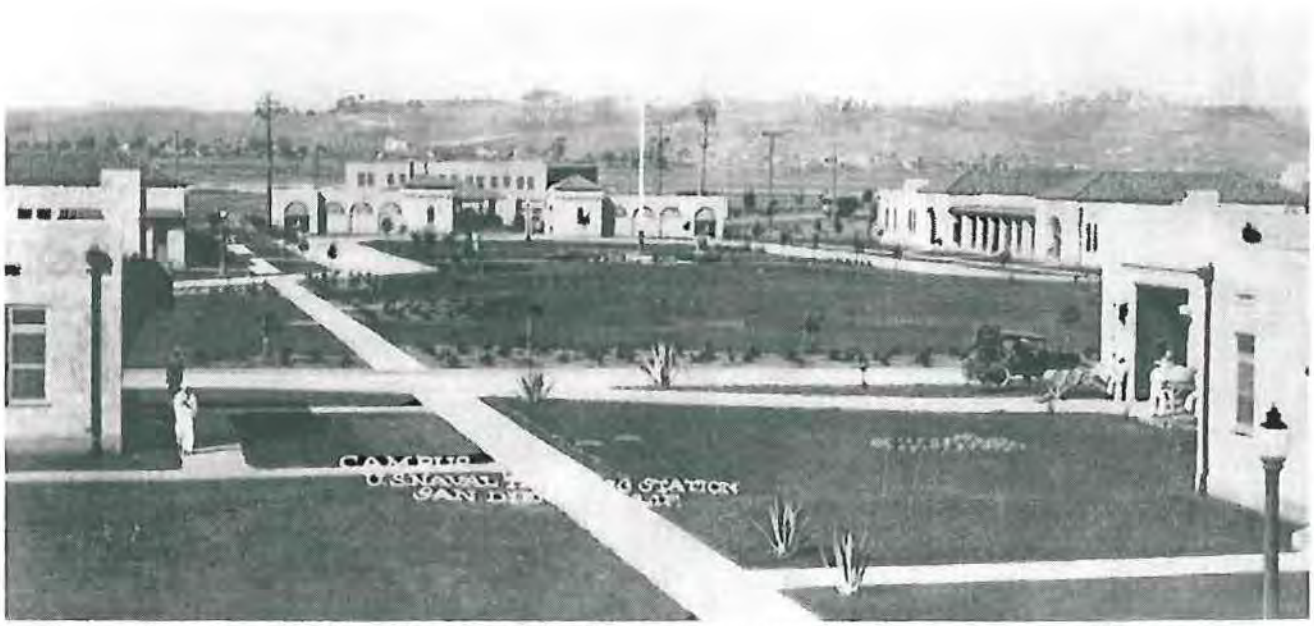
The original landscape design plans included two distinct aspects. Single rows of trees in regular patterns were planted along the streets to emphasize the linear qualities of the axes. The street trees defined the spaces and edges of the base and the Historic District while providing visual uniformity and order. The photo on 2A-1 shows the uniform spacing and pattern of the Black Acacia (Acacia melanoxylon) along Truxtun Road and Decatur Road. The heads of these trees were pruned into a cone shape. The purpose of the street trees was to draw the eye along the view corridors and emphasize the overall architectural theme. Trees were also utilized to provide shade in the courtyards.

Bougainvillea on arcade column at Lawrence Court. Photograph courtesy of KTU+A, February 2000.

The transition areas from the hardscape to the buildings emphasized the repetitive architectural elements through varied height group plantings. Shrub plantings, in a symmetrical and balanced arrangement, were used primarily as foundation massings along building walls and corners, and to reinforce the walkways and building lines. Low-growing plant materials were used in the foreground, with the heights and density of plant materials increasing near the buildings. Trees and shrubs with flowers, unusual foliage or interesting branch shapes were highlighted against the solid colored walls of the buildings. Along the arcades in John Paul Jones Court and Lawrence Court, Italian Cypress (Cupressus sempervirens) were planted at the building corners and at the openings in the arcade leading to the interior courtyards. Hollywood Juniper (Juniperus chinensis) 'Torulosa' has been used extensively as a replacement for the Italian Cypress. Bougainvillea vines were planted on trellises on the arcade columns between the building entries, and shrubs were planted between the arcade openings.

Lawn was utilized extensively throughout the Historic District, primarily in rectangular shapes. Lawn was planted adjacent to the roads to complement the linear aspect of the street trees and to provide an additional color element to complement the flowers of the shrubs and trees. The lawns softened the angular edges of the landscape.

In Sellers Plaza, a large lawn area provided the setting for the flagpole. Black Acacias were planted as street trees adjacent to Sellers Plaza, and Mexican Fan Palms (Washington robusta) were planted on Perry Road in front of the Fire Station. Century Plant (Agave americana) were planted at the corners of the walkways around the Fire Station. This created a green oasis at the main entry, letting visitors know that while the base was a place of work and activity, it was also a pleasant and attractive setting for working and living. The lawns served as a transition zone to the small, one-story buildings surround the plaza. At least six, and possibly as many as twelve Araucaria bidwillii trees (Bunya Bunya) were planted in Sellers Plaza, eventually creating a skyline silhouette of trees.



Looking northeast towards Sellers Plaza ca. 1925. Photograph courtesy of the San Diego Historical Society Photograph Collection.

VEGETATION

Under the direction of head gardener August Anderson, the variety of plant species utilized at NTC in 1923 changed over the years, but the basic design intent was retained around many of the buildings constructed during the years preceding World War II.

Anderson wrote a gardening column for the base newspaper, *The Hoist*, where he detailed his activities and acquainted his readers with the plant materials being used. Anderson utilized his knowledge of plants and aesthetic sense to implement the original landscape design concepts developed by Morley.

The Hoist identified other plant materials used throughout the base:
- Bailey Acacia (Acacia baileyana) - behind the Station Library and Chaplain's office
- Australian Peppermint (Agonis flexuosa) - near the garages
- Scarlet Flowering Gum (Eucalyptus ficifolia) - across the street from the Post Office
- Red Gum (Eucalyptus cornuta) - behind the sound school
- Monterey Cypress (Cupressus macrocarpa) - both sides of the walk leading to the Officers' Quarters
- Italian Cypress (Cupressus sempervirens) - used to emphasize the lines of the barracks and various buildings and generally planted to flank entrance areas
- Queen Palm (Syagrus romanzoffianum) - Camp Ingram
- Canary Island Date Palm (Phoenix canariensis) - east side of the Fire House
- Fan Palm (Washingtonia robusta)
- Dragon Palm (Dracaena draco) - used in the corners of the base as accent plants
- Bunya bunya Tree (Araucaria bidwillii) - Sellers Plaza

The gardens at the rear of the Officers' Quarters are terraced in formal levels with cobblestone or concrete walls dividing each level. Stairs are located in the center of each level, with walkways leading to various points within the gardens. The terraces provided flat areas for large lawns with hedges at the edges of the terraces. All of the plant materials utilized on the base were repeated in these gardens. The gardens used large shrubs and trees to separate the lawns and provide limited privacy.

Since detailed records of the original plantings are not available, the selection of plant materials should be suitable for a semi-arid climate, their compatibility with the historic character and their resistance to pests and diseases.

Recommended

Identify, Retain and Preserve Historic Features and Materials

Identifying, retaining and preserving the existing historic vegetation prior to project work, including street trees, lawn trees, courtyard trees, shrubs and vines. Documenting broad cover types, genus, species, caliper and/or size, as well as color, scale, form and texture. Particular emphasis should be placed on the preservation of the Bunya bunya trees in Sellers Plaza. Also, the large eucalyptus trees throughout NTC were planted prior to 1942 and should be maintained and preserved.

Preserving the Black Acacia trees on Rosecrans Street in front of the Officers' Quarters. Although there have been problems with Black Acacia as a street tree, there is a sufficient setback from Rosecrans and these trees contribute to the historical character of the area. As trees die, they should be replaced in kind. If this species is not available, the Black Acacias should be replaced with a species with similar growth structure, size and color, but with a root system suitable for a street tree.

Evaluating the condition and determining the age of vegetation. For example, examining historic photographs to determine age.

Retaining and perpetuating vegetation through propagation of existing plants. Methods include seed collection and genetic stock cuttings from existing materials to preserve the genetic pool.

Preserve and protect the formal setting of the Officers' Quarters gardens including the cobblestone and concrete walls, steps, fountains and rose gardens.

Not Recommended

Undertaking project work that impacts vegetation without executing an existing conditions survey of plant material.

Undertaking project work without understanding the significance of vegetation. For example, removing street trees for utility installations, or road and walkway expansions.

Failing to propagate vegetation from extant genetic stock, when few or no known sources or replacements are available.

Black Acacia trees lining Rosecrans Street in front of the Officers' Quarters. Photograph courtesy of KTU+A, February 2000.

VEGETATION

Examples of varying pruning practices at the Naval Training Center. Photograph courtesy of KTU+A, February 2000.

RECOMMENDED

Protect and Maintain Historic Features and Materials

Protecting and maintaining historic vegetation by use of nondestructive methods and daily, seasonal and cyclical tasks.

Utilizing maintenance practices that respect the habit, form, color, texture, bloom, fruit, fragrance, scale and context of historic vegetation. For example, the shrubs planted at the building foundations should be pruned to create a mass of plant materials, rather than pruning to maintain the individual shape of each shrub, as has been done at Headquarters Building around the rose garden.

Removing all ivy growing on arcades and building walls. The ivy is invasive and will damage the structural features and integrity if left unchecked.

Transplanting the Canary Island Palm adjacent to the flagpole in Ingram Plaza to another location at NTC. This palm was not planted in conjunction with the flagpole construction and is not in keeping with the concept of the view corridor in this area.

Canary Island Palm adjacent to the historic flagpole at Ingram Plaza. Photograph courtesy of KTU+A, February 2000.

NOT RECOMMENDED

Failing to undertake preventive maintenance of vegetation, such as pest control.

Utilizing maintenance practices and techniques that are harmful to vegetation; for example, over- or under-irrigating or severe pruning that destroys the natural or intended shape, such as hedges.

Utilizing maintenance practices and techniques that fail to recognize the uniqueness of individual plant materials. For example, utilizing soil amendments that may alter flower color or, poorly timed pruning that may make trees vulnerable to insect pests.

Ivy growing on arcades and building walls should be removed. Photograph courtesy of KTU+A, February 2000.

Not Recommended

Escaped exotics that have been "bird planted" should be removed.

Escaped (to grow wild, as a newly introduced plant) exotics such as this pampas grass should be removed. Photograph courtesy of KTU+A, February 2000.

VEGETATION

Low hedges in the rose garden on the north side of Headquarters Building consist of both Myrtus communis 'Compacta' and Buxus microphylla japonica 'Compacta'. Photograph courtesy of KTU+A, February 2000.

Recommended

Repair Historic Features and Materials

Rejuvenating historic vegetation by corrective pruning, deep root fertilizing, aerating soil, renewing seasonal plantings and/or grafting onto historic genetic root stock.

Replace Deteriorated Historic Materials and Features

Using physical evidence of composition, form, and habit to replace a deteriorated, or declining, vegetation feature. If using the same kind of material is not technically, economically, or environmentally feasible, then a compatible substitute material may be considered. For example, older, historically correct shrubs too large for their locations (particularly along the arcades) and dead or diseased trees and shrubs (particularly foundation shrubs around buildings) should be removed and replaced with the same species, or a current variety of the same genus, in keeping with the original 1923 planting concept.

Replacing a variety of plant species with one species. For example, the low hedges in the rose garden on the north side of Headquarters Building consist of both Myrtus communis 'Compacta' and Buxus microphylla japonica 'Compacta'. Dead or diseased shrubs should be replaced with Myrtus Communis 'Compacta' until the species is consistent throughout the garden.

Replacing the arcade planting along Lawrence Court to create the hierarchy of planting materials envisioned in the original plan.

Not Recommended

Replacing or destroying vegetation when rejuvenation is possible. For example, removing a deformed or damaged plant when corrective pruning may be employed.

Hollywood Junipers were used to replace the original Italian Cypress planted along the arcades to indicate the building entries. During the rehabilitation of Lawrence Court and John Paul Jones Court, the Italian Cypress should be replanted. Photograph courtesy of KTU+A, February 2000.

Removing deteriorated historic vegetation and not replacing it, or replacing it with a new feature that does not convey the same visual appearance. For example, removing the vertical Italian Cypress or Hollywood Junipers along the arcade entries and replacing them with shrubs with a horizontal growth pattern

Recommended

Design for the Replacement of Missing Historic Features

Designing and installing new vegetation features when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial and physical documentation; or be a new design that is compatible with the habit, form, color, texture, bloom, fruit, fragrance, scale, and context of the historic vegetation. For example, missing plant materials along the arcades should be replaced to create the originally intended hierarchy of plant materials (low shrubs, taller shrubs, vines, and hedges).

Installing new street trees in conformance with the original concept of one species per street to reinforce the axial arrangement. Although street trees currently exist along most of these streets, two or more species may occur on any one street. Many of the aracias are in declining or poor health, and/or the root systems are lifting walkways and roads. If all of the street trees were to be removed and replaced at one time, it is recommended that the original species, Acadia melanoxylon, be utilized with the understanding that the trees have a relatively short lifespan of 25 to 30 years. Continuous maintenance would be required to promote straight trunk growth, control aggressive roots, and remove suckers and brittle branches.

Not Recommended

Creating a false historical appearance because the replaced feature is based on insufficient historical, pictorial and physical documentation.

Introducing new replacement vegetation that is incompatible with the historic character of the landscape.

Consideration should be given to reconstructing the planted "anchor" visible in aerial photographs of Sellers Plaza in 1928. Photograph courtesy of the San Diego Historical Society Photograph Collection

Recommended

However, it is highly unlikely that an overall tree replacement plan would be implemented at one time. Many of the current street trees are planted at thirty feet on center, as originally designed by Morley, are very long-lived, and are generally in a healthy condition. With selective replacement and on-going maintenance, these trees envisioned in the original landscape plan.

Therefore, the following trees are recommended:

- Truxtun Road - Ficus rubiginosa (Rustyleaf Fig)
- Decatur Road - Cinnamomum camphora (Camphor Tree)
- Roosevelt Road - Magnolia grandiflora 'Russet' (Southern Magnolia)
- Dewey Road - Magnolia grandiflora 'Russet' (Southern Magnolia)
- Sims Road - Acacia melanoxylon (Black Acacia) or Quercus suber (Cork Oak)
- Perry Road - Acacia melanoxylon (Black Acacia) or Quercus suber (Cork Oak)
- Sellers Plaza - Acacia melanoxylon (Black Acacia)

Creating lawn areas in place of parking lots in John Paul Jones Court, Lawrence Court, and Luce Plaza to return to the original concept of open areas as gathering spaces. The use of additional trees and shrubs should be carefully considered to preserve and enhance the view corridors.

Recommended

Alterations/Additions for the New Use

Designing a compatible new vegetation feature when required by the new use to assure the preservation of the historic character of the landscape. For example, the planting for proposed arcades and buildings along John Paul Jones Court and Lawrence Court should complement the existing arcade plantings.

Providing appropriate shade trees and shrub screening in new parking lots.

Utilizing "Recommended Plant Materials" included on page 2L-3.

Not Recommended

Placing a new feature where it may cause damage or is incompatible with the character of the historic vegetation. For example, constructing a new building that adversely affects the root systems of historic trees.

Locating any new vegetation feature in such a way that it detracts from or alters the historic vegetation. For example, introducing exotic species in a landscape that was historically comprised of indigenous plants.

Introducing a new vegetation feature in an appropriate location, which is visually incompatible in terms of its habit, form, color, texture, bloom, fruit, fragrance, scale, or context.

CIRCULATION

Dedication ceremony in Sellers Plaza, October 27, 1923. Courtesy of the San Diego Historical Society Photograph Collection.

CIRCULATION

The vehicular circulation system provides the means for primary access to facilities, as well as a wayfinding system for drivers and pedestrians. The establishment of a roadway hierarchy separates incompatible traffic types and provides direction to roadway users. Visually, a hierarchy of primary, secondary and tertiary streets reinforces the level of importance of each street to promote an understanding of the layout of the Naval Training Center (NTC), ease of circulation, and as an attractive streetscape.

The prominent layout of the historic circulation system includes the parallel Truxtun Road and Decatur Road corridors and their convergence at Sellers Plaza and the main gate off Lytton Avenue, planned as the main entry to NTC. A second, shorter pair of streets, Roosevelt Road and Dewey Road, cross perpendicular to Decatur Road and Truxtun Road to form a formal, rectilinear grid arrangement. These four streets comprise the primary roadways in the Historic District, providing access between the entry gates and prominent destination points. The secondary streets include Mayo Place, Perry Road and Sims Road. Woodsworth Way is a tertiary street.

In addition to the streets, there is a well-developed system of pedestrian walkways linking all major buildings on the base. This pedestrian circulation system was part of the original master plan concept and has largely survived intact.

The NTC Reuse Plan proposes several changes to the circulation system at NTC, including:

- Removing parking from John Paul Jones Court, Luce Court and Lawrence Court.
- Widening of Truxtun Road and Decatur Road to meet City of San Diego Standards.
- Parking lot improvements in the arcade building areas.

Recommended

Protect and Maintain Historic Features and Materials

Protecting and maintaining pedestrian and vehicular circulation systems by the use of nondestructive methods in daily, seasonal and cyclical tasks. For example, in several locations, residue from diseased plants has stained the concrete walkways. These walkways should be carefully cleaned to restore the original color and texture.

Restricting improvements that block established sight lines and view corridors from pedestrian or vehicular circulation routes, or disrupt the remaining strong elements of the orthogonal plan.

Protecting and maintaining the materials and forms of the original walkways, steps, and streets. For example, walkways were typically constructed six feet wide and two-foot square score joints. Steps with more than one riser were constructed with "cheek walls" on both sides of the steps.

Not Recommended

Failing to undertake preventive maintenance of circulation features and materials.

Allowing infrastructure to become dysfunctional. For example, permitting a failed drainage system to contribute to the degradation and loss of associated curbs or erosion of road surfaces.

Painted brick banding found on the arcade walkways should be returned to the natural brick finish. Photograph courtesy of KTU+A, February 2000.

Steps throughout NTC were constructed with six to twelve inch wide "cheek walls." Photograph courtesy of KTU+A, May 2000.

CIRCULATION

Recommended

Repair Historic Features and Materials

Repairing surface treatment, materials and edges. For example, by applying a traditional material to a stabilized subsurface base.

Removing paint from the concrete and brick banding in the arcades.

Removing the expansion joint material that has extruded and spread on the concrete paving. A suitable materials should be utilized to replace any expansion joints fully removed.

Analyzing the use of ramps to provide disabled access to the arcade and buildings. For example, the arcade typically includes three openings to the walkway in each location. Only the center opening should be ramped, and this should be designed to expose as much of the brick step as possible.

Not Recommended

Replacing or destroying circulation features and materials when repair is possible. For example, not salvaging and reusing the historic brick banding located in the arcade.

Repairing or replacing walkway or roadway materials with dissimilar materials. For example, repairing the concrete walkways with asphalt patching.

Recommended

Replace Deteriorated Historic Materials and Features

Using physical evidence of form, detailing and alignment to reproduce a deteriorated circulation feature. If using the same kind of material is not technically, economically or environmentally feasible, then a compatible substitute material may be considered. For example, replacing in kind the brick banding in the arcade.

Re-establishing the design character of Sellers Plaza as the primary and historic entry to NTC.

Develop a street tree planting plan from the 1923 historic era.

Design for the Replacement of Missing Historic Features

Designing and installing new circulation features when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial and physical documentation; or be a new design that is compatible with the historic character of the landscape.

Strengthen the original primary sidewalk axis identified as a pedestrian promenade and view corridor.

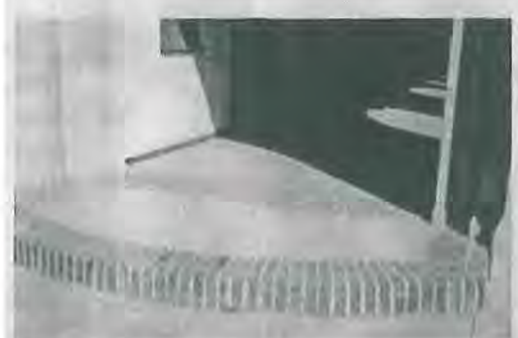
Replacing the missing brick banding in the arcade. For example, in some locations, the brick has been removed and the area patched with concrete

Not Recommended

Removing a circulation feature that is deteriorated and not replacing it, or replacing it with a new feature that does not convey the same visual appearance. For example, replacing a set of stairs with a wall, or completely removing a portion of the axial walkway system because the concrete is cracked and uneven.

Creating a false historical appearance because the replaced feature is based on insufficient historical, pictorial and physical documentation.

Introducing a new circulation feature that is incompatible with the historic character of the landscape.



Original brick banding at arcade entrance. Photograph courtesy of KTU+A, February 2000.

Brick banding has been replaced with concrete. Photograph courtesy of KTU+A, February 2000.

CIRCULATION

Inappropriate parking area directly next to historic building with no landscape buffer. Photograph courtesy of KTU+A, February 2000.

RECOMMENDED

Alterations/Additions for the New Use

Designing and installing compatible new circulation features when required by the new use to assure the preservation of historic character of the landscape. For example, controlling and limiting new curb cuts, driveways, and intersections along a historic road.

Carefully analyzing the impacts to historical resources when widening streets to meet current City of San Diego Standards. For example, if widening is required along Truxtun Road and/or Decatur Road, the widening should occur on the side of the street opposite the arcade buildings. Any necessary retaining walls should be constructed according to the Topography Design Guidelines. Existing street trees should be protected and preserved, or replaced to meet the Vegetation Design Guidelines for street trees.

Reviewing the configurations of proposed parking areas to protect view corridors, historic landscape areas and buildings. For example, landscape buffer areas should be provided between parking spaces and the buildings in the arcade areas. Parking spaces should not be located directly in front of the building entrances.

Removing existing contemporary paving materials such as stamped concrete, clay tiles and interlocking pavers and replacing with integrally colored and scored concrete.

Providing for disabled access to all facilities through the incorporation of the Accessibility Considerations Guidelines.

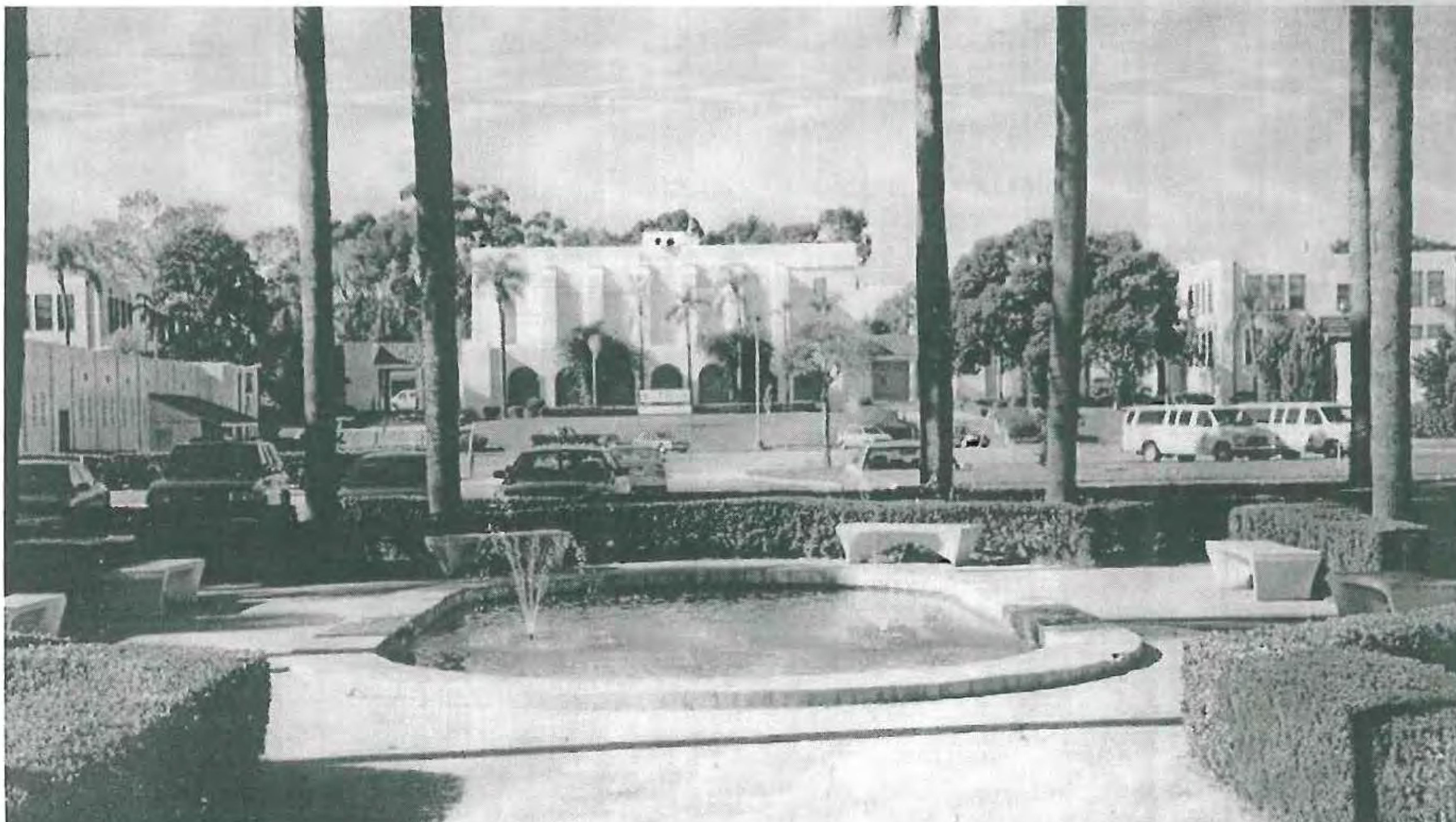
NOT RECOMMENDED

Placing a new feature where it may cause damage or is incompatible with the historic circulation. For example, adding on-street parking adjacent to the arcade buildings. Locating any new circulation feature in such a way that it detracts from or alters the historic circulation pattern.

Introducing a new circulation feature which is in an appropriate location, but making it visually incompatible in terms of its alignment, surface treatment, width, edge treatment, grade, materials, or infrastructure. For example, installing a new parking lot in a non-significant location, but utilizing paving materials and patterns that are incongruous with the landscape's historic character.

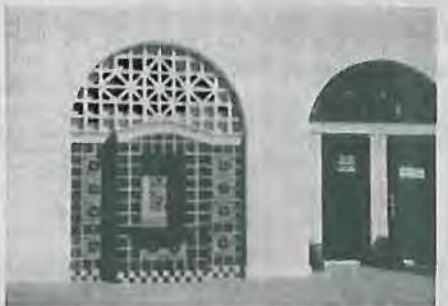
Existing contemporary paving material located adjacent to Luce Court should be removed. Photograph courtesy of KTU+A, February 2000.

WATER FEATURES



"Fish Pond" and water fountain located in the courtyard between Building 201 and 202. Photograph courtesy of KTU+A, February 2000.

WATER FEATURES



One of two water fountains located at Building 20 and 21. Photograph courtesy of KTU+A, February 2000.

"Redwood Flume" along Woodworth Way. Photograph courtesy of KTU+A, February 2000.

There is one water feature in the Historic District located just north of Headquarters Building in the courtyard between Buildings 201 and 202, aligned with Luce Court originally known as the "fish pond," this water feature was located in the center of the interesting ovals between Luce Court and Ingram Plaza. It is quasi-Moorish in style to complement the surrounding Spanish Revival buildings and is set in the midst of a formally-designed rose garden. The mechanical systems are almost certainly not original, but the remainder of the water feature and its surroundings appear to possess historical integrity.

Another water feature was originally located in the courtyard of the Information Building and Guard's Quarters (Buildings 9 and 10). This "concrete pool" is shown on the U.S. Naval Training Station Guards' Quarters Plans and Elevations dated February 5, 1921, Sheet 36 of 44 on Y and D No. 92555. The concrete form still exists in the courtyard, however, it is currently planted.

The 1929 Planting Plan identifies a "ditch" and "redwood flume" at the lower edge of the officers gardens. Evidence of this "ditch" still exists along Woodworth Way.

Additionally, two water fountains are located on the west side of Buildings 20 and 21 at Sellers Plaza.

Concrete curb remains at location of previous pool under Building 202. Photograph courtesy of KTU+A, February 2000.

Recommended	*Not Recommended*
Identify, Retain, and Preserve Historic Features and Materials	
Identifying, retaining and preserving existing water features and water sources such as the water feature at Headquarters Building and the water fountains at Buildings 20 and 21.	Executing project work that impacts water features without undertaking an existing conditions survey. Executing project work without understanding its impact on water features.
Protect and Maintain Historic Features and Materials	
Protecting and maintaining water features by use of non-destructive methods in daily, seasonal and cyclical tasks. For example, cleaning leaf litter or mineral deposits from drainage inlets or outlets.	Failing to undertake preventive maintenance of water features and materials. Utilizing maintenance methods that destroy or degrade water features, for example, the use of harsh chemical additives for maintaining water quality.
Maintaining a water feature's mechanical, plumbing and electrical systems to insure appropriate depth of water or direction of flow.	Allowing mechanical systems to fall into a state of disrepair, resulting in changes to the water feature. For example, failing to maintain a pool's aeration system thus leading to algae growth.
Repair Historic Features and Materials	
Repairing water features by reinforcing materials or augmenting mechanical systems. For example, at the Headquarters Building 200 water feature, placing the exposed pump system in a below grade junction box, and replacing the white PVC pipes with a darker color pipe to minimize their visibility.	Replacing or removing features or systems when repair is possible.

WATER FEATURES

Recommended

Replace Deteriorated Historic Materials and Features

Using existing physical evidence of form, depth and detailing to reproduce a deteriorated water feature. If using the same kind of material is not technically, economically, or environmentally feasible, then a compatible substitute material may be considered.

Design for the Replacement of Missing Historic Features

Designing and installing a new water feature when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial and physical documentation; or be a new design that is compatible with the historic character of the landscape. For example, replacing the mechanical components of the water feature in the Building 9 and 10 courtyard.

Not Recommended

Removing a water feature that is unrepairable and not replacing it, or replacing it with a new feature that does not convey the same visual appearance. For example, replacing a single orifice nozzle with a spray nozzle, thus changing the fountain's historic character from a singular stem of water to a mist-like stream.

Creating a false historical appearance because the replaced feature is based on insufficient historical, pictorial and physical documentation.

Introducing a new design that is incompatible with the historic character of the landscape.

Recommended

Alterations/Additions for the New Use

Designing and installing a compatible new water feature when required by the new use to assure the preservation of historic character of the landscape.

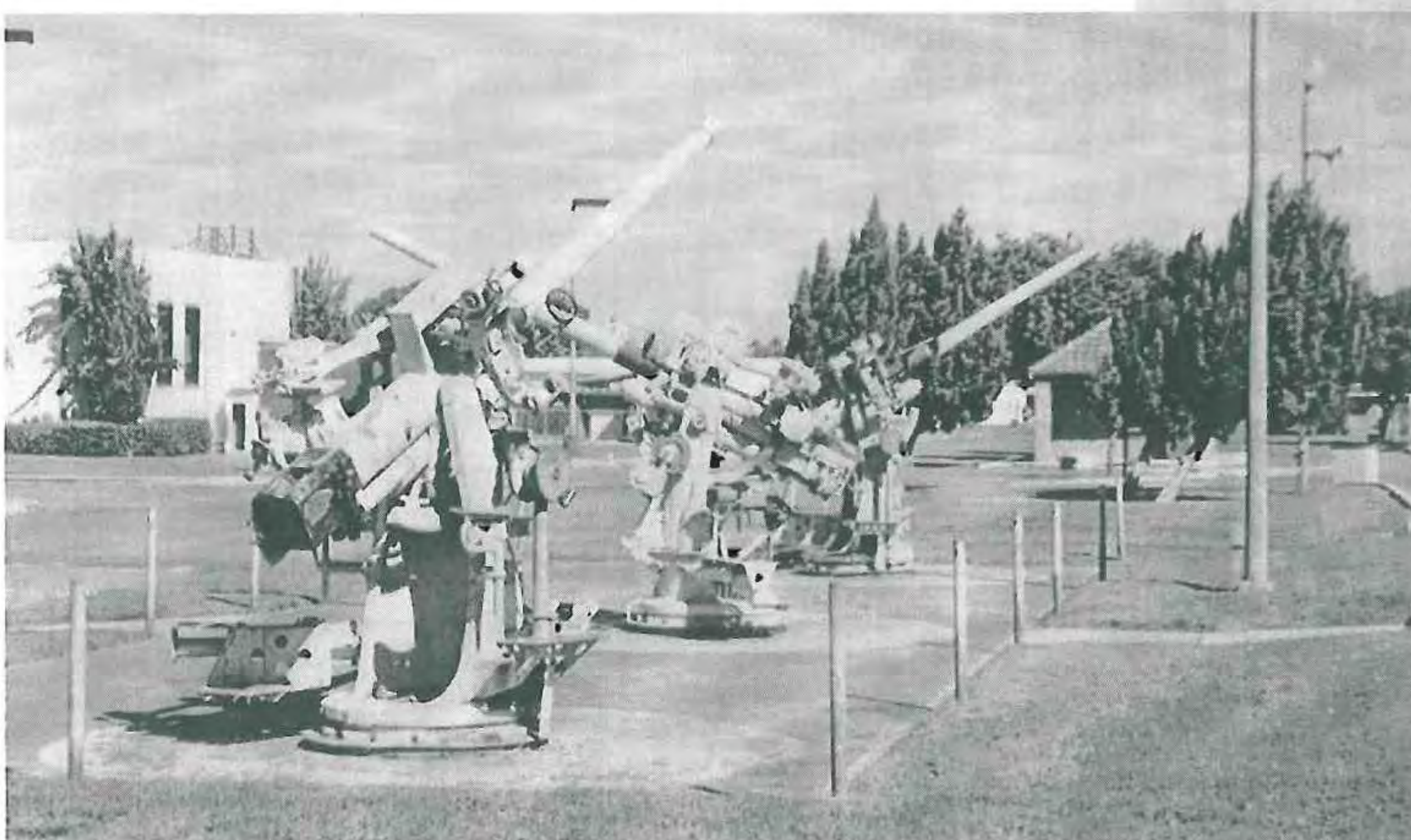
Not Recommended

Placing a new water feature where it may cause damage, or is incompatible with the historic character, such as adding a water slide.

Locating any new water feature in such a way that it detracts from or alters the historic character of the landscape. For example, installing a "period" fountain where one never existed.

Introducing a new water feature which is in an appropriate location, but is visually incompatible in terms of its shape, edge, and bottom condition/material; or water level, movement, sound, and reflective quality.

SITE FURNISHINGS, MONUMENTS, LIGHTING, SIGNAGE, FENCING AND SCREENING



Looking north at the historic Gun Platforms located at the southeast side of Cushing Road. Photograph courtesy of KTU+A, February 2000.

SITE FURNISHINGS, MONUMENTS, LIGHTING, SIGNAGE, FENCING AND SCREENING

Site furnishings generally include amenities such as benches, tables, drinking fountains, trash containers, light standards, signage, flag poles, and bicycle racks. Site furnishings should provide visual interest and fulfill a functional need within the built environment. The furnishings should be consistent in detailing and complement the architecture and landscape architecture in terms of style, materials and color.

In general, there are very few site furnishings at Naval Training Center (NTC), and other than the flag pole, nothing exists from the historic period. It is recommended that all existing trash containers, benches and tables be removed and replaced according to the *NTC Guidelines*.

Existing monuments consist of military displays, historic markers and plaques, the USS Recruit Destroyer Escort mock-up located on Gearing Drive near buildings 412 and 378, the gun platforms at Ingram Plaza and the bronze tribute plaque to August Anderson mounted to a tree in Sellers Plaza. All monuments should be preserved in their existing condition. It is also recommended that interpretive signage be installed near the USS Recruit and the gun platforms to provide visitors with some historical context of the monuments.

USS Recruit. Photograph courtesy of KTU+A, February 2000.

SITE FURNISHINGS, MONUMENTS, LIGHTING, SIGNAGE, FENCING AND SCREENING

None of the lighting system from the historical period has survived, although historic photographs do show street light fixtures similar to those used at the Marine Corps Recruit Depot as well as pendant light fixtures in the arcades, and hanging and wall mounted lights at Gate 1. Currently, two widely used contemporary styles of street and parking lot light fixtures are commonly seen at the Naval Training Center, the "shoe-box" and the "cobra." In general, it is recommended that all wall-mounted lights be removed and replaced with a consistent lighting system that complements the historic character of the District. The lighting system for the streets and parking lots should be consistent and in keeping with the historic character.

There is very little signage at NTC, with the exception of street signs and current tenants sign. No extant signage from the historic period is known to exist except in reference to historical photographs.

Pendant light fixture in arcades, ca. 1930. Courtesy of the San Diego Historical Society Photograph Collection.

Historic streetlight fixture and signage on Truxtun Road, ca. mid 1920s. Courtesy of the San Diego Historical Society Photograph Collection.

SITE FURNISHINGS, MONUMENTS, LIGHTING, SIGNAGE, FENCING AND SCREENING

A limited amount of fencing and screening occurs at the Naval Training Center. With the exception of the wrought iron gates at the ends of the plazas between Barracks Buildings 2 and 26, and 5 and 18, and the fencing that occurs at Gate 1 in Sellers Plaza and Gate 3 on Roosevelt Road, all remaining fences and walls were constructed after 1945. Gate and fence mounting hardware is still attached to the arcade columns on the Barracks buildings north of Lawrence Court. A wrought iron gate was located in the center arcade, and matching wrought iron fencing was in the flanking arcades. Historic photographs should be reviewed to verify when these fences and gates existed. It is recommended that the chain link fence at Building 11 be removed.

Most utility and transformer enclosures are encircled with chainlike fences fitted with wood slats. It is recommended that these structures instead be enclosed with walls stuccoed and painted to match the texture and color of the adjacent buildings, with an expanded metal or wrought iron gate for access. In several locations, concrete masonry and slump block walls have been constructed. These walls should also be stuccoed and painted to complement the adjacent buildings. Extraneous barbed wire, razor wire and other security features should be removed.

Historic wrought iron gate on Dewey Road.
Photograph courtesy of KTU+A, February 2000.

RECOMMENDED	*NOT RECOMMENDED*
Identify, Retain, and Preserve Historic Features and Materials	
Identifying, retaining and preserving existing buildings, structures, furnishings and objects prior to beginning project work. Documenting the relationship of these features to each other, their surrounds, and their material compositions.	Undertaking project work that impacts buildings, structures, furnishings, and objects without executing an cultural landscape inventory. Undertaking work without understanding the significance of structures, furnishings and objects.
Evaluating the condition and determining the age of structures, furnishings and objects through the use of historic photographs and the *1997 Cultural Landscape Report, Naval Training Center*.	Removing or relocating structures, furnishings and objects, thus destroying or diminishing the historic relationship between the landscape and these features. For example, relocating a historic flagpole or monument to a new location or destroying a feature without replacing it.
Retaining the historic relationships between the landscape and its buildings, structures, furnishings and objects.	
Protect and Maintain Historic Features and Materials	
Protecting and maintaining buildings, structures, furnishings and objects by use of non-destructive methods and daily, cyclical and seasonal tasks. This may include rust or limited paint removal, and reapplication of protective coating systems. For example, painting metal wrought iron fences or regrouting brick to match original mortar material, color and profiles.	Failing to undertake preventive maintenance for structures, furnishings and objects, resulting in their damage or loss. For example, failing to stop rusting of gun mounts and foundations. Utilizing maintenance practices and materials that are harsh, abrasive, or unproven. For example, using only aggressive and potentially damaging cleaning methods such as grit blasting on wood, brick, or soft stone or using harsh chemicals on masonry or metals.

SITE FURNISHINGS, MONUMENTS, LIGHTING, SIGNAGE, FENCING AND SCREENING

Recommended	*Not Recommended*
Repair Historic Features and Materials	
Repairing features and materials of buildings, structures, furnishings or objects by reinforcing historic materials.	Replacing or destroying a feature of structures, furnishings or objects when repair is possible. For example, replacing fallen original copper gutters with contemporary ferrous metal or plastic gutters rather than repairing and reinstalling them.
Replace Deteriorated Historic Materials and Features	
Using existing physical evidence of form, material and detailing to reproduce a deteriorated structure, furnishing or object. If using the same kind of material is not technically, economically, or environmentally feasible, then a compatible substitute material may be considered.	Removing a structure, furnishing, or object that is deteriorated and not replacing it, or replacing it with a new feature that does not convey the same visual appearance. For example, removing a square cross section, matte finish, wrought iron handrail and replacing it with an anodized tubular aluminum one of inappropriate

Recommended

Design for the Replacement of Missing Historic Features

Designing and installing new structures, furnishings and objects when the historic features are missing is recommended. It may be an accurate reconstruction using historical, pictorial and physical documentation; or be a new design that is compatible with the historic character of the landscape. For example, replacing a contemporary light standard with one of a new compatible design based on historical research.

Site Furnishings – Utilizing a standardized palette of site furnishings throughout the Historic District. Site furnishings should complement the Spanish Colonial Revival style and reflect the Beaux Arts tradition of simplicity and order. Site furnishings should include benches, picnic tables, and trash receptacles.

Not Recommended

Creating a false historical appearance because the replaced feature is based on insufficient historical, pictorial and physical documentation.

Introducing a new design that is incompatible with the historic character of the landscape. For example, replacing a lost wrought iron fence with chain link fence, or utilizing contemporary-style elements when pre-1942 style elements are appropriate and available.

Unlike this concrete table and benches, introduction of site furnishings should be representative of the historic period. Photograph courtesy of KTU+A, February 2000.

2.0 HISTORIC LANDSCAPE GUIDELINES

SITE FURNISHINGS, MONUMENTS, LIGHTING, SIGNAGE, FENCING AND SCREENING

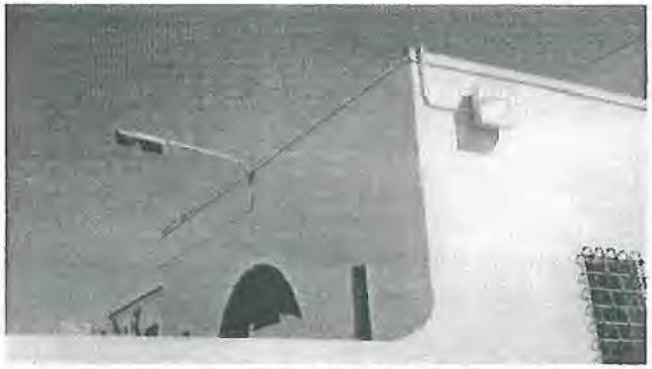
Recommended

Lighting – Removing all inappropriate lighting fixtures, including flood lights attached to building facades that can be seen by the public. Replace with appropriately styled pedestrian scale lighting or more appropriately detailed building lights. (These can be salvaged and installed elsewhere on NTC.)

Incorporating the recommended lights, including street, walkway, parking lot, pedestrian, hanging and wall mounted lights, into proposed improvements within the Historic District. This will strengthen the visual unity of the Historic District. Standardization also decreases maintenance costs by allowing for single item replacement stock.

- Lighting must meet the minimum light distribution requirements necessary to provide a safe nighttime environment and to provide security monitoring.
- Lighting is necessary in all areas where steps, drop-offs or other trip hazards are located.
- Lighting should be used to help direct vehicular and pedestrian traffic to major entrances and parking lots.
- Historic Period Light (to be used for Primary and Secondary Streets, Parking Lots and Walkways).

Not Recommended



Inappropriate wall mounted light fixtures should be replaced. Photograph courtesy of KTU+A, February 2000.

Contemporary street light fixtures, like this one found near Gate 1, should be replaced with new fixtures to the match historic style. Photograph courtesy of KTU+A, February 2000.

Recommended

Alterations/Additions for the New Use

Designing and installing a new structure, furnishing or object when required by the new use, which is compatible with the preservation of the historic character of the landscape. For example, installing appropriately scaled and detailed signage.

Signage – Designing and installing a signage system with consistent materials and detailing that can become a unifying site amenity and communicate information to vehicular and pedestrian traffic.

- Signs must be simple and functional in appearance.
- The number of message panels on each sign should be limited, and the amount of text on each message panel should be kept to a minimum.
- Signs must be clearly visible and located at key decision points.
- The type of sign (identification, informational, regulatory) must be clearly identified prior to deciding on location, size, message panels, and materials. All signs within each category should be consistent.

Sign Placement

- Directional and identification signs should be located where the signs are visible, and placed far enough in advance of key decision points to allow enough time to make a decision as to where to advance or turn.
- Identification signs should be integrated with the buildings and the site. Building numbers and building complex signs should be oriented to the primary street and be visible to drivers.

Not Recommended

Placing a new structure, furnishing, or object where it may cause damage, or is incompatible with the historic character of the landscape. For example, constructing a new utility enclosure in one of the public courts or installing a new parking that blocks a primary view corridor.

Locating any new structure, furnishing or object in such a way that it detracts from or alters the historic character of the landscape. For example, installing a "period" gazebo that was never present in the cultural landscape.

Introducing a new structure, furnishing or object in an appropriate location, but making it visually incompatible in mass, scale, form, features, materials, texture, or color.

SITE FURNISHINGS, MONUMENTS, LIGHTING, SIGNAGE, FENCING AND SCREENING

RECOMMENDED

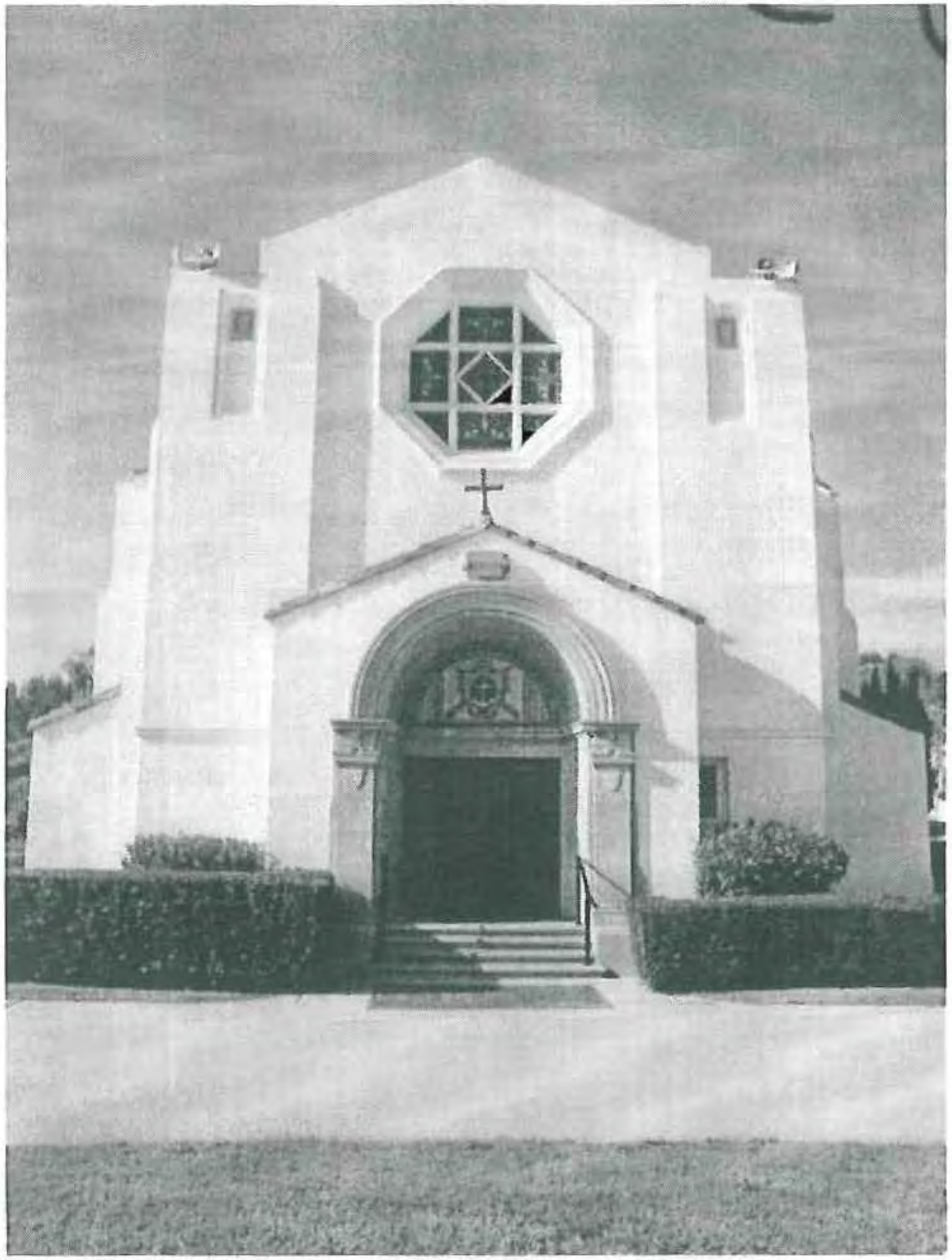
Screening and Fencing – Utilizing walls, fences, and plant materials to successfully screen unsightly views or elements, such as trash and utility enclosures, enclosed spaces, or define boundaries and edges. Large parking areas should also be partially screened.

- Fences: Two types of fences are recommended in garden areas where enclosure is needed but the physical form of a solid fence is not acceptable. A chainlink fence may be constructed and lined on either one or both sides depending on the visibility with hedges and shrubs to hide the fence. Wrought iron fencing using simple posts and pickets may be used when visibility is desired but some type of enclosure is needed.
- Parking Lots: Planting should be installed within and around parking lots to minimize views of the cars and the paving, while still maintaining sight lines for safety and security. Shrubs should have a maximum height of 4'-0". Shrubs should not obstruct the opening of car doors, or limit pedestrian access.
- Trash and Utility Enclosures: These facilities should be enclosed with a 6'-0" high concrete block wall with a stucco finish. It should have an integral color of matching the selected building color. Enclosures located in lawn areas should be separated from the lawn by a 6 inch high and 6 inch wide concrete mow strip. The enclosures should be screened with shrubs and vines.
- Rosecrans Street Edge: As one of the entry roadways into downtown San Diego, Rosecrans Street carries a high volume of traffic. Visible along this edge are the Historic District Sail Ho Golf Course and the Officers' Quarters. Edge treatments in this area should emulate existing screening materials, and include dense, evergreen shrubs and street trees.

Utility enclosures, like this one south of building 30, should be screened with shrubs and vines. Photograph courtesy of KTU+A, February 2000.

2.0 HISTORIC LANDSCAPE GUIDELINES

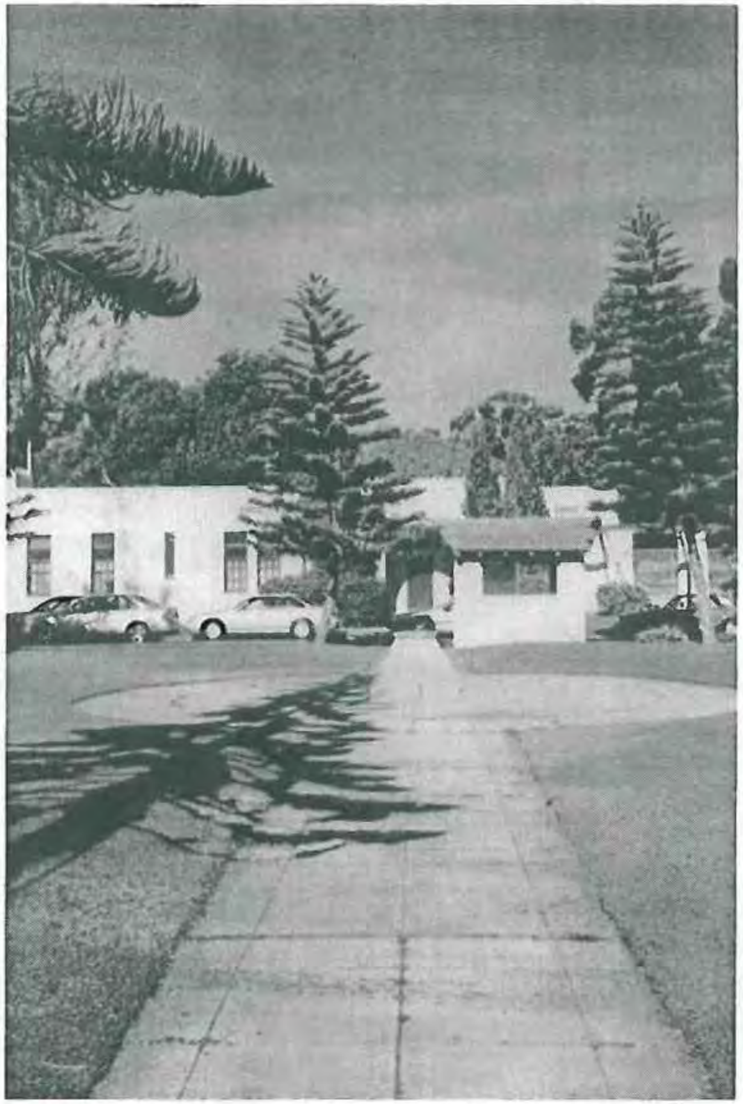
ACCESSIBILITY CONSIDERATIONS



Stairway at the North Chapel main entrance. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

ACCESSIBILITY CONSIDERATIONS

Although providing access is an important aspect of rehabilitation projects, its is usually not part of the overall process of rehabilitating character-defining features (maintenance, repair and limited replacement); rather, such work is generally assessed for its potential negative impact on the landscape's historic character. For this reason, particular care must be taken not to obscure, alter, or damage character-defining features such as the arcade walkways.



Throughout the site, character defining historic walkway need no modifications to meet accessibility requirements. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

ACCESSIBILITY CONSIDERATIONS

Recommended

Identifying the cultural landscape's character-defining features, materials and finishes so that accessibility code-required work will not result in their damage or loss.

Complying with barrier-free access requirements in such a way that character-defining features, materials and finishes are preserved. At NTC, most of the buildings have multiple entries. Each of the buildings should be carefully assessed to determine the most direct accessible route feasible while protecting the integrity of the entries. In many cases, access can be gained through the arcade or secondary entries in close proximity to primary entrances. In other cases, ramps may be incorporated to provide access.

Working with local accessibility and preservation specialists to determine the most appropriate solution to access problems that will have the least impact on character-defining features.

Providing barrier-free access that promotes independence for the person with disabilities to the highest degree practicable, while preserving character-defining landscape features, materials and finishes. For example, incorporating wider sidewalks only at intersections where ramps are being installed and leaving the primary historic sidewalks in place.

Finding solutions to meet accessibility requirements that minimize the impact on the cultural landscape, for example, retaining the original character-defining entrance steps and placing the access ramp at a side or secondary entrance.

Not Recommended

Undertaking code-required alterations before identifying those features, materials and finishes that are character-defining and must therefore be preserved.

Damaging or destroying character-defining features in attempting to comply with accessibility requirement. For example, ramping up to the arcade by removing the brick banding or removing steps at the main building entries.

Altering, character-defining features, materials and finishes without consulting with local experts.

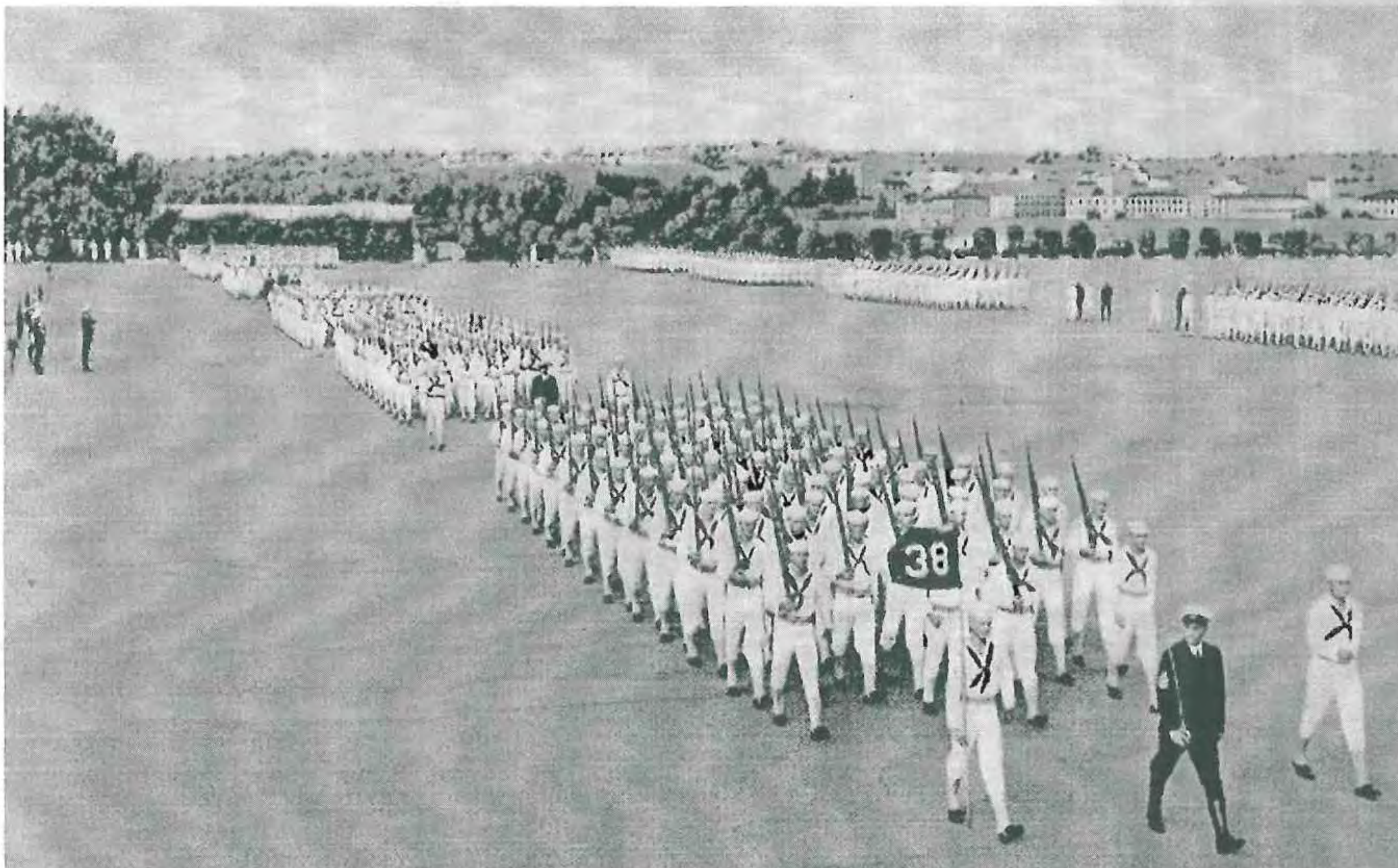
Making access modifications that do not provide a reasonable balance between independent, safe access and preservation of character-defining landscape features, materials and finishes. For example, replacing the historic concrete sidewalks with new wider concrete sidewalks.

Making modifications for accessibility without considering the impact on the cultural landscape. For example, introducing a new access element (ramp or lift) that destroys the symmetry of a foundation planting along a building's main facade.

Access ramps should be added to side or secondary entrances to minimize impact the historic character of the main facade. Photograph courtesy of KTU+A, February 2000.

2.0 HISTORIC LANDSCAPE GUIDELINES

HEALTH AND SAFETY CONSIDERATIONS



Weekly inspection parade at Preble Field, ca. early 1930s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

HEALTH AND SAFETY CONSIDERATIONS

Recommended

Identifying the cultural landscape's character-defining features, materials and finishes so that code-related work will not result in their damage or loss.

Complying with health and safety code requirements in such a manner that character-defining features, materials and finishes are preserved. For example, recognizing standards for the application of herbicides.

Removing toxic materials only after thorough testing has been conducted and only after less invasive abatement methods have been shown to be inadequate.

Providing workers with appropriate personal protective equipment for hazards found in the work site.

Working with local code officials to investigate systems, methods, or devices of equivalent or superior effectiveness and safety to those prescribed by code so that unnecessary alterations can be avoided.

Upgrading character-defining features to meet health and safety codes in a manner that assures their preservation. For example, upgrading a historic stairway without destroying its character-defining handrails.

Installing safety-related systems that result in the retention of character-defining features, materials, and finishes; for example, fire-suppression systems, or seismic retrofits.

Not Recommended

Undertaking code-required alterations before identifying those features, materials and finishes that are character-defining and must therefore be preserved.

Altering, damaging or destroying character-defining features, materials and finishes while making modifications to a cultural landscape to comply with safety codes.

Destroying character-defining features, materials and finishes without careful testing and without considering less invasive abatement methods.

Removing unhealthful materials without regard to personal and environmental safety.

Making changes to cultural landscape without first exploring equivalent health and safety systems, methods, or devices that may be less damaging to character-defining features, materials and finishes.

Damaging or obscuring character-defining features, materials and finishes or adjacent areas in the process of doing work to meet code requirements.

Covering character-defining features with fire resistant sheathing that results in altering their visual appearance.

Using materials intended to provide additional protection, such as fire-retardant coatings, if they damage or obscure character-defining features, materials and finishes.

HEALTH AND SAFETY CONSIDERATIONS

Recommended

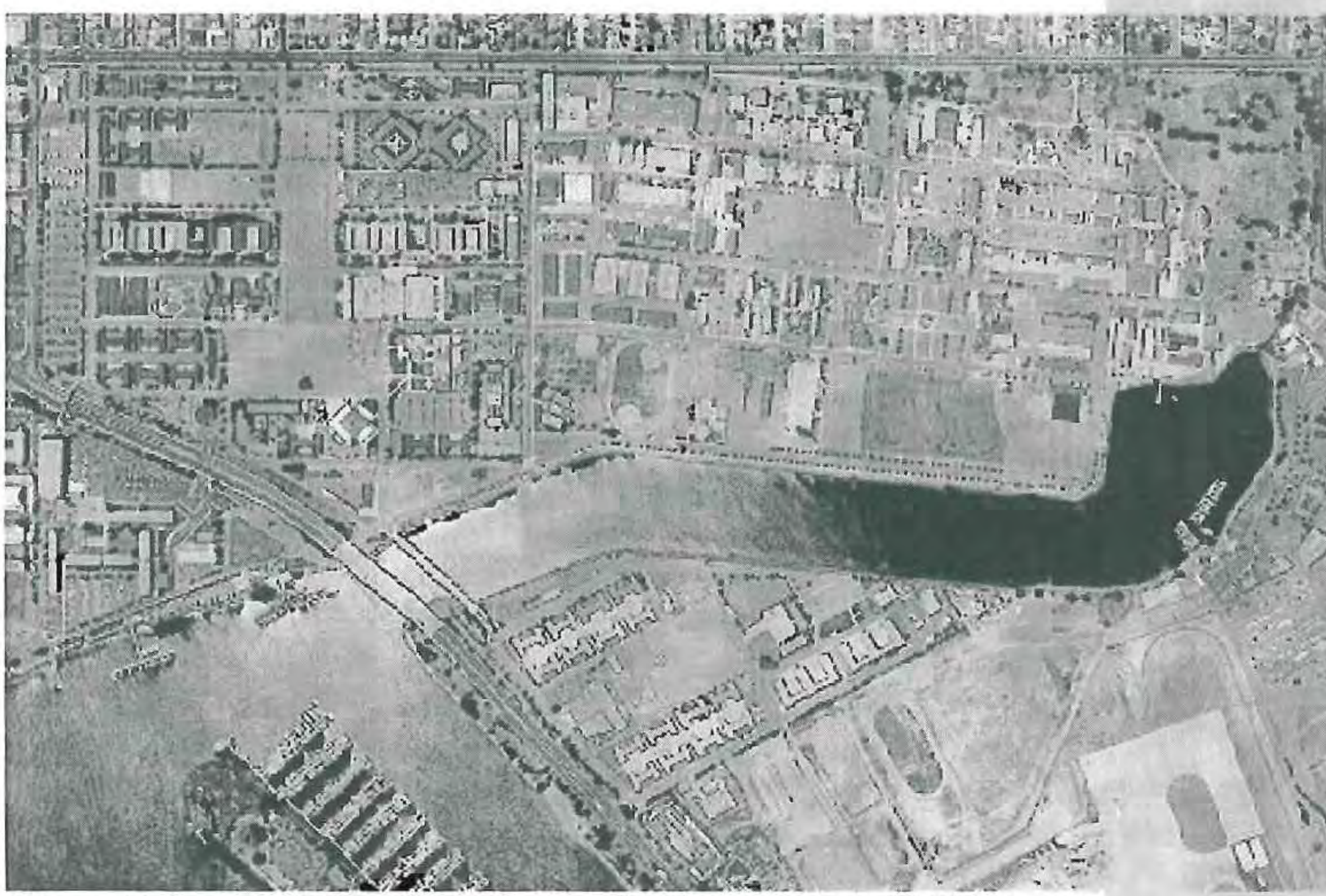
Applying the necessary materials to add protection to character-defining features, materials and finishes.

Adding new features to meet health and safety codes in a manner that preserves adjacent character-defining features, materials and finishes. For example, providing a new fire access to all buildings and structures.

Not Recommended

Radically changing, damaging or destroying character-defining features, materials and finishes when adding new code-required features.

ENVIRONMENTAL CONSIDERATIONS



Existing aerial photograph of the Naval Training Center, ca. 1999. Photograph courtesy of McMillin Companies.

ENVIRONMENTAL CONSIDERATIONS

RECOMMENDED

Identifying the cultural landscape's character-defining features, materials and finishes so that environmental protection-required work will not result in their damage or loss.

Complying with environmental protection regulations in such a manner that character-defining features, materials and finishes are preserved. For example, protecting historic vegetation in which rare and endangered species nest.

Working with environmental protection officials to investigate systems, methods, devices or technologies of equivalent or superior effectiveness to those prescribed by regulation so that unnecessary alterations can be avoided.

Reclaiming or re-establishing natural resources in a manner that promotes the highest degree of environmental protection, while preserving significant historic features, materials and finishes.

NOT RECOMMENDED

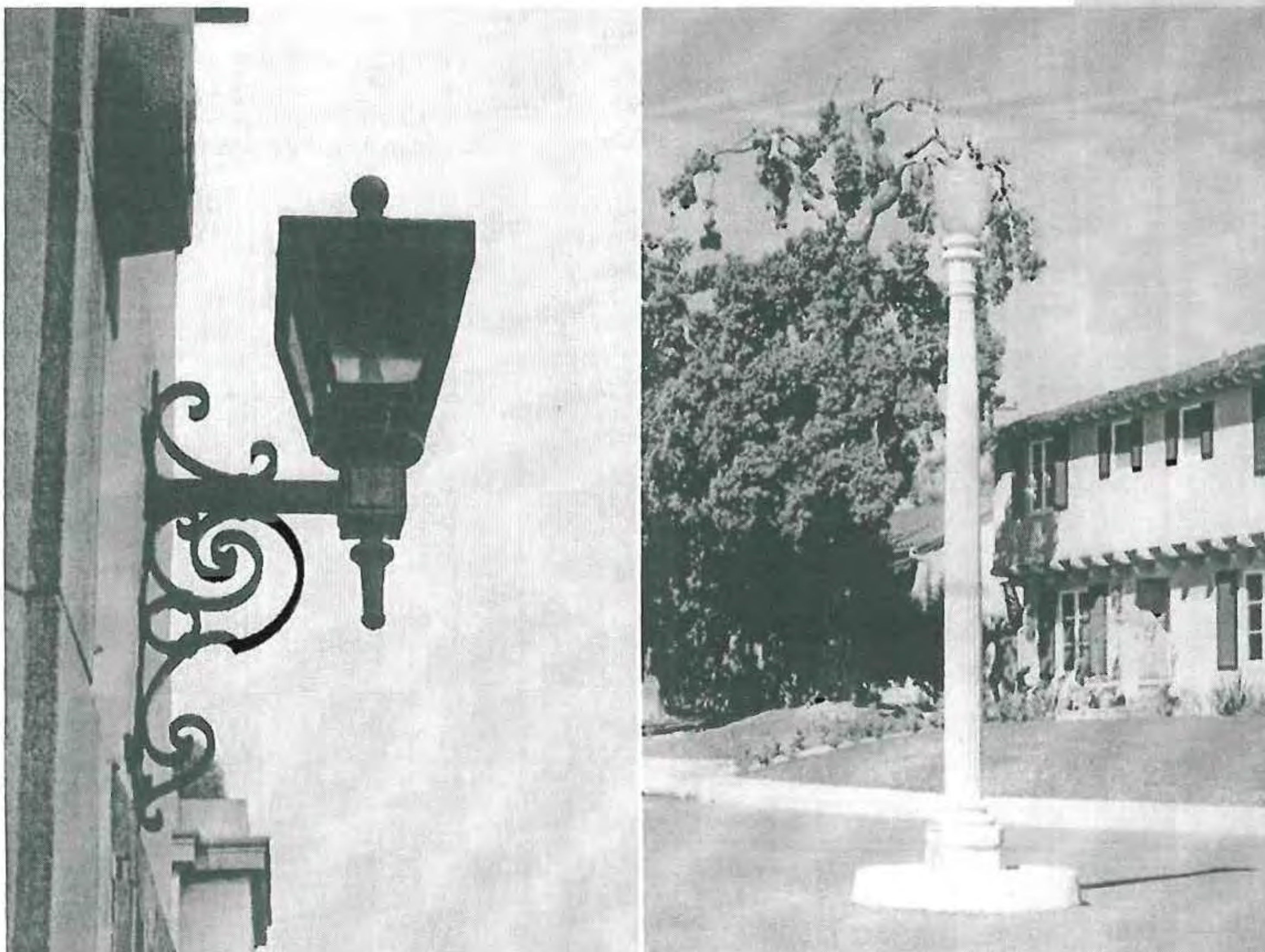
Undertaking environmental protection-required work before identifying those features, materials and finishes which are character-defining and must therefore be preserved.

Altering, damaging, or destroying character-defining features, materials and finishes while making modifications to a cultural landscape to comply with environmental protection regulations.

Making changes to cultural landscapes without first exploring equivalent environmental protection systems, methods, devices or technologies that may be less damaging to historic features, materials and finishes.

Making environmental protection modifications that do not provide a reasonable balance between improved environmental conditions and the preservation of historic features, materials and finishes.

ENERGY EFFICIENCY



Two exterior light fixtures present at the Naval Training Center, January 2000. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA.

ENERGY EFFICIENCY

Recommended

Retaining and maintaining those energy efficient features or parts of features of the landscape. For example, maintaining vegetation that performs passive solar energy functions.

Improving energy efficiency of existing features through non-destructive means.

Not Recommended

Removing or altering those features or parts of features that play an energy conserving role. For example, removing a historic windbreak.

Replacing energy inefficient features rather than improving their energy conservation potential. For example, replacing an entire historic light standard rather than retrofitting the fixture to be more efficient.

2.0 HISTORIC LANDSCAPE GUIDELINES

RECOMMENDED PLANT MATERIALS

Aerial photograph looking southeast over the Officers' Quarters Gardens toward the Naval Training Station with the San Diego Bay in the background, ca. late-1920s. Photograph courtesy of the U.S. Navy.

RECOMMENDED PLANT MATERIALS

Plant Selection

All new and renovated landscape treatments should reinforce the character of each area and emphasize the recommended street hierarchy. Many of the plant materials included in the recommended list possess the following characteristics: historically utilized in San Diego during the period of significance (1921-1929); low maintenance; ability to adapt to poor soil conditions; ability to adapt to reclaimed water use; low water requirements; non-invasive species; durable and resistant to neglect and abuse; and native, indigenous or visually similar to natives found in the San Diego region.

Functional Requirements

- Street Trees and Parking Lot Trees: Trees should have deep root systems to avoid breaking up the surrounding pavement, and a high branching structure to allow vehicular and pedestrian circulation. Trees should provide shade where needed to reduce heat gain and glare. Trees that have a large amount of litter or limb breakage should be avoided in pedestrian areas. Trees near paving edges should be planted a minimum of 5'-0" away from paved surfaces and installed with root barriers.

- Lawn Trees: Trees must be able to withstand the large amounts of water necessary for the lawn to thrive. Some trees may also make it difficult for lawn to grow under them because of dense shade patterns, aggressive root systems, or continual leaf drop.

- Screening/Windbreak Trees: When planted closed together or in a grove, the trees should be dense to block the wind, create a wall for separation, or screen an objectionable view.

- Accent Trees: May be selected for their flowers, branching structure, form, pattern, leaf texture, or unusual bark characteristics. Accent trees may be planted singularly or in groups to show off their unusual characteristics or to highlight or draw attention to a special area.

- Container Plants: These plants generally require more attention than plants growing in the ground. Plants should be selected for their unusual characteristics, ability to serve a particular purpose, and withstand the possibility of being moved.

- Foundation/Massing Shrubs: These shrubs may be used to screen a building, or to serve as a visual effect to define an edge, provide direction, or display a spectacular show of flowers or foliage.

- Screening/Background Trees and Shrubs: Screening shrubs may be used to block a view or define an area. Background shrubs may be used as filler plants that generally present a mass of green foliage when viewed from a distance. These shrubs are often used as a backdrop for plants that have more interesting characteristics when viewed up close.

Recommended Plant Materials

The 1926 planting plan and other plans reviewed during project research graphically indicate the desired positions for trees and major shrub masses, but do not list plant species. The following plant selections are intended to fulfill the historic period design intent referenced in other historic sources, such as photographs and periodicals. In some cases, they are replacement species due to well-documented maintenance problems associated with the historic species. In other cases, they are species that are known to fulfill a specific historic purpose, such as foundation planting, in lieu of any specific historic reference to species. In all cases, the species have been selected to fulfill the design intent of the historic planting scheme.

This following list should not be considered a definitive plant list because not all plant species can be verified due to lack of annotated period plans and the likelihood that most of the plantings currently at NTC may be second or even third generation. In addition, other replacement species may be acceptable if they are in keeping with the overall design intent.

Street Trees (Historically spaced thirty feet on center)

Historically used at NTC during period of significance	Historically used in San Diego during the period of significance	Botanical Name	Common Name
•	•	*Acacia melanoxylon*	Black Acadia
	•	*Cinnamomum camphora*	Camphor Tree
		Figus rubiginosa	Rustlyleaf Fig
•		*Magnolia grandiflora 'Russet'*	Southern Magnolia
	•	*Quercus suber*	Cork Oak

RECOMMENDED PLANT MATERIALS

Specimen Trees (Trees for use in areas other than streetscapes)

Historically used at NTC during period of significance	Historically used in San Diego during the period of significance	Botanical Name	Common Name
•	•	*Araucaria bidwillii*	Bunya Bunya Tree
•		*Araucaria heterophylla*	Norfolk Island Pine
•	•	*Eucalyptus ficifolia*	Scarlet Flowering Gum
•	•	*Eucalptus cornuta*	Yate
	•	*Eucalyptus sideroxylon*	Red Iron Bark
	•	*Koelreuteria bipinnata*	Chinese Flame Tree
•		*Magnolia grandiflora "Russet'*	Southern Magnolia
	•	*Metrosideros excelsus*	New Zealand Christmas Tree
	•	*Pinus canariensis*	Canary Island Pine
•		*Pinus radiata*	Monterey Pine
•		*Pinus torreyana*	Torrey Pine
	•	*Pittosporum undulatum*	Victorian Box
	•	*Tipuana tipu*	Tipu Tree

Palms

Historically used at NTC during period of significance	Historically used in San Diego during the period of significance	Botanical Name	Common Name
•	•	*Cocos plumosa*	Queen Palm
•		*Phoenix canariensis*	Canary Island Date Palm
•		*Washintonia filifera*	Mexican Fan Palm

Grinder Trees (Trees for use in the central courtyard areas)

Historically used at NTC during period of significance	Historically used in San Diego during the period of significance	Botanical Name	Common Name
		Cassia leptophylla	Gold Medallion Tree
		Chionanthus retusus	Chinese Fringe Tree
		Fraxinus oxycarpa 'Raywood'	Raywood Ash
	•	*Koelreuteria bipinnata*	Chinese Flame Tree
	•	*Tipuana tipu*	Tipu Tree

RECOMMENDED PLANT MATERIALS

Foundation Shrubs (Large, contiguous masses along major building facades)

Historically used at NTC during period of significance	Historically used in San Diego during the period of significance	Botanical Name	Common Name
		Abelia grandiflora	Glossy Abelia
		Carissa macrocarpa	Natal Plum
	•	*Choisya ternata*	Mexican Orange
	•	*Coprosma repens*	Mirror Plant
		Escallonia rubra	No common name
		Grewia occidentalis	Lavender Starflower
	•	*Hibiscus rosa-sinensis*	Chinese Hibiscus
		Ligustrum japonicum	Japanese Privet
•	•	*Myrtus communis*	True Myrtle
		Pittosporum tobira	Tobira
		Raphiolepis idica	Indian Hawthorn

Portal Shrubs (Tall, coniferous shrubs flanking major building portals)

Historically used at NTC during period of significance	Historically used in San Diego during the period of significance	Botanical Name	Common Name
•		*Cupressus sempervirens*	Italian Cypress

Screening/Background Shrubs (Large shrubs typically used for visual or wind barriers)

Historically used at NTC during period of significance	Historically used in San Diego during the period of significance	Botanical Name	Common Name
•	•	*Acacia baileyana*	Bailey Acacia
	•	*Feijoa sellowiana*	Pineapple Guava
•		*Leptospermum laevigatum*	Australian Tea Tree
	•	*Malaleuca armillaris*	Drooping Melaleuca

RECOMMENDED PLANT MATERIALS

Vines and Vine-like Plants (Trained and staked on major building facades and arcades)

Historically used at NTC during period of significance	Historically used in San Diego during the period of significance	Botanical Name	Common Name
•	•	*Bougainvillea sp.*	Bougainvillea
	•	*Distictis buccinatoria*	Blood-Red Trumpet Vine
	•	*Distictis laxiflora*	Vanilla Trumpet Vine
		Mandevilla 'Alice du Pont'	No common name
	•	*Petra volubilis*	Queen's Wreath

Groundcovers

Historically used at NTC during period of significance	Historically used in San Diego during the period of significance	Botanical Name	Common Name
		Coprosma kirkii	No common name
	•	*Trachelospermum jasminoides*	Star Jasmine

Lawn

Lawn is evident in historic photographs taken after 1924 and is widely used, especially along streets, fronting major buildings, and in areas such as Sellers Plaza.

INTRODUCTION

Commanding Officer's Quarters "A" at the Naval Training Station in 1924. Courtesy of the San Diego Historical Society Photograph Collection.

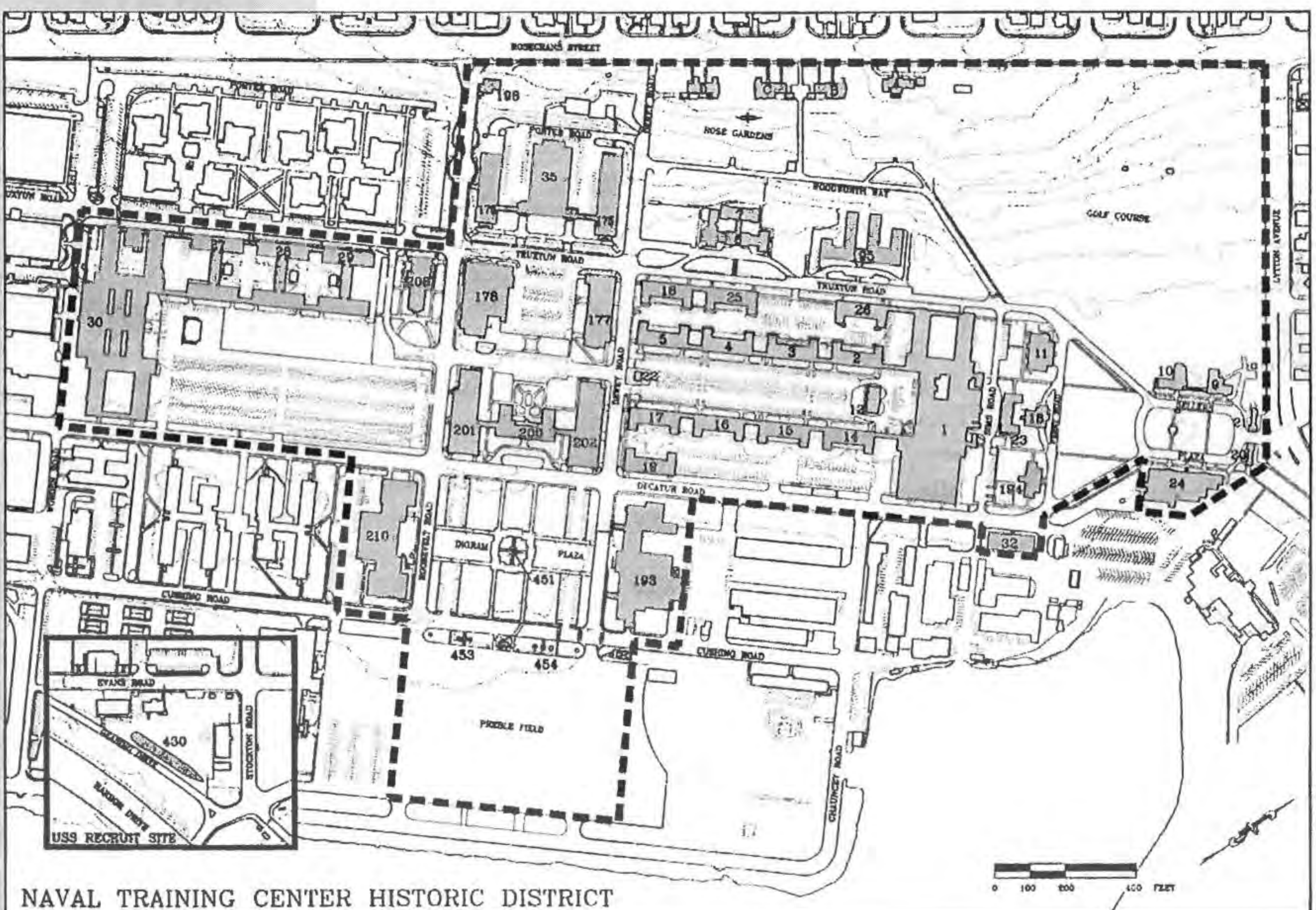
GUIDELINES FOR REHABILITATING HISTORIC BUILDINGS AT THE NAVAL TRAINING CENTER

The purpose of the historic buildings design guidelines is to provide criteria establishing standards for improving the Historic District's built environment. This section focuses on the primary contributing buildings identified in the Naval Training Center National Register. The contributing buildings are:

Bldg. No.	Construction Date	Historic Use	Current Use
	1923	Quarters A	MOQ Command
	1923	Quarters B	MOQ Command
	1923	Quarters C	MOQ Command
	1923	Quarters D	MOQ Command
1	1921-1922	Commissary	Commissary
2	1923	Barracks	Bachelor Enlisted Quarters
3	1923	Barracks	Bachelor Enlisted Quarters
4	1923	Barracks	Bachelor Enlisted Quarters
5	1923	Barracks	Bachelor Enlisted Quarters
6	1922	Dispensary	Medical Administration
7	1922	Dispensary	Cubical Ward
8	1922	Fire Station	Office / Storage
9	1923	Information	CATO Switching Station
10	1921-1922	Quard's Quarters	Golf Course Clubhouse
11	1922	Post Office & Quartermaster's Store	Child Care Center
12	1923	Regimental Headquarters	Navy & Marine Relief Society
14	1923	Barracks	Bachelor Enlisted Quarters
15	1923	Barracks	Bachelor Enlisted Quarters
16	1923	Barracks	Bachelor Enlisted Quarters
17	1923	Barracks	Bachelor Enlisted Quarters
18	1923	Barracks	Bachelor Enlisted Quarters
19	1923	Barracks	Bachelor Enlisted Quarters

20	1923	Gatehouse No. 1	Gate House No. 1
21	1923	Gatehouse No. 1	Pass / Decal Office
22	1923	Pump House	Pump House
23	1923	Cooks' Barracks and Brig	Naval Investigative SErvice
24	1923	Administration	MWR Club
25	1924	Barracks	Bachelor Enlisted Quarters
26	1923	Barracks	Bachelor Enlisted Quarters
27	1931	Barracks	Bachelor Enlisted Quarters
28	1931	Barracks	Bachelor Enlisted Quarters
29	1931	Barracks	Bachelor Enlisted Quarters
30	1932	Mess Hall	Community Facility Building
32	1937	Storehouse No.1	Exchange Warehouse
35	1941	Luce Theater	Auditorium
175	1941	School Building	School Building
176	1941	School Building	School Building
177	1941	Library	Office
178	1942	Navy Exchange Office	Main Retail Store
193	1941	Recreation Building	Enlisted Club
194	1942	Waves Quarters	Offices
195	1942	Medical Dispensary	Naval Medical Clinic
198	1942	Gatehouse No. 3	Gatehouse No. 3
200	1942	Administration Building	Administration Building
201	1942	Administration Building	South Office Building
202	1942	Administration Building	North Office Building
208	1942	North Chapel	North Chapel
210	1942	Swimming Pool No. 1	Swimming Pool
430	1949	USS Recruit	DE Mockup

Navy band practicing at the north end of the John Paul Jones Court, ca. 1922. Photography courtesy of the San Diego Historical Society Photograph Collection.


ROSECRANS STREET
ROSE GARDENS
GOLF COURSE
TRUXTUN ROAD
DECATUR ROAD
CUSHING ROAD
PREBLE FIELD
INGRAM
PLAZA
EVANS ROAD
USS RECRUIT SITE
430
NAVAL TRAINING CENTER HISTORIC DISTRICT

ARCHITECTURAL ELEMENTS

Naval Training Center as a Distinguished Example of Spanish Colonial Revival Architecture

The Naval Training Center (NTC) Historic District represents an important landmark in the development of the Spanish Colonial Revival style in that it was built shortly after Goodhue completed the 1915 Panama-California Exposition and the Marine Corps Recruit Depot built in 1919. Architectural historians have long linked Goodhue to the development of the Spanish Colonial Revival style, chiefly because of his work in the 1915 Exposition. The architecture and planning of NTC offers an outstanding opportunity to study the influence of Goodhue's designs as interpreted by NTC architect Lincoln Rogers.

John Paul Jones Court looking northeast towards Building 1 flanked by the barracks, ca. 1920s. Courtesy of the San Diego Historical Society Photograph Collection.

INTRODUCTION

Additional information taken from studies conducted under the direction of the Naval Training Center (NTC) may be available for specific buildings and assist in identifying significant features. The studies may also address similar buildings that could be used as examples of the type of features that are considered significant. The studies include:

- *Architectural Historical Significance of Selected Buildings at the Naval Training Center San Diego, California* prepared by the Terry Group in 1993.
- *Historic Properties Phase II Eligibility Study of the Naval Training Center San Diego, San Diego County, California* prepared by Ogden Environmental in 1995.
- *Final Cultural Landscape Report Naval Training Center, San Diego, California* prepared by the Ogden Environmental in 1997.
- The *Nomination of the Naval Training Center for the National Register of Historic Places* prepared by the Navy in 2000.

Historical photographs and drawings, may also be available to assist in determining the historical significance of building features as found at the San Diego Historical Society archives.

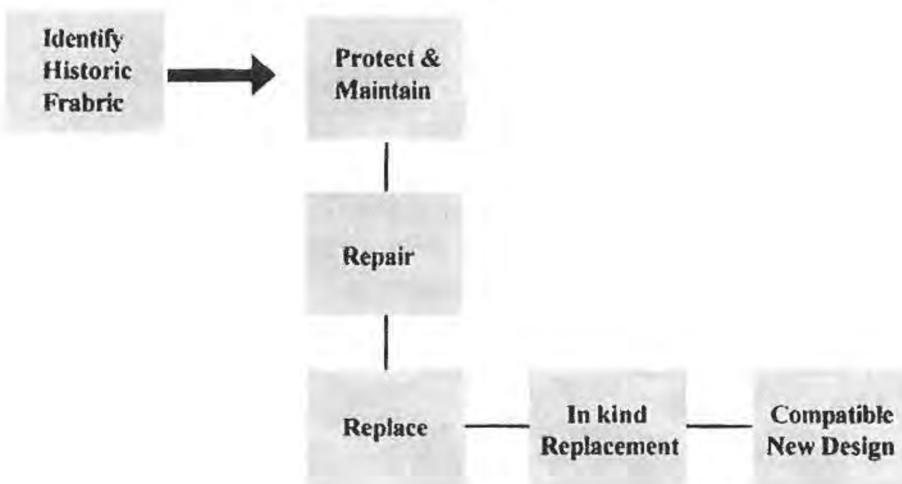
Within the chapters, original text taken from *The Secretary of the Interior's Standards for the Treatment of Historic Properties* has been supplemented with additional text, providing information more specific to NTC. Photographs and sketches illustrate examples of conditions found at NTC. While many potential problems in rehabilitating NTC buildings are specifically addressed, others can be resolved by interpreting *The Secretary of the Interior's Standards for Rehabilitating Historic Buildings* and making reasoned decisions.

PRIORITY OF TREATMENT FOR THE HISTORIC BUILDINGS AT THE NAVAL TRAINING CENTER

These guidelines pertain to historic buildings of all sizes, materials, occupancy, and construction types. Future alterations could include interior and exterior work as well as new exterior additions.

To provide clear and consistent guidance to follow, the recommended courses of action in each section are listed in order of historic restoration priorities. Following the priorities will ensure the restoration of a building's important or "character-defining" architectural materials and features, and make possible an efficient contemporary use of the historic buildings at NTC. Rehabilitation guidance in each section begins with protection and maintenance, the work that should be maximized in every project to enhance overall preservation goals. If deterioration is present, repair of the building's historic materials and features is recommended. If repair is not possible, the replacement of historic materials and features with new in kind materials is considered.

Level of Priority



INTRODUCTION

Identify, Retain, and Preserve

The guidance that is basic to the treatment of all historic buildings (identifying, retaining, and preserving the form and detailing of those architectural materials and features that are important in defining the historic character) is listed first in the **Recommended** column. The **Not Recommended** column lists the types of actions that are most apt to cause the diminution or even loss of a building's historic character. It should be remembered, however, that such loss of character is just as often caused by the cumulative effect of a series of actions that would seem to be, at the onset of such actions, minor interventions. Thus, the guidance in the **Not Recommended** columns must be viewed in that larger context (for example, the total impact on a historic building).

Protect and Maintain

Protection and maintenance are addressed after identifying those materials and features that are important and must be retained in the process of rehabilitation. Protection generally involves the least degree of intervention and is preparatory to other work. For example, protection includes maintenance of historic material through treatments such as rust removal, caulking, limited paint removal, and reapplication of protective coating; cyclical cleaning of roof gutter systems; or installation of fencing, protective plywood, alarm systems, and other temporary protective measures. Although a historic building will usually require more extensive work, an overall evaluation of its physical condition should always begin at this level.

Repair

Repair is recommended when the physical condition of character-defining materials and features warrants additional work. Guidance for the repair of historic materials such as masonry, wood, and architectural metals begins with the least degree of intervention possible, including such techniques as patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading according to recognized preservation methods. Repair also includes the limited replacement in kind, or with compatible substitute material, of extensively deteriorated or missing parts of features when there are surviving prototypes (for example, brackets, steps, plaster, or portions of tile roofing). Although using the same kind of material is always the preferred option, substitute material is acceptable if the form and design, as well as the material itself, convey the visual appearance of the remaining parts of the feature and finish.

Replace

An entire character-defining feature is replaced with new material if the level of deterioration or damage of materials precludes repair (for example, an exterior cornice, an interior staircase). If the essential form and detailing are still evident and can be used to reestablish the feature as an integral part of the rehabilitation project, then its replacement is appropriate. As with repair, the preferred option is always replacement of the entire feature in kind. Because this approach is not always technically or economically feasible, provisions are made to consider the use of a compatible substitute material.

It should be noted that, while the National Park Service guidelines recommend the replacement of an entire character-defining feature under certain well-defined circumstances, they never recommend removal and replacement with new material for a feature that though damaged or deteriorated, could reasonably be repaired and thus preserved.

Design for Missing Historic Features

When an entire interior or exterior feature is missing (for example, an entrance or cast stone ornamentation, or the missing light at Gate 1), it no longer plays a role in physically defining the historic character of the building unless it can be accurately recovered in form and detailing through the process of carefully documenting historical appearance. Where an important architectural feature is missing, its recovery is always recommended in the guidelines as the preferred course of action. Thus, if adequate historical, pictorial, and physical documentation exists so that the feature can be accurately reproduced, and if it is desirable to reestablish the feature as part of the building or site's historical appearance, then designing and constructing a new feature based on such information is appropriate (for example the anchor design at Sellers Plaza). However, a new design that is compatible with the remaining character-defining features of the historic building is acceptable. The new design should always take into account the size, scale, and material of the historic building itself and, most importantly, not create a false historical appearance.

Alterations/Additions to Historic Buildings

Some exterior and interior alterations to a historic building are generally needed to ensure its continued use, but it is most important that such alterations do not radically change, obscure, or destroy character-defining spaces, materials, features, or finishes. Alterations may include providing additional parking space on an existing historic building site, cutting new entrances or windows on non-primary elevations, inserting an additional floor, or installing an entirely new mechanical system. Alterations may also include the selective removal of buildings or other features of the environment or building site that detract from the overall historic character.

The construction of an exterior addition to a historic building may seem to be essential for the new use, but the guidelines emphasize that such new additions should be avoided, if possible, and considered only after it is determined that those needs cannot be met by altering secondary (for example, non-character-defining) interior spaces. If, after a thorough evaluation of interior solutions, an exterior addition is still judged to be the only viable alternative, it should be designed and constructed to be clearly differentiated from the historic building and so that the character-defining features are not radically changed, obscured, damaged, or destroyed.

Additions to historic buildings are referred within specific sections of the *NTC Guidelines* such as "Accessibility" "Roofs" or "Structural Systems" — but are also considered in more detail in a separate section, "New Construction"

Sustainable Design

"Sustainability" is an approach to design that recognizes that every design choice has an impact on the natural and cultural resources of not only the local environment, but also regional and global environments. It embraces the concept that human civilization is an integral part of the natural world and, as such, has a profound effect, for good or ill, on the natural environment. To halt, and perhaps to repair, the environmental damage caused by the excesses of the past, we must incorporate the principles of globally interdependent environmental stewardship and social responsibility. The City of San Diego, whose central mission is the protection of both the natural and cultural resources entrusted to it, views sustainability as an integral part of the NTC's design and management philosophy.

Sustainability recognizes that some portions of the built environment represent important touchstones with our past, and it is important that they be preserved. Some of these are so important that we set them aside to be preserved, virtually unchanged, for perpetuity. Others derive their importance primarily from being a part of a larger whole, such as a historic community or landscape. NTC represents one of San Diego's best example of military architecture as designed by Lincoln Rogers and heavily influenced by the regional design of a master architect Bertram Goodhue. As such, these structures may be altered or "rehabilitated" so that they may continue to have viable uses so long as alterations do not degrade important features or characteristics. Indeed, building rehabilitation can be, by its very nature, a form of sustainability. Existing structures represent energy that has already been expended, materials that have been mined or harvested, components that have already been manufactured - the embodied energy of past generations.

The NTC structures derive their importance from being part of a historic community. In addition to the intrinsic sustainability of their continued use, the work employed in rehabilitating them can and should also follow the principles of sustainability. There are many ways that sustainability can be applied to building rehabilitation, such as energy conservation measures, the reuse of existing materials or components, and the use of new components made from recycled materials. The following sections address specific ways sustainability can be applied to particular topics.

MASONRY AND CONCRETE

Aerial photograph of the Naval Training Station looking northeast, ca. 1921. Photo shows Building 1 and four barracks (Buildings 2, 3, 4 and 5) are under construction. Courtesy of the San Diego Historical Society Photograph Collection.

MASONRY AND CONCRETE

MASONRY

Before 1870 brick clays were pressed into molds and were often unevenly fired. The quality of brick depended on the type of clay available and the brick making techniques; by the 1870s with the perfection of an extrusion process bricks became more uniform and durable. Terra cotta, especially the form of hollow clay tile, is a kiln-dried clay product popular from the late 19th century until the 1930s. The development of steel frame and concrete frame buildings in the early 20th century contributed to the widespread use of architectural terra cotta.

Mortar is used to bond masonry units. Historic mortar was generally quite soft, consisting of lime and sand with other additives. After 1880, portland cement was also heavily lime based, increasing in hardness with the addition of portland cement in the late 19th century. Concrete has a long history, being variously made of tabby, volcanic ash, and later, of natural hydraulic cements. Since the introduction of portland cement in the 1870s concrete has also been used in precast form.

While masonry is among the most durable of historic building materials, it is very susceptible to damage by improper maintenance or repair techniques and harsh or abrasive cleaning methods.

Aerial photograph of the Naval Training Station looking northeast, ca. 1922, showing the completion of six more barracks (Buildings 14 through 19) and the two entrance buildings (Buildings 20 and 21). Courtesy of the San Diego Historical Society Photograph Collection.

MASONRY AND CONCRETE

Historically, there are four types of unit masonry construction from the early 1920s construction in the NTC Historic District: brick, hollow clay tile, terra cotta, and cast stone used alone and in combination.

Hollow clay tile is the most common unit masonry material in the NTC Historic District. Poured concrete and hollow clay tile were the principle building materials of the historic buildings and were covered with plaster. The chimneys are brick and are covered with plaster.

Terra cotta is represented as decorative glazed tile units at the water fountains and decorative treatments in many of the building entrances, arcade entrances and accents. Cast stone is used at the building entrances and arcade entrances.

Materials and workmanship at NTC are generally of a higher quality than that typically found in local masonry construction of the same period.

Because of the relatively mild temperatures of San Diego, freeze-thaw cycles, which can be quite destructive to masonry, are not a serious problem at NTC. Exposure to soot and chemicals from industrial pollutants is high due to the airport activity and the marine climate. Bird debris and biological growth pose a constant threat to the plaster coated masonry.

With the exception of Quarters "A", the original buildings in the NTC historic district have the original sand-float adobe style plaster texture. Quarters "A" has received a new "skip trowel" stucco coat not in keeping with the original sand-float simulated adobe style plaster finish of architect Lincoln Roger's interpretation of the Pueblo style.

The work required to clean the plaster and masonry of accumulated texture or residues is considerable, and may have a significant impact on the surrounding environment. The consequences of any such work should be carefully evaluated in light of sustainable design. High-pressure water cleaning not only requires an enormous quantity of water, but may force water into the walls, damaging interior materials such as plaster as well as metal elements. Dry abrasive cleaning methods generate large amounts of dust, endangering equipment operators and the immediate environment, including unprotected plants and adjacent materials. In addition, chemical cleaning products and herbicides used to control biological growth are also potentially harmful to the operator, to the masonry and plaster, and to the environment. These cleaning methods should be avoided whenever possible.

Masonry edging is typical at entrances to arcades and main building entrances. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

MASONRY AND CONCRETE

Plaster covered masonry chimneys are distinctive features on selected buildings at the Naval Training Center. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

RECOMMENDED

Identify, Retain, and Preserve

Before undertaking any construction, identify, retain, and preserve masonry features that are important in defining the overall historic character of the building, such as walls, cornices, steps, and details such as tooling and bonding patterns, coatings, and color. (Refer to glossary for description.)

Identify all masonry building materials, such as the type of brick and its corresponding mineral composition or manufacturing process, porosity, solubility, and hardness. Appropriate treatments will vary depending on these properties.

Identify, retain, and preserve mortar composition. This will require a mortar analysis to identify and match the original binder, aggregate, pigment and strength of the brick or hollow clay tile.

Identify possible problem areas, such as locations of potential spalling due to corroded metal anchors, by carefully studying the building's construction from original drawings, field tests, and other research methods.

Retain plaster covered masonry chimneys in place, even if they no longer function. Chimneys contribute significantly to the historic and visual character of the building.

NOT RECOMMENDED

Removing or radically changing masonry features that are important in defining the overall historic character of the building such that the character is diminished.

Replacing or rebuilding a major portion of exterior masonry walls, which is essentially new construction, such that the building is no longer historic.

Applying paint or other coatings such as heavy skip-trowel stucco to masonry that has historically been with sand-float simulated adobe style texture plaster.

Removing paint from historically painted masonry. Although the 1920s NTC buildings were originally finished with a natural plaster color coat, several coats of paint have been applied in the past and removal without damaging the thin color coat, may not be possible. Radically changing the colors traditionally used at NTC.

Recommended

Protect and Maintain

Protect and maintain masonry by providing proper drainage so that water does not stand on flat, horizontal surfaces or accumulate in decorative features. Water should be directed off masonry wherever possible.

Clean masonry only when necessary to halt deterioration or remove heavy soiling.

Evaluate and treat the various causes of mortar joint deterioration, such as leaking roofs or gutters, differential settlement of the building, capillary action, or extreme weather exposure.

Conduct masonry surface cleaning tests if cleaning is appropriate. Tests should be observed over a sufficient period of time to assess both the immediate and the long-range effects of cleaning. The length of test should be based upon the product manufacturer's recommendation. Testing could be accelerated under lab conditions.

Clean masonry surfaces with the gentlest method possible, such as low-pressure water and detergents, using natural bristle brushes.

Inspect painted masonry surfaces to determine whether painting is necessary. The clay tile and brick window sills should not have been painted at NTC. There are several occurrences of cast stone work that has been painted as well. These units were not intended to have paint coatings applied to them and this paint detracts greatly from their appearance.

Not Recommended

Cleaning masonry surfaces when they are not heavily soiled to create a new appearance, thus needlessly introducing chemicals or moisture into historic materials.

Cleaning masonry surfaces without testing or without sufficient time for the testing results to be of value.

Sandblasting the cast stone ornamentation surfaces using dry or wet grit or other abrasives. These methods of cleaning permanently erode the surface of the material and accelerate deterioration.

Cleaning with chemical products that will damage masonry, such as using acid on the cast stone or leaving chemicals on masonry surfaces.

Cast stone entry to arcade and masonry edged walkway. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

MASONRY AND CONCRETE

Hollow clay tile units stacked in front of a barracks building, ca. 1922. Photograph courtesy of the San Diego Historical Society Photograph Collection.

Recommended

Remove damaged or deteriorated paint only to the next sound layer using the gentlest method possible (i.e., hand scraping) prior to repainting.

Apply compatible paint coating systems following proper surface preparation.

Repaint with colors that are historically appropriate to the NTC Historic District.

Evaluate the overall condition of the masonry to determine if only protection and maintenance are required, or if repairs to the masonry features are necessary.

Protect and maintain masonry by providing site drainage that does not negatively affect other site features.

Seismically retrofit chimneys to improve their seismic resistance and ensure their survival during an earthquake.

Locate test cleaning patches in a representative, but inconspicuous location. If there are different types of masonry or widely dissimilar substances to be removed, several test patches may be necessary.

Clean by proceeding in clearly defined areas delineated by structural or architectural features to minimize the visual impact of variations in the effects of cleaning.

Not Recommended

Applying high-pressure water cleaning methods that will damage historic masonry and the mortar joints.

Using methods of removing paint that are destructive to masonry, such as sandblasting, application of caustic solutions, or high-pressure water blasting.

Failing to follow manufacturer's product and application instructions when repainting masonry.

Using new paint colors that are inappropriate to the historic building and district.

Failing to adequately protect masonry features.

Using heat (applied with propane torch or similar device) to remove paint from masonry. Heat can crack and spall the masonry and cause softened paint to penetrate porous masonry.

Inappropriate painted masonry edge which was originally left unpainted at Building 10. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

Recommended

Prune plants regularly and brush off growths such as moss or fungi by hand, using a stiff, nonmetallic brush and water. Consider chemical cleaners only if these gentle cleaning methods are inadequate.

Remove bird debris and jet fuel deposits regularly to prevent heavy buildup by washing with cold water, supplemented with a mild detergent; use nonmetallic brushes or scrape with a wood scraper if necessary. Cleaning personnel should guard against exposure to potential health hazards by wearing protective masks, gloves, and clothing.

Identify specific material to be removed (such as the specific type of graffiti paint) to limit the application of solvents.

Apply an absorbent poultice with appropriate solvent to remove metallic stains, graffiti, and efflorescent salt deposits. Unlike particulate dirt, stains—especially industrial stains due to contact with fuel oil, asphalt and the jet fuel deposits from Lindbergh International Airport—usually penetrate deeply into stucco. A poultice is generally the most effective removal method.

Not Recommended

Cleaning masonry without first sealing paths of water entry to prevent damage to the interior.

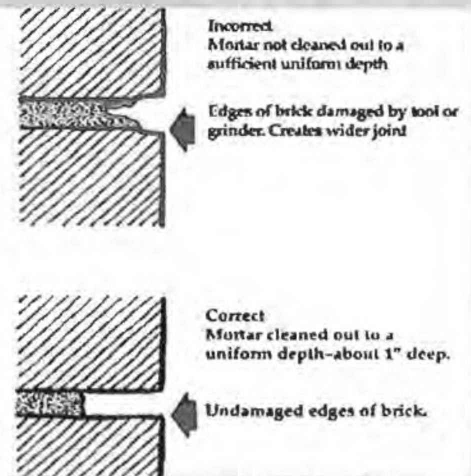
Cleaning masonry without first shielding adjacent materials that can be etched or damaged to the interior.

Applying herbicides as means of controlling biological growth. They can introduce salts and acids into the masonry as well as create environmental problems. If properly managed, biological growth should not be an ongoing problem for buildings at the NTC.

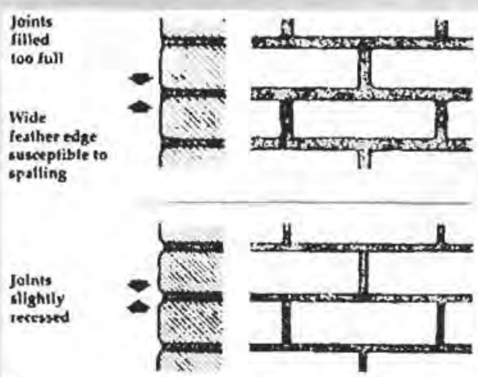
Planting flowers and shrubs that require frequent watering adjacent to masonry walls.

Inappropriate paint and color applied to window sill tile. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

MASONRY AND CONCRETE



Comparison of incorrect and correct preparation of mortar joints for repointing. Drawing courtesy of National Park Service.



Comparison of visual effects of full mortar joints versus slightly recessed joints. Filling joints too full and changes the character of the original brickwork. Drawing courtesy of National Park Service.

Recommended

Repair masonry walls and other masonry features by repointing the mortar joints where there is evidence of deterioration, such as disintegrating mortar, cracks in mortar joints, loose bricks, damp walls, or damaged plaster work.

Remove deteriorated mortar by carefully hand-raking the joints to avoid damaging the masonry.

Duplicate old mortar in strength, composition, color, and texture; duplicate old mortar joints in width and in joint profile. This work requires the experience of an expert masonry craftsperson.

Repair masonry features by patching, piecing-in, or consolidating the masonry using recognized preservation methods. Repair may also include the limited replacement in kind—or with compatible substitute material—of those extensively deteriorated or missing parts of masonry features when there are surviving prototypes, such as cast-stone at the entrances to the arched covered walkways.

Brick edges at arcade walkway. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA. January 11, 2000.

Not Recommended

Removing non-deteriorated mortar from sound joints, then repainting the entire building to achieve a uniform appearance.

Using electric saws and roto-hammers rather than hand tools to remove deteriorated mortar from joints prior to repointing.

Repointing with mortar of high portland cement content (unless it is the content of the historic mortar). This often creates a bond that is stronger than the historic material, which can cause damage due to the differing coefficient of expansion and the differing porosity of the material and the mortar.

Repointing with a synthetic caulking compound or off-color mortar creating an obvious area that has been repaired.

Using a "scrub" coating technique to repoint instead of traditional repointing methods.

Changing the width or joint profile when repointing.

Recommended

Apply new or nonhistoric surface treatments such as water-repellent coatings, only after repointing and only if masonry repairs have failed to stop water penetration.

Use mortar of an appropriate strength to relieve stresses due to thermal expansion, settlement, or seismic activity. The mortar must be less strong than the stone or brick so that stresses can be relieved by cracks in the mortar rather than through the masonry unit. Mortar, with a high percentage of portland cement, is stronger than most cast-stone or historic brick and is inappropriate.

Use mortar of an appropriate density, to allow water within the wall to migrate and escape. Portland cement is denser than most stone or brick and will force water to migrate through the masonry units.

Fill cracks in masonry units to reestablish structural integrity and prevent water penetration. Use a structural grout formulated to match the original masonry in strength and vapor transmission rate; use a mortar-like composite material that matches the original masonry in color, texture, and vapor transmission rate for surface treatment, including superficial cracks. Patch material should be weaker than the original.

Not Recommended

Replacing an entire masonry feature such as ornamentation when repair of the masonry and limited replacement of deteriorated or missing parts are appropriate.

Using a substitute material for the replacement part of the masonry feature that does not convey the visual appearance of the surviving parts or that is physically or chemically incompatible.

Applying waterproof, water-repellent, or nonhistoric coatings such as portland cement heavy skip-trowel stucco to masonry as a substitute for the original lime plaster sand float finish. Coatings are frequently unnecessary, expensive, and may change the appearance of historic masonry as well as accelerate its deterioration.

Using a chemical bonding agent to increase the bond of new mortar to old mortar rather than hand ranking the joints to a sufficient depth to guarantee mechanical keying. These agents are generally unnecessary and can be harmful to the masonry.

Inappropriate new concrete substituted for original masonry edge at arcade. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA dated January 11, 2000.

MASONRY AND CONCRETE

Inappropriate patch with modern brick not matching original pattern at Building 30. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

RECOMMENDED

Chemically consolidate deteriorating masonry only if such treatment is deemed appropriate. Always test materials and procedures in an inconspicuous location before attempting full-scale treatment. Different types of brick will require different consolidation materials. Consolidation should not alter the appearance or vapor transmission rate of the original masonry.

Mock-up test areas for repointing or patching to serve as a quality-control standard. Locate the test area in a representative, but inconspicuous place. The test patch should be approximately one square yard.

NOT RECOMMENDED

Overfilling mortar joints when repointing. The visual effect of a full mortar joint as opposed to a slightly recessed joint is considerable and changes the visual character of the original masonry wall.

Patching masonry with portland cement. Aside from being visually incompatible, the material is too strong and dense for most masonry and will lead to deterioration.

Patching historic brick with modern brick, which is different in dimensions and edge detail.

Surface mounting elements such as new metal conduits or downspouts onto a masonry unit. This not only destroys historic fabric, but also provides direct access for moisture to penetrate the masonry wall. There are several downspouts and collector heads at NTC that are mounted into the hollow clay tile and shall remain. Prior to manufacturing, determine where reattachment is required for the downspouts, points of attachment should be made at mortar joints, not into the hollow clay tile void.

Recommended

Replace

Replace in kind an entire masonry feature that is too deteriorated to repair, if the overall form and detailing are still evident. Use the physical evidence as a model to reproduce the feature. If use of the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.

Consider sustainability factors—such as resource depletion, toxicity of materials, maintenance levels, and resource recovery—in deciding whether to use a substitute material.

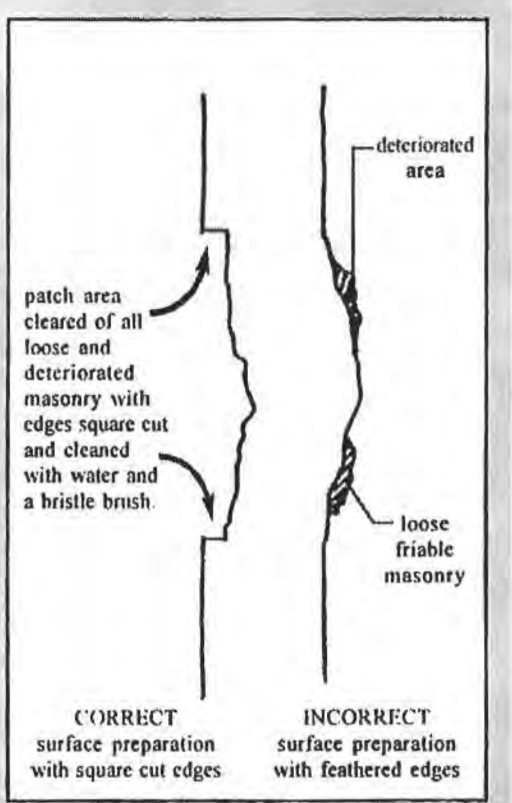
Replace brick, and glazed terra cotta with material matching the original in size, color, texture, density, and profile. Potential sources for replacement material should be considered early in a project to allow for delivery time. Salvaged materials merit consideration as replacement materials. Great care must be taken to match the glaze on replacement tiles. Custom order to size and materials.

Not Recommended

Removing a masonry feature that is beyond repair and not replacing it; or replacing it with a new feature that does not have the same appearance.

Using glazed terra cotta tile that does not match the originals in size, glaze, color, texture, density and profile.

Glaze damage to terra cotta tile in the fountain near Building 20 and 21. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.



The proper method of preparing and applying a masonry patch. Drawing courtesy of Architect Milford Wayne Donaldson, FAIA.

Design for Missing Historic Features

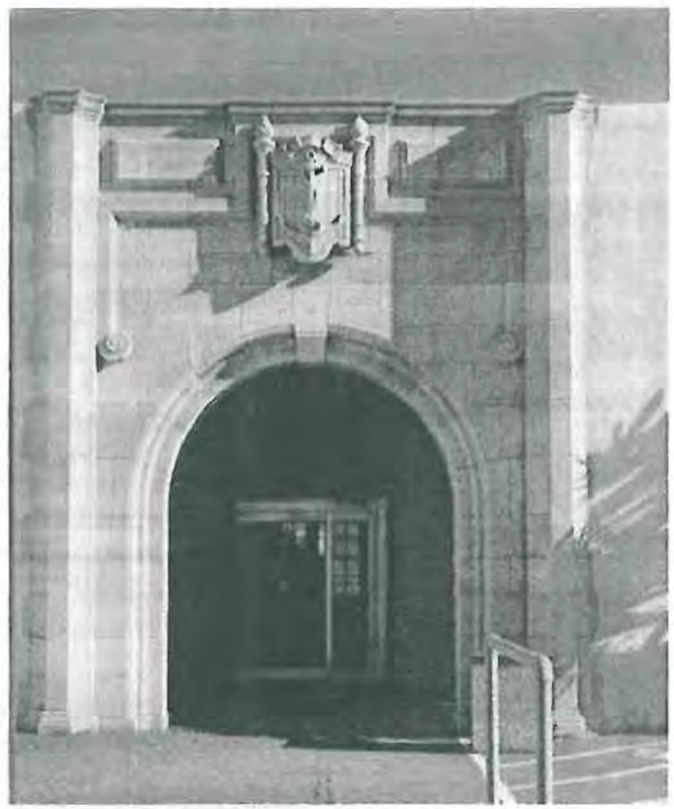
Design and install new masonry, such as the window sills or walkways, when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial, and physical documentation; or a new design that is compatible with the size, scale, material and color of the historic building.

Creating a false historical appearance because the replaced masonry feature is based on insufficient historical, pictorial, and physical documentation.

Introducing a new masonry feature that is incompatible in size, scale, material or color.

MASONRY AND CONCRETE

Concrete should be cleaned only when it is necessary to halt deterioration. From the viewpoint of sustainable design, most methods of cleaning concrete have adverse effects on the environment. Water cleaning methods consume large amounts of water and can damage concrete by driving moisture into the wall and causing the reinforcing to corrode. Most chemical cleaning agents are toxic and can endanger the equipment operator as well as the environment. If solvents are used, special attention should be paid to their collection and reuse. Sandblasting to remove corrosion from reinforcing bars can damage adjacent materials and creates dust, which is a potential threat to the operator.



Cast stone entrance with anchor shield and torches at Building 1. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Recommended

Identify, Retain, and Preserve

Identify, retain, and preserve concrete features that are important in defining the overall historic character of the building.

Identify finished surface texture, color, and coatings.

Identify the age and potential inherent preservation problems in original materials or construction methods, which may require laboratory analysis. Any rehabilitation plan must be based on a thorough knowledge of the properties of the original materials.

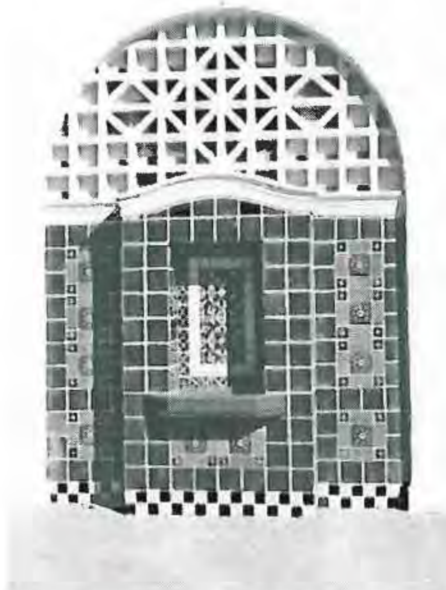
Identify type and location of reinforcing bars.

Further tests should be made to identify the appropriate concrete mix.

Not Recommended

Removing or radically changing concrete features that are important in defining the overall historic character of the building.

Specifying treatment of a particular building without a thorough understanding of the composition of the concrete.



Glazed terra cotta drinking fountain units were installed at Gate Houses. Original concrete lattice grill is shown above. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA. December 21, 1999.

Recommended

Protect and Maintain

Protect and maintain concrete by ensuring that water is not absorbed. This may require proper drainage, repairing and filling cracks and spalls, or installing flashing at flat surfaces.

Evaluate and treat the various causes of deterioration, such as leaking roofs or gutters, different settlement of the building, capillary action (such as rising damp), or chloride contamination.

Conduct concrete cleaning test if cleaning is appropriate. Tests should be observed over a sufficient period of time to assess both the immediate and the long-range effects of cleaning. Clean concrete surfaces with the gentlest method possible, such as a low-pressure water rinse using a mild detergent applied with natural bristle brushes. Chemicals applied as a poultice may be necessary to remove tenacious stains without abrading surface texture or detail. After treatment, thoroughly rinse the surface of all residual chemicals.

Inspect painted and stuccoed concrete surfaces to determine whether re-coating is necessary. Failed coatings are characterized by flaking or loss of adhesion.

Not Recommended

Cleaning concrete surfaces when they are not heavily soiled to create a new appearance, thus needlessly introducing chemicals or moisture into historic materials.

Cleaning concrete surfaces without testing or without sufficient time for the testing results to be of value.

Cleaning with chemical products that will damage concrete or failing to rinse the surface clean of chemicals.

Applying high-pressure water cleaning methods that will damage historic surface treatment or coating and can drive water into the wall, causing corrosion of the steel reinforcing bar.

Sandblasting concrete surfaces using dry or wet abrasive, which permanently erode the surface of the material and accelerate deterioration.

Recommended

Remove damaged or deteriorated plaster only to the next sound layer using the gentlest method possible (i.e., hand scraping) prior to re-coating.

Apply compatible coating systems following proper surface preparation. Testing is mandatory to ensure that replacement material is compatible with the aesthetic and physical properties of the existing fabric and to determine short and long-term adverse effects.

Recoat with materials, textures, and colors that are historically appropriate to the building and district. However, if the concrete texture and color has aged over the years, then match the concrete with similar finishes. Several mock-up tests may need to be performed.

Evaluate the overall condition of the concrete to determine if protection and maintenance are sufficient, or if material analysis and repairs are necessary.

Locate areas of delamination and incidental spalls by sounding. Spalled or delaminated concrete will reverberate with a distinctly hollow sound.

Patch spalls and fill stable cracks with material duplicating the original concrete mix in strength, composition, color, and surface texture. To ensure a strong bond between new and original material, the patch must dovetail into the existing sound concrete.

Not Recommended

Remove paint or stucco from historically coated concrete such as the ceilings of the arcades.

Removing sound stucco, then re-coating the entire building to achieve a uniform appearance.

Removing paint or stucco by methods that destroy concrete, such as sandblasting, application of caustic solutions, or high-pressure water blasting.

Applying paint or other coatings such as stucco to concrete in a manner that creates a new appearance.

Traditional scored concrete walkway in arcades with brick edging adjacent to landscape area. Photo courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

MASONRY AND CONCRETE

Cast stone bell tower at fire station Building 8. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

Recommended

At soffits, replicate original form and texture, such as marks of the formwork lumber. This requires imprinting lumber marks on fresh concrete patches using boards of appropriate dimension and surface texture.

Replace

Reproduce in kind an entire concrete element that is too deteriorated to repair, using physical evidence as a model. If a similar, non-deteriorated piece can be found on the building, a mold can be made for casting the replacement piece. Examples include cast-stone elements, projecting moldings, columns, or walkways.

Not Recommended

Replacing or rebuilding a major portion of repairable concrete features, which is essentially new construction such that the building is no longer historic.

Replacing an entire concrete feature such as decorative ornamentation when repair and limited replacement of deteriorated or missing parts are appropriate.

RECOMMENDED

Design for Missing Historic Features

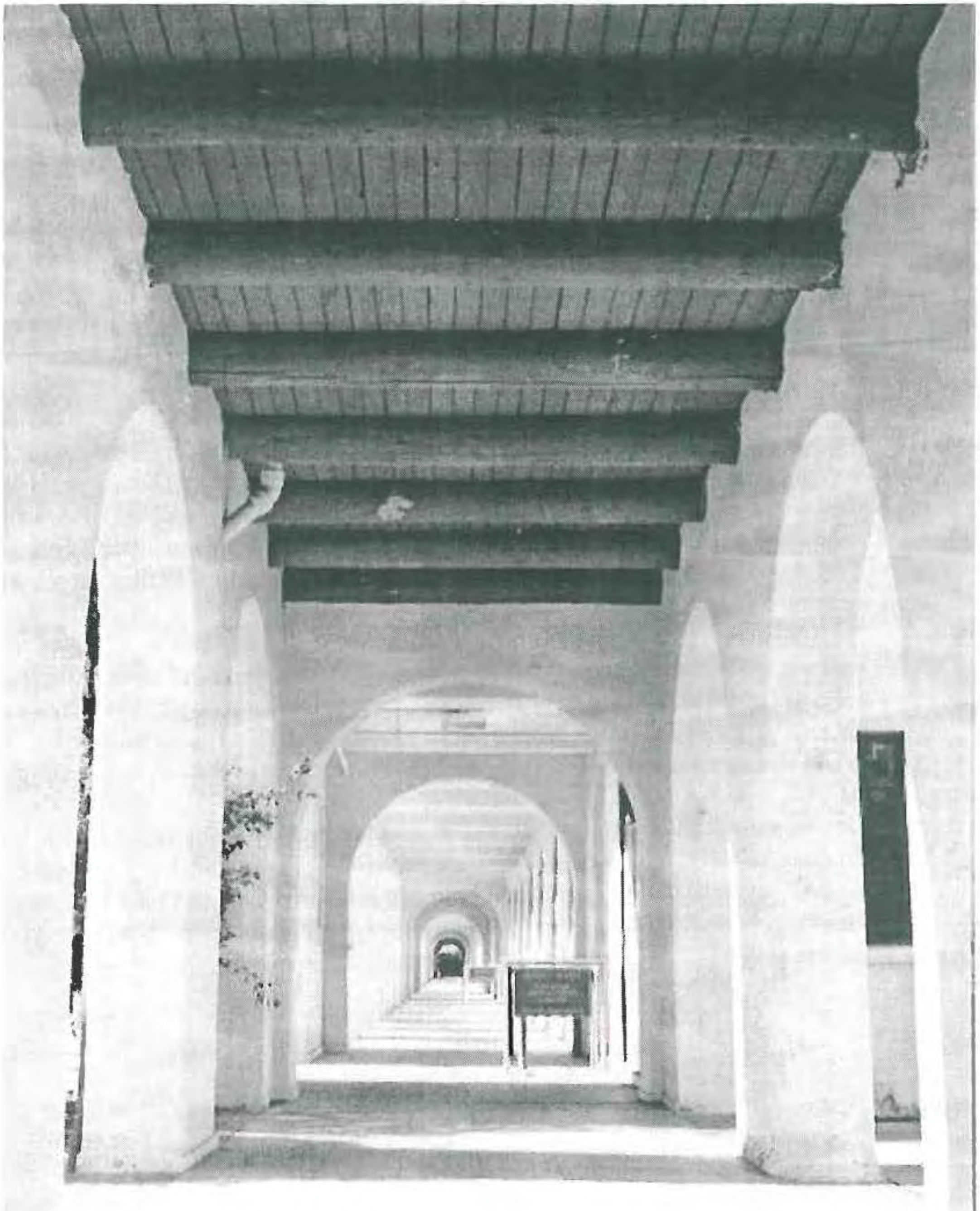
Design and install a new concrete feature when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial, and physical documentation; or an entirely new design, compatible with the size, scale, material, and color of the historic building but still showing enough differences to reflect its era of construction.

NOT RECOMMENDED

Creating a false historical appearance because the replacement concrete feature is based on insufficient historical, pictorial, and physical documentation.

Introducing a new concrete feature that is incompatible in size, scale, texture, or color.

Cast concrete units form the entrance arch to the arcade. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.



Arcade ceiling showing vigas and plank ceiling. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

WOOD

WOOD

Because it can be easily shaped by sawing, planing, carving, and gouging, wood is used for architectural features such as clapboard, cornices, brackets, entablatures, shutters, columns, and balustrades. These wooden features, both functional and decorative, may be important in defining the historic character of the building. Their retention, protection, and repair are important in rehabilitation projects.

Wood has played a central role in American building during every period and in every style. Whether as structural members, exterior cladding, roofing, interior finishes, or decorative features, wood is frequently an essential component of historic and older buildings.

A number of wood barracks and warehouses, designed as temporary buildings, were quickly built for service during World Wars I and II. For the most part, the major buildings in the NTC Historic District are constructed of masonry with substantial wood elements including roof and floor structures, stairs, porches, floorboards, doors, window frames and sashes, and trim constructed to reflect Rodgers' interpretation of Goodhue's Spanish Colonial Revival architecture. Although the 1920s buildings are concrete-framed and hollow clay tile covered with plaster, the 1940s additions are primarily wood-framed construction.

Wood vigas project beyond wall showing pueblo style architectural design influence. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Exterior wood trim on historic buildings often performs the dual function of protection and decoration. Moldings, sidings and trim not only create visual interest with highlights and shadows, but also have practical value. In addition to covering joints and protecting the wood endgrain, they direct rainwater from one component to the next and eventually to the ground.

Moisture, usually in combination with other influences such as insects and fungi, weakens the structure of wood and is the main cause of wood deterioration. Common design flaws in many of the wood buildings are inadequate separation from the soil and insufficient drainage. These conditions allow moisture to migrate through wood foundations and spread to the main structure.

Paint is one of the most effective means of waterproofing a wood surface, and most exposed wood at the NTC has been painted. Paint makes it difficult to identify wood species, but it appears that the wood is primarily fir. Some interior wood has been stained and varnished to enhance the wood grain and color.

Treatments for insect and fungal attack include treating wood with insecticides and preservatives, treating the surrounding soil, and fumigating. However, each of these methods is also harmful to the environment and can damage certain types of metal, paint, and interior finishes. An Integrated Pest Management Program for alternative nontoxic pest treatments should be introduced.

There are a number of more sustainable alternatives to harsh chemical treatments. Preventive measures, such as providing adequate ventilation and installing metal flashing to separate wood from possible sources of moisture, can contribute substantially to preventing decay. Clearing gutters and drains of debris and maintaining painted surfaces will significantly prolong the life of a wood structure. Although traditional stripping and refinishing products are toxic, carcinogenic, and high in volatile organic compounds, new water-based products are less poisonous and do not produce polluting hydrocarbons. Stripping and refinishing products and epoxies are highly flammable and must be used with care. The National Park Service can provide regulatory and technical information and guidance on which wood preservatives and other treatments are acceptable.

The wood stairway balustrade and finish detail add to the elegance of Officers' Quarters "A." Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 1995.

Recommended

Identify, Retain, and Preserve

Identify, retain, and preserve wood features that are important in defining the overall historic character of the building, such as siding, cornices, brackets, window arches, transoms, and doorway pediments, and their paints, finishes, and colors. (Refer to photos in this section and glossary references.)

Identify the species of wood, grain pattern, dimensions, millwork, shaping, joining, and finishing techniques, and means of fastening.

Determine if a wood element functions as a structural, decorative or finish material, and select the appropriate [illegible]

Not Recommended

Removing or radically changing wood features that are important in defining the overall historic character of the building, such that the character is diminished.

Removing a major portion of the historic wood from a facade (instead of repairing or replacing only the deteriorated wood), then reconstructing the facade with new material to achieve a uniform or "improved" appearance.

Radically changing the type of finish or its color or accent scheme so that the historic character of the exterior is diminished.

Stripping historically painted surfaces to bare wood, then applying clear finishes or stains to create a "natural look."

Stripping paint or varnish to bare wood rather than repairing or reapplying a special finish (for example, a grain finish to an exterior wood features such as a front door).

Removing all paint layers without retaining samples for analysis and documentation.

Simulated hand hewn wood posts and beams covered walkway. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Recommended

Protect and Maintain

Evaluate, and treat the causes of wood deterioration, including faulty flashing, leaking, gutters, cracks and holes in siding, deteriorated caulking in joints an seams, plant material growing too close to wood surfaces, or insect or fungus infestation.

Protect and maintain wood features by providing proper drainage so that water is not allowed to stand on flat horizontal surfaces to accumulate in decorative features.

Apply environmentally safe chemical preservatives to wood features, such as beam ends or outriggers, that are exposed to decay hazards and are traditionally unpainted.

Retain coatings such as paint that help protect the wood from moisture and ultraviolet light. Paint removal should be considered only where there is paint surface deterioration as part of an overall maintenance program that involves repainting or applying other appropriate protective coatings.

Inspect painted wood surfaces to determine whether repainting is necessary or if cleaning is all that is required.

Remove damaged or deteriorated paint to the next sound layer using the gentlest method possible (hand scraping and hand sanding), then repaint.

Not Recommended

Using chemical preservatives, such as creosote, that can change the appearance of wood features.

Stripping paint or other coatings to reveal bare wood, thus exposing historically coated surfaces to the effects of accelerated weathering.

Removing paint that is firmly adhering to, and thus protecting, wood surfaces.

Using destructive paint removal methods, such as propane or butane torches, sandblasting, or water blasting. These methods can irreversibly damage historic woodwork.

Using thermal devices improperly, so that the historic wood work is scorched.

Failing to thoroughly neutralize the wood after using chemicals; unless the wood is neutralized, new paint will not adhere.

WOOD

Wood framed raised roof for attic ventilation of barracks building. Note that the aluminum screen is not appropriate. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Recommended

Carefully use electric hot-air guns on decorative wood features and electric heat plates on flat wood surfaces when paint condition is so deteriorated that it must be totally removed prior to repainting such as the paint cracking or flaking to bare wood and paint not adhering.

Use chemical strippers primarily to supplement other methods, such as hand scraping, hand sanding, and the above-recommended thermal devices. With the proper safeguards, detachable wooden elements-such as shutters, doors, and columns-can be chemically dip-stripped.

Limit paint removal. Generally, wood at the NTC should be stripped only if it is necessary to make elements operable (such as windows), or to remove lead-containing paint at areas where paint is friable. Existing lead paint may be "encapsulated." It is better to create a lead-safe surface rather than lead-free in order to preserve the wood. Refer to glossary for definitions of lead-safe and lead-free.

Apply compatible paint coating systems following proper surface preparation.

Repaint with colors that are appropriate to historic building based on historic paint layer analysis. Refer to section 3P.

Evaluate the overall condition of the wood features to determine if protection and maintenance are sufficient, or if repair is necessary.

Not Recommended

Allowing detachable wood features to soak too long in a caustic solution, which raises the wood grain and roughens the surface.

Failing to follow manufacturer's product application instructions when repainting exterior woodwork.

Using new colors that are inappropriate to the historic building or district.

Failing to undertake adequate measures to ensure the protection of wood features. Burning paint produces toxic fumes and is a fire hazard and should be prohibited at NTC.

Relying on brush-or spray-applied insecticides or preservatives, or those incorporated into paint coatings. These are generally ineffective, because penetration is superficial and the interior of the member is unprotected.

Treating wood with preservatives that alter its appearance. Preservatives generally release objectionable odors, can stain or corrode adjacent materials, and may affect future paint application.

Applying coatings, such as acrylics, to wood flooring. They produce a slippery surface, require regular replacement, and are difficult to remove.

Recommended

Correct conditions that allow moisture intrusion. This includes repairing damaged or missing gutters and downspouts, and providing adequate ventilation and separation from the ground and surrounding vegetation.

Inspect wood surfaces and structural elements regularly for signs of moisture retention and insect or fungal attack. Peeling paint, spongy wood, discoloration, staining, and the presence of fungi are clear indicators. Insect damage generally occurs on the interior of a wood member and may be hidden until the structural integrity is severely compromised. Sills and wood joints or members bearing on masonry at NTC are particularly susceptible to rot, because they are frequently subjected to moisture.

Maintain successful existing details of joints and flashing that keep water out of wood assemblies, and consider historic detail reconstruction before caulking.

Use shades to control direct sunlight on interior wood finishes to prevent ultraviolet damage.

Not Recommended

Sanding floors when not absolutely necessary. Sanding removes a considerable amount of historic fabric.

Applying sealants without addressing the cause of the problem or as a substitute for good detailing of joints and flashings.

The exposed vigas are character defining features and should be preserved and protected. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA. December 21, 1999.

Recommended

Paint only areas that require repainting. Areas exposed directly to sunlight and weather will require more frequent painting than the rest of the building. To reduce paint buildup on the exterior and interior, paint only those elements that require repainting. However, spot-painting is generally not recommended, because it creates an irregular appearance.

Maintain wood floors by cleaning and waxing regularly. Wear and decay can be slowed through regular maintenance. Limit wear of existing wood floors in heavily trafficked areas by covering with a reversible protective surface (e.g., carpet).

The light-colored painted wood moldings, doors, wainscotting and trim at the sunporch in Officer's Quarters "A" provide a sunny and pleasant space. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, March 2, 2000.

RECOMMENDED

Repair

Repair wood features by patching, piecing-in, consolidating, or otherwise reinforcing the wood using recognized preservation methods. Where there are surviving prototypes such as brackets, molding, or sections of siding, repair may also include the limited replacement in kind or with compatible substitute material of those extensively deteriorated or missing parts of features.

Strengthen weakened wood members by adding new members alongside the original. Wood structures are most commonly weakened when the original cross section of a structural member is reduced by cutting out portions during alterations, by fire, or by insect damage or fungal rot. Rot on the original member must be removed before installing new material.

Replace missing wood features, especially those on the exterior, in a timely manner. Exterior wood components are usually designed and joined to prevent water from penetrating joints. One missing element can compromise the entire system.

NOT RECOMMENDED

Replacing an entire wood feature, such as a cornice or wall, when repair of the wood and limited replacement of deteriorated or missing parts are appropriate.

Using substitute material for the replacement part that does not have the appearance of the surviving parts of the wood feature or that is physically or chemically incompatible.

Using nongalvanized fasteners in moist conditions. These can discolor and chemically attack certain woods, including fir and oak.

This photo illustrates the repair of a deteriorated wood sill using a wood consolidate. The voids in this weathered sill were filled with a compatible product. Once the product has dried it can be sanded down flush with adjacent surfaces and painted to match. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA.

Recommended

Remove a damaged or decayed section only, rather than the entire wood member. Repair wood elements using wood that matches the original in dimension, finish and species, unless the species is not available, in which case an appropriate substitute should be used.

Repair voids left after removal of damaged wood by inlaying pieces of wood cut to precisely fit the void. In this type of repair, called a dutchman, the wood should match the original in species and color.

Consolidate deteriorated wood rather than replacing the original, where possible. In some nonstructural locations, such as wood sills, injection of a polymer composite material (such as a flexible epoxy restoration compound that can be shaped) is an appropriate means to extend the life of a wood component.

Use galvanized or stainless-steel nails in repair work to reduce metal stains on wood. Where appropriate, countersunk finish nails with wood filler applied over the nailheads will also prevent staining.

Use predrilling and screws in old brittle wood rather than nails to minimize cracking and splitting. Nailing old brittle wood, causing it to split.

The intricate wood newel post cap in Officers' Quarters "A" is carved from one piece of wood. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA dated March 2, 2000.

RECOMMENDED

REPLACE

Removing an entire wood feature that is beyond repair and replacing it, it with a replicant that has the same appearance but can be identified as a new feature by date-stamping on the blind side of the wood.

If the overall form and detailing are still evident, use the physical evidence as a model and replace in kind an entire wood feature that is too deteriorated to repair. Examples of wood features include a cornice, entablature, or balustrade. If using the same kind of material is not technically feasible, a compatible substitute material may be considered.

Where repair and restoration are not possible, match the original wood as exactly as possible in wood species, grain, dimensions, finish texture, and coating. Current dimensions of lumber are often different from historic dimensions; custom milled lumber will probably be necessary.

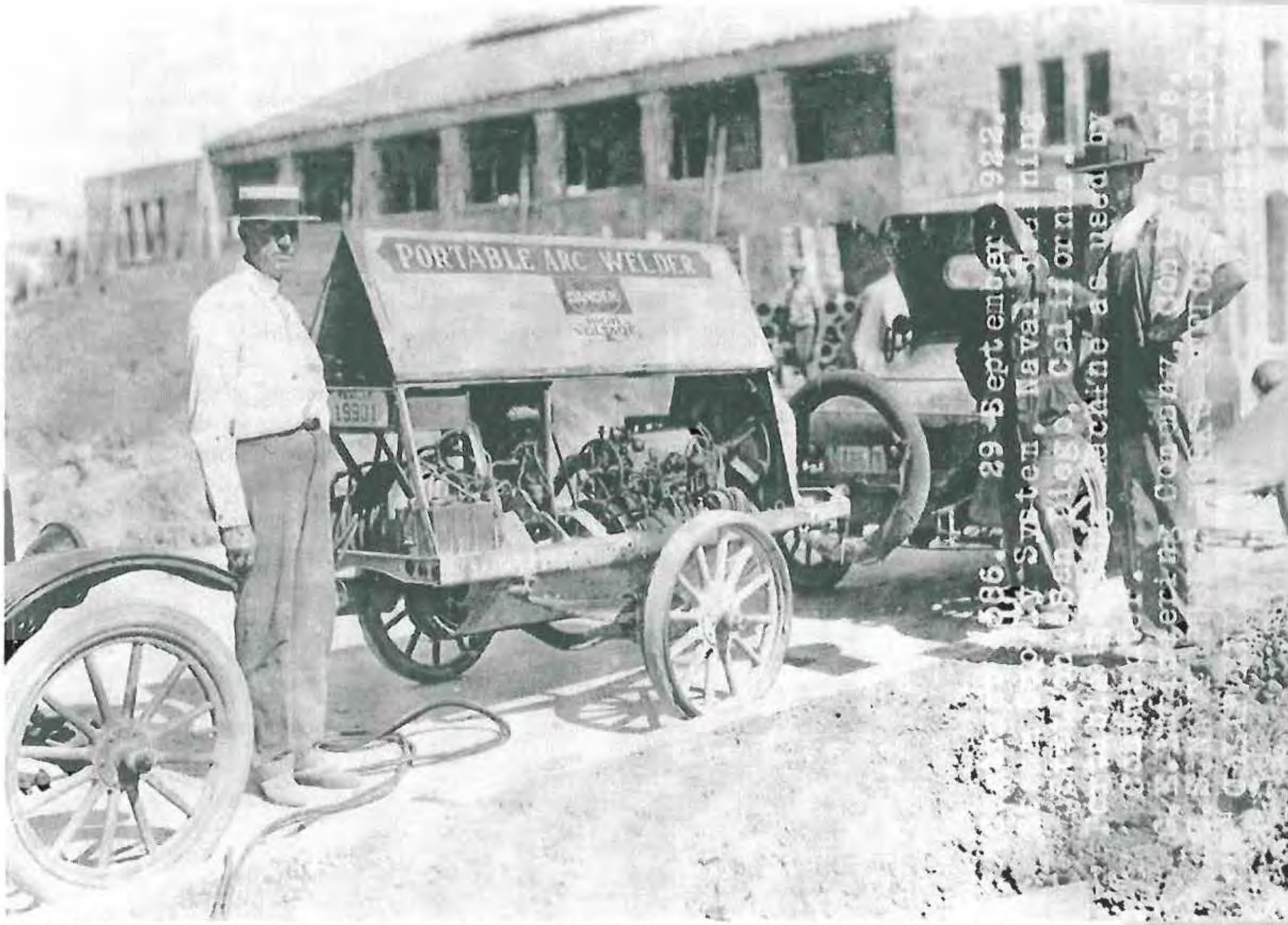
Replace wood features using the same joining techniques as found in the original feature.

NOT RECOMMENDED

Replacing milled lumber with plywood. Plywood is both historically inappropriate and visually distinct from historic wood.

Wood door entry surrounds, when deteriorated, should be replaced "in kind" to exactly match the original material and details. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

ARCHITECTURAL METALS



Portable arc welder used during construction by the G.E. Engineering Company on site at the Naval Training Station. Photograph courtesy of San Diego Historical Society Photograph Collection, September 29, 1922.

ARCHITECTURAL METALS

Gun platforms adjacent to Preble Field. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

Gun platforms adjacent to Preble field. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

Architectural metal features are often highly decorative and may be important in defining the overall historic character of the building. Historically, these features included cast iron facades, porches, gates, flag poles and steps; sheet metal cornices, siding, roofs, down spouts, and storefronts; and cast or rolled metal doors, window sash, entablatures, hardware and memorial plaques.

Metals commonly used in historic buildings include lead, tin, zinc, copper, bronze, brass, iron, steel, and to a lesser extent-nickel alloys, stainless steel, and aluminum. Historic metal building components were often created by highly skilled local artisans; by the late 19th century, many of these components were prefabricated and readily available from catalogs in standardized sizes and designs.

Architectural metals in the NTC Historic District can be divided into ferrous (iron) alloys and copper alloys. Ferrous alloys include cast iron, wrought iron, and steel; these are hard metals that rust readily in marine air and must be painted or coated to prevent corrosion. Copper alloys include copper as well as bronze and brass; these relatively soft metals form a natural protective patina and should not be painted. The downspouts of the 1920s buildings have copper gutters and collector heads that have been painted over the years.

Both ferrous and copper alloys are used at NTC on exteriors and interiors for utilitarian and decorative purposes. Ferrous alloys are the only metals commonly used for structural elements such as cast iron and exposed wood truss brackets. Some specialized wrought iron elements, such as balcony railings, were probably hand-forged by local artists working in the San Diego area. However, the majority of metal architectural elements are standardized, 20th century, factory-made products chosen for their strength, low cost, fire resistance, durability, and ease of assembly.

ARCHITECTURAL METALS

Metals can be associated with a particular architectural style. For example, painted ferrous metals, usually appear on the Spanish Colonial Revival buildings, in wrought iron balcony rails, grilles, light fixtures, and hardware. Copper flashing, gutters, and leaders, and occasionally copper roofs and light fixtures are featured on the exteriors.

Some early elements, such as stair railings and gates have been replaced or augmented over the years with more durable metal elements, which have often gained significance themselves. These include the painted steel pipe rails , and window security grilles, characteristic features of many NTC buildings.

The San Diego microclimate with its moist salt-laden air is especially harsh on architectural metals. Maintenance is of vital importance and raises several issues related to sustainable design. Historical coatings used to inhibit metal corrosion were rich in lead, which can flake and pollute the surrounding soil and groundwater, and modern substitutes may still pose environmental problems. Chemical products designed to remove paint and corrosion from metals are toxic-laden; abrasive removal methods produce toxic dust, affecting the immediate environment and equipment operators and possibly damaging unprotected adjacent materials. Hand scraping and wire brushing, in conjunction with containment of removed materials, are generally the most environmentally-sound cleaning methods. Forging processes, including soldering and welding, may also be very hazardous if the worker is unfamiliar with specific techniques. Many metals are recyclable and may rate highly for sustainability; however, aluminum is not recommended as a replacement metal because it is particularly energy-intensive to produce, corrodes easily in a marine environment and does not compliment the Spanish Colonial Revival architecture.

NTC Historic District has some unique elements. The USS Recruit is a building made to look like a naval ship and constructed of painted sheet metal with both real and mock-up ships fittings. Gun platforms, anchors and other naval items are located throughout NTC. These historic metal elements must be maintained free of rust and corrosion.

USS Recruit, constructed in 1949 as a simulated full size mock-up of a Destroyer Escort (DE) Class Navy ship was used for classrooms and training . Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

ARCHITECTURAL METALS

There are several grills that vent the buildings' foundations and should be replaced "in kind" if damaged beyond repair. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Recommended

Identify, Retain, and Preserve

Identify, retain, and preserve architectural metal features-such as columns, stairways, plaques, or downspouts which are important in defining the overall historic character of the building and their finishes and colors. (Refer to photos in this section.) Identification is also critical to differentiate between metals prior to work. Each metal has unique properties and requires different treatment.

Identify methods of assembly. Metal features are often assembled from smaller elements bolted, screwed or welded together. Joints must be sealed to prevent moisture from penetrating to the interior and causing corrosion from within.

Identify the particular type of metal prior to any cleaning procedure and then test to ensure that the gentlest cleaning method possible is selected, or determine that cleaning is inappropriate for the particular metal.

Evaluate the overall condition of the architectural metals to determine if protection and maintenance are sufficient, or if repair is necessary.

Protect and Maintain

Protect and maintain architectural metals from corrosion by providing proper drainage so that water does not stand on flat horizontal surfaces or accumulate in curved decorative features.

Clean architectural metals, when appropriate, to remove corrosion prior to repainting or applying other appropriate protective coatings.

Not Recommended

Removing or radically changing architectural metal features that are important in defining the overall historic character of the building such that the character is diminished.

Removing a major portion of the historic architectural metal from a facade instead of repairing or replacing only the deteriorated metal, then reconstructing the facade with new material to create a uniform or "improved" appearance.

Radically changing the type of finish or its historic color or accent scheme.

Failing to identify, evaluate, and treat the causes of corrosion, such as moisture from leaking roofs or gutters.

Placing incompatible metals together without providing a reliable separation material. Such incompatibility can result in galvanic corrosion of the less noble metal (e.g., copper will corrode cast iron, steel, tin and aluminum).

Recommended

Clean soft metals such as lead, tin, copper, terneplate, and zinc with appropriate nonabrasive chemical methods, because their finishes can easily be abraded by blast cleaning.

Use the gentlest cleaning methods for hard metals such as cast iron, wrought iron, and steel to remove paint buildup and corrosion. If hand scraping and wire brushing are ineffective, low pressure grit blasting may be used as long as it does not abrade or damage the surface.

Apply appropriate paint or other coating systems after cleaning to decrease the corrosion rate of metals or alloys.

Repaint with colors that are appropriate to the historic building or district.

Apply an appropriate protective coating such as lacquer to any architectural metal feature that is subject to heavy pedestrian use.

Not Recommended

Exposing metals that were intended to be protected from the environment.

Applying paint or other coatings to metals that were meant to be exposed, such as copper, bronze or stainless steel.

Using cleaning methods that alter or damage the historic color, texture, or finish of the metal; or cleaning when it is inappropriate for the metal.

Removing the patina of historic metal. The patina may be a protective coating on some metals, such as bronze or copper, or a significant historic finish.

Cleaning soft metals such as lead, tin, copper, terneplate, or zinc with grit or blasting, which will abrade the surface of the metal.

Failing to reapply protective coating systems to metals or alloys after cleaning, which accelerates corrosion.

Using new colors that are inappropriate to the NTC Historic District.

Failing to assess pedestrian use or new access patterns so that architectural metal features are subject to damage by use or by inappropriate maintenance.

Bronze plaque dedicating Ingram Plaza in the memory of Osmond K. Ingram needs restoration work. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Decorative copper downspouts occur throughout Naval Training Center. Protect in-place all existing copper downspouts and replace any missing downspouts "in kind." Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Recommended

Remove accumulated plant material from metal elements, such as roofs and gutters. Acids from decomposing plants will cause metals to corrode.

Replace deteriorated caulking between assembled components of metal elements to prevent moisture from entering internal voids and causing corrosion.

Strengthen loose metal railings by tightening all bolts and screws. Remove and replace seriously rusted bolts and screws that have stripped threads.

Clean brass plaques by the gentlest means possible using nonabrasive solvents.

Clean and lubricate or replace in kind missing hinges and fasteners in a timely manner.

Check ferrous metal components biannually; remove and refinish any areas that show corrosion.

Remove all rust before repainting; however, it is usually not necessary to remove paint that is well adhered.

Clean all paint from copper downspouts as necessary. Do no repaint.

Not Recommended

Failing to undertake adequate measures to protect architectural metal features.

Filling voids in hollow metal balusters, newel posts, and other elements with concrete.

Using heat, applied with propane torch or similar device, to remove paint or rust from architectural metal. Localized heat applied to cast iron, such as to a cast iron column, can cause it to shatter. Heat can distort most metals, and intense heat will vaporize the lead in old paint, resulting in highly toxic fumes.

Using solvents and abrasive cleaners on the brass plaques that will eventually remove the material and obscure the lettering. Careless polishing has left a "ghost" on the surrounding plaster surfaces.

Recommended

Select primer and finish coats that are chemically compatible with the particular metal in question.

Choose a primer that contrasts with the color of the prepared metal surface when treating painted metals to allow the uniform application of coats and easy detection of wear.

Consider whether layers of paint need to be removed to restore and define the architectural details of metal features.

Wire brush or hand scrape where paint buildup and rust are not severe. Brushes should be of like metals, such as bronze wool or brass wire for cleaning copper alloys. Steel wire brushes or steel wool can initiate corrosion of copper alloys by depositing minute pieces of iron onto the object.

Protect any adjacent materials such as plaster, wood, or glass when using chemical cleaning agents or low-pressure grit blasting, or when repainting architectural metals. The plaster walls around the brass plates have been stained by the polish.

Metal stairs, brackets and balustrades are character defining features in the barracks buildings. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

ARCHITECTURAL METALS

Decorative metal security grills are a common feature at NTC and should be retained. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

RECOMMENDED

Repair

Repair architectural metal features by patching, splicing, or otherwise reinforcing the metal following recognized preservation methods. Repairs may also include the limited replacement in kind or with compatible substitute material of those extensively deteriorated or missing parts of features when there are surviving prototypes, such as porch balusters, column capitals or bases.

Select metal used for patching or reinforcing that closely matches the original material to prevent galvanic corrosion.

Fill small holes and nonstructural cracks using non-shrink grout to prevent water penetration to the interior.

Replace

If the overall form and detailing are still evident, replace in kind an entire architectural metal feature that is too deteriorated to repair, using the physical evidence as a model. An example is a wrought iron security grill. If use of the same kind of material is not technically or economically feasible, a compatible substitute material may be considered.

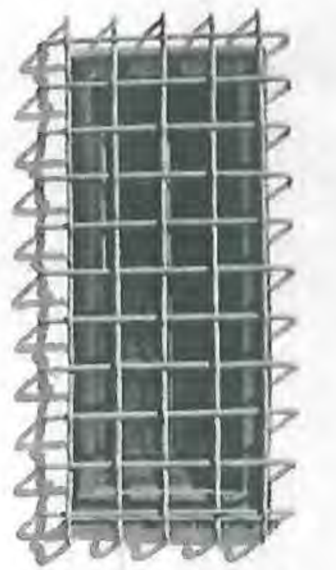
Replace materials in kind; the simple and once common metal elements used at the NTC may still be produced, or may be available in local salvage yards. Try to use recycled materials before attempting to reproduce original features to provide sustainability of natural resources.

NOT RECOMMENDED

Replacing an entire architectural metal feature, such as a security grille, when repair of the metal and limited replacement of deteriorated or missing parts are appropriate.

Using a substitute material for the replacement part that does not have the appearance of the surviving parts or that is physically or chemically incompatible.

Applying bituminous patching materials, which are visually inappropriate and will initiate corrosion in some metals.



Decorative metal security grills. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Recommended

Design for Missing Historic Features

Design and install a replicated architectural metal feature, such as a copper downspout or cast iron handrail, when the historic feature is completely missing. It may be an accurate reconstruction using historical, pictorial, and physical documentation; or a new design compatible with the size, scale, material, and color of the buildings at NTC.

Wrought iron railing at the balcony of barracks Building 27. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Not Recommended

Removing an architectural metal feature that is beyond repair and not replacing it; or replacing it with a new architectural metal feature that does not have the same appearance, material, size, scale, or color as the original.

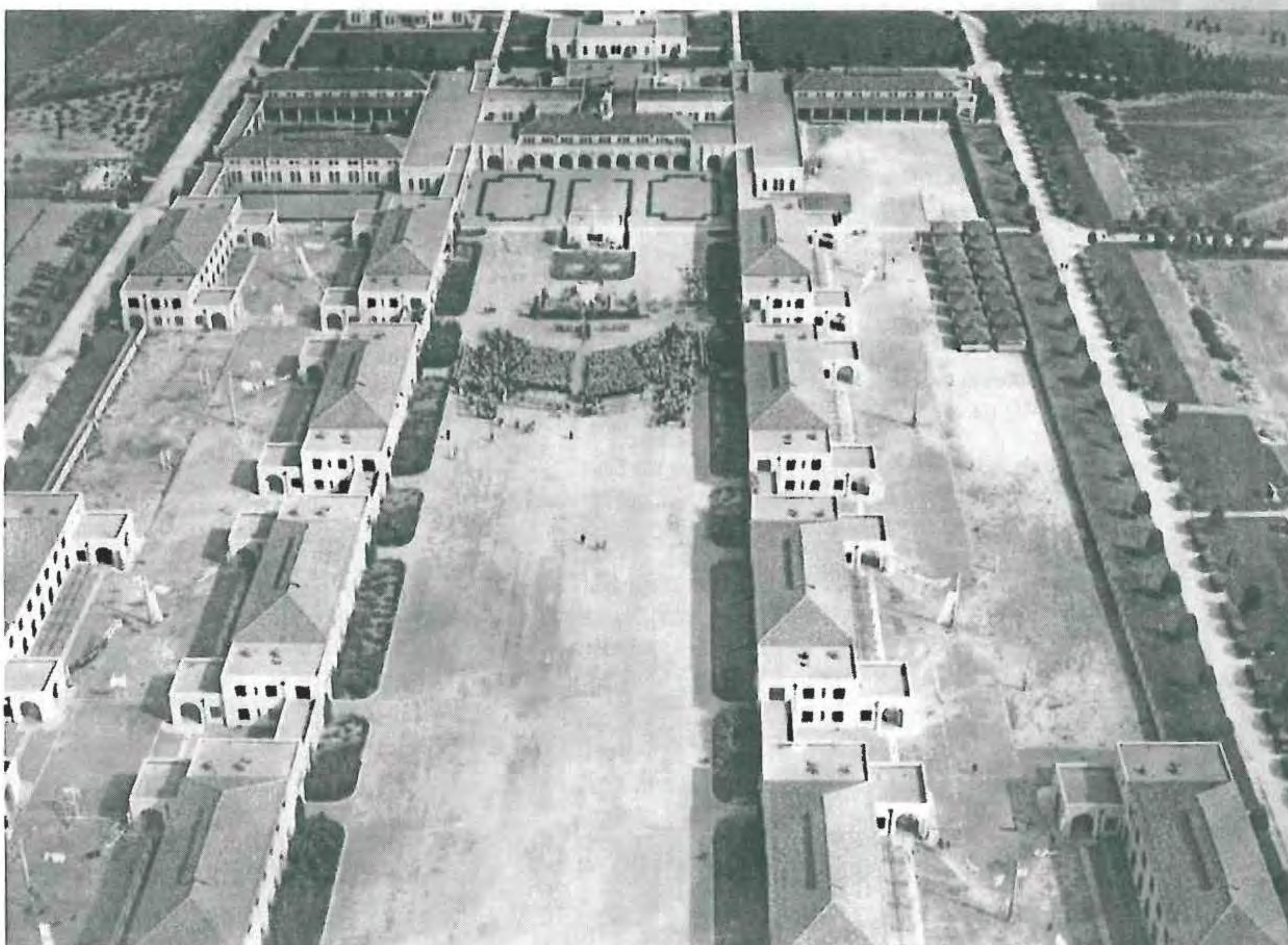
Replacing a metal element with a less durable metal.

Selecting aluminum as a replacement material unless the original is aluminum. Aluminum is usually an inappropriate substitute because it differs from the historic metals in color and dimension. The production of aluminum is particularly energy-intensive, which makes it a poor choice from the sustainable design point of view.

Creating a false historical appearance because the replaced architectural metal feature is based on insufficient historical, pictorial, and physical documentation.

Introducing a new architectural metal feature that is incompatible in size, scale, material, or color.

ROOFS



Aerial photograph of John Paul Jones Court looking northeast during the public dedication ceremony on October 27, 1923. Courtesy of the San Diego Historical Society Photograph Collection.

ROOFS

The roof is an important design element of many historic buildings with its shape; features such as variegated mission roof tile, parapets with vigas, copper flashing, and chimneys; and the size, color, and patterning of the roofing material. In addition, a weather-tight roof is essential to the long-term preservation of the entire structure. Historic roofing reflects available materials, levels of construction technology, climatic conditions, and cost. European settlers used clay tile for roofing as early as the mid-17th century. In some cities, such as Los Angeles and San Francisco, clay was popularly used as a precaution against fire. The Spanish influence in the use of clay tiles is found in the southern, southwestern, and western states. In the mid-19th century, tile roofs were often replaced by sheet metal, or wood shingles which were lighter and easier to obtain. The use of metals for roofing and roof features dates from the 18th century, and includes the use of sheet iron, corrugated iron, galvanized metal, tin plate, copper, lead, and zinc. Awareness of these and other traditions of roofing materials and their detailing will contribute to more sensitive treatment.

Sloping variegated red tile roofs are a distinctive unifying feature at the NTC. Roofs are often viewed from above especially from planes flying into and out of Lindbergh International Airport and homes in Point Loma. The roofs help illustrate Lincoln Roger's interpretation of the prevailing Goodhue designs of the Spanish Colonial Revival style.

The earliest extant NTC buildings date from 1923 and have hip roofs with overhanging eaves usually symmetrical, sometimes with a central vented roof section over the main roof line to allow hot air to escape which aids in the passive cooling of the building.

Utilitarian buildings at the NTC such as maintenance structures, reflect similar stylistic influences. Most of these building have gabled roofs and skylights or monitors to allow light into large interior spaces. Some larger buildings were constructed with flat or nearly flat built-up with minimal overhangs and no decorative details. Likewise, some of the minor service structures, are flat roofed.

Variegated red tile roofs are very distinctive and a unifying feature at Naval Training Center as seen at barracks Building 29. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

ROOFS

The majority of the NTC buildings in the historic district were constructed to Lincoln Roger's plans. Elements of the drainage system such as gutters and downspouts are significant features, although in most cases are utilitarian in design.

When an action is contemplated on NTC roofs, several points should be considered:

- NTC's roofscape is an important component of the landscape. The dominant type is a variegated red mission tile sloping hip roof, with few variations.

- Many repairs have been somewhat haphazard and some roofs show signs of deterioration, most often due to failure of the drainage system, poor maintenance, and poor detailing of successive additions and reroofing. Some portions of the roofs have been replaced with new tile of a uniform color that does not match the original historical variegated red mission clay tile roofs.

The replacement of roofing materials at NTC has conflicted with the extant original roofing. Roofs have also been negatively impacted by the haphazard addition of new rooftop elements such as mechanical equipment. Many flat roofs also have several layers of roofing materials; the additional weight may ultimately cause structural problems.

As the primary protective cover of a building, the roof plays a major role in sustainable design. Maintenance of the roof, and more importantly, its drainage system, the most significant factor in assuring the long-term sustainability of the building as a whole, by protecting other building materials and systems from exposure and water infiltration. The energy-conserving performance of many roofs may be significantly enhanced with the addition of insulation. While well maintained mission clay tile roofs have extremely long life spans; the life of composition roofs should also be maximized by using the best quality products when replacement is necessary. Materials selected for roof drainage systems should be as long-lived as the roofing material itself. Insulating and roofing materials should pose no hazards to the environment, and roofing materials should be recycled where possible or stockpiled for later reuse. The use of existing skylights and clerestories for both natural lighting and ventilation is encouraged.

ROOFS

Clay tile roofing, while very durable, may be damaged due to impact or deterioration of substrate and fasteners. This roof can be preserved by repairing its substrate and fasteners as required, and by selectively replacing damaged tiles. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Recommended

Identify, Retain and Preserve

Identify, retain, and preserve roofs and their functional and decorative features that are important in defining the overall historic character of the building. Important features include the roof shape, decorative features such as chimneys, and roofing materials such as variegated red mission clay tile.

Consider roofing as a system of combined components, from the ridge to splash blocks, including the underlying sheathing and structure. Every element of the roof should be considered as an integral part of the whole.

Maintain elements that unify buildings into groups, such as similar roofs. Most NTC buildings form a part of a cluster or group, and roofs may be an important unifying feature. This unity must be maintained when any replacement, repair, or alteration work takes place on one or more buildings in the group.

Use all available information, including physical evidence and investigation, to determine what roof features are character-defining such as variegated red mission clay tile roofs, monitors, chimneys, and cupolas. (Refer to glossary for definitions.)

Not Recommended

Radically changing, damaging, or destroying roofs which are important in defining the overall historic character of the building such that the character is diminished.

Removing a major portion of the roof or roofing material that is repairable, then reconstructing it with new material in order to create a uniform, or "improved' appearance.

Changing the configuration of a roof by adding new features such as vents, or skylights such that the historic character is diminished.

Stripping the roof of sound historic material such as mission clay tile, or architectural metal.

Applying paint or other coatings to roofing material which historically has been uncoated.

Changing material types, such as replacing a historic variegated red mission clay tile roof with red composition shingles or consistent color red mission tiles.

Removing roof materials when undertaking seismic repairs to a building without considering, and carefully documenting, the historic features of the roof.

Recommended

Evaluate the existing condition of roofs in consideration of their important role in the seismic strength of a building. Many older NTC buildings have serious problems in this area: weak connections with walls below, poor behavior as a diaphragm, and unsupported parapets or cast-stone ornamentation. These need to be analyzed and corrected in order to ensure the buildings' continued survival such as parapet ties to the roof and seismic retrofits of wall connections.

Protect and Maintain

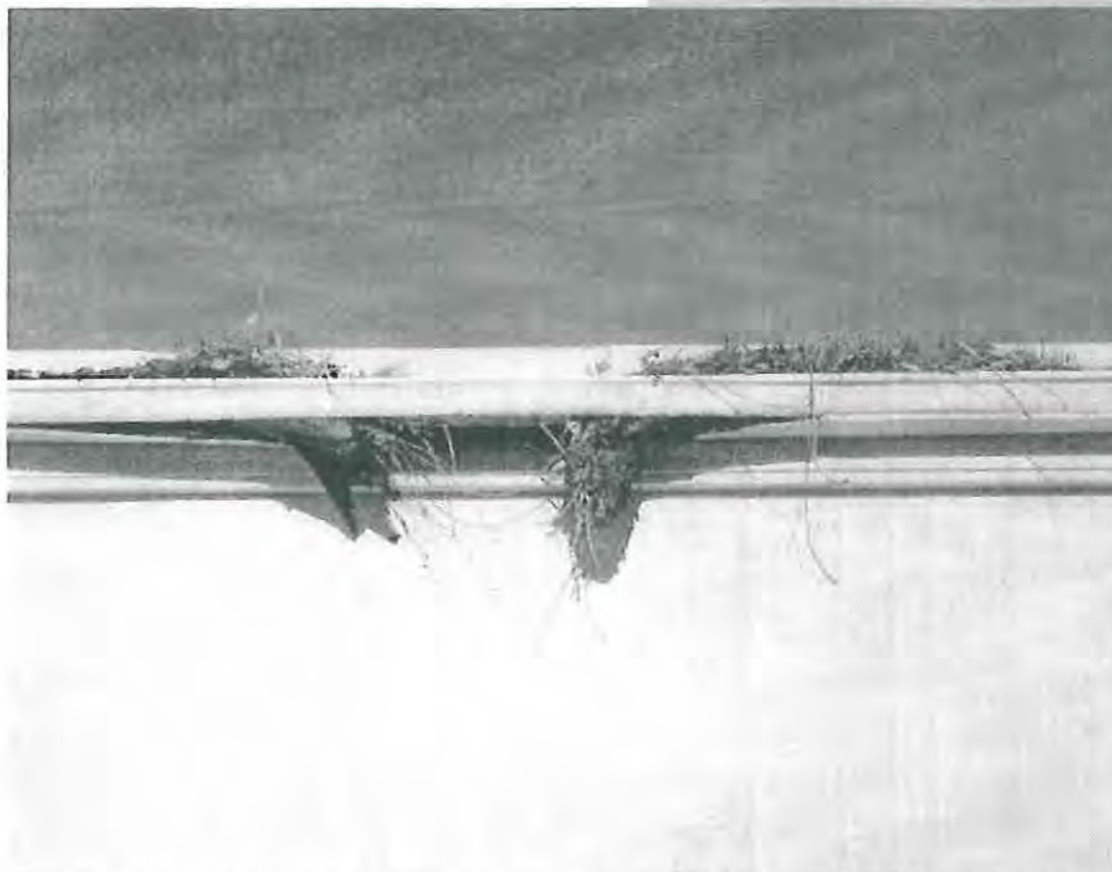
Protect and maintain a roof by cleaning the gutters and downspouts and replacing deteriorated flashing. Roof sheathing should also be checked for proper venting to prevent moisture condensation and water penetration; and to ensure that materials are free from insect infestation.

Provide adequate anchorage for roofing material to guard against wind damage and moisture penetration.

Protect a leaking roof with plywood and building paper until it can be properly repaired.

Regularly inspect and clean gutters. Protective screens may need to be installed in some locations.

Not Recommended



Failing to clean and maintain gutters and downspouts as seen at Building 30, will cause damage to roof fasteners, sheeting and the underlying structure. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

Recommended

Provide support for parapets, finials, chimneys, and other rooftop elements.

Protect building features such as overhanging eaves and decorative brackets with netting or other repellent systems against birds and other animals, as necessary.

Regularly inspect and clean internal drainage systems. Leaks can cause serious damage to building structures and interior finishes.

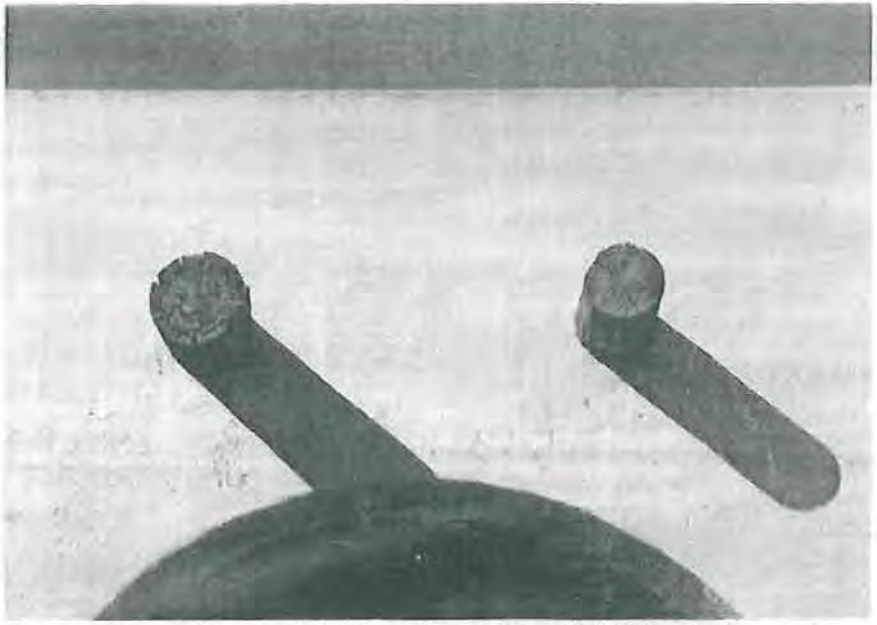
Install unobtrusive removable weatherproof caps over unused fireplace chimneys and service chimneys to protect them from water, debris, and animals.

Not Recommended

Allowing roof fasteners such as nails and clips to corrode so that roofing material is subject to accelerated deterioration.

Permitting a leaking roof to remain unprotected, allowing accelerated deterioration of historic building materials-masonry, wood, plaster, paint, and structural members.

Permitting any break in the protective surface provided by the roof to remain unprotected. NTC's microclimate is frequently damp and deterioration can occur rapidly.



Arcade parapet with extended pole rafters or "vigas" defining the flat roof behind the parapet. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Recommended

Repair

Repair a roof by reinforcing the historic materials which comprise roof features. Repairs will also generally include limited replacement in kind or with compatible substitute materials of extensively deteriorated or missing parts of features when there are surviving prototypes.

Use only compatible metals, or proper isolating methods, in making roof repairs; galvanic action can cause deterioration of metal roofing, fasteners, and flashing.

Inspect built-in gutters at NTC frequently; they are vulnerable to leaks due to building movement. Patching should be done when necessary with an appropriate, flexible, ultraviolet resistant material. Asphalt patches should be removed and proper repairs made.

Repair historic flashing in kind where possible. Flashing failure is a frequent cause of leaks and damage to the roof structure and the building interior, as well as to exterior masonry.

Repair damaged, disconnected, and missing gutters and downspouts.

Not Recommended

Removing important elements such as chimneys.

Replacing an entire roof feature when repair of the historic materials and limited replacement of deteriorated or missing parts are appropriate.

Failing to reuse intact variegated red mission-clay tile when only the roofing substrate needs replacement.

Using a substitute material for the replacement part that does not convey the visual appearance of the surviving parts of the roof or that is physically or chemically incompatible.

Overloading the roof support system when repairing or replacing roof elements, when performing seismic strengthening, or introducing new elements such as antennas or mechanical equipment.

Patching a tile roof with tar, mastic, metal, or other inappropriate material.

Patching a built-in gutter with asphalt, which cracks with movement and corrodes some metals.

Undertaking roof repair without assessing the condition of underlayment and structure below. Making repairs to damaged interior surfaces prior to resolving roof problems.

Recommended

Replace

Replace in kind an entire feature of the roof that is too deteriorated to repair if the overall form and detailing are still evident using the physical evidence as a model to reproduce the feature. Examples can include large sections of roofing or a chimney. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.

Use existing historical sources and physical evidence to determine the details of a deteriorated feature. Many NTC buildings were constructed as groups of identical structures, and provide examples that can serve as models for replacing the feature.

Replace a seriously deteriorated roof in conjunction with necessary seismic repairs to the underlying structure. Plywood shear panels could be used over tongue-and-groove wood ceiling members to help resist seismic forces as long as nails and other fasteners cannot be seen.

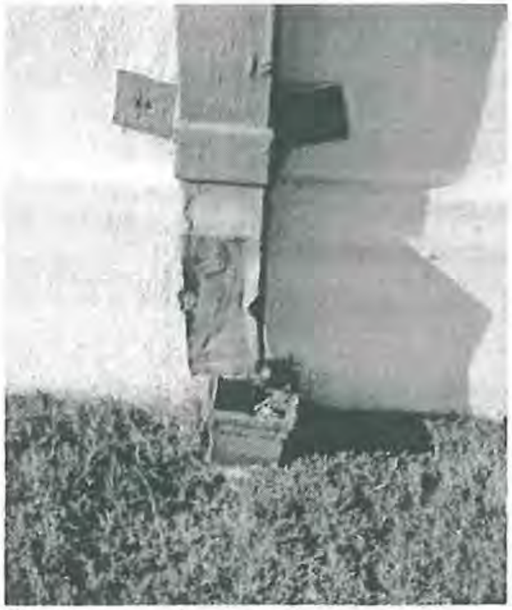
Replace roofing material (such as mission clay tile), when partial replacement of a historic roof is required, with material that matches the original in color, texture, pattern, profile, and dimension. Potential sources for replacement material should be considered early in a project to allow for delivery time. Salvaged material should be used for replacement whenever possible.

Not Recommended

Removing a feature of the roof that is beyond repair, such as a chimney and not replacing it, or replacing it with a new feature that does not have the same appearance.

Replacing built-in gutters or internal downspouts with new gutters at roof edge or exterior downspouts.

Replacing copper flashing with galvanized sheet metal or other material.



The downspout has been disconnected from the drain. The drain has become clogged with debris. This situation needs to be corrected to prevent water damage to the plaster walls and foundation. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

RECOMMENDED

Locate replacement tiles on rear-facing or inconspicuous roof surfaces, and reuse original tiles in prominent locations.

Carefully record details and retain ornamental elements when replacement of roofing is necessary. Salvage removed materials.

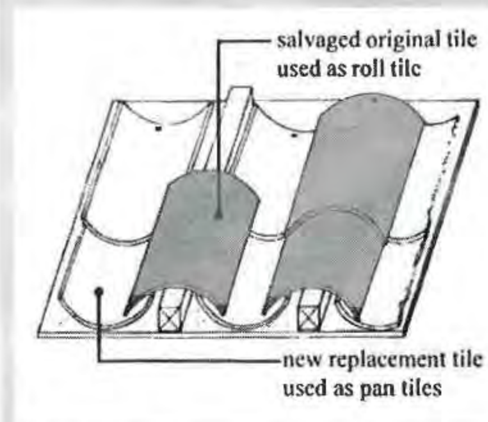
Number or group clay tiles so they may be reinstalled in their original location and pattern when replacing tile fasteners, mission clay tile normally has a longer life-span than its fasteners.

Construct all new roofs of the best quality materials available, to ensure long life and low maintenance. Built-up and composition roofing have limited life spans. Roofs should also conform to principles of sustainable design, making use of recycled, nontoxic, locally produced materials whenever possible.

Use metals for flashing, gutters, and downspouts that are compatible in quality and longevity with roofing materials, such as copper with clay tile.

Introduce or increase insulation where possible at the time of reroofing. All new work should attempt to improve the building's thermal insulative performance.

Original barrel tile roof at the rear facade of Building 25. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.



Drawing courtesy of Architect Milford Wayne Donaldson, FAIA..

In most cases, replacement tiles should be located on rear-facing roof surfaces. In the case of the barrel tiles shown here, place new tiles on the bottom (pan) and original tiles on top (roll), as the top ones are more visible and will match the color and texture of the rest of the roof. The first row of tiles, including the bottom, should be original tiles.

ROOFS

Built-in downspouts are particularly vulnerable to deterioration because they are within the roof or wall structure. Their deterioration can go unnoticed until it leads to serious problems. Adding new exterior roof drain pipes, as shown at Building 30, detracts from the Building's historic appearance. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Recommended

Design for Missing Historic Features

Design and construct a new feature when the historic features such as a chimney is completely missing. It may be an accurate restoration using historical, pictorial, and physical documentation; or a new design that is compatible with size, scale, material, and color of the historic building.

Compare a building with other similar buildings when possible to determine what original historic features are missing, and use them as models for reconstruction of original elements.

Replace composition roofs with different materials only when the composition roofing is not historically significant and when there is clear evidence of the original materials and details. Most of the NTC buildings have built-up roofs with minimum slope for drainage . Modern roof protection systems should be considered as replacements but should match the original built-up membrane roof in color and texture. Replacement material and detailing should be based on historic research, future performance, and an understanding of the physical history of the building.

Verify historic roofing using physical evidence, such as construction shadows. If there is no clear evidence of the original roofing material or if a later roofing material has gained significance, the material should be replaced in kind.

Not Recommended

Creating a false historical appearance because the replaced feature is based on insufficient historical, pictorial, and physical documentation.

Introducing a new roof feature that is incompatible in size, scale, material, or color.

Assuming that buildings of a particular period always have similar details. At NTC, the Spanish Colonial Revival was the dominate architectural style, but there were several periods of construction. Careful documentation is necessary before reintroducing any apparently missing feature.

Recommended

Alterations/Additions for New Use

Install required mechanical and service equipment on the roof such as air conditioning, transformers, or solar collectors when required for the new use so that they are inconspicuous from the public realm and do not damage, obscure, or overwhelm character-defining features.

Plan for new equipment or antennas in the context of the overall roofscape. Most buildings can be seen from many vantage points, including from above at the Point Loma residential hillsides and over the Lindbergh International Airport runway. This complicates the task of locating equipment in inconspicuous locations.

Locate equipment in another location when an inconspicuous location on a roof is not possible. Cooling towers and condensing units may need to be placed on the ground in a new structure isolated from the historic buildings.

Additions to a historic building need to be compatible in form, materials, and details with the historic roof, but also to be recognizable as a modern addition. When a new element, such as a solar collector or antenna must be added to a roof, install it in such a way as to be reversible and could be removed in the future without damage to the historic roof.

In some cases, screening structures could be used to diminish the visual impact of roof mechanical equipment at flat roofs. Color should be considered and the screening should reflect a secondary plaster parapet.

Not Recommended

Installing mechanical or service equipment so that it damages or obscures character-defining features, or is conspicuous from the public realm.

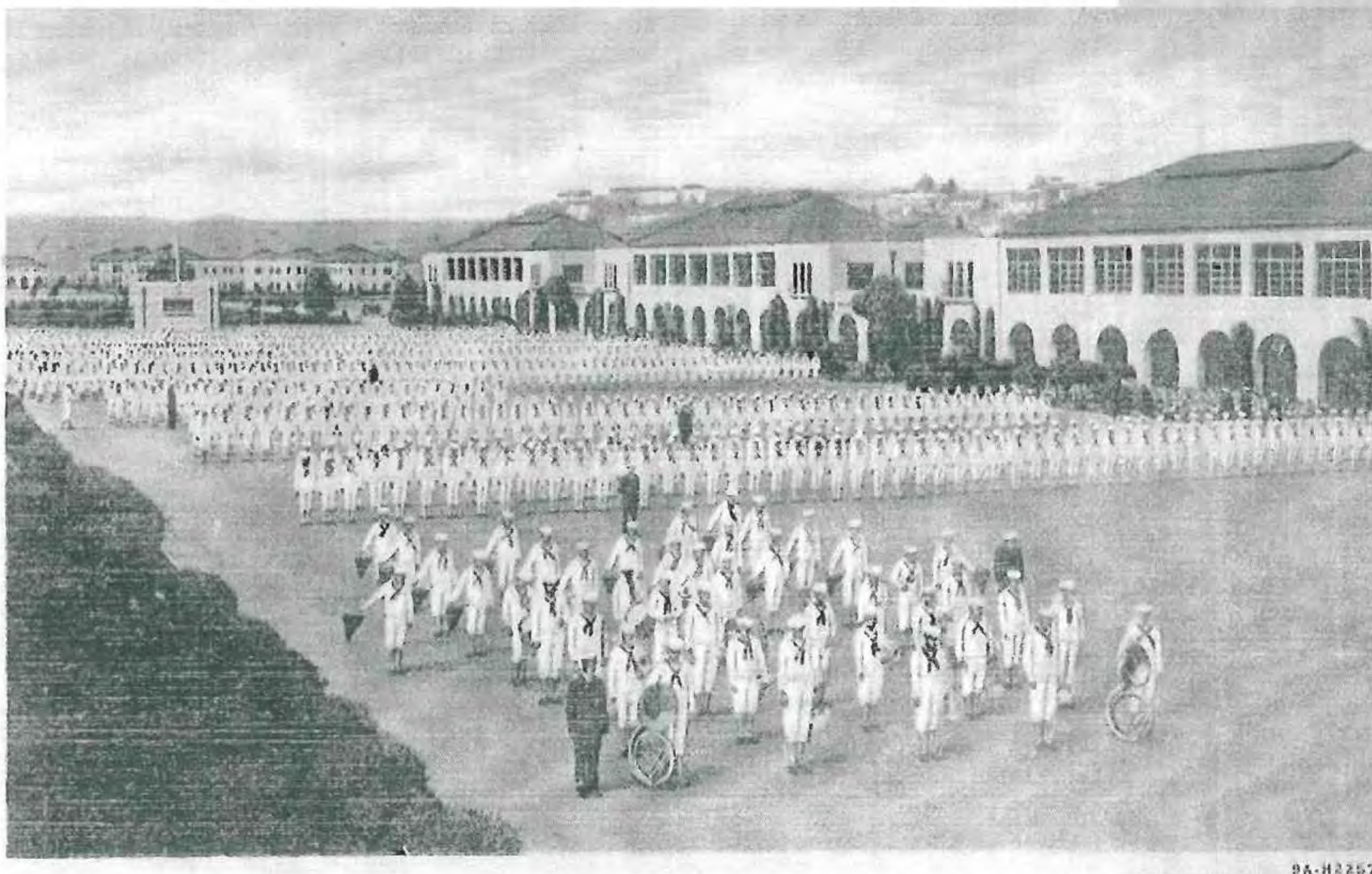
Radically changing a character-defining roof shape or damaging or destroying character-defining roofing material as a result of incompatible design or improper installation techniques.

Assuming that the normally simple roof features of utilitarian buildings can be altered. Such features are character-defining and although utilitarian buildings are frequently good candidates to be adapted to new uses, their original qualities should be maintained.

Raising a historic character-defining roof to add floor area or volume to a building. This is generally unacceptable.

The addition of mechanical equipment that disrupts the clean parapet roof line, should be discouraged within the historic district. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

WINDOWS



Aerial view of John Paul Jones Court looking southwest with barracks Buildings 3, 4, and 5 on the right hand side, ca. 1930s. Courtesy of Architect Milford Wayne Donaldson, FAIA, historic postcard collection.

WINDOWS

Technology and prevailing architectural styles have shaped the history of windows in the United States, starting in the 17th century with wooden casement windows having tiny glass panes seated in lead canes. From the transitional single-hung sash in the 1700s to the true double-hung sash later in the same century, these early wooden windows were characterized by the small panes, wide muntins, and the way in which decorative trim was used on both the exterior and interior of the window. As the sash thickness increased by the turn of the century, muntins took on a thinner appearance as they narrowed in width but increased in thickness according to the size of the window and design practices. Regional traditions continued to have an impact on the prevailing window design, such as with the long-term use of traditional window designs used by Lincoln Rogers in his interpretation of Goodhue's Spanish Colonial Revival architecture.

As one of the few parts of a building serving as both an interior and an exterior feature, windows are nearly always an important part of the historic character of a building. In most buildings, windows form a considerable amount of the historic fabric of the wall plane and thus are deserving of special consideration in a rehabilitation project.

There are several window types and styles are used consistently in all buildings in the NTC Historic District. Multi-pane, double-hung wood windows, make up the fenestration on the majority of the buildings. Casement windows are also used in the barracks and other buildings. The buildings built in the 1940s had wood frame double and triple sash awning type windows. Many of the windows have been replaced with modern aluminum windows.

The rhythm and spacing of the wood windows emphasize Goodhue's Spanish Colonial Revival influence and are an essential component of Naval Training Center architecture. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Some generalizations may be made about windows and fenestration at the NTC:

- Wood double-hung sash is most common.
- Windows, frames, and trim reflect the dominant styles of the Spanish Colonial period, but tend to be modest in scale and simple in detailing.
- Fenestration is generally regular and symmetrical.
- The use of daylight is an important feature of many interiors.

Extensive window sash replacement has occurred in the NTC Historic District, primarily evident in the replacement of windows in the historic district with aluminum windows, an "upgrade" commonly found on military buildings. Another common problem results from perhaps too much attention—paint buildup interfering with the operation of the sashes. Likewise, frequent painting has rendered some historic hardware nonfunctional on the interior. In some cases, hardware has been entirely removed and the window fixed shut, or replaced with new, often inappropriate, hardware.

A specially designed wood window at the landing of Officer's Quarters "A" allows a shower of light to flood the interior. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, March 2, 2000.

REPAIR CLASS I: ROUTINE MAINTENANCE
- some degree of interior and exterior paint removal
- removal and repair of sash, including reglazing if necessary
- repair of frame
- weather stripping and reinstallation of the sash
- repainting

REPAIR CLASS II: STABILIZATION
- Repairing partially decayed of weathered wood using putty or epoxy fillers then sanding the surface, priming and painting to match the surrounding surfaces.
- Removal of moisture infiltration and/or wood destroying pest infiltration

REPAIR CLASS III: SPLICES & PART REPLACEMENT
- Replacing severely deteriorated items with new matching parts
- Splicing new wood into existing members

Following an inspection of the window the scope of the necessary repairs should be evident. Generally the repairs necessary to return the window to "like new" condition will fall into one of the three classes listed above. Chart courtesy of National Park Service and Architect Milford Wayne Donaldson, FAIA.

WINDOWS

Window sashes have often been removed or altered for the installation of fans, vents, or unit air conditioners. NTC's microclimate has not made the addition of storm windows necessary, but exterior insect screens have been installed on selected windows in both residential and nonresidential buildings. All of these alterations and additions appear to have been performed as needed, without uniform standards for location or design.

The primary cause of window deterioration is rain driven against and into windows, and standing water on brick and plaster sills. At NTC, this condition is exacerbated by extended periods of damp weather, which prevent windows from drying out and encourage expansion and rot. Movement due to seismic activity and settlement over the years, paint buildup, broken glazing, deteriorated putty, and in some cases interior condensation, have contributed to window deterioration.

Windows provide character not only to the building's exterior, but also to its interior spaces by admitting natural light, framing views, and providing architectural features. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Windows admit light and air to a building. In considering sustainability, both of these functions must be maximized, but in a controlled manner. Admitting natural light to all spaces, while limiting ultraviolet radiation and excessive heat gain through the use of appropriate shading devices, is one important step. Weather stripping and regular maintenance will also increase thermal efficiency. In some cases, the installation of insulating or low-E glazing or glass-applied film may be an appropriate energy-saving device. The NTC's climate rarely requires air conditioning; well maintained, operable windows will be an important and preferred component in creating an efficient ventilating system for most buildings. However, in most areas of the historic core the sound from the jet engine is so great, it is anticipated that most buildings, following rehabilitation, will have new heating and air conditioning and the windows will remain closed. Replacement windows and components, when required, should be constructed of environmentally sound materials of the highest quality.

Recommended

Identify, Retain, and Preserve

Identify, retain, and preserve windows and their functional and decorative features that are important in defining the overall historic character of the building. Such features can include frames, sash, muntins, glazing, sills, heads, hood molds, paneled or decorated jambs and moldings, and interior and exterior shutters and blinds. (Refer to glossary for definitions and illustrations.)

Conduct an in-depth survey of the conditions of windows early in rehabilitation planning so that repair and upgrade methods and possible replacement options can be fully explored.

Consider windows as components of the principal exterior facade and its contribution to an interior space when determining its historic significance.

Preserve all remaining original glazing. Historic glass often has distortions and imperfections that are not found in modern glass and is often a character-defining element.

Evaluate the overall condition of materials to determine whether more than protection and maintenance are required, for example, whether repairs to windows and window features are needed.

Not Recommended

Removing or radically changing windows which are important in defining the historic character of the building such that the character is diminished.

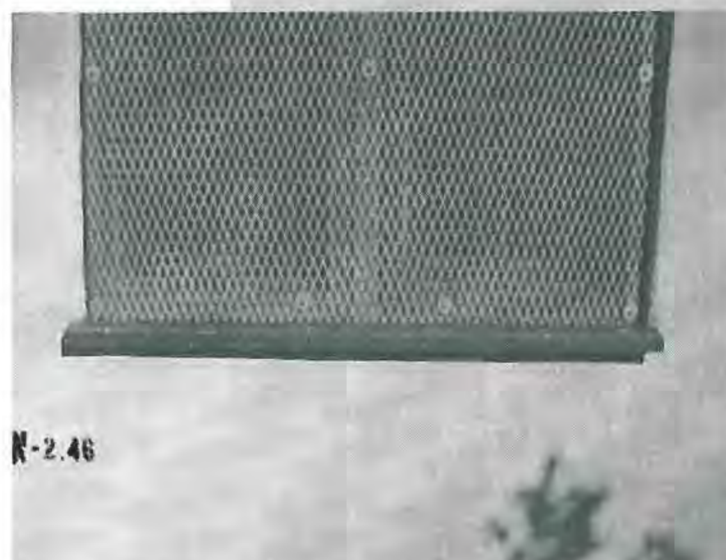
Changing the number, location, size, or glazing pattern of windows, through cutting new openings, blocking in windows, or installing replacement sash that does not fit the historic window opening.

Changing the historic appearance of windows through the use of inappropriate designs, materials, finishes, or colors which noticeably change the sash, depth of reveal, or muntin configuration; the reflectiveness and color of the glazing; or the appearance of the frame.

The use of tinted glass in NTC Historic District is not appropriate.

Obscuring historic window trim with metal or other material.

Replacing windows solely because of peeling paint, broken glass, stuck sash, or air infiltration. These conditions, in themselves, are not indications that windows are beyond repair.



Original window has been obscured by temporary protective metal screen. Remove metal screen and rehabilitate historic wood windows. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Recommended

Maintain or restore the mechanical means for operating industrial sash in clerestories or other inaccessible locations where possible. If new, automated means are required, the original system should be left in place.

Provide adequate protection of materials on a cyclical basis such that deterioration of the windows does not result.

Preserve transoms in operable condition. Transoms are frequently character-defining features of corridors and interior spaces, providing natural light and ventilation to such spaces.

Protect and Maintain

Protect and maintain the wood and architectural metal that comprises the window frame, sash, muntins, and surrounds, through appropriate surface treatments such as cleaning, limited paint removal, and replication of protective coating systems.

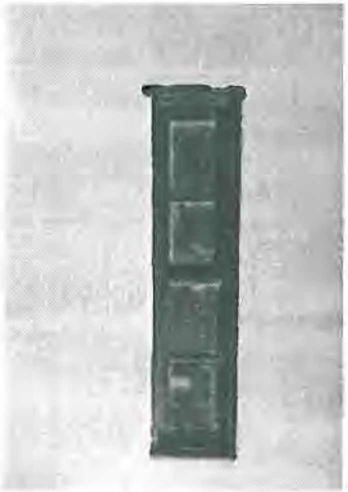
Make windows weather tight by recaulking and replacing or installing weather stripping. These actions also improve thermal efficiency.

Not Recommended

Removing any existing textured, colored, or early wire glass.

Retrofitting or replacing windows rather than maintaining the sash, frame, and glazing.

Failing to undertake adequate measures at NTC to ensure the protection of historic windows, such as the entire replacement of wood windows with aluminum windows.



Historic wood window at Building 10, with small double-hung windows should be maintained and not replaced with aluminum windows. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Recommended

Keep glazing clear to maximize the natural light source.

Preserve operating systems for historic windows, such as weights on double-hung windows, repairing or replacing components as needed.

Repair all broken or missing glass immediately, as it can allow entry of water, pests, and vandals.

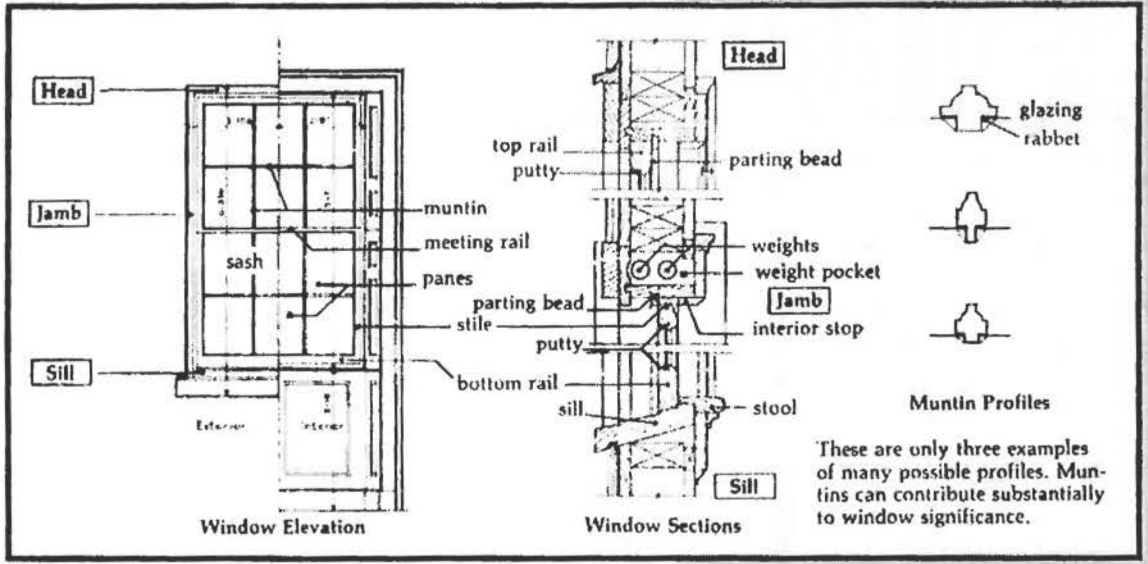
Where fire code requires, install safety or wire glass into existing window sashes, carefully retaining frame and hardware components. Salvage original glass for later reinstallation or use elsewhere in the building. Where irreversible damage to significant historic elements would occur, refer to the State Historical Building Code for alternative means of mitigating fire hazards, it offers unique solutions to code compliance. The State Historical Building Code can also mitigate using the existing glass at pedestrian openings as appropriate with the use of the building instead of installing new safety glass.

Remove rust and paint from steel windows by hand scraping. Sandblasting may be used to remove heavy corrosion, with careful protection of glass and surrounds.

Not Recommended

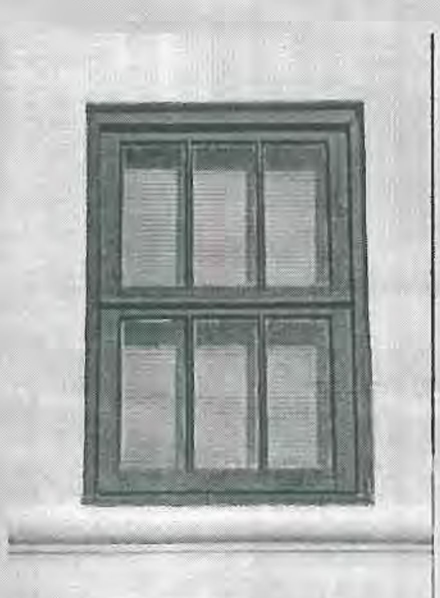
Painting over windows, skylights, or clerestories to limit the entry of daylight for the new building use.

Replacing an entire window when repair of materials and limited replacement of deteriorated parts are appropriate.



This drawing illustrates the major components of wooden double hung windows commonly used at NTC. Typical damage may include cracked glass or muntins, broken weight cords, rotten jambs and sills, loose or missing putty, peeling paint, paint on the glass panes, sashes painted shut, and cracked frames. Drawing courtesy of National Park Service.

WINDOWS



Use of removable devices such as shades curtains, or blinds, as shown here, are preferred for control of daylight. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Recommended

Repair

Repair window frames and sash by patching, splicing, consolidating, or otherwise reinforcing. Such repair that are extensively deteriorated or missing when there are surviving prototypes such as molds, sash, sills, and interior or exterior shutters and blinds. Window panes may be double glazed as long as the glazing is clear and replacement does not alter existing window material and form, especially creating the necessity to manufacture new sashes.

Repair defective sills to permit positive drainage. Poor design of the exterior window sill is a frequent problem; window deterioration usually begins on horizontal surfaces and at joints where water collects, saturating the wood.

Reuse serviceable window hardware such as brass sash lifts and sash locks.

Not Recommended

Using substitute material for the replacement part that does not have the appearance of the surviving parts of the window or that is physically or chemically incompatible.

Window glazing has been painted for daylight control. The use of shades, curtains, and other removable devices is preferred. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

RECOMMENDED

Repair of historic windows is always preferred to replacement. Usually the sill must be replaced first, then lower sash parts. Splicing can be an effective method of repairs for wood window elements.

If replacement is required, limit it to severely deteriorated components.

Clean and oil hardware that has been painted over; in most cases, repair, rather than replacement, should be possible.

Remove paint from painted skylight and clerestory glazing. Remove built-up paint that causes sashes to be inoperable.

Remove earlier repairs that have been insensitive to the historic features and materials, and repair according to accepted standards.

WINDOWS

RECOMMENDED

Replace

Replace in kind an entire window that is too deteriorated due to dry rot and termites to repair, using the same sash and pane configuration and other design details. If the same kind of material is not technically or economically feasible, a compatible substitute material may be considered. Wooden replacement windows are practical and the design detail of the historic windows can be matched.

Replacement may be the only feasible option when substantial structural damage to a window has occurred. Choose a replacement window with particular care. Ideally the new window should be an exact match of the old one. If this is not possible, carefully consider all of the window's characteristics, both interior and exterior, and its importance in the facade, when selecting a replacement.

The aluminum windows that currently exist can remain. However, if replacement of an aluminum windows is required in the future, it should be replaced with an in kind historically correct wood window.

Replacement or installation of caulking and weather-stripping around windows is permissible.

NOT RECOMMENDED

Removing a character-defining window that is beyond repair and blocking it in; or replacing it with a new window that does not have the same appearance.

Replacing historic windows simply to enhance the energy conservation performance of a building.

Replacing windows within the historic district with aluminum windows should not be permitted.

The building reveals an altered window that is now a door. There is clear evidence of the original window style form, materials, and color. Reconstruction of the altered window is appropriate. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

RECOMMENDED

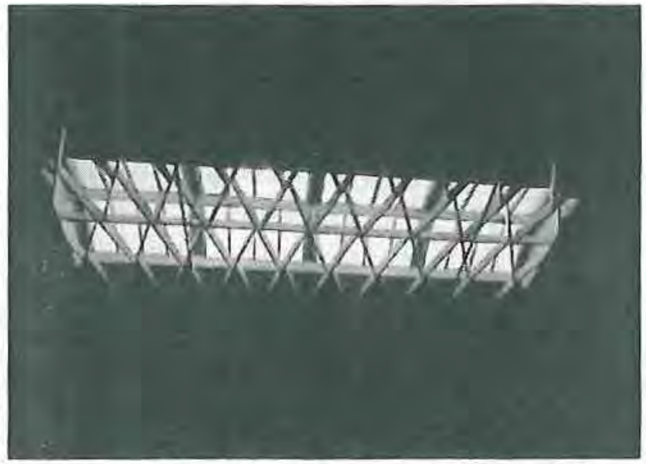
Always keep replacement to a minimum. Where sash replacement is called for, attempt to retain the window frame, hardware, and trim.

Design for Missing Historic Features

Design and install new windows when the historic windows (frames, sash, and glazing) are completely missing. The replacement windows may be an accurate restoration using historical, pictorial, and physical documentation; or they may be a new design that is compatible with the window openings and the historic character of the building.

Restore windows that were blocked in or boarded up after the historic period, where possible, and where adequate documentation exists. The arcades at the second level of the barracks were infilled in the early 1930s and could remain in their present configuration. Depending upon the adaptive reuse of the barracks, the infill windows may be removed if the current windows are aluminum. Original 1930s wood windows are not to be removed.

NOT RECOMMENDED



Skylights and clerestory windows allow the interior to receive natural sunlight and should not be covered. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Creating a false historical appearance because the replaced window is based on insufficient historical, pictorial, or physical documentation

Introducing a new design that is incompatible to the historic character of the building.

Reopening blocked-up windows and reconstructing new windows without adequate historic documentation.

WINDOWS

Recommended

Alterations / Additions for the New Use

Design and install additional windows on rear or other non-character-defining elevations if required by the new use. New window openings may also be cut into interior party walls. Such designs should be compatible with the overall design of the building, but not duplicate exactly the fenestration pattern and detailing of a character-defining elevation.

Provide a setback in the design of dropped ceilings when they are required for the new use to allow for the full height of the window openings.

Consider the effect of any interior changes on historic windows and trim and the appearance of these changes from outside the building (as seen through windows).

Assess existing fenestration. Some of the utilitarian NTC buildings may not have adequate fenestration for human occupancy if rehabilitated. Additional fenestration may be appropriate if carefully located in secondary facades, placed on roofs, or incorporated into existing door openings such as on Building 178.

Some arches have been filled with modern aluminum windows, stucco infill, and dropped ceilings visible from the outside. These modifications are not in character with the historic buildings. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Not Recommended

Installing new windows, including frames, sash, and muntin configurations, that are incompatible with a building's historic appearance or obscure, damage, or destroy character-defining features.

Inserting new floors or furred-down ceilings which cut across the glazed areas of windows so that the exterior form and appearance of the windows are changed.

Planning for a new building use that will require the addition or blocking of windows on primary facades or in any locations that will compromise the building's historic character.

Constructing new interior walls, partitions, or floors that intersect windows, damaging their historic fabric on the interior, and creating a negative impact on the windows appearance from the exterior.

Removing historic windows partially or completely or damaging them to install through-wall mechanical equipment, and vents.

Recommended

Consider an appropriate solution where noise from Lindbergh International Airport is a problem. Weatherization, maintenance of windows, and the installation of curtains or interior windows or shutters will alleviate some noise, but in some locations and for certain uses, additional measures such as new glazing may be necessary. Laminated glazing is preferable to double or triple glazing because the existing sashes may not accommodate the additional thickness.

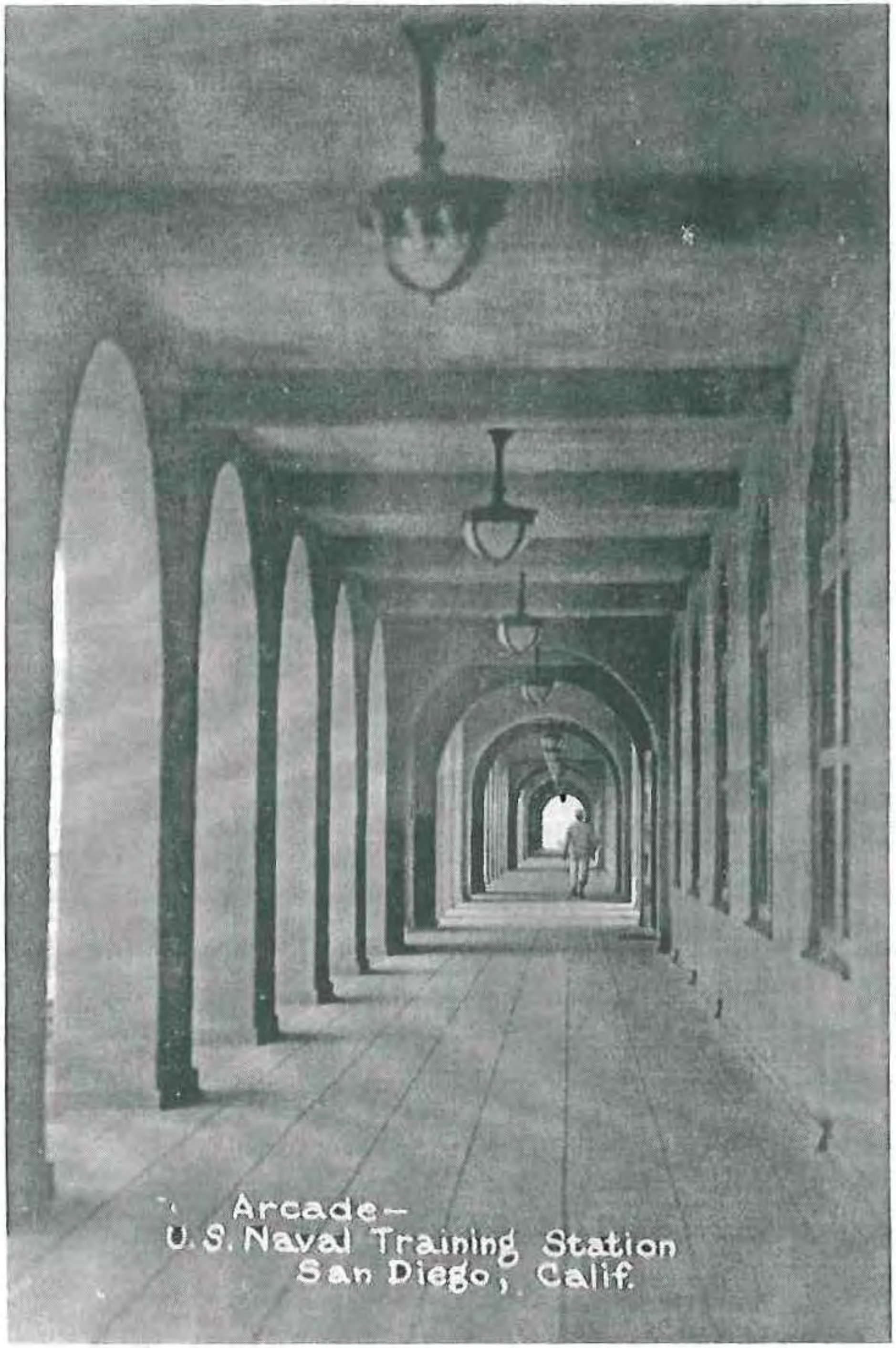
Design details of modifications so that they have a minimal visual impact on the historic appearance of a building and so they can be removed without damage to the historic material. These changes can have an enormous impact on window appearance; however, some methods do allow modification of some types of historic windows.

Address energy conservation (the reduction of total heat gain or loss through windows) by changing to insulated glazing when new windows are required, adding exterior or interior shading devices, or when appropriate, applying clear solar control film directly to window glass. Interior blinds, curtains, and other treatments can also be effective, and can be detailed in such a way that there is no damage to the original building. In all cases the appropriate treatment will depend on the type, location, and significance of the window and its orientation.

Not Recommended

Furring of interior walls for insulation or to accommodate modern improvements which negatively impact the interior character-defining elements of a historic opening.

High arched windows allow a large amount of light to the interior of the building and provide a pleasant environment. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.



Photograph of connected arcades that linked the buildings at the Naval Training Station, ca. 1923. The historic light fixtures in the arcades have all been replaced. Courtesy of the San Diego Historical Society Photograph Collection.

ENTRANCES AND ARCADES

ENTRANCES AND ARCADES

This decorative door surround at Building 208 is an important character-defining feature for the building entrance. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

Entrances and arcades are quite often the focus of historic buildings, particularly on primary elevations. Together with their functional and decorative features such as doors, steps, balustrades, pilasters, and entablature, they can be extremely important in defining the overall character of a building. In many cases, arcades are energy-saving devices, shading southern and western elevations.

Due to the restrained ornamental styles of NTC buildings, arcades become prominent elements and are nearly always primary character-defining features that reflect the formality of the military. Entrances and arcades are prevalent throughout the NTC Historic District. They provide building functions such as entries and outside rooms and help define the style of the buildings. The arcades also function in the larger context of the site, visually unifying a group of buildings around plazas or courts. Many buildings also have side and rear porches. Original doors and entrances in the Historic District are character defining features.

Many of the Spanish Colonial Revival style buildings have prominent doors that are often set into round arch openings and some have wrought-iron balconies or details.

Some of the balconies at the NTC have been altered. The upper balconies on some of the barracks were enclosed very early in the 1930s. In the past years a portion of the wood windows were replaced with modern aluminum windows.

As elements of sustainable design, balconies function as energy-saving devices. While open balconies block solar heat gain, enclosed balconies allow solar heat gain, offer shelter against the cold wind, and reduce heat loss from the building interior. Functioning as transition spaces from the outside that help to keep the building clean, enclosed balconies also help protect interior finishes.

ENTRANCES AND ARCADES

Recommended

Identify, Retain, and Preserve

Identify, retain, and preserve entrances-and their functional and decorative features such as doors, sidelights, entablatures, balustrades, and stairs that are important in defining the overall historic character of the building.

Identify the importance of alterations prior to considering changes. The NTC has a significant number of porches that have been enclosed.

Retain and preserve formal entrances even if they no longer provide primary pedestrian or vehicular access to the structure.

Evaluate the overall condition of materials to determine whether protection and maintenance are required.

Identify arcade maintenance problems caused by general wear or by inappropriate changes and find solutions which are compatible with the character-defining features. Arcades at the NTC require maintenance due to their frequent exposure to moisture and traffic. Maintain existing materials with protective systems appropriate to those materials.

Not Recommended

Removing or radically changing entrances and arcades which are important in defining the overall historic character of the building such that the character is diminished.

Stripping entrances and arcades of historic material such as wood, cast iron, and plaster.

Removing an entrance or arcade because the building has been reoriented to accommodate a new use.

Cutting new entrances on a primary elevation.

Altering utilitarian or service entrances so they appear to be formal entrances by adding paneled doors, fanlights, and sidelights.

The arcade is an important design feature used to unify the buildings. The arcade constantly receives sunlight providing ever changing shadows through the day. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

ENTRANCES AND ARCADES

Entrances to the Mess Hall and Officer's Quarters maintain consistent design features throughout Naval Training Center. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Recommended

Protect and Maintain

Protect and maintain the plaster, wood, and architectural metal of entrances and arcades through appropriate surface treatments such as cleaning, limited paint removal, and reapplication of protective coating systems.

Provide adequate protection to materials on a cyclical basis such that deterioration of entrances and arcades results.

Distinguish between historic materials and inappropriate past maintenance interventions. Past maintenance procedures at NTC have often been haphazard and destructive to preservation practices, utilizing inappropriate materials.

Not Recommended

Failing to undertake adequate measures to ensure the protection of historic entrances and arcades such as removing historic doors and replacing them with aluminum door frames.

Entrance to the Mess Hall in Building 30. The historic doors have been removed and replaced with aluminum frame doors (this is not recommended). Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Recommended

Repair

Repair entrances and arcades by reinforcing the historic materials. Repair will generally include the limited replacement in kind or with compatible substitute material of extensively deteriorated or missing parts of repeated features where there are surviving prototypes.

Repair deteriorated elements of arcades, such as decking, vigas (rafters), or roofing, rather than replacing the entire arcade. In many cases, only a small part of an element needs to replaced, such as one or two vigas instead of an entire row of vigas.

Improve the structural capacity of an arcade, where needed, by adding additional concealed supports and shoring existing members, rather than replacing entire structural systems.

Not Recommended

Replacing an entire entrance or arcade when the repair of materials and limited replacements of parts are appropriate.

Using a substitute material for the replacement parts that does not have the appearance of the surviving parts of the entrance and arcade or that is physically or chemically incompatible.

The second story balconies in the barracks Buildings 27, 28, and 29 were enclosed shortly after completion of the buildings. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

ENTRANCES AND ARCADES

Entrances can be architecturally compromised by the introduction of trash receptacles and other non-complimentary items. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Recommended

Replace

Replace in kind an entire arcade or entrance that is too deteriorated to repair if the form and detailing are still evident-using the physical evidence as a model to reproduce the feature. If using the same kind of material is not technically or economically feasible, then compatible substitute materials may be considered.

Check the archival sources as well as available physical evidence before designing a replacement entrance or arcade. Many resources exist for NTC buildings, including historic photographs and original drawings.

Give careful considerations to the design and location of the hardware, security equipment, signage, and lighting, so as not to detract from the character-defining features.

Design for Missing Historic Features

Design and construct a new entrance or arcade when the historic entrance or arcade is completely missing. The new feature may be a restoration based on historical, pictorial, and physical documentation; or a new design that is compatible with the historic character of the building.

Use the many resources available to guide the design of missing features. In addition, many buildings retain physical evidence of missing details.

Not Recommended

Removing an entrance or arcade that is beyond repair and not replacing it; or replacing it with a new entrance or arcade that does not have the same appearance.

Changing the doors, door openings, surrounds, hardware, or other character-defining elements; or changing the location of the doors.

Creating a false historical appearance because the replaced entrance or arcade is based on insufficient: historical, pictorial, and physical documentation.

Introducing a new entrance or arcade that is incompatible in size, scale, material, or color.

ENTRANCES AND ARCADES

Recommended

Take particular care with additions to utilitarian buildings, where contemporary elements may be confused with the simple historic elements.

Retain the ceremonial functions of an original primary entrance, even when traffic patterns have shifted. In the past, the rear entrance frequently became the primary entrance, usually as a result of a change in the vehicular access to a building. Some of these modifications have been done sensitively; others have diminished the building's historic character. In the future, the rear entrance should remain visually secondary to the original front entrance. When it is necessary to replace the primary entrance with an entrance on another facade, consider linking the original front entrance with the proposed primary entrance by an interior space.

New Materials

Prior to the installation of security devices, including dead bolts, door locks, window latches and door peep holes, careful consideration of location, retention of historic hardware, and compatibility with historic materials, color, design, and style must be determined.

Not Recommended

New or contrived entrances are not appropriate. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Main entrance arches provide welcoming entry to a building. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

ENTRANCES AND ARCADES

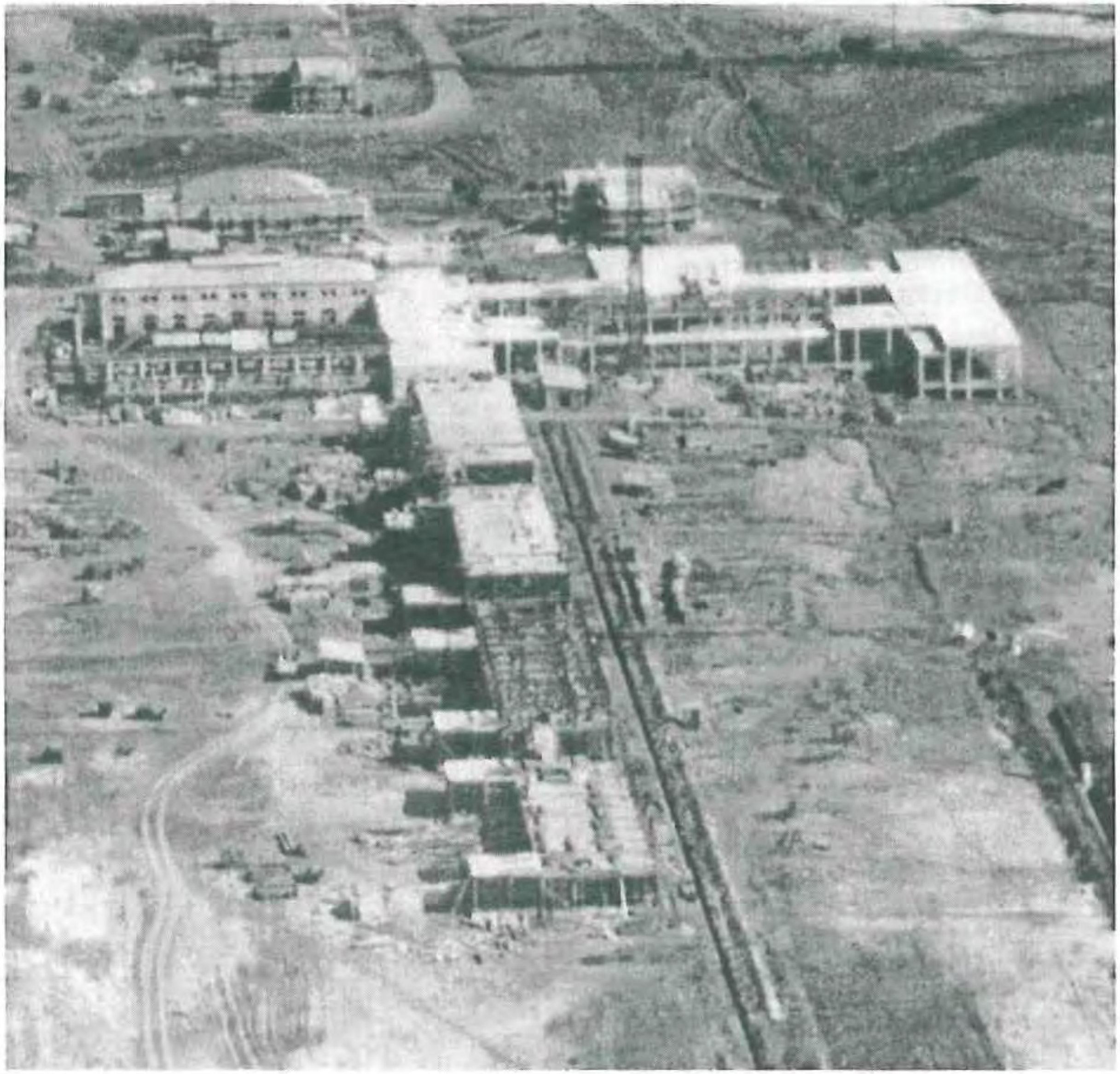
RECOMMENDED

Use the California State Historical Building Code to evaluate the actual hazards or deficiencies of arcades and stairways that do not meet current code requirements for guardrails, handrails, and stair details. Develop interventions or alterations only as required for public safety. Alterations should be nondestructive to the historic materials. This could be accomplished by adding additional elements where necessary, while retaining original elements. Where new elements are added, they should be compatible with the existing fabric and differentiated from original elements.

Access for persons with disabilities should be designed in a manner which is sensitive to the porches and entrance features. Most NTC buildings will require improved accessibility, to the buildings, the arcades, and through portions of the interior. (See Accessibility Considerations chapter for more information.)

NOT RECOMMENDED

Many entrances do not allow wheelchair access. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.



Aerial photograph of Buildings 1 through 5 under construction ca. 1921. Photograph courtesy of the San Diego Historical Society.

STRUCTURAL SYSTEMS

STRUCTURAL SYSTEMS

The structural system of a building should always be examined and evaluated early in the project planning stage to determine both its physical condition and its importance to the building's historic character or historical significance. Exposed features of the structural system, such as load-bearing hollow clay tile walls, nonductile concrete columns and beams, roof trusses, posts and beams, and concrete foundation walls may be important in defining the building's overall historic character. Unexposed structural features that are not character-defining or an entire structural system may nonetheless be significant in the history of building technology.

The NTC contains a limited range of structural systems and materials, representing only eighty years of construction technology. Overall, the NTC Historic District presents examples of most of the common structural materials and systems of the early 1920s through the 1940s.

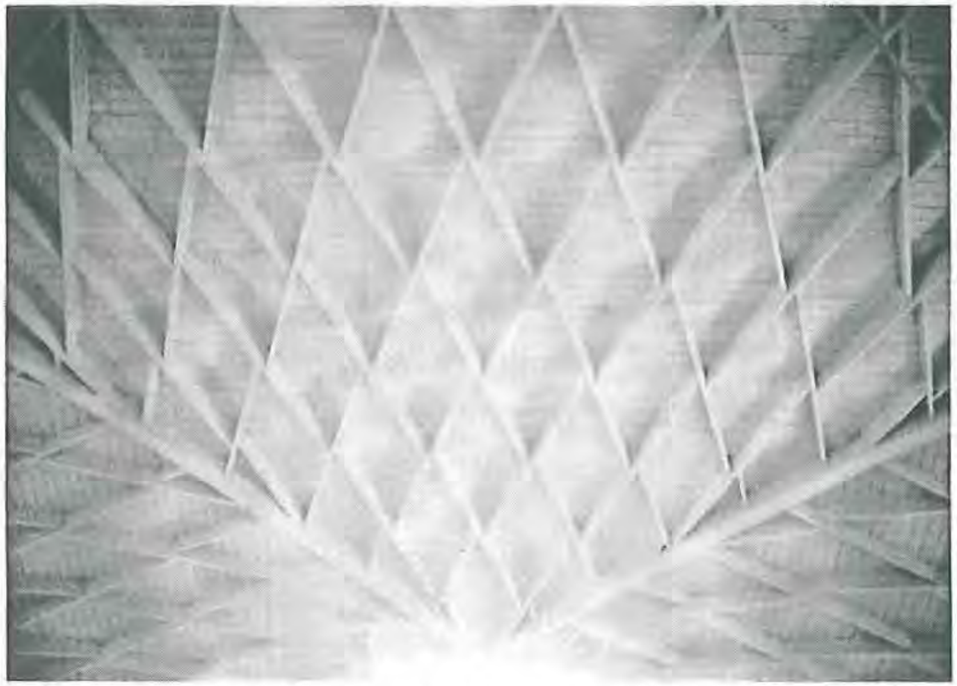
SEISMIC HAZARD ISSUES AT THE NAVAL TRAINING CENTER

Although buildings constructed at NTC over the last eighty years were built to the best standards of their time, construction systems and standardized building types were based on national design models. They were often modified in significant ways to accommodate local conditions, but little scientific data was known about earthquake-resistive design. Engineers were early advocates of embedding iron in masonry buildings as a means to improve seismic resistance, but very few special measures were taken to improve the overall seismic resistance of buildings at the NTC. Today, knowledge and understanding about earthquake-resistant structural design continue to grow and change as engineers are able to test and monitor performance in actual earthquakes. Code requirements for both new structures and for retrofit design have changed and will undoubtedly continues to change overtime.

STRUCTURAL SYSTEMS

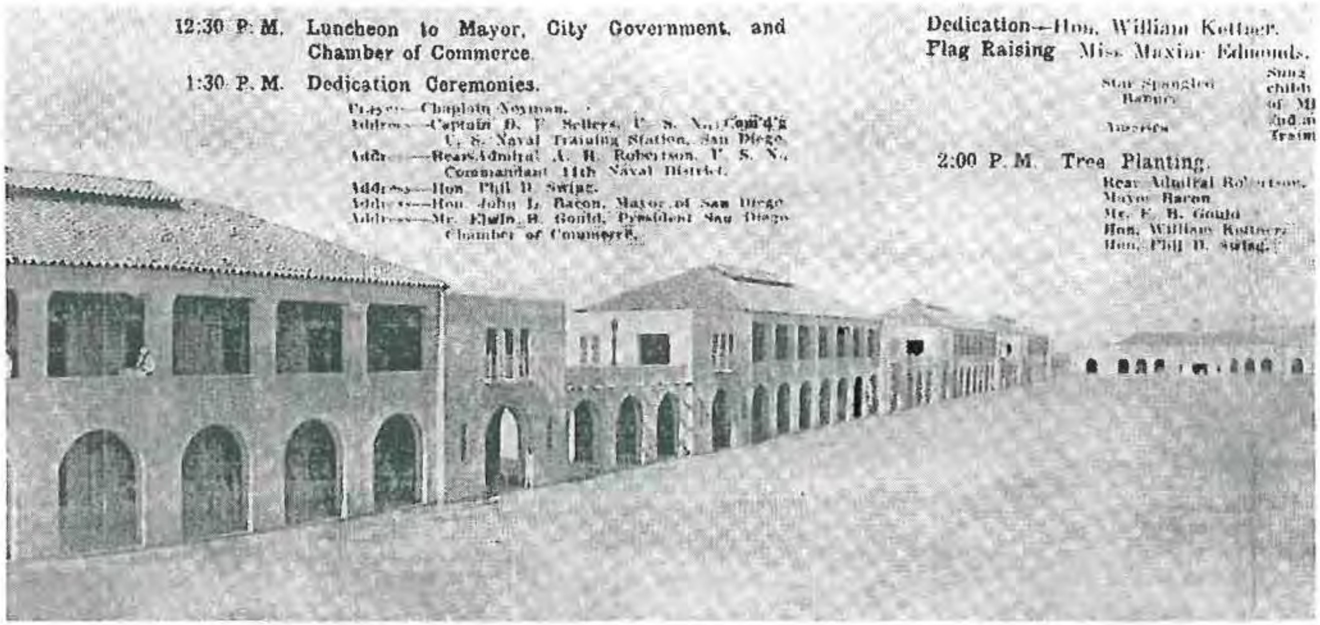
Requirements for measures to strengthen historic buildings at the NTC to reduce seismic hazards will depend on a number of factors specific to each building. The evaluation of the need for seismic strengthening and the performance objective required will be made by the City of San Diego for each building use and occupant situation.

Once the decision is made to make seismic improvements to a building, an appropriate design response must be developed. The building system, as well as the variety of proposed uses for the structure, require a wide range of structural interventions for rehabilitation. Seismic strengthening measures appropriate for one situation may be completely inappropriate in another. Although solutions will vary, the methodology for evaluating and implementing solutions should be similar in each situation. A consistent design process is essential to the development of appropriate solutions and to obtaining approval from the review agencies, including the City of San Diego Development Services and the Historic Resources Board. The following chart indicates the recommended design process for evaluating and implementing seismic improvements in a historic building. Structural strengthening and seismic hazard reduction measures are inherently consistent with the policy of sustainable design, working to limit hazards to life safety while also assuring the building's future life.



Interior of pool building showing wood structural system. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

STRUCTURAL SYSTEMS



Panoramic view of John Paul Jones Court used in the public dedication ceremony brochure. Courtesy of the San Diego Historical Society.

Evaluated Need for Seismic Improvements
Initial Survey for Seismic Requirements by the City of San Diego

↓

Begin Seismic Strengthening

↓

Assemble Design Team
- Architect
- Engineer
- Owner
- Contractor

→

Define Applicable Codes and Ordinances

→

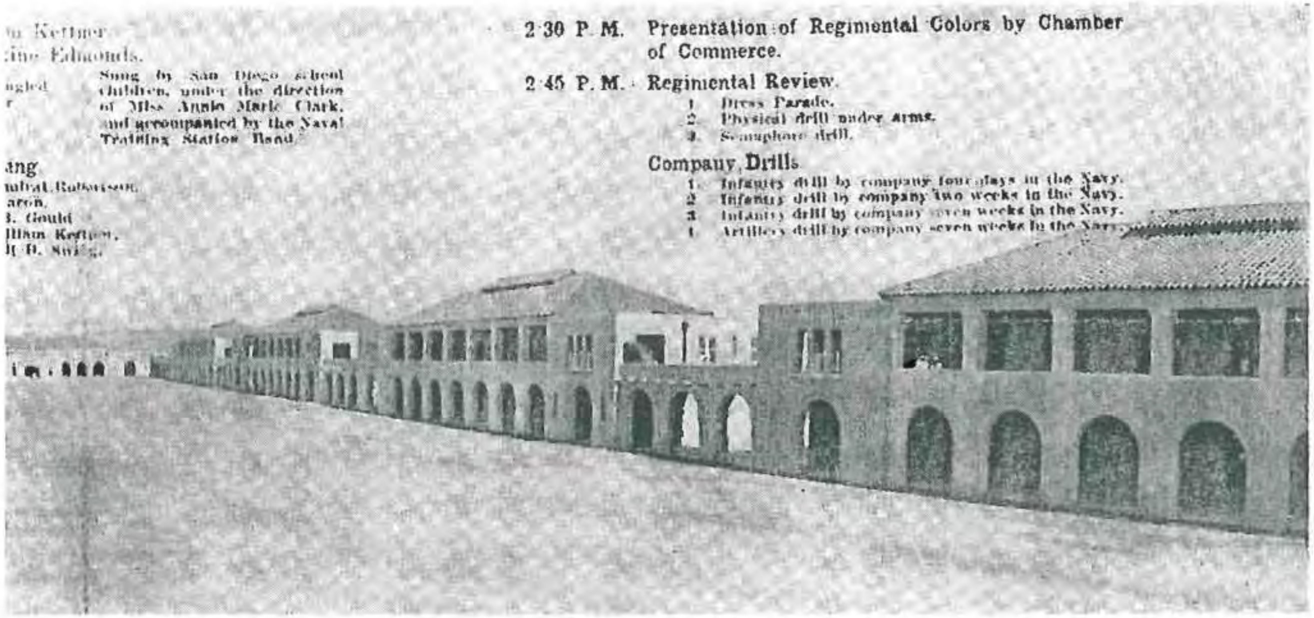
Understand the Risk
- General structural response expected
- Occupancy and use
- Special hazards

→

Identify the Building's Existing Capacity
- Exploratory demolition (minimal)
- Materials tests
- Soils analyses

→

STRUCTURAL SYSTEMS



Develop Criteria

- How strong should the building be?
- How much damage is

→

Define Preservation Objectives

- Define areas of the building that are most significant
- Identify areas of lesser significance (potential for alternation)
- Identify existing voids and hidden areas within

→

Develop Conceptual Strengthening Alternatives

- Identify appropriate alternative strengthening methods
- Identify alternative geometries/locations of new structure
- Consider mixture of structural methods and appropriate in different locations

→

Evaluate Alternatives

Life Safety
Preservation
Design

→

Select Preferred Scheme

STRUCTURAL SYSTEMS

Recommended

Identify, Retain and Preserve

Identify, retain and preserve structural systems and individual features of systems that are important in defining the overall historic character of the building, such as concrete post and beam systems, trusses, and above-grade foundation walls.

Prior to designing any seismic interventions:

- Conduct an existing conditions survey to understand existing components of the building system. Exploratory demolition should be done only when there is no other means to obtain necessary information. As much as possible it should occur in non-character-defining locations with low visibility. Repairs should be performed by an appropriate trades person.
- Conduct an adequately detailed testing program to evaluate and understand the physical capacities of the existing materials. The program should incorporate masonry push tests, concrete core samples, pachometer tests, or other appropriate tests.
- Evaluate or develop geotechnical information specific to the building site.

Not Recommended

Historic building frequently have rafter ties, bond iron ties or other elements which improve their seismic capacity. A building should be carefully researched and surveyed to locate these elements, and the seismic analysis should take their value into account. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

STRUCTURAL SYSTEMS

Recommended

Establish the construction history of the building. Alterations may have compromised original structural systems; earlier strengthening campaigns may have added capacity. Historic construction photographs and original construction drawings should be studied in detail.

In evaluating the structure, assemble a complete design team. This should include, in addition to a qualified engineer, a preservation architect and a contractor who are experienced with historic structures.

Not Recommended

Removing, covering, or radically changing features of structural systems that are important in defining the overall historic character of the building such that the character is diminished.

Putting a new use into the building that could overload the existing structural system; or installing equipment or mechanical systems that could damage the structure.

Demolishing a hollow clay masonry wall that could be augmented and retained, and replacing it with a new wall such as steel studs.

Leaving untreated known structural problems such as deflection of beams, cracking and bowing of walls, or racking of structural members.

Using treatments or products that accelerate the deterioration of structural material such as introducing urea-formaldehyde foam insulation into wood-frame walls.

Making structural assumptions or discounting the building's capacity without a complete understanding of the existing structural system.

STRUCTURAL SYSTEMS

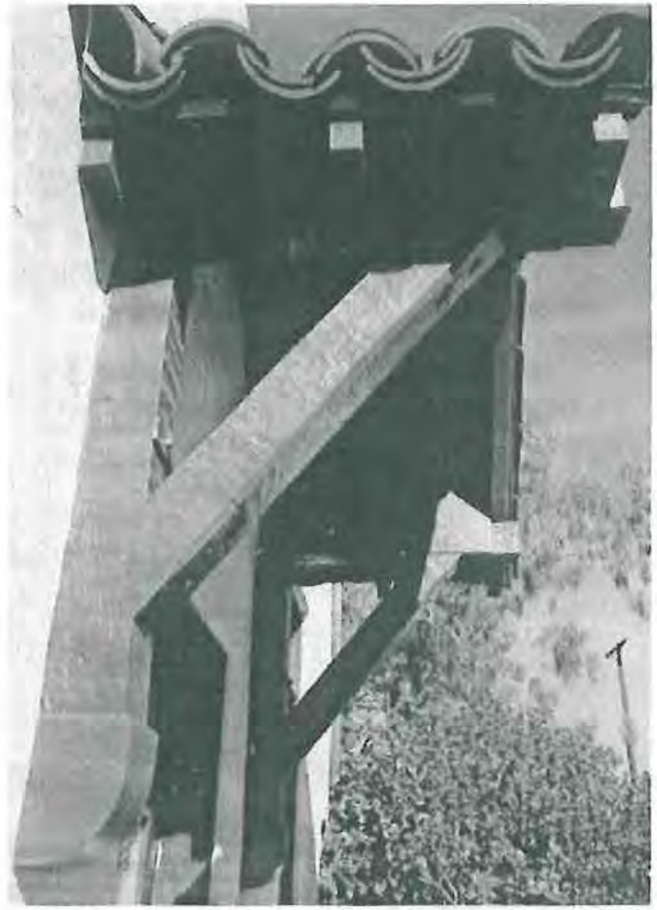
Recommended

Identify existing capacity of the structural system, levels of hazard, and type and extent of damage expected. Include analysis of elements such as chimneys, cornices, and parapets, as well as the overall building.

Define applicable performance objectives. How strong does the building need to be in order to protect the life safety of its occupants? How much damage is acceptable? Should the building be repairable after a major earthquake? These questions should be posed in each instance, and the response may be quite different for different structures and different uses.

Establish preservation objectives. Define the most significant areas of the building interior, and less significant areas that may be available for alteration. Attempt to limit interventions to areas of lesser significance. The preservation architect should assume a key role in assisting the engineer in the development of alternatives. Coordinate this process with other rehabilitation/preservation objectives for the building, which may include improved egress, accessibility, heating, ventilation, and air conditioning, or other planned programming alterations.

Not Recommended



Several wood members are fastened by metal plates and bolts, but need to be seismically analyzed. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

Recommended

Protect and Maintain

Protect and maintain the structural system by cleaning the roof gutters and down spouts; replacing roof flashing; keeping masonry, wood, and architectural metals in a sound condition; and assuring that structural members are free from water and insect infestation.

Examine and evaluate the physical condition of the structural system and its individual features using nondestructive techniques such as X-ray photography.

Repair

Repair the structural system by augmenting or upgrading individual parts or features. For example, weakened structural members such as floor framing can be paired with a new member, braced, or otherwise supplemented and reinforced.

Not Recommended

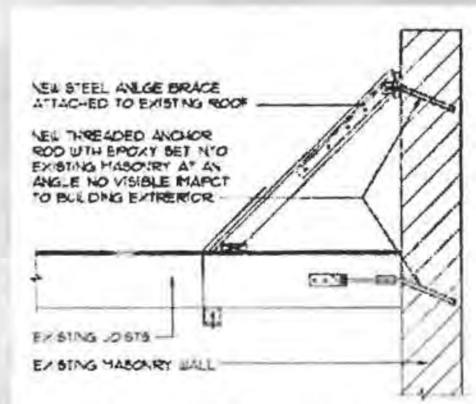
Failing to provide proper building maintenance, such that the structural system deteriorates. Causes of deterioration include subsurface ground movement, vegetation growing too close to foundation walls, improper grading, and poor interior ventilation that results in condensation.

Utilizing destructive probing techniques that will damage or destroy structural material.

Structurally upgrading a building in a manner that damages interior features or spaces, or that diminishes the historic character of the exterior for example, installing strapping channels or removing a decorative cornice.

Replacing a structural member or other feature of the structural system that could be augmented and retained.

Ignoring the inherent capacity of the existing structural system, and installing an entirely new structural system in the building shell.



Parapet brace detail. Courtesy of Architect Milford Wayne Donaldson, FAIA.

STRUCTURAL SYSTEMS

RECOMMENDED

Develop alternative conceptual schemes for seismic strengthening alterations. The schemes should consider both alternative structural methods and different potential areas for locating reinforcing elements.

Evaluate the alternative conceptual schemes for their relative impact on or loss of historic material, impact on other building systems, and for their relative cost. They should also be evaluated with respect to other building needs, such as egress.

Consider structural schemes which are appropriate to their building type. For example, exposed braces may be appropriate in an industrial building. If structural strengthening is required in a more finished interior space, furring out walls to conceal the brace may be appropriate. Materials and details should also be developed to be physically compatible with the surrounding original materials.

In some cases where exterior and interior significance are both great and conventional methods will result in extensive loss of historic material, consider options for "blind" strengthening, such as masonry core drilling.

In highly sensitive areas of a facade, where anchorage of walls to floors and roof is necessary, consider epoxy grouted concealed anchors.

NOT RECOMMENDED

Later additions such as this stairway may need to be reviewed for current seismic upgrading. This addition distracts from the cubic simplicity of the original architecture. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Recommended

Where exposed bolt plates are necessary, carefully consider their location and placement on the building and potential architectural treatment, such as paint, detail, or the possibility of recessing them below stucco or other existing material.

Where possible, seismic strengthening measures should be designed to be reversible. This is frequently impossible due to the nature of the work, but it should be considered as a goal. Alternative schemes should be evaluated for their relative reversibility.

Replace

Replace in kind or with substitute material those portions or features of the structural system that are either extensively deteriorated or are missing when there are surviving prototypes such as cast iron columns, roof rafters or trusses, or sections of load-bearing walls. Substitute material should have the same form, design, and overall appearance as the historic feature; and at a minimum, should have equal load-bearing capabilities.

Not Recommended

Installing a replacement feature that does not have the same appearance, such as replacing an exposed wood beam with a steel beam.

Using substitute material that does not equal the load-bearing capabilities of the historic material and design or is otherwise physically or chemically incompatible.

RECOMMENDED

Alterations/Additions for the New Use

Limit any new excavations adjacent to historic foundations to avoid undermining the structural stability of the building or adjacent historic buildings. Studies should be done to evaluate potential damage to archaeological resources.

Add a new floor when required for the new use if such an alteration does not damage or destroy the structural system or obscure, damage or destroy character-defining spaces, features, or finishes.

Create an atrium or a light well to provide natural light when required for the new use in a manner that preserves the structural system as well as character-defining interior spaces, features, and finishes.

Most of the buildings at NTC have reinforced concrete foundations and require evaluation for seismic strengthening. Any modifications should be accomplished without removal or damage to the existing system.

NOT RECOMMENDED

Carrying out excavations or regrading adjacent to or within a historic building without causing the historic foundation to settle, shift, or fail, similarly affect adjacent historic buildings, or destroy significant archeological resources.

Radically changing interior spaces or damaging or destroying features or finishes that are character-defining while trying to correct structural deficiencies in preparation for the new use.

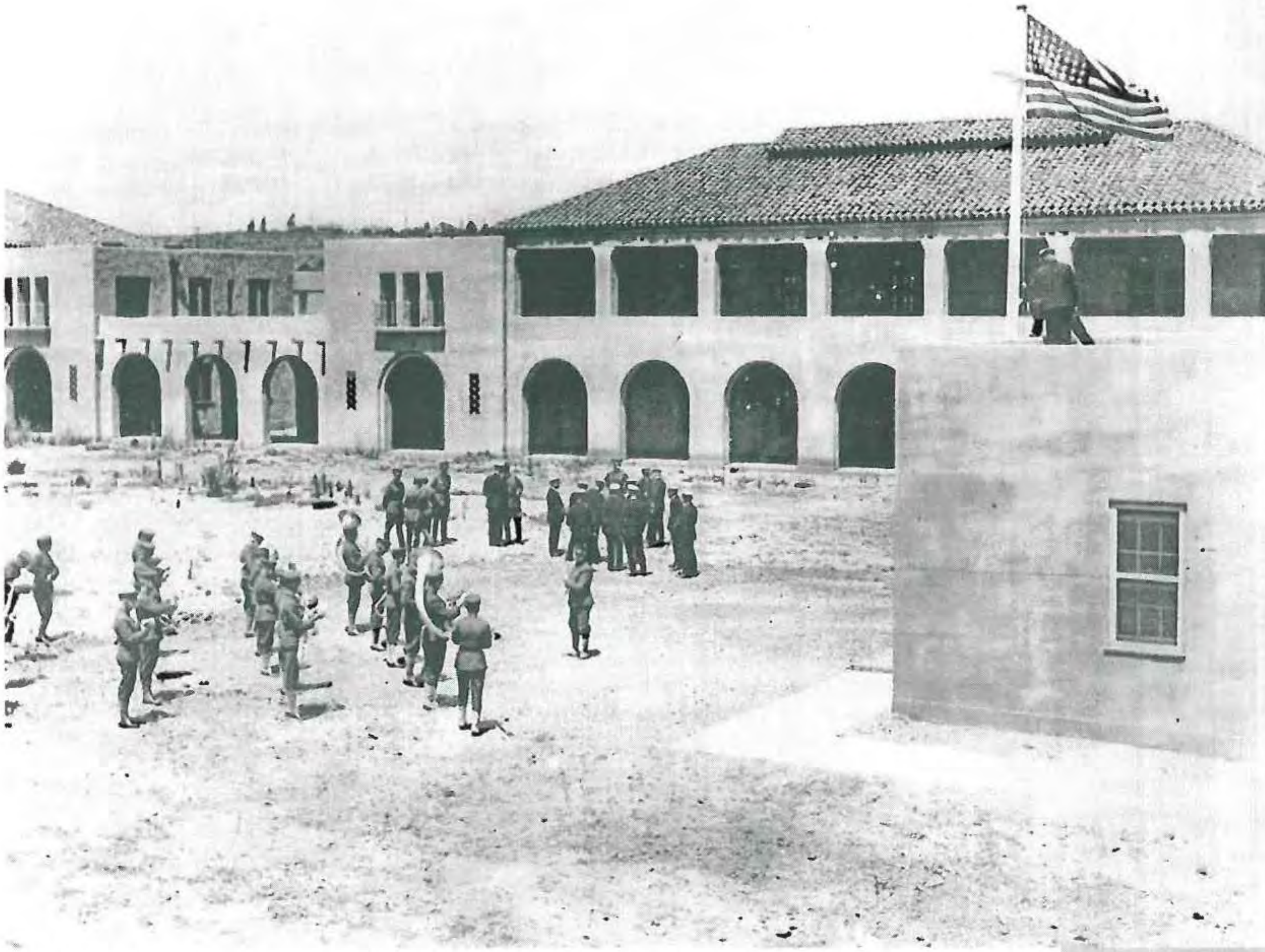
Installing new mechanical and electrical systems or equipment in a manner which results in numerous cuts, splices, or alterations to the structural members.

Inserting a new floor when such a radical change damages a structural system or obscures or destroys interior spaces, features, or finishes.

Inserting new floors or furred-down ceilings which cut across the glazed areas of windows so that the exterior form and appearance of the windows are radically changed.

Damaging the structural system or individual features, or radically changing, damaging, or destroying character-defining interior spaces, features, or finishes in order to create an atrium or a light well.

STUCCO



Naval Training Station band practicing in front of Building 1 (on the left) ca. 1922. Courtesy of the San Diego Historical Society Photograph Collection.

STUCCO

Stucco is an exterior plaster used to weatherproof and decorate building exteriors. Although stucco is nonstructural, it offers a protective coating and some fire resistance, and prolongs the life of the building. Stucco is both convenient and affordable: its ingredients are readily available; it can be applied over a variety of building materials, including hollow clay tile, concrete, and wood or metal lath; and it is possible to repair cracks or breaks in a stucco coating.

An aggregate and a binder are the two basic stucco constituents. The aggregate consists of a fine granular substance such as crushed brick and stone, sand, or old mortar, while traditional binders include lime, clay, gypsum, or natural and man-made (portland) cements. In addition, mineral pigments can be added for color, and synthetic additives can be used to further improve the performance of the stucco mixture.

A mechanical key must be created to ensure a strong bond between stucco and its support. For masonry, either raking out the mortar joints or texturing the masonry surface is usually necessary. The hollow clay tiles at NTC provide the binding surface for the stucco. Wood, metal, or wire lath provide a network of voids into which the wet stucco can penetrate and harden to form an interlocking mechanical key. Generally, stucco is applied in one to three coats; three-coat work is most common. Layers usually differ slightly in composition, and each coat is scored to provide a key for the next layer.

Although the earliest stuccos used lime as a binder, by the middle of the 19th century, stucco included other elements such as imported natural cement. Gray portland cement stucco, harder and denser than earlier stuccoes, appeared in the 1880s; with the introduction of white portland cement in the early 20th century, a range of tinted stuccos became available. These tinted stuccos coincided with and were widely employed in the Mission Revival and Spanish Colonial Revival architectural styles (ca.1890-1930).

All buildings in NTC with the exception of Quarters A retain most of their original stucco. Historical photographs and on-site investigations indicate that many stucco building were originally unpainted and had an integral color coat of light coral sand float finish simulating slightly lumpy adobe style plaster . Over the years, the buildings have been painted and now exhibit a yellow gold color.

Original simulated adobe style texture with a sand float finish stucco was used for the buildings built in the 1920s, 1930s, and the 1940s. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Most stucco at the NTC has a high portland cement content and is applied directly over concrete, hollow clay tile, or wood frame.

The materials required to produce stucco are readily available and of a fairly simple character; however, the choice of materials for the aggregate and binder is critical to match an existing stucco surface. Stucco is an inexpensive material that forms a resistant exterior shell to protect materials in the substrate from exposure and decay; it may considerably prolong the life of a building by sheltering major building components from wear. Stucco also offers some fire protection for wood construction; a stucco wall is less readily combustible than exposed timbers. Also, though stucco application requires a skilled worker, only a minimal amount of specialized equipment is necessary.

Stucco failure is caused by the breakdown of its water-shedding capacity and the ultimate deterioration of the supporting structure. Poor original materials and techniques, incompatible building materials with different expansion rates, structural settlement, seismic movement, and biological growth can all cause cracking or adhesion failure between the stucco and its backing or between individual stucco layers. Lack of proper maintenance increases the likelihood of problems that can lead to the breakdown of the stucco surface.

A heavy "skip trowel" stucco skim coating has been applied to Officer's Quarters "A" and has greatly changed the original adobe style finish. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

STUCCO

Recommended

Identify, Retain, and Preserve

Identify, retain, and preserve stucco coatings that are important in defining the overall historic character of the buildings at NTC.

Determining whether the historic finish coat of stucco was painted, unpainted, or integrally colored. The original stucco appears to be simulated adobe plaster style with a sand-float finish and with an integral color coat and originally unpainted.

When repairing stucco, identify original components of the stucco mix through laboratory analysis to match strength, composition, color and texture.

Identify substrate and method of keying stucco to the underlying structure to identify potential problems such as corroding metal lath.

Identify finish trowling technique to duplicate the original finish in replacement stucco.

Evaluate and treat the various causes of stucco deterioration, such as leaking roofs or gutters, differential settlement of the building, or ground moisture penetrating into the structure.

Test new stucco in an inconspicuous location and allow test samples to weather as long as possible, ideally for one year. Matching the original material would probably require a number of test samples.

Not Recommended

Removing stucco from surfaces that historically feature a stucco finish.

Removing and reapplying a major portion of a stucco coating that could be repaired.

Applying paint to stucco that has been historically unpainted or, conversely, removing paint from historically painted stucco.

Recommended

Protect And Maintain

Maintain roofs, gutters, and down spouts to prevent moisture from penetrating walls.

Remove all plant materials from the base of stucco walls for a distance of a minimum five feet unless the plants are historic.

Clean stucco only when necessary to halt deterioration or remove heavy soiling. It is difficult to clean most stucco without removing some of the textured surface.

Test cleaning methods in a discreet location before full scale treatment. The gentlest method should be selected and tested to avoid unnecessary damage.

Survey stucco surfaces for conditions such as biological growth, water or metallic staining, or leaching deposits, which may indicate active water penetration or damage that is masked by the stucco coat.

Remove soiling and biological growth, such as mold, using a low-pressure water rinse and mild detergent applied with natural fiber brushes. Poultice-applied solvents are probably the most appropriate method for removing graffiti and metallic stains.

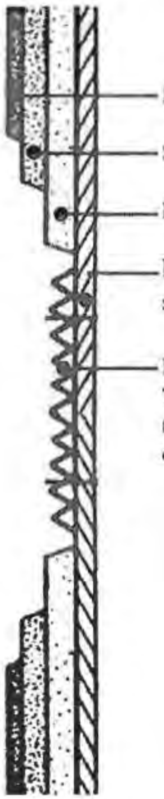
Not Recommended

Cleaning stucco surfaces without testing or without sufficient time for the testing result to be of value.

Using abrasive cleaning techniques on stucco surfaces, which can pit the surface and increase moisture penetration.

The stucco texture allows a wide range of color contrast due to shade and shadows. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

STUCCO



The repair of stucco requires that each coat be patched separately. Drawing courtesy of National Park Service and Architect Milford Wayne Donaldson, FAIA.

Recommended

Remove damaged or deteriorated paint from stucco only to the next sound layer using the gentlest method possible, such as hand-scraping or natural bristle brushes.

Maintain paint coatings by applying vapor-permeable coating when necessary, matched to existing color.

Repair

Determine the extent of detached stucco by systematically sounding the surface with a wood or acrylic mallet. Areas where stucco layers have delaminated or are no longer keyed to the substrate will produce a characteristic reverberating or hollow sound and should be repaired as outlined below.

Repair most stucco by removing damaged material and patching with new stucco that duplicated the hold in strength, composition, color, and texture.

Repair cracks in stuccoed surfaces by raking out the crack and undercutting the edges to provide a mechanical key for new stucco. Cracks are most likely to occur at doors, windows, and floor lines, and where stucco covers joints between dissimilar building materials.

Not Recommended

Removing sound stucco or repairing with new stucco that is stronger or denser than the historic material which will damage underlying masonry and softer, more porous stucco or that does not have the same appearance.

Inserting metal lath over masonry such as hollow clay tile. Attaching the lath will damage the masonry, and moisture penetration can cause the metal lath and attachments to corrode.

Applying a stucco patch without remedying the underlying problem.

Recommended

Apply stucco with adequate separation from the ground. Moisture from the ground can rise through the stucco and into the supporting structure.

Remove incipient spalls or bulges back to sound plaster. Identify and rectify the cause of deterioration before patching.

Remove previous patches that do not match texture, color, or strength of the original stucco.

Undercut the repair boundaries to create a dovetail-shaped mechanical bond between the old and new stucco.

Patch stucco rather than replace. It may be difficult to match stucco and to conceal patched areas, especially on smooth-finished stucco. A color match may not be critical if the surface was originally painted and will be repainted following repairs.

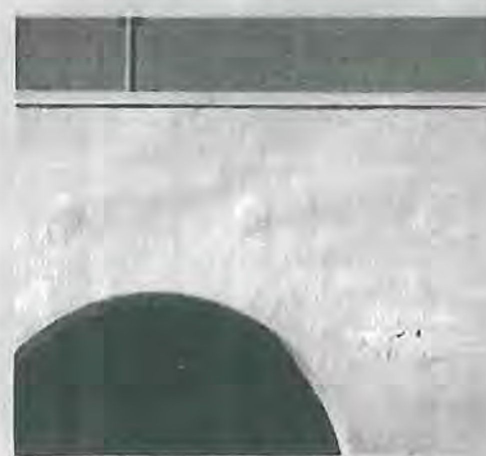
Thoroughly wet substrate (except metal lath) before patching, to prevent it from drawing moisture out of the stucco too rapidly, which could affect the curing time and eventual strength.

Not Recommended

Patching cracks with commercial caulking compounds. This type of patch is highly visible because the material has a different texture and sheen than stucco. It also tends to attract dirt and weathers differently.

Applying paint to repair patches before the new stucco has fully cured or the cracks have been fully cleaned and allowed to dry. This will create dark splotches in the future and will migrate through the paint or new plaster.

Applying a bonding agent where a mechanical bond is possible. A good mechanical bond is always preferable to reliance on bonding agents. Only substrates that do not offer a good bonding surface may require the use of an agent.



The arcade between Buildings 1 and 26 had the vigas removed. The stucco patches do not match the original stucco texture and are deteriorating. These areas should receive new vigas when appropriate. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA. January 10, 2000.

STUCCO

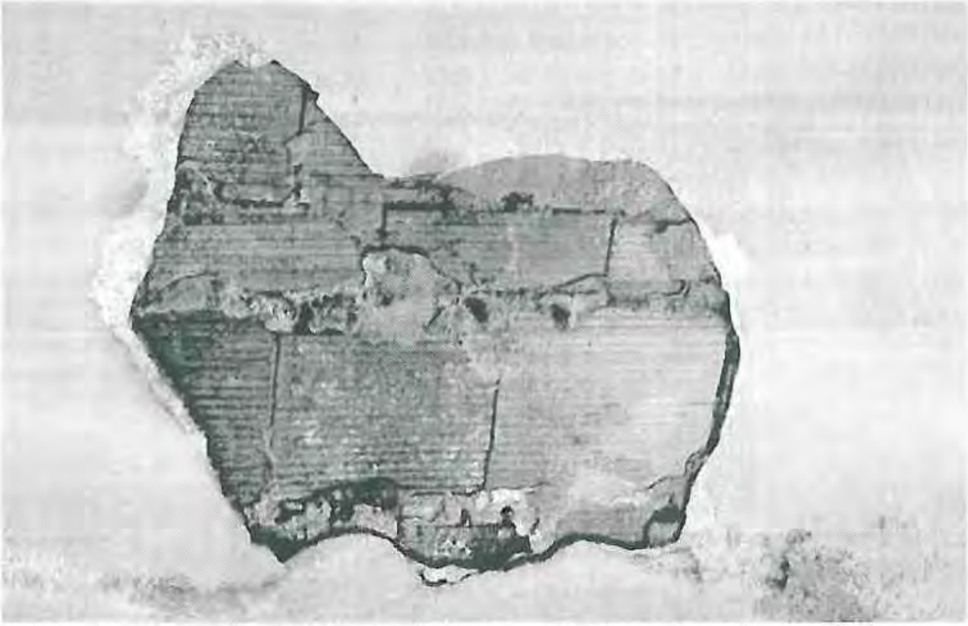
Recommended

Not Recommended

The stucco finish on many of the NTC buildings was applied directly over reinforced concrete or hollow clay tile without lath. Stucco repair to these buildings may require a bonding agent to provide strong adhesion between the repair patch and the original substrate.

Prevent new stucco from drying too rapidly during hot weather by shading or repeating misting for twenty-eight to seventy-two hours.

Reintegrate detached or delaminated stucco by low pressure injection grouting with fluid mortars or synthetic adhesive materials. These substances must be compatible with the original stucco.



Porch ceiling at Building 25 showing hollow clay tile where plaster has deteriorated. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Recommended

Use chemical consolidates on deteriorated stucco only when deemed necessary by a trained conservator. The need for this type of treatment at the NTC is limited. Materials and methods must be tested before attempting full-scale treatment; different stuccos may require different consolidation materials for chemical compatibility.

Design modifications where faulty original design or construction details have led to chronic deterioration. Modifications should be built into the new work without visually altering the original appearance.

Design and install a new stucco feature or finish when the historic feature is completely missing. It may be an accurate restoration using historical, pictorial, and physical documentation; or a new design that is compatible with the size, scale, material, and color of the historic building.

Not Recommended

Design for Missing Historic Features

Creating a false historical appearance because the replaced stucco is based on insufficient historical, pictorial, and physical documentation.

Introducing a new stucco feature or finish that is incompatible in size, scale, texture, or color.

Stucco patches above and around the viga are poorly blended with original stucco. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Recommended

Replace

Replace in kind an entire stucco finish that is too deteriorated to repair using physical evidence to replicate the original mix and finish texture.

Not Recommended

Replacing a major portion of a stucco finish that could be repaired, so that the stucco finish is no longer historic and is essential new construction.

INTERIOR SPACES

Original library in Building 1 used for study and recreation, ca. 1920s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

INTERIOR SPACES

An interior floor plan, the arrangement and sequence of spaces, and built-in features and applied finishes are individually and collectively important in defining the historic character of the NTC buildings. Their identification, retention, protection, and repair should be given prime consideration in every rehabilitation project. In evaluating historic interiors prior to rehabilitation, it should be kept in mind that interiors are comprised of a series of primary and secondary spaces.

Primary spaces, including entrance halls, mess halls, assembly rooms such as the library, and lobbies are defined not only by their features and finishes, but by the size and proportion of the rooms themselves— purposely created to be the visual attraction or functioning "core" of the building. Care should be taken to retain the essential proportions of primary interior spaces and not to damage, obscure, or destroy distinctive features and finishes.

Secondary spaces include areas and rooms that "service" the primary spaces and may include kitchens, bathrooms, mail rooms, utility spaces, hallways, fire stairs, and work spaces in a commercial or office building. Extensive changes can often be made in these less important areas without detrimental effect on the overall historic character.

The NTC has an assortment of building types constructed over an eighty-year period for diverse purposes. This range of building types has a corresponding variety of interiors, each with its own historic character. Despite the diversity, a few generalizations can be made that apply to nearly all NTC interiors:

- The buildings were constructed by the Navy, governed by an undeviating sense of purpose, NTC buildings exhibit a consistent design reflective of Lincoln Rodger's focus on providing an utilitarian and functional military interior for most of the buildings.
- The decorative simplicity of NTC interior spaces should not be confused with a lack of significance. Original finishes and spaces, though simple, are highly significant.
- Interiors were built using standard construction and machine-made finish materials chosen for durability, ease of assembly, and low maintenance.
- A distinctive feature in many NTC buildings is the effective natural daytime lighting of the spaces.

INTERIOR SPACES

The following interior spaces, including those interiors in accordance with the City of San Diego and the United States Navy Memorandum of Agreement, approved July 3, 1998, were identified as being significant and special consideration should be given to their preservation:

- Commissary (Building 1)
- Auditorium (Building 35)
- Library (Building 177)
- Swimming Pool area of gymnasium (Building 210)
- Quarters "A" through "D" living rooms, entry stairways, dining rooms and all fireplaces.
- Ceiling in Mess Hall, Building 30 and its associated murals.

INTERIOR SPACES

Warehouses and other industrial buildings at the NTC Historic District are similar in character and quality of construction to buildings by other institutional builders. The interiors of the industrial buildings and shops are open-plan spaces with exposed structural elements and generous floor-to-ceiling heights. Industrial glazing and skylights allow the maximum amount of natural light into the center of the space.

The hierarchy within the NTC is most evident in the residences. Officers' housing are larger, crafted more carefully, and of more expensive materials than housing constructed for the lower ranks. Design of many residences reflects the social order of the military during the 1920s. Formal living patterns are indicated by the arrangement of interiors, with a hierarchy established by separation of formal and service circulation , room size and location, and choice of finish materials. In contrast, the barracks are large, multistory buildings which initially had open plans punctuated by interior columns and open stairwells.

Many buildings on the NTC have been altered overtime to accommodate new uses. The method of remodeling used consistently by NTC has been one of making additive changes along with demolition and reconstruction with new interior finishes. New mechanical and electrical systems have been hidden by dropped ceilings of acoustical tiles and fluorescent light panels, obscuring historic features and finishes and changing the original proportions of spaces. Some of the large open-plan barracks have been converted to offices with partition walls dividing the once-large spaces into small offices. Because these alterations are often superficial, in many cases they could easily be reversed depending upon the adaptive reuse.

With change in use, alterations will be needed, but the new uses should be chosen so that only minimal change to the original building is required, especially for those buildings with intact significant interiors. Historic interiors currently obscured by overlying nonhistoric finishes are considered intact. Greater freedom for new design can be taken with those buildings having less sensitive interiors.

For all buildings, sustainable design requires that finishes and treatments be environmentally sound and that nonrenewable materials be avoided. Solvent-based or non-biodegradable coatings and cleaning agents must be avoided, as should such materials as adhesives and synthetics containing toxins or off-gas volatile organic compounds that contribute to indoor air and atmosphere pollution. The use of flexible elements in the design of the space, such as furniture systems, as opposed to permanent partitions, may extend the usefulness of an interior and prevent further alterations. Additionally, making reversible changes in historic spaces are always important considerations in sustainable design.

Recommended

Interior Spaces
Identity, Retain, and Preserve

Identify, retain, and preserve floor plans or interior spaces that are important in defining the overall historic character of a building. This includes the size, configuration, proportion, and relationship of rooms and corridors; the relationship of features to spaces; and the spaces themselves, such as the lobby of the Commander's Office, reception halls, entrance halls, auditoriums, commercial use spaces and other recreational spaces, such as the swimming pool.

Determine a compatible use for the building that will require only minimal alteration. It is critical that the new use not require substantial alteration of the historic plan, distinctive spaces, or character-defining architectural features or finishes.

Identify secondary spaces or nonsignificant areas and features which can be altered.

Conduct on site investigations and research as necessary to identify original floor plan configurations.

Not Recommended

Radically changing a floor plan or interior spaces including individual rooms that are important in defining the overall historic character of the building such that the character is diminished.

Altering the floor plan by demolishing principal walls and partitions to create a new appearance.

Altering or destroying interior spaces by inserting floors, cutting through floors, lowering ceilings, or adding or removing walls.

Relocating an interior feature such as a staircase so that the historic relationship between features and space is altered.

Blocking natural light sources that contribute to the character of the interior spaces by changing floor plans or interior spaces.

RECOMMENDED

Interior Features and Finishes
Identity, Retain, and Preserve

Identify, retain, and preserve interior features and finishes that are important in defining the overall historic character of the building, including columns, cornices, baseboards, fireplaces and mantels; paneling, light fixtures, hardware, flooring; wallpaper, plaster, paint, painted murals in Building 30, and finishes and other decorative materials that accent interior features and provide color, texture, and patterning to walls, floors, and ceilings. Refer to glossary and illustrated examples.

Conduct on site investigations and research as necessary to identify original elements, including those hidden by remodeling.

Identify significant finishes which must remain in place as well as those areas of finish which can be dismantled and reconstructed with minimal damage.

Retain the original exposed finish in industrial and warehouse buildings. Areas of new finish should be discreetly detailed and separated from existing exposed finishes.

Evaluate the overall condition of materials to determine if protection and maintenance are sufficient, or if repairs to interior features and finishes are necessary.

Identify sources of moisture infiltration and correct deficiencies. Make timely repairs. Moisture infiltration, from roof leaks or faulty heating and plumbing systems, is the most prevalent cause of damage to interior materials. Besides damaging historic fabric, leaks or other problems can disturb intact paint surfaces, exposing layers of lead-containing paint that may pose a danger to building occupants.

NOT RECOMMENDED

Removing or radically changing features and finishes that are important in defining the overall historic character of the building such that the character is diminished.

Installing new decorative material that obscures or damages character-defining interior features or finishes.

Removing paint, plaster, or other finishes from historically finished surfaces to create a new appearance (e.g., removing plaster to expose masonry surfaces such as hollow clay tile walls or a chimney).

Applying paint, plaster, or other finishes to surfaces that have been historically unfinished to create a new appearance.

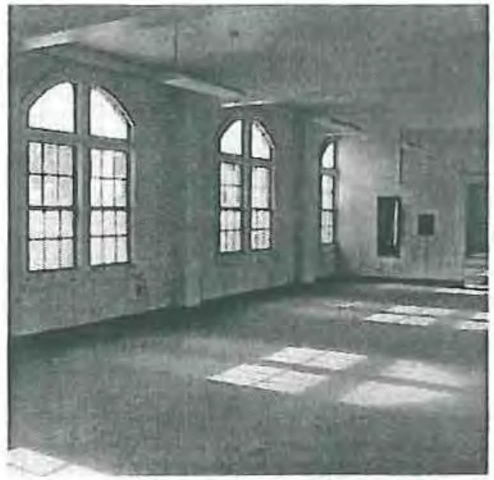
Stripping paint to bare wood rather than repairing or reapplying original finishes to features such as doors and paneling.

Radically changing the type of finish or its color, such as painting a previously varnished wood feature.

Recommended

Examine existing fabric and original floor plans closely to determine whether alterations have covered historic features without destroying them. If the changes themselves have not acquired significance, alterations may be removed and repairs made to return the interior to its historic appearance.

Document existing interior spaces and features photographically prior to rehabilitation.



A distinctive feature in many Naval Training Center interiors is the effective use of natural light. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

Detail of mural in Building 30. These murals should be conserved and protected in place. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

RECOMMENDED

Protect and Maintain

Provide adequate protection to materials on a cyclical basis so that deterioration of interior features does not result.

Protect and maintain masonry, wood, and architectural metals which comprise interior features through appropriate surface treatments such as cleaning, rust removal, limited paint removal, and replication of protective coating systems.

Protect interior features and finishes against arson and vandalism before project work begins, erect protective fencing, board up windows, and install fire alarm systems that are distributed to local protection agencies.

Protect interior features such as staircases, terrazzo floors, mantles or decorative finishes and wall coverings against damage during project work by covering them with heavy canvas or plastic sheets.

Install protective coverings in areas of heavy pedestrian traffic to protect historic features such as wall coverings, ceramic tile flooring and paneling.

Remove damaged or deteriorated paints and finishes to the next sound layer using the gentlest method possible, then repaint or refinish using compatible paint or other coating systems.

Provide proper protection of interior features and finishes during work so that they are not gouged, scratched, dented, or otherwise damaged.

NOT RECOMMENDED

Permitting entry into historic buildings through unsecured or broken windows and doors so that the interior features and finishes are damaged by exposure to weather or through vandalism.

Stripping interiors of features such as woodwork, doors, windows, light fixtures, copper piping, or radiators; or of decorative materials.

Using destructive methods such as propane or butane torches or sandblasting to remove paint or other coatings. These methods can irreversibly damage the historic materials of interior features.

Recommended

Repaint with colors that are appropriate to the historic building, even for new uses.

Undertake adequate measures to assure the protection of interior features and finishes.

Limit abrasive cleaning methods to certain industrial or warehouse buildings where the interior masonry or plaster features do not have distinguishing design, detailing, tooling, or finishes; and where wood features are not finished, molded, beaded, or worked by hand. Abrasive cleaning should be considered only after other, gentler methods have been proven ineffective.

Undertake paint analysis to determine historic finishes for historically significant spaces. It is unlikely that any historic coating remains uncovered, because the NTC followed a regular maintenance program. There are original murals and stained wood ceilings in the Mess Hall and Chapel and these features should be protected. Paint samples should be taken from the least obtrusive location possible.

Consider stripping old layers of paint before undertaking repainting. Multiple paint layers may have dulled molding profiles and patterns on some significant features. Stripping procedures should be gentle enough to remove paint without damaging the substrate. All necessary precautions must be taken against exposure to lead-based paint.

Not Recommended

Using new paint colors that are inappropriate to the historic building.

Changing the textures and patina of character-defining features through sandblasting or use of abrasive methods to remove paint, discoloration or plaster. Exposed wood, including structural members and masonry are both vulnerable to this kind of change.

Using harsh cleaning agents that can change the appearance of historic materials such as wood.

Attaching new materials to historically significant elements, such as carpeting over wood or tile floors, in a manner either destructive to the original material or in any way not fully reversible.

Care should be taken to protect ceramic tile and terrazzo floors during rehabilitation and remodeling. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

Recommended

Repair

Repair interior features and finishes by reinforcing the historic materials. Repair will generally include the limited replacement in kind or with compatible substitute material of extensively deteriorated or missing parts of repeated features, when there are surviving prototypes such as stairs, balustrades, or columns, decorative wall coverings or plaster ceilings.

Repair damaged plaster or replace it in kind whenever possible. Gypsum wallboard may be acceptable in some cases.

Consider removing partitions and restoring the rooms to their original proportions if rooms have been subdivided through an earlier insensitive renovation.

Not Recommended

Replacing an entire interior feature (such as a staircase, paneled wall); or finish (such as a decorative wall covering or ceiling), when repair of materials and limited replacement of such parts are appropriate.

Using a substitute material for the replacement part that does not have the appearance of the surviving parts or portions of the interior feature or finish or that is physically or chemically incompatible.

Leaking water cooler discoloring tile and mortar joints should be repaired to match original condition. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

Recommended

Remove nonhistoric carpet, vinyl tile or other floor covering that obscures historic wood.

Replace

Replace in kind an entire interior feature or finish such as wainscoting, or interior stairs, that is too deteriorated to repair if the overall form and detailing are still evident using the physical evidence as a model. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered.

Replace inappropriate additions that have deteriorated with historically appropriate features and finishes.

Not Recommended

Removing a character-defining feature or finish that is beyond repair and not replacing it; or replacing it with a new feature or finish that does not have the same appearance.

The wood moldings, fireplace, doors, and finish floor materials of the Officer's Quarters are original and should be maintained. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

The kitchens in the Officers' Quarters have been remodelled with new cabinets, floor and ceiling materials that are not respective of the historical character of the building. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

RECOMMENDED / *NOT RECOMMENDED*

Design for Missing Historic Features

Recommended: Design and install a new interior feature or finish if the historic feature or finish is completely missing. Missing partitions, stairs, elevators, lighting fixtures, and wall coverings may be designed, or even entire rooms, if all historic spaces, features, and finishes are missing or have been destroyed by inappropriate "renovations" The design may be a restoration based on historical, pictorial, and physical documentation; or it may be a new design that is compatible with the historic character of the building or the NTC Historic District and consistent with the *Secretary of the Interior's Standards*.

Not Recommended: Creating a false historical appearance because the replaced feature is based on insufficient physical, historical, and pictorial documentation or on information derived from another building.

Introducing a new interior feature or finish that is incompatible with the scale, design, materials, color, and texture of the surviving interior features and finishes. The new features should not distract from or destroy the historic features.

Alterations/Additions for the New Use

Recommended: Accommodate service functions such as bathrooms, mechanical equipment, and office machines required by the building's new use in secondary spaces such as first floor service areas or on upper floors.

Reuse decorative material or features that have had to be removed during the rehabilitation work, including wall and baseboard trim, door molding, paneled doors, and simple wainscoting; relocate such material or features in areas appropriate to their historic placement.

Not Recommended: Dividing rooms, lowering ceilings, and damaging or obscuring character-defining features such as fireplaces, niches, stairways, or alcoves, so that a new use can be accommodated in the building.

Discarding historic material that can be reused within the rehabilitation project, or relocating it in historically inappropriate areas.

Installing permanent partitions that damage or obscure character-defining spaces, features, or finishes.

Recommended

Install permanent partitions in secondary spaces; removable partitions that do not destroy the sense of space should be installed when the new use requires the subdivision of character-defining interior space.

Enclose an interior stairway where required by code so that its character is retained. In many cases, glazed fire rated walls may be used.

Place new code-required stairways or elevators in secondary and service areas of the historic building.

Create an atrium or a light well to provide natural light when required for the new use in a manner that preserves character-defining interior spaces, features, and finishes as well as the structural system. Inserting a new atrium or light well is appropriate only in very limited situations where the existing interiors are not historically or architecturally distinguished.

Add a new floor only if required for the new use in a manner that preserves character-defining structural features, and interior spaces, features, and finishes.

Not Recommended

Enclosing an interior stairway with fire-rated construction so that the stairwell space or any character-defining features are destroyed.

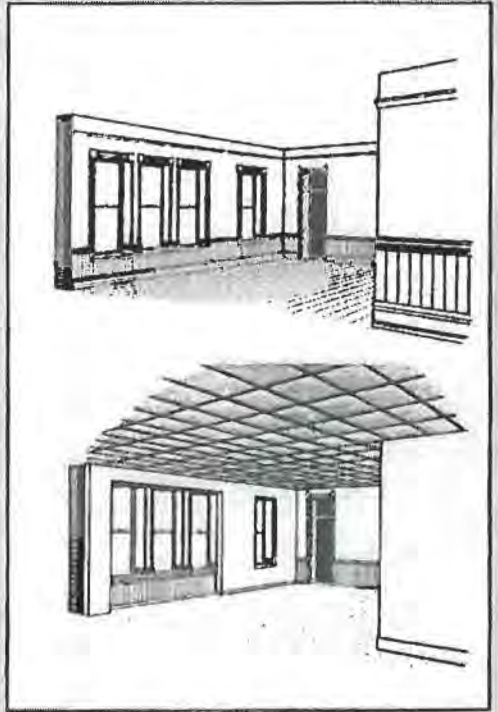
Radically changing, damaging, or destroying character-defining spaces, features, or finishes when adding new code-required stairways and elevators.

Destroying character-defining interior spaces, features, or finishes; or damaging the structural system in order to create an atrium or light well.

Inserting a new floor within a building that alters or destroys the fenestration; radically changes a character-defining interior space; or obscures, damages, or destroys decorative detailing.

Cutting through floors, ceilings, or walls in a way that changes character-defining spaces, features, or finishes.

Furring out perimeter walls for insulation or other purposes. This requires unnecessary removal of window trim and can change a room's proportions. Consider alternative means of improving thermal performance, such as installing insulation in attics and basements, if these spaces are not historically significant, or reducing air infiltration by various means such as adding weather stripping.



Furring out walls and ceilings to add insulation, ductwork or wiring can change the proportions of the room and cause the interior features to appear fragmented. In the above example the top sketch shows a space prior to modification and the bottom sketch shows the addition of a dropped ceiling and furred out wall. Many character defining features have been covered or obscured by the addition. A more sensitive approach should be considered. Drawing courtesy of National Park Service.

Recommended

Recycle materials whenever possible. If historic materials must be removed, they should be stockpiled and made available for other buildings at NTC.

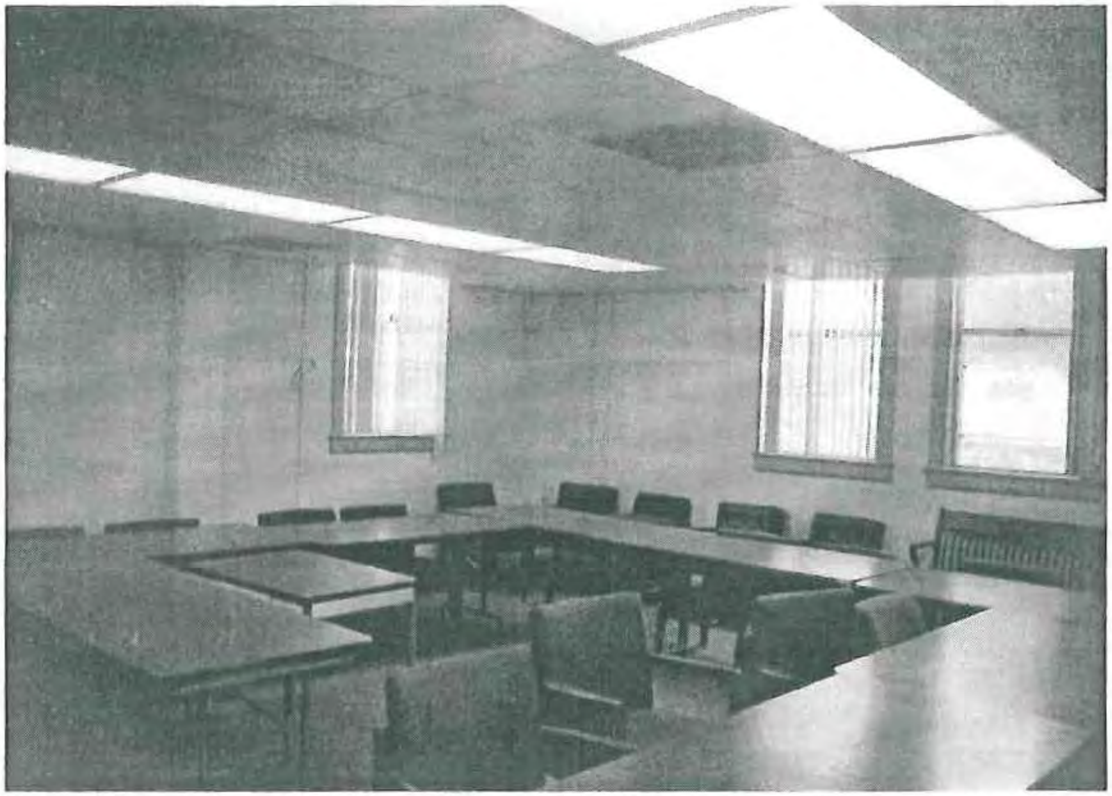
Consider reconfiguring toilet rooms. Most buildings have large, single-sex facilities which reflect the past population of the NTC. These may need to be altered to serve both men and women. An additional consideration is the accommodation of persons with disabilities. Where alterations would destroy historic fabric, consider creation of new accessible toilet rooms.

Avoid the construction of a modern lay-in acoustical panel ceiling unless no other alternative is available. Design dropped ceilings to be set well back from the windows so they do not obstruct them and are not visible from the exterior. Dropped ceilings are appropriate only in spaces that are not character-defining.

Retain the original floor-to-ceiling height in primary spaces when installing fire protection, improved mechanical systems, or upgraded electrical systems. Locate new work in less significant secondary spaces.

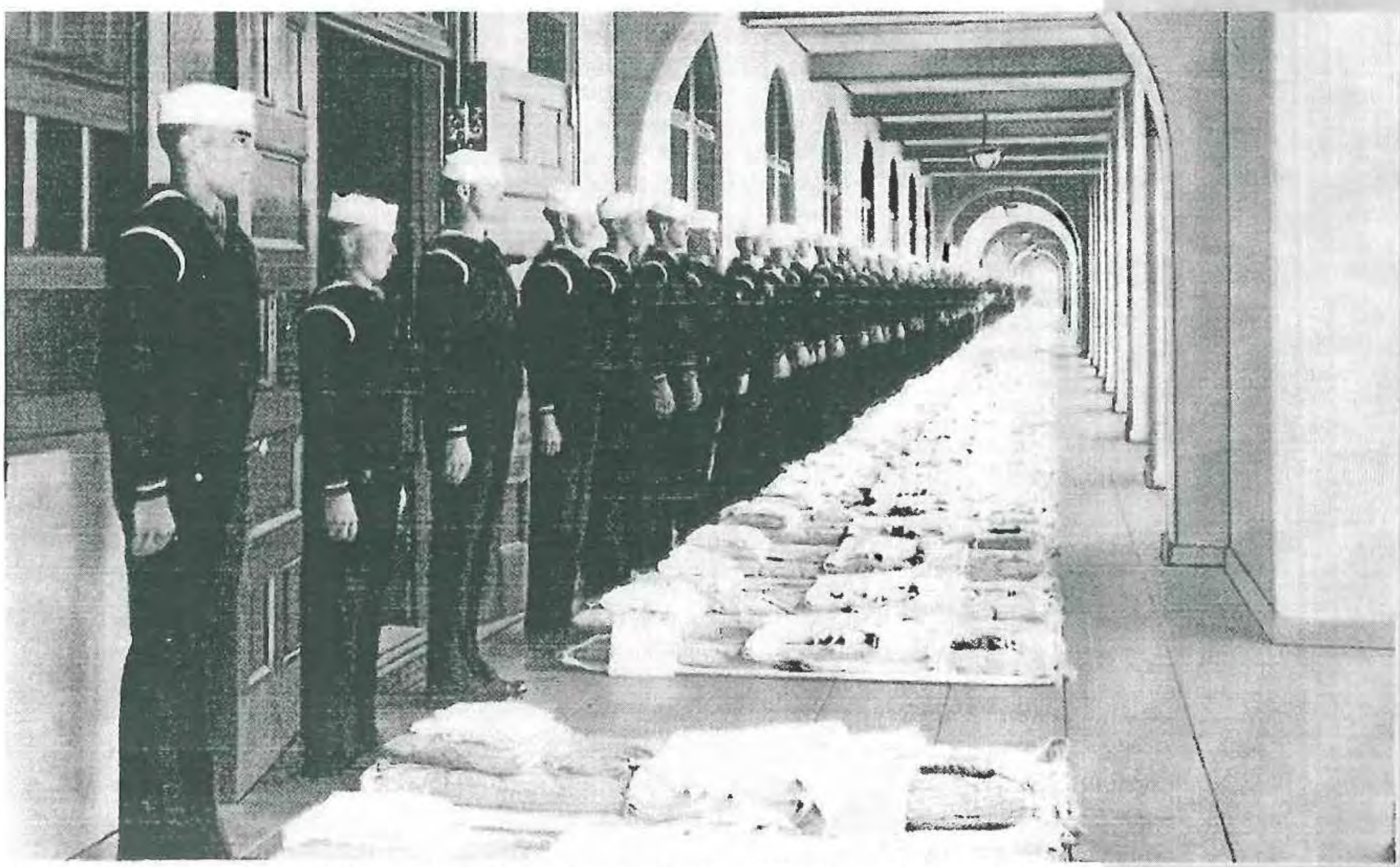
Make a clear distinction between new and old construction. New work such as registers, grilles, hardware, and trim should be compatible with the historic character of the interior, but should be distinguishable from the original material. New work also should be reversible and could be removed later with no damage to the building's significant elements.

Recommended



New suspended ceilings should be modified to maintain the perception of the original space and not block off the historic windows. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

MECHANICAL & ELECTRICAL SYSTEMS



Navy seamen line the arcade outside the barracks, ca. 1920s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

MECHANICAL & ELECTRICAL SYSTEMS

Before: Historic light fixture located at the center of the Naval Training Center gate. Historic postcard collection of Architect Milford Wayne Donaldson, FAIA.

Mechanical, lighting, and plumbing systems improved significantly with the coming of the Industrial Revolution. The 19th century interest in hygiene, personal comfort, and the reduction of the spread of disease was met with the development of central heating, piped water, piped gas, and networks of underground cast iron sewers. Vitreous tiles in kitchens, baths, and hospitals could be cleaned easily and regularly. The mass production of cast iron radiators made central heating affordable to many; some radiators were elaborate and included special warming chambers for plates or linens. Ornamental grilles and registers provided decorative covers for functional heaters in public spaces. By the turn of the 20th century, it was common to have all of these modern amenities in a building.

The greatest impact of the 20th century on mechanical systems was the use of electricity for interior lighting, forced air ventilation, exterior lighting and heat. The new age of technology brought an increasingly high level of design and decorative art to the functional elements of mechanical, electrical, and plumbing systems.

The visible decorative features of historic mechanical systems such as grilles, lighting fixtures, and ornamental switch plates may contribute to the overall historic character of the building and should be retained and repaired whenever possible. Identification of these features should take place early in project planning, together with an evaluation of their physical condition. On the other hand, the functioning parts of many older systems, such as compressors, their ductwork, wiring, and pipes may often need to be upgraded or entirely replaced in order to accommodate the new use and to meet code requirements.

After: Light fixture removed from entry gate. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Although mechanical and electrical systems at NTC may range from rudimentary to sophisticated, the majority are relatively basic. Over the years, NTC made improvements to building systems based upon the changing functional needs of the occupants. Systems were augmented or replaced as technological advances or changes in occupancy occurred. With each advance came new equipment, with new wires, pipes, and controls, often installed without removing outdated equipment. NTC made little attempt to conceal systems, so in many of the buildings the developments remain clearly visible, and historic elements have been to some degree preserved. Attempts to conceal systems are frequently the cause of significant damage to historic fabric, but at NTC the minimal damage incurred can generally be repaired and restored.

MECHANICAL & ELECTRICAL SYSTEMS

These guidelines emphasize issues of existing nonhistoric mechanical and electrical systems in historic buildings, which is a typical characteristic of building at NTC. They augment the *Secretary of Interior's Standards* for mechanical and electrical systems, which are orientated toward preserving historic systems and incorporating new systems in historic buildings.

- Many NTC buildings may have insufficient electrical service for their current uses.
- Many buildings have inadequate lighting for their present occupancy. In addition, the lighting, whether historic or nonhistoric, is not energy efficient.
- Heating, ventilating and air conditioning (HVAC) systems are frequently hybrids (e.g.., gas boilers, steam heating, electric baseboard heaters, and window air conditioning units) that are both inefficient and redundant.
- Supply and distribution systems (ducts, pipes, conduit, and wiring) are generally exposed, and in many cases, deteriorated.
- Much of the equipment, though in some cases functional, is well past its designed life span. The steam heating delivery system is antiquated and in poor condition.

Exposed conduit and other mechanical systems in industrial spaces are appropriate. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

MECHANICAL & ELECTRICAL SYSTEMS

Exposed mechanical units and ductwork on the exterior of the buildings are unsightly and inappropriate. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Mechanical and electrical systems are major consumers of energy and they can be upgraded to reduce consumption. Among the many strategies for reducing energy consumption are the following general guidelines:

- Carefully match the proposed building program to the existing building so the need for additional light, ventilation, or heating is minimized.
- Since most NTC buildings were originally designed to take advantage of natural light and ventilation, there should be little need for air conditioning if windows are made operable and adequate ventilation is provided. The noise level at the Historic District as caused by the Lindbergh International Airport is, however, excessive and it is anticipated that most of the buildings to be rehabilitated will use new HVAC systems to help control the noise and keep the windows closed.
- Perform routine maintenance, such as cyclical cleaning of filters to assure the optimal efficiency as well as longevity of a system.
- Rehabilitate and reuse existing equipment whenever possible with the exception of inefficient HVAC systems, motors and hot water heaters.
- Recycle elements that must be replaced. Any new equipment should be highly efficient and have low maintenance requirements.
- Carefully consider specific building uses when planning for new building systems; heating and illuminating the entire building may not always be necessary when zoned heating and task lighting may satisfy the occupant's needs.

A thorough understanding of both preservation and sustainable design will inform the design solution for these issues.

The tangible reminders of earlier mechanical and electrical systems including light fixtures and switchplates contribute to the overall character of a building and should be retained in place, even if the systems themselves are obsolete or need upgrading. Typically these elements can be integrated into upgraded systems and remain functional. Photograph courtesy of Architect Milford dated February 2000.

MECHANICAL & ELECTRICAL SYSTEMS

Survey the System
- Is the type of system acceptable and does the system follow the City of San Diego efficiency and guidelines?
- Is the size adequate?
- Is it operational?
- Does it meet functional and use requirements, does it meet code requirements?

Yes

Continue use of the system. Rehabilitate, make minor repairs; and maintain as necessary

No

Establish Significance
- Are the system or its components significant?
- Are the system or its components in a significant place?

Yes

Assess the Impact
Do needed improvements or alterations adversely affect significant features of the building or system?

Yes

Identify Alternatives
- Do significant features/ elements have rehabilitation potential? (Reuse is the preferred option).
- Will the new system or components have minimal impact on significant features?
- Can measures be taken to reduce impact?

Yes

Select system alternatives that provide adequate solutions while minimizing impact on significant features.

No

What is not significant may be removed and replaced to permit construction of an appropriate system.

No

Make alterations or improvements needed for an appropriate system.

No

Where impact is substantial, consider other uses more suitable to the limitations of the building

MECHANICAL & ELECTRICAL SYSTEMS

Although built to withstand abuse, some original faucets and sinks have been replaced as shown in this restroom. However, the overall historical integrity of most lavatories remains high. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

Recommended

Identify, Retain, and Preserve

Identify, retain, and preserve visible features of early mechanical systems that are important in defining the overall historic character of the building, such as radiators, vents, fans, grilles, plumbing fixtures, switch plates, and lights. Many of these items, although non-functional should remain to convey the historical character of the building's period of significance and the military's conservative approach to heating and cooling systems.

Analyze each existing system for safety, energy conservation, and cost effectiveness, as well as for historic significance. Review the building background data and confer with a qualified mechanical engineer, a preservation architect and the City of San Diego to assess each system. Many systems have some components that may be considered historically significant.

Employ professional engineering consultants with experience in retrofitting systems in historic buildings. Ensure mechanical and electrical subcontractors are qualified and experienced in such work.

Carefully determine that a building is suitable for conversion to the new use without serious impact on the historic fabric due to the introduction of necessary systems.

Not Recommended

Removing or radically changing features of mechanical systems that are important in defining the overall historic character of the building such that the character is diminished.

Determining that the existing system is not significant without proper research.

Removing abandoned obsolete systems or equipment before they have been assessed and, if significant, documented.

MECHANICAL & ELECTRICAL SYSTEMS

Recommended

Analyze the condition of existing systems. Many obsolete mechanical and electrical systems have been abandoned in place. Assess how they may be preserved and adapted to new uses.

Protect and Maintain

Provide adequate protection of materials on a cyclical basis such that mechanical systems and their visible features do not deteriorate.

Protect and maintain mechanical, plumbing, and electrical systems and their features through cyclical cleaning and other appropriate measures.

Prevent accelerated deterioration of mechanical systems by providing adequate ventilation of attics, and crawl spaces to avoid moisture problems.

Improve the energy efficiency of existing mechanical systems to help reduce the need for elaborate new equipment. Insulate and install vapor barriers in the attic and crawl space.

Keep systems in good working order with regular and careful maintenance. The microclimate of NTC is periodically very damp, providing an ideal environment for metal corrosion.

Not Recommended

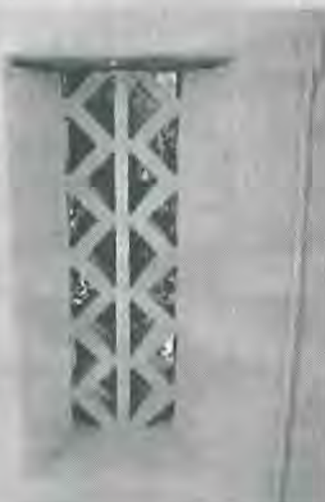
Enclosing mechanical systems in areas that are not adequately ventilated such that the system deteriorates.

Installing unnecessary air conditioning or climate control systems which can add excessive moisture to the building. This additional moisture can either condense inside, damaging interior surfaces, or pass through interior walls to the exterior, potentially damaging adjacent materials as it migrates.

Proposing uses for a building that cannot be adapted to the building's thermal limitations. The use of hollow clay tile walls at the 1920s buildings provide some level of thermal insulation.

Installing new vents or louvers rather than adapting existing ones.

Allowing existing plumbing systems to deteriorate. Water infiltration from leaks is a major cause to the deterioration of building materials.



Exposed electrical conduit is not appropriate and should be concealed where possible. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Modern suspended fluorescent lighting fixtures distract from the overall historical character of the interior of this 1920s barracks building. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

MECHANICAL & ELECTRICAL SYSTEMS

The original light fixture base is still present at Building 8, the Fire Station. The fixture should be restored to its original condition. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Recommended

Secure all equipment, gas, water, and electric lines for safety, as NTC lies in an active earthquake zone. Provide safety valves on all utility lines.

Retain attic louvers for passive attic ventilation; where appropriate, they may be incorporated into new heating, ventilation, and air conditioning systems.

Retain and maintain system components that visually contribute to the character of a room or space, such as light fixtures, radiators, and floor or wall air distribution grilles. If this is not possible, rehabilitate or replace them in kind.

Consider remodeling of bathrooms on a case-by-case basis retaining original fixtures where possible.

Repair

Repair mechanical systems by augmenting or upgrading system parts; for example, installing new pipes and ducts, or adding new compressors or boilers.

Provide proper venting for heating and plumbing systems. Existing skylights, transoms, and clerestories may be used to ventilate spaces naturally.

Not Recommended

The original bathroom fixtures in the Officers' Quarters have been replaced with inappropriate plastic counters, sinks, toilets, and shower stalls. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 1995.

Replacing a mechanical system or its functional parts when it could be upgraded and retained.

Replacing equipment or pipes that may simply require cleaning and treatment for continued use. Corrosion, frequently found in plumbing and heating equipment and piping may be only a surface condition.

Recommended

Return all originally operable windows to functional condition if HVAC systems are not considered in the rehabilitation.

Remove paint from painted-over skylights or transoms to restore natural light to the interior.

Provide mechanical ventilation for interior rooms and spaces that currently have inadequate ventilation.

Establish the elimination of fire hazards as a priority. Some existing systems pose fire hazards due to their composite nature, lack of clearances, or overloading.

Replace

Replace in kind or with compatible substitute material visible features of mechanical systems that are either extensively deteriorated or are prototypes, such as ceiling fans, swtichplates, radiators, grilles, or plumbing fixtures.

Replace inappropriate non-historic light fixtures with energy efficient fixtures that are compatible with the historic spaces, finishes, and character.

Remove surface-mounted elements such as pipes, wires, conduits, ducts, and cables that have been surface-mounted over historic finishes. Where they are necessary components of operational systems, replace them or reinstall them in a manner appropriate to the particular building.

Not Recommended

Blocking or painting over skylights, clerestories, or transoms.

Installing a replacement feature that does not have the same appearance.

Many systems, such as the exposed steam lines, at NTC may have no historic value and are, in fact, detrimental to the historic character of a building, particularly its exterior facades and along the arcades. Such equipment should be removed and alternate locations or alternative systems should be provided.

Several light fixtures are original and although the illumination may not meet current code requirements, they should remain and be supplemented with additional compatible light fixtures. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

MECHANICAL & ELECTRICAL SYSTEMS

Mechanical units installed in historic windows are inappropriate mechanical units. The units should be removed and windows reconstructed. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Recommended

Alterations/Additions for the New Use

Install a completely new mechanical system if required for the new use such that it causes the smallest possible alteration to the building's floor plan, and to the exterior elevations, and the least damage to the historic building material.

Provide adequate structural support for new mechanical equipment.

Install the vertical runs of ducts, pipes, and cables in closets, service rooms, and wall cavities.

Install air conditioning units, if required by the new use, such that historic features are not damaged or obscured. Excessive moisture that would accelerate deterioration of historic materials should not generate by condensing units or condensate lines.

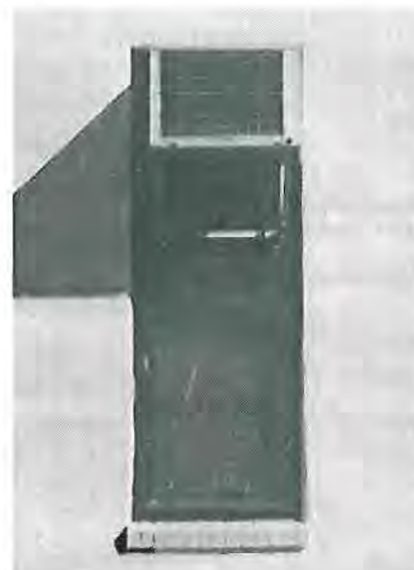
Not Recommended

Installing a new mechanical system so that character-defining structural roof lines, sight lines or interior features are radically changed, damaged, or destroyed.

Consider the weight and design of new mechanical equipment such that historic structural members or finished surfaces are not weakened or cracked, or excessive vibration noise is not introduced.

Installing vertical runs of ducts, pipes, and cables in places where they will obscure character-defining features.

Concealing mechanical equipment in walls or ceilings in a manner that requires removal of historic building material.



Air conditioning units installed in windows should be removed and the window rehabilitated to working condition. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

MECHANICAL & ELECTRICAL SYSTEMS

RECOMMENDED

Design all new systems with consideration towards their serviceable design performance time-standards. (Life-cycle analysis. By using the best components and planning for future growth and technological changes, future alterations and possible further damage to the historic building can be avoided.

Determine whether adding heating or air conditioning systems is appropriate. If the building's internal environment is altered through the addition of heat or air conditioning, historic building materials may be adversely affected. Keep alterations to the minimum necessary for the occupancy.

Bring services into a building underground, where possible. Penetrations for ducts, vents, or fans, when required, should be located in existing openings on secondary facades or rear roof planes.

NOT RECOMMENDED

Installing dropped acoustical ceiling to hide mechanical equipment destroying the proportions of character-defining interior spaces.

Cutting through architectural features such as masonry walls in order to install air conditioning units.

Radically changing the appearance of the historic building, damaging, or destroying windows by installing heating or air conditioning units in historic window frames.

Locating necessary new equipment rooms, elevators, or toilet facilities without carefully assessing their impact on historic spaces. Choose locations which allow maximum preservation of historic features.

Designing any new systems before the actual use and occupancy of a building are known, to prevent over design of systems and unnecessary damage to the historic fabric.

Creating new penetrations of the building envelope to accommodate mechanical equipment.

New electrical switches and outlets should be placed to minimize visibility and impact to historic fabric. This photograph shows a typical interior door elevation at Naval Training Center. Existing historic wood trim and molding should not be covered or cut for the installation of new outlets and switches. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA.

MECHANICAL & ELECTRICAL SYSTEMS

Original cast-in-place conduit has deteriorated and exposed conduit to service light fixture was installed over the archway. Attempts should be made to install new conduit to minimize visibility from public view. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Recommended

Consider alternative architectural changes to create a comfortable interior environment such as adding insulation, natural lighting and ventilation, storm windows, control devices, or lowering heat output from lighting rather than designing new systems to satisfy all needs.

Reduce the visual impact of new equipment; when there is no suitable space within a building, certain equipment such as transformers and heat pumps should be installed at remote locations.

Determine the appropriate treatment for installation of new systems. In utilitarian buildings with no spaces to conceal new systems, exposed systems, carefully designed and detailed, and installed in such a way as to limit damage to historic features and finishes, may be appropriate.

In more refined buildings, systems that must be installed in visible locations will be less intrusive if equipment is placed in less significant spaces and if existing architectural features such as cornices or baseboards are used to obscure new wires or pipes. The additions should be a part of the space design and hidden from view.

Remove abandoned utility lines.

Not Recommended

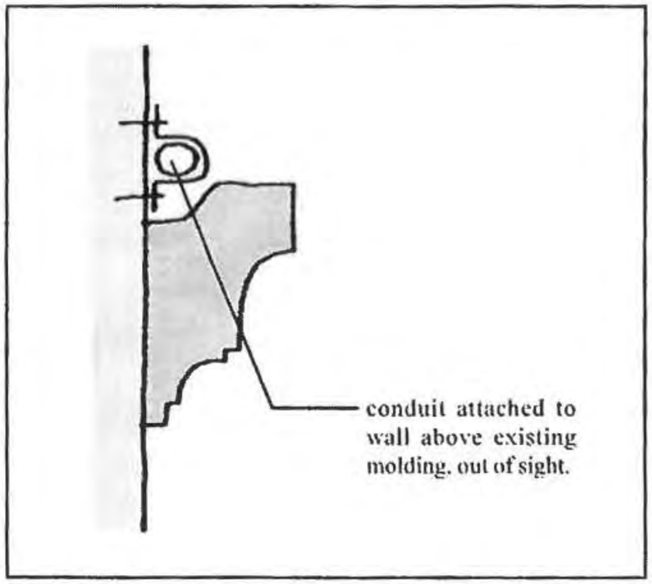
Installing highly visible communication equipment. Antennas and satellite dishes can be major intrusions in the historic landscape.

These new mechanical units greatly distract from the architecture of the historic district. Mechanical units have been installed where they are visible from the public realm and are not acceptable. The design and placement of newspaper stands should be considered as to not distract from the historic setting. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

MECHANICAL & ELECTRICAL SYSTEMS

Recommended

Plan for future needs. Any renovation must plan for the need to eventually replace partial or entire systems, and where possible, should incorporate the new systems in the ongoing work. Where a new system cannot be included as apart of a renovation project, make provisions that will allow its future installation without further damage to the historic fabric, e.g., use in-wall conduit with pull wires for future data and communication lines.



In many Naval Training Center buildings, trim pieces such as cornices and moldings may be used to minimize the visual impact of new conduits and pipes. Drawing courtesy of Architect Milford Wayne Donaldson, FAIA.

Not Recommended

The exterior walls have exposed conduit and steam pipes that should have been installed away from the public view. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

ENERGY CONSERVATION

Drills in front of Barracks Building 5 in John Paul Jones Court, ca. 1920s. Photograph courtesy of the San Diego Historical Society Photograph Collection.

ENERGY CONSERVATION

Some character-defining features of a historic building or site such as clerestories, shutters, transoms, skylights, sunrooms, porches, and plantings also play a major energy conserving role. Prior to retrofitting historic buildings to make them more energy efficient, the first step should always be to identify and evaluate the existing historic features to assess their inherent energy conserving potential. If it is determined that retrofitting is necessary, then such work needs to be carried out with particular care to ensure that the building's historic character is preserved in the process of rehabilitation.

The rehabilitation and use of the NTC's vast stock of historic and non historic buildings will provide a unique opportunity to introduce and assess energy conserving design on a large scale and to create an exemplary sustainable community.

The temperate climate of the San Diego Bay area demands a much smaller energy expenditure than that of the average American city. Both winter and summer are mild, resulting in a modest heating load and little need for air conditioning for most building uses. The sitting of many NTC buildings creates a naturally pleasant environment, where the site receives many hours of direct sunlight and breezes from the bay. Cold, high winds, or uncomfortably hot temperatures are rare; however, heavy fog is a regular phenomenon, especially during the summer months.

Many historic NTC building also have numerous passive energy conserving features. Hollow clay tile walls provide the thermal inertia necessary to hold either warm or cool temperatures. Daylighting and natural ventilation feature prominently in the original building designs control wind and capture solar heat. Conversely, however, many buildings are not insulated, and existing heating and electrical systems are not energy efficient. Previous alterations have also frequently increased energy consumption by blocking windows, created interior spaces without natural light or ventilation, and introduced inappropriate occupancies.

ENERGY CONSERVATION

In addition to both passive and active measures that can be introduced into building design to reduce energy consumption, another important aspect of energy conservation is that older buildings already embody energy conservation value. New construction can only require more energy because of the need for new building materials and associated transportation. All demolition and alteration consumes energy—this energy consumption is further exacerbated when the existing work being demolished or altered is well built of durable, permanent, natural materials. When new products are necessary, durable locally produced, natural and recycled materials will usually prove more energy efficient than low-quality, imported or manufactured materials.

Energy conservation goals for the NTC are summarized as follows:

- To achieve improved energy efficiency without sacrificing historical features.
- To employ passive strategies as the first choice for energy conservation.
- To promote energy awareness among both occupants and visitors, through signs, educational programs, and financial incentives.
- To prevent waste and restrict/manage energy use.

A specially designed wood window at the landing of Officers' Quarters "A" allows a shower of light to flood the interior. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, March 2, 2000.

ENERGY CONSERVATION

The sun porches found at the Naval Training Center's Officers' Quarters were early energy conserving features. Many porches on residences were later enclosed. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Roofed corridors are a feature of many NTC buildings. They perform a valuable energy conserving function, controlling summer sunlight and allowing windows to be used for ventilation during inclement weather. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

Recommended

Identify, Retain, and Preserve

Identify and evaluate existing features to assess their inherent energy conserving potential prior to retrofitting historic buildings to make them more energy efficient. Some character-defining features of a historic building or site-such as clerestories, shutters, transoms, skylights, sunrooms, porches, and plantings may also play a major energy conserving role. If retrofitting is necessary, it needs to be carried out with particular care to ensure that the building's historic character is preserved in the process of rehabilitation.

Choose all new products, materials, or systems for buildings in light of their life-cycle costs. Although some may initially be more expensive, they may be more cost effective because of longevity or energy efficiency.

Educate building occupants regarding energy conservation.

Take advantage of cool breezes, natural light, or passive solar energy available due to a building's orientation. These concerns were carefully considered in most of the original NTC designs by Lincoln Rogers.

Not Recommended

Assigning an inappropriate building use that requires high energy consumption.

Planning a new use for a non-insulated building that requires the installation of an air conditioning system without first considering the suitability of the building for such use.

Painting over or blocking a window that provides daylight or ventilation.

Removing historic interior features that play a secondary energy conserving role.

Recommended

Consider masonry and plaster inherent abilities to store thermal energy when assessing the need for wall insulation. Depending on orientation and exposure, a building's high level of thermal inertia can be an important energy conserving feature that might be compromised by the addition of insulation. The relative effect of wall insulation needs to be studied on a building-by-building basis.

Retain plant materials, trees, and landscape features, especially those that perform passive solar energy functions, such as sun shading and wind breaks.

Evaluate possible use of day lighting as a valuable strategy for energy conservation. Blocked or painted over windows, clerestories, and skylights should be restored to allow daylight wherever possible. Removable devices, such as shades should be used to control the level of light

Retain historic interior shutters and transoms for their inherent energy conserving features.

Not Recommended

The mature landscaping plays an important role in providing passive control of sunlight and wind. Alteration of such landscaping can radically change the interior environment of nearby buildings and create a need for future energy conservation solutions. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

ENERGY CONSERVATION

Restoration and maintenance of the arched transom window, shown above, will provide daylight and natural ventilation to the building interior. This will enhance both the internal environment and reduce energy use. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

RECOMMENDED

Alterations for Energy Efficiency

Provide zoning and operational controls for all systems; regularly assess the system's performance and level of energy use.

Use reversible, environmentally sound insulation products.

Cap unused chimneys with a reversible device to minimize heat loss from within.

Ensure that attic louvers and ventilators such as found in the library are functional; rehabilitate and upgrade operable skylights and ventilators. Where adequate documentation exists, restore missing ventilators in their historic locations rather than installing new equipment.

Improve thermal efficiency with weather stripping, caulking, interior shades, and if historically appropriate blinds and awnings.

NOT RECOMMENDED

Installing freestanding solar collectors that obscure, damage, or destroy the historic landscape or archaeological features.

Locating solar collectors where they radically change the property's appearance, or damage or destroy character-defining features.

Placing solar collectors on roofs where they will alter the historic roof line or obscure the relationship of other roof features, such as dormers, skylights, and chimneys.

Insulating an attic in such a way as to eliminate its natural ventilation system.

Installing rigid roof insulation that alters the profile or detailing of the roof with its additional thickness.

Installing rooftop energy conservation elements, such as ventilators or skylights, without regard for their impact on the historic fabric and appearance of the building.

Fireplaces with undampered chimneys are a major source of heat loss. Nonfunctional chimneys should be covered by removable caps. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Recommended

Maintain and Preserve

Regularly clean and maintain mechanical equipment and distribution systems. Lack of maintenance of mechanical systems is a major contributor to their inefficiency.

Consider cyclical maintenance as one of the most important components of energy conservation design. Regular maintenance is a preventive measure against poor operation of systems, deterioration of materials, and their subsequent replacement.

Restore and maintain existing skylights to fulfill original day lighting and ventilating functions.

Use the inherent energy conserving features of a building by maintaining windows and louvered blinds in good operable condition for natural ventilation.

Restore and maintain existing transoms that enhance cross-ventilation within a building, and that may provide the only natural ventilation and day lighting to interior spaces.

Use the inherent energy conserving features of a building; maintain porches in good condition so that they fulfill their original functions, retaining heat, blocking the sun and wind, and providing natural ventilation.

Not Recommended

Removing historic shading devices rather than keeping them in operable condition.

Replacing historic multipaned sashes with new thermal sashes using false muntins.

Replacing windows or transoms with fixed thermal glazing or allowing windows and transoms to remain inoperable rather than using them for their energy conserving potential.

ENERGY CONSERVATION

Awnings can be appropriate devices for sunlight control particularly on residences or modest, unornamented structures. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 1995.

Recommended

Replace

Consider the use of low-E glass for new or rehabilitated windows. Alternatively, apply a reversible coating to existing glazing to reduce the penetration of ultraviolet rays and heat gain.

Carefully consider the impact of proposed wall or ceiling insulation on interior finishes and features. (Refer to section 3J.)

Incorporate energy-saving features found in many historic buildings at the NTC such as masonry construction, well-planned day lighting, and natural ventilation into the design of new additions.

Install thermal insulation and vapor barriers in attics, unheated cellars and crawl spaces to conserve energy.

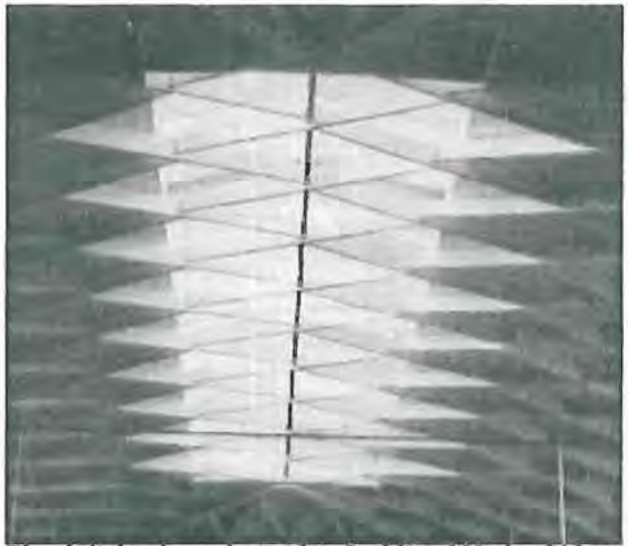
Not Recommended

Installing new exterior storm windows that are inappropriate in size or color, or that are inoperable.

Installing tinted or reflective glazing.

Installing wall insulation without considering window casings and trim, which will be affected by increased wall thickness.

Installing new additions, such as multistory solar greenhouses, that obscure, damage, or destroy character-defining features. Design issues should be under the consultation of a preservation architect.



The skylight above the pool in Building 210 should be maintained to provide natural light to the to the building. Skylights should not be painted or blocked, but allowed to provide natural light into the building spaces. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

ENERGY CONSERVATION

Recommended

Reduce the large amount of energy expanded for lighting by:

Using daylight wherever possible.

- Using fluorescent lights instead of incandescent bulbs unless the incandescent bulbs are a character-defining historic feature.
- Using appropriate lighting for tasks combined with a lower level of ambient lighting.
- Implementing controls to limit lighting use, such as occupant-activated light.

Reduce a buildings electrical load with a careful selection of energy-efficient equipment, computers, and appliances.

Add timers, sensors, or other control systems to help reduce energy consumption.

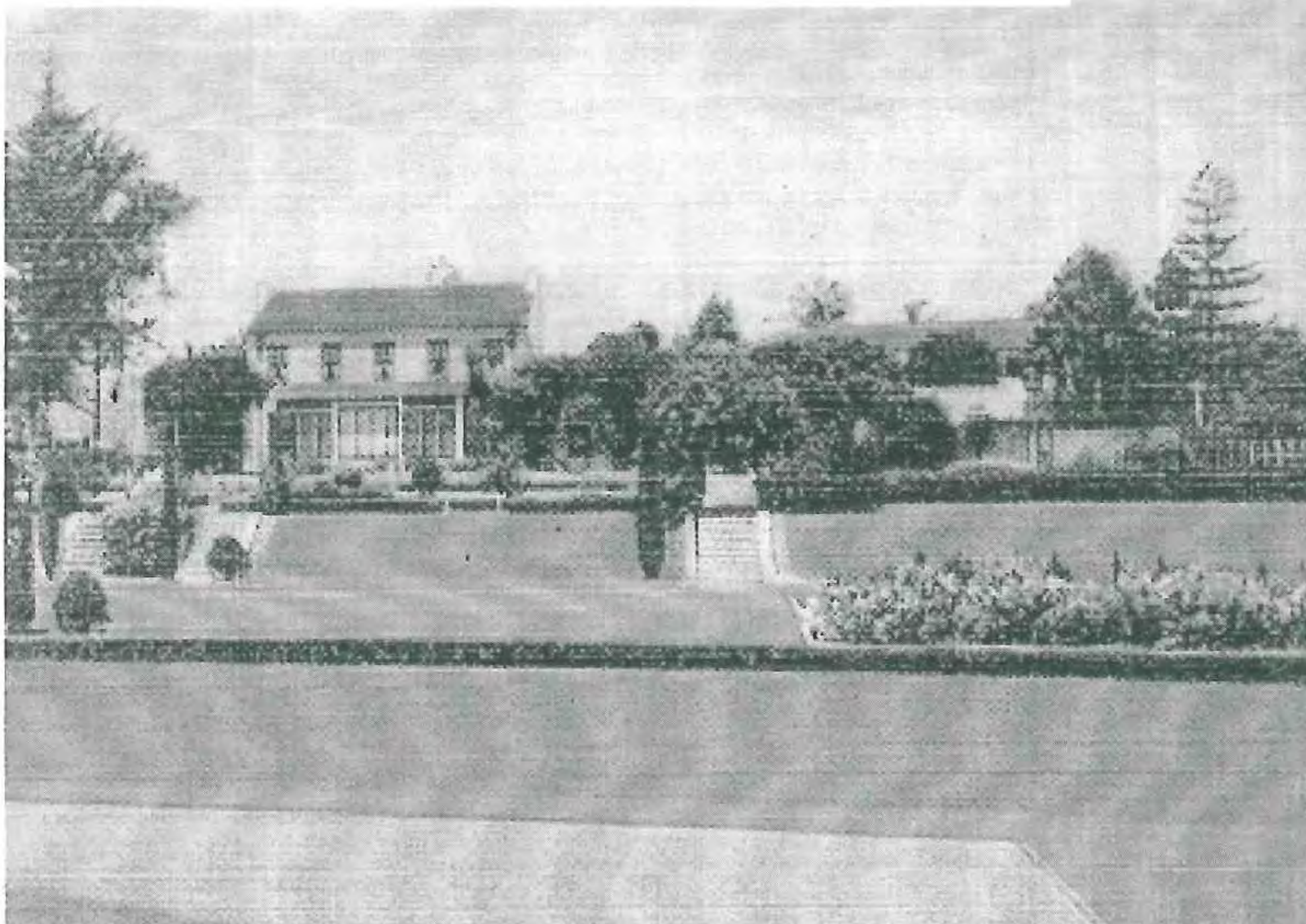
Consider designing a program of load management off peak of certain systems as a means of saving energy. San Diego Gas and Electric Company can assist in the initial design of energy saving systems.

Not Recommended

Applying unrea formaldehyde foam or any other thermal insulation with a water content that may cause the collection and retention of moisture in wall cavities.

The Library (Building 177) was built with large windows to provide adequate natural light and ventilation into the space. The added fluorescent lights obstruct the high volume of the space. Substitution of task lighting for some of the overhead fixtures will increase efficiency and be more sympathetic to the historic space. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February, 2000.

ACCESSIBILITY CONSIDERATION



The manicured gardens behind the Officers' Quarters were used for entertaining guests that visited the Naval Training Station, ca. 1930s. Courtesy of Architect Milford Wayne Donaldson, FAIA historic postcard collection.

ACCESSIBILITY CONSIDERATION

It is often necessary to modify a historic property to comply with current accessibility code requirements. Accessibility to certain historic buildings and sites is required by the Architectural Barriers Act of 1968, Section 502 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990. Federal rules, regulations, and standards provide guidance on how to provide access to meet both accessibility and historic preservation requirements. Modifications to historic properties must be carefully planned and undertaken so that they do not result in a loss of character-defining spaces, features, or finishes. The goal is to provide the highest level of access with the lowest level of impact to the historic buildings at Naval Training Center (NTC).

The majority of buildings at NTC, both historic and nonhistoric, have accessibility problems many of which present serious obstacles to use by the disabled. This includes exterior and interior routes, ramps, entrances, kitchens, toilets, parking, and displays and signage.

To determine access requirements at NTC in addition to those access requirements contained in the three acts mentioned above NTC will need to follow the Uniform Federal Accessibility Standards and California Title 22, including the State Historical Building Code for qualified historic buildings, such as the USS Recruit. In specific cases these codes allow some latitude for compliance with regards to historic buildings.

Inherent characteristics of the NTC site and buildings pose other challenges, such as:

- Lack of direct access to buildings due to parking requirements.
- Historically significant entrances and elevated arcades that do not comply with current standards of accessibility.
- Features that inhibit movement through the building, such as changes of floor level, narrow doors and corridors, lack of elevators, and noncompliant stairways.
- Toilet, bath, and kitchen deficiencies due to age and design.
- Lack of required accessibility aids, such as signage, and warning and control systems.

Accessibility is important in determining proposed uses; some occupancies are more appropriate than others for modification. For example, the need to add an elevator may preclude public uses for some smaller, multistory buildings.

Accessibility design must strike a balance between equal access and sustainability, especially the preservation and conservation of existing built resources. Barrier-free access not only promotes independence for persons with disabilities, but also minimizes the need for duplicate facilities. Regrading for ramps to existing entries and providing accessible paved parking and paths should be accomplished sensitively to prevent adverse effects on the site. Simple solutions and additive elements should be considered before the abandonment or replacement of existing components.

Some pedestrian paths are not clearly signed for wheelchair access across the roadway. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Simple modifications can help create accessibility to historic buildings. This photograph of Building 210 shows accessible parking adjacent to an accessible ramp giving convenient access to the building. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

ACCESSIBILITY CONSIDERATION

REVIEW THE HISTORIC SIGNIFICANCE OF THE PROPERTY

- review available written documentation
- conduct a physical investigation of the property
- identify major character defining features, spaces and materials
- identify secondary features which could be modified without threatening or destroying the historic significance of the property

ASSESS EXISTING AND REQUIRED LEVEL OF ACCESSIBILITY

- identify accessibility barriers
- identify all applicable accessibility requirements included in local, state or federal laws and apply the most stringent requirements when implementing modifications

IDENTIFY AND EVALUATE ACCESSIBILITY OPTIONS

- identify and prioritize spaces which require modification for accessibility
- evaluate proposed modifications for conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties
- if necessary, contact the State Historic Preservation Officer for guidance if the proposed modifications will threaten or destroy the significance of the property

Planning Accessibility Modifications Flow Chart courtesy of National Park Service and Architect Milford Wayne Donaldson, FAIA

ACCESSIBILITY CONSIDERATION

Some buildings are equipped with ramps for moving materials which may serve as wheelchair access with little or no alterations. This ramp occurs at Building #35. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Recommended

Identify, Retain, and Preserve

Identify the historic building's character-defining spaces, features, and finishes so that accessibility code-required work will not result in their damage or loss.

Comply with barrier-free access requirements in such a manner that character-defining spaces, features, and finishes are preserved.

Work with local disability groups, access specialists, and historic preservation specialists to determine the most appropriate solution to access problems. Consultation with the California State Historical Building Code to evaluate compliance and hazards.

Provide barrier-free access that promotes independence for the disabled person to the highest degree practicable, while preserving significant historic features.

Design new or additional means of access that are compatible with the historic property and its setting.

Carefully consider proposed changes when planning access that will affect character-defining features, such as porches and entrances, the immediate site, and interior spaces.

Not Recommended

Undertaking code-required alterations before identifying those spaces, features, or finishes that are character-defining and must be preserved.

Altering, damaging, or destroying character-defining features in attempting to comply with accessibility requirements.

Making changes to buildings or sites without first seeking expert advice from access specialists and cultural resource professionals.

Providing access modifications that do not reasonably balance independent, safe access and preservation of historic features.

Designing new or additional means of access without considering effects on the historic property and its setting.

Accepting existing access solutions as a standard. Access solutions at NTC have frequently had an adverse effect on the historic fabric because of their appearance or the irreversible damage they have caused to historic features, finishes or site elements.

ACCESSIBILITY CONSIDERATION

Recommended

Completely survey all deficiencies and potential hazards related to accessibility. Compare the results with a list of highly sensitive and less sensitive historic features to determine where conflicts may occur.

Consider all alternative access possibilities in the context of preservation. In some cases, where compliance with access requirements would threaten or destroy the historic significance of a building or site, the codes permit some options, such as rear or secondary entry access locations, the addition of an elevator, or a lift in place of a ramp.

Consult the California State Historical Building Code to evaluate compliance and hazards.

Not Recommended

Installing a new internal elevator that penetrates the roof causing structural destabilization or roofline visual impacts without first considering the merits of building a compatible new addition to house the elevator.

Modifying stairs and railings; even seemingly minor alterations to these simply designed elements may adversely affect their character-defining qualities.

Certain buildings have prominent entrances that are difficult to modify without affecting the historic character of the building such as the North Chapel (Building 208). A wheelchair lift or ramp at a secondary entrance is a possible alternative. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

A common condition at the Naval Training Center is a one or two step elevation change at building or arcade entrances, as shown here. In some cases, this can be treated by regrading and constructing a sloped sidewalk. This is preferred because of its reduced impact on the historic appearance of the building. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA. January 4, 2000.

ACCESSIBILITY CONSIDERATION

RECOMMENDED

Maintain the character-defining importance of utilitarian features, such as loading docks, service entrances, or completely paved sites, when developing access solutions.

Develop a plan for compliance, in consultation with specialists in the fields of accessibility and cultural resource professionals. Following a consistent design methodology, establish a completely accessible path of travel to and throughout the building and site.

NOT RECOMMENDED

Disabled access are provided through basements or service areas, as in some current solutions at the NTC. Such points of access should be relocated and redesigned as part of any rehabilitation.

Assuming that the rear facade of a building is less sensitive to change than its nominal front. Some NTC buildings have several facades with significant features; the addition of a substantial structure to any facade may be unacceptable in such cases.

Damaging character-defining features in making housing units accessible. Some residences have serious obstacles to access from parking to main floor entrance; others may be more easily reached.

This is an example of a building entrance modified to comply with accessibility requirements. The original scored concrete was removed and new concrete was ramped up to threshold and matched to the existing concrete in color, texture, and scoring. The original brick edging was left unaffected. The entrance doors shown here are not historic. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

ACCESSIBILITY CONSIDERATION

Recommended

Maintain and Preserve

Try to establish access for all persons through a primary entrance. In some building uses, it is more important to integrate access into the general public entrance. In all cases, an attempt must be made to allow all persons access to a common arrival point, whether this is an arcade, lobby, or other space. Frequently, a secondary entrance such as found at the Commander's Office area can connect internally with the main lobby.

Consider regrading to develop an accessible path from parking to the building only where character-defining features of the site will not be affected.

Take advantage of changing use patterns when they can be adapted to provide a satisfactory access path. Often, the main entrance has shifted from the original front entry to a back or side entry, due to more convenient automobile access. This reorientation may help preserve the building's historic entrance facade. A suitably designed ramp to the back door of an individual residence, for example, may satisfy both.

Not Recommended

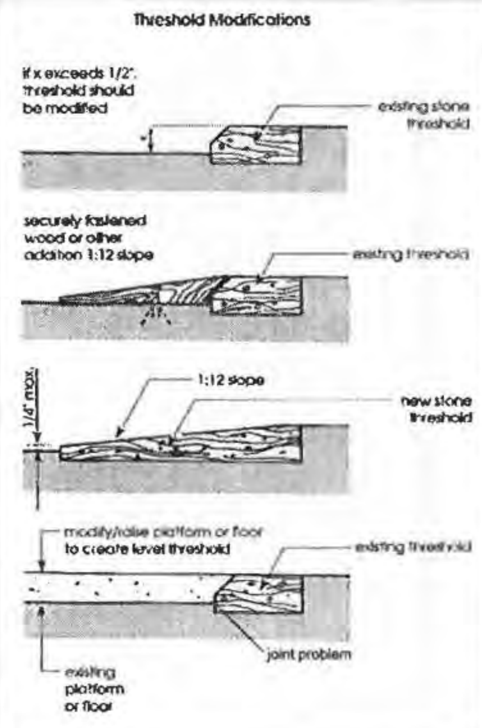
Replacing or rebuilding all doors throughout.

Reconstructing entire bathrooms when the addition of new facilities is feasible.

Replacing all hardware

The typical single step into most buildings may be avoided through alternative routes or by installing an appropriate reversible short ramp for wheelchair access. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

ACCESSIBILITY CONSIDERATION



Thresholds that exceed allowable heights can be modified several ways to increase accessibility. Source: Uniform Federal Accessibility Standards (UFAS) Retrofit Manual.

RECOMMENDED

Allow for differentiation between the design of access solutions and the existing structure, as discussed in the "New Addition New Building" chapter. However, additions should be of a compatible mass, scale, and detailing. The utilitarian character of many NTC buildings makes the addition of straightforward access solutions, such as ramps, possible.

Consider future reversibility as a key element in determining whether access solutions are appropriate. Most solutions will affect the historic fabric to some extent, but their effects should be minimized.

Carefully assess the effects of any new exterior additions on both the building and its setting. Consider limited site regrading to provide access to porches without adding major ramp structures.

Ensure that the major circulation route to every public space within a building is accessible to all. Throughout NTC, door thresholds are not accessible, but the addition of bevels to thresholds of modest height may improve access to and within many buildings.

Recommended

Consider alternative solutions for NTC interiors with level changes of one to two steps. Often, constructing ramps in these locations may damage significant finishes, door openings, and other historic features. In some cases, functions within a building can be reorganized to allow access to all areas on a single level.

Introduce new facilities such as stairs and toilets into less significant spaces (service areas or repetitive spaces) or spaces that have been previously altered. Knowledge of a building's construction and alteration history is essential in developing access solutions.

Choose previously modified interior spaces as the best candidates for further modification and addition of required facilities for accessibility.

Install reversible treatments for slippery surfaces such as vinyl tile, and terrazzo floors, as found in the Commander's Office area, can be refinished to meet accessibility standards.

The floor tile should not be waxed to the point that the surface becomes too slippery and poses a threat to persons on crutches or that have other disabilities. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

ACCESSIBILITY CONSIDERATION

A common condition at the Naval Training Center is the one or two step elevation change at the entrances. In some cases, this can be treated by regrading and constructing a sloped sidewalk. This is preferred because it reduces the visual effect on the historic buildings. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, December 21, 1999.

Recommended

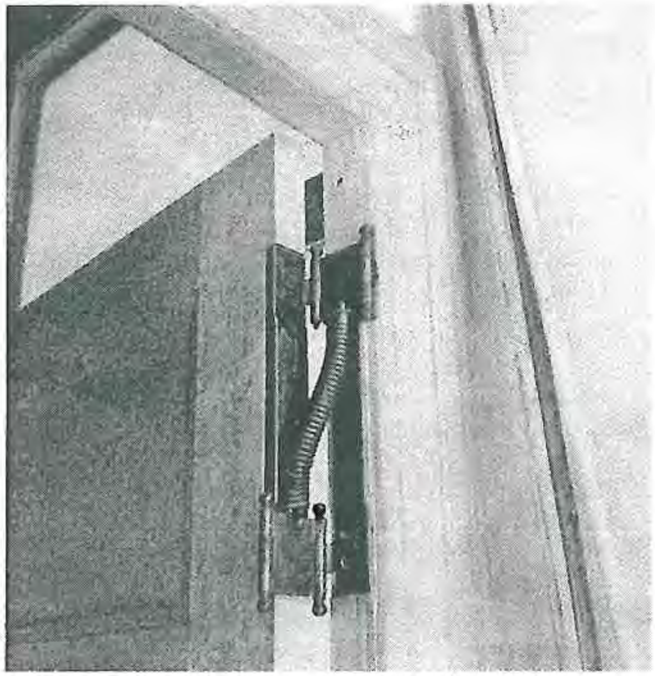
Consider rehanging doors with offset hinges where door opening width is inadequate.

Retain historic doors wherever possible. Where doors must be removed, retain jamb and casing as a framed opening rather than removing the entire assembly.

Consider adding lever hardware rather than replacing significant hardware.

Preserve significant fixtures and finishes within existing toilet rooms while upgrading the facility for accessibility. In some cases, the addition of completely new facilities for persons with disabilities may be preferable to remodeling.

Select accessible hardware where required, such as for drinking fountains, telephones, and signage, that are compatible with the historic character and features of a building.



Accessibility modification to historic buildings can be sensitively integrated to minimize impact to existing historic fabric. In this case, a door opening which was originally less than 32" wide has been modified with offset hinges to make it accessible. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA.

Fire Station, dated 1931. Courtesy of the San Diego Historical Society Photograph Collection.

HEALTH & SAFETY

Current health and safety codes, such as occupational safety, fire safety, electrical, structural and building codes must be met as historic buildings on NTC are rehabilitated. Impacts to character defining spaces, features and finishes on historic buildings should be considered while complying with building codes.

Rehabilitation of historic buildings at NTC should comply with the following building codes and standards:

California State Historical Building Code (SHBC)
Americans with Disabilities Act (ADA);
Uniform Federal Accessibility Standards (UFAS);
National Fire Protection Association (NFPA) - 101 Life Safety Code;
Uniform Building Code (UBC) for new work;
National Electric Code (NEC) for new work;
Uniform Mechanical Code (UMC) for new work; and
Uniform Plumbing Code (UPC) for new work.

Proposed uses for historic buildings at NTC include office and administration, nonprofit institutional, retail, museum, cultural activities, live-work spaces, environmental research and development, public use areas, bed and breakfast, commercial, and civic/arts educational. Fire safety is a concern at NTC. Fire safety codes are based on occupancy (the building use and number of occupants), construction type (fire-resistant characteristics) and proximity to adjacent buildings. The primary purpose of fire safety codes are to provide occupants sufficient time to safely exit a building during a fire.

The use of automatic fire suppression systems can enhance life safety by increasing the amount of time occupants have to safely exit a building, but can also offer protection to the building and its contents.

Inherent characteristics of historic buildings at NTC which pose challenges to fire safety code compliance include:

Most of the 1920s NTC historic buildings are built of concrete-frame construction with hollow clay tile infill walls and heavy timber wood trusses. The 1940s structures are primarily wood-frame.

All NTC historic buildings are generally sited with clear space around the exterior, but many are connected by arcades.

In most cases interior stairways are enclosed and located at exterior walls with adjacent building exits.

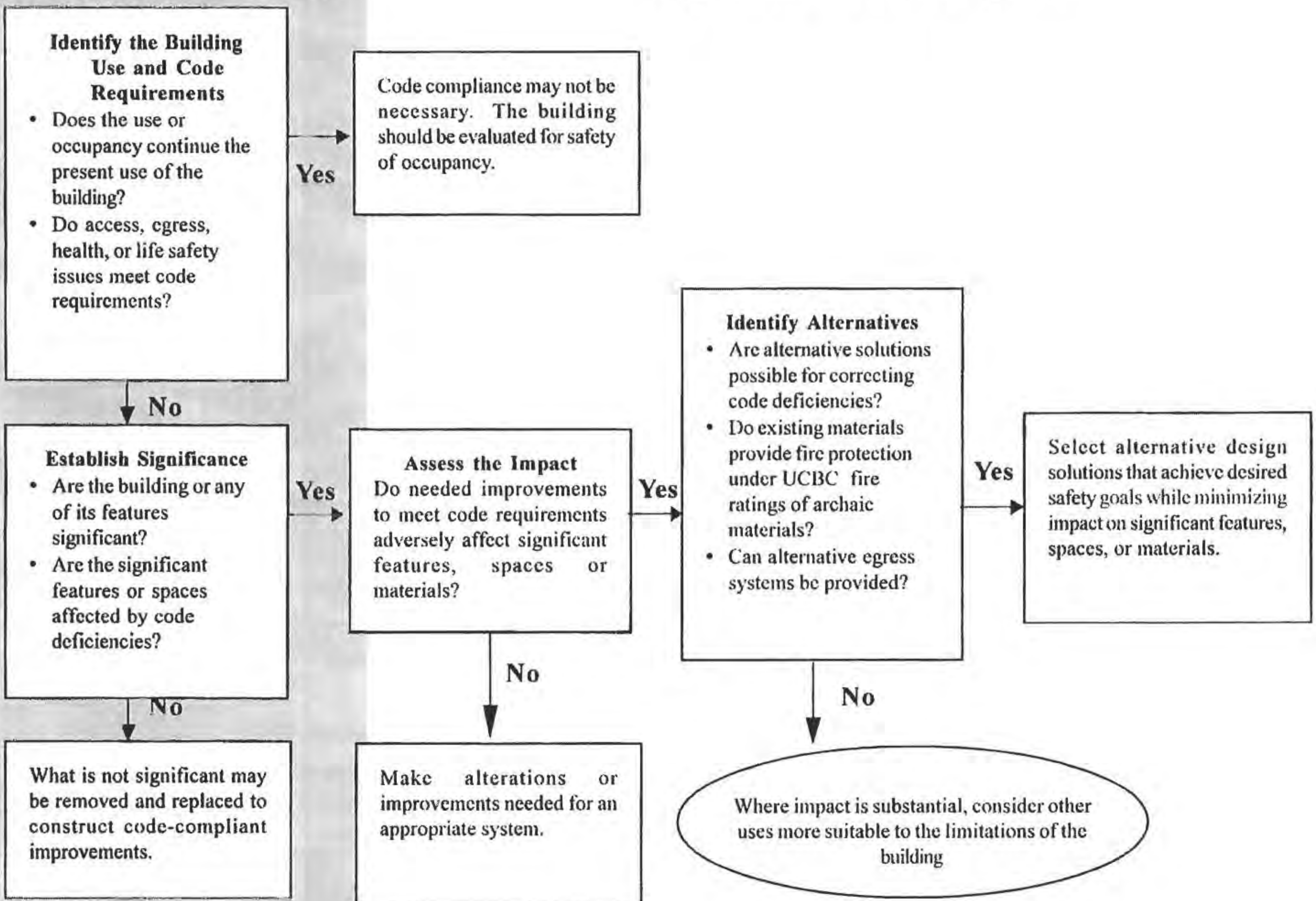
Sprinkler systems have been added to some of the buildings.

HEALTH & SAFETY

Hazardous materials in NTC historic buildings primarily include lead-based paint, lead pipes and asbestos. The need to remove and properly dispose of hazardous toxic materials must be balanced with the need to preserve the existing resources. Features should be modified to comply with building codes, additive methods often can preserve the historic resources better than wholesale replacement.

Lead was a common ingredient in paint mixtures until the 1950s, thus all NTC historic buildings most likely contain lead-based paint under its current coat. Striping away old coats to remove lead-based paint can pose serious health and safety concerns. Lead-based paint should not be removed from historic buildings if encapsulated under an intact coat of non-lead-based paint and is determined its presence does not pose a health risk to building occupants.

Design Process for Code Compliance



Recommended

Identify, Retain, And Preserve

Identify the historic building's character-defining spaces, features and finishes so that code-required work will not result in their damage or loss.

Assess the building, including the site, zones within the building and individual features for fire and life safety. Incorporate this survey into an assessment of the building's historically significant features.

Coordinate with the City of San Diego Fire Department, a preservation architect and the provisions of the State Historical Building Code to investigate alternative systems, methods or devices which effectively meet safety requirements and avoid unnecessary alterations to the historic buildings.

Develop a master plan to meet fire protection code requirements and intent, determine the building's code compliance deficiencies and recommend alternative approaches to code compliance which correct the deficiencies with minimal impact to the historically significant features.

Not Recommended

Undertaking code compliance alterations to a building or site without first identifying the spaces, features or finishes which are character-defining and therefore must be preserved.

Altering, damaging or destroying character-defining spaces, features and finishes while modifying a building or site to comply with safety codes.

Making changes to historic buildings without first exploring equivalent health and safety systems, methods or devices that may be less damaging to historic spaces, features and finishes.

Several exit doors have been retrofitted with panic hardware; however exit signs have not been installed. All exit doors should have illuminated exit signs. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

Recommended

Life Safety

Utilize sensitively designed glazed partitions, wall and doors to enclose and alter interior stairways to meet life safety codes.

Modify existing doors with fireproof panels, new seals and panic hardware to increase their fire-resisting capacity. Applying intumescent paint to the frame and edges of a historic door will expand when exposed to heat and form an effective seal.

The direction of inward swinging doors in exit routes should be reversed if the original doors and hardware can be maintained.

Apply an additional layer of a fire-resistant material to augment the fire-resistance of wall, ceiling and door assemblies.

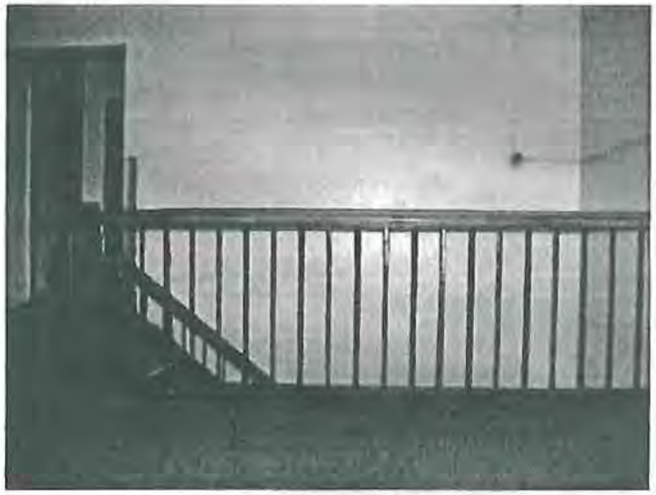
Add exit illumination and exit route guidance in a manner that does not damage nor detract from historic details and materials.

Not Recommended

Adding a new exterior stairway to meet life safety codes without first exploring alternatives to modify interior stairways to meet the codes.

Radically changing, damaging or destroying character-defining spaces, features or finishes when adding a new code-required stairway or elevator.

Constructing a new addition to accommodate code-required stairs and elevators on character-defining elevations of historic buildings.



Although the guardrails on the upper floors do not meet regular code, they should be assessed for their safety before considering alteration with the State Historical Building Code. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

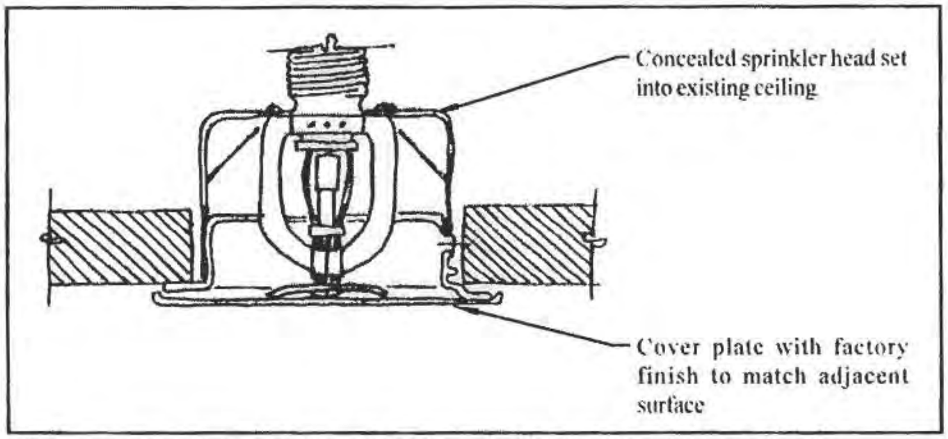
Recommended

Fire Protection Systems

Install active fire protection systems — including fire suppression, fire detection and smoke management systems to meet life safety codes while offsetting the need for alternatives which disrupt the historic fabric, such as enclosed stairways.

Minimize visual intrusion where sprinkler piping must be exposed by planning piping routes and sprinkler head locations.

Factory paint sprinkler piping to match existing ceilings and walls. Sprinkler heads should not be painted because paint would alter the factory finish and jeopardize proper function.



Fire protection systems such as sprinkler systems should be integrated without disrupting the historic integrity of the building. Custom color can be applied at the factory to match surrounding surfaces. To further minimize visibility, the location of heads should also be considered. Drawing courtesy of Architect Milford Wayne Donaldson, FAIA.

Residential basement areas may contain lead-based paint or asbestos as seen in this basement in Officer's Quarters "A". All such areas should be investigated for hazardous materials. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, February 2000.

Recommended

Hazardous Materials

Remove toxic building materials only after thorough testing and only after less invasive abatement methods are determined to be inadequate.

Provide workers with appropriate personal protective equipment for hazards at the work site.

Monitor encapsulated asbestos for any signs of deterioration. If determined asbestos should be removed, utilize trained personnel following prescribed methods.

Determine if lead-based paint must be removed. For non-housing units where the lead-based paint does not present extreme health dangers to children, the existing paint could be encapsulated.

Not Recommended

Altering historic interior features and finishes prior to testing and considering less invasive abatement methods.

NEW ADDITIONS / NEW BUILDINGS

View looking northeast over the roofs of the Naval Training Center toward the Marine Corps Recruitment Depot and the homes on Bankers Hill in San Diego, ca. 1922. Photograph courtesy of the San Diego Historical Society Photograph Collection.

NEW ADDITIONS / NEW BUILDINGS

Inappropriate additions not sensitive to the original design in materials, massing, or character should be evaluated for possible demolition. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 4, 2000.

An attached exterior addition to a historic building expands its "outer limits" to create a new profile. Because such expansion has the capability to radically change the historic appearance, an exterior addition should be considered only after it has been determined that a new use cannot be met successfully by altering non-character-defining *interior* spaces. If a new use cannot be met in this way, then an attached exterior addition is usually an acceptable alternative. New additions should be designed and constructed so that the character-defining features of the historic buildings are not radically changed, obscured, damaged, or destroyed in the process of rehabilitation. New design should always be clearly differentiated so that the addition does not appear to be part of the historic resource.

Additions to existing NTC buildings should be considered as a last resort, after all other alternatives have proved inadequate. This is due to NTC's formal arrangement of buildings and the high symmetry and balance of bulk, height and form of the buildings. The available space left within the historic core of the original 1920s design is limited. However, some other areas within the Historic District offer the opportunity for additions. New additions can serve the goals of preservation, if they reduce impact on significant original features.

Alterations at the NTC have generally involved adding on to the buildings, filling in courtyards, filling in windows, porches and doors. Original massing and architectural styles have not always been preserved. Many of these additions are of poor design and are done without sensitivity to the historical resource. Each style, whether historic or contemporary, has its own design vocabulary, and successfully designed additions will reflect the inherent differences of individual styles.

Designing a new addition to an existing building or a new building at the NTC Historic District poses a challenging design problem for both historic and nonhistoric buildings. An addition should be compatible with the existing structure and appropriate for its particular area within the NTC; at the same time, character-defining features must be preserved and the new addition must be differentiated from the existing structure. Although a new addition or building may be made more compatible to the existing building by being subordinated architecturally, constructed of the same materials, or designed to emphasize the original massing and to repeat fenestration patterns, it can still easily disrupt the original cohesiveness. The design of new additions and buildings must be coordinated with the City of San Diego Historical Resources Board, and possibly the State Historic Preservation Officer if federal funds are involved and will follow the same review and approval process as for other modifications.

In all cases, an addition must be designed to be reversible, with minimum impact on historic fabric, particularly where the new structure comes into contact with the historic. As much as possible, renewable and recyclable construction materials should be used for the addition. Natural, locally produced, and high-quality materials will improve sustainability. The addition should be designed for energy efficiency with highly efficient equipment, and should maximize passive energy design. Life-cycle costs should be carefully weighed against construction costs; it is important to recognize that long-term savings in operating costs may justify higher initial costs for some items. Sustainability will require analyzing the impact of the addition on the existing building as well as on ventilation, weather protection, fire protection, and access to adjacent buildings. The new additions will need to comply with regular codes for life safety concerns.

In response to the sitting and context of the NTC, new buildings must be visually unobtrusive and also protect original facades, particularly of historic structures. Circulation patterns at the NTC have often changed over time, so that the primary facade of a building may no longer be the most visible. Consequently, the effect of new buildings or structures to the Historic District must be carefully evaluated. A new building should be located away from both the original primary facade and the current most visible facade.

The simplicity of form, the rhythm of the arches, the variegated tile roofs, the predominate use of plaster and a single exterior wall color present a strong cohesiveness of architectural style. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

NEW ADDITIONS / NEW BUILDINGS

Sustainable design principles imply utilizing existing space before constructing additional buildings. New buildings to be located within the Historic District should attempt to follow the original concept of axial relationship and hierarchy of building massing of Lincoln Rogers interpretation of Goodhue's Spanish Colonial Revival design principles. New buildings will most certainly distract from the historic buildings and other sites outside of the district should be first considered as an alternative. The following criteria should be used in the design and sitting of new buildings:

- Building height should not be more than two stories.
- The scale should be compatible with surrounding historic buildings.
- The orientation, spacing and site coverage of the new buildings should be subordinate to the existing historic buildings unless representative of the historic site plan or are being historically reconstructed .
- All new buildings should have pitched variegated mission tile roofs, flat roofs and parapets as appropriate for their setting and in context with adjacent or opposing structures. The setting within or to the outside of an enclosed courtyard should attempt to maintain balance, symmetry and rhythm of the existing buildings.
- All materials, textures and color should match original, existing historic buildings.
- Facade proportions, window patterns, door and windows detailing should be harmonious but distinctly not be exact copies of the historic.
- The new buildings should be linked with landscaping, walkways, fences and if appropriate, arcades as a part of the building.
- The original site layouts of the 1920s and 1940s should be consulted for design intent.

Aerial view of the Naval Training Center looking southwest, including the four Officers' Quarters along Rosecrans Street in the upper right and the dredged channel in the lower left, October 24, 1923. Photograph courtesy of the San Diego Historical Society Photograph Collection.

DECISION-MAKING PROCESS FOR NEW ADDITIONS / NEW BUILDINGS

IS AN ADDITION OR NEW BUILDING REALLY NEEDED?

Is the proposed use compatible with the scale, type of construction and original occupancy of the building?

Can all rooms and functions required by the proposed use be accomplished in the building without major impact to the historic building fabric or significant spaces?

Can disabled access, egress, toilets, and code requirements or special environmental controls for the proposed use be provided without major impact to the historic building fabric or significant spaces?

Can adjustments be made to the proposed use to reduce or eliminate major impacts to historic building fabric or significant spaces?

WHAT IMPACT WILL A NEW ADDITION HAVE?

Can an addition or new building be designed to fit with the site and site circulation without a major impact to sensitive landscape or architectural features?

Can the addition and its physical effect on the original building be minimized and made reversible?

Can the addition be placed away from the original and current primary facades so that it is not readily perceived?

Can the perceived size of the addition, from any vantage point, be kept smaller than the existing building?

How will an addition affect the natural light, ventilation and energy efficiency of a building?

CONSIDERATIONS FOR DESIGNING AN ADDITION?

What is the Building Type?
- A. Residential
- B. Institutional

What are the primary exposed building materials?
- A. Wood
- B. Concrete
- C. Stucco

What is the building form and massing?
- A. Roof forms
- B. Wall surfaces, projecting eaves, awnings or balconies
- C. Simple volumes or complex arrangements of forms
- D. Building height and number of stories

What are the adjacent sites and building like?
- A. Similar identical buildings
- B. Individual buildings with distinctive characteristics
- C. Regularly spaced structures clustered on a site
- D. Orientation within the cluster
- E. Part of a streetscape
- F. Isolated buildings in a landscape

Where can the addition be placed to reduce visual impact?
- A. Least visible elevation
- B. Side elevation
- C. Rear elevation
- D. Effects on existing views

How can the addition be attached to the original building?
- A. "Hyphen" or connecting link
- B. Direct abutment
- C. Detached new building

Can the addition complement the buildings?

NEW ADDITIONS / NEW BUILDINGS

Buildings, like the old fire station, can be adaptively reused for other uses and still maintain their architectural character-defining forms and integrity. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

Recommended

Identify, Retain, and Preserve

Place functions and services required for the new use in non-character-defining interior spaces rather than installing a new addition.

Evaluate whether the proposed use of a new building is appropriate. Consider an alternative use or alter the building program to better meet the existing configuration of the building outside of the NTC Historic District.

Recognize that a decision might be aesthetically pleasing in the design of an independent new building but may not be appropriate in the NTC Historic District as regards to historic preservation, because it may overwhelm or compromise the historic character of the building and site.

Consider an attached exterior addition in terms of both the new use and the appearance of other buildings in the Historic District.

Identify whether a building is part of a cluster of similar repetitive building types. Consider how a new building will affect the whole building group. Maintain uniformity that characterizes the group.

Not Recommended

Expanding the size of the historic building by constructing a new addition, when the new use could be met by altering non-character-defining interior space.

Designing and constructing new buildings that result in the diminution or loss of the historic character of the NTC Historic District, including its design, materials, workmanship, location, or setting.

Constructing "temporary" buildings for permanent functions, as opposed to carefully planned and designed buildings that have a potential to become part of the history of the NTC Historic District and contribute to its complexity.

Demolishing any part of an existing building, including an existing addition, to make way for a new addition without first ascertaining whether the part is significant and whether there are feasible use alternatives.

Recommended

Protect and Maintain

Take into account the context of NTC as a whole. Design new buildings that are compatible with that larger context, but that also respond to the immediate surroundings and the building group.

Locate necessary attached or detached additions in less sensitive zones of the cultural landscape, in inconspicuous areas of the site. An addition in the back of a particular building may still be perceived in the setting—due to the topography at NTC and the hillsides of Point Loma where there are many vantage points.

Integrate a new building into the site as a whole. Preserve the natural features of the site. Pay particular attention to changed drainage patterns, existing trees, and grading. Address the change of circulation routes to and around the building. Maintain the original sense of arrival and entry at Gate 1.

The architecture of this building, although slightly Spanish in character, does not capture the historical elements of the original design and diminishes the historic character of the district. Its placement in sellers plaza disrupts the master plan. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA. January 10, 2000.

NEW ADDITIONS / NEW BUILDINGS

The addition of contrived porch coverings greatly detracts from the historic district. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 11, 2000.

Recommended

Identify a building's character-defining and significant features. Examine the stylistic complexity of the building to make informed decisions about changes. Most NTC buildings have simple detailing and massing. Design of an even more restrained addition requires special consideration and calls for a creative solution so as not to obscure the already understated character-defining features of the original. Design new additions in a manner that makes clear what is historic and what is new but within a harmonious feeling and initially an unperceived awareness of the addition. Allow the historic building to dominate.

Reflect the original massing and scale of the existing building. Simple, rectangular additions will fit in better with simple cubic buildings. Keep roofs flat with simple parapet so that additions are subordinate to the original. When two story additions are contemplated, a sloped variegated mission tile roof should be used.

Not Recommended

Imitating a historic style or period of architecture in new additions.

Recreating a historic building addition based on insufficient information.

Altering the character and the perception of the original building by placing an addition where it is highly visible, i.e., in front of the building, on a character-defining primary elevation, or in a place where it will be visible from a prominent location.

Recommended

Achieve a balance between imitation and contrast. The degree of similarity to the original will be different in each case; some buildings will allow for more abstraction and variation.

Distinguish between new and existing elements; this may be accomplished through the use of contrasting materials appropriate for the original period of construction and the scale of the structure.

Not Recommended

Using the same wall plane, roof line, cornice height, materials, or window type to make additions appear to be a part of the historic building.

Imitating exactly wood work, brick joints, architectural detailing, and the building form. A new addition should be discernible as new and should not be an exact imitation of an original structure.

Contrasting in a manner that overpowers the architectural features of an existing building.

Contrasting materials inappropriately, such as a brick addition on a plaster sided structure. Brick is usually considered a more substantial and refined construction material than plaster, and it is historically rare to find examples of brick additions to plaster structures.

This new restroom building attempted to blend in with the Spanish style of the buildings. However, it is poorly executed in form, design and materials. The structure detracts from the character of the NTC Historic District. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 10, 2000.

COLOR & PAINT ANALYSIS

Sample 2 - Stucco Sample, Building #178

The cross-section sample analysis process indicates that there are approximately five generations of coatings in this sample. The first generation above the substrate appears to be the original exterior surface for sample 2, as well as for sample 4 (from Building #28). The evidence suggests this first coating is not a paint layer but rather is a light peach-colored stucco.

Stucco texture and color chipping in several buildings. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 27, 2000.

This stucco layer consists of a light-colored and transparent coarsely grained aggregate (most likely a light-colored sand with sharp uneven edges) and a warm peach-colored binder. The aggregate is compacted tightly together and is irregular in shape, which suggests that the surface of the stucco had a very rough and uneven appearance. This texture would be consistant with the pueblo-style of architecture for plaster walls.

The sample was tested for organic components and the stucco binder had a strong positive reaction for the presence of proteins. This positive reaction suggests there could be a natural protein additive added to the stucco mix.

All subsequent coatings applied to the original stucco are cream-colored, off-white, and yellowish paint layers. Binding media analysis suggests generations 2 and 3 are oilbound paints while 4 and 5 may be modern "latex" (acrylic) paints.

Sample 3 — Wood Trim, Building #28.

The cross-section sample analysis process indicates there are approximately eleven paint generation in sample 3. This paint sequence is similar to sample 1 from the wood trim for Building #176. The evidence indicates the first generation of paint above the wood substrate is a medium green oilbound paint over an off-white primer. There is a consistent use of green paints in generations 1 through 9. Generations 10 and 11 are blue paints with a white primer coat sandwiched between them. These two uppermost generations may be acrylic-based paints, based on the absence of reactions for the presence of oils, carbohydrates and proteins with the fluorochrome stains used for binding media analysis.

Sample 4 — Stucco Sample, Building #28:

The cross-section sample analysis process indicates that there are up to eight generations of coatings in sample 4. The first generation above the substrate is a light peach-colored stucco, which appears to be the original exterior surface.

This first stucco layer consists of a light-colored coarsely grained aggregate (most likely a light-colored sand with sharp uneven edges) and a warm peach-colored binder. The aggregate is compacted tightly together and is irregular in shape, which suggests that the surface of the stucco would have had a rough and uneven appearance. This sample was also tested positively for oil in generations 2 through 6, and the stucco coating had a strong positive reaction for the presence of proteins (like sample 2).

Although sample 2 and 4 are very similar, the second generation of paint in sample 4 (directly above the stucco) is a medium green paint. It is possible that this green paint was accidently applied when an adjacent area of the wood trim was painted. It is difficult to determine the true cause for this second generation of paint with just one sample from one location without analyzing other comparative stucco samples from the building. The remaining generations of paint are consistent with sample 2, which suggests the medium green was an accidental application of trim paint.

Sample 5 — Metal Downspout Tie, Building #28

The evidence in the cross-section sample suggests the copper gutter was not originally painted. There appears to be a thin oxidation layer directly above the copper substrate, below fragments of what may be a red lead-based primer. The first generation of paint found in this sample is a green layer which lines up with the second generation of green paint found on samples 1 and 3 from wood trim elements.

Copper downspout removed from Building 28 showing layers of paint. The downspouts were originally left unpainted. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 27, 2000.

There are nine generations of paint in the sample on the downspout. Generations 2 through 7 are off-white and cream-colored paints similar to those found in the stucco samples. The two uppermost (most recent) paints are the same type of blue paint found in the wood trim samples. This paint sequence indicates that although the downspout was not originally painted, it was painted comparatively early on in the life of the building. In generations 1, 8, and 9 it was painted to match the wood trim, and in generations 2 through 7 it was painted to match the body color of the building.

Sample 6 — Brick, Building #28.

The cross-section sample analysis process indicates that up to nine generations of coatings remain intact in sample 6. The first generation of paint above the brick substrate appears to be a red-brown "brick" color. The second generation of paint is a darker red-brick color over an off-white primer. Generations 3 through 9 are off-whites, cream colors, and yellowish paints very similar to the paint generations found in the stucco samples 2 and 4.

This comparative evidence suggests the brick was either painted originally or it was painted very early in the life of the building. There are no signs of weathering or trapped dirt on the surface of the brick substrate, below the first paint generation, which would suggest the brick was left unpainted for any significant period of time. The evidence also indicates that after generation 3 the brick and stucco buildings were painted in the same manner.

Conclusion:

This small group of samples from three different buildings contains sufficient evidence to identify the original body colors for Buildings #178 and #28, and the original trim colors for Buildings #176 and #28. The comparative paint histories suggest the metal downspout for Building #28 was not originally painted, but that it was painted to match the trim in generation 2 and in the two most recent generations. During the other repaints, the metal downspout was painted to match the body of the building.

The early paints on the wood trim, brick and metal elements appear to be traditional oilbound paints. The original stucco appears to contain a proteinaceous additive and numerous coarse sand particles. The two uppermost paint generations in all the samples may be modern acrylic paints.

After the third paint generation it appears that the brick surfaces (Building #28) and the stucco surfaces (Building #28 and #'178) were painted to match each other up to the present paint found in all three samples.

Bricks inappropriately painted and chipped at an arcade entrance. Photograph courtesy of Architect Milford Wayne Donaldson, FAIA, January 27, 2000.

The original colors were determined as the following:

<u>Sample 1 and 3</u>: Wood trim at Building #28 and #176

Color System*			Coordinates
	Hue	Value	Chroma
Munsell	7.8G	3.2	2.7
	Black to White	Green to Red	Blue to Yellow
CIEL*a*b*	L*32.67	a*-14.57	b*+2.81

A reference color to **Benjamin Moore #602** is listed as a close color match. COLOR SAMPLE

<u>Sample 2 and 4</u>: Stucco sample at Building #28 and #178

Color System*			Coordinates
	Hue	Value	Chroma
Munsell	8.2YR	6.7	3.7
	Black to White	Green to Red	Blue to Yellow
CIEL*a*b*	L*68.34	a*+6.70	b*+22.87

A reference color to **Benjamin Moore #1153** is listed as a close color match. COLOR SAMPLE

Color System*			Coordinates
	Hue	Value	Chroma
Munsell	6.1YR	6.7	3.7
	Black to White	Green to Red	Blue to Yellow
CIEL*a*b*	L*68.46	a*+8.84	b*+20.45

A reference color to **Benjamin Moore #2177** is listed as a close color match. COLOR SAMPLE

Color System*			Coordinates
	Hue	Value	Chroma
Munsell	7.8YR	7.0	3.5
	Black to White	Green to Red	Blue to Yellow
CIEL*a*b*	L*70.93	a*+6.63	b*+21.21

Three colors are provided for this sample as there is a noticeable variation in the color of the stucco binder due primarily to the coarse nature of the stucco composition.

Two reference colors, Benjamin Moore #1153 and Sherwin Williams #2177, are listed as close color matches. The original stucco coating was very coarse. In order to appropriately replicate the original stucco surface, colorless and light colored sand particles should be added to the color coat mix. Test samples should be compared with exposed sections of the original stucco to obtain an acceptable match.

Sample #5: Copper downspout at building #28.

Exposed copper left to naturally age, is the appropriate material selection for downspouts.

Sample #6: Brick window sill at Building #28.

Color System*			Coordinates
	Hue	Value	Chroma
Munsell	9.8R	3.2	4.5
	Black to White	Green to Red	Blue to Yellow
CIE L*a*b*	L*32.84	a*+18.64	b*+16.31

A reference color of **Sherwin Williams #2728** is listed as a close color match.

COLOR SAMPLE

COLOR MATCHING

For two colors to match, three quantities defining color must be identical. These three quantities are called tristimulus values X, Y, and Z as determined by Commission Internationale de l'Eclairage (CIE) in 1931. Color as perceived has three dimensions: hue, chroma and lightness. Chromaticity includes hue and chroma (saturation), specified by two chromaticity coordinates. Since these two coordinates cannot describe a color completely, a lightness factor must also be included to identify a specimen color precisely.

The Munsell color system consists of a series of color charts which are intended to be used for visual comparison with the specimen. Colors are defined in terms of the Munsell Hues (H; indicates hue), Munsell Value (V; indicates lightness), and Munsell Chroma (C; indicates saturation) and written as H V/C.

In the Yxy (CIE 1931) color system, Y is a lightness factor expressed as a percentage based on a perfect reflectance of 100%, x and y are the chromaticity coordinates of the CIE x, y Chromaticity Diagram. Equal distances in the CIE x, y Chromaticity Diagram do not represent equal differences in color as perceived. The CIE L*a*b* color system, however, more closely represents human sensitivity to color. Equal distances in this system approximately equal perceived color differences. L* is the lightness variable; a* and b* are the chromaticity coordinates.

In all cases, samples of the proposed matching colors should be compared with an exposed section of the original color in order to obtain an acceptable match.

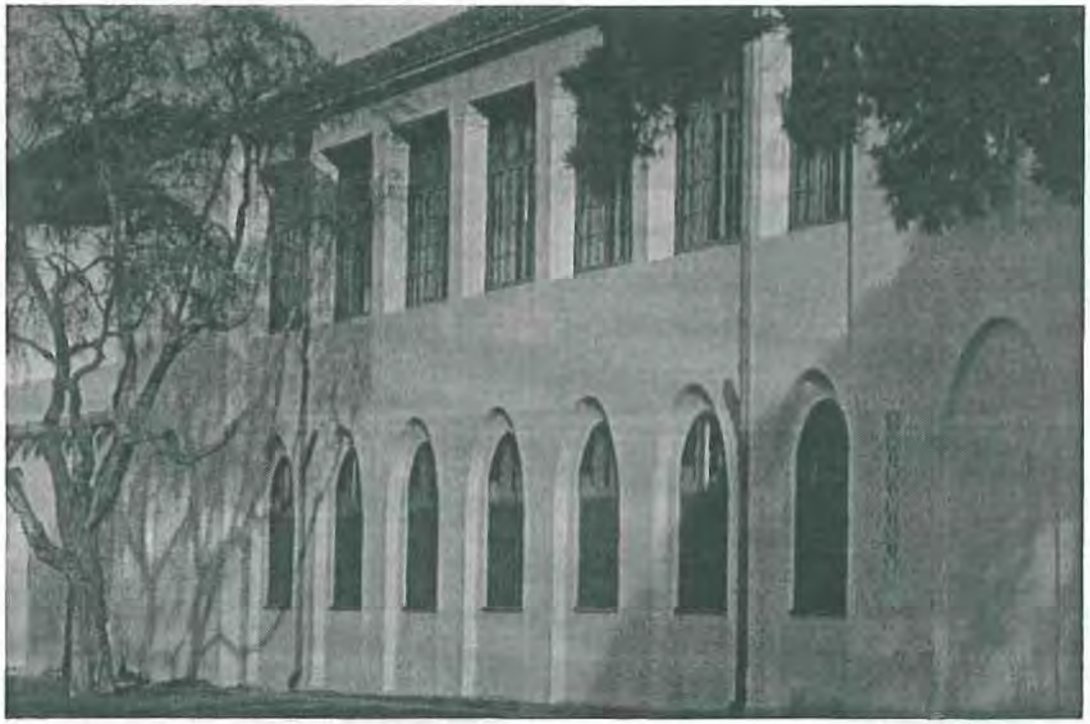
COLOR MEASUREMENT PROCEDURES

The target layers for color matching were identified through cross-section microscopy analysis of the cast paint samples, but the measurements were made using uncast portions of the cast paint samples, but the measurements were made using uncast portions of the samples that were carefully examined under a binocular microscope to locate clean, relatively even areas for matching. The measurements for color matches were made with a Minolta Chroma Meter CR-241, a tristimulus color analyzer that has an internal, 360-degree pulsed xenon arc lamp and provides an accurate color measurement in a choice of five different three-coordinate color systems. Its focus area of 0.3 mm allows measurement of extremely small paint samples.

COLOR & PAINT ANALYSIS

Measurements are first generated in the Munsell color system (a color standard used in the architectural preservation field), and then in the CIE L*a*b* color space system, currently one of the most widely accepted industry color measuring systems.

The Munsell measurements were compared to the values of the closest Munsell color swatches in the standard Munsell Book of Color (gloss paint standards). The match was then double-checked by eye by comparing the Munsell swatches with the paint samples under 30X magnification. The closest Munsell swatches were then used to fine the closest visual commercial color swatches in the master catalogs for Benjamin Moore and/or Sherwin-Williams paints. The Chroma Meter was then employed to determine the commercial swatch with the closest Munsell and CIE L*a*b* values. All measurements are provided in the report and the closest commercial paint color swatches are supplied for each target paint layer. Special color mixtures at qulity paint supplies can also be made using the Munsell color system.



Color reflecting from natural sunlight of one of the buildings at the Naval Training Center. Photograph courtesy of David Harrison, March 2000.

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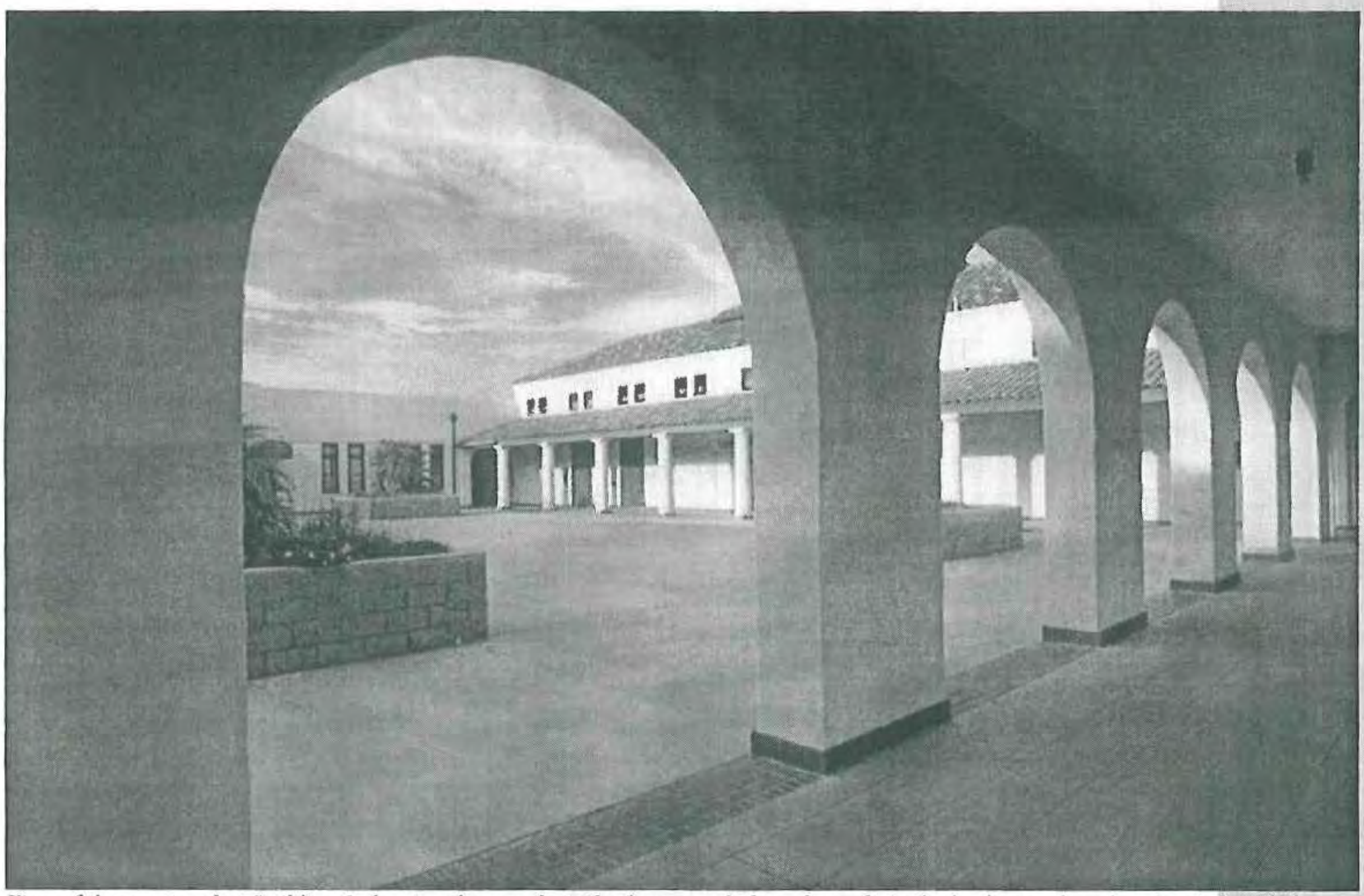
BIBLIOGRAPHY AND TECHNICAL RESOURCES



View of the courtyard at Building 1 showing the arcade in the foreground, the colonnade in the background, and variegated roof tiles. Photograph courtesy of McMillin NTC, LLC, March 2000.

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The **California Historical Resources Information System** (CHRIS) is comprised of eleven Information Centers spread throughout the state under contract with the State Historic Preservation Office (SHPO) to:

- Integrate newly recorded sites and information on known resources into the California Historical Resources Inventory
- Furnish information on known resources and surveys to government, institutions, and individuals who have a justifiable need to know; and
- Supply a lis of consultants who are qualified to do work within their area.

Information Centers provide archeological and historical resources information to local governments and individuals with responsibilities under the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and California Environmental Quality Act (CEQA). A fee is charged for information or assistance provided.

SOUTH COASTAL INFORMATION CENTER
Dr. Lynne Christenson, Coordinator
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5500 Campanile Drive
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http://ssrl.sdsu.edu/scic/scic.html

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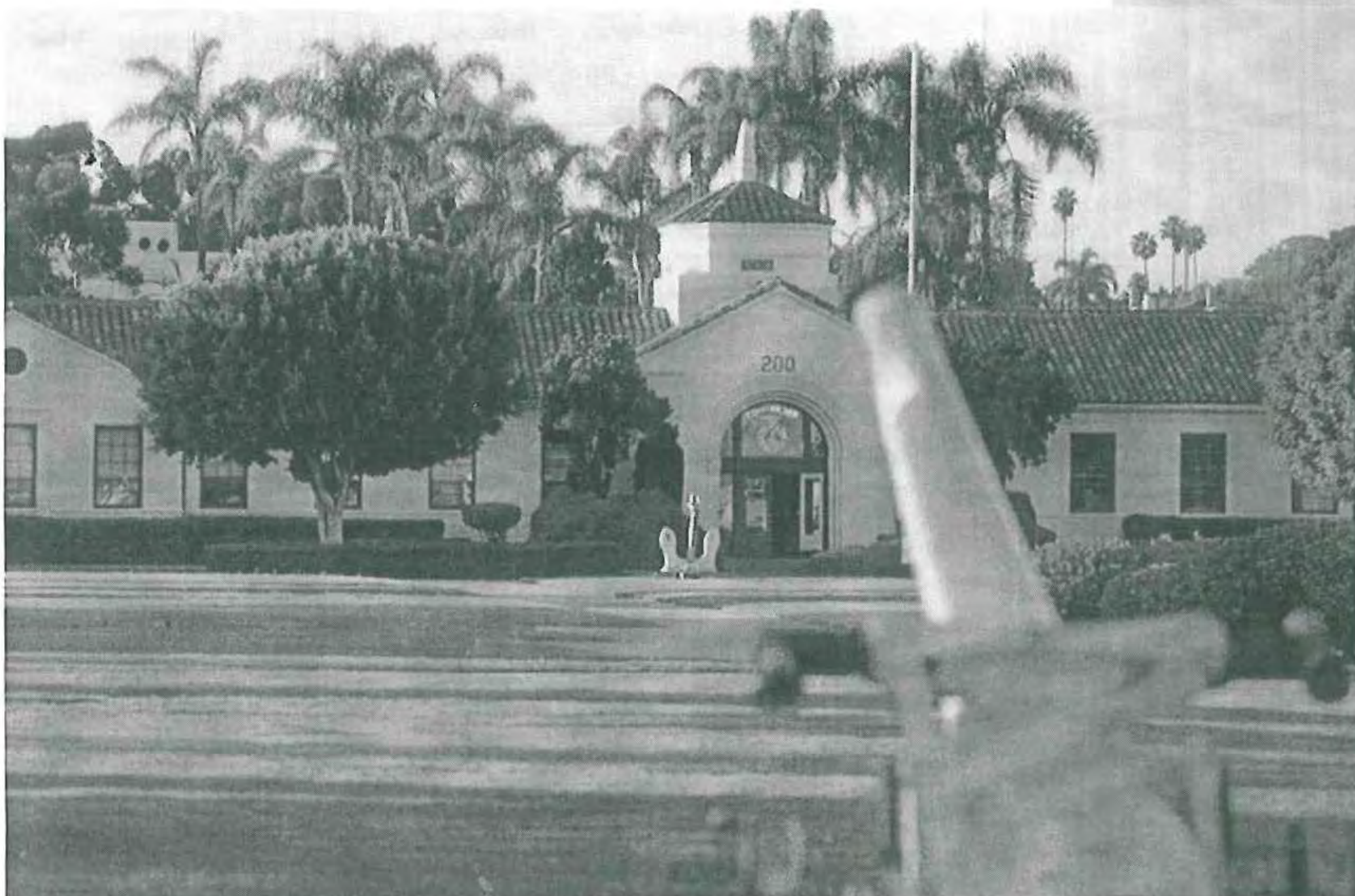
GLOSSARY



View across Ingram Plaza looking north toward Building 200. Photograph courtesy of McMillin NTC, LLC, March 2000.

4.0 APPENDICES

GLOSSARY

Arcade

Bracket

This glossary is designed to facilitate understanding of the terms in this document. However, the entries are not intended to be a comprehsive list of architectural and construction terms and the definitions are not exhaustive, as they explain the meaning of the terms specifically for the Naval Training Center. Professional and technical dictionaries should be referenced for more information and for additional uses of terms.

Abatement - removal or lessening of hazard, for example, asbestos or lead paint.

Adaptive Use - the process of making a building viable, often involving sensitive adjustment of an existing structure to new needs.

Aggregate - a granular material (for example, sand or gravel) which, mixed together with water and a cementing agent (binder), forms concrete, mortar, or stucco.

Ambient Lighting - the general overall lighting in a space, as opposed to task lighting (focused lighting for a specific task).

Arcade - a series of arches on columns or piers, either freestanding or attached to a wall; also a covered walk with a line of such arches on one or both sides; see illustration.

Ashlar - squared and dressed stones used for facing a masonry wall.

Backsplash - a panel protecting the wall behind a sink or counter.

Baluster - one of a series of small pillars or units of a balustrade; also an upright support of the railing for a stair; balusters can often be decoratively sawn. See illustration at stair.

Balustrade - a railing or parapet consisting of a top rail on balusters, sometimes on a base member and sometimes interrupted by posts.

Base (Baseboard) - a horizontal decorative element along the lowest portion of an interior wall covering the joint between the flooring and the wall; also the lowest component of a column; see illustration at Wall.

Bay - a regularly repeated spatial unit of a building or wall as defined by columns, piers or other vertical elements; also a structural projection, most often with windows, expressed on the elevation of a building

Beam - a horizontal structural member, bridging between its supports and carrying the weight of a floor or roof above; see illustration at Structural System.

Belt (Belt Course) - a horizontal band course on a brick or stone wall; it may be of a different kind of brick or stone; see illustration at Facade.

Biological Growth - black, brown, or green discoloration due to the presence of lower plant forms such as moss and fungi.

Bituminous - composed of or containing bitumen materials, such as tar, asphalt, macadam, or asphalt cement.

Bollard - a low post, usually made of stone, placed alone or in a series to prevent vehicles from entering an area.

Bond - the arrangement of bricks or stones in a wall created by lapping them upon one another so that the vertical joints are staggered, see illustration.

Bonding Agent - a substance applied to create adhesion between two materials, such as that applied to a substrate before installation of a finish coating.

Bracket - a projection from a vertical surface providing support under cornices, balconies, and window frames: see illustration; also sometimes used to describe a metal fastener.

Came - a slender rod of cast lead used to hold together the panes or pieces of glass in casements and stained glass windows.

Casement Window - a window having a sash with hinges on one side allowing it to open vertically into or out of a space.

Casework - interior built-in cabinets and shelving.

Casing - the trim molding around a door or a window; see illustration at Double-Hung Window.

Cast Stone - an artificial building stone manufactured from concrete, cast in a mold and used as paving, facing, or ornament. Pigments and aggregate are often added to simulate the appearance and color of natural stone. See illustration.

Caulking (calking) - a resilient mastic compound used to seal cracks, fill joints, and provide weatherproofing.

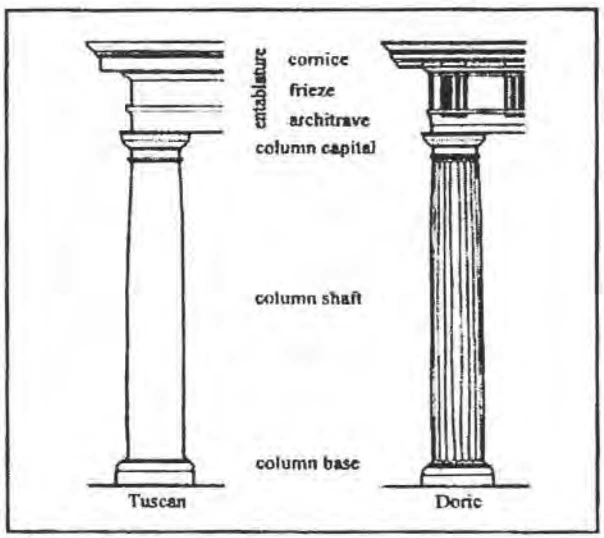
Cementitious - of plastic consistency when applied, with cementing or binding properties; also, cement-containing plasters.

Chair Rail - a horizontal wood strip or molding on the wall of a room at the height of a chair back, preventing damage to a plaster wall, used alone or applied to the top of wainscoting; see illustration at Wall.

Character-Defining - essential to the perception or understanding; a character-defining element is a feature that contributes to the special quality of a building or a site, without which the uniqueness is lost.

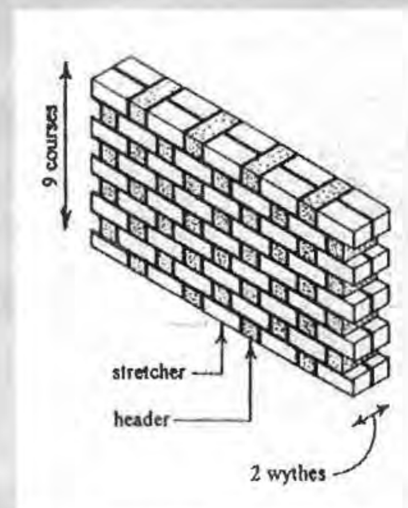
Classical Orders - strict established principles of style and design for columns and entablature derived from classical Greek and Roman orders, see illustration.

Clear-Span - in an interior, an uninterrupted distance between the end supports of beams spanning the space.



Classical Orders.

Cast Stone



Bond

4.0 APPENDICES
GLOSSARY

Colonnade

Cupola

Clerestory - an elevated range of windows in a wall that rises above adjacent roofs; see illustration at Window Types.

Code of Federal Regulations (CFR) - CFR is a codification of the general and permanent rulesl published in the *Federal Register* by the Executive departments and agencies of the Federal Government.

Colonnade - a row of columns supporting a beam or: entablature; see illustration.

Column - A slender, vertical element that supports part of a building or structure; see illustrations at Classical Orders, Pier, and Structural System.

Component landscape – A discrete portion of the landscape that can be further subdivided into individual features. The landscape unit may contribute to the significance of a National Register property. In some cases, the landscape unit may be individually eligible for the National Register of Historic Places, such as Ingram Plaza.

Composition Shingle - manufactured, asphalt-saturated felt shingle used as roofing after 1900.

Compression - a force that tends to shorten or crush a member; the opposite of tension.

Conduit - a tube or trough for receiving and protecting electric wiring; also a pipe or channel for conducting water.

Conservation - practice encompassing technical examination, preservation, protection, and maintenance of tangible cultural resources.

Consolidation - chemical treatment that improves the cohesion of a material, used in the conservation of masonry, wood, concrete, and stucco.

Construction Type - a term used to describe a code-imposed classification of a building, based on the degree of public safety and resistance to fire a building can provide.

Coping - a linear cap protecting the wall below it by shedding water away from it.

Corbel - an upward stepped projection in the face of the wall used to support a weight above.

Cornice - in classical vocabulary, the top portion of the entablature; see illustration at Classical Orders; also an ornamental projection finishing off an element, such as at the top of a wall below a roof.

Course - in masonry, a horizontal row of units, running the length and spanning the thickness of the wall; see illustration at Bond.

Cresting - an ornament of a roof, roofscreen, or wall; generally rhythmic, highly decorative, and frequently perforated.

Cultural landscape – A geographic area (including both cultural and natural resources and the wildlife or domestic animals therein) associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes and ethnographic landscapes. In association with the historic site planning and architectural features, NTC meets the definition of a historic designed landscape.

Cupola - a small dome; a small structure built on top of a roof; see illustration.

Cyclical Maintenance - regularly scheduled cleaning, inspection, maintenance and repair of a building, ranging from daily to long-range tasks.

Damper - a device for regulating the flow of air in the flue of a furnace or chimney.

Deflection - the deformation of a structural member as a result of loads acting on it.

Delamination - deterioration, as in plaster, manifested by the separation of layers.

Diaphragm - a continuous structural plate providing rigidity and strength in all directions.

Displacement - the action of being forced out of an original, usual, or proper position.

Dormer - a projecting structure on a sloping roof, usually perpendicular to the ridge of the main roof, with its own roof and a window on its front vertical face.

Double-Glazed Window - a window having two sheets of glass with an air space between, used to improve thermal or acoustic properties.

Double-Hung Window - a window containing two moveable sash sections that open vertically; see illustration.

Downspout - a vertical sheet metal or plastic tube on the exterior of a building conducting water from the roof; (frequently used interchangeably with leader); see illustration at Gutter.

Drip Groove - a groove or indentation designed to direct rain water from a masonry structure.

Ductwork - part of heating, ventilation, and air-conditioning system; a conveyance system of ducts used to transfer air from one location to another, often fabricated of sheet metal.

Dutchman - a small piece or wedge inserted to fill an opening.

Eve - the overhanging portion of a sloping roof projecting beyond the wall below; see illustration **Wall.**

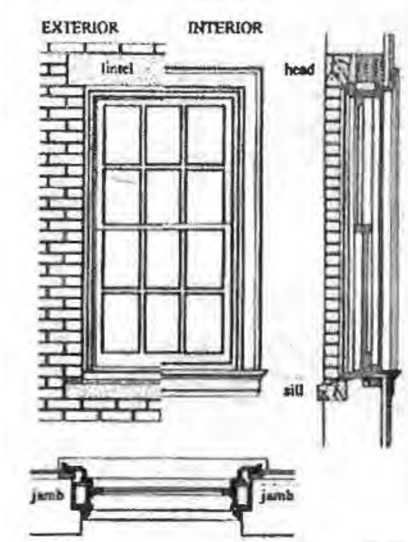
Efflorescence - a deposition of soluble salts originating in the masonry or adjacent materials on the surface of a wall; usually initiated by excessive moisture penetration.

Egress - a path of exit; in case of emergency, an uninterrupted path of travel from any point in the building safety (exterior at ground level).

Electrolyte - an electric conductor, such as water or moisture.

Encapsulation - containment and enclosure in a way that prevents dangerous exposure; one means of treating asbestos or lead paint within a building.

Entablature - The entire band of horizontal elemetns above the column captials; from botom to top, the entablature is composed of the architrave, reieze, and cornice.see illustration at **Classic Orders.**



Double-Hung Window

Facade

GLOSSARY

Gutter and Downspout

Epoxy - synthetic resin used chiefly as an adhesive or in coating; also used to consolidate wood.

Escutcheon - a protective plate or flange over an opening.

Fabric - the elements and materials of which a building is made.

Facade - the entire exterior elevation of a building, particularly the front; see illustration.

Feature – The smallest element(s) of a landscape that contributes to the significance and that can be the subject of a treatment intervention. Examples at NTC include the water fountain at Building 200, the Bunya-bunya trees in Sellers Plaza, and the flagpoles.

Fenestration - the arrangement or pattern of windows or other openings in the facade of a building.

Finial - an ornament, usually pointed, which terminate a vertical element.

Fire-Rated (Fire-Resistance-Rated) - classified, in accordance with established standards and tests, to withstand or confine fire without loss of structural function (measured in length of time).

Flashing - a thin impervious sheet of metal or plastic used in construction to prevent water penetration and to redirect water; see illustration at **Wall**.

Flue - a heat-resistant enclosed passage, as a chimney or pipe, carrying the smoke from a fireplace, boiler, or furnace to the outside.

Formwork - a temporary construction to contain wet concrete in the required shape while it sets.

Furring - attaching wood or metal spacers between a subsurface and a finish surface, for example, between masonry wall and plaster.

Gable - the triangular section of a wall below a two-way pitched roof, sometimes projecting above the roof.

Gabled Roof - see illustration at **Roof Types**.

Galvanic Corrosion - accelerated corrosive action occurring when two dissimilar metals touch each other while wet with any solution, such as water, capable of conducting an electrical current; this process tends to accelerate corrosion of one metal while protecting the other.

Galvanized - coated with zinc to prevent corrosion; applied to iron, steel, or aluminum.

Girder - a principal horizontal structural member supporting beam or rafters; see illustration at **Structural System**.

Grout - mortar that is sufficiently liquid that it can be poured or pumped into joints or cavities in masonry.

Guardrail - a railing or a protective barricade providing safety at an elevated walking surface, such as a raised terrace, roof edge, or stair landing open to the space below.

Gutter - a channel at the bottom edge of a roof for collecting and carrying rainwater; see illustration.

Handrail - a hand support: a single rail along a stairway or ramp; see illustration at **Stair**.

Head - the top horizontal member of a door or window frame; see illustration **Double-Hung Window**.

Header - see illustration at **Bond**.

Hipped Roof - see illustration at **Roof Types**.

Historic Character - the sum of all visual aspects, features, materials and spaces associated with a property's history.

Historic District - an ensemble of buildings and their surroundings given a designation due to their significance as a whole.

Historic Designed Landscape – A landscape that was consciously designed or laid out by a landscape architect, master gardener, architect, engineer or horticulturist according to design principles, or an amateur gardener working in a recognized style or tradition. The landscape may be associated with a significant person, trend or event in landscape architecture; or illustrate an important development in the theory and practice of landscape architecture.

Historic Site – A landscape significant for its association with a historic event, activity or person. For example, San Diego landscapes include Balboa Park and Marine Corps Recruit Depot (MCRD).

Aesthetic values play a significant role in designed landscapes. In this case, the work of J.G. Morley and August Anderson are recognized.

Historic Structure Report (HSR) - a document based on research and fieldwork which evaluates and presents the history and condition of a structure and its setting, and makes recommendations for treatment consistent with its significance, integrity, and condition; the document may include schematic designs for the programmed use.

Hood Mold - a projecting molding over the head of a door or window; see illustration.

In kind - matched exactly in material, form and installation.

Insulating Glass - double glazing in which the airspace between the sheets of glass is hermetically sealed.

Integrity - the quality or state of being complete, uncompromised and whole; **historic integrity** is the extent to which the original features of a building remain unchanged.

Intumescent Paint or Coating - paint or coating that swells when exposed to heat.

Joist - one of a series of parallel beams used to support floors or ceilings, supported in turn by beams, girders, or walls; see illustration at **Structural System**.

Knee Wall - a wall supporting roof rafters at an intermediate point in their span.

Lamella Roof - a large-span vault built of wooden, concrete, or metal members joined by bolts or other means, connected in a diamond pattern: The system was designed by a German Engineer in 1925.

Landing - the horizontal platform at the end of a stair or a ramp, or between flights, see illustration at **Stair**.

Lamella Roof

Joists

GLOSSARY

Loggia

Monitor

Lateral Support - the bracing of a wall or a structural member to strengthen against a load acting from the side, as in the case of wind or earthquake loads.

Lead-free - containing no lead contaminants.

Lead-safe - The act of making a property safe from contamination by lead-based paint, lead-dust, and lead in soil generally through short and long-term methods to remove it, or to isolate it from small children.

Leader - a rainwater conduit made of steel pipe or tubing, on the building exterior or within an exterior wall (sometimes used interchangeably with **downspout**).

Light (Lite) - an individual piece of glass often joined within a window sash with similarly sized pieces separated by muntins; **pane**; see illustration at **Double Hung Window**; sidelight is usually a long fixed sash located beside a door or window—often in pairs; six-over six refers to six panes above and six below; see illustration at **Window Types**.

Load-Bearing - capable of supporting a load in addition to its own weight.

Loggia - a covered arcade or gallery, usually within the body of the building at second floor level or above, with one side open to the air; see illustration.

Louver - an assembly of horizontal slats used to regulate the amount of air or light admitted into a space; see illustration at **Monitor**.

Low-E Glass - glass with low emissivity, such as, having qualities that arrest transfer of solar heat gain through the glass pane.

Lunette - see illustration at Window Types.

Mastic - a heavy-bodied, dough-like adhesive; may be waterproof and somewhat elastic.

Massing - arrangement of geometric volumes into a building's shape.

Microclimate - a set of predictable weather condition specific to a certain locale.

Mission Revival - a popular style first seen around the turn of the 20th century; it was based on the shape and form of Spanish missions. Typically, these buildings have a rectangular form and a gabled roof with scrolled or stepped gable ends. A ground floor arcade, often extending beyond the building, is a common feature, as are stuccoed wood or concrete walls; red tile roofing; unornamented round-arched openings; and quatrefoil or other shaped windows in gable ends.

Mitigation - alleviation of an adverse condition.

Modillion - a scrolled ornamental bracket placed horizontally below a cornice.

Molding - a contoured decorative band applied to a wall surface or to the edge of a building element; often functioning to cover a joint between materials or elements; see illustration at **Wall**.

Monitor - a raised structure on a roof with louvers or windows admitting air or light; frequently found on large utilitarian buildings; see illustration.

Mullion - major support member found between adjacent window sash or panels of glass; see illustration at **Double-Hung Window**.

Muntin - small bar separating and holding individual glass panes within a window sash; also found on glazed, multipaned doors; see illustration at Double-Hung Window.

National Historic Landmark - a building or a site legally designated as having national significance.

National Register of Historic Places - a list maintained and revised by the Secretary of the Interior of properties (buildings, sites, districts, and objects) designated as landmarks due to local, state, or national significance.

Newel Post - an ornamental post at the beginning or end of a stair handrail; see illustration at Stair.

Occupancy - the existing or intended use of a building (as well as the number of people occupying it) as in code definitions of occupancy types, for example, assembly occupancy.

Outrigger - a structural member perpendicular to the joists, supporting a roof or floor beyond the walls.

Palladian Window - a window with one large central round-arched window flanked by narrower flat-topped windows; named for Andrea Palladio, a 16th-century Italian architect; see illustration at **Window Types**.

Pane - a piece of window glass filling one opening in a frame.

Parapet - a low protective wall along the edge of a roof, balcony or terrace.

Partition - a dividing wall within the interior of a building, often non-load-bearing.

Patina - the weather coating of brass, bronze, and copper, acquired through age and the oxidation of the metal; also loosely applied to the general mellowing and aging of building materials.

Petrographic Analysis - a laboratory determination of the mineral content and chemical character of any masonry material.

Pediment - in classical vocabulary, the triangular gable end of the roof above a cornice; also, a similar decorative element above a window or door; see illustration at Facade.

Performance Objective - a level of seismic resisting capacity that is expected of the structure. Typical performance objectives strive for risk reduction, substantial life safety, damage control, immediate occupancy, and full functionality.

Period of Significance - a defined period of time during which a property established its historical association, cultural meaning, or value.

Pier - a masonry structural support, more massive than a column, for an arch, lintel, or beam; often an element of a foundation system; see illustration.

Pilaster - a shallow rectangular column or pier attached to a wall, often modeled on a classical order; frequently found flanking doors or windows. See illustration.

Portland Cement - an extremely strong and hard manufactured hydraulic (hardens in water) cement used in concrete and mortars.


Newel Post


Pilaster

GLOSSARY

Raking Cornice

Poultice - an absorbent paste applied to a surface; used to remove stains or other chemicals from a material.

Primary - First in a series or sequence; of the first stage of development.

Property - a structure, its exterior and interior, related landscape features and its site and environment; for a historic property, this includes attached or related new construction as well.

Quatrefoil - a window or opening in a pattern of four leaves; **Trefoil** three leaves; see illustration at **Window Types**.

Rafter Tail - the part of a rafter overhanging the wall.

Raking Cornice - a cornice that follows the slope of a roof gable; see illustration.

Reconstruction - the act or process of depicting, by means of new construction, the form, features and detailing of a nonsurviving site, landscape, building, structure or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

Register - in a heating or air conditioning system, a grille with baffles for regulating the quantity of air that passes through it.

Rehabilitation - the act or process of making possible an efficient compatible use for a property through repair, alterations and additions while preserving those portions of features which convey its historical, cultural, or architectural values.

Repointing - removing deteriorated mortar from between the joints of masonry and replacing it with new mortar.

Reproduce - to create a copy.

Preservation - the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Primer - a paint applied as a first coat.

Restoration - the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Retrofit - to furnish with new parts not available at the time of original construction.

Reveal - the offset between two elements; the vertical face of an opening in a wall for a door or window.

Reversibility - a condition which allows removal of an added material or feature and return to the original, without damage to the original.

Right-of-Way - any area of land that is designated, by deed or easement, for the construction and maintenance of roads and utilities.

Riser-to-Tread Ratio - a comparison of the height of an individual stair riser (the vertical part of each step) to an individual tread (the horizontal part of the step), indicating the steepness of a stair; see illustration at **Stair**.

Rising Damp - moisture penetration from the ground up through building materials.

Roof Types - at NTC two styles of roof predominate: **gabled**, a two-way pitched roof, and **hipped**, one which slopes upward from all four sides of a building. Variations on these styles include cross-gabled roofs and hipped roofs without a ridge (pyramidal). Other roof types found at NTC are **flat** and **shed** roofs; see illustration.

Rubble Masonry - masonry built of rubble or roughly quarried stone.

Sash - framework for holding a single glass pane, or multiple panes with muntins, of a window; see illustration at **Double-Hung Window**.

Scale - the relationship of parts, their relative size and proportions, to one another and to the human figure.

Scalant - a coating applied over a joint or surface to ex dude water.

Secondary - Depending of what is primary or original.

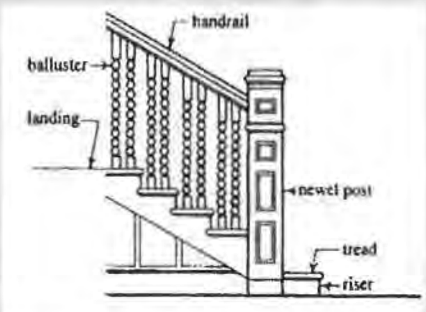
Secretary of the Interior's Standards - a set of standard and guidelines, issued by the U.S. Department of the Interior, National Park Service, for the acquisition, protection, stabilization, preservation, restoration, and reconstruction of historic properties. The Standards, in 1976, and revised and expanded in 1983, 1990, and 1995 were developed pursuant to the National Historic Preservation Act of 1966 which directs the secretary of the interior to develop and make available information concerning historic properties.

Section 106 - the part of the National Historic Preservation Act of 1966 that requires every federal agency financing or licensing a project to take into account how it will affect historic properties on the National Register of Historic Places (or historic properties eligible for this register).

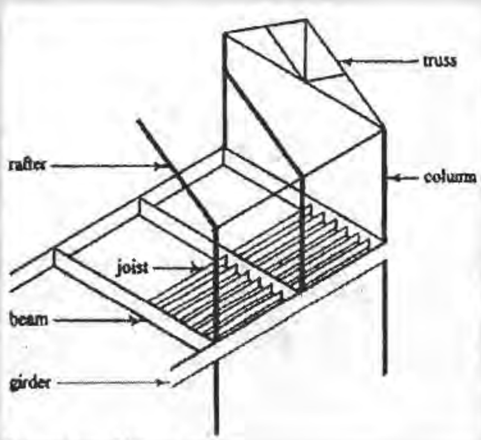
Seismic Retrofit - introduction of new structural members or materials to increase a building's ability to resist seismic forces during an earthquake; all measures that improve the performance of an existing building during an ,of earthquake, especially those that improve the structural stability and reduce the potential for extensive damage or collapse thereby assisting in the preservation of the resource and life safety of occupants and the public.

Roof Types

GLOSSARY



Stair



Structural System

Settlement - the downward movement of a building due to the compaction of soil under the foundation; **differential settlement** is the uneven settlement of parts of a building due to varying loads or soil conditions.

Shed Roof - A roof with a single slope, with the rafters spanning from one outside wall to the opposite wall; see illustration at **Roof Types**.

Shear - a deformation that results in building elements moving in opposite directions within the same plane, to ex-caused by a lateral load, such as wind or seismic forces; a **shear wall** is a wall designed to resist shear forces.

Sheathing - a layer of boards or panels applied over the structural members and providing a base for the application of an exterior finish material; see illustrated at **Wall**.

Shoring - a system of timbers or steel members providing temporary support for walls or floors during construction; also used to prevent the collapse of earth into nation an excavation.

Significance - the meaning or value ascribed to a structure, landscape, or object; **historic significance** normally stems from integrity and historic associations and is based on National Register criteria for evaluation.

Sill - the bottom member of a window or door frame, or of a wood frame wall assembly; see illustration at **Double-Hung Window**.

Single-Hung Window - a window with only one vertically movable hung sash.

Slab - a part of a reinforced concrete floor carried on beams below; also a concrete mat poured directly on grade.

Soffit - the exposed undersurface of an overhead element; see illustration at **Wall**.

Spall - a surface loss of masonry or concrete; an incipient spall is the early stage of surface loss, signaled by cracking and bulging.

Splash Block - a small masonry block placed on the ground below a downspout to drain water from the roof away from the building and to prevent soil erosion.

Splice - to join two members by overlapping and securing their ends; usually a straight line connection.

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

Stair - see illustration.

State Historic Building Code (SHBC) - a series of comprehensive performance regulations (California Title 24, Part 8) that control and allow alternatives to prevailing codes when dealing with qualified historic buildings or sites.

State Historic Preservation Officer- the official in each State or territory who consults with Federal agencies during section 106 review. The SHPO administers the national historic preservation program at the State level, reviews National Register nominations, and maintains
file data on historic properties that have been identified.

Steel Frame - construction type in which steel columns support steel beams.

Structural System - see illustration.

Substrate - the underlying support of finish materials.

Surround - an encircling border or a decorative frame.

Sustainable Design - is an approach to design that recognizes that every design choice has an impact on the natural and cultural resources of not only the local environment, but also regional and global environments; the United Nations World Commission on Environment and Development defines sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."

Tabby - a mixture of lime and water with shells, gravel, or stone; dries as hard as rock: used as a building material.

Task Lighting - fixtures providing light for a limited area, for example, a work surface.

Tension - a pulling or stretching force as opposed to compression, which is a crushing force.

Terneplate - sheet iron or sheet steel coated with a tin alloy, most often used as a roofing material or flashing.

Terra cotta - hard-burnt clay use or roof or floor tiles and ornamental work; sometimes glazed to mimic stone.

Tertiary - Of or pertianing to the earlier of the two geological periods or systems comprising the Cenozoic era.

Thermal Mass - a measure of a materials thermal storage capacity. **Thermal inertia** refers to the "fly wheel" effect by which a masonry wall stores heat from the sun and other sources and releases it later when surrounding when temperatures have dropped. The process works in the opposite, cooling direction as well.

Tooling - texturing the surface of stone or shaping the face of a mortar joint.

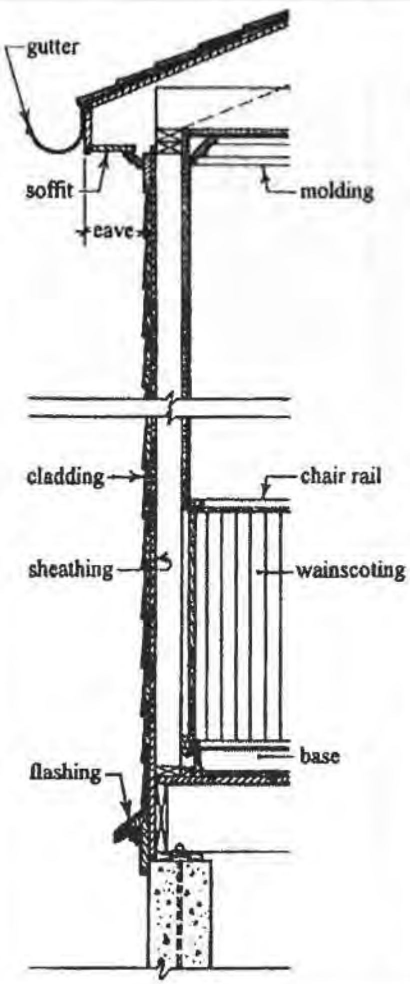
Transom Window - a window above a door; usually a hopper window which pivots open from the top with hinges at the bottom; see illustration at **Window Types**.

Treatment – Work carried out to achieve a particular historic preservation goal, in this case, restoration and rehabilitation.

Trefoil - A window or opening in a pattern of three leaves.

Transom Window

GLOSSARY



Wall

Trim - visible, often decorative, woodwork or molding (of various materials) of a building; frequently used to cover joints in a construction assembly.

Truss - a structural assembly composed of separate members acting together to form a rigid framework; top and bottom members are chords, which are connected by diagonal or vertical members called webs that form stable triangular sections; see illustration at **Structural System**.

Unreinforced Masonry - a construction type in which masonry walls have no added tensile and shear strength, and therefore are not designed to withstand earthquake loads.

Utilitarian - merely serving a purpose, non-decorative, in the built to fulfill a function; in building, a structure with out stylistic ornamentation; also used to describe the majority of industrial and other functional buildings. These buildings have simple forms and gain character through their massing, materials and fenestration. They tend to lack stylistic features or to be executed in very simplified with versions of styles. Typical materials are brick, board-and-Types batten and weatherboard siding, and corrugated metal.

Vent - in a plumbing system, a pipe providing a flow of air to equalize pressure; also the passage and outlet for moisture vapor, air, or gas to escape from a building.

Ventilator - a mechanical device enabling moisture vapor, air, or gas to escape from a building.

Vigas - logs with the bark peeled off and typically used as exposed ceiling beams; see illustration. .ppebark peeled off and typically used as exposed ceiling beams, see illustration

Vitreous Tile - tile produced at high temperatures which fuse grains and close pores, creating an impervious surface

Wainscot - a protective or decorative facing applied to the lower portion of an interior wall, frequently topped by a chair rail; see illustration at Wall.

Wall - a solid vertical enclosure of rooms, buildings, or outdoor spaces; see illustration.

Water table - a slight projection of a masonry wall near grade, creating a narrow ledge; see illustration at Facade.

Whiting - a type of extender used to reduce gloss or to increase volume or texture of paint and whitewash.

Winder - a wedge-shaped step, with the tread wider at one end than the other, used where a stair changes direction without a landing.

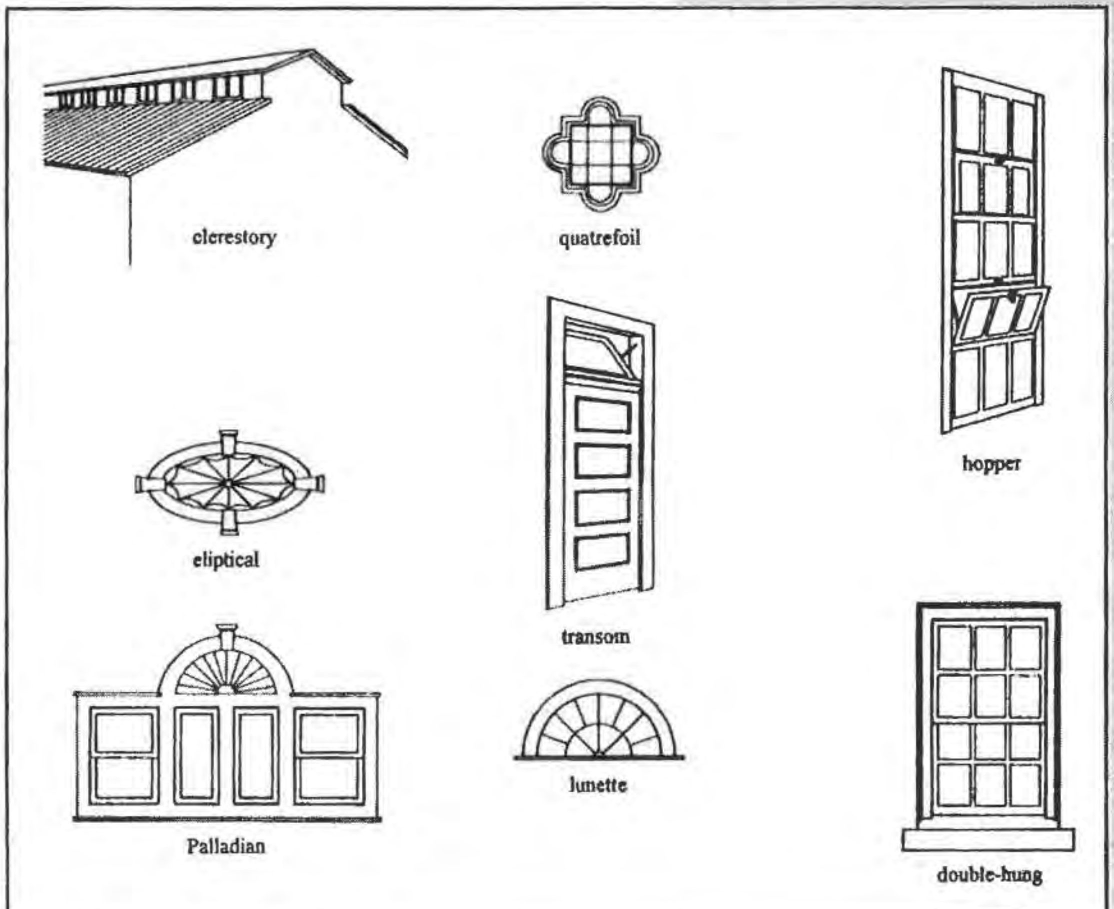
Vigas

Window Types - at the Naval Training Center, the dominant window type is double-hung and the other most common types are hoppers and casements; other functional or decorative types are found less frequently; see illustration.

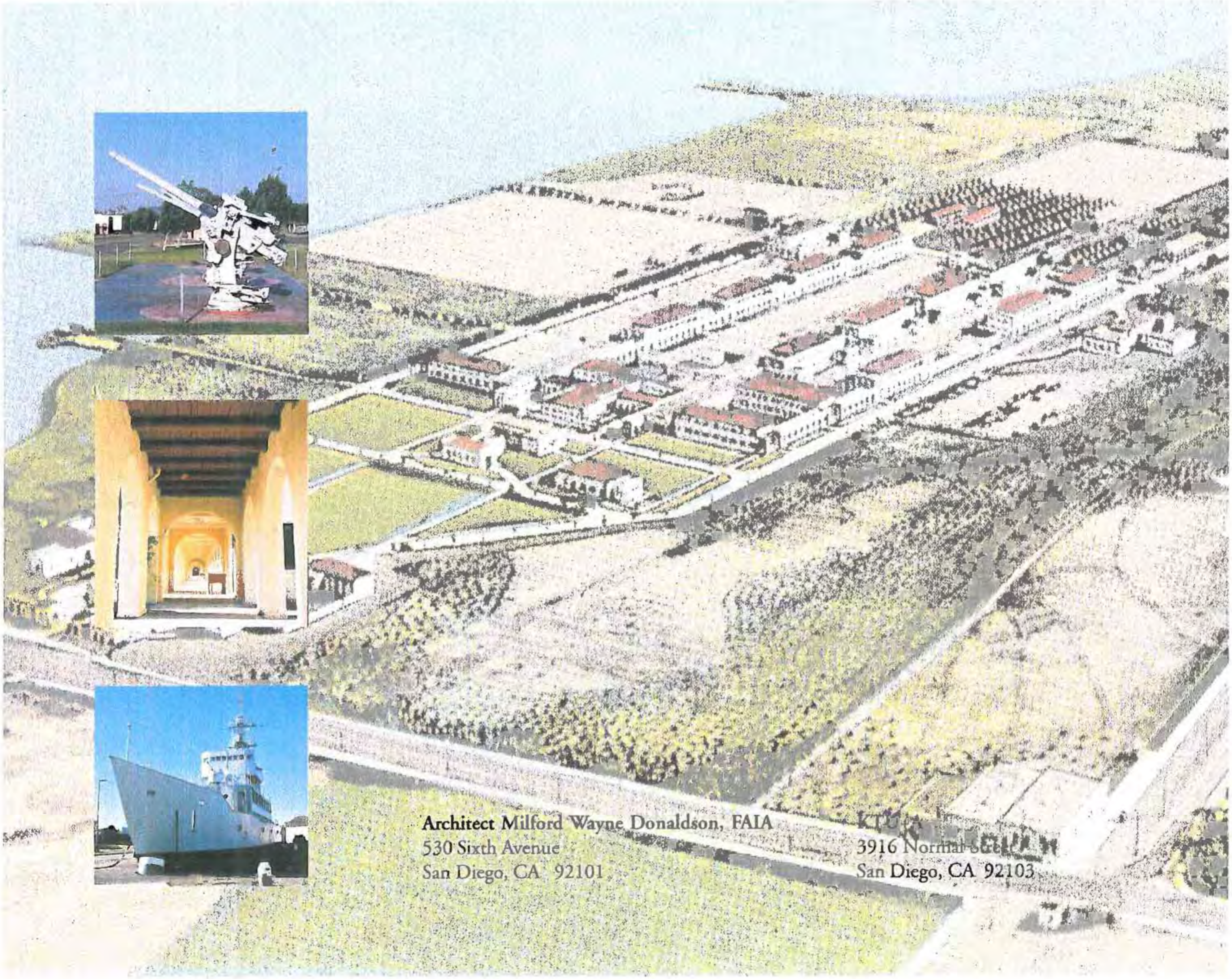
Wood Frame - Construction type in which wood columns or stud walls support wood beams.

Wythe - A vertical stack of masonry units, one unit thick, in a wall; in a cavity wall, two wythes of brick are separated by an air space; see illustration at **Bond**.

Zoned Heating or Air Conditioning - A system in which the building is divided into a number of zones; the temperature and sometimes humidity of each zone are regulated independently by their own controls.



Window Types



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