NAS Alameda Historic District

Historic District Assessment and Historic Preservation Strategy

Alameda Point Preliminary Development Concept

Alameda, California
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I. INTRODUCTION

This report was prepared by Page & Turnbull at the request of the Alameda Reuse and Redevelopment Authority (ARRA). The purpose of this report is to describe the existing conditions present at the Alameda Naval Air Station (NAS Alameda) prior to its redevelopment as a mixed-use project area consisting of new market rate and affordable housing, commercial and light industrial facilities and public open space. This report will primarily concentrate on the relative significance of resources on the former naval air station, as well as provide a baseline level of information about NAS Alameda. Following the Introduction, Section II includes a brief description of NAS Alameda and discusses the proposed project. Section III summarizes the current historic status of NAS Alameda and Section IV discusses the history of the former base. Section V describes the historic district and character-defining features of its contributing buildings and structures. Section VI includes the historic preservation strategy. The report concludes with a Bibliography and Appendix including relevant bibliographic sources and support documents.

II. SETTING

NAS Alameda was constructed in the late 1930s and early 1940s on filled tidal lands and marshes on the western end of the City of Alameda, an urban island community of 72,259 people located near the geographical center of the San Francisco Bay Area. The former naval air station is bounded by Oakland Inner Harbor to the north, San Francisco Bay to the south and west and residential neighborhoods of Alameda to the east. The former base occupies 1,734 acres of dry land and 1,108 acres of submerged lands laying largely within the City of Alameda. There is also a small section of filled land and submerged lands lying within the City and County of San Francisco. Occupying a total of 2,842 acres, NAS Alameda is currently the fourth largest naval property in the San Francisco Bay Area **(Figure 1)**.

NAS Alameda was commissioned in 1940; two years of active dredging, filling and construction operations were required to convert a former Army airfield, civilian airport and municipal marina into the most important naval air station on the West Coast during the Second World War. The Japanese attacks on Pearl Harbor and other American bases and possessions on December 7, 1941 unleashed a major expansion at NAS Alameda. Serving as a logistical supply base, aircraft repair facility, seaplane base and homeport for dozens of aircraft carriers and other naval vessels during the Second World War and the Korean and Vietnam Wars, the base continued in operation until 1993 when it was included on a list of bases to be decommissioned by the Base Realignment and Closure Commission (BRAC). Following BRAC's decision to close NAS Alameda, the Navy began preparations to decommission the base and turn it over to the City of Alameda. Although the Navy withdrew in 1997, the former base has not yet been transferred to the City. Today, the former base consists of an airfield with two runways, a seaplane lagoon, nine massive hangars and millions of square feet of industrial, warehousing, administrative, residential and recreational space, much of it presently vacant.

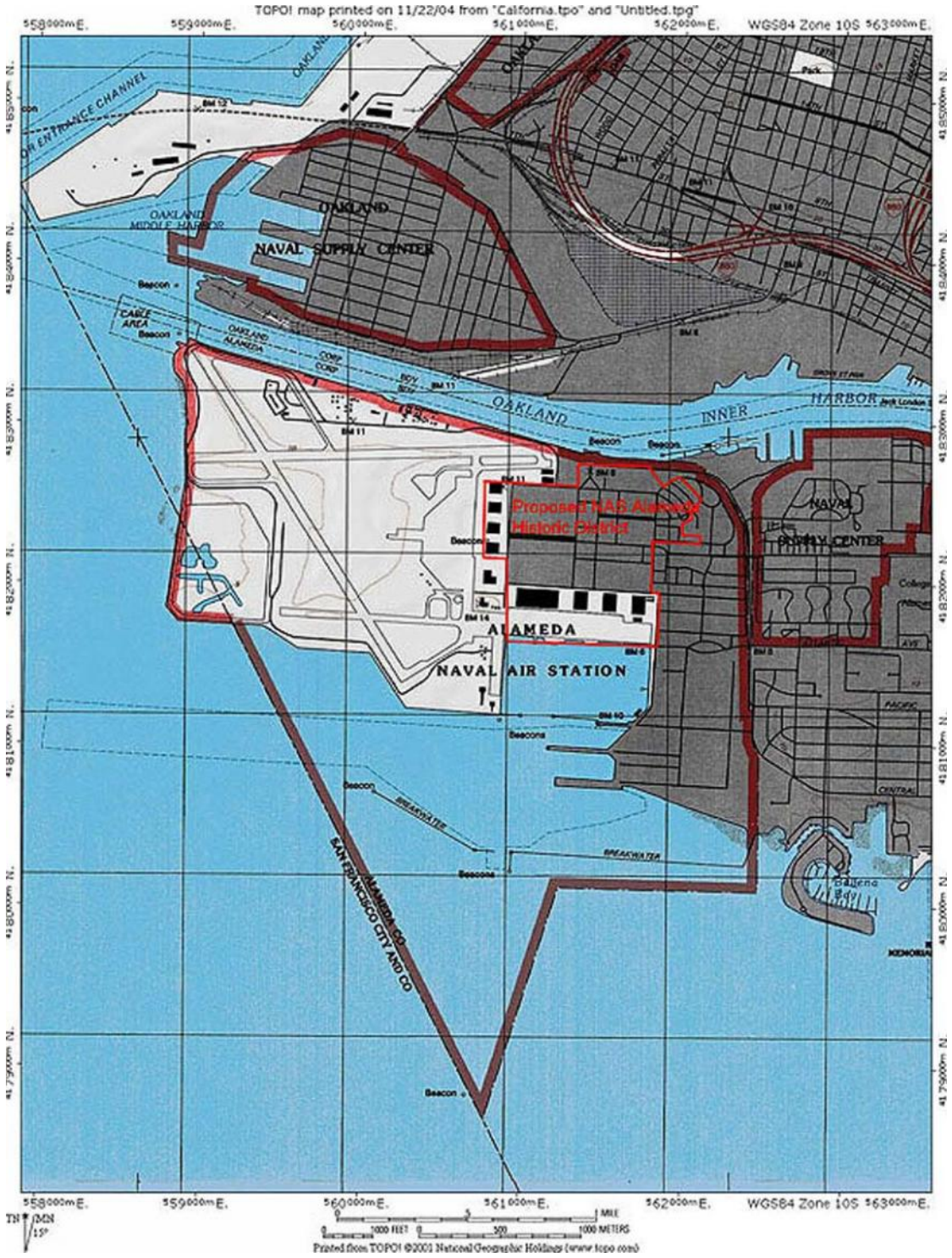

Figure 1. USGS Map showing location of NAS Alameda

III. CURRENT HISTORIC STATUS

Woodbridge Inventory
In 1992, prior to the closure of NAS Alameda, the Navy retained architectural historian Sally Woodbridge to survey all buildings on the base constructed prior to 1946 and assess their potential significance. Woodbridge determined that while no buildings appeared to be individually eligible for listing in the National Register, a potential historic district comprised of buildings, structures and landscapes dating to the pre-war and World War II periods existed at the core of the base. Consisting of eighty-five contributing buildings built between 1939 and 1945, the NAS Alameda Historic District (Historic District) was found to qualify for listing in the National Register under Criteria A (Events) and C (Architecture) **(Figure 2)**. The Navy and the California Office of Historic Preservation (OHP) concurred with the findings and OHP formally listed the district as being eligible for listing in the National Register.[1] The number of contributing buildings was revised to eighty-seven in a memorandum to OHP from the Navy, dated October 3, 1997 and acknowledged by OHP in a letter to the Navy dated November 5, 1997. In 2003, one contributor, Building 101, was lost in a fire, reducing the total number of contributors to eighty-six.

NAS Alameda Community Reuse Plan
In 1996, prior to the decommissioning of NAS Alameda, the City and ARRA adopted the *NAS Alameda Community Reuse Plan* (CRP), a "visioning" document designed to guide the City's incorporation of base into the city and its conversion to civilian use. Although this document covers a variety of topics, it devotes relatively little space to cultural resources, including historic structures or landscapes. The only reference to the Historic District occurs in the Open Space and Conservation Element sections, where a brief discussion concludes with seven policies for the treatment of buildings within the Historic District boundaries.[2]

1996 Advisory Council for Historic Preservation Memorandum of Agreement
In 1996, a Memorandum of Agreement (MOA) was signed by the City, the Navy, OHP and the Advisory Council for Historic Preservation (ACHP). This document authorized the Navy's proposal to demolish six contributing buildings within the Historic District.[3] Although all six were deemed to be contributors to the Historic District, Buildings 75A (Officers' Bathhouse), 115 (Ambulance Garage), 116 (Rehabilitation Center), 130 (Medical Laboratory), 135 (Community Facilities) and 137 (Recreation Storage Facility) were determined to be of lesser significance. All were constructed after 1942 and were not part of the original base design drawn up by the Navy Bureau of Yards & Docks. Furthermore, all but one (Building 75A) were classified by the Navy as "temporary" or "semi-permanent" buildings when they were constructed during the Second World War. As such, these temporary buildings were utilitarian structures built with lower quality materials and less substantial construction techniques. Constructed in a hurry to meet the immediate needs of wartime exigencies, temporary and semi-permanent buildings were not intended to be retained indefinitely once the War had ended. Nevertheless, as contributors, mitigation measures were required to lessen the effect of their demolition. Accordingly, the MOA required the recordation of each building according to Historic American Buildings Survey (HABS) standards. The completed documentation was submitted to OHP, the City and the Alameda Historical Society. To date, none of the vacant buildings have been demolished, although all have been recorded.

Guide to Preserving the Character of the NAS Alameda Historic District
In 1997, prior to decommissioning NAS Alameda, the Navy retained JRP Historical Consulting Services to develop Design Guidelines to facilitate the preservation and maintenance of contributing buildings and

[1] Sally Woodbridge, *Historic Architectural Inventory for Naval Air Station* (Alameda, 1992).
[2] EDAW, Inc., *NAS Alameda Community Reuse Plan* (San Francisco, 1996), pp. 5-14-5-16.
[3] "Memorandum of Agreement Submitted to the Advisory Council on Historic Preservation Pursuant to 36 CFR, Section 800.6," on file with the City of Alameda.

landscapes within the Historic District. Prepared as a guide to assist the Alameda Planning & Building Department and the Historic Advisory Board (HAB) in evaluating proposed redevelopment projects, the Design Guidelines identified important character-defining features and established five sub-areas within the Historic District: (1) Administrative Core, (2) Land plane Hangars Area, (3) Seaplane Hangars Area, (4) Shops Area and (4) Residential Area.[4]

1999 Advisory Council for Historic Preservation Memorandum of Agreement
In September 1999, a second MOA was signed by the City, the Navy, OHP and ACHP. This document required the Navy to complete the following tasks related to historic preservation prior to transferring the base to Alameda: (1) prepare and submit a National Register nomination for the Historic District, (2) donate or permanently loan the inventory of historic artifacts from NAS Alameda to museums in Alameda or the Bay Area and (3) follow the *Maintenance and Repair Guidelines for the Naval Air Station Alameda Historic District* extracted from the JRP Consulting Services technical report of April 1997.[5] To date, the Navy has not completed the National Register nomination, although recent conversations indicate that they have identified funds and personnel who will begin the process.

NAS Alameda Listed as a Historic Monument
In September 1999, the City passed Resolution No. 13139, listing the NAS Alameda Historic District in the City's Historical and Cultural Monument List.

Environmental Compliance
In 1999, the Navy completed a Final Environmental Impact Statement (FEIS) titled: *Disposal and Reuse of Naval Air Station Alameda and the Alameda Annex,* which was required before the base could be transferred to Alameda. Meanwhile, the City completed a Draft Environmental Impact Report (DEIR), titled: *Reuse of Naval Air Station Alameda and the Fleet and Industrial Supply Center, Alameda Annex and Facility*. Both documents identified the *NAS Community Reuse Plan*, adopted in 1996 and amended in 1997, as the preferred alternative for the reuse of NAS Alameda. Although the FEIS and DEIR concluded that the preferred alternative would have a significant effect on the Historic District, both documents stated that appropriate mitigation measures would reduce the impacts to a less-than-significant level.

On June 6, 2000, the Navy and ARRA signed a Lease in Furtherance of Conveyance (LIFOC) for NAS Alameda. By the terms of this agreement, ARRA leased the base from the Navy and took charge of maintenance and subleasing buildings to tenants. From this point on, all leases were to be granted under the terms of the City's Interim Leasing Program, in anticipation of a future master-planned redevelopment.

In November 2001, the City of Alameda issued a DEIR for a proposed amendment to the City's *General Plan*, which would result in the creation of the new *Alameda Point Element*. In March 2002, the City issued a new Notice of Preparation (NOP) for a second DEIR for the revised *General Plan Amendment* (GPA). The second GPA DEIR was finalized in March 2003 and published. On April 28, 2003, the GPA was considered for adoption by the City of Alameda Planning Commission and adopted by the Alameda City Council on May 20, 2003.

[4] Steven D. Mikesell, JRP Historical Consulting Services, *Guide to Preserving the Character of Naval Air Station Alameda Historical District* (Davis, CA: April 1997), p. 2.
[5] "Memorandum of Agreement Among the United States Navy, the Advisory Council on Historic Preservation and the California State Historic Preservation Officer Regarding the Layaway, Caretaker Maintenance, Leasing, and Disposal of the Historic Properties on the Former Naval Air Station, Alameda, California," on file with the City of Alameda, p. 2.

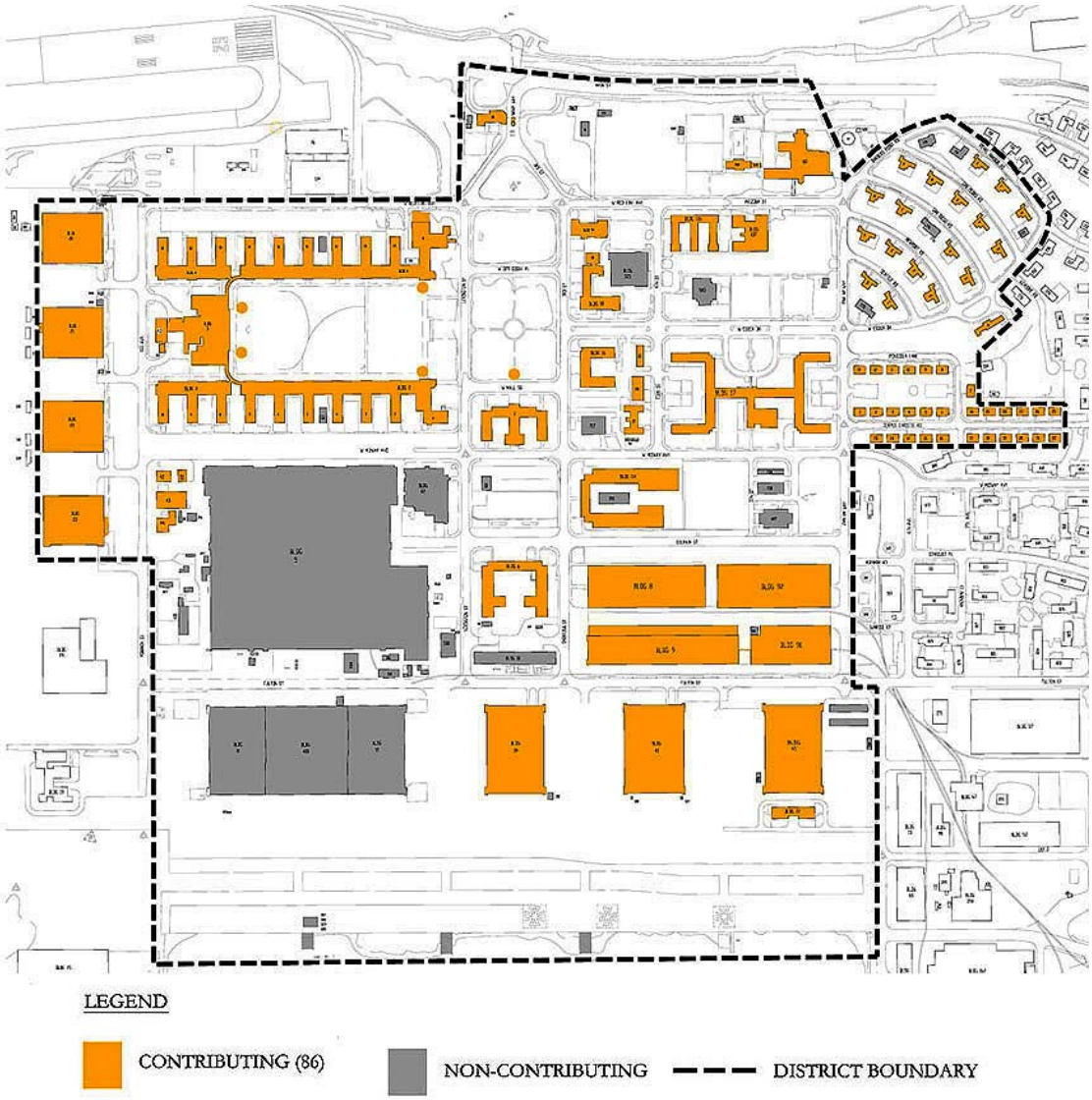

Figure 2. NAS Alameda Historic District Boundaries

IV. HISTORIC CONTEXT

Native American Period
Prior to European contact, the former marshlands on the western end of Alameda Island were occupied by a Penutian-speaking tribelet belonging to the larger Ohlone civilization. Although called the *Costeños* or "coast dwellers" by the Spanish, today their Native American descendents prefer the term Ohlone. Similar to many coastal California aboriginal groups, the Ohlone survived by fishing, hunting and gathering. Favored foods included fish, shellfish, waterfowl, acorns, roots, nuts, berries and other foods readily available in the marshlands, streams and foothills of the pre-contact San Francisco Bay Area. Based on the oral traditions of the tribe and data gathered by archaeologists from several large shellmounds on the margins of San Francisco Bay, it is likely that the ancestors of the Ohlone first inhabited the land surrounding San Francisco Bay between 5000 and 2000 BC. Ohlone occupation of the Bay Area appears to have been continuous until the beginning of the historic era, circa 1700 AD. After the arrival of Spanish missionaries and soldiers during the last quarter of the eighteenth century, the traditional lifestyle of the Ohlone gradually gave way to the influence of the Mission System and accompanying demographic changes brought on by disease and declining birthrates.[6]

Historically marshland and tidal flats, the site of NAS Alameda was utilized by the Ohlone as a rich larder where men would catch fish, hunt waterfowl and gather shellfish. Due to the fact that most of the land was at least partially submerged, it is unlikely that any permanent settlements were located within the boundaries of the former air station. However, permanent Ohlone settlements were not far away. Until it was quarried to provide surfacing for runways at the San Francisco Bay Airdrome, a prehistoric midden or refuse heap called Sather Mound was located approximately two miles southeast of NAS Alameda. Consisting of huge mounds of discarded shells, the middens were excavated in 1900 by an amateur archaeologist known as Captain Clark, who found them to contain flaked stone tools and burials. In addition to Sather Mound, five other known Ohlone sites have been identified in what is now the City of Alameda.[7]

European Contact: Spanish and Mexican Periods
The first permanent European settlements in the San Francisco Bay Area were established during the last quarter of the eighteenth century with the founding of Misión San Francisco de Asís and the Presidio of San Francisco in 1776. Two decades later, Misión San José was established by the Franciscans in what is now Fremont. During the ensuing decades, the Ohlone were rapidly dispossessed of their livelihoods, lands and freedom after being moved to the missions, where they were converted to Catholicism and taught European ways. Many died from exogenous diseases and others were killed when they attempted to escape and to return to their former way of life. Meanwhile, the Spanish and later Mexican governors of Alta California were granting vast tracts of land to retired Spanish soldiers and Mexican settlers. In 1820, Governor Don Pablo Vicente de Sola, the last Royal Spanish governor of Alta California, granted Rancho San Antonio to Sergeant Luís María Peralta. The 44,800-acre ranch included all of what is now Alameda and much of Oakland. In 1842, Peralta divided Rancho San Antonio among his sons. Antonio María Peralta, his third son, received 15,206 acres comprising the entire Alameda Peninsula, known then as Bolsa de Encinal.[8]

Early American Period
On February 2, 1848, the United States and Mexico signed the Treaty of Guadalupé-Hidalgo. Drawn up at the conclusion of the Mexican-American War, the treaty ceded much of northern Mexico to the United States. In exchange, the United States paid Mexico fifteen million dollars, assumed responsibility for three million dollars in claims against Mexico by American citizens and relieved Mexico of its monetary debt to the United States. Long before the ink dried on this document, American and European immigrants had been streaming into

[6] Busby et al., *Archaeological Survey and Site Evaluation: Disposal and Reuse, Department of Defense Family Housing, Novato, Marin County, California* (1995).
[7] Information on file at the Northwest Information Center, Sonoma State University, Rohnert Park, California.
[8] City of Alameda, *Alameda Historic Preservation Element* (Alameda: 1980), p. 5.

California. In 1850, the year California became a state, William W. Chipman and Gideon Aughinbaugh purchased the section of Rancho San Antonio called Bolsa de Encinal from Antonio María Peralta. Bolsa de Encinal, which roughly translated means "pocket of oaks," was a tract of 1,960 acres comprising the majority of what is now the City of Alameda. The future site of NAS Alameda was part of this tract, although as partially submerged tidal flats and marshland, the land had little value.[9]

In 1853, the State Legislature created Alameda County out of parts of Contra Costa and Santa Clara Counties. Responding to a huge influx of American and foreign immigrants into the San Francisco Bay Area during the Gold Rush, Chipman and Aughinbaugh sold off sections of Bolsa de Encinal to speculators and real estate developers, who in turn subdivided the lands into farmsteads and residential lots. In 1854, the communities of Alameda and Encinal were incorporated, although neither was ultimately ratified by local election. However, due to poor access and lack of infrastructure, people did not flock to either settlement. Consequently, the peninsula remained sparsely populated throughout the 1850s and 1860s. On the other hand, the level terrain, rich soils and benevolent climate made Alameda ideal for pasture and horticulture. In addition, the presence of vast stands of native oaks made Alameda a popular location for commercial wood-cutting and charcoal manufacturing operations.[10]

Railroads Arrive at Alameda Point

In 1864, Alameda became infinitely more accessible to the wider world with the completion of the first leg of Alfred. A. Cohen's San Francisco & Oakland Railroad. The original alignment extended from what is now Versailles Avenue in eastern Alameda to Alameda Point, at the southwestern tip of the peninsula. The railroad was soon extended into Oakland via a bridge across San Leandro Bay and eventually on to Hayward. As the closest dry ground to San Francisco in Alameda, Alameda Point was selected by Cohen as the ideal location for railroad shops and a ferry wharf. From Alameda Point, ferries would connect rail passengers to San Francisco. Called "Cohen's Wharf," Alameda Point attracted a hotel, housing and several industries. Hoping to profit from land sales around his wharf, Cohen laid out a town in February 1868 and named it Woodstock.[11] Bounded by present-day Lincoln Avenue, Third Street, San Francisco Bay and Atlantic Avenue, Woodstock occupied a small section of what is now the southeastern corner of NAS Alameda.

Between 1868 and 1869, the community of Woodstock enjoyed a major building boom. In 1868, Pacific Coast Oil Works opened for business. Operated by Samuel Orr, the company was a predecessor to the Standard Oil Company.[12] For a brief time, Woodstock became the western terminus of the Transcontinental Railroad with the arrival of the first train from New York at Cohen's Wharf on September 6, 1869. Two months later, the Central Pacific Railroad, which had purchased the San Francisco & Oakland Railroad from Alfred Cohen in 1868, constructed a terminal at Prescott Street in West Oakland and removed the Transcontinental Railroad terminal from Cohen's Wharf.[13] Woodstock sustained another blow in 1873 when the Central Pacific re-routed the San Francisco & Oakland tracks from Alameda Point to Oakland via a new bridge spanning the Oakland Estuary just west of Webster Street. Cohen's Wharf was quickly abandoned and much of Woodstock reverted to agrarian uses.[14] The wharf and shops slowly deteriorated and collapsed but the remains of the facilities were encountered during excavations performed in 1938 during the construction of NAS Alameda.

In 1872, the City of Alameda incorporated, encompassing the entire peninsula historically known as Bolsa de Encincal, encompassing the communities of Encinal, Alameda and Woodstock **(Figure 3)**. According to the 1870 U.S. Census, the population of the new city remained very small, with only 1,557 residents. Nevertheless, major transportation projects undertaken during the 1870s set the stage for Alameda to eventually assume a

[9] *Ibid.*
[10] *Ibid.*, p. 6.
[11] *Ibid.*, p. 78.
[12] LSA Associates, *Alameda Point General Plan Amendment EIR* (Berkeley: 2002), p. 143.
[13] City of Alameda, *Alameda Historic Preservation Element* (Alameda: 1980), p. 7.
[14] *Ibid.*, p. 71.

leading role in industrial, commercial and residential development in the decades to come. In 1874, the U.S. Army Corps of Engineers began dredging San Antonio Creek in anticipation of a proposed canal linking the Oakland Estuary with San Leandro Bay. As part of this work, the Corps built a "training wall" to guide the flow of San Antonio Creek.[15] This structure still exists north of NAS Alameda and is listed on the Alameda List of Monuments.

The completion of James G. Fair's South Pacific Coast Railroad from Santa Cruz to Alameda in 1878 restored railroad uses to Alameda Point. The right-of-way traversed the city from San Leandro Bay in the east, ran along Encinal and Central Avenues and terminated at a new pier near the decaying remains of Cohen's Wharf.[16] The new railroad began to attract industry back to Alameda Point. In 1879, Pacific Coast Oil Works built a kerosene refinery at Alameda Point near the southwest corner of what is now the intersection of Pacific Avenue and Main Street, within the present-day eastern boundary of NAS Alameda.

In search of improved access to San Francisco Bay, the South Pacific Coast Railroad eventually constructed a raised track bed along Main Street to the company's new Alameda Pier and Ferry Terminal at the northwestern corner of what is presently NAS Alameda. The construction of the causeway and ferry terminal in 1883 was the first major documented filling operation in the tidal marshland that would eventually become NAS Alameda. The causeway structure consisted of a double rock wall filled with mud and rubble, stretching over two miles into the Bay **(Figure 4)**. Constructed on top of the causeway were two tracks, a wagon road and a pedestrian walkway. Standing at the western end of the causeway was an 800'-long, 280'-wide pile trestle upon which was located a small railroad yard and massive terminal building. The terminal building measured 310' by 100' with two wings, each measuring 30' by 510' in plan. The Eastlake-style terminal featured electric lighting and was reported to have been "much handsomer an architectural sense than that of the Central Pacific (later Southern Pacific terminal in Oakland)."[17] The new South Pacific Coast pier (later called the Alameda Mole) was parallel to the Southern Pacific's Long Wharf on the other side of the Estuary in Oakland (later called the Oakland Mole). Both were much closer to San Francisco, cutting the length of the ferry trips between San Francisco and the East Bay by fifteen to twenty minutes. The new location also provided better access to deep water, solving the perennial silting problems that occured in the shallower waters off Alameda Point.

The old South Pacific Coast Railroad terminal in Alameda was destroyed by fire in 1902 and subsequently rebuilt by the Southern Pacific in 1903-04. After the 1906 Earthquake destroyed the San Leandro Bay trestle, the Southern Pacific bypassed the Alameda Pier and Ferry Terminal, reserving it exclusively for local service. In 1934, the terminal was retired following the completion of the San Francisco-Oakland Bay Bridge. No longer dependent on ferries, rail service on the bridge was provided by the Interurban Electric Railway (more popularly known as the Key System) on the lower deck until the 1960s. The Alameda Pier and Ferry Terminal were demolished when the Navy began constructing NAS Alameda in 1938.[18]

[15] *Ibid.*
[16] *Ibid.*
[17] Andy Fahrenwald, "A Short History of the Alameda Moles," *Newsletter of the Samuel Knight Chapter of the Society for Industrial Archaeology* (October 7, 1997), p. 7.
[18] Henry E. Bender and Thornton Waite, "Additional Depots Designed by D.J. Patterson," undated manuscript in the California State Railroad Museum.

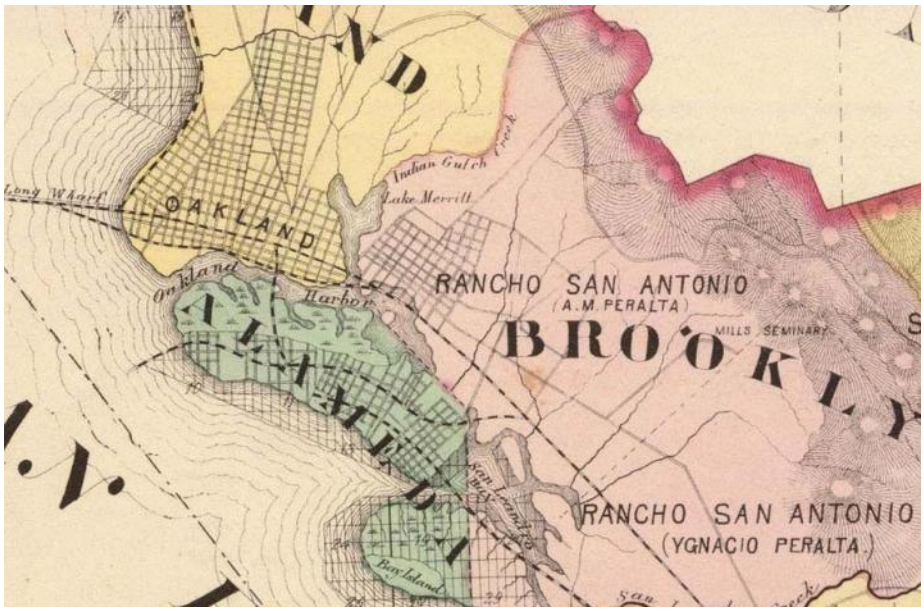

Figure 3. Map showing northern Alameda County in 1878.
Courtesy Bancroft Library, UC Berkeley

Figure 4. Detail of Oakland Tribune Map showing Alameda Point, ca. 1885.
Courtesy Online Archive of California

Industrial Development at Alameda Point

Reflecting its growing importance as an industrial and residential community, Alameda re-incorporated as a Charter City in 1884. Between 1870 and 1880, the population grew from a little over 1,500 to 5,708. By 1890 the population had nearly doubled to 11,165. Residential development in the form of rows of speculator-built cottages and larger residences on the "Gold Coast" replaced the farmsteads along the principal rail corridors. Meanwhile, Woodstock, at the western end of the city, attracted increasing amounts of heavy industry, including refineries, potteries and shipyards. In 1885, the Standard Oil Company of California purchased the Alameda Oil Works and Pacific Coast Oil Company and consolidated these operations in a sprawling complex located immediately west of South Gate in what is now NAS Alameda **(Figure 5)**. The refinery remained in business at Alameda Point until Standard Oil moved its operations to Point Richmond in 1903.[19] In 1886, Standard Oil Company was joined at Alameda Point by N. Clark & Sons, a large commercial pottery at the corner of Fourth Street and Pacific Avenue in Woodstock.[20]

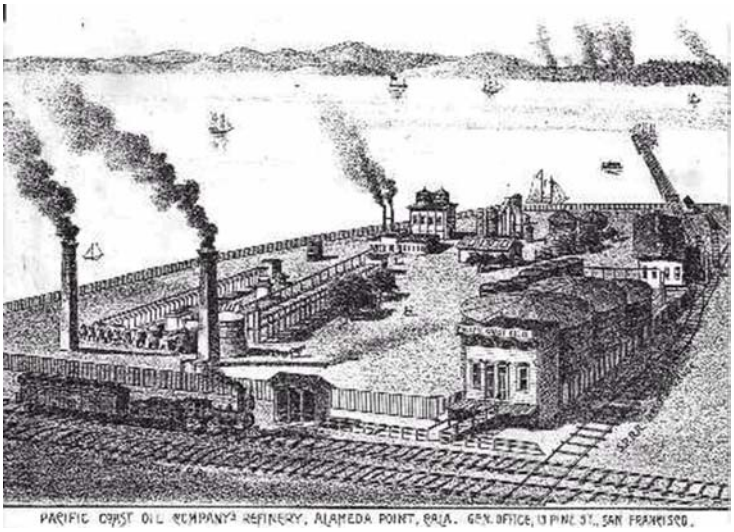

Figure 5. Pacific Coast Oil Refinery, Alameda Point, ca. 1890
Courtesy of Toxicspot.com

One of the most illustrious industries to relocate to Alameda Point was Pacific Coast Borax Company, constructed in 1893 by Francis "Twenty Mule Team" Smith, the famous Death Valley borax miner. Although far from his Death Valley mines, Smith chose Alameda Point for its convenient rail connections and access to San Francisco Bay. Smith constructed a huge wood-frame and concrete refinery complex on what is presently the site of the Engine Overhaul Shop (Building 360) and a wharf and coal storage warehouse on what is now the location of the Engine Test Cell complex (Building 14). When it was completed, Pacific Coast Borax Company was the largest borax refinery in the world and reportedly one of the first to make use of reinforced-concrete in the United States **(Figure 6)**.[21] The refinery was closed in 1930 after the exhaustion of the borax mines in Death Valley and the main four-story refinery building was subsequently dynamited. The Navy spared at least one building from the borax plant when they began grading and filling NAS Alameda in 1938. This building, Building 163, still exists as a small brick maintenance shed in the southeastern corner of the base.

[19] City of Alameda, *Alameda Historic Preservation Element* (Alameda: 1980), p. 143.
[20] *Ibid.*, p. 72.
[21] *Ibid.*, p. 73.

Despite the industrial boom at Alameda Point, most of what is now NAS Alameda remained undeveloped throughout the nineteenth and early twentieth centuries. First, ongoing title disputes over the submerged tidal flats and marshes between the Central Pacific Railroad (the successor to the South Pacific Coast Railroad) and the heirs of Antonio Peralta made investment in these lands risky. Even more daunting was the high cost of dredging and filling several thousand acres of submerged tidal flats. The 1897 Sanborn Fire Insurance Map, the earliest detailed insurance map to cover the area, shows almost no development in the area within what are now the boundaries of NAS Alameda. Meanwhile, the section of Alameda formerly known as Woodstock consisted of the Standard Oil Company Refinery, the acific Coast Borax Company complexes and a handful of wood-frame workers' dwellings along Pacific Avenue **(See Sanborn Maps in Appendix A)**.

Figure 6. Pacific Coast Borax Refinery, n.d.
Courtesy of the Bancroft Library, UC Berkeley

The dawning of the twentieth century witnessed many developments that contributed toward the evolution of Alameda into an important Bay Area community. By 1900, Alameda had a population of 16,464, making it the fourth largest city in the Bay Area and the eighth largest city in California. The completion of the Tidal Canal in 1902, which linked the Oakland Estuary with San Leandro Bay, provided additional Bay frontage for shipyards and other water-dependent industries in Alameda and Oakland. Incidentally, the Tidal Canal severed most of Alameda from the mainland, transforming the bulk of the community into an island in San Francisco Bay. Now known as the "Island City," the citizens and business leaders of Alameda anticipated continued industrial and residential growth in the upcoming decades. The 1906 Earthquake and Fire was a boon to Alameda. Fleeing the devastation in San Francisco, an influx of earthquake refugees boosted Alameda's population to 23,383 by 1910. Rows of neat Craftsman bungalows infilled much of the remaining vacant land in the city, converting the still quasi-rural community into a dense streetcar suburb of San Francisco.[22]

U.S. Naval Air Power

The history of naval aviation begins well over three decades before the founding of NAS Alameda. The Wright Brothers' successful flight at Kitty Hawk, North Carolina on December 17, 1903, launched the aviation revolution. Within a decade of this event, the value of the airplane as a military tool had become increasingly apparent to the United States military. The Navy was the first to create an aviation wing when it established the Naval Aviation Department in 1911. The Army followed suit in 1912 when it set up the Aviation Section within the U.S. Signal Corps. In 1914, the Navy opened its first naval air station at Pensacola, Florida.[23]

For most of the nineteenth century, the Navy focused its attention on threats coming from Europe and as a result, most Naval installations were located on the Atlantic and Gulf Coasts. The Spanish-American War of 1898 and growing American concerns over Japanese power in Asia following the Japanese victory in the Russo-

[22] United States Census, 1910.
[23] Department of the Navy, Naval Historical Center, *Chronology of Significant Events in Naval Aviation, Part I* http://www.history.navy.mil/avh-1910/PART01.PDF.

Japanese War of 1904-05, caused the Navy to shift its focus from Europe to the Pacific. Before 1900, the only naval installation of any consequence in California was Mare Island Naval Shipyard in Vallejo. In 1907, the Navy established the first Pacific Fleet and in 1922, the United States Fleet was again reorganized, with a Battle Fleet in the Pacific and a Scouting Fleet in the Atlantic. Most of the Navy's large battleships were moved to the Pacific to counter the growing threat from Imperial Japan. In the early 1920s, the Navy began looking for ports to house the growing Pacific Fleet; eventually San Diego, California; Bremerton, Washington and Pearl Harbor, Hawaii were selected. In 1921, the new headquarters of the Eleventh Naval District were established in San Diego, where they remained until they were moved to Pearl Harbor in 1940.[24]

Despite having established the first military aviation wing in 1911, Navy brass initially downplayed the significance of aircraft in combat. It was only after Billy Mitchell demonstrated the ability of an airplane to sink a battleship off Hampton Roads, Virginia in 1922 that the Navy began to seriously investigate the use of aircraft in future naval engagements. Not long after Mitchell's feat, the Navy began constructing its first aircraft carriers from converted colliers and battle cruisers. The first purpose-built aircraft carrier constructed, the *USS Ranger*, was commissioned in 1934. New land bases were established for naval aircraft as well. The earliest naval air station at Pensacola was joined in the 1930s by installations at Anacostia (Washington, D.C.); Norfolk, Virginia; San Diego; Pearl Harbor and the Panama Canal Zone.[25]

Alameda Point Becomes Center of Aviation in the Bay Area
Pioneering Bay Area aviators often dealt with significant challenges including frequent fog and the scarcity of level vacant land for take off and landing. The western portion of Alameda, on the other hand, was soon identified as being an ideal location for civil aviation, mostly due to its central location, abundant level land and infrequent fog-filled days. The first recorded flight at Alameda Point took place on Columbus Day, 1911, when aviator Weldon Cooke took off from Alameda Point to entertain President William Taft and other spectators gathered on the north side of the Estuary in Oakland.[26]

With its deepwater access and protected location, Alameda Point's potential strategic value attracted the attention of top military brass during the early twentieth century. Alameda Point's first defense-related industry materialized in 1916 when Bethlehem Steel Shipbuilding Company built a shipyard on the Estuary immediately northeast of what is now NAS Alameda. Several drydocks and manufacturing buildings still survive on the site, presently the location of the Alameda Ferry Terminal. A year later, during the height of the First World War, local Alameda business leader John J. Mulvany convinced the Navy that Alameda Point would be an ideal location for a destroyer base.[27] Mulvany's lobbying efforts resulted in a fact-finding investigation by a committee headed by Admiral James Helm. The Helm Report recommended that a supply station be built at Alameda. The Helm Report went on to argue that Alameda's sheltered location on a major bay, coupled with the presence of local industry and infrastructure, made the site compare most favorably with the Navy base at Hampton Roads, Virginia. With only one other major West Coast naval installation at San Diego, the Helm Report concluded that a new base at Alameda would fit in well with the Navy's plans to establish a chain of facilities stretching along the Pacific Coast from San Diego to Seattle.[28]

[24] U.S. Army Corps of Engineers Baltimore District, *National Historic Context for Department of Defense Installations, 1790-1940, Vol. 1* (Baltimore: 1995), pp. 81-82.
[25] *Ibid.*
[26] *History of U.S. Naval Air Station Alameda, California,* manuscript at the Pacific Branch of the National Archives, San Bruno (January 9, 1945), p. 2.
[27] *Ibid.*, p. 1.
[28] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 3.

Charles Lindbergh's famous transatlantic flight in 1927 unleashed a second and more sustained interest in commercial aviation in the United States, with hundreds of small private and municipal airfields opening in the

Figure 7. View of Alameda Municipal Airport, 1934.
Courtesy National Archives Pacific Region, San Bruno

wake of his flight. Opening in 1927, Mills Field in South San Francisco was the first major airfield constructed in the Bay Area. This airfield was eventually purchased by San Francisco and evolved into San Francisco International Airport. Oakland followed suit with the Oakland Municipal Airport. Alameda did not lag far behind and in 1928 Alameda Municipal Airport opened for business on filled land near the Alameda Pier and Ferry Terminal on the northwestern corner of the future NAS Alameda **(Figure 7)**. In addition to a short runway, the facility consisted of an administration building and three hangars. Curtis Wright Aviation was the principal tenant until Pan American Airways leased the facility to house the company's famous China Clippers.[29]

San Francisco Bay Airdrome

After witnessing the success of Alameda Municipal Airport, the Board of Regents of the University of California began making plans to construct their own airport on 458 acres of marshland that the university had acquired in western Alameda. The rectangular tract was bounded by Atlantic Avenue to the south, Main Street to the west, the Bethlehem Steel Shipbuilding Company yard to the north and Webster Street to the east. The San Francisco Bay Airdrome was intended to serve as a major regional airport and construction began in 1930. After draining the site, two runways—one 3,400' in length and the other 1,700'—were graded and paved with crushed oyster shells looted from prehistoric Ohlone shell middens on Bay Farm Island. The airport offices and the terminal were at first housed in a single 53,000-square-foot hanger constructed at a cost of $150,000. The San Francisco Bay Airdrome was initially very successful and in the early 1930s, a 160' addition was added to the original hangar and construction began on a second hangar. By the mid-1930s, however, the facility began to lose most of its major airline tenants to Oakland Municipal Airport and Mills Field. For the rest of the 1930s the San Francisco Bay Airdrome was primarily used by private aircraft. In 1941, the Navy condemned seventy acres of the airdrome bordering Atlantic Avenue for a housing project and later ordered the

[29] *History of U.S. Naval Air Station Alameda, California* (San Bruno, California: Manuscript at the Pacific Branch of the National Archives, January 9, 1945), p. 3.

abandonment of the rest of "America's first downtown Airport" to eliminate possible interference with operations at NAS Alameda.[30] Today, the site of the former airdrome is occupied by Alameda College and the new "Alameda Pointe" subdivision.

Benton Field

The third major airfield built at Alameda Point got its start in 1930 when the Army acquired a 128-acre tract of partially submerged land located between Alameda Municipal Airport and the San Francisco Bay Airdrome

Figure 8. 1938 map showing location of airfields at Alameda Point.
Courtesy of Richard Rutter

(Figure 8). On April 3, 1931, Captain Leander Larson arrived at the newly named Benton Army Air Corps Field to take charge of building the first military airfield at Alameda Point. On May 8, 1931, Captain Larson received authority to spend $500,000 to undertake the following work: drilling a well, driving piles prior to filling, constructing a levee, dredging and building a 200,000-gallon water tower and railroad spur.[31] Although it does not seem to have reached completion, Benton Army Airfield was substantially underway on the northern portion of what is now NAS Alameda when the Navy began to show renewed interest in the site. In fact, the water tower was reused during the construction of NAS Alameda and only demolished within the past decade.

Navy Acquires Alameda Point

Perhaps spurred on by interagency rivalry, in 1935, the Navy met with Alameda officials to inquire about the possibility of acquiring 1,000 acres of land near Alameda Point for a naval installation. In June 1936, Congress passed Public Resolution Number 19 authorizing President Franklin D. Roosevelt to accept the 929.34-acre Alameda Municipal Airport from the City of Alameda. A year later, on October 7, 1936, the Navy officially acquired the 1,075-acre Benton Airfield (including submerged lands) from the Army, bringing the total area of the proposed naval base to a little more than 2,000 acres.[32]

[30] K.O. Eckland, "San Francisco Bay Airdrome" http://www.aerofiles.com/SFBA/SFBA.html.
[31] *History of U.S. Naval Air Station Alameda, California* (San Bruno, California: Manuscript at the Pacific Branch of the National Archives, January 9, 1945), p. 4.
[32] *Ibid.*, p. 4.

Plans Drawn

The original peacetime plans for NAS Alameda called for a 1,000-man, 200-aircraft facility costing $13,500,000. In 1937, Congress appropriated $15,000,000 to build the base, although the project was delayed for some time due to the need to allow Pan Am to vacate Alameda Municipal Airport and the Army to decommission Benton Airfield.[33] The new naval air station was designed by the Navy's Bureau of Yards & Docks, Department of Planning and Design. The Bureau was under the leadership of Navy Captain Ben Morell, who was in charge of developing naval installations throughout the nation during the prewar buildup of the late 1930s. The officers of the Department of Planning and Design were usually drawn from the Civil Engineers Corps, although the majority of the staff were civilian architects, engineers and planners under the direction of Capt. Thomas Trexel, Chief Architect in the Bureau's Washington, D.C. office.[34]

Dredging and Filling Commences

On February 10, 1938, Commander E.C. Seibert arrived in Alameda to assume his duties as Officer-in-Charge of Construction, administering the work from a small shack in the center of the base. Seibert awarded lump-sum contracts to twenty-five companies totaling $12,200,000, including contracts for demolition, dredging and construction. The first task was to demolish the majority of the extant structures within the base boundaries. Former occupants and owners were given an opportunity to remove existing improvements before contractors moved in to demolish the remaining buildings and remove submerged pilings and foundations. Next, the land was scarified in anticipation of it being filled and graded. The removal of submerged construction debris was especially critical, in order to ensure the even distribution of fill and eliminate obstructions to future construction.[35] A stone rip-rap seawall was built to exclude bay water from submerged and partially submerged areas. Dredging then commenced, with silt removed from the future sites of the ship channel, turning basin and seaplane lagoon. The dredged materials were then deposited on top of the marshlands and tidal flats within the seawall by means of large pressurized tubes. Millions of cubic yards of silt were spread on top of the mud, gradually creating "dry" land **(Figure 9)**.[36] Filling was held up briefly in 1938 when the dredging crew encountered an old trestle pier and ferry slip, remains of Cohen's Wharf. The debris, including pilings, iron railings, locomotive wheels, coupling links and a pile of sandstone cobbles, were all located on the site of what is now Pier 2.[37]

[33] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 3.
[34] John S. Garner, *World War II Temporary Military Buildings: A Brief History of the Architecture and Planning of Cantonments and Training Stations in the United States* (Washington , D.C.: U.S. Army Corps of Engineers, 1993), p. 17; LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 3.
[35] LSA Associates, *Alameda Point General Plan Amendment EIR* (Berkeley: 2002), p. 143.
[36] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 3.
[37] *History of U.S. Naval Air Station Alameda, California* (San Bruno, California: Manuscript at the Pacific Branch of the National Archives, January 9, 1945), p. 6.

Figure 9. Filling underway at NAS Alameda, 1940.
Courtesy of National Archives Pacific Region, San Bruno

Figure 10. Building 5 under construction, April 1940.
Courtesy of the National Archives Pacific Region, San Bruno

Construction Begins
After dredging and filling were completed, contractors installed underground utilities and constructed the following buildings in order: Building 90 (Garage), Building 1 (Administration Building), Building 2 (Bachelor Enlisted Men's Quarters), Building 3 (Mess Hall), Building 18 (Post Office/Theater), Building 6 (Public Works Garage and Firehouse), Building 5 (Assembly and Repair Shop), Building 10 (Power Plant), Building 8 (General Storehouse), Building 9 (Aircraft Storehouse), Building 13 (Paint and Oil Storage), Building 14 (Engine Test Stands), Buildings 11 and 12 (Seaplane Hangars), Buildings 20, 21, 22 and 23 (Land Plane Hangars), Building 19 (Operations Building), Building 15 (Boathouse), Building 17 (Bachelor Officers' Quarters) and ten Married Officers' Quarters. The first building completed, Building 90, was built in 1938 as a garage. This building has been moved several times and is currently located near the East Gate, where it was most recently used as the Civilian Employment Office. In November 1938, Building 1, the Administration Building, had been completed and was ready for occupation. By 1940 the main base buildings were well underway, including the massive hangars on the north side of Seaplane Lagoon **(Figure 10)**.[38]

War in Europe
By the end of 1939, construction of NAS Alameda was progressing steadily under the supervision of Commander Harold J. Brow, USN, the first commander of NAS Alameda. Meanwhile, anxiety was steadily growing over the aggression of Nazi Germany in Eastern and Central Europe and Imperial Japan in Asia. By the end of 1938, Germany had annexed the Sudetenland region of Czechoslovakia and all of Austria and Adolf Hitler was showing few signs of being satisfied. Meanwhile, Japan was embroiled in a bitter war to conquer China. On September 1, 1939, German forces invaded Poland and two days later Britain and France declared war on Germany. The Second World War had begun. Although there were many in the United States who advocated remaining neutral, most Americans realized the likelihood of American participation in the War was high.

Rearmament
Realizing that American involvement in the War was ultimately inevitable, President Franklin D. Roosevelt signed the Hepburn Base Program Act on April 4, 1939. The act authorized the construction of additional naval bases throughout the United States and its possessions. At this time, Navy enlistment stood at 110,000 personnel with an additional 18,000 men in the Marines. Despite having won a medal from the Association of Federal Architects at the Seventh Annual Architectural Exhibition as an "outstanding example of functional planning," NAS Alameda was clearly inadequate to accommodate additional personnel and equipment necessitated by pre-war buildup.[39] In 1940, Captain Frank R. McCrary, USN, was appointed Commanding Officer of NAS Alameda and in July of that year, the Navy decided to dramatically enlarge the base from 1,000 to 4,000 men. Congress approved an emergency appropriation of $17,000,000 and Drake & Piper Construction Company was contracted to carry out the work.[40]

[38] *Ibid.*, pp. 5-6.
[39] *Ibid.*, p. 5.
[40] *Ibid.*, p. 8.

Landscaping
In addition to expanding the physical plant of NAS Alameda, Navy architects and engineers were faced with problems involving chronic soil slippage and blowing sand. In 1939, the Navy entered into an agreement with the organizers of the then-underway Golden Gate International Exposition (GGIE) to transplant grass and shrubs from the fair site on nearby Treasure Island to NAS Alameda after the fair closed in September. The State Forestry Division also stepped in, contributing shrubs and trees to the landscaped mall between the Main Gate and the Administration Building. When the mall was complete, it was promptly nicknamed the "The Magic Carpet" due to the effect created by the tapestry of flower beds and other decorative plantings **(Figure 11)**.[41] To reduce the impacts of storm-induced erosion, the Navy also scuttled and sank several World War I-era destroyers south of Seaplane Lagoon to serve as a breakwater.

Figure 11. View from north of the central Mall at NAS Alameda, 1950.
Courtesy of the National Archives Pacific Region, San Bruno

[41] *Ibid*, p. 12.

NAS Alameda Opens
On November 1, 1940, NAS Alameda was formally commissioned. The brief ceremony was attended by Rear Admiral A.J. Hepburn, USN, Commandant of the Twelfth Naval District and members of his staff; officers attached to NAS Alameda; officials representing the cities of Alameda, Oakland and San Francisco; newspaper reporters; and approximately 390 sailors and marines. The flag-raising ceremony took place at the flagpole installed three days earlier in front of the Administration Building. The United States flag required for the ceremony had to be procured at the last minute from Mare Island Naval Shipyard in Vallejo.[42]

The opening of NAS Alameda was a boon for the nearby communities of Alameda, Oakland and San Francisco, which were all still suffering from the residual effects of the Depression. The February 27, 1941 special edition of the *Alameda Times-Star* projected that NAS Alameda would eventually employ close to 800 Alamedans. This figure ended up being much larger; by the end of the War, the Assembly & Repair Department alone would employ close to 9,000 civilians. The *Oakland Tribune* heralded the arrival of the first seven of the projected 200 planes that would be based at the station and described how they would be housed in the "largest hangars in the world." One of the articles discussed the trade schools built to train civilians and enlisted men in airplane mechanics, instrumentation, metal fabrication and drafting. In July 1941, demand for trained personnel led to the opening of several "Class A" trade schools at Alameda Point, including the Aviation Metalsmiths' School, the Aviation Machinists Mates' School and the Aviation Radiomen's School.[43]

Prior to the Japanese attacks on Pearl Harbor, most of the 400-odd civilian employees of NAS Alameda arrived at work in their own private automobiles, most of which were parked in a lot by the Main Gate. After Pearl Harbor, gasoline rationing and rubber shortages compelled employees to take public transportation to work, mostly on Key System buses running between downtown Alameda and the Main Gate. Workers from San Francisco and Oakland could also take water taxis from Jack London Square in Oakland to NAS Alameda.[44]

Pearl Harbor
Despite the hectic construction activity, NAS Alameda was nowhere near completion when carrier-based Japanese bombers and fighters attacked Pearl Harbor and other U.S. possessions on December 7, 1941. The attacks panicked West Coast residents and put the military on alert. Bombers were expected over San Francisco and other West Coast cities in the months that followed Pearl Harbor. The shelling of an oil refinery outside of Santa Barbara by a Japanese submarine in February 1942 only elevated fears. After Pearl Harbor, all personnel stationed at NAS Alameda were commanded to immediately report for duty. Hasty preparations were undertaken to protect the base, including the installation of anti-aircraft guns, fire watch stations, fire hydrants and earthworks around important buildings. All access roads were closed off and protected by security checkpoints with orders issued to shoot to kill any intruders.[45] Meanwhile, construction continued into 1942 and the base was completed as originally designed by the end of the year **(Figure 12)**.

NAS Alameda During Wartime
The primary mission of NAS Alameda during the Second World War was to supply the ships and stations of the Pacific Fleet and to "Keep 'em flying"; in other words, repair damaged aircraft. Most of this work was carried out by the Assembly & Repair Department in Building 5. By 1945, this department employed 9,000 people, many of them women. Building 5 underwent continual expansion to accommodate more aircraft, growing from 204,000 square feet in 1941 to over one million square feet by 1945. Eventually, Building 5 and its neighbors accommodated nine divisions: Aircraft Overhaul, Engine Overhaul, Accessories, Metal and

[42] *Ibid*., p. 9.
[43] *Ibid*., p. 10.
[44] *Ibid*., p. 12.
[45] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 4.

Machines, Radio-Radar, Engineering, Planning, Maintenance and Personnel. At its peak year in 1945, Assembly & Repair overhauled 842 aircraft and 2,027 engines.[46]

NAS Alameda also served as the primary supply base for Naval installations throughout the Pacific Theater. After the bombing of Pearl Harbor, Pacific Island bases were activated at Midway, Wake, Johnston and Palmyra Islands. Located on remote islands, these bases had to be supplied with nearly everything, including food, water, weapons, materiel and men. NAS Alameda also served several outlying installations in California, including Navy airfields at Crows Landing, Santa Rosa, Hollister, Monterey, Watsonville and Eureka, as well as a Coast Guard station in San Francisco. NAS Alameda was also the home port for several aircraft carriers.[47]

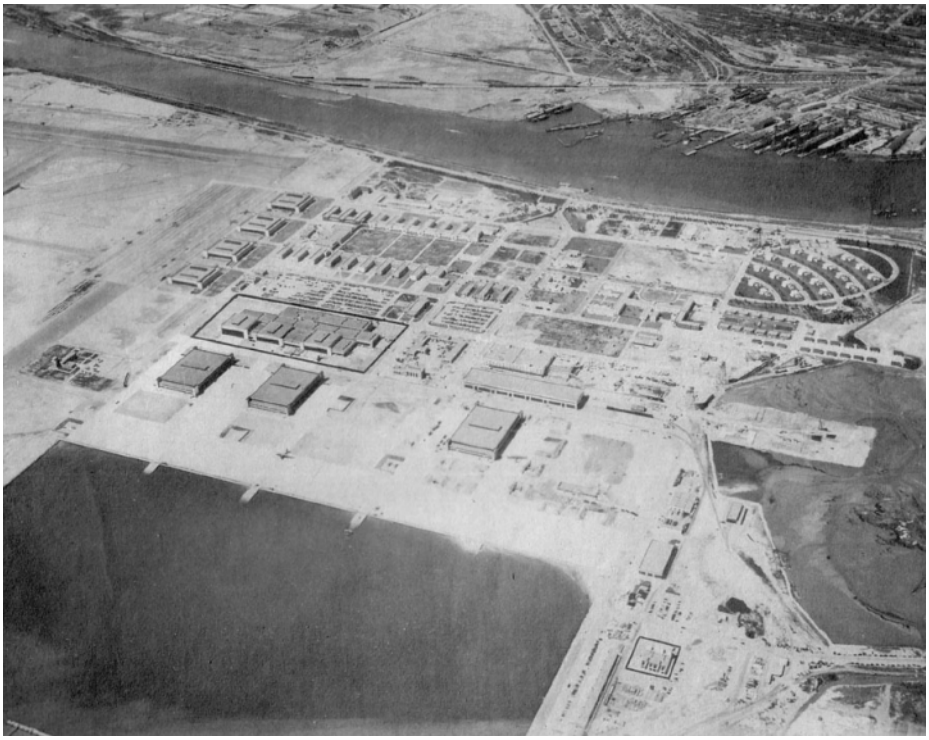

Figure 12. Aerial view of NAS Alameda, June 1942.
Courtesy of the National Archives Pacific Region, San Bruno

Labor Shortages
With all of the work going on at NAS Alameda, the demand for skilled labor grew to an insatiable level. During the Second World War, the city of Alameda became an unofficial Navy company town, more than doubling in population from 30,000 people in 1941 to over 85,000 people by 1945. Workers came from all over the United States to work at NAS Alameda and in other war industries ringing San Francisco Bay, especially shipyards and military installations. After the institution of the mandatory draft sent working-age men off to war, women became a critical part of the workforce at NAS Alameda. These women civilian workers, immortalized by the famous image of "Rosie the Riveter," joined forces with enlisted female military personnel called "WAVES"(Women Accepted for Voluntary Emergency Service).[48]

[46] *Ibid*, p. 5.
[47] *Ibid.*
[48] *Ibid.*, p. 5.

Wartime Events at NAS Alameda

One of the most important events to take place at NAS Alameda during the Second World War was the departure of the *USS Hornet* with Alameda native Lieutenant Colonel James Doolittle's force of eighteen B-25 bombers in April 1942. "Doolittle's Raiders," as they were called, bombed Tokyo and three other Japanese cities on April 18, 1942. American morale was at its lowest ebb, and the raids, although of little tactical benefit, proved to the American (and Japanese) public that the Japanese homeland was not invulnerable. Another noteworthy event took place in January 1944 when Army pilot 2nd Lieutenant Harry Pape of Sacramento bailed out of his P-39 seconds before it crashed within feet of Building 5. The pilot was uninjured, but several workers in Building 5 were wounded by flying debris.[49]

World War II Ends

By VJ Day in 1945, NAS Alameda barely resembled the small 500-man base that had existed before Pearl Harbor. Under the capable leadership of Captain Walter F. Boone, NAS Alameda had expanded over the course of the War to accommodate twenty-two squadrons of aircraft, twenty-three ships, 1,500 aircraft and 158 buildings. In order to accommodate all of this growth, in 1944, the Navy Bureau of Yards & Docks began to construct hundreds of temporary wood-frame and corrugated metal barracks, office buildings and machine shops throughout the base. Building 5, the home of the Assembly & Repair Department, was vastly enlarged to accommodate the large numbers of aircraft damaged in battle or those merely in need of overhaul. Large temporary wood-frame warehouses, such as Buildings 91 and 92, were erected in the Shops Area to house supplies awaiting shipment to the Pacific Theater. To accommodate the increasing size of aircraft carriers, the Navy awarded a million-dollar contract to Basalt Rock Company of Napa to build a mile-and-a-quarter-long breakwater south of the three carrier piers.[50]

Postwar Years: 1946-1950

The cessation of hostilities with Japan occurred on August 14, 1945 and demobilization took place with astounding speed. Charged with shipping men and materiel out to the Pacific Theater throughout the War, NAS Alameda was now responsible for bringing them home safely. Wartime personnel levels were cut in half by April 1946 and to one-third by June. By August 1946, NAS Alameda only had 187 officers and 1,792 enlisted personnel. Ships were decommissioned, planes mothballed and machinery and scrap melted down into ingots. Nevertheless, NAS Alameda would continue to play a role in the postwar Navy. Having invested over seven hundred million dollars in the construction and expansion of NAS Alameda, the Navy intended that the station would become one of three permanent stations of the Twelfth Naval District. In the immediate postwar period, NAS Alameda served as a supply depot for food, equipment and personnel sent to Occupied Japan. NAS Alameda was also home port to the Pacific Reserve Fleet and the aircraft carriers *Hancock*, *Ranger* and *Enterprise*. The giant Mars seaplanes used to ferry equipment and supplies to Pacific bases during the War were either mothballed or converted for use on rescue missions. By 1948, NAS Alameda was said to be "resting on its oars."[51]

Despite its reduced mission following the Second World War, aircraft overhaul work did not cease at NAS Alameda. After the War, a major amount of work went into converting the station from a facility catering to propeller-driven aircraft to one focused on jet propulsion. The Assembly & Repair Department (renamed Overhaul & Repair in 1948) continued to operate out of Building 5, which was radically altered and enlarged to accommodate jet aircraft and the 5,400 civilian workers who worked on them.[52] New engine test cells and other

[49] *Ibid.*
[50] *History of U.S. Naval Air Station Alameda, California* (San Bruno, California: manuscript at the Pacific Branch of the National Archives, January 9, 1945), p. 5.
[51] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 7.
[52] *Ibid.,* p. 8.

new structures were built in the southeastern part of the station and many World War II-era temporary buildings were demolished.

Korean War to Vietnam
On June 25, 1950, Chinese and Soviet-backed North Korean troops invaded South Korea, launching the Korean War. On June 27, President Harry Truman ordered U.S. air and sea forces to give the Korean government troops cover, and on June 30, he authorized American ground troops to take part in the fighting. On July 3, 1950, NAS Alameda-based Carrier Division 3 became the first to launch air strikes against North Korean troops. Marines stationed at NAS Alameda were also some of the first American troops to see combat on the Korean Peninsula. Given its new mission in Asia, the Navy embarked on a major expansion of NAS Alameda. An additional 1,000 civilian workers were hired; reservists were called up; ships re-commissioned; aircraft de-mothballed; and the two runways were lengthened from 5,200' to 7,200'. In total, forty-six million dollars were expended on improvements to NAS Alameda. After the Korean War ended on July 27, 1953, NAS Alameda experienced a slight slowdown in operations, although nothing equivalent to what happened after the conclusion of the Second World War. The Cold War kept the U.S. military on its toes and NAS Alameda remained active.[53]

By 1958, NAS Alameda had a station population of 13,200, of which 4,800 were military personnel and 8,400 civilian workers. The base itself was comprised of 2,679 acres of land: 1,607 acres of dry land and 1,072 acres of submerged land. There were approximately 283 buildings and over thirty miles of roads. During this period, NAS Alameda was home port to the largest aircraft carrier in the world, the *USS Ranger*, one of the newest generation of Forrestal-class carriers, which were 1,000' long and weighed 76,000 tons.[54] By 1962, NAS Alameda had three 8,000' runways, four large aircraft carriers—*USS Hancock*, *Ranger*, *Coral Sea* and *Midway*—three seaplane ramps, 1,920,000 square feet of shop area, 2,858,000 square feet of storage area and 280 buildings. The total size of the base in 1962 was 2,720 acres, including 1,612 acres of dry land and 1,108 acres of submerged land.[55]

In 1960, the last seaplane squadron was transferred from NAS Alameda to NAS Whidbey Island, marking the end of an era. In July 1961, NAS Lemoore opened in the San Joaquin Valley and most of the carrier-based jet squadrons moved to the new station or to NAS Miramar, near San Diego. This was done to reduce the congestion and noise of jet training in the increasingly urban Bay Area.[56]

In September 1960, a mission of another kind came to NAS Alameda when the Oakland Raiders, a newly formed American Football League team, made the station their practice grounds. Coached by former Naval Academy head coach Eddie Erdalatz, the scrappy Raiders attracted the attention of naval personnel and civilian workers on their lunch breaks.[57]

Vietnam
In 1966, NAS Alameda again became homeport to the world's largest aircraft carrier, this time the *USS Enterprise*, which was the first nuclear-powered aircraft carrier. Events in Southeast Asia kept the ship and its personnel away from NAS Alameda for months at a time during the 1960s. As with the World War II and the Korean War, Alameda was significantly involved with the Vietnam War. After Viet Cong troops attacked American and South Vietnamese troops in South Vietnam on February 7, 1965, aircraft from the Alameda-based carriers *USS Ranger*, *Hancock* and *Coral Sea* launched strikes against North Vietnamese positions in Dong Hoi. During the rest of the 1960s, half of the attack carriers involved in Vietnam were

[53] *Ibid.*, p. 9.
[54] *NAS Alameda Base Directory* (Alameda: 1958), p. 12.
[55] v, p. 8.
[56] LCDR B.L. Allbrandt, *History of the Naval Air Station & Naval Aviation Depot at Alameda, California* (unpublished manuscript: 1996), p. 14.
[57] *Ibid.*, p. 17.

home-ported at NAS Alameda. In 1967, the airfield at NAS Alameda was renamed "Nimitz Field" in honor of Admiral Chester W. Nimitz, the man credited with winning America's sea war with Japan. Also in 1967, the Overhaul & Repair Department of NAS Alameda ceased to exist, replaced with another similarly charged organization called the Naval Air Rework Facility, or "NARF" **(Figure 13)**. The Vietnam War continued for another six years until a cease-fire was signed on February 5, 1973, ushering in a period of peace, budget cuts and personnel reductions at NAS Alameda. By 1980, only two carriers were home-ported at NAS Alameda, *USS Coral Sea* and *Enterprise.*[58]

Post-Vietnam to BRAC

Faced with changing priorities and political sensibilities in the 1970s, the Navy introduced new programs emphasizing psychological and physical well-being and improved race relations, as well as several new recreational buildings. The demographic character of the workforce began to change as World War II-era workers retired, many to be replaced by ethnic minorities and women. Leaders of the environmental movement also began to place expectations on the Navy to improve its record of environmental responsibility at NAS Alameda. During the 1970s and 1980s, the Navy spent substantially more resources to mitigate hazards caused by spilled jet fuel and oil.

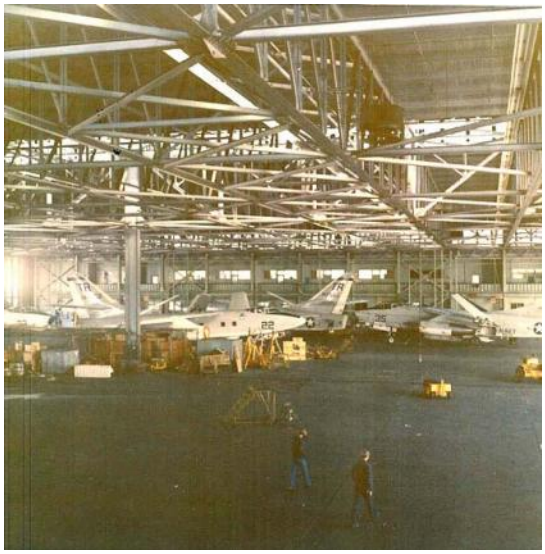

Figure 13. Interior of Hangar 20, 1960s.
Courtesy of Richard Rutter

Despite the Reagan-era military buildup of the 1980s, Secretary of Defense Caspar Weinberger suggested in 1985 that NAS Alameda be added to a list of twenty-two bases proposed for closure, partially due to declining productivity and morale in the NARF department (later renamed Naval Aviation Depot, Alameda, or NADEP). Nevertheless, productivity dramatically improved after the base made improvements to the station and gave pep talks to the employees, and as a result, NAS Alameda was taken off the list for closure.[59] On October 17, 1989, the San Francisco Bay Area was hit by the 7.1 Loma Prieta Earthquake. The earthquake heavily damaged runways, partially destroyed the control tower and disrupted utilities. Nevertheless, within days, NAS Alameda was back in service and providing assistance to earthquake victims throughout the Bay Area.

Base Realignment and Closure

The "Peace Dividend" resulting from the end of the Cold War put pressure on the branches of the military to cut costs and close redundant installations. In 1990, Defense Secretary Dick Cheney suggested closing all Navy facilities in the San Francisco area. After a brief respite during the First Persian Gulf War, the Base Realignment and Closure Commission (BRAC) began the work of determining which bases should be closed. NAS Alameda narrowly escaped the first cut in 1991. Many believed that Alameda's high level of productivity would cause the station to be spared, but on March 12, 1993, to the shock of base personnel and thousands of Alamedans who worked at the base, NAS Alameda was included in the next list of thirty-one bases designated for decommissioning.

[58] *Ibid.*, pp. 17-19.
[59] *Ibid.*, p. 21.

At the time that NAS Alameda was designated for closure, the station was comprised of 2,842 acres of land, including 1,527 acres of dry land and 1,315 acres of submerged land; 251 buildings; 195 structures; and two runways measuring 8,000' and 7,200' long. Total employment consisted of 2,861 military personnel and 4,025 civilians. Home-ported ships included two carriers, the *USS Abraham Lincoln* and *Carl Vinson*; one missile cruiser, the *USS Arkansas*; and one destroyer tender, the *USS Samuel Gompers*. In addition, NAS Alameda was home to four Naval Air Reserve squadrons and one Marine Air Group.[60] In 1997, NAS Alameda finally closed its gates, fifty-seven years after opening.

[60] *NAS Alameda Fact Sheet,* October 20, 1993.

V. DESCRIPTION OF NAS ALAMEDA HISTORIC DISTRICT

Boundaries
NAS Alameda Historic District encompasses an area of approximately 350 acres at the center of the former military base. The historic district is bounded by Main Street and Oakland Inner Harbor to the north, 1960s-era multi-family housing to the east, mixed-use industrial buildings and warehouses to the southeast, Seaplane Lagoon to the south, and Nimitz Field to the west **(Figure 2)**.

Figure 14. Main Gatehouse and Sentry House (Buildings 30 and 31), NAS Alameda, 2004.

Significance
Architectural Historian Sally Woodbridge, author of the 1992 *Historic Architectural Resources Inventory for the Naval Air Station, Alameda*, identified a potential historic district at the center of NAS Alameda that appeared to be eligible for National Register listing under Criteria A (Events) and C (Architecture), with a period of significance of 1938-1945. Under Criterion A, the district appears to be significant as an important component in the evolution of the Bay Area as America's "Arsenal of Democracy" during the Second World War. The district also appears to be eligible for listing under Criterion C as a military installation embodying the characteristics of "Total Base Design," as well as a rare example of a military installation designed in the Streamline Moderne style **(Figure 14)**. Military bases built during the Interwar Period (1919-38) and during the early years of the Second World War (1939-42), typically embody the characteristics of Total Base Design, defined as the careful integration of site planning, architectural program and landscape architecture. Influenced by municipal zoning ordinances adopted during the 1910s and 1920s, bases designed during this era usually display a pronounced segregation of uses for functional, aesthetic and safety reasons. Bases constructed according to the precepts of Total Base Design also often embody City Beautiful planning and design principles, particularly cross-axial patterns of circulation, large landscaped malls terminating at important visual monuments or vistas, and symmetrical disposition of buildings. Sally Woodbridge's *Historic Architectural Resources Inventory* identified eighty-five contributing resources and thirty-one non-contributing resources in the Historic District.[61]

Character-Defining Features

Site Plan
The original site plan for NAS Alameda is a logical arrangement composed around two primary cross axes centrally placed in a roughly square framework of roadways (**Figure 15**). Sprawling across over 350 acres of mostly level, filled land, the Historic District is bounded by streets and open water to the north and south, later multi-family construction to the east, industrial uses to the southeast and Nimitz Field to the west. The original

[61] Page & Turnbull has identified eighty-six contributors and fifty-five non-contributors within the boundaries of the NAS Alameda Historic District (Refer to Appendix E). Since Woodbridge's inventory, the number of contributors was revised to 87 (acknowledged in a letter from the Offfice of Historic Preservation dated Nov. 5, 1997) and one building (Building 101) was destroyed by fire, reducing the number of contributors to eighty-six.

award-winning design of NAS Alameda was executed by the Bureau of Yards & Docks, Department of Planning and Design, an agency that employed talented civilian planners, architects and engineers who were well-versed in the important planning trends of the time. One of the most obvious influences in the base's design is the City Beautiful Movement. Inspired by Daniel H. Burnham and Frederick Law Olmsted's design for the World's Columbian Exposition in Chicago in 1893, City Beautiful urban planning was characterized by symmetrical arrangements of buildings along landscaped axes terminated by important monuments or vistas, Beaux-Arts architectural vocabulary and unified landscape treatments. The City Beautiful Movement was reinterpreted in cities across the United States and its colonies, including Washington, D.C. (1901), Manila (1904), San Francisco (1905), Chicago (1909), Denver (1910) and others. Obsessed with resolving the chaotic conditions so characteristic of young and rapidly growing American cities, the City Beautiful Movement sought to appropriate the best elements of European Renaissance and Baroque planning traditions to imprint a uniquely American identity to our civic centers, educational campuses and federal institutions.

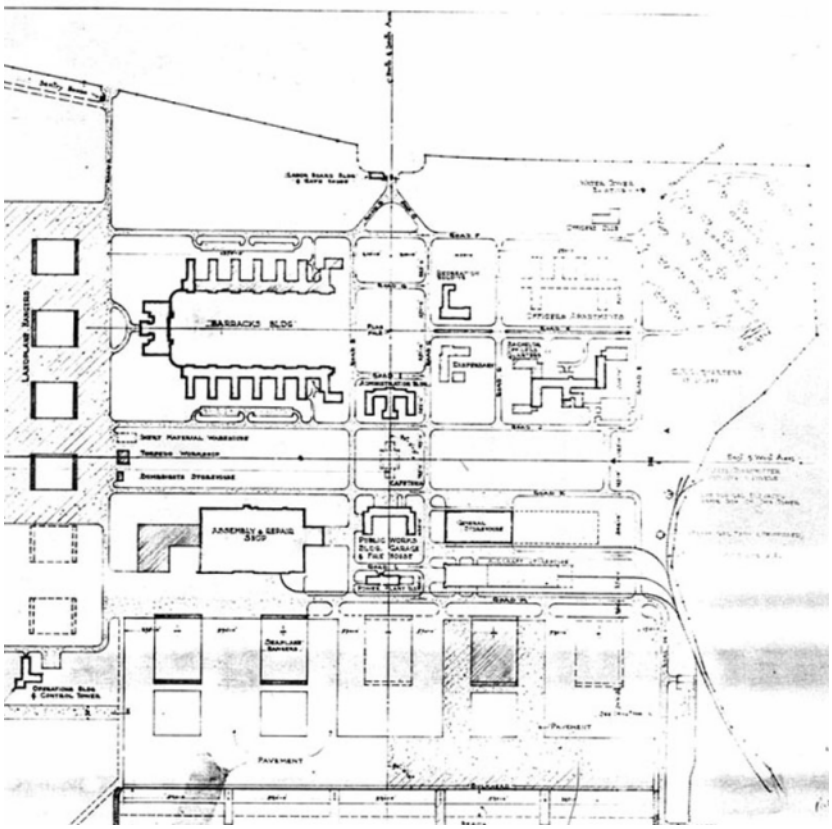

Figure 15. 1940 plan of NAS Alameda.
Courtesy of Department of the Navy, NAS Alameda Plan Room

Figure 16. Moffett Field, ca. 1940
Source: Moffett Field Historical Society

Between the First and Second World Wars, U.S. military leaders became increasingly committed to the orderly aesthetic of the City Beautiful Movement for base design. Mere aesthetics aside, the military's interest in City Beautiful planning principles was a culmination of a long history of logical and efficient base planning going back as far as the Roman *castrum*. U.S. military installations designed between the wars typically employed a strong axial plan (often centered around a landscaped mall), and a cohesive architectural vocabulary (usually referencing the local regional architectural tradition), which were set within a unified landscape. These bases follow what has been termed as "Total Base Design," meaning that architecture, site planning and landscape architecture are integrated, informing a whole, highly organized design.[62] Good examples of this system include March Airforce Base in Riverside; Hamilton Field in Novato; the Naval Training Center in San Diego; and NAS Sunnyvale (renamed Moffett Field) **(Figure 16)**. Unlike NAS Alameda, these four bases adhere to the popular Mission Revival or Spanish Colonial Revival architectural styles.[63] However, these bases share in common with NAS Alameda an expansive central mall. At Moffet Field, the mall serves as the heart of the base, connecting the main entry with the central administration buildings, ultimately terminating at the signature icon and *raison d'être* of the base: the dirigible hangar. In the case of NAS Alameda, the landscaped north-south axis terminates at the Seaplane Hangars and the Seaplane Lagoon, while the east-west axis terminates at the Landplane Hangars, and beyond that, the San Francisco skyline. This progression along the central axis gives hierarchy to the plan, leading from the entry point to the impressive buildings that most directly serve the base mission.

The Woodbridge inventory specifically identifies the central open spaces and the street system as character-defining features of the Historic District, and comments on its overall "continuity of style and a high degree of architectural integrity enhanced by the retention of landscaping and parklike open spaces."[64] The reference to the installation's manifestation of Total Base Design is also recognized in the JRP *Guidelines* as being analogous to Gunther Barth's "instant city" model, used by the author to describe the near instantaneous development of San Francisco and Denver during their respective Gold Rushes.[65] The overarching continuity of the Historic District is emphasized in the *Guidelines* as embodying the following characteristic:

> If there is one overriding character-defining element of the NAS Alameda Historic District, it is this uniformity of design features, elements, and materials. These buildings were designed as a group, an ensemble, and should, to the extent possible, be managed in the same manner.[66]

[62] U.S. Army Corp of Engineers, Sacramento District, *California Historic Military Buildings and Structures Inventory, Vol. III* (Sacramento: 2000), p. 6-21.
[63] These four bases are listed on the National Register of Historic Places as historic districts.
[64] Sally Woodbridge, *Historic Architectural Inventory for Naval Air Station* (Alameda, 1992), p.3.
[65] Steven Mikesell, *Guide to Preserving the Character of the Naval Air Station Alameda Historic District* (Prepared for Naval Facilities Engineering Command, San Bruno, CA, 1997), p. 1.
[66] *Ibid.*

Axes

As described above, the principal cross axes that help to define the character of NAS Alameda are clearly indicated in the original plans prepared by the Bureau of Yards & Docks. The main north-south axis is a large landscaped mall historically known as the "Magic Carpet," beginning at the Main Gatehouse (Building 30) and continuing south to the Administration Building (Building 1). Landscaped areas originally carried the main axis south to Building 6 and the Seaplane Lagoon beyond. As originally designed, the east-west axis separated the Administrative and Residential sub-areas from the Shops and Hangars sub-areas. However, after the bombing of Pearl Harbor, the formerly open east-west axis was sacrificed to wartime contingencies and filled with additions to the Assembly & Repair Shop (Building 5), and new training, maintenance and storage structures (including Buildings 114, 101, 73A and 73B). The primary north-south axis was retained along with a secondary east-west mall framed by the Bachelor's Enlisted Quarters Buildings and the General Service Building (Buildings 2, 3 and 4). This secondary mall and the landscaped boulevard along Road H (currently W. Essex Road), which connects to the Residential Area of Officer's Quarters, became the predominant east-west axis by the end of World War II **(Figures 17-19)**.

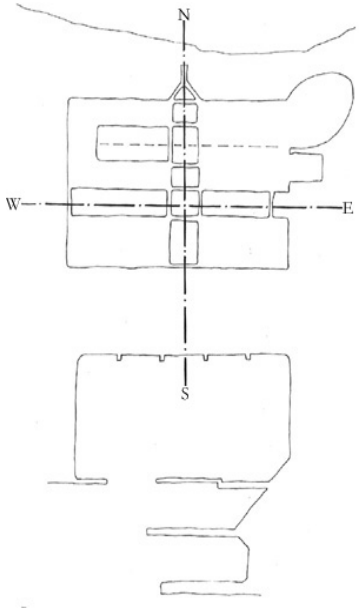

Figure 17. Original plan axes

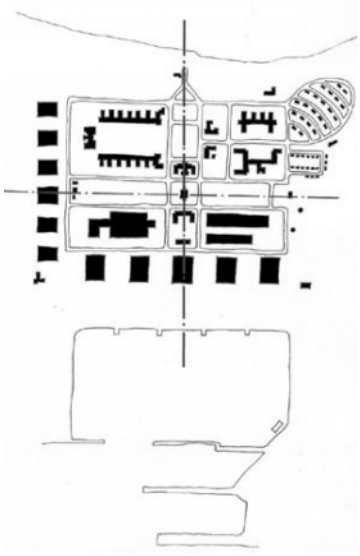

Figure 18. Master plan, ca. 1940

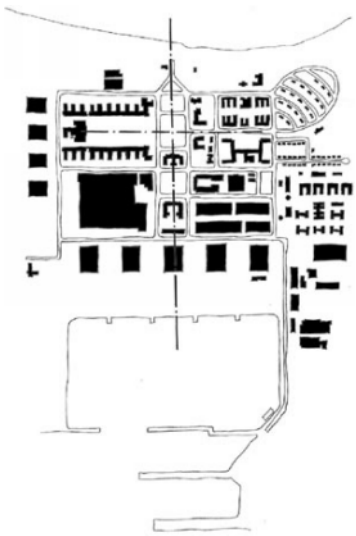

Figure 19. Built plan, ca. 1945

In addition to providing important vistas of significant monuments and landscapes beyond the base, the principal axes also serve as the primary circulation routes. Individual circulation elements, such as prominent entrance pavilions, arcaded passageways, paths and stairs, tend to relate to the principal axes. Some circulation elements, such as the covered pedestrian passageways connecting Buildings 2, 3, and 4, frame views of the Bay and downtown San Francisco in the distance. The axes are defined by rows of low-slung buildings, which serve not so much as continuous edges but as punctuation within a park-like setting. The most significant landscape treatments are encountered along the north-south and east-west malls, with some extending into other sub-areas like tendrils of green open space, especially a landscaped boulevard that originally existed along W. Essex Street. The malls are punctuated periodically by important structures and monuments, such as the main

flagpole at the southern end of the north-south mall, directly across from the main entrance to the Administration Building.

View Corridors
As discussed above, the two principal malls serve as important view corridors, providing vistas or glimpses of primary features of the base plan **(Figure 20)**. The corridors focus attention on symbolically and architecturally significant structures. The main north-south mall begins north at the Gatehouse (Building 30) and terminates at the Administration Building (Building 1) at the south. Visitors standing at any point along the mall enjoy dramatic views of both buildings at either end of the mall. The buildings lining the mall defer to the Administration Building, although their design is compatible. Landscaping, in particular mature Monterey Cypress trees, also direct the attention of the visitor to the Administration Building with the flagpole in front of it. In this way, planning, architecture and landscape architecture work in concert to direct strangers to the central nerve center of the base, as well as promote public interaction with the elements that embody the highest degree of architectural interest.

Figure 20. View corridors

Although not a landscape in the traditional sense, significant view corridors are afforded along and in-between the rows of massive Seaplane Hangars at the southern edge, and the somewhat smaller Landplane Hangars along the western edge of the district. The repetition of identical, 60-foot-tall volumes creates strong streetscapes when viewed along Monarch Street and West Tower Avenue. These two vistas, as well as the views between the hangar buildings, are mentioned in the JRP *Guidelines* as some of the most important character-defining elements of NAS Alameda. Taken in conjunction with glimpses of downtown San Francisco in the distance, these views are some of the most impressive on the base.

Sub-Areas
Five sub-areas within NAS Alameda were identified in the JRP *Guidelines* as possessing distinctive characteristics. Reflecting the segregation of usage that is so characteristic of the base, these sub-areas are coterminous with function: the Administrative Core, the Shops Area, the Residential Area, and the Seaplane and Landplane Hangars Areas. (**Figure 21**). The purposeful arrangement of functions, or zoning as it came to be known in the early 20th century, is indicative of the Total Base Design practice and the City Beautiful Movement, from which it derived in part. The functional segregation of different, mutually incompatible

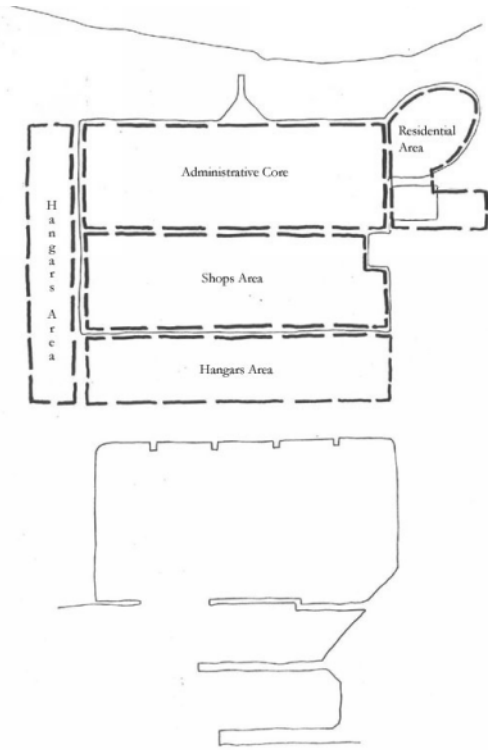

Figure 21. District Sub-Areas

uses fulfills the practical purpose of grouping similar activities together in one area, making work more efficient. It was also safer, in important consideration in an area containing large stores of explosive materials. Finally, the practice of zoning allowed for a better opportunity to shape the aesthetic character of the base as a coherent entity.

To that end, each sub-area of NAS Alameda is unique and distinguished from other sub-areas by different building massing, architectural treatment and landscaping. As the center of command and ceremonial nucleus of the base, the Administrative Core is located at the heart of the base. The most architecturally significant buildings are located here, including Buildings 1, 2, 3, 4, 16, 17 and 18. These buildings are symmetrically arranged on either side of broad, intersecting landscaped malls. The buildings are consistently two to three stories in height and have stepped massing, often consisting of a central pavilion flanked by two one-story wings **(Figure 22)**.

The Residential Area is located just east of the Administrative Core. Nestled into a landscaped area of lawns and mature street trees in the northeast corner of the base, the Residential Area is segregated from through-traffic by a network of curvilinear streets that do not connect to major through-streets. The Residential Area is comprised of two separate clusters of family housing: relatively large, hip-roofed, single-family houses intended for officers; and a secondary cluster of less-elaborate, small, flat-roofed bungalows intended for non-commissioned officers. Although quite different, reflecting discrepancies in rank, the scale and detailing of the architecture in the Residential Area is decidedly smaller and more "domestic" in nature than any of the other four sub-areas **(Figure 23)**.

Figure 22. Building 16, Administrative Core

The Shops Area is sandwiched between the Administrative Core to the north, the Seaplane Hangars Area to the south, and the Landplane Hangars to the west. The Shops Area contains the largest and the most utilitarian buildings of any of the five sub-areas. Although quite large, the buildings of the Shops Area are effectively screened from view from the Administrative and Residential Areas by landscaping and relatively horizontal massing, the notable exception being Building 5, which looms over much of the central portion of the Historic District. The Shops Area is also the most heterogeneous of the five sub-areas, running the gamut from utilitarian wood-frame, "semi-permanent" warehouses like Buildings 91, 92 and 114, to more elaborate Streamline Moderne structures, such as Building 6.

Figure 23. "Big White," Officers' Housing in the Residential Area

Similar to the structures of the Shops Area, the buildings of the two Hangars Areas are designed in a utilitarian mode. However, the hangars are substantially different from the Shops Area by virtue of their cohesive design (apparently by Detroit architect Albert Kahn) and repetitive arrangement in rows along the south and west sides of the Historic District. Visible from much of the inner Bay Area, the massive hangars visually summarize in an iconic fashion the mission of NAS Alameda. Built in proximity to the Seaplane Lagoon and Nimitz Airfield, the hangars define the edges of the runways and taxiways that dominate much of the base. The only building in the Hangars Areas that departs from the overall utilitarian character of the sub-area is Building 77, the Passenger Terminal. Built somewhat later than the hangars, Building 77 conforms to the Streamline Moderne aesthetic of the Administrative Core. Although not landscape features in the traditional sense, the tarmac taxiways alongside the bay side of both rows of hangars create important open spaces that serve as transitional zones between the Historic District, Nimitz Field and the Seaplane Lagoon **(Figure 24)**.

Architecture: Streamline Moderne

NAS Alameda is a rare example of a military base with significant portions designed in the Streamline Moderne style. Derived in part from European High Modernism and the contemporary work of American industrial designers, the Streamline Moderne style began to develop in the United States during the late 1920s and early 1930s, with the now-famous PSFS Building in Philadelphia (1929) and the McGraw-Hill Building in New York (1931). The basis of the style can be traced in large part back to American transportation designers like Raymond Loewy, who tested their designs in wind-tunnels and fluid tanks to produce aerodynamically advanced designs for train engines, automobiles, airplanes and ships that enhanced forward motion by reducing wind or water resistance. Industrial designers discovered that refrigerators, toasters, and pencil boxes with the same curves and wind lines appealed to consumers over earlier boxy models. Shoppers were even willing to pay more, maybe because these "modernistic" gadgets seemed futuristic in the same way the era's science-fiction films and comic books painted a future technologically freed of all problems. Buildings designed in the Streamline Moderne style referenced this fascination with speed and efficiency by exhibiting curved corners, ship rails, and porthole windows. The buildings also featured modern-age materials such as chrome-plated steel interior trim, magnesite flooring and ribbon windows

Figure 24. Seaplane Hangars north of Seaplane Lagoon, 2004

Figure 25. Building 18 (Theater), 2004

featuring aluminum sash or glass-block. More accessible to the public than the rarefied European Modernism of the 1920s, the Streamline Moderne style conveyed notions of speed, efficiency, cleanliness and a progressive vision of the future.

In the years leading up to the Second World War, the Navy began to build new bases under the provisions of the Hepburn Act. A handful of these new bases departed from the historicist and regional vocabularies typically used by the Navy and embraced a more modern design aesthetic influenced by the contemporary Art Deco and Streamline Moderne movements. Alternately called "Stripped" or "Starved Classicism," or "Works Progress Administration Moderne," the modern styling developed by the Navy's Bureau of Yards & Docks was generally more conservative than civilian works of the same era. Due in part to the fact that the military relied on standardized plans, Navy buildings constructed during the late 1930s continued to retain strict axial plans and symmetrical facades dominated by colonnades or porticos. However, instead of using traditional Neoclassical architectural detailing, the "new" modern buildings incorporated simple, stylized decorative details and massing typical of the Streamline Moderne style. Characteristics of the style evident at NAS Alameda include: smooth stucco walls, curved parapets, incised "speed lines," stacked window elements, glass-block or horizontal ribbon windows, and stylized sculpture depicting traditional military motifs such as eagles, or in the case of the Navy, anchors or figures of Pegasus **(Figures 25 & 26)**.

Figure 26. "Pegasus," Building 4, 2004

In California, the largest base designed wholly in the Streamline Moderne style is NAS Alameda. While other bases feature concentrated areas designed in the style, such as McClellan Air Force Base near Sacramento, or feature individual buildings, such as the Naval and Marine Corps Reserve Center in Los Angeles and the Naval Reserve Center in Santa Barbara, none retain such a large concentration of buildings designed in the Streamline Moderne style.[67] While NAS Alameda features World War II-era temporary and semi-permanent buildings that are not compatible with the original base design, the majority of the Historic District contains buildings constructed between 1938 and 1941 in the Streamline Moderne style.

Landscape

The most important landscaped areas at NAS Alameda are the two intersecting malls at the center of the Administrative Core **(Figure 27)**. Landscape materials consist of broad grassy areas segmented into smaller sections by paved paths. Decorative borders of box hedges, Monterey pine, Monterey cypress, red

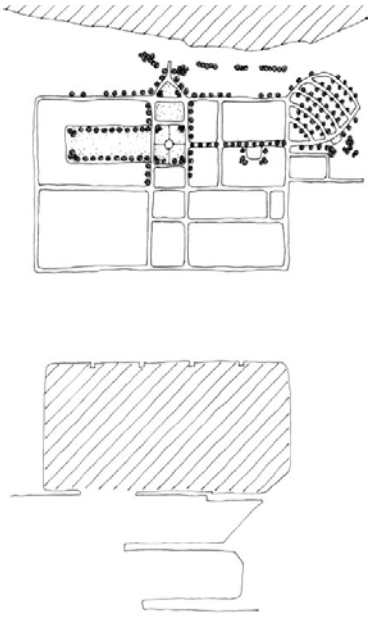

Figure 27. Landscape features

[67] U.S Army Corp of Engineers, Sacramento District, *California Historic Military Buildings and Structures Inventory., Vol. III* (Sacramento: 2000), pp. 7-44-7-45.

gum eucalyptus, bottle brush and other trees and shrubs typical of California, line important paths, borders or significant spaces, such as the area surrounding the flagpole in front of Building 1. Other significant areas of landscaping include the lawns and trees in the Residential Area, a large expanse of grass and athletic fields east of the Main Gate, three landscaped courtyards on three sides of Building 17 and a now-paved median in the center of Essex Drive. Some of the mature landscaping appears to have been either salvaged from the 1939 Golden Gate International Exposition or donated by the California Division of Forestry around the same time. Historic photographs taken of the base in the 1940s and 1950s indicate that the original landscaping in the Administrative Core was more formal, with ornamental parterres and shrub borders giving the north-south mall its historic nickname the "Magic Carpet." These areas are now either paved or covered in grass.

Contributing Buildings

As the nerve center of the former base, and the area most often encountered by visitors, the Administrative Core is home to the most architecturally significant buildings at NAS Alameda. Many of the most important contributors to the Historic District are located here and most are designed in the Streamline Moderne style. The Administrative Core also contains a handful of World War II-era "semi-permanent" buildings constructed during wartime, such as Buildings 94 (Chapel), 130 (Medical Lab), 135 (Community Facilities) and 137 (Recreation Storage Facility). Contributors in the Administrative Core include Buildings 1 (Administration Building), 2 (Bachelor Enlisted Men's Quarters), 3 (General Services/Commissary), 4 (Bachelor Enlisted Men's Quarters), 16 (Medical Clinic), 17 (Bachelor Officers' Quarters), 18 (Post Office and Theater), 30 (Main Gatehouse), 31 (Sentry House) and 94 (Chapel). Most are low-slung buildings with smooth stucco walls, curved corners and parapets, pronounced entry blocks, aluminum ribbon windows, glass block accent windows, "speed lines," colonnades with curved canopies, and occasional sculptural elements, including Pegasus figures on Buildings 2 and 4 and eagles on Building 3. Interior detailing is often quite fine, featuring terrazzo flooring, glass block and nickel-plated stair balustrades **(Figure 28)**

Figure 28. Interior stair, Building 17, 2004

Comprised of eighteen two-story Officers' Quarters and thirty one-story Non-commissioned Officers' Quarters, the Residential Area has a greater number of buildings than the other four sub-areas. However, unlike the other sub-areas, there are only two variants of contributing buildings in the Residential Area: the Married Officers' Quarters, also known as the "Big Whites," and the Non-Commissioned Officers' Quarters (NCO Quarters). The Big Whites are located in the distinctive beehive shaped network of curvilinear streets in the northeastern corner of the Historic District. Set down in a landscaped park-like setting, the Big Whites are large, two-story, hip-roofed structures with projecting sun room and

Figure 29. Officers' Quarters, "Big White," 2004

garage wings. Based largely on standardized military plans, the Big Whites closely resemble the classic American "foursquare" house. Typically rendered in the Neoclassical style on military installations in other parts of the country, the design of the Officers' Quarters at NAS Alameda was modified to blend in with the Streamline Moderne character of the base. Coated in smooth, white-painted stucco, the Big Whites feature distinctive Moderne elements, such as vertical bands of small rectangular windows and the absence of applied ornament. Instead, ornamental detailing is provided by geometric features, such as the circular openings punched into the portico canopy supports. The NCO Quarters, also based on standardized Navy plans, are much smaller and more utilitarian than the Officers' Quarters. Located on both sides of Corpus Christi Road and along the south side of Pensacola Lane, the NCO Quarters feature shallow-pitched hipped roofs (which appear flat), recessed porches and broad roof overhangs. All buildings have double-hung wood windows and wood doors. Few alterations have taken place over time to either the buildings or to the landscaping, resulting in a high level of integrity in the Residential Area.

Sandwiched between the Hangars Areas and the Administrative Core, the Shops Area is a support zone for the the Hangars. As utilitarian buildings used primarily for machining aircraft parts or storing goods intended for shipment overseas, the buildings of the Shops Area received comparatively little attention in regard to their appearance. The Shops Area has also undergone more ad hoc alterations than any other sub-area. During the Second World War, the area was subjected to massive new construction projects that infilled the formerly open east-west axis and added large additions to Building 5 (Repair and Assembly Shop). Contributing buildings in the Shops Area includes Buildings 6 (Public Works Garage and Firehouse), 8 (General Storehouse), 9 (Aircraft Storehouse), 42 (Fuel Chemical Lab and Office), 43 (Weapons Building), 44 (unknown), 91 (Shipping Storehouse), 92 (Packing/Shipping), 102 (Ordnance Building) and 114 (Machine Shop). Six of these structures (Buildings 6, 8, 9, 42, 43, and 44) are concrete or steel-framed permanent buildings that were part of the original 1938 plan. The rest are semi-permanent wood-frame structures that were not part of the original plan but were built to serve for the duration of the Second World War. On axis with the north-south mall, Building 6 shares architectural design elements in common with the buildings of the Administrative Core. Unique in the Shops Area, Building 9 is a steel-frame warehouse that resembles the nearby hangars in its construction and appearance. Buildings 8 and 9 are massive concrete structures with sparse ornamentation **(Figure 30)**. Buildings 91, 92, 102 and 114 are semi-permanent wood-frame buildings with flat or gable roofs, rustic channel siding and no ornamentation. Steel or wood industrial sash and sliding or hinged doors are nearly

Figure 30. Building 9, 2004

Figure 31. Building 40 (Seaplane Hangar), 2004

universal in the Shops Area.

Despite their functional purpose, the two rows of massive identical hangars along the southern and western boundaries of the Historic District comprise an indispensable character-defining feature of NAS Alameda. Although otherwise purely functional buildings, the hangars incorporate elements of the Streamline Moderne style, in particular in the stepped massing of their stucco exteriors. Contributors within the Hangars Area include Hangars 20, 21, 22, 23, 39, 40, 41 and Building 77 (Passenger Terminal). All of the hangars are large, steel-framed buildings with massive concrete bulkhead foundations; the hangars are based on standardized plans developed by Detroit architect Albert Kahn **(Figure 31)**. Additional character-defining features include large telescoping doors, the stepped massing of the corner pylons (which serve as door pockets), monitor roofs, open central workspaces bridged over by rows of steel trusses and steel industrial windows. The only building that departs from this function and aesthetic is Building 77. Constructed to serve as a passenger terminal, Building 77 is designed in a mode similar to the buildings of the Administrative Core.

VI. HISTORIC PRESERVATION STRATEGY

Purpose

The Naval Air Station Alameda Historic District is facing a critical transformation as ownership is transferred from the Navy to the City of Alameda. Over the past year, from 2004 to 2005, the City has created the Preliminary Development Concept (PDC) outlining a plan to integrate NAS Alameda with the remainder of the island city, by adding residential and commercial uses in existing structures and newly constructed buildings. The PDC has undertaken a study of a host of constraints affecting property development, including economic feasibility, environmental contamination, the 100-year flood plain, young bay mud, a wildlife refuge buffer, Tidelands Trust, Alameda housing policies, traffic impacts, timing and phasing of transfer from the Navy, and historic preservation. In this context, it is important that a historic preservation plan be put in place to outline the goals, standards, process and policies required to ensure the appropriate level of protection and enhancement of the historic resource. This section is intended to provide a historic preservation strategy to initiate that process. It begins with a summary of the significance of resources and their proposed treatment under the PDC, and ends with recommendations for the redevelopment and reuse of the Historic District.

Summary of Significance and Preliminary Development Concept (PDC) Policy by Sub-Area

The Administrative Core

The Administrative Core is the heart of the NAS Alameda Historic District. Most of the extant buildings and landscape elements were part of the original plans drawn up by the Bureau of Yards & Docks and were built during the earliest construction campaign between 1938 and 1940. Few of these contributors have undergone substantial alterations, resulting in the Historic District's high level of integrity. The Administrative Core contains several wood-frame semi-permanent buildings that do not share the same level of design significance as the original buildings. Although they are contributors to the Historic District, the Navy proposed to demolish six of these semi-permanent buildings in 1996. A Memorandum of Agreement signed by the City, the Navy, State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) in April 1996 acknowledges that while demolishing Buildings 75A, 115, 116, 130, 135 and 137 would have an effect on the Historic District, HABS recordation would be an appropriate mitigation measure.[68]

The Administrative Core is retained in large part in the PDC and given a prominent place as the civic center of the new community (**Figure 32**). Of the nineteen contributing buildings in the sub-area, twelve are to be

[68] Memorandum of Agreement Submitted to the Advisory Council on Historic Preservation Pursuant to 36 CFR, Section 800.6(a), April 12, 1996.

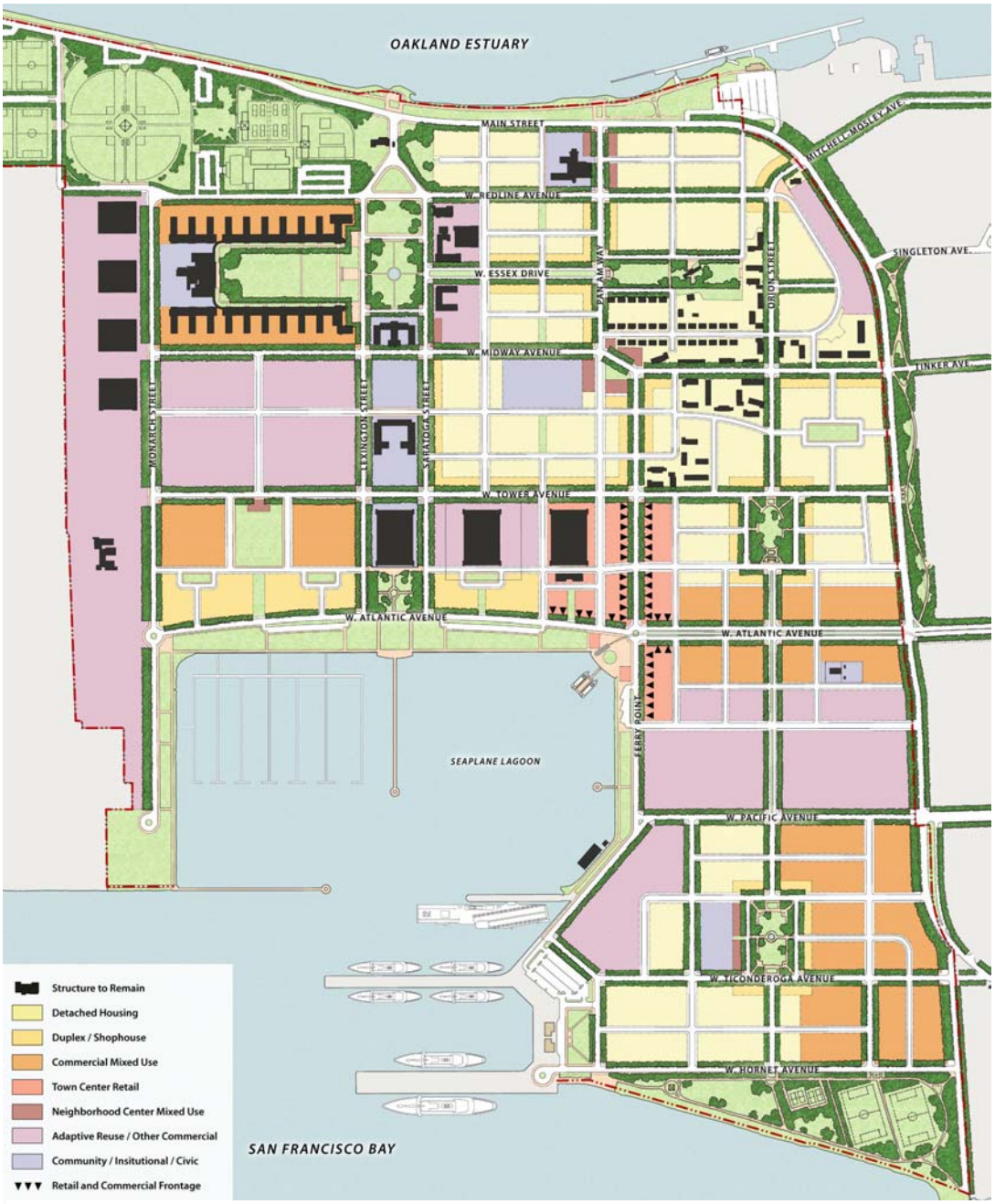

Figure 32. Preliminary Development Concept
Courtesy of ROMA Design Group

rehabilitated according to the Secretary of Interior's Standards and used for civic, office, community, and possibly work-live purposes. Alameda City Hall West will continue to serve as a civic center in Building 1, which is the original Main Administration Building and the primary structure on the site. The two main intersecting malls will be maintained in their present configuration, street framework and surroundings, thereby preserving the important symbolic core and the two primary axes of the site plan. The original entrance to the former base along the north-south axis is also preserved as an important gateway to Alameda Point. One contributing building, the Bachelor Officer's Quarters (Building 17), and the six contributors that were the subject of the 1996 MOA (Buildings 75A, 115, 116, 130, 135 and 137), will be demolished. In their place, as well as north of Redline Avenue, new single family residential units will be constructed. Seventy new units will be constructed on the current site of the Bachelor Officer's Quarters.

The Residential Area
Devoted entirely to housing, the Residential Area is the smallest and most homogeneous of the four sub-areas identified at NAS Alameda. Of the two contributing building types found there, the Officers' Quarters and the NCO Quarters, the former are more architecturally significant, although both contribute to the historical understanding of the former base. The Admiral's House, a larger version of the Officers' Quarters, is placed at the hinge between the two housing types and within a green park at the terminus of West Essex Drive. The Residential Area is also the only part of the base to feature smaller, domestic-scaled buildings exclusively. After the Administrative Core, the Residential Area features the most extensive and intact landscaping of any of the five sub-areas. Finally, as the only sub-area of NAS Alameda that has undergone few programmatic changes over time, the Residential Area retains a higher overall degree of integrity than the other sub-areas.

The thirty identical NCO Quarters will be reused for housing in the PDC. The Admiral's House will be rehabilitated for residential or community use, and will retain its setting within a park environment. The park will continue to serve as the eastern terminus of the east-west axis, enhanced with new landscaping and reshaped into a rectilinear configuration. The 18 Officer Quarters, known as the Big Whites, and the associated curvilinear road pattern will be demolished and replaced with approximately 120 new housing units following a linear street layout. New compacted fill, which will result in a new higher grade, is planned to address young bay mud and the 100-year flood plane that falls within the zone of the Big Whites. Adjacent to the Residential Area, outside of the Historic District boundaries, more residential development is planned, which will consist of mostly single family units and reuse of existing 1960's-era residential buildings.

The Shops Area
Designed to serve as a staging area for the Hangars and the supply ships, the Shops Area was planned with flexibility in mind, and originally included unidentified vacant space. During the Second World War, several wood-frame semi-permanent buildings went up around the more substantial permanent warehouses and shops. As a result, the Shops Area remains the most heterogeneous of the five sub-areas and the one that retains the lowest degree of integrity. According to Steven Mikesell's 1997 *Guide to Preserving the Character of the Naval Air Station Alameda Historic District:*

> The Shops Area was given the least attention of all areas of the original NAS Alameda, at least with respect to its architectural detail. The Shops Area buildings were tucked away from view, behind the Administrative Core, and had little public use or visibility. The shops, in short, were designed strictly for function rather than appearance. Nonetheless, the shops buildings do share some architectural features and elements with other parts of the base, including the hangars and the Administrative Core...[69]

[69] Steven Mikesell, *Guide to Preserving the Character of the Naval Air Station Alameda Historic District* (Prepared for Naval Facilities Engineering Command, San Bruno, CA, 1997), p. 57.

Other studies have reached similar conclusions about the Shops Area. Although historically significant, the several semi-permanent buildings contribute less to the area architecturally and even detract from the overall Streamline Moderne style of the original buildings. Steven Mikesell's *Guide to Preserving the Character of the Naval Air Station Alameda Historic District* states:

> It would be appropriate to consider policies that treat the wood-frame buildings (Buildings 91, 92, 101, 102 and 114) with a wider degree of latitude than with the concrete buildings and Building 9. The World War II-era temporary buildings were built to a much lower standard and are generally not consistent with the overall design of the base. Measured in terms of the uniform design of the original base, the World War II-era wood frame buildings make the least contribution to the overall quality of the historic district.[70]

Although it has been confirmed that Buildings 91, 92, 101, 102, and 114 are designated "semi-permanent" rather than "temporary" on Navy property record cards, it is widely accepted that these buildings do not exhibit the architectural integrity of the permanent buildings on the base.[71]

The PDC does acknowledge the Shops Area as the least historically significant of the sub-areas and most difficult collection of buildings to reuse, given their obsolete purpose and tremendous scale. The PDC proposes the most dramatic alteration to this zone of the Historic District, removing 9 of the 10 contributing structures and replacing the buildings with residential units and commercial buildings. The most strategic and architecturally consistent of the 10 contributing buildings, the Fire Station (Building 6), is retained and will continue to operate as a fire station.

The Hangars Area
The Seaplane and Landplane Hangars Areas are both relatively homogenous, consisting of two rows of identical hangars and the former Air Terminal (Building 77). The only non-contributors in the area are Buildings 11 and 12 and their linking wing, Building 400. Although the Streamline Moderne architectural treatment of the Administrative Core buildings is not found at the hangars, the sheer scale, the stacking track doors, as well as the structural engineering involved with the hangars, deserve recognition. Furthermore, as it appears that the hangars were based on the standardized plans drawn up by Detroit architect Albert Kahn, they are the only buildings on the base that can be attributed to an individual architect. Visible from much of the Bay, the hangars embody the purpose and historical significance of NAS Alameda for many people.

The PDC retains the Air Terminal Building (Building 77) and all seaplane and landplane hangars identified as contributing structures, a total of 8 hangars. Commercial and retail uses are proposed for the reuse of the large structures, with rehabilitation according to the Secretary of Interior's Standards. A few current uses, including the Alameda Naval Air Museum in Building 77, are to remain. Additional commercial infill development is planned for the Seaplane Hangar Area, along with a revitalized waterfront and a new public space consisting of green and hard space areas fronting the Seaplane Lagoon. The area adjoining the northeastern corner of the Seaplane Lagoon is identified as the Alameda Point's commercial and transportation hub, the Town Center, which includes contributing structures, Building 41 and 77. The Town Center and the waterfront are served by an extension of West Atlantic Avenue in-between the Seaplane Hangars and the Lagoon. The PDC recognizes

[70] Ibid., p. 67.
[71] Temporary World War II-era buildings are covered by a 1986 nationwide programmatic agreement, prepared and signed by the Department of Defense (DoD), Advisory Council on Historic Preservation (ACHP) and National Conference of State Historic Preservation Officers (NCSHPO) permitting any (DoD) branch to demolish any buildings classified as "temporary" that date from the World War II era (1939-1945) without review under standard provisions of Section 106 of the National Historic Preservation Act. Refer to U.S. Army Corps of Engineers, *California Historic Military Buildings and Structures Inventory* (Washington, D.C.: March 2000), p. 7-2.

the importance of the north-south axis extending through the District to the Oakland Estuary and the Seaplane Lagoon, and protects key view corridors looking south along Lexington and Saratoga Streets, and looking west towards San Francisco along Redline and Midway Avenues.

For a complete list of all buildings currently at NAS Alameda, summary information, and ratings of significance and integrity, see the Property Database in **Appendix F**.

Recommendations for the Redevelopment and Re-Use of the NAS Alameda Historic District

Goal
The goal for historic preservation planning is to ensure the protection and future preservation of historic and cultural resources. NAS Alameda Historic District, as a City of Alameda monument and a National Register eligible Historic District, is a property of historic significance with ties to important local and national historic trends. The protection of the resource will enable continued observation, interpretation, and understanding of its contribution to, as well as its unique place within, our society.

All projects within the eligible Historic District boundary should comply with *The Secretary of Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (The Standards) (**Appendix G**). The Standards outline the Department of the Interior's advice on responsible preservation practice and are to be used when property owners seek certification for Federal tax benefits. They provide a consistent philosophical basis for the treatment of historic properties, be they buildings, structures, sites, objects, districts, or landscapes – all components found within the NAS Alameda Historic District. The Standards describe the following approach to rehabilitation:

1. Identify, retain and preserve character-defining features
2. Protect and maintain important materials and features
3. Repair materials and features
4. Replace deteriorated materials and features and design for replacement of missing features
5. Design alterations and additions in such a way so as not to change, obscure, damage or destroy character-defining features
6. Provide for life-safety and accessibility code requirements in a manner that does not radically change, obscure, damage or destroy character-defining elements

The Standards are referenced in the City of Alameda's Historical Preservation Ordinance as the guiding rule in determining whether to issue a Certificate of Approval for repairs and alterations to historical monuments.[72] The designation of a historic monument, according to the City's Ordinance, is discussed as follows:

> The purpose of this section is to promote the educational, cultural, and economic welfare of the City by preserving and protecting historic structures, sites, monuments, streets, squares, and neighborhoods which serve as visible reminders of the history and cultural heritage of the City, State or Nation. Furthermore, it is the purpose of this chapter to strengthen the economy of the City by stabilizing and improving property values in historic areas, and to encourage new buildings and developments that will be harmonious with the existing buildings and squares.[73]

[72] City of Alameda Historical Preservation Ordinance, 13-21.4.b.1.
[73] City of Alameda Historical Preservation Ordinance, 13-21.1.

The Alameda Point Element, Chapter 9 of the General Plan, currently outlines the following policies with respect to preservation of the historic resources within the NAS Alameda Historic District:

> *Guiding Policy: Historic Resources*
> 9.5.g Preserve Alameda Point's Historic District, buildings, development patterns, and open spaces.
>
> *Implementing Policies: Historic Resources*
> 9.5.h Preserve to the greatest extent possible buildings within the Alameda Point Historic District to maintain the neighborhood and historic character.
> 9.5.i Provide a mechanism for timely and expedient reviews to ensure that contributing buildings in the Historic District are not left vacant and are managed in compliance with all applicable regulations.
> 9.5.j Preserve the historic sense of place of the Historic District by preserving the historic pattern of streets and open spaces in the area.
> 9.5.k Minimize impacts on the architectural integrity of individual contributing buildings and structures.
> 9.5.l Make every reasonable effort to incorporate compatible adaptive uses or uses for which the buildings were originally designed…
> 9.5.m Prepare design guidelines and specifications for new construction within and adjacent to the Historic District that ensures compatibility of new construction with the character of the Historic District.[74]

Building upon this past work, the PDC recommends the following historic preservation strategies be used to guide future City actions and proposed development projects in the NAS Alameda Historic District. These strategies aim to protect and reinforce significant character-defining features while encouraging re-use and providing opportunities for new development. Care for the District's unique historic identity is stipulated while maintaining Alameda Point's future viability.

Strategy 1:
Prioritize Buildings for Stabilization
Since the Navy closed NAS Alameda in 1997, and base facilities have become available for public lease, many buildings have become filled with new tenants and have received architectural upgrades. Those structures that have not had the benefit of occupants and have remained vacant tend to be the very large structures with inflexible spaces. Examples of contributing buildings in this category include the Mess Hall (Building 3), and one of the Bachelor Enlisted Men's Quarters (Building 4). These buildings do not receive regular maintenance and have witnessed deterioration. Not only will the deferral of maintenance continue to compound the problem and add to the cost of rehabilitation in the future, but it places the condition of the historic property into question. It is recommended that further analysis be performed to determine how best to re-establish a stabilization and maintenance program, and which buildings according to the PDC will require this work. Immediate stabilization and sustained maintenance of these unoccupied buildings is the first and foremost items in need of action. Included in **Appendix H** is *NPS Preservation Brief 31: Mothballing Historic Buildings*, a primary reference on this topic.

Strategy 2:
Distinguish the NAS Alameda Historic District as a Unique Place within the Fabric of the City
The western end of Alameda island has, from the City's earliest documented history, been the site of notable industrial, rail, and aviation activity. The area has always been a zone primarily comprised of industry and transportation, while the remainder of the island supported the growth of residential, civic and commercial

[74] City of Alameda, 1991 General Plan as amended 2003, Chapter 9: Alameda Point, p. 15-16.

areas. It has a unique history and footprint, evident today in the site plan and building fabric that is an important and rare example of a Naval base designed in the Steamline Moderne style. This differentiation from the tree-lined neighborhood streets and Victorian-styled homes of adjacent areas is inherent in what is character-defining about the Historic District.

One of the stated goals of the NAS Community Reuse Plan is to preserve "the character of NAS whenever possible and appropriate while integrating the base into the culture and tradition of the city".[75] Continuing, the Community Reuse Plan looks to "achieve complete integration of the former NAS site with the rest of the island of Alameda, this is to be a seamless integration of the many neighborhoods, open space, and the best qualities of the existing city".[76] Redevelopment of the Historic District should maintain the character, integrity and singular quality of the historic resource while knitting the land into the fabric of the city. It is appropriate to consider thresholds and gateways that allow connection and porosity but acknowledge and allow for a unique historic environment to coexist and thrive. The objective is to remove barriers and fences, provide connections, support the continuation of neighborhood qualities, and make accessible Alameda Point's revitalized public amenities while fostering a recognition and protection of its valued historic character.

Strategy 3:
Restore and Reinforce the Site Planning Concepts Reflected in the Original 1940 Plan
The original master plan for NAS Alameda served as the organizational framework for the early development of the base and is a prime example of the Total Base Design concept, wherein architecture, site planning and landscape are integrated into a complete ensemble. The influence of City Beautiful planning is apparent, resulting in the most significant aspects of the plan: the landscaped cross axes, progression and hierarchy along the axes, symmetrical buildings or groupings, cohesive architectural vocabulary, and unified landscape treatment. This organization can equally be effective in serving as a framework and guide for future development. Specific concepts to address or reinforce consistent with the PDC include:

- North – South Axis and East – West Axis
- View Corridors
- Street Pattern and Circulation
- Central Landscaped Malls
- Landscape treatments including boulevard landscaping on W. Essex Road
- Relationship of Buildings and Open Spaces to Axes
- Relationship of the plan to the Seaplane Lagoon

Strategy 4:
Retain Significant Use Relationships Reflected in the Original Five Sub-Areas
The purposeful arrangement of functions, indicative of the Total Base Design practice, is found in the five sub-areas: the Administrative Core, the Shops Area, the Residential Area, the Landplane Hangar Area and the Seaplane Hangar Area. These distinctive zones, with the associated building and landscape treatments, should be understood, even as change and modification occurs. Beyond their historic association, they provide logical arrangement of building types, scale, edges, and massing variation to the historic area.

Where significant alteration of a sub-area is required, it is recommended to focus the alteration on areas that have historically experienced modification. Following this approach, the PDC proposes the highest percentage of demolition and new development in the Shops Area of the District, where buildings departed from the original master plan configuration and the architectural treatment was greatly simplified. The new PDC

[75] EDAW, *NAS Community Reuse Plan*, prepared for the Alameda Reuse and Redevelopment Authority, adopted January 31, 1996, p. 1-10.
[76] Ibid.

buildings in this area include the tallest new buildings and most densely developed program, including shop houses and commercial buildings, to re-establish compatible scale and volume characteristics.

With respect to functional uses, a compatible use to the building's historic use is to be employed with rehabilitation wherever feasible with the PDC. This is best illustrated in the re-use of the Administration Building (Building 1), a highly significant building at the center of the Historic District. The PDC proposes to maintain the City Hall West offices in this location and define the zone as a civic center in keeping with the nature and significance of the original historic use. The facing landscaped mall will be made available for large public gatherings and community events, a compatible use for a former parade ground.

Strategy 5:
Restore and Revitalize Historic District Landscapes and Open Spaces
Within the Historic District, the landscape serves to define the ceremonial entry and central open space. Two large rectangular intersecting green lawns orient along the main axes, originally comprised of more formal plantings. Decorative edges are formed with shrubs and trees, extending along streets into connecting areas and smaller entry courts. In the residential sub-area the green again becomes predominant, providing a park-like setting for residential quarters. Throughout, the planting material reflects the scale and function of the spaces.

It is recommended that a study of the Historic District landscape be completed to provide assessment and suggested guidelines for appropriate landscape rehabilitation. With this information, all new landscape plans should be formulated to reinforce the concepts of the original plan, provide for the restoration of the significant landscape features, and incorporate compatible new plant material in keeping with the historic plan. Monuments, flagpoles, and signage should be addressed and carefully integrated. The open space provided by the Seaplane Lagoon is equally important to consider. The open flat nature of the area in front of the grand row of seaplane hangars creates an impressive view corridor which must be considered in the design for improved public access and utilization of the waterfront on this important edge.

Strategy 6:
Encourage and Support Re-Use and Rehabilitation of Contributing Structures
Re-use of buildings is the first goal of any preservation plan. Occupancy brings not only life and purpose to the structure, but necessary care and maintenance. The most ideal use is the same as the original use of the building. However, a change in use is often required, in which case rehabilitation is to be followed. Rehabilitation is defined by the Standards 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, cultural, or architectural values.[77]

Currently the Mikesell document, *Guide to Preserving the Character of the Naval Air Station Alameda Historic District*, serves as guidelines for the NAS Alameda Historic District, providing a description of character-defining features and examples of suitable and non-suitable treatments to selected buildings in the District. Although the document has been an invaluable tool for the City, and has been recognized by the State Office of Historic Preservation as a guiding document, an updated, comprehensive set of re-use guidelines is suggested to accompany the PDC. Re-use guidelines outline information and conditions found in specific buildings to facilitate and assist owners and tenants with the re-use process. Data should be tailored to the needs of the building, but generally should include:

[77] National Park Service, *The Secretary of Interior's Standards for the Treatment of Historic Properties*, Standards for Rehabilitation, 1995, http://www.cr.nps.gov/hps/tps/secstan5.htm.

- Building summary information
- Identification of intact historic fabric
- Conditions assessment and recommendations
- Parameters for rehabilitation, repair, and maintenance work
- Pertinent code issues such as life-safety, accessibility and energy requirements
- State Historic Building Code
- Mechanical, electrical, and plumbing systems
- Preservation incentives, including tax-credits and grants

Strategy 7:
Guide New Development within the Historic District
When new buildings are introduced into a historic context the overarching aim is to have the new work exhibit differentiated, yet compatible design with the historic. The Standards address new construction with Rehabilitation Standard number 9, calling for compatibility with historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.[78]

Design guidelines for new development are necessary to establish a clear policy on appropriate design within the Historic District. Guidelines are used as a design aid in determining acceptable new construction that preserves the character of the District. They should allow for creative design to occur, and not prescribe a certain architectural style but rather encourage an understanding of and compatibility with the Streamline Moderne architectural vocabulary in the District. In the process of formulating Guidelines, interested parties can analyze the issue of compatibility and reach consensus on acceptable architectural review processes. In addition to architectural design issues, Guidelines for NAS Alameda can specify planning, zoning, and landscape criteria for new development that are equally important in preserving the character of the Historic District (**Strategies 3, 4 and 5**).

Strategy 8:
Manage the Historic Resource
The responsible management of historic resources will provide innumerable benefits to our community. Proper knowledge, planning, tools, and communication are key elements for the task, resulting in clear policies, roles, responsibilities, and anticipated funding mechanisms to manage development. Acceptable management practices of historic resources should be analyzed and stipulated; financial sources available for rehabilitation, low-income housing, and other uses which may involve historic resources studied and identified; marketing strategies crafted; and a roadmap for implementing sound management of the historic resource adopted. With these efforts, future development and growth as outlined in the PDC can be achieved in collaboration with historic preservation.

VII. CONCLUSION

The NAS Alameda Historic District is a rare asset that is facing an unprecedented period of change. In this period of planning and review there is an opportunity to truly recognize the historic significance of the resource and to plan for preservation. The aim is to protect and reinforce significant character-defining features while encouraging re-use and providing opportunity for new development. In preserving the historic resource we broaden our knowledge, we retain the opportunity for future understanding, and we enhance appreciation of our cultural heritage.

[78] Ibid.

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IX. APPENDIX

A. Sanborn Fire Insurance Maps

A-1. Sheet 1, 1897

A-2. Sheet 2, 1897

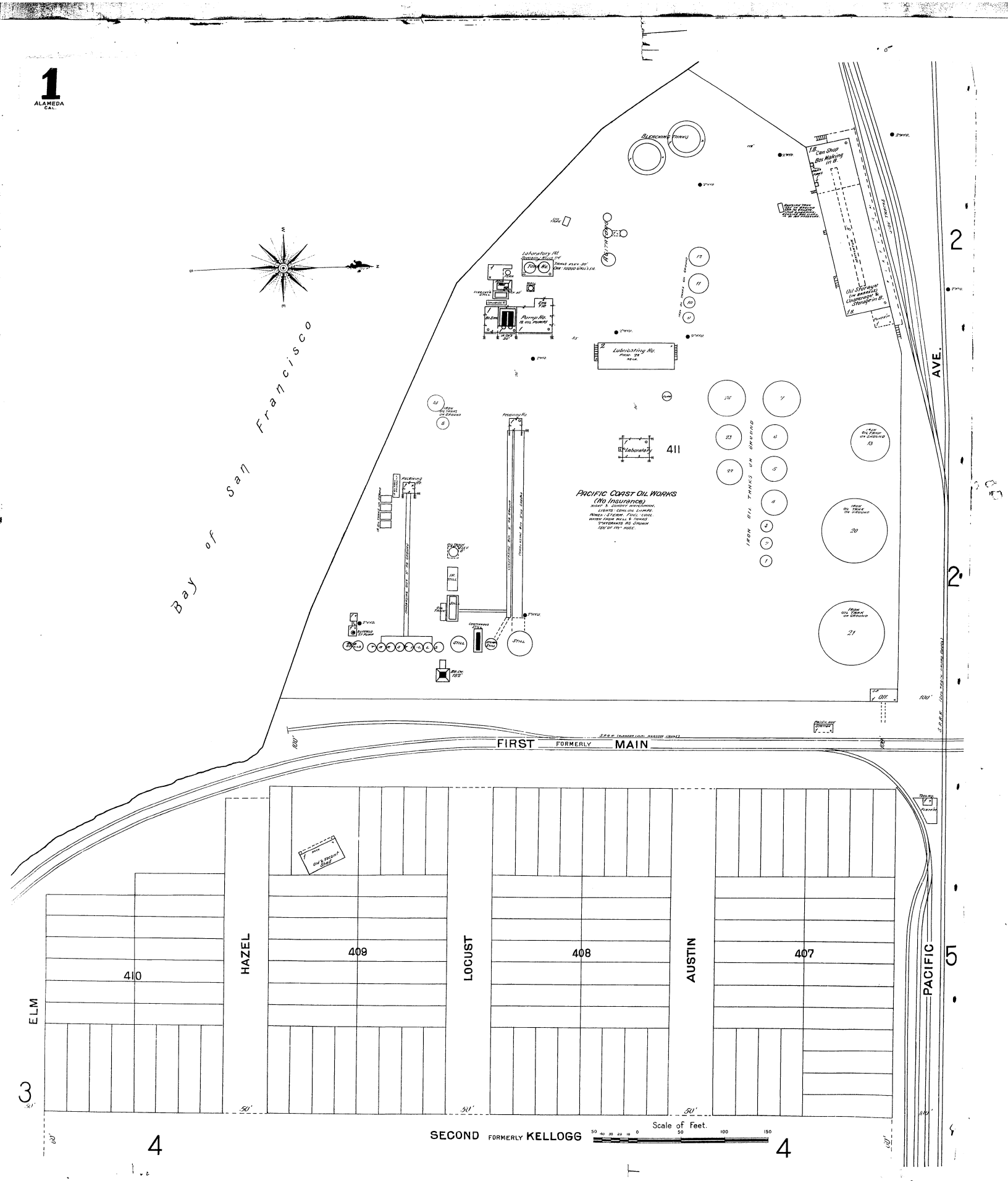
A-3. Sheet 1, 1948

A-4. Sheet 2, 1948

A-5. Sheet 8, 1948

A-6. Sheet 35, 1948

A-7. Sheet 93, 1948


1
ALAMEDA
CAL.
Bay of San Francisco
Bleaching Tanks
Can Shop Box Making in B.
Oil Storage (in barrels) Cooperage & Storage in B.
Laboratory Pt. Bleaching Wells
Pump No.
Lubricating No.
Laboratory
411
Pacific Coast Oil Works
(No Insurance)
Iron Oil Tanks on Ground
Iron Oil Tank on Ground
Receiving No.
Still
Off
FIRST FORMERLY MAIN
Oil & Vacant Shed
ELM
410
HAZEL
409
LOCUST
408
AUSTIN
407
PACIFIC
AVE.
2
2
5
3
4
4
SECOND FORMERLY KELLOGG
Scale of Feet.
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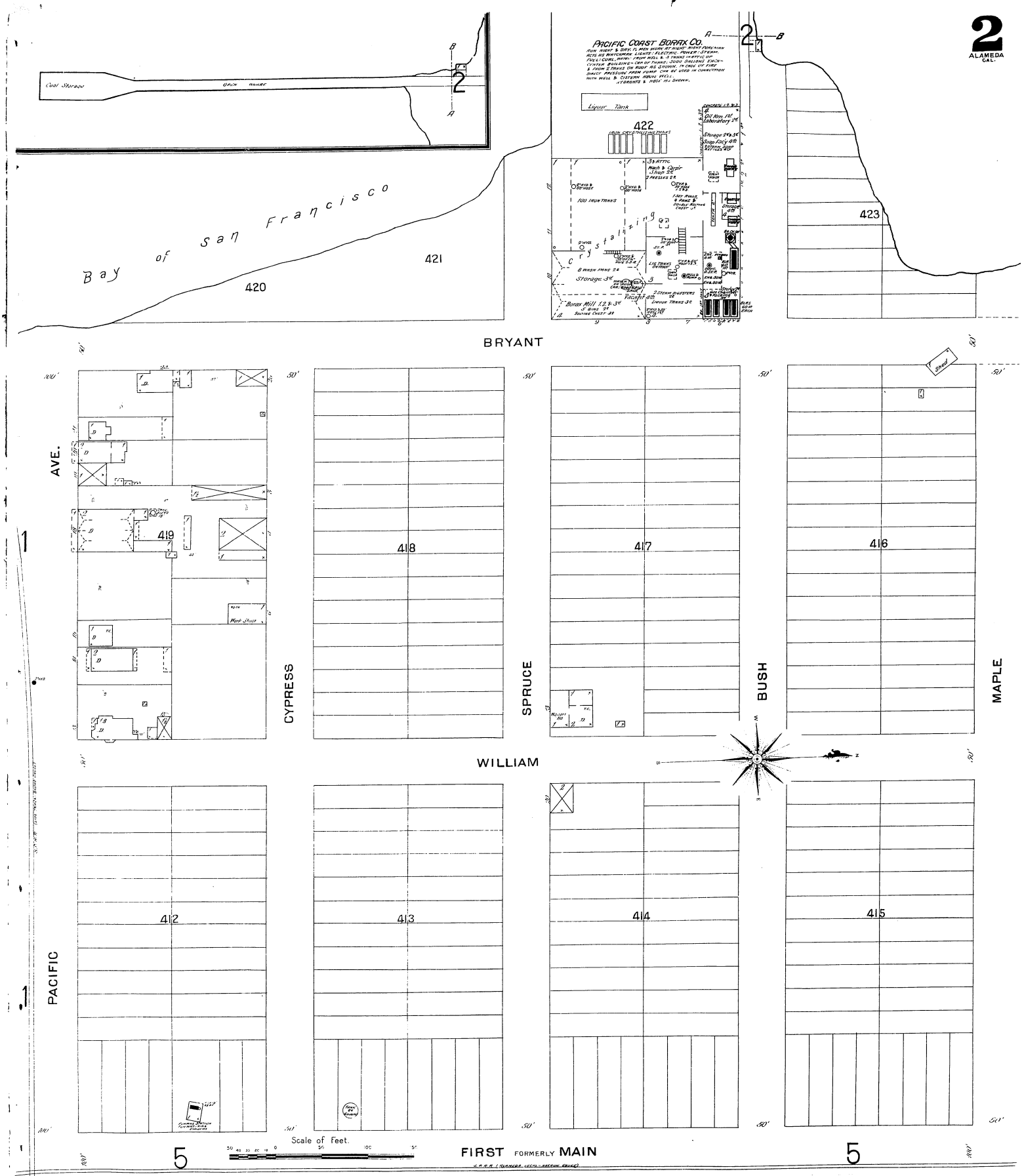
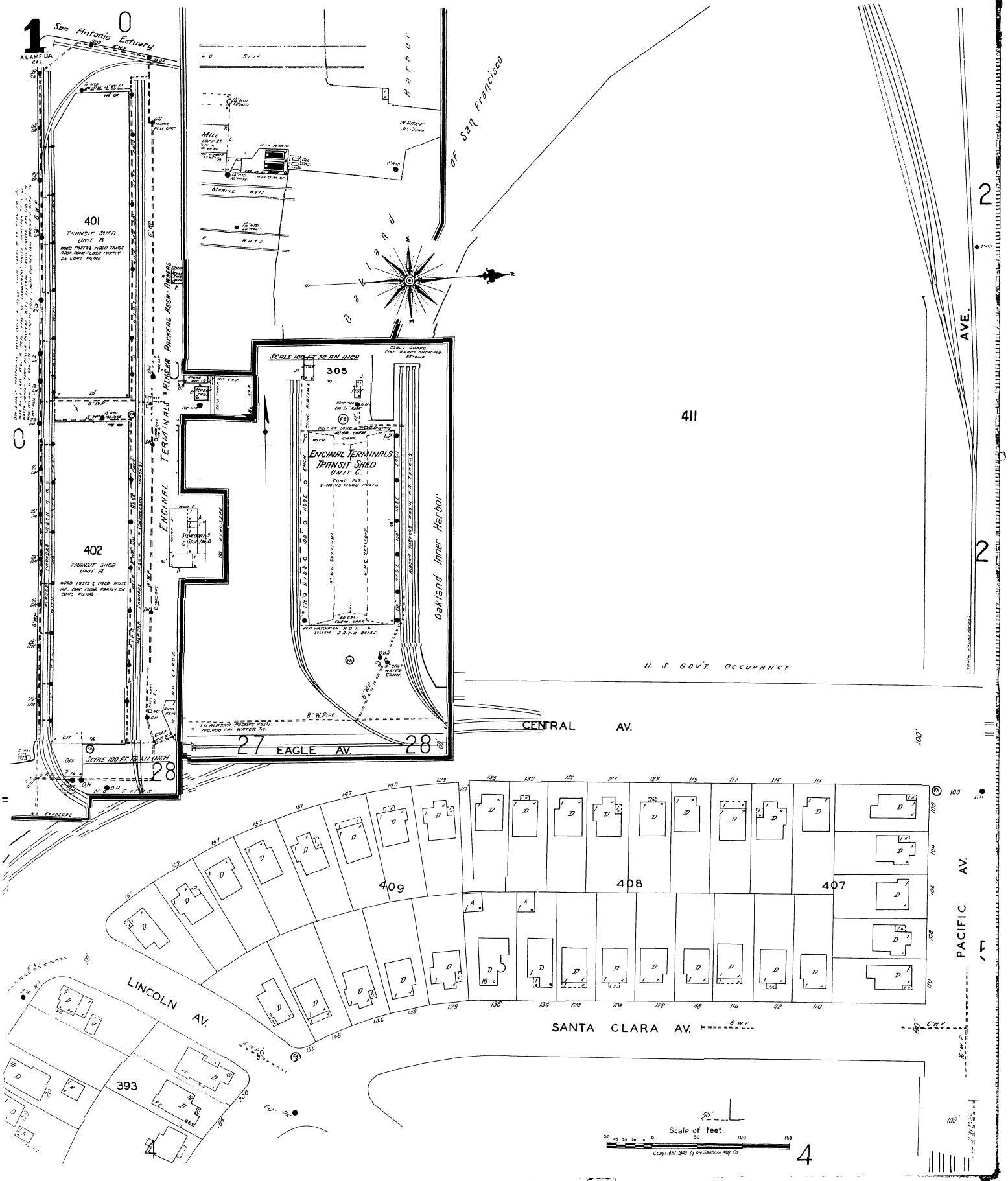
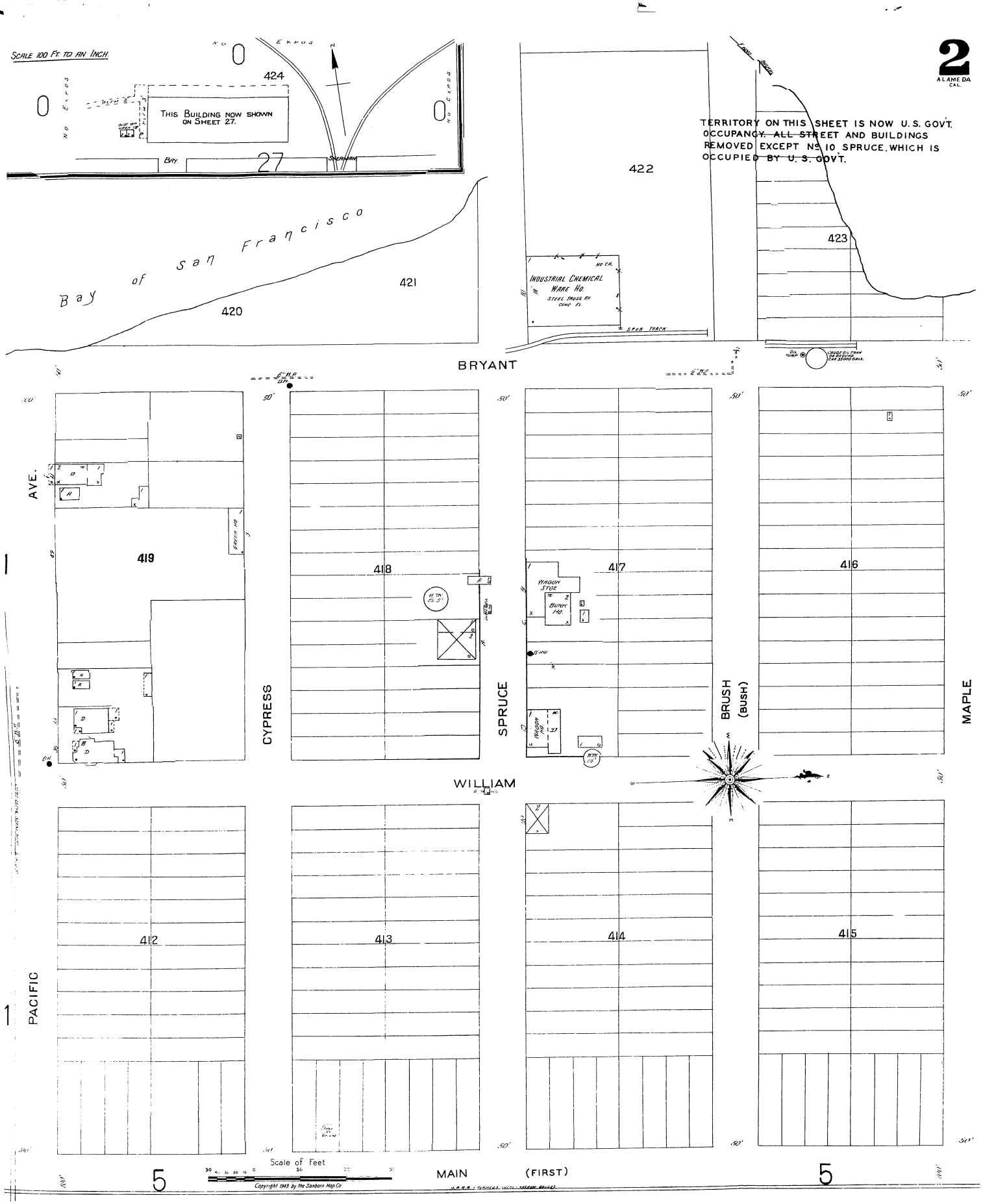
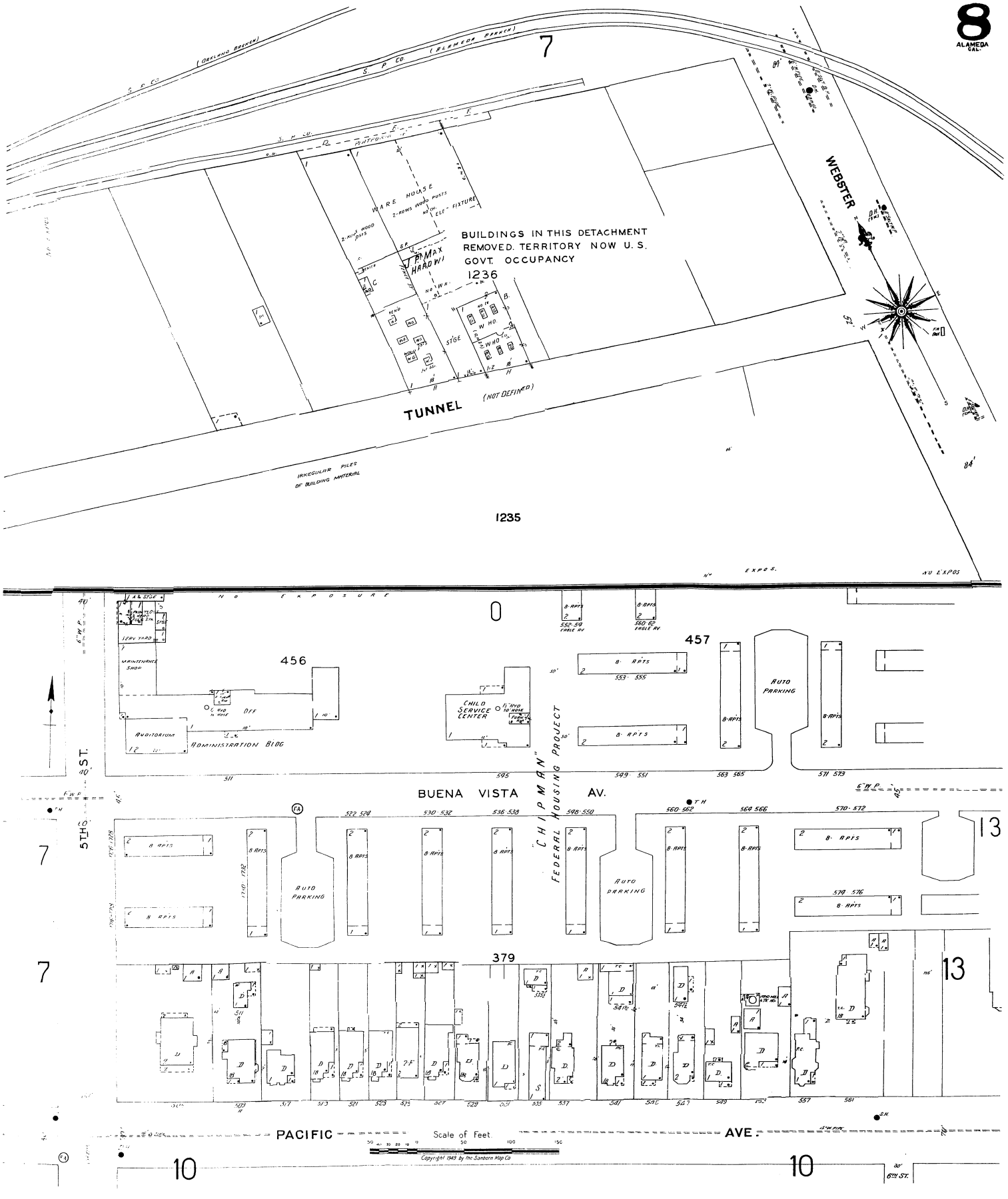

2
ALAMEDA CAL.
PACIFIC COAST BORAX CO.
Liquor Tank
422
423
421
420
Bay of San Francisco
Coal Storage
Crystalizing
BRYANT
AVE.
419
418
417
416
CYPRESS
SPRUCE
BUSH
MAPLE
WILLIAM
412
413
414
415
PACIFIC
Scale of Feet.
FIRST FORMERLY MAIN
5
5


1
ALAMEDA CAL
San Antonio Estuary
Oakland Inner Harbor
of San Francisco
401
TRANSIT SHED UNIT B
402
TRANSIT SHED UNIT A
ENCINAL TERMINALS
ALAMEDA PACKERS ASSN. OWNERS
SCALE 100 FT. TO AN INCH
305
ENCINAL TERMINALS TRANSIT SHED UNIT C
411
U. S. GOV'T. OCCUPANCY
CENTRAL AV.
EAGLE AV.
27
28
AVE.
2
409
408
407
LINCOLN AV.
SANTA CLARA AV.
PACIFIC AV.
393
Scale of Feet.
Copyright 1949 by the Sanborn Map Co.
4

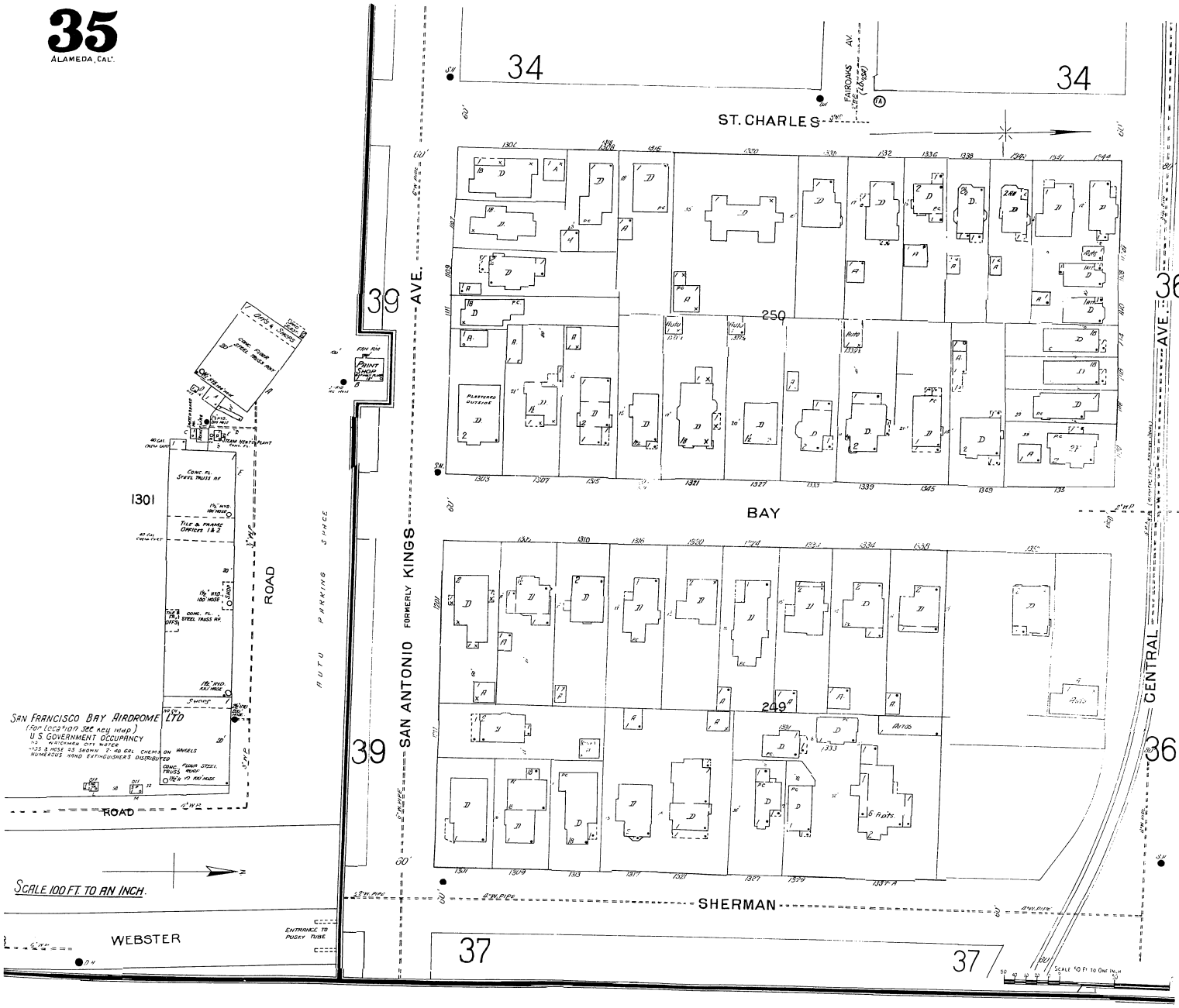


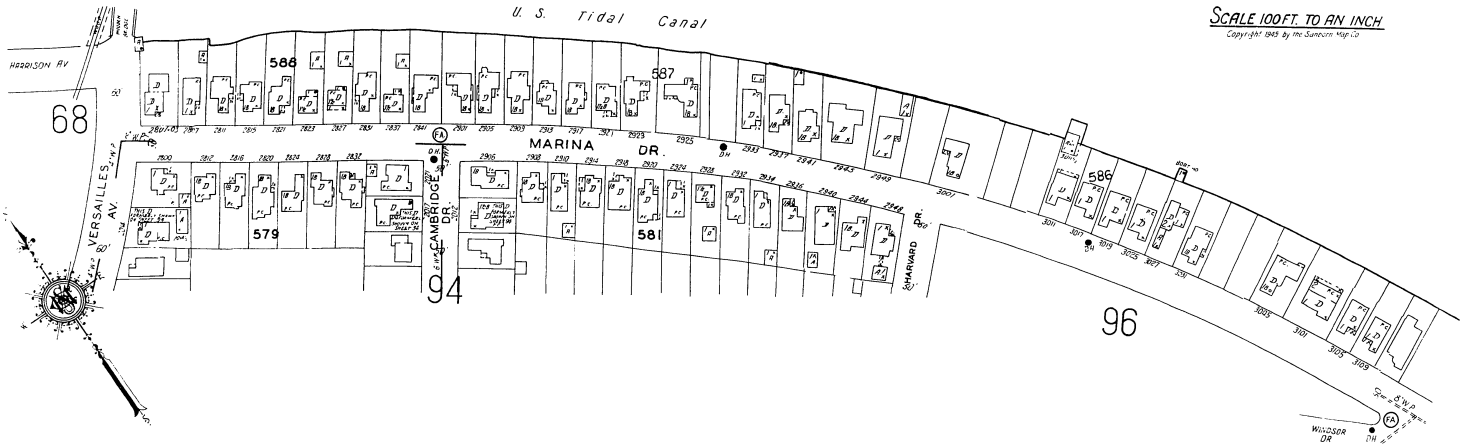
2
ALAMEDA CAL.
SCALE 100 FT. TO AN INCH.
NO EXPOS
424
THIS BUILDING NOW SHOWN ON SHEET 27.
BAY
27
SHERMAN
TERRITORY ON THIS SHEET IS NOW U.S. GOV'T. OCCUPANCY. ALL STREET AND BUILDINGS REMOVED EXCEPT No 10 SPRUCE, WHICH IS OCCUPIED BY U.S. GOV'T.
422
423
Bay of San Francisco
421
420
INDUSTRIAL CHEMICAL WARE HO.
STEEL TRUSS RF. CONC. FL.
SPUR TRACK
BRYANT
AVE.
419
418
417
416
WAGON STOR.
BUNK HO.
CYPRESS
SPRUCE
BRUSH (BUSH)
MAPLE
WILLIAM
412
413
414
415
PACIFIC
Scale of Feet
MAIN (FIRST)
5
5
Copyright 1949 by the Sanborn Map Co

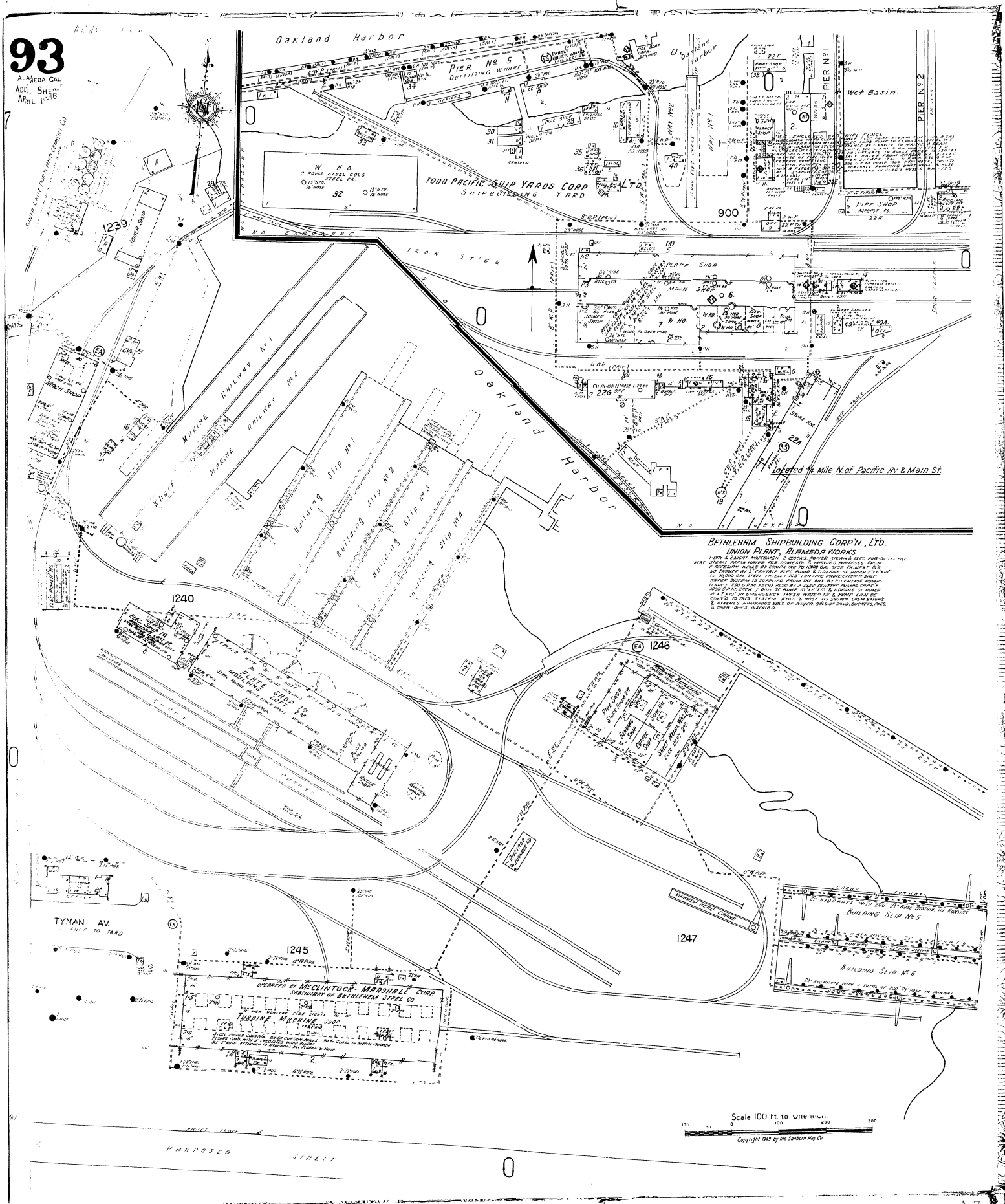

8
ALAMEDA CAL.
7
S. P. CO. (ALAMEDA BRANCH)
WEBSTER
WARE HOUSE
BUILDINGS IN THIS DETACHMENT REMOVED. TERRITORY NOW U. S. GOVT. OCCUPANCY
1236
TUNNEL
(NOT DEFINED)
IRREGULAR PILES OF BUILDING MATERIAL
1235
NO EXPOSURE
0
456
457
MAINTENANCE SHOP
AUDITORIUM
ADMINISTRATION BLDG
CHILD SERVICE CENTER
AUTO PARKING
"CHIPMAN" FEDERAL HOUSING PROJECT
BUENA VISTA AV.
5TH ST.
379
13
PACIFIC AVE.
Scale of Feet
Copyright 1949 by the Sanborn Map Co.
10
6TH ST.

35

ALAMEDA, CAL.






93
ALAMEDA CAL
ADD'L SHEET
APRIL 1918
Oakland Harbor
PIER No 5
OUTFITTING WHARF
TODD PACIFIC SHIP YARDS CORP LTD
SHIPBUILDING YARD
PIER No 1
PIER No 2
Wet Basin
PIPE SHOP
900
1239
JOINER SHOP
IRON STGE
PLATE SHOP
MACH SHOP
MARINE RAILWAY No 1
MARINE RAILWAY No 2
Building Slip No 1
Building Slip No 2
Building Slip No 3
Building Slip No 4
Oakland Harbor
Located ¾ Mile N of Pacific Av & Main St.
BETHLEHAM SHIPBUILDING CORP'N., LTD.
UNION PLANT, ALAMEDA WORKS
1240
PLATE MOULDING SHOP
1246
MARINE BUILDING
PIPE SHOP
BOILING SHOP
COPPER SHOP
SHEET METAL WKS
TYNAN AV.
1245
OPERATED BY McCLINTOCK-MARSHALL CORP
SUBSIDIARY OF BETHLEHEM STEEL CO.
TURBINE MACHINE SHOP
1247
HAMMER HEAD CRANE
BUILDING SLIP No 5
BUILDING SLIP No 6
Scale 100 ft. to One inch
Copyright 1949 by the Sanborn Map Co
PROPOSED STREET

B. Historic Plans

B-1. 1934 Photograph of Alameda Airport (Source: NARA)

B-2. 1940 Map of NAS Alameda

B-3. 1941 Map of NAS Alameda

B-4. 1945 Aerial Photograph, NAS Alameda (Source: NARA)

B-5. 1948 U.S. Naval Air Station – Alameda, California

B-6. 1954 Master Shore Station Development Plan

B-7. 1956 Pictorial Map of NAS Alameda (Source: NARA)

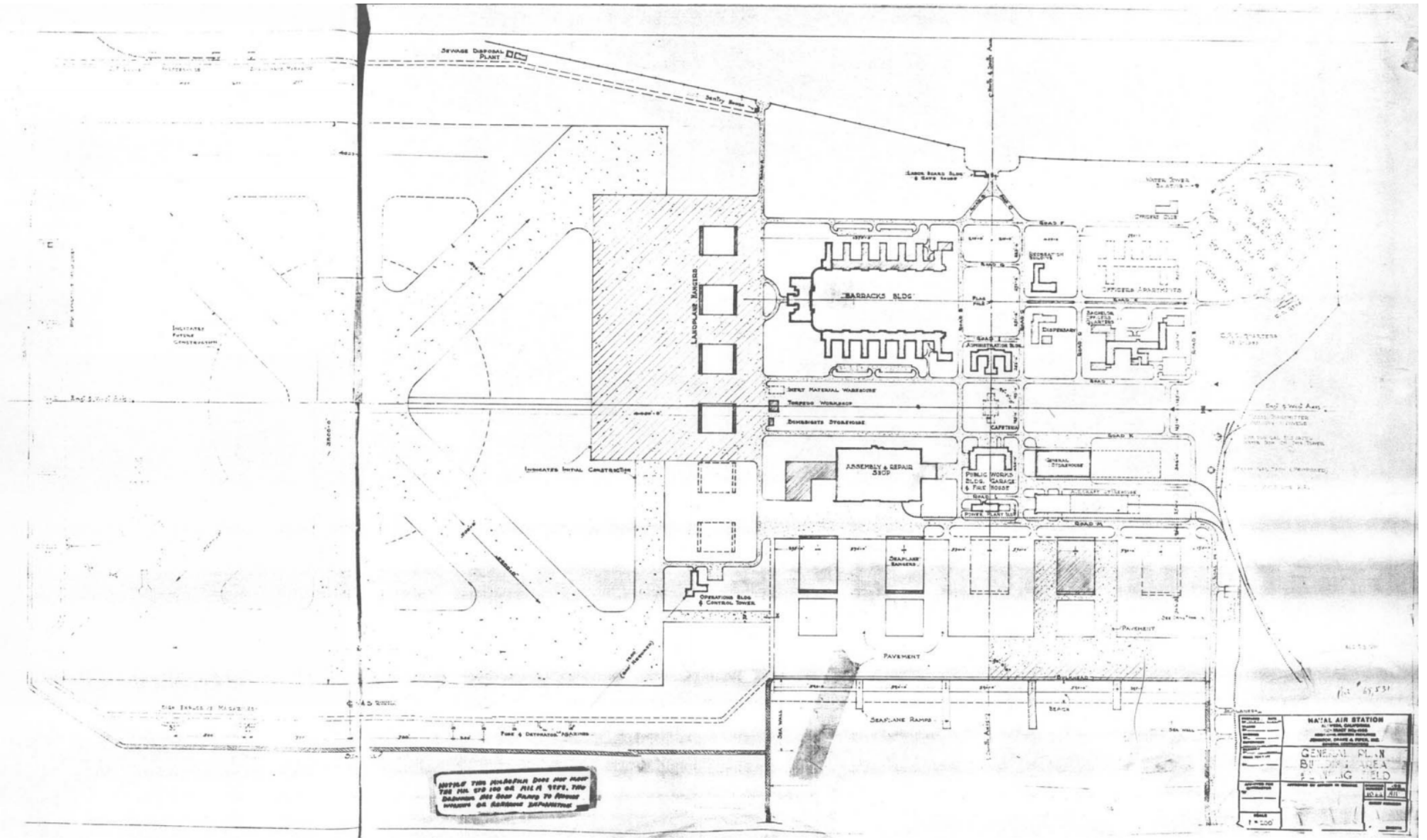
B-8. 1959 Aerial Photograph, U.S. Naval Air Station, Alameda, California

B-9. 1968 General Development Map, Existing and Planned [illegible], NAS Alameda

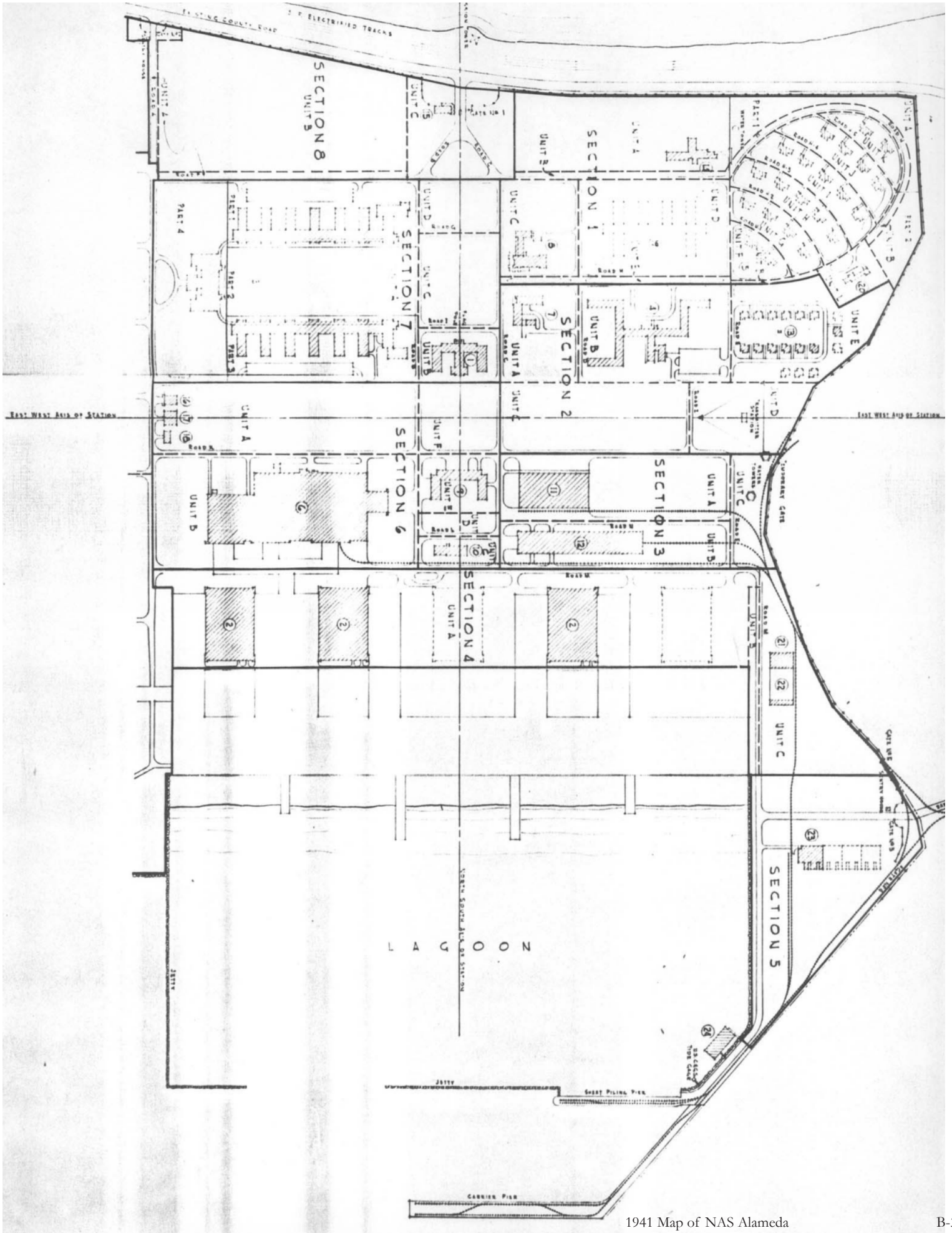
B-10. 1976 Existing Conditions Map of NAS Alameda

B-11. 1984 General Development Map, Existing and Planned Pre M Day, Main Station Area, NAS Alameda

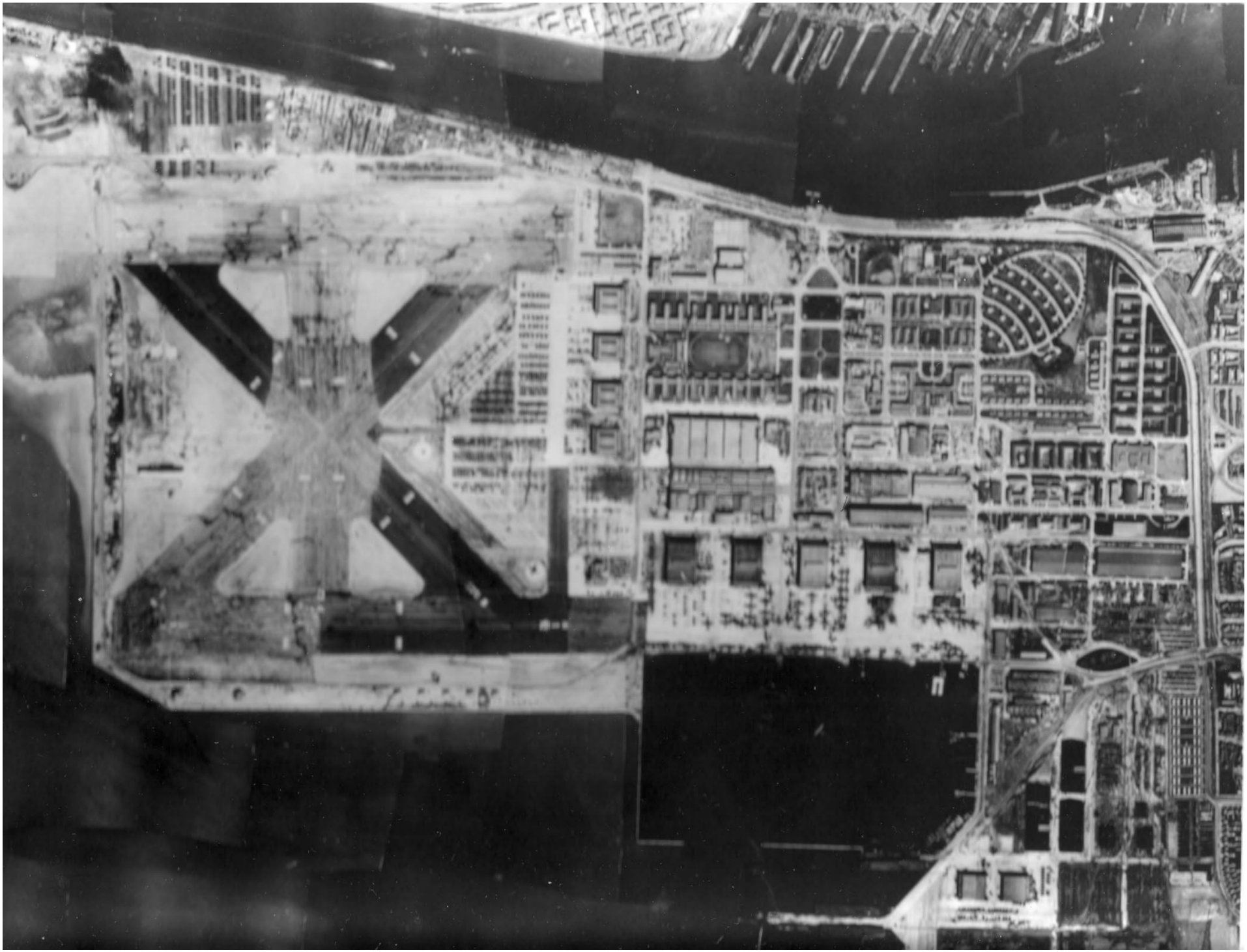
1934 Photograph of Alameda Airport (Source: NARA)



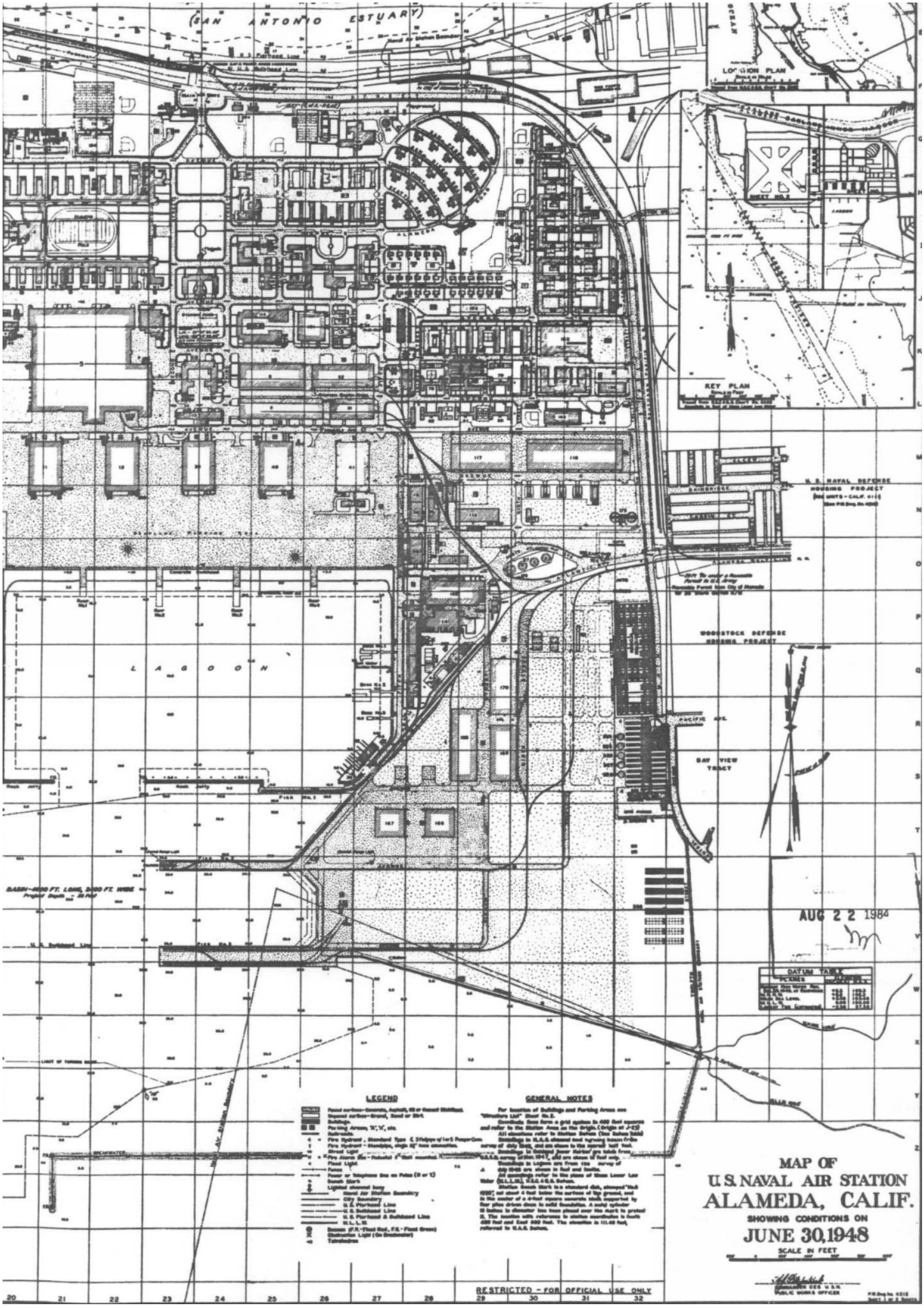
1940 Map of NAS Alameda

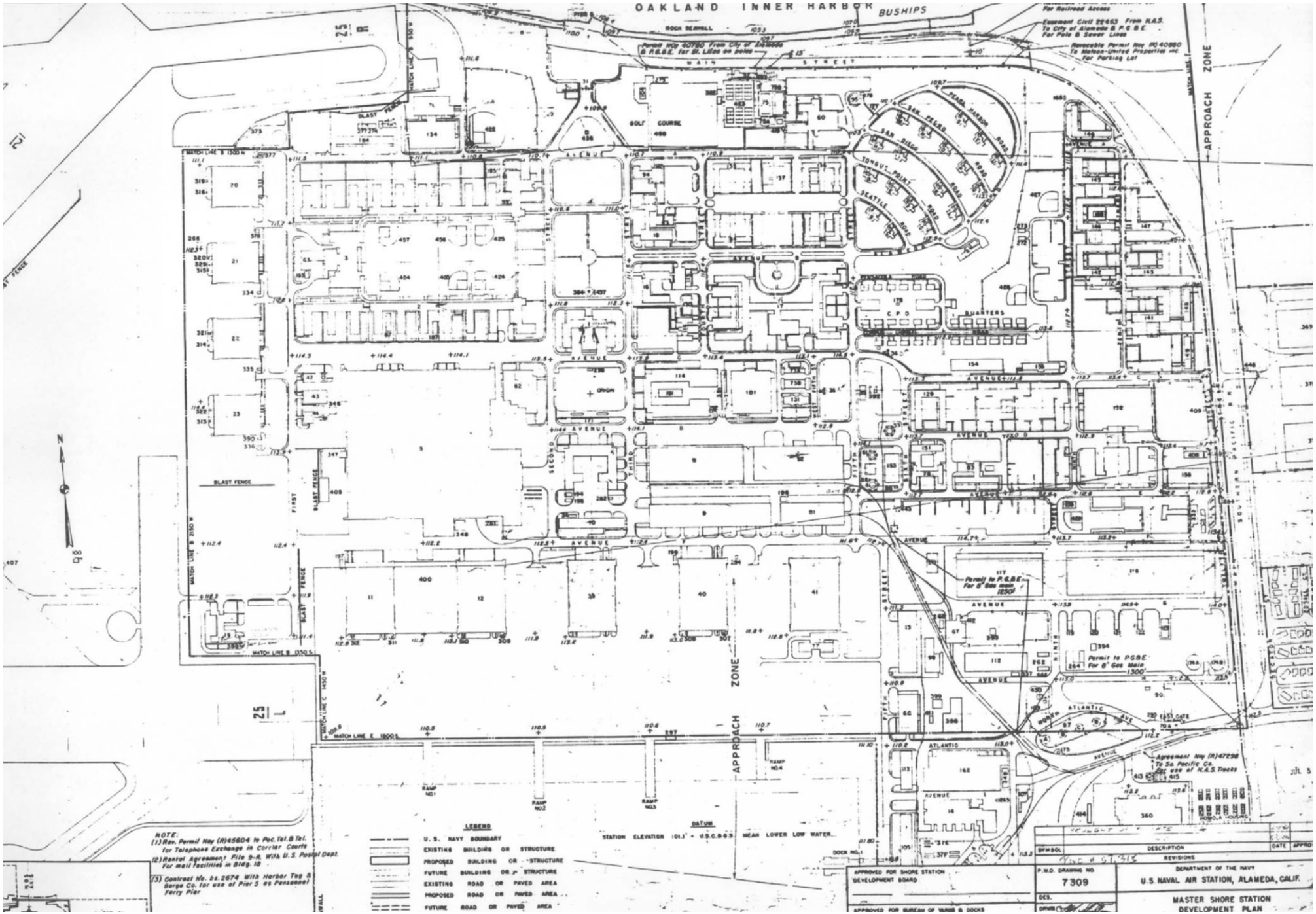


1941 Map of NAS Alameda

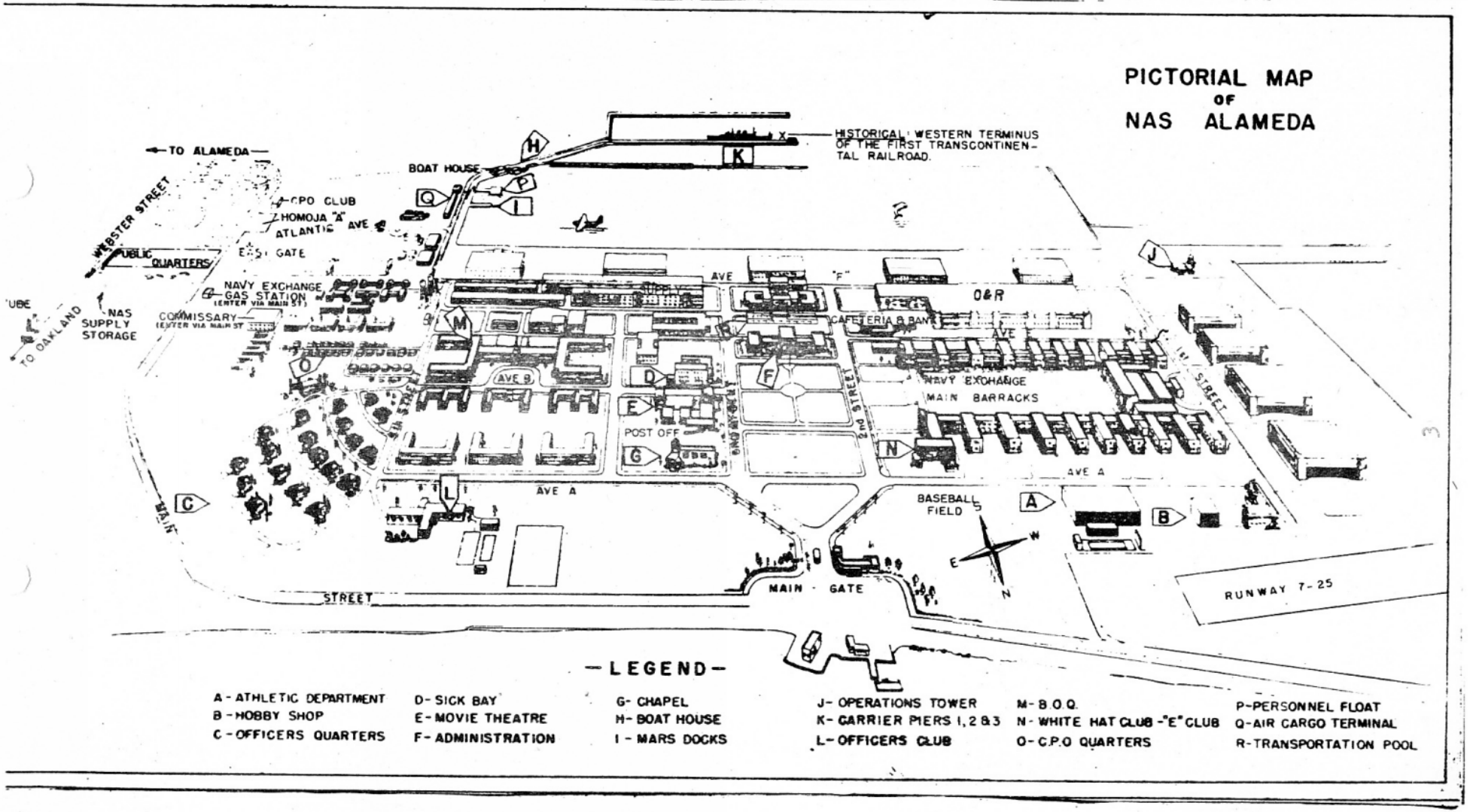


1945 Aerial Photograph, NAS Alameda (Source: NARA)


(SAN ANTONIO ESTUARY)
LOCATION PLAN
KEY PLAN
U. S. NAVAL DEFENSE HOUSING PROJECT
WOODSTOCK DEFENSE HOUSING PROJECT
BAY VIEW TRACT
LAGOON
AUG 2 2 1984
DATUM TABLE
LEGEND
GENERAL NOTES
MAP OF
U.S. NAVAL AIR STATION
ALAMEDA, CALIF.
SHOWING CONDITIONS ON
JUNE 30,1948
SCALE IN FEET
RESTRICTED - FOR OFFICIAL USE ONLY

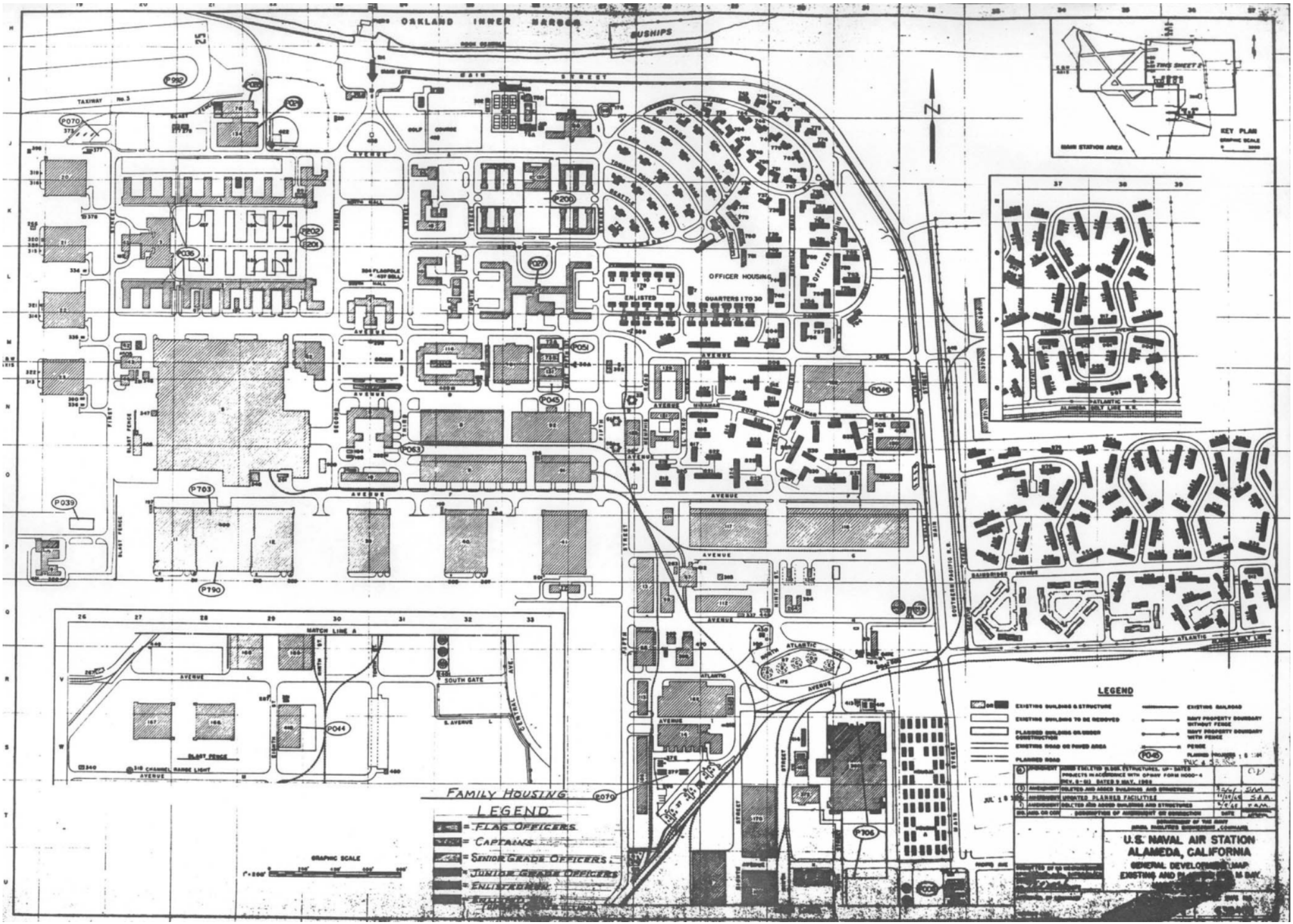


1954 Master Shore Station Development Plan

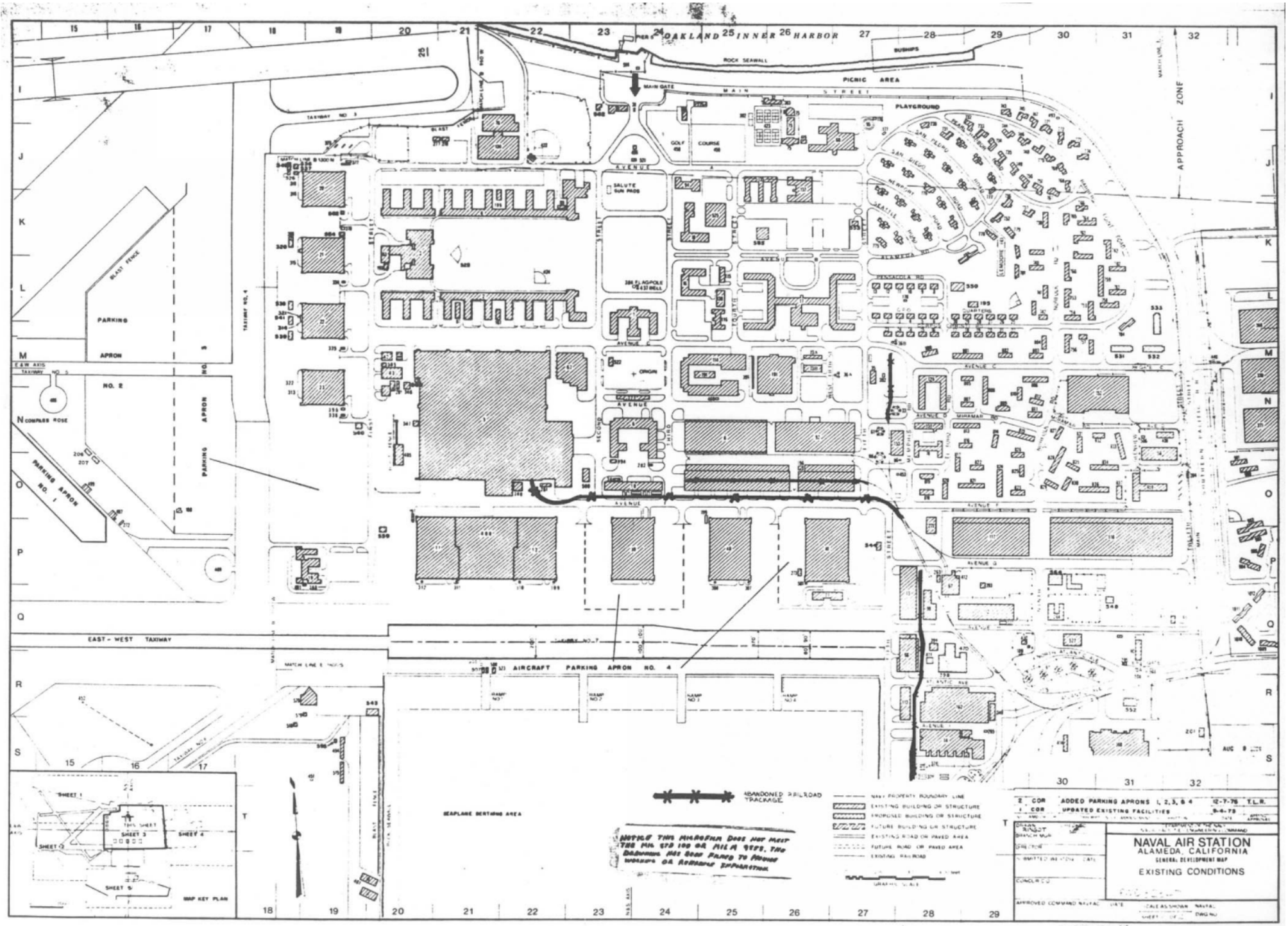


1956 Pictorial Map of NAS Alameda (Source: NARA)

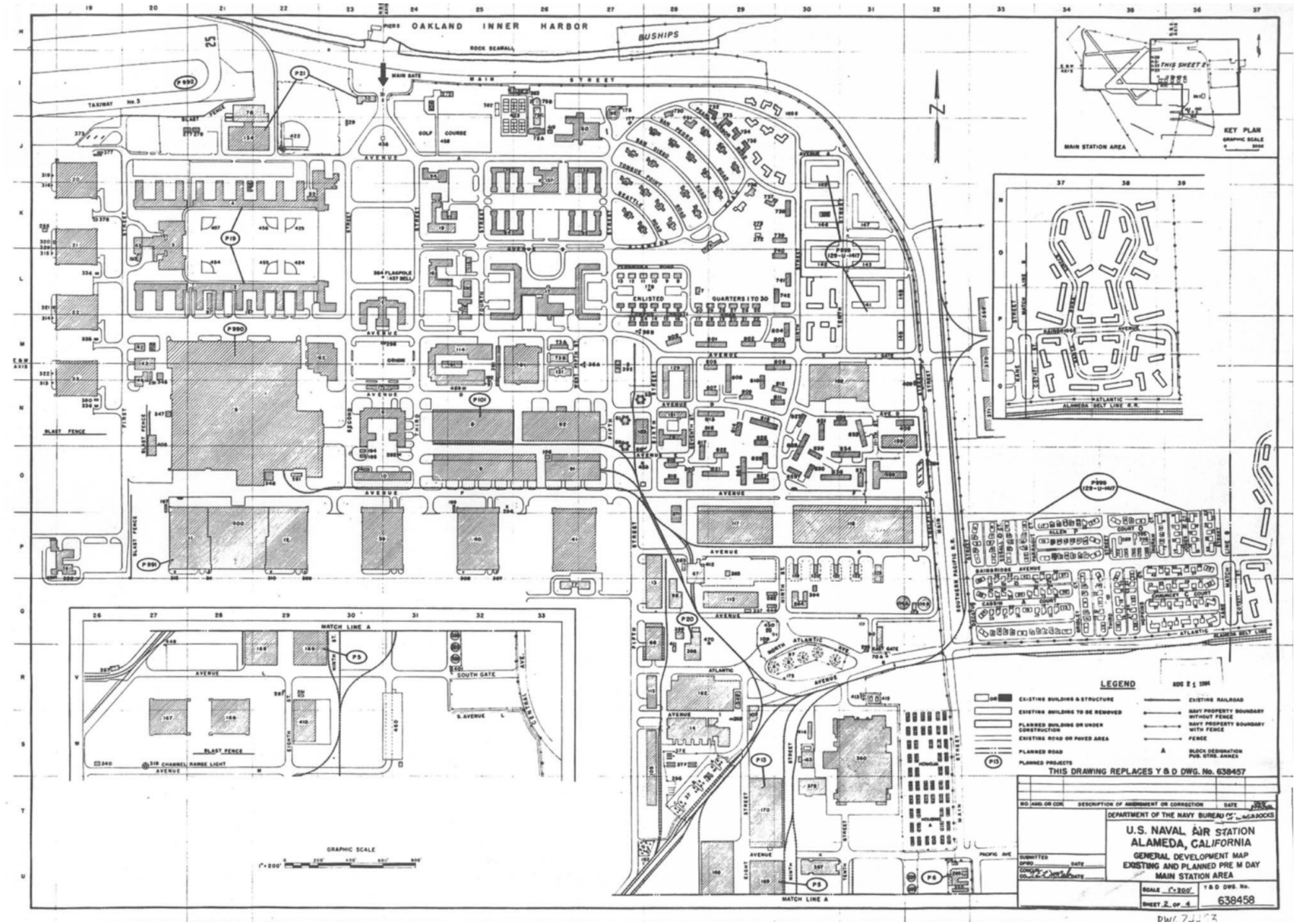
1959 Aerial Photograph



1968 General Development Plan, Existing and Planning [illegible], NAS Alameda



1976 Existing Conditions Map of NAS Alameda



1984 Existing Conditions Map of NAS Alameda

C. Historic Timeline

ALAMEDA NAVAL AIR STATION

1820 Governor Don Pablo Vicente de Sola, grants Rancho San Antonio to Sergeant Luis Maria Peralta. The 44,800 acre-ranch included all of what is now the City of Alameda as well as much of Oakland (*Alameda Historic Preservation Element*, p. 5).

1842 Luis Maria Peralta divides Rancho San Antonio among his sons. Anotnio Maria Peralta, his third son, received 15,206 acres comprising all of the Alameda Peninsula (then known as Bolsa de Encinal) (*Alameda Historic Preservation Element*, p. 5).

1851 William W. Chipman and Gideon Aughinbaugh purchased Bolsa de Encinal, which was comprised of 1,959.76 acres, from Peralta. The present-day location of the Alameda Naval Air Station was marshland and appears to not have been part of the original property surveys (*Alameda Historic Preservation Element*, p. 5).

1853 Alameda County created by the California State Legislature.

1854 Towns of Alameda and Encinal incorporated but never ratified by local election (*Alameda Historic Preservation Element*, p. 6).

1864 A. A. Cohen establishes the San Francisco & Oakland Railroad from the foot of Pacific Avenue in the west end to Versailles Avenue. It was later extended into Oakland and San Leandro. Company shops and a pier were constructed at Alameda Point. Called "Cohen's Wharf," ferry service was available from Alameda Point to San Francisco (*Alameda Historic Preservation Element*, p. 6).

Bird Brothers build a hotel in the settlement (called Woodstock) that grew up around Cohen's Wharf. The hotel catered to hunters of waterfowl in the adjoining marshlands.

1868 A.A. Cohen lays out the "Town of Woodstock" at Alameda Point, comprising the area bounded by Lincoln Avenue, Third Street, San Francisco Bay and the marshlands located north of what is now Atlantic Avenue (*Alameda Historic Preservation Element*, p. 6).

Samuel Orr establishes Alameda Oil Works, processor of castor, coconut and linseed oils, on lands adjacent to Cohen's Wharf (*Alameda Point General Plan Amendment,* p. 143).

1869 The Central Pacific brings the Transcontinental Railroad over the San Francisco & Oakland Railroad right-of-way to Cohen's Wharf (*Alameda Historic Preservation Element*, p. 7).

1871 Webster Street Bridge constructed over the Estuary.

1872 City of Alameda incorporated, encompassing Encinal, Alameda and Woodstock (Alameda Historic Preservation Element, p. 7). Population 1,557 in 1870 according to U.S. Census.

1873 Central Pacific builds a drawbridge over the Estuary west of Webster Street. This diverted the Alameda Line to Oakland. Ferry service to Alameda Point was discontinued and Cohen's Wharf was abandoned.

1874 Army Corps of Engineers begins to dredge San Antonio Creek (the Estuary). Plans include the digging of the Tidal Canal to join San Antonio Creek and San Leandro Bay. "Training Wall" begun as part of this work.

1878 Completion of James G. Fair's South Pacific Coast Railroad from Santa Cruz to Alameda Point, traversing the peninsula from the East End along Encinal and Central Avenues, to a new pier near the abandoned Cohen's Wharf (*Alameda Historic Preservation Element*, p. 7).

Neptune Gardens and Beach built on the Bay between Webster and Fourth Streets.

1879 Pacific Coast Oil Works builds kerosene refinery at Alameda Point (Alameda Historic Preservation Element, p. 6).

1880 According to 1880 U.S. Census, Alameda's population reaches 5,708.

Pacific Oil Company builds a refinery next to Alameda Oil Works near the southwest corner of what is now the intersection of Pacific Avenue and Main Street (*Alameda Point General Plan Amendment,* p. 143).

1881 South Pacific Coast Railroad builds a bridge across the Estuary at Webster Street.

1884 South Pacific Coast Railroad builds Alameda Pier and Ferry Terminal on the Estuary just north of present-day Alameda Naval Air Station.

Alameda re-incorporates as a Charter City.

1885 Standard Oil Company acquires Alameda Oil Works and Pacific Oil Company (*Alameda Point General Plan Amendment,* p. 143).

1886 N. Clark & Sons builds massive pottery at corner of Fourth Street and Pacific Avenue in Woodstock.

1887 Southern Pacific, successor to Central Pacific, acquires South Pacific Coast Railroad and improves Pier and Ferry Terminal, transforming it into the Alameda Mole in 1894.

1890 According to 1890 Census, Alameda's population reaches 11,165.

1893 Francis "Twenty Mule Team" Smith builds Pacific Coast Borax Company alongside the rails of the Pacific Coast Railroad and builds his own wharf to deliver coal. When it was completed it was the largest Borax Refinery in the world and reportedly one of the first reinforced concrete buildings in the United States. The refinery was closed in 1930 upon the exhaustion of the Death Valley mine and relocation of refining to Southern California. Following closure the four-story refinery building, which was located on the site of the Engine Overhaul Shop (Building 360) was dynamited. Building 163 on the Alameda Naval Air Station is supposedly a remnant of the Borax Refinery.

1897 1897 Sanborn Map shows site of Naval Air Station mostly occupied by marshes. The only visible development are several railroad trackbeds.

1900 According to 1900 U.S. Census, Alameda's population reaches 16,464.

1902 Tidal Canal completed, making Alameda an island (*Alameda Historic Preservation Element*, p. 8).

South Coast Pacific Railroad Terminal burns

1903 Pacific Coast Oil Company refinery south of Cohen's Wharf closes and moves to Richmond(*Alameda Point General Plan Amendment,* p. 143).

1906 1906 Earthquake unleashes an exodus of San Franciscans to outlying communities like Alameda, launching a major building boom (*Alameda Historic Preservation Element*, p. 8).

1910 Southern Pacific Railroad builds a maintenance shop on the site of what was later to become the Bethlehem Shipbuilding Co. yard east of Main Street.

According to the 1910 U.S. Census, Alameda's population reaches 23,383.

1911 Aviator Weldon Cooke entertains President William Taft on Columbus Day in a stunt flight that takes off from the sands of Alameda Point (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 2).

1914 First Naval air training station established at Pensacola, Florida.

1916 Bethlehem Shipbuilding Co. builds a major shipyard on the Estuary.

1917 John J. Mulvany convinces the U.S. Navy that Alameda Point would be an ideal Navy destroyer base (*History of the Naval Air Station).* The First World War ended before plans were complete (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 1).

Neptune Beach opens at the foot of Webster Street (*Alameda Historic Preservation Element*, p. 8).

1928 Alameda Municipal Airport opens for business near the Alameda Mole (Alameda Historic Preservation Element, p. 8). Installation consisted of an administration building and three hangars. The runway ran east-west. Curtis Wright Aviation was the principal tenant. Simultaneously the City of Alameda established a yacht harbor to the southwest of the airport (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 3).

George A. Posey Tube opens *(Alameda Historic Preservation Element*, p. 8).

1930 San Francisco Bay Airdrome opens on land west of Webster Street, on the site of present-day College of Alameda (*Alameda Historic Preservation Element*, p. 8).

Constructed in the wake of Charles Lindbergh's successful Transatlantic flight, the UC Board of Regents began construction of an airport on 458 acres of partially filled marshland on both sides of Webster Street. UC had inherited the land in 1920 from a wealthy alumnus. The marsh was drained by digging a network of ditches from which water was pumped. After grading the site, crushed oyster shells were barged from Bay Farm Island to pave the 3,400-foot and 1,700-foot runways. All of the airports functions were housed in a single 53,000 square foot hanger constructed for a cost of $150,000. The airport's success during 1930-31 led to a 160-foot addition to the original hangar and the first 160 feet of a second hangar. The victim of a Depression-era economy and the loss of major airline tenants to Oakland and San Francisco Airports, the Airdrome was used primarily by private planes and business fleets. In 1941, the Navy first condemned 70 acres bordering Atlantic Avenue for a housing project and later ordered the abandonment of "America's first downtown Airport".

U.S. Army acquires 100-acre site located east of Alameda Municipal Airport to construct an airfield (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 3).

1931 1,075 acres of tidelands comprising what is now the Naval Air Station are deeded by the City of Alameda to the Army for the construction of Benton Field Army Air Base. Only 128 acres were above sea level. On April 3, 1931 Captain Leander Larson arrived to take charge of the filling and construction work. On May 8, authority to spend $500,000 was received and construction began. Work included drilling a well, driving piles, construction of a levee and dredging of bay sand, as well as the erection of a 200,000-gallon capacity water tank and railroad spur. Construction was never completed pending the transfer of the property to the U.S. Navy several years later (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 4).

1935 Pan American China Clipper takes over Alameda Municipal Airport in April 1935, making it the headquarters of its Transpacific China Clipper flights (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 3).

1936 In June 1936 Public Resolution Number 19 was presented to Congress to authorize President Franklin D. Roosevelt to accept the site of the Alameda Municipal Airport from the City of Alameda for $1 (*History of Naval Air Station*).

On October 7, 1936, the Navy acquired title to the 1,075-acre Benton Army Airfield from the Army and the 929.34 acres that comprised Alameda Municipal Airport from the City of Alameda (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 4).

1937 Captain (later promoted to Rear Admiral) Ben Moreel is appointed head of the Navy Bureau of Yards and Docks. In this position, which he held until 1945, he begins build up of Naval facilities (Garner, *World War II Temporary Military Buildings,* p. 17).

1938 On February 10, 1938, Commander E.C. Seibert arrives in Alameda to assume his duties as Officer in Charge of Construction. Within the Bureau of Yards and Docks, the Department of Planning and Design prepared the basic drawings of the Alameda Naval Air Station. The officers of that department were drawn from the Civil Engineers Corps, whereas the majority of the staff were civilian architects, engineers and planners under the direction of Capt. Thomas Trexel, Chief Architect in the Bureau's Washington, D.C. office (Garner, *World War II Temporary Military Buildings,* p. 17).

The original plans called for a 1,000-man air station costing $13,500,000 (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 5).

Construction began in February. The lump-sum contracts were awarded to 25 companies for a total amount of $12,200,000. Work included construction of a seawall, dredging and filling, installation of underground utilities, construction of the Administration Building (Building 1), the first section of the Bachelor Enlisted Men's Quarters (Building 2), Mess Hall (Building 3), Theater and Welfare Building (Building 18), Public Works Garage and Firehouse (Building 6), Assembly and Repair Shop (Building 5), Power Plant (Building 10), General Storehouse (Building 8), Aircraft Storehouse (Building 9), Paint and Oil Storage (Building 13), Engine Test Stands (Building 14), two seaplane hangars (Buildings 11 and 12), four landplane hangars (Buildings 20, 21, 22 and 23), Operations Building (Building 19), Boathouse (Building 15), Bachelor Officers' Quarters (Building 17) and ten Married Officers' Quarters ("Big Whites"). Also included was the dredging of the Seaplane Lagoon and the construction of a seaplane ramp. The first building to be constructed was a temporary garage, called Building 90. Built in 1938, this building was moved several times. It is currently located near the East Gate and was most recently used as the Civilian Employment Office (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, pp. 5-6).

For a while construction was held up when the dredging crew encountered an old trestle pier and ferry slip, remains of A.A. Cohen's Wharf constructed in 1864 as part of his San Francisco & Oakland Railroad. The debris, located on the site of what is now Pier 2, had to be manually removed included pile stubs, iron railings, locomotive wheels, coupling links and a pile of sandstone cobbles (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 6).

March 1938, Hitler annexes Austria and the Czech Sudetenland to Germany.

In November the Administration Building was completed and ready for occupation (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 7). Commander Harold J. Brow, USN, was the first commander of the facility.

1939 On April 4, 1939, President Franklin D. Roosevelt signs the Hepburn Base Program Act which authorizes construction of Naval air bases (Garner, *World War II Temporary Military Buildings,* p. 16).

Hitler invades Poland in September 1939.

Pan Am moves its China Clipper operations from the old Alameda Municipal Airport to Treasure Island.

U.S. Navy enlistment stands at 110,000 personnel, with an additional 18,000 enlisted in the Marines (Garner, *World War II Temporary Military Buildings,* p. 16).

The design of the Alameda Naval Air Station wins a medal from the Association of Federal Architects at the Seventh Annual Architectural Exhibition as an "outstanding example of functional planning" (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 5).

1940 Hitler's forces occupy Paris on June 14.

In June Captain Frank R. McCrary was appointed Commanding Officer of Alameda Naval Air Station.

July 1940 the Navy Department decided to dramatically increase the size of the under-construction Alameda Naval Air Station from 1,000 to 4,000 men. A $17,000,000 contract was signed with Johnson, Drake & Piper Construction Company (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 8).

Chronic problems with blowing sand and soil slippage led an arrangement whereby the Navy transplanted grass and shrubs from the site of the Golden Gate International Exposition on Treasure Island once it closed in September. In addition, the State Forestry Division contributed shrubs. The landscaped mall between the Main Gate and the Administration Building was called "The Magic

Carpet" (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 12).

Several World War I-era destroyers were apparently sunk to the south of Seaplane Lagoon to serve as a breakwater.

On November 1, 1940 Alameda Naval Air Station was formally commissioned. The brief ceremony was attended by Rear Admiral A.J. Hepburn, Commandant of the Twelfth Naval District; members of his staff; all officers attached to the station; officials representing Alameda, Oakland and San Francisco; newspaper reporters and approximately 390 sailors and marines aboard. The first Executive Officer was Commander John G. Farrell, USN. The flag-raising ceremony took place at the flagpole in front of the Administration Building (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 9).

1941 The first squadron of planes to arrive at Naval Air Station flew in from Seattle on January 3. It was commanded by Lieutenant Commander W.L. Erdman (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 11).

Key System bus service began Alameda and the Main Gate on January 13. Most of the 400-odd persons employed came in their own cars until gas rationing and rubber shortages caused them to take the buses, water taxis and taxis from Oakland, Alameda and San Francisco (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 12).

The February 27, 1941 edition of the *Alameda Times-Star* reported that Alameda Naval Air Station was to be home to two squadrons of eighteen seaplanes, two aircraft carriers and that eight hundred civilians would find work there. At the time the article was published the station housed around 550 enlisted men and officers.

July 1941, demand for trained personnel led to the opening of several "Class A" trade schools at Alameda Point, including the Aviation Metalsmiths' School, Aviation Machinists' Mates' School and the Aviation Radiomen's School.

Alameda Naval Air Station was nowhere near completion when the Japanese attacked Pearl Harbor and other US possessions and bases on December 7, 1941. Anti-aircraft guns and fire watch stations were installed and earthworks hastily thrown up. Important buildings and fire hydrants were protected against bomb blasts (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 14).

The Navy hastened construction by recruiting emergency personnel, which eventually doubled the population of Alameda from 30,000 to 85,000.

1942 April 18, 1942, Lieutenant Colonel James Doolittle's force of eighteen B-25 bombers bombed Tokyo and four other Japanese cities. The expedition had been outfitted and loaded aboard the USS Hornet at Alameda Naval Air Station.

1944 Captain Walter F. Boone, USN, replaces Captain McCrary as Commanding Officer on April 25, 1944 (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 15).

1945 By January 1945 Alameda Naval Air Station was home to twenty-two squadrons, twenty-three ships, 1,500 planes, 158 buildings (*History of U.S. Naval Air Station Alameda, California*, dated January 9, 1945, p. 12).

On February 28, Commodore Stanley J. Michael, USN, replaces Commodore Walter F. Boone as Commanding Officer of Alameda Naval Air Station (*History of U.S. Naval Air Station Alameda, California*, Vol. 2, dated January 9, 1945, p. 1).

During March 1945, the Assembly and Repair Building (Building 5) received its first addition, the Overhaul Building (*History of U.S. Naval Air Station Alameda, California*, Vol. 2, dated January 9, 1945, p. 1).

Construction of several wood-frame "temporary" buildings was approved in the spring of 1945, including two wood-frame warehouses measuring 120' x 200' in plan, (possibly Buildings 91 and 92). Several extant warehouses were freed up for military combat supplies after a smelting facility was built on the grounds, providing a use for bulky scrap metal accumulating in storage warehouses (*History of U.S. Naval Air Station Alameda, California*, Vol. 2, dated January 9, 1945, p. 2).

A contract was let to the Basalt Rock Company of Napa for the construction of a million-dollar breakwater. A mile and a quarter long, the breakwater was built south of the three carrier piers. The breakwater was constructed to prevent the filling in of the carrier turning basin and protecting the piers from storm damage (*History of U.S. Naval Air Station Alameda, California*, Vol. 2, dated January 9, 1945, p. 5).

Expansion of Alameda Naval Air Station continued even after the cessation of hostilities with Japan on August 14, 1945. It was intended that Alameda Naval Air Station would be one of three permanent stations in the Twelfth Naval District. Many of the nine million dollars worth of projects were constructed east of the three carrier piers (*History of U.S. Naval Air Station Alameda, California*, Vol. 2, dated January 9, 1945, p. 6).

1958 In 1958 Alameda Naval Air Station had a station population of 13,200, of which 4,800 were military and 8,400 civilian. The base itself comprised 1,607 acres of dry land and 1,072 acres of underwater acreage for seadromes and docking space. There were then approximately 283 buildings and over thirty miles of roads. The Naval Air Station had a three-part mission consisting of the following major tasks:

- Provide facilities and support for fleet aviation activities;
- Provide training facilities for military personnel;
- Provide facilities and support for the overhaul and repair of military aircraft, engines and accessories (*1958 Base Directory*, p. 8).

1962 Alameda Naval Air Station has three 8,000' runways, four large aircraft carriers, including the USS Hornet and USS Ranger, three seaplane ramps and seadrome, several MSTS ships, 1,920,000 square feet of shop area, 2,858,000 of storage area and 280 buildings. Total size of the base in 1962 was 2,720 acres, including 1,108 acres of underwater acreage (*1962 Base Directory*).

1989 The San Francisco Bay Area is hit by the 7.1 Loma Prieta Earthquake. Base personnel assisted in relief efforts. The runways were heavily damaged by the earthquake.

1992 Inventory of historic buildings constructed prior to 1946 is undertaken at NAS Alameda by Sally Woodbridge for the Navy.

1993 NAS Alameda, as it was now called, was comprised of 2,842 acres of land, including 1,527 of dry land and 1,315 acres of submerged land. The two runways: 31/13 and 25/7 were 8,000' and 7,200' long respectively. Total employment was 2,861 military personnel and 4,025 civilians. Homeported ships included two carriers: the USS Abraham Lincoln and USS Carl Vinson; one missile cruiser: USS Arkansas; and one destroyer tender, the USS Samuel Gompers. In addition NAS Alameda was home to four Naval Air Reserve squadrons and one Marine Air Group (*NAS Alameda Fact Sheet,* October 20, 1993).

Alameda included on the list of bases to be closed as part of the Base Realignment and Closure Act.

1994 NAS Alameda de-activation begins.

1995 In 1995 the base's real assets included 251 buildings, 195 structures on 1,700 acres of land (*NAS Alameda Real Property Management*, p. 4-1).

1996 The City of Alameda and the Alameda Reuse & Redevelopment Authority adopt the *NAS Alameda Community Reuse Plan* as a "visioning document" to guide the reuse of the base.

A Memorandum of Agreement (MOA) was signed by the City of Alameda, the US Navy, the State Historic Preservation Office (SHPO) and the Advisory Council for Historic Preservation (ACHP), authorizing the demolition of six contributing buildings within the historic district boundaries identified by Sally Woodbridge in 1992.

1997 The US Navy formally closes NAS Alameda. As part of this effort, JRP Historical Consulting Services was retained to develop design guidelines for the historic district.

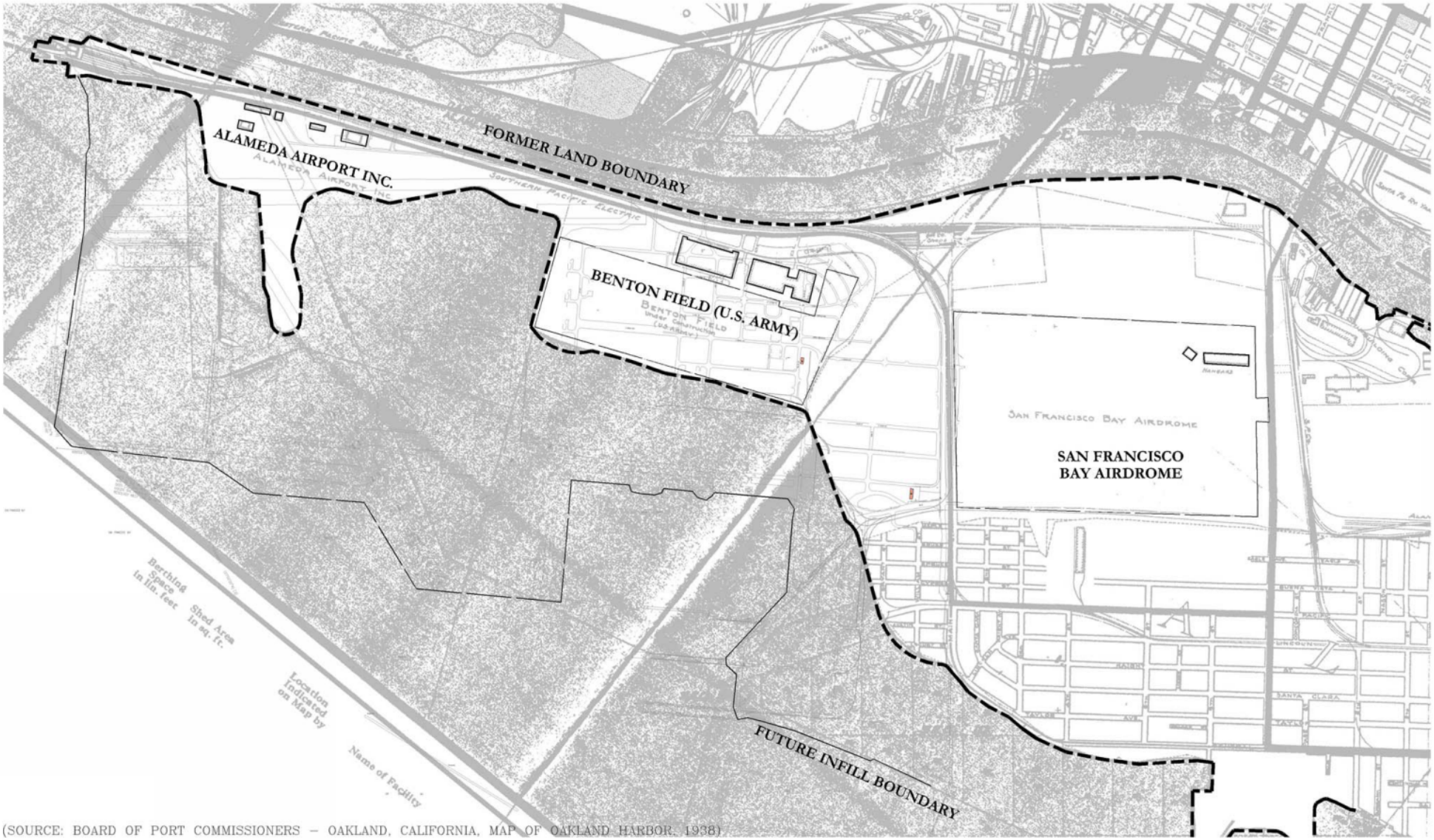
1999 A second MOA was signed by the City of Alameda, the Navy, SHPO and ACHP. This MOA stipulated that the Navy would prepare and submit a National Register

nomination for the NAS Historic District and maintain the buildings according to the Design Guidelines prepared the prior year.

In September 1999 the City of Alameda passed a resolution authorizing the addition of the NAS Alameda Historic District to their Historical and Cultural Monument List.

2003 The Alameda City Council adopted a revised General Plan, including a new Alameda Point Element

D. Chronology of Development



(SOURCE: BOARD OF PORT COMMISSIONERS – OAKLAND, CALIFORNIA, MAP OF OAKLAND HARBOR, 1938)

PRE-1938 PLAN
FORMER NAVAL AIR STATION, ALAMEDA, CALIFORNIA

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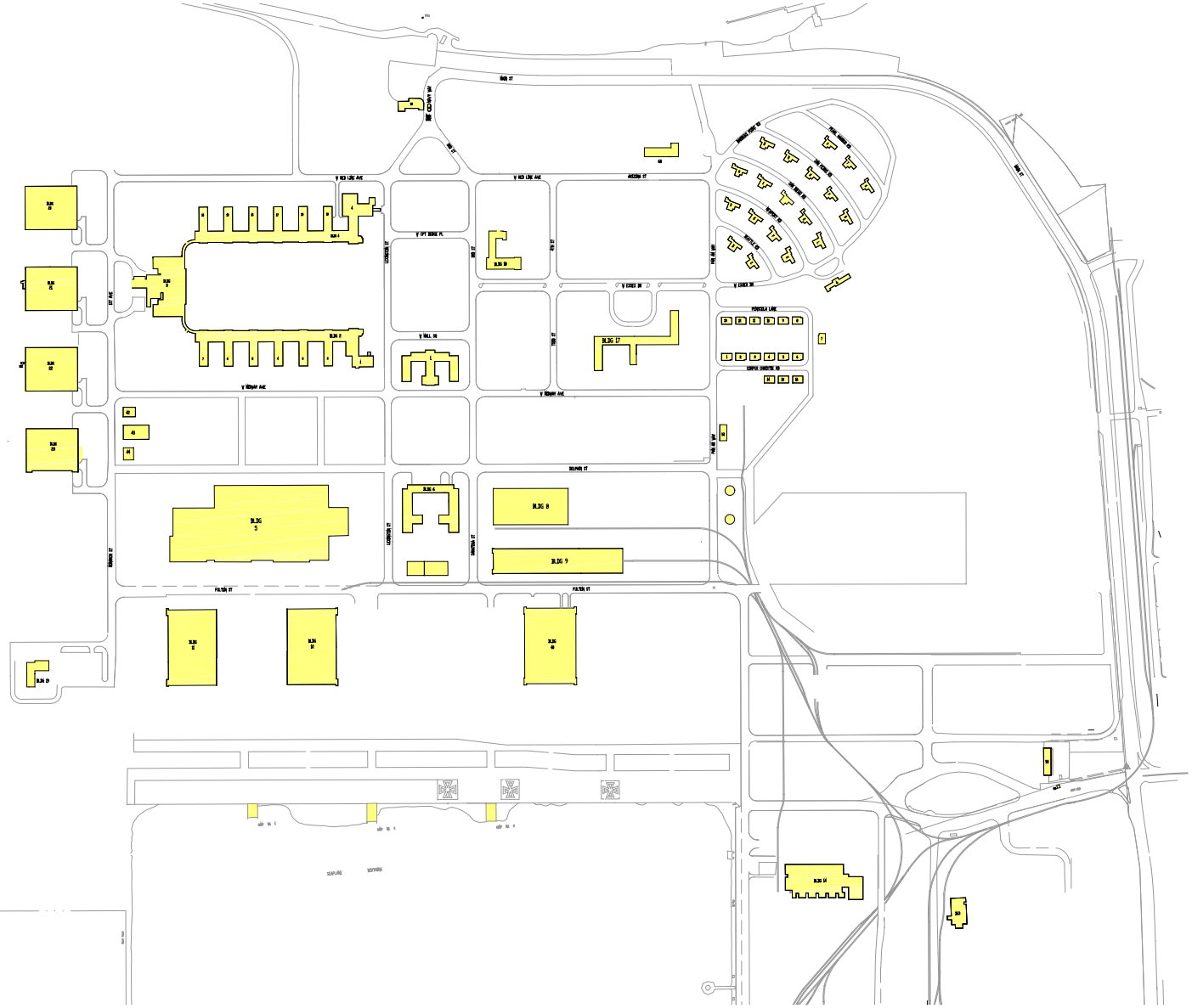

LEGEND

CONSTRUCTION FROM 1938 TO 1941

1941 PLAN
FORMER NAVAL AIR STATION, ALAMEDA, CALIFORNIA

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LEGEND

CONSTRUCTION FROM 1942 TO 1945

CONSTRUCTION FROM 1938 TO 1941

1945 PLAN
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1954 PLAN
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NOVEMBER 22, 2004

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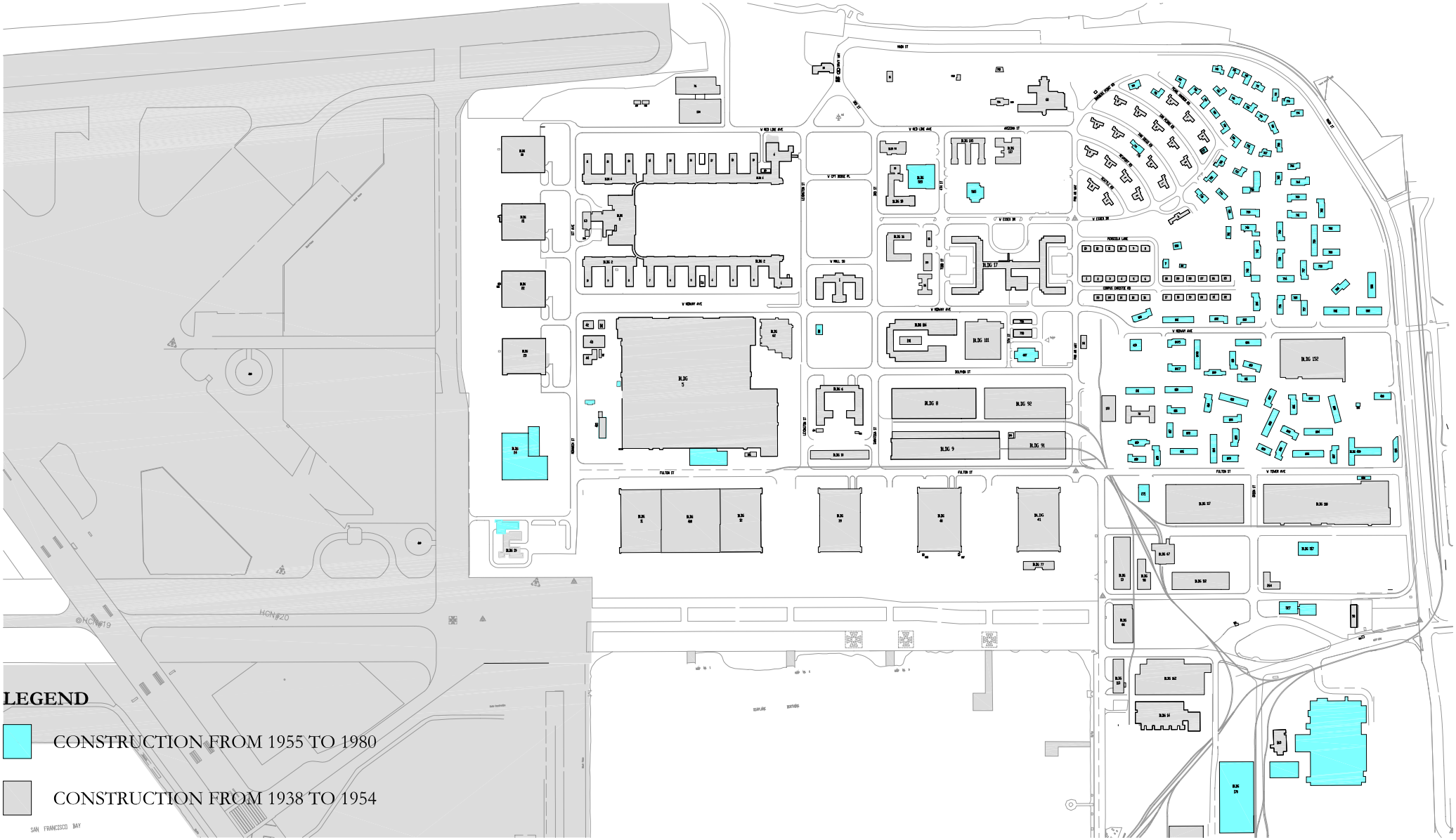

1980 PLAN
FORMER NAVAL AIR STATION, ALAMEDA, CALIFORNIA
NOVEMBER 22, 2004

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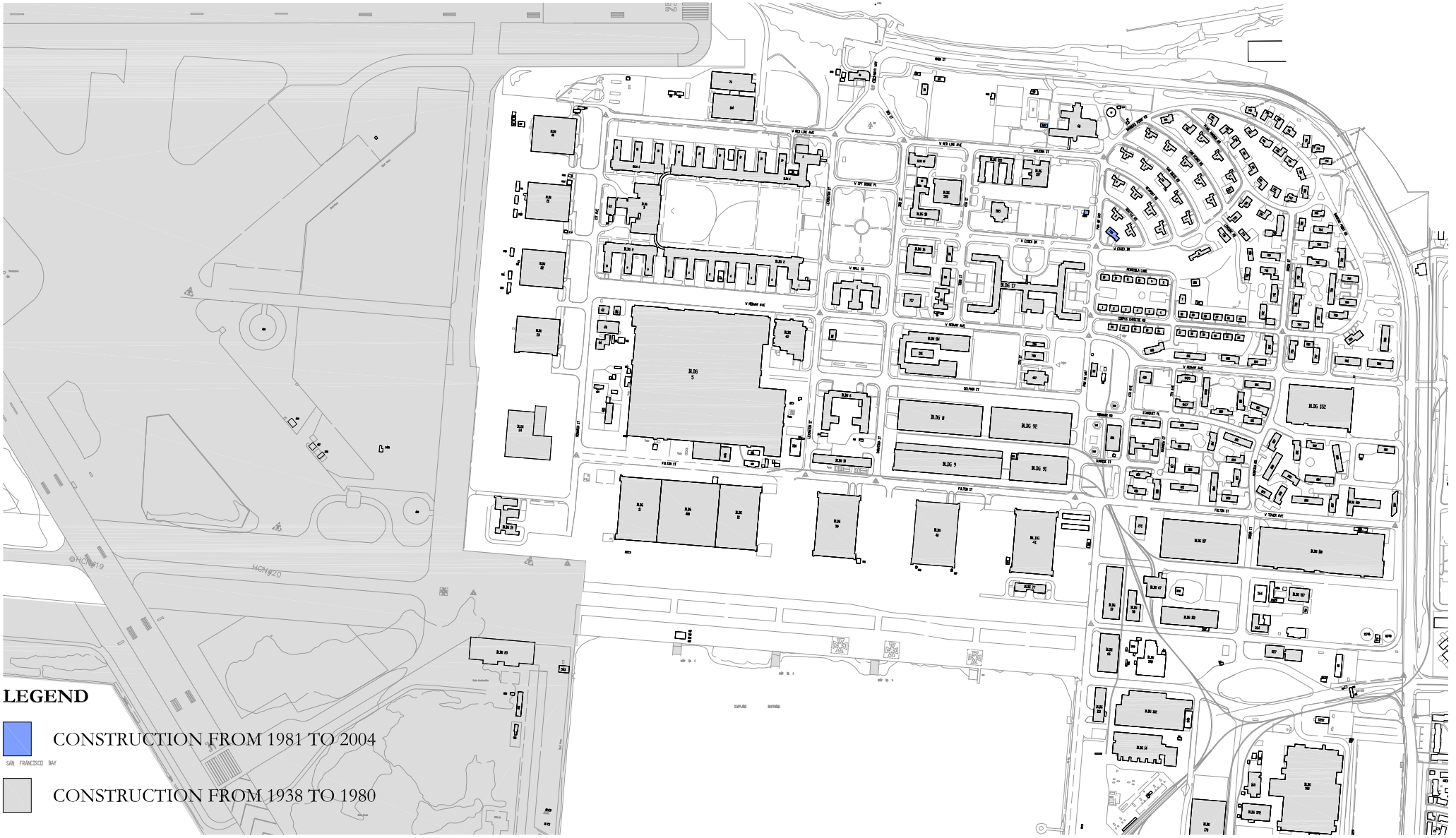

2004 PLAN
FORMER NAVAL AIR STATION, ALAMEDA, CALIFORNIA

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E. List of Contributing and Non-Contributing Buildings

	CONTRIBUTORS INSIDE HISTORIC DISTRICT		NON-CONTRIBUTORS INSIDE HISTORIC DISTRICT	
	Building 1	Officer's Housing 1	Building 5	Building 500
	Building 2	Officer's Housing 2	Building 10	Building 507
	Building 3	Officer's Housing 3	Building 11	Building 508
	Building 4	Officer's Housing 4	Building 12	Building 522
	Building 6	Officer's Housing 5	Building 62	Building 523
	Building 8	Officer's Housing 6	Building 73A	Building 525
	Building 9	Officer's Housing 7	Building 73B	Building 544
	Building 16	Officer's Housing 8	Building 75B	Building 553
	Building 17	Officer's Housing 9	Building 89	Building 554
	Building 18	Officer's Housing 10	Building 104	Building 585
	Building 20	Officer's Housing 11	Building 191	Building 605
	Building 21	Officer's Housing 12	Building 194	Building 607
	Building 22	Officer's Housing 13	Building 196	Building 614
	Building 23	Officer's Housing 14	Building 261	Building 615
	Building 30	Officer's Housing 15	Building 264	Building 707
	Building 31	Officer's Housing 16	Building 273	Building 717
	Building 39	Officer's Housing 17	Building 275	Building 730
	Building 40	Officer's Housing 18	Building 281	Building 731
	Building 41	Officer's Housing 19	Building 282	Building 775
	Building 42	Officer's Housing 20	Building 300	Building 776
	Building 43	Officer's Housing 21	Building 307	Building 777
	Building 44	Officer's Housing 22	Building 308	Ramp 1
	Building 60	Officer's Housing 23	Building 334	Ramp 2
	Building 63	Officer's Housing 24	Building 346	Ramp 3
	Building 75A	Officer's Housing 25	Building 347	
	Building 77	Officer's Housing 26	Building 348	
	Building 91	Officer's Housing 27	Building 378	
	Building 92	Officer's Housing 28	Building 382	
	Building 94	Officer's Housing 29	Building 400	
	Building 102	Officer's Housing 30	Building 405	
	Building 114	Officer's Housing A	Building 416	
	Building 115	Officer's Housing B		
	Building 116	Officer's Housing C		
	Building 130	Officer's Housing D		
	Building 135	Officer's Housing E		
	Building 137	Officer's Housing F		
	Building 193	Officer's Housing G		
		Officer's Housing H		
		Officer's Housing I		
		Officer's Housing K		
		Officer's Housing L		
		Officer's Housing M		
		Officer's Housing N		
		Officer's Housing O		
		Officer's Housing P		
		Officer's Housing Q		
		Officer's Housing S		
		Officer's Housing T		
		Officer's Housing U		
Total	**86**		**55**	

F. Property Database

Property Database
NAS Alameda
Historic District Assessment

Legend:
bold red= Contributors within Historic District Boundaries
bold black = Non-contributors within Historic District Boundaries
normal text = Non-Contributors outside of Historic District Boundaries

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Definitions:

Building, Structure or Object = denotes the number assigned by the U.S. Navy to a building, structure or object.

Historic Name = denotes the common name utilized by the U.S. Navy in identifying a building, structure or object.

Construction Date = denotes the initial date of construction along with any **major** additions.

Original Use = denotes the original usage of the building.

Current Use = denotes the current usage of the building.

Integrity = denotes the building, structure or object as either "High," "Moderate," or "Low." This system of classification is used by Sally Woodbridge in the initial assessment of Alameda Point. (See Sally Woodbridge, *Historic Architectural Inventory for Naval Air Station*, Alameda, 1992). The National Park Service describes integrity as the ability of a property to convey its significance, evidenced by the survival of physical characteristics that existed during the property's historic period.[1] Historic integrity consists of seven qualities: location, design, setting, materials, workmanship, feeling, and association. Not all seven need to be present, as long as the overall sense of past time and place is evident.

Significance = denotes the importance of a property to the history, architecture, archeology, engineering, or culture of a community, State, or the nation. It is achieved by one or more of the four *National Register* Criteria. Sally Woodbridge identified Criterion A (event) and Criterion C (Design/Construction) as applicable to the NAS Alameda Historic District. Woodbridge classified significance "High", "Moderate", or "Low" for individual buildings.

Contributing / Non-contributing = denotes whether the building contributes to the district's significance and shares historic associations with the district. Sally Woodbridge identified 85 contributing and 101 non-contributing structures.

Notes = denotes any additional information gathered and assessment on the property by Page & Turnbull.

[1] National Park Service, *National Register Bulletin No. 15: How to Apply the National Register Criteria for Evaluation,* (Washington, D.C.: rev. 1998) 44-45.

Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
1	Main Administration Building	1940	Administration	Alameda City Hall West	High	High	Contributing	Located on West Mall Sq. in historic district
2	Bachelor Enlisted Men's Quarters	1940	BEQ Dorm	Light Industrial	High	High	Contributing	Located on Lexington in historic district
3	General Service for the BEQ	1940	Dormitory	Vacant	High	High	Contributing	Located in historic district
4	Bachelor Enlisted Men's Quarters	1940	BEQ Dorm	Vacant	High	High	Contributing	Located on Lexington in historic district
5	Metal Treatment Facility	1940	Aircraft Repair	Various	Low	High	Non-Contributing	Located on West Midway Ave. in historic district
6	Fire Station	1940	Fire Station	Vacant	High	High	Contributing	Located on Ranger St. between Saratoga and Lexington in historic district
8	Multi-Purpose Administration Bldg	1940	Warehouse	Warehouse	High	Moderate	Contributing	Located on se corner of Ranger and Saratoga in historic district
9	Storage Building	1940	Warehouse	Warehouse	High	Moderate	Contributing	Located on ne corner of Tower and Saratoga in historic district
10	Engine Lab and Powerhouse	1942/1947	Engine Lab	Vacant	Low	Moderate	Non-Contributing	Located on Tower and Saratoga in historic district. P&T think integrity is higher.
11	Hangar	1941	Hangar	Unknown	Low	High	Non-Contributing	Located south of Tower in historic district
12	Hangar	1941	Hangar	Vacant	Low	High	Non-Contributing	Located south of Tower in historic district
13	Paint Storage	1942, 1950	Paint Storage	Hazardous Material/Waster Storage	Low	Low	Non-Contributing	Located east of Building 41 outside historic district
14	Engine Test Cell	1940	Engine Testing	Not in use	Low	Moderate	Non-Contributing	Located east of Seaplane Lagoon outside historic district
15	Boathouse	1940	Boathouse	Unknown	High	Moderate	Non-Contributing	Located on se corner of Seaplance Lagoon outside historic district
16	Medical Clinic	1942	Clinic	Vacant	Moderate	High	Contributing	Located on se corner of Saratoga and Essex in historic district
17	Bachelor Officers Quarters (BOQ)	1941	Dormitory	Vacant	High	High	Contributing	Located on Essex Dr. and Todd St. in historic district
18	Post Office and Recreation+R[15]C	1941/1945	Post	Office, Auction House and Theater	High	High	Contributing	Located on ne corner of Saratoga St. and Essex Drive in historic district
19	Flight Control Tower	1941	Control Tower	Office	Low	High	Non-Contributing	Located west of Taxiway outside historic district
20	Hangar	1941	Hangar	Commercial	High	High	Contributing	Located on Taxiway in historic district
21	Hangar	1941	Hangar	Commercial	High	High	Contributing	Located on Taxiway in historic district
22	Hangar	1941	Hangar	Commercial	High	High	Contributing	Located on Taxiway in historic district
23	Hangar	1941	Hangar	Commercial	High	High	Contributing	Located on Taxiway in historic district
24	Hangar	1980s?	Hangar	N/A	N/A	Low	Non-Contributing	Located west of Monarch St. outside historic district
25	Hangar	1980s?	Hangar	Auctions by the Bay	N/A	Low	Non-Contributing	Located on northwest corner of Seaplane Lagoon outside historic district
26	Storage Building	1980s?	Storage	Storage	N/A	Low	Non-Contributing	Located near Fire School outside historic district
27	Storage Building	1980s?	Storage	N/A	N/A	Low	Non-Contributing	Located near Fire School outside historic district

* = denotes information gained from Sally Woodbridge, *Historic Architectural Resources Inventory for the Naval Air Station, Alameda* (1992)

Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
28	Storage Building	1980s?	Storage	N/A	N/A	Low	Non-Contributing	Located near Fire School outside historic district
30	**Main Gatehouse**	**1941**	**Gatehouse**	**Vacant**	**High**	**High**	**Contributing**	**Located at Main Gate in historic district**
31	**Sentry House**	**1941**	**Sentry House**	**Vacant**	**High**	**High**	**Contributing**	**Located at Main Gate in historic district**
s34	**Storage Building**	**N/A**	**Storage**	**Vacant**	**N/A**	**Low**	**Non-Contributing**	**Located west of Lexington St. in historic district**
35	Maintenance Shop	1940	Maintenance	N/A	Low	Moderate	Non-Contributing	Located on Pan Am Wy outside historic district. P&T think integrity is higher.
39	**Hangar**	**1944**	**Hangar**	**Commercial**	**High**	**High**	**Contributing**	**Located on Taxiway in historic district**
40	**Hangar**	**1941**	**Hangar**	**Commercial**	**High**	**High**	**Contributing**	**Located on Taxiway in historic district**
41	**Hangar**	**1945**	**Hangar**	**Commercial**	**High**	**High**	**Contributing**	**Located on Taxiway in historic district**
42	**Fuel Chemical Lab and Office**	**1941**	**Fuel Chem. Lab**	**N/A**	**High**	**Moderate**	**Contributing**	**Located west of Building 5 in historic district**
43	**Weapons Building**	**1941**	**Weapons Bldg.**	**N/A**	**High**	**Moderate**	**Contributing**	**Located west of Building 5 in historic district**
44	**Building 44**	**1941**	**N/A**	**N/A**	**High**	**Moderate**	**Contributing**	**Located west of Building 5 in historic district**
60	**Officers Recreation Building**	**1941**	**O Club**	**Recreation**	**Moderate**	**High**	**Contributing**	**Located on Arizona St. near Pan Am Wy in historic district. P&T thinks integrity is lower.**
62	**Building 62**	**1942, 1983**	**Machine Shop**	**N/A**	**Low**	**Low**	**Non-Contributing**	**Located northeast of Building 5 in historic district**
63	**(General Services for the BEQ)**	**1942**	**Office Bldg.**	**Vacant**	**Moderate**	**Moderate**	**Contributing**	**Attached to Building 3 inside historic district**
64	SIMA Diving Locker	1941	Diving Locker	Port Services	High	Moderate	Non-Contributing	Located on se corner of Seaplane Lagoon outside historic district. P&T think significance is higer.
66	Engineering Accessory Test Shop	1942, 1960s	Shop	N/A	Low	Moderate	Non-Contributing	Located east of Taxiway outside historic district
67	Automotive Repair Shop	1942	Shop	N/A	Low	Low	Non-Contributing	Located east of Building 41 outside historic district
70A	East Gate Sentry House	1941	East Gate	Vacant	High	Moderate	Non-Contributing	Located on Atlantic Ave. outside historic district
73A	**BOQ Garage**	**1941**	**Garage**	**N/A**	**High**	**Low**	**Non-Contributing**	**Located on Ranger St. east of Building 114 in historic district**
73B	**BOQ Garage**	**1941**	**Garage**	**N/A**	**High**	**Low**	**Non-Contributing**	**Located on Ranger St. east of Building 114 in historic district**
75A	**Officers Bathhouse**	**1942**	**Bathhouse**	**Vacant**	**High**	**Moderate**	**Contributing**	**Located west of Building 60, Officer's Club in historic district. P&T think that integrity is lower.**
75B	**Building 75B**	**1980s?**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located east of Main Gate in historic district**
76	Pool (Indoor)	1942	Pool	Recreation	Low	Moderate	Non-Contributing	Located on W. Red Line Ave. outside historic district
77	**Air Terminal**	**1942**	**Air Terminal**	**Museum**	**Moderate**	**High**	**Contributing**	**Located south of Building 41 in historic district**
78	Multi-Use	1942	Barracks	Vacant	Moderate	Low	Non-Contributing	Located on Rainbow Ct. outside historic district
89	**Building 89**	**N/A**	**Garage**	**Vacant**	**Low**	**Low**	**Non-Contributing**	**Located north of Building 4 in historic district**

* = denotes information gained from Sally Woodbridge, *Historic Architectural Resources Inventory for the Naval Air Station, Alameda* (1992)

Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
90	Employment Office	1938	Office Bldg.	Office	Moderate	High	Non-Contributing	Located north of East Gate outside historic district
91	**Shipping Storehouse**	**1942**	**Warehouse**	**Commercial**	**Moderate**	**Moderate**	**Contributing**	**Located on Tower St. in historic district (semi-permanent building)**
92	**Packing/Shipping**	**1942**	**Warehouse**	**Commercial**	**High**	**Moderate**	**Contributing**	**Located on Ranger St. in historic district (semi-permanent building)**
94	**Chapel**	**1943**	**Chapel**	**N/A**	**High**	**High**	**Contributing**	**Located on Saratoga and Red Line Ave in historic district (semi-permanent building)**
95	Water Tank	N/A	N/A	N/A	Low	Low	Non-Contributing	Located north of Officers' Club outside historic district
98	Barrel Shed	1942	Shed	N/A	Low	Low	Non-Contributing	Located east of Taxiway outside historic district
101	**Training Building**	**1942**	**Training Building**	**Destroyed by fire**	**Low**	**Low**	**Non-Contributing**	**Formerly located on Ranger St. in historic district. Semi-permanent building destroyed by fire**
102	**Ordnance Building**	**1943**	**Ordance Storage**	**N/A**	**High**	**High**	**Contributing**	**Located northwest of Building 5 in historic district**
104	**Golf Course Clubhouse**	**1942**	**Clubhouse**	**N/A**	**High**	**Low**	**Non-Contributing**	**Located east of Main Gate in historic district**
109	Gas Truck Headstand	1943	Storage	N/A	High	Low	Non-Contributing	Located on Atlantic Ave. outside historic district
112	Packing/Storage	1944	Warehouse	N/A	Moderate	Low	Non-Contributing	Located east of Taxiway outside historic district
113	Shipping/Repair	1943	Warehouse	N/A	High	Low	Non-Contributing	Located on northeast corner of Seaplane Lagoon outside historic district
114	**Public Works/Maintenance**	**1944**	**Office Bldg.**	**Vacant**	**High**	**Low**	**Contributing**	**Located on Ranger St. in historic district (semi-permanent building)**
115	**Ambulance Garage**	**1943**	**Garage**	**Vacant**	**High**	**Low**	**Contributing**	**Located on Todd St.; to be demolished per MOA (semi-permanent building)**
116	**Rehabilitation Center**	**1943**	**Office Bldg.**	**Vacant**	**High**	**Low**	**Contributing**	**Located on Todd St.; to be demolished per MOA (semi-permanent building)**
117	Storehouse	1943	Warehouse	N/A	High	Low	Non-Contributing	Located sw corner of Tower and Orion Sts. Outside historic district. Damaged during Loma Prieta Earthquake.
118	Exchange and Storehouse	1944	Warehouse	N/A	Low	Low	Non-Contributing	Located on se corner of Tower and Main Sts. Outside historic district. Damaged by Loma Prieta Earthquake in 1989.
130	**Medical Lab**	**1944**	**Office Bldg.**	**Vacant**	**High**	**Low**	**Contributing**	**Located on Todd St.; to be demolished per MOA (semi-permanent building)**
134	Gymnasium	1945	Gymnasium	Recreation	Low	Moderate	Non-Contributing	Located north of Building 4 outside historic district
135	**Community Facilities**	**1944**	**Recreation**	**Vacant**	**High**	**Low**	**Contributing**	**Located on Arizona St.; to be demolished per MOA (semi-permanent building)**
137	**Recreation Storage Facility**	**1945**	**Storage**	**Vacant**	**High**	**Low**	**Contributing**	**Located on Arizona St.; to be demolished per MOA (semi-permanent building)**
152	Commissary Warehouse	1945	Storage	Vacant	Low	Low	Non-Contributing	Located on se corner of Midway and Norfolk outside historic district
153	Refrigerated Storage	1945	Storage	N/A	High	Low	Non-Contributing	Located east of Building 92 outside historic district
162	Engine Accessory Overhaul Fac.	1945	Shop	N/A	Low	Moderate	Non-Contributing	Located on east side of Seaplane Lagoon outside historic district
163	Equipment Maintenance	1939	Shop	N/A	Low	High	Non-Contributing	Located south of East Gate outside historic district. May date to 1893 as former Pacific Coast Borax building.
166	Aircraft Maintenance	1946	Shop	N/A	Low	Low	Non-Contributing	Located southeast of Seaplane Lagoon outside historic district

* = denotes information gained from Sally Woodbridge, *Historic Architectural Resources Inventory for the Naval Air Station, Alameda* (1992)

Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
167	Warehouse	1946	Warehouse	N/A	N/A	N/A	Non-Contributing	Located southeast of Seaplane Lagoon outside historic district
168	Warehouse	1946	Warehouse	Warehouse	N/A	N/A	Non-Contributing	Located southeast of Seaplane Lagoon outside historic district
169	Warehouse	1946	Warehouse	Warehouse	N/A	N/A	Non-Contributing	Located southeast of Seaplane Lagoon outside historic district
170	Warehouse	1957	Warehouse	Warehouse	N/A	N/A	Non-Contributing	Located southeast of Seaplane Lagoon outside historic district
171	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Demolished?
S176	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located north of Officers' Club in historic district
177	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located northeast of Officers' Club inside historic district
191	**N/A**	**Pre-1948**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located within courtyard of Building 114 in historic district**
193	**Commissary Office**	**1944**	**Office Bldg.**	**Vacant**	**Moderate**	**Moderate**	**Contributing**	**Addition to Building 63**
194	**N/A**	**Pre-1948**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located south of Building 6 inside historic district**
196	**Storage**	**N/A**	**Storage**	**Flammable Storage**	**N/A**	**Low**	**Non-Contributing**	**Constructed on north wall of Building 91 inside historic district**
258	Child Development Center	1985	N/A	Recreation	N/A	N/A	Non-Contributing	Located outside historic district
261	**Storage**	**Pre-1948**	**N/A**	**Flammable Storage**	**N/A**	**Low**	**Non-Contributing**	**South of Building 5 in historic distrrict**
264	Utility Building	1944	Storage	??	N/A	N/A	Non-Contributing	Located east of Building 112 outside historic district
265	N/A	Pre-1948	N/A	N/A	N/A	N/A	Non-Contributing	Located northeast of Building 114 outside historic district
266	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located west of Building 21 outside historic district
272	Storage	N/A	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located near parking apron outside historic district
273	**Storage**	**N/A**	**Storage**	**Flammable Storage**	**N/A**	**Low**	**Non-Contributing**	**Located west of Building 41 inside historic district**
275	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located east of Main Gate inside historic district**
277	Storage	Pre-1948	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located north of Building 4, outside historic district
278	Storage	Pre-1948	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located north of Building 4 outside historic district
281	**Storage**	**Pre-1948**	**Storage**	**Storage Shed**	**N/A**	**Low**	**Non-Contributing**	**Located west of Building 5 inside historic district**
282	**Storage**	**Pre-1948**	**Storage**	**Storage Shed**	**N/A**	**Low**	**Non-Contributing**	**Located south of Building 6 inside historic district**
283	Storage	Pre-1948	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located in P.W. Corp Yard outside district
284	Bus Shelter	N/A	Bus Shelter	Bus Shelter	N/A	N/A	Non-Contributing	Located east of Building 118 outside historic district
290	Storage Shed	Pre-1948	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located in P.W. Corp Yard outside district

* = denotes information gained from Sally Woodbridge, *Historic Architectural Resources Inventory for the Naval Air Station, Alameda* (1992)

Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
291	Storage Shed	Pre-1948	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located in P.W. Corp Yard outside district
292	Storage Shed	N/A	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located near Pier 3 outside historic district
296	Bus Shelter	N/A	Bus Shelter	Bus Shelter	N/A	N/A	Non-Contributing	Located outside historic district
300	**N/A**	**Pre-1948**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located southeast of Building 39 in historic district**
301	Storage	Pre-1948	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located in P.W. Corp Yard outside district
307	**Storage Shed**	**Pre-1948**	**Storage**	**Storage Shed**	**N/A**	**Low**	**Non-Contributing**	**Located southeast of Building 40 inside historic district**
308	**Storage Shed**	**Pre-1948**	**Storage**	**Storage Shed**	**N/A**	**Low**	**Non-Contributing**	**Located southwest of Building 40 inside historic district**
309	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located outside historic district
310	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
311	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
312	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
313	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
314	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
s315	Storage Shed	N/A	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located west of Building 21 outside historic district
316	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
317	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
s318	N/A	N/A	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located south of Building 167 outside historic district
319	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
320	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
321	Storage Shed	N/A	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located west of Building 21 outside historic district
322	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
329	N/A	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
334	**Storage Shed**	**N/A**	**Storage**	**Storage Shed**	**N/A**	**Low**	**Non-Contributing**	**Located southeast of Building 21 inside historic district**
339	Storage Shed	N/A	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located at northwest corner of NAS outside historic district
346	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located east of Building 44 in historic district**
347	**Storage Shed**	**N/A**	**Storage**	**Storage Shed**	**N/A**	**Low**	**Non-Contributing**	**Located west of Building 5 in historic district**

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Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
348	**Storage Shed**	**N/A**	**Storage**	**Storage Shed**	**N/A**	**Low**	**Non-Contributing**	**Located south of Building 5 in historic district**
355	Magazine	N/A	Magazine	Magazines	N/A	N/A	Non-Contributing	Located near fire school outside historic district
356	Magazine	N/A	Magazine	Magazines	N/A	N/A	Non-Contributing	Located near fire school outside historic district
357	Magazine	N/A	Magazine	Magazines	N/A	N/A	Non-Contributing	Located near fire school outside historic district
358	Magazine	N/A	Magazine	Magazines	N/A	N/A	Non-Contributing	Located near fire school outside historic district
359	Magazine	N/A	Magazine	Magazines	N/A	N/A	Non-Contributing	Located near fire school outside historic district
377A	Storage Shed	N/A	Storage	Storage Shed	N/A	N/A	Non-Contributing	Located north of Building 20 outside historic district
378	**Storage Shed**	**N/A**	**Storage**	**Storage Shed**	**N/A**	**Low**	**Non-Contributing**	**Located northeast of Building 21 in historic district**
382	**Playing Field Enclosure**	**Pre-1948**	**Storage**	**Tennis Courts**	**N/A**	**Low**	**Non-Contributing**	**Located east of Main Gate in historic district**
385	Boat House	1958	Boat House	Port Services	N/A	N/A	Non-Contributing	Located near Pier 3 outside historic district
400	**Hangar Addition**	**1952**	**Hangar**	**Hangar**	**N/A**	**Low**	**Non-Contributing**	**Located between Buildings 11 and 12 in historic district**
401	Bus Shelter	N/A	Bus Shelter	Bus Shelter	N/A	N/A	Non-Contributing	Located outside historic district
404	Skeet Range	N/A	Recreation	Skeet Range	N/A	N/A	Non-Contributing	Located outside historic district
405	**N/A**	**Ca. 1954**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located west of Building 5 inside historic district**
416	**N/A**	**N/A**	**Recreation**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located east of Main Gate inside historic district**
423	Storage Shed	N/A	N/A	Storage Shed	N/A	N/A	Non-Contributing	Located outside historic district
459	Auto Repair Facility and Gas Station	1962	Retail	Gas Station	N/A	N/A	Non-Contributing	Located north of Building 118 outside historic district
494	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located on west side of Seaplane Lagoon outside historic district
500	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located east of Building 5**
503/504	East Gate						Non-Contributing	Located outside historic district
507	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on north side of Seaplane Lagoon inside historic district**
508	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on north side of Seaplane Lagoon inside historic district**
516	Magazine	N/A	Magazine	Magazines	N/A	N/A	Non-Contributing	Located on west side of NAS on San Francisco Bay outside historic district
517	Mini Mart	1968	Storage	Retail	N/A	N/A	Non-Contributing	Located south of Building 118 outside historic district
522	**Civilian Employees Welfare & Rec.**	**1970s**	**Office**	**Administrative**	**N/A**	**Low**	**Non-Contributing**	**Located east of Building 62 inside historic district**
523	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on north side of Seaplane Lagoon inside historic district**

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Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
525	**Bowling Alley**	**1970**	**Bowling Alley**	**Auctions by the Bay**	**N/A**	**Low**	**Non-Contributing**	**Located east of Building 18 inside historic district**
526	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located west of Building 20 outside historic district
527	Alfa Credit Union	1970	Credit Union	N/A	N/A	N/A	Non-Contributing	Located east of Building 112 outside historic district
530	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	
531	Navy Exchange Navy Lodge	1971	Hotel	N/A	N/A	N/A	Non-Contributing	Located nw corner of Midway and Main St. outside historic district
532	Navy Exchange Navy Lodge	1971	Hotel	N/A	N/A	N/A	Non-Contributing	Located nw corner of Midway and Main St. outside historic district
533	Navy Exchange Navy Lodge	1971	Hotel	N/A	N/A	N/A	Non-Contributing	Located nw corner of Midway and Main St. outside historic district
537	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located west of Building 20 outside historic district
538	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located west of Building 22 outside historic district
539	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located west of Building 22 outside historic district
541	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located west of Building 22 outside historic district
542	Restaurant, Laundramat, Rec Ctr.	1975	Restaurant	Restaurant	N/A	N/A	Non-Contributing	Located in southeastern corner of NAS outside historic district
543	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located on west side of Seaplane Lagoon outside historic district
549	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located west of Building 20 outside historic district
553	**Storage Shed**	**N/A**	**Storage**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located nw corner of Pan Am Way and Essex St. inside historic district**
554	**Storage Shed**	**N/A**	**Storage**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located east of Building 21 inside historic district**
562	Storage Shed	N/A	Storage	N/A	N/A	N/A	Non-Contributing	Located west of Building 30 outside historic district
585	**Top Four Club**	**1976**	**Club**	**Social Services**	**N/A**	**Low**	**Non-Contributing**	**Located on ne side of Essex Dr. and Todd St. inside historic district**
595	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located on west side of Seaplane Lagoon outside historic district
605	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on north side of Seaplane Lagoon inside historic district**
607	**Craft Hobby Shop**	**1980**	**Shop**	**Social Services**	**N/A**	**Low**	**Non-Contributing**	**Located on north side of Ranger St. inside historic district**
608	Auto Hobby Shop	1979	Shop	N/A	N/A	N/A	Non-Contributing	Located near southeastern corner of NAS outside historic district
612	Navy Public Works Center	1980s	Shop	N/A	N/A	N/A	Non-Contributing	Located near southeastern corner of NAS outside historic district
613	Family Services Center	1983	Office	N/A	N/A	N/A	Non-Contributing	Located on se corner of Midway and 6th St. outside historic district
614	N/A	N/A	N/A	N/A	N/A	N/A	Non-Contributing	Located west of Building 5 outside historic district
615	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located south of Building 5 inside historic district**

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Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
621	Mare Island Naval Shipyard Repair Stn.	1986	N/A	N/A	N/A	N/A	Non-Contributing	Located outside historic district
707	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on nw corner of Midway and Todd St. inside historic district**
717	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on ne corner of Saratoga and Midway inside historic district**
730	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on Pearl Harbor Rd. inside historic district**
731	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on Pearl Harbor Rd. inside historic district**
775	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on corner of Pan Am Wy and Essex Dr. inside historic district**
776	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on San Diego Rd. inside historic district**
777	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**Low**	**Non-Contributing**	**Located on Essex Dr. inside historic district**
Ramp 1	**Seaplane Ramp**	**1940**	**Seaplane Ramp**	**Abandoned**	**Low**	**High**	**Non-Contributing**	**Located on north side of Seaplane Lagoon inside historic district**
Ramp 2	**Seaplane Ramp**	**1940**	**Seaplane Ramp**	**Abandoned**	**Low**	**High**	**Non-Contributing**	**Located on north side of Seaplane Lagoon inside historic district**
Ramp 3	**Seaplane Ramp**	**1940**	**Seaplane Ramp**	**Abandoned**	**Low**	**High**	**Non-Contributing**	**Located on north side of Seaplane Lagoon inside historic district**
Wharf 1	Wharf	1940	Wharf	Same	N/A	N/A	Non-Contributing	Located outside historic district
Wharf 2	Wharf	1940	Wharf	Same	N/A	N/A	Non-Contributing	Located outside historic district
Dock 5	Marina	1953	Marina	Same	N/A	N/A	Non-Contributing	Located in southeastern corner of NAS outside historic district
Pier 1	Pier 1	1940	Pier	Same	N/A	High	Non-Contributing	Located in southeastern corner of NAS outside historic district
Pier 2	Pier 2	1940	Pier	Same	N/A	High	Non-Contributing	Located in southeastern corner of NAS outside historic district
Pier 3	Pier 3	1940	Pier	Same	N/A	High	Non-Contributing	Located in southeastern corner of NAS outside historic district
USS Hornet	Aircraft Carrier	1943	Carrier	Same, Museum	High	High	Non-Contributing	Located in southeastern corner of NAS outside historic district
ecreation Vehicle Pa	Recreational Vehicle Park	1992	RV Park	Vacant	N/A	N/A	Non-Contributing	Located in southeastern corner of NAS outside historic district
Officer's Housing 1			**Officer Housing**	**Housing for homeless**	**High**	**Moderate**	**Contributing**	**Located in eastern part of historic district**
Officer's Housing 2	**271 Corpus Christi Road**	**1941**	**Officer Housing**	**Housing for homeless**	**High**	**Moderate**	**Contributing**	**Located in eastern part of historic district**
Officer's Housing 3	**301 Corpus Christi Road**	**1941**	**Officer Housing**	**Housing for homeless**	**High**	**Moderate**	**Contributing**	**Located in eastern part of historic district**
Officer's Housing 4	**331 Corpus Christi Road**	**1941**	**Officer Housing**	**Housing for homeless**	**High**	**Moderate**	**Contributing**	**Located in eastern part of historic district**
Officer's Housing 5	**351 Corpus Christi Road**	**1941**	**Officer Housing**	**Housing for homeless**	**High**	**Moderate**	**Contributing**	**Located in eastern part of historic district**
Officer's Housing 6	**371 Corpus Christi Road**	**1941**	**Officer Housing**	**Housing for homeless**	**High**	**Moderate**	**Contributing**	**Located in eastern part of historic district**
Officer's Housing 7			**Officer Housing**	**Housing for homeless**	**High**	**Moderate**	**Contributing**	**Located in eastern part of historic district**

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Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
Officer's Housing 8	450 Penscacola Lane	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 9	470 Penscacola Lane	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 10	500 Penscacola Lane	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 11	530 Penscacola Lane	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 12	550 Penscacola Lane	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 13	570 Penscacola Lane	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 14	300 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 15	330 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 16	350 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 17	370 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 18	450 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 19	470 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 20	500 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 21	530 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 22	550 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 23	250 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 24	270 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 25	571 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 26	551 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 27	531 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 28	501 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 29	471 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing 30	451 Corpus Christi Road	1941	Officer Housing	Housing for homeless	High	Moderate	Contributing	Located in eastern part of historic district
Officer's Housing A	570 West Essex Drive	1940	Admiral's House	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing B	2805 Seattle Road	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing C	2765 Seattle Road	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district

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Building, Structure or Object	Historic Name	Construction Date	Original Use	Current Use	Integrity*	Significance*	Contributing/Non-Contributing*	Notes and P&T view
Officer's Housing D	2825 Newport Road	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing E	2815 Newport Road	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing F	2801 Newport Road	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing G	2765 Newport Road	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing H	2865 San Diego Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing I	2835 San Diego Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing K	2805 San Diego Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing L	2775 San Diego Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing M	2875 San Pedro Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing N	2845 San Pedro Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing O	2835 San Pedro Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing P	2815 San Pedro Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing Q	2795 San Pedro Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing S	2845 Pearl Harbor Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing T	2825 Pearl Harbor Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district
Officer's Housing U	2805 Pearl Harbor Rd	1940	Officer Housing	Rental housing	High	Moderate	Contributing	Located in northeastern part of historic district

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G. Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings

introduction

Using the Standards and Guidelines for a Preservation, Rehabilitation, Restoration, or Reconstruction Project

-INTRODUCTION-

Choosing Treatment

Using the Standards Guidelines

-Historical Overview

Exterior Materials
Masonry
Wood
Architectural Metals

Exterior Features
Roofs
Windows
Entrances + Porches
Storefronts

Interior Features
Structural System
Spaces/Features/Finish
Mechanical Systems

Site

Setting

Special Requirement
Energy Efficiency
Accessibility
Health + Safety
New Additions

Background. In the Code of Federal Regulations, Title 36, *Parks, Forests, and Public Property*, Chapter I, ("National Park Service, Department of the Interior"), Parts 1 to 99, Revised as of July 1, 1998, p. 329, it states: PART 68--The Secretary of the Interior's Standards for the Treatment of Historic Properties. AUTHORITY: National Historic Preservation Act of 1966, as amended, (16 U.S.C. 470 *et seq.*); Section 2124 of the Tax Reform Act of 1976, 90 Stat. 1918; EO 11593, 3 CFR Part 75 (1971); sec. 2 of Reorganization Plan No. 3 of 1950 (64 Stat. 1262). Federal Register Source: Volume 60, page 35843, July 12, 1995.

History. *The Secretary of the Interior's Standards for the Treatment of Historic Properties* are the Secretary's best advice to everyone on how to protect a wide range of historic properties. By separate regulation, the Secretary has required the application of the Standards in certain programs that the Secretary administers through the National Park Service.They apply to all proposed development grant-in-aid projects assisted through the national Historic Preservation Fund, and are intended to be applied to a wide variety of resource types, including buildings, sites, structures, objects, and districts.

The Standards, revised in 1992, were codified as 36 CFR Part 68 in the July 12, 1995 Federal Register (Vol. 60, No. 133). The revision replaces the 1978 and 1983 versions of 36 CFR 68 entitled *The Secretary of the Interior's Standards for Historic Preservation Projects.* It is noted that another regulation, 36 CFR 67, focuses on "certified historic structures" as defined by the IRS Code of 1986. *The Standards for Rehabilitation* in 36 CFR 67 should always be used when property owners are seeking certification for Federal tax benefits.

How to Use the Standards and Guidelines. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings* are intended to provide guidance to historic building owners and building managers, preservation consultants, architects, contractors, and project reviewers prior to treatment. As noted, while the treatment Standards are designed to be applied to all historic resource types included in the National Register of Historic Places--buildings, sites, structures, districts, and objects--the Guidelines apply to specific resource types; in this case, buildings.

The Guidelines have been prepared to assist in applying the Standards to all project work; consequently, they are not meant to give case-specific advice or address exceptions or rare instances. Therefore, it is recommended that the advice of qualified historic preservation professionals be obtained early in the planning stage of the project. Such professionals may include architects, architectural historians, historians, historical engineers, archeologists, and others who have experience in working with historic buildings.

The Guidelines pertain to both exterior and interior work on historic buildings of all sizes, materials, and types. Those approaches to work treatments and techniques that are consistent with *The Secretary of the Interior's Standards for the Treatment of Historic Properties* are listed in the "Recommended" column on the left; those which are inconsistent with the Standards are listed in the "Not Recommended" column on the right.

One section of this web site is devoted to each of the four treatments: **Preservation**, **Rehabilitation**, **Restoration**, and **Reconstruction.**

Each section contains one set of Standards and accompanying Guidelines that are to be used throughout the course of a project. The Standards for the first treatment, *Preservation,* require retention of the greatest amount of historic fabric, along with the building's historic form, features, and detailing as they have evolved over time. The *Rehabilitation* Standards acknowledge the need to alter or add to a historic building to meet continuing or new uses while retaining the building's historic character. The *Restoration*

Standards allow for the depiction of a building at a particular time in its history by preserving materials from the period of significance and removing materials from other periods. The *Reconstruction* Standards establish a limited framework for re-creating a vanished or non-surviving building with new materials, primarily for interpretive purposes.

The Guidelines are preceded by a brief historical overview of the primary historic building materials (masonry, wood, and architectural metals) and their diverse uses over time. Next, building features comprised of these materials are discussed, beginning with the exterior, then moving to the interior. Special requirements or work that must be done to meet accessibility requirements, health and safety code requirements, or retrofitting to improve energy efficiency are also addressed here. Although usually not part of the overall process of protecting historic buildings, this work must also be assessed for its potential impact on a historic building.

GUIDELINES

historical overview - **PRESERVING** - **REHABILITATING** - **RESTORING** - **RECONSTRUCTING** main - credits -

preserving

NATIONAL PARK SERV

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an 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.

1 STANDARDS

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standards for preservation

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THE STANDARDS

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

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

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

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

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

6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.

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

Guidelines for Preservation-->

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THE STANDARDS

When the property's distinctive materials, features, and spaces are essentially intact and thus convey the historic significance without extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations, Preservation may be considered as a treatment. Prior to undertaking work, a documentation plan for Preservation should be developed.

Choosing Preservation as a Treatment

In Preservation, the options for replacement are less extensive than in the treatment, Rehabilitation. This is because it is assumed at the outset that building materials and character-defining features are essentially intact, i.e, that more historic fabric has survived, unchanged over time. The expressed goal of the **Standards for Preservation and Guidelines for Preserving Historic Buildings** is retention of the building's existing form, features and detailing. This may be as simple as basic maintenance of existing materials and features or may involve preparing a historic structure report, undertaking laboratory testing such as paint and mortar analysis, and hiring conservators to perform sensitive work such as reconstituting interior finishes. Protection, maintenance, and repair are emphasized while replacement is minimized.

top

Identify, Retain, and Preserve Historic Materials and Features

The guidance for the treatment **Preservation** begins with recommendations to identify the form and detailing of those architectural materials and features that are important in defining the building's historic character and which must be retained in order to preserve that character. Therefore, guidance on ***identifying, retaining, and preserving*** character-defining features is always given first. The character of a historic building may be defined by the form and detailing of exterior materials, such as masonry, wood, and metal; exterior features, such as roofs, porches, and windows; interior materials, such as plaster and paint; and interior features, such as moldings and stairways, room configuration and spatial relationships, as well as structural and mechanical systems; and the building's site and setting.

top

Stabilize Deteriorated Historic Materials and Features as a Preliminary Measure

Deteriorated portions of a historic building may need to be protected thorough preliminary stabilization measures until additional work can be undertaken. ***Stabilizing*** may include structural reinforcement, weatherization, or correcting unsafe conditions. Temporary stabilization should always be carried out in such a manner that it detracts as little as possible from the historic building's appearance. Although it may not be necessary in every preservation project, stabilization is nonetheless an integral part of the treatment Preservation; it is equally applicable, if circumstances warrant, for the other treatments.

top

Protect and Maintain Historic Materials and Features

Preservation of the exterior of the Hale House, Los Angeles, California, involved repainting the exterior walls and decorative features in historically appropriate colors. In excellent example of the Preservation treatment focused upon the ongoing maintenance of historic materials and features. Photo: Before, NPS files; After: Bruce Boehner.

After identifying those materials and features that are important and must be retained in the process of **Preservation** work, then ***protecting and maintaining*** them are addressed. Protection generally involves the least degree of intervention and is preparatory to other work. For example, protection includes the maintenance of historic materials through treatments such as rust removal, caulking, limited paint removal, and re-application of protective coatings; the cyclical cleaning of roof gutter systems; or installation of fencing, 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.

top

Repair (Stabilize, Consolidate, and Conserve) Historic Materials and Features

Next, when the physical condition of character-defining materials and features requires additional work, ***repairing*** by ***stabilizing, consolidating, and conserving*** is recommended. **Preservation** strives to retain existing materials and features while employing as little new material as possible. Consequently, guidance for repairing a historic material, such as masonry, again begins with the least degree of intervention possible such as strengthening fragile materials through consolidation, when appropriate, and repointing with mortar of an appropriate strength. Repairing masonry as well as wood and architectural metal features may also include patching, splicing, or otherwise reinforcing them using recognized preservation methods. Similarly, within the treatment **Preservation**, portions of a historic structural system could be reinforced using contemporary materials such as steel rods. All work should be physically and visually compatible, identifiable upon close inspection and documented for future research.

top

Limited Replacement In Kind of Extensively Deteriorated Portions of Historic Features

If repair by stabilization, consolidation, and conservation proves inadequate, the next level of intervention involves the ***limited replacement in kind*** of extensively deteriorated or missing

parts of features when there are surviving prototypes (for example, brackets, dentils, steps, plaster, or portions of slate or tile roofing). The replacement material needs to match the old both physically and visually, i.e., wood with wood, etc. Thus, with the exception of hidden structural reinforcement and new mechanical system components, substitute materials are not appropriate in the treatment **Preservation**. Again, it is important that all new material be identified and properly documented for future research. If prominent features are missing, such as an interior staircase, exterior cornice, or a roof dormer, then a Rehabilitation or Restoration treatment may be more appropriate.

top

Energy Efficiency/Accessibility Considerations/Health and Safety Code Considerations

These sections of the **Preservation** guidance address work done to meet accessibility requirements and health and safety code requirements; or limited retrofitting measures to improve energy efficiency. Although this work is quite often an important aspect of preservation projects, it is usually not part of the overall process of protecting, stabilizing, conserving, or repairing character-defining features; rather, such work is assessed for its potential negative impact on the building's historic character. For this reason, particular care must be taken not to obscure, damage, or destroy character-defining materials or features in the process of undertaking work to meet code and energy requirements.

HISTORICAL OVERVIEW - **preserving** - REHABILITATING - RESTORING - RECONSTRUCTING main - credits -

NATIONAL PARK SERV

rehabilitating

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, cultural, or architectural values.

1 STANDARDS

2 GUIDELINES

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Special Requirement
Energy Efficiency
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Accessibility
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THE STANDARDS

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.

3. Each property will 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 will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a 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 will 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. Archeological 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 shall 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 a such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Guidelines for Rehabilitation-->

HISTORICAL OVERVIEW - PRESERVING - rehabilitating - RESTORING - RECONSTRUCTING main - credits -

REHABILITATION the approach

When repair and replacement of deteriorated features are necessary; when alterations or additions to the property are planned for a new or continued use; and when its depiction at a particular period of time is not appropriate, Rehabilitation may be considered as a treatment. Prior to undertaking work, a documentation plan for Rehabilitation should be developed.

Choosing Rehabilitation as a Treatment

In **Rehabilitation**, historic building materials and character-defining features are protected and maintained as they are in the treatment Preservation; however, an assumption is made prior to work that existing historic fabric has become damaged or deteriorated over time and, as a result, more repair and replacement will be required. Thus, latitude is given in the **Standards for Rehabilitation and Guidelines for Rehabilitation** to replace extensively deteriorated, damaged, or missing features using either traditional or substitute materials. Of the four treatments, only Rehabilitation includes an opportunity to make possible an efficient contemporary use through alterations and additions.

top

Identify, Retain, and Preserve Historic Materials and Features

Like Preservation, guidance for the treatment **Rehabilitation** begins with recommendations to identify the form and detailing of those architectural materials and features that are important in defining the building's historic character and which must be retained in order to preserve that character. Therefore, guidance on ***identifying, retaining, and preserving*** character-defining features is always given first. The character of a historic building may be defined by the form and detailing of exterior materials, such as masonry, wood, and metal; exterior features, such as roofs, porches, and windows; interior materials, such as plaster and paint; and interior features, such as moldings and stairways, room configuration and spatial relationships, as well as structural and mechanical systems.

top

Protect and Maintain Historic Materials and Features

After identifying those materials and features that are important and must be retained in the process of **Rehabilitation** work, then ***protecting and maintaining*** them are addressed. Protection generally involves the least degree of intervention and is preparatory to other work. For example, protection includes the maintenance of historic material through treatments such as rust removal, caulking, limited paint removal, and re-application of protective coatings; the cyclical cleaning of roof gutter systems; or installation of fencing, 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.

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Repair Historic Materials and Features

Next, when the physical condition of character-defining materials and features warrants additional work ***repairing*** is recommended. **Rehabilitation** guidance for the repair of historic materials such as masonry, wood, and architectural metals again begins with the least degree of intervention possible such as patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading them according to recognized preservation methods. Repairing 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, dentils, steps, plaster, or portions of slate or 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 substitute material itself convey the visual appearance of the remaining parts of the feature and finish.

This two-story brick commercial building--with its corner storefront--was originally constructed ca. 1876, then remodeled in 1916 in the Craftsman style and given a new, distinctive roofline. It served a number of uses, including a hotel, boarding house, saloon, restaurant, liquor store, warehouse, and office furniture showroom. The red brick walls had been painted several times over the years. Rehabilitation work included removal of multiple paint layers using a chemical stripper and thorough water rinse; spot repointing with matching mortar; and appropriate interior alterations. The building is now being used as a retail shop. Photos: NPS files.

top

Replace Deteriorated Historic Materials and Features

Following repair in the hierarchy, **Rehabilitation** guidance is provided for ***replacing*** an entire character-defining feature with new material because the level of deterioration or damage of materials precludes repair (for example, an exterior cornice; an interior staircase; or a complete porch or storefront). If the essential form and detailing are still evident so that the physical evidence can be used to re-establish the feature as an integral part of the rehabilitation, then its replacement is appropriate. Like the guidance for repair, the preferred option is always replacement of the entire feature in kind, that is, with the same material. Because this approach may not always be 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 that is extensively deteriorated, they never recommend removal and replacement with new material of a feature that--although damaged or deteriorated--could reasonably be repaired and thus preserved.

top

Design for the Replacement of Missing Historic Features

When an entire interior or exterior feature is missing (for example, an entrance, or cast iron facade; or a principal staircase), 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 the historical appearance. Although accepting the loss is one possibility, where an important architectural feature is missing, its replacement is always recommended in the **Rehabilitation** guidelines as the first or preferred, course of action. Thus, if 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 building's historical appearance, then designing and constructing a new feature based on such information is appropriate. However, a second acceptable option for the replacement feature is a new design that is compatible with the remaining character-defining features of the historic building. The new design should always take into account the size, scale, and material of the historic building itself and, most importantly, should be clearly differentiated so that a false historical appearance is not created.

top

Alterations/Additions for the New Use

Some exterior and interior alterations to a historic building are generally needed to assure 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 secondary elevations; inserting an additional floor; installing an entirely new mechanical system; or creating an atrium or light well. Alteration may also include the selective removal of buildings or other features of the environment or building site that are intrusive and therefore 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 it is emphasized in the **Rehabilitation** guidelines 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, i.e., non character-defining interior spaces. If, after a thorough evaluation of interior solutions, an exterior addition is still judged to be the only viable alterative, 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 and alterations to historic buildings are referenced within specific sections of the Rehabilitation guidelines such as Site, Roofs, Structural Systems, etc., but are addressed in detail in New Additions to Historic Buildings (see nav bar, right).

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Energy Efficiency/Accessibility Considerations/Health and Safety Code Considerations

These sections of the guidance address work done to meet accessibility requirements and health and safety code requirements; or retrofitting measures to improve energy efficiency. Although this work is quite often an important aspect of **Rehabilitation** projects, it is usually not a part of the overall process of protecting or repairing character-defining features; rather, such work is assessed for its potential negative impact on the building's historic character. For this reason, particular care must be taken not to radically change, obscure, damage, or destroy character-defining materials or features in the process of meeting code and energy requirements.

HISTORICAL OVERVIEW - PRESERVING - **rehabilitating** - RESTORING - RECONSTRUCTING main - credi

restoring

NATIONAL PARK SERV

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 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.

1 STANDARDS

2 GUIDELINES

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standards for restoration

-GUIDELINES-

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Setting

Special Requirement
Energy Efficiency
Accessibility
Health + Safety

THE STANDARDS

1. A property will be used as it was historically or be given a new use which reflects the property's restoration period.

2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.

3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.

6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.

7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.

8. 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.

9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

10. Designs that were never executed historically will not be constructed.

Guidelines for Restoration-->

RESTORATION the approach

When the property's design, architectural, or historical significance during a particular period of time outweighs the potential loss of extant materials, features, spaces, and finishes that characterize other historical periods; when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned, Restoration may be considered as a treatment. Prior to undertaking work, a particular period of time, i.e., the restoration period, should be selected and justified, and a documentation plan for Restoration developed.

Choosing Restoration as a Treatment

Rather than maintaining and preserving a building as it has evolved over time, the expressed goal of the **Standards for Restoration and Guidelines for Restoring Historic Buildings** is to make the building appear as it did at a particular--and most significant--time in its history. First, those materials and features from the "restoration period" are identified, based on thorough historical research. Next, features from the restoration period are maintained, protected, repaired (i.e., stabilized, consolidated, and conserved), and replaced, if necessary. As opposed to other treatments, the scope of work in **Restoration** can include removal of features from other periods; missing features from the restoration period may be replaced, based on documentary and physical evidence, using traditional materials or compatible substitute materials. The final guidance emphasizes that only those designs that can be documented as having been built should be re-created in a restoration project.

top

Identify, Retain, and Preserve Materials and Features from the Restoration Period

The guidance for the treatment Restoration begins with recommendations to identify the form and detailing of those existing architectural materials and features that are significant to the restoration period as established by historical research and documentation. Thus, guidance on ***identifying, retaining, and preserving features from the restoration period*** is always given first. The historic building's appearance may be defined by the form and detailing of its exterior materials, such as masonry, wood, and metal; exterior features, such as roofs, porches, and windows; interior materials, such as plaster and paint; and interior features, such as moldings and stairways, room configuration and spatial relationships, as well as structural and mechanical systems; and the building's site and setting.

top

Protect and Maintain Materials and Features from the Restoration Period

After identifying those existing materials and features from the restoration period that must be retained in the process of **Restoration** work, then ***protecting and maintaining*** them is addressed. Protection generally involves the least degree of intervention and is preparatory to other work. For example, protection includes the maintenance of historic material through treatments such as rust removal, caulking, limited paint removal, and re-application of protective coatings; the cyclical cleaning of roof gutter systems; or installation of fencing, alarm systems and other temporary protective measures. Although a historic building will

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THE STANDARDS

usually require more extensive work, an overall evaluation of its physical condition should always begin at this level.

top

Repair (Stabilize, Consolidate, and Conserve) Materials and Features from the Restoration Period

Next, when the physical condition of restoration period features requires additional work, ***repairing*** by ***stabilizing, consolidating, and conserving*** is recommended. **Restoration** guidance focuses upon the preservation of those materials and features that are significant to the period. Consequently, guidance for repairing a historic material, such as masonry, again begins with the least degree of intervention possible, such as strengthening fragile materials through consolidation, when appropriate, and repointing with mortar of an appropriate strength. Repairing masonry as well as wood and architectural metals includes patching, splicing, or otherwise reinforcing them using recognized preservation methods. Similarly, portions of a historic structural system could be reinforced using contemporary material such as steel rods. In **Restoration**, repair may also include the limited replacement in kind--or with compatible substitute material--of extensively deteriorated or missing parts of existing features when there are surviving prototypes to use as a model. Examples could include terra-cotta brackets, wood balusters, or cast iron fencing.

top

Replace Extensively Deteriorated Features from the Restoration Period

In **Restoration**, ***replacing*** an entire feature from the restoration period (i.e., a cornice, balustrade, column, or stairway) that is too deteriorated to repair may be appropriate. Together with documentary evidence, the form and detailing of the historic feature should be used as a model for the replacement. Using the same kind of material is preferred; however, compatible substitute material may be considered. All new work should be unobtrusively dated to guide future research and treatment. If documentary and physical evidence are not available to provide an accurate re-creation of missing features, the treatment Rehabilitation might be a better overall approach to project work.

In a project at Fort Hays, Kansas, the wood frame officers' quarters were restored to the late 1860s--their period of significance. This included replacing a missing kitchen ell, chimneys, porch columns, and cornice, as well as closing a later window opening in the main block. The building and others in the museum complex is used to interpret frontier history. Photo: NPS files.

top

Remove Existing Features from Other Historic Periods

Most buildings represent continuing occupancies and change over time, but in **Restoration**, the goal is to depict the building as it appeared at the most significant time in its history. Thus, work is included to remove or alter existing historic features that do not represent the restoration period. This could include features such as windows, entrances and doors, roof dormers, or landscape features. Prior to altering or removing materials, features, spaces, and finishes that characterize other historical periods, they should be documented to guide future research and treatment.

top

Re-Create Missing Features from the Restoration Period

Most **Restoration** projects involve re-creating features that were significant to the building at a particular time, but are now missing. Examples could include a stone balustrade, a porch, or cast iron storefront. Each missing feature should be substantiated by documentary and physical evidence. Without sufficient documentation for these "re-creations," an accurate depiction cannot be achieved. Combining features that never existed together historically can also create a false sense of history. Using traditional materials to depict lost features is always the preferred approach; however, using compatible substitute material is an acceptable alternative in **Restoration** because, as emphasized, the goal of this treatment is to replicate the "appearance" of the historic building at a particular time, not to retain and preserve all historic materials as they have evolved over time. If documentary and physical evidence are not available to provide an accurate re-creation of missing features, the treatment Rehabilitation might be a better overall approach to project work.

top

Energy Efficiency/Accessibility Considerations/Health and Safety Code Considerations

These sections of the **Restoration** guidance address work done to meet accessibility requirements and health and safety code requirements; or limited retrofitting measures to improve energy efficiency. Although this work is quite often an important aspect of restoration projects, it is usually not part of the overall process of protecting, stabilizing, conserving, or repairing features from the restoration period; rather, such work is assessed for its potential negative impact on the building's historic appearance. For this reason, particular care must be taken not to obscure, damage, or destroy historic materials or features from the restoration period in the process of undertaking work to meet code and energy requirements.

HISTORICAL OVERVIEW - PRESERVING - REHABILITATING - **restoring**- RECONSTRUCTING main - credits -

NATIONAL PARK SERV

reconstructing

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

1 STANDARDS

2 GUIDELINES

HISTORICAL OVERVIEW - PRESERVING - REHABILITATING - RESTORING - **reconstructing** main - credits -

standards for reconstruction

-GUIDELINES-

The Approach

Research + Documentation

Building Exterior

Building Interior

Site

Setting

Special Requirement
Energy Efficiency
Accessibility
Health + Safety

THE STANDARDS

1. Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.

2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts which are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken.

3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.

4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color, and texture.

5. A reconstruction will be clearly identified as a contemporary re-creation.

6. Designs that were never executed historically will not be constructed.

Guidelines for Reconstruction-->

HISTORICAL OVERVIEW - PRESERVING - REHABILITATING - RESTORING- reconstructing main - credits -

RECONSTRUCTION
the approach

-GUIDELINES-

The Approach

Research + Documentation

Building Exterior

Building Interior

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Special Requirement
Energy Efficiency
Accessibility
Health + Safety

THE STANDARDS

When a contemporary depiction is required to understand and interpret a property's historic value (including the re-creation of missing components in a historic district or site); when no other property with the same associative value has survived; and when sufficient historical documentation exists to ensure an accurate reproduction, Reconstruction may be considered as a treatment. Prior to undertaking work, a documentation plan for Reconstruction should be developed.

Choosing Reconstruction as a Treatment

Whereas the treatment Restoration provides guidance on restoring--or re-creating--building features, the **Standards for Reconstruction and Guidelines for Reconstructing Historic Buildings** address those aspects of treatment necessary to re-create an entire non-surviving building with new material. Much like restoration, the goal is to make the building appear as it did at a particular--and most significant--time in its history. The difference is, in **Reconstruction**, there is far less extant historic material prior to treatment and, in some cases, nothing visible. Because of the potential for historical error in the absence of sound physical evidence, this treatment can be justified only rarely and, thus, is the least frequently undertaken. Documentation requirements prior to and following work are very stringent. Measures should be taken to preserve extant historic surface and subsurface material. Finally, the reconstructed building must be clearly identified as a contemporary re-creation.

In the 1930s reconstruction of the 18th century Governor's Palace at Colonial Williamsburg, Virginia, the earliest archeological remains of the brick foundation were carefully preserved in situ, and serve as a base for the reconstructed walls. Photo: The Colonial Williamsburg Foundation.

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Research and Document Historical Significance

Guidance for the treatment Reconstruction begins with ***researching and documenting*** the building's historical significance to ascertain that its re-creation is essential to the public understanding of the property. Often, another extant historic building on the site or in a setting can adequately explain the property, together with other interpretive aids. Justifying a reconstruction requires detailed physical and documentary evidence to minimize or eliminate conjecture and ensure that the reconstruction is as accurate as possible. Only one period of significance is generally identified; a building, as it evolved, is rarely re-created. During this important fact-finding stage, if research does not provide adequate documentation for an accurate reconstruction, other interpretive methods should be considered, such as an explanatory marker.

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Investigate Archeological Resources

Investigating archeological resources is the next area of guidance in the treatment **Reconstruction**. The goal of physical research is to identify features of the building and site which are essential to an accurate re-creation and must be reconstructed, while leaving those archeological resources that are not essential, undisturbed. Information that is not relevant to the project should be preserved in place for future research. The archeological findings, together with archival documentation, are then used to replicate the plan of the building, together with the relationship and size of rooms, corridors, and other spaces, and spatial relationships.

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Identify, Protect and Preserve Extant Historic Features

Closely aligned with archeological research, recommendations are given for ***identifying, protecting, and preserving*** extant features of the historic building. It is never appropriate to base a **Reconstruction** upon conjectural designs or the availability of different features from other buildings. Thus, any remaining historic materials and features, such as remnants of a foundation or chimney and site features such as a walkway or path, should be retained, when practicable, and incorporated into the reconstruction. The historic as well as new material should be carefully documented to guide future research and treatment.

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Reconstruct Non-Surviving Building and Site

After the research and documentation phases, guidance is given for Reconstruction work itself. Exterior and interior features are addressed in general, always emphasizing the need for an *accurate depiction*, i.e., careful duplication of the appearance of historic interior paints, and finishes such as stencilling, marbling, and graining. In the absence of extant historic materials, the objective in reconstruction is to re-create the appearance of the historic building for interpretive purposes. Thus, while the use of traditional materials and finishes is always preferred, in some instances, substitute materials may be used if they are able to convey the same visual appearance. Where non-visible features of the building are concerned--such as interior structural systems or mechanical systems--it is expected that contemporary materials and technology will be employed. Re-creating the building site should be an integral aspect of project work. The initial archeological inventory of subsurface and aboveground remains is used as documentation to reconstruct landscape features such as walks and roads, fences, benches, and fountains.

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Energy Efficiency/Accessibility/Health and Safety Code Considerations

Code requirements must also be met in **Reconstruction** projects. For code purposes, a reconstructed building may be considered as essentially new construction. Guidance for

these sections is thus abbreviated, and focuses on achieving design solutions that do not destroy extant historic features and materials or obscure reconstructed features.

HISTORICAL OVERVIEW - PRESERVING - REHABILITATING - RESTORING- **reconstructing** main - credits -

H. National Park Service, Preservation Brief #31: Mothballing Historic Buildings

31 Preservation Briefs
Technical Preservation Services
HPS
National Park Service

Mothballing Historic Buildings

Sharon C. Park, AIA

»Documentation
»Stabilization
»Mothballing
»Mothballing Checklist
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»Conclusion

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

When all means of finding a productive use for a historic building have been exhausted or when funds are not currently available to put a deteriorating structure into a useable condition, it may be necessary to close up the building temporarily to protect it from the weather as well as to secure it from vandalism. This process, known as mothballing, can be a necessary and effective means of protecting the building while planning the property's future, or raising money for a preservation, rehabilitation or restoration project. If a vacant property has been declared unsafe by building officials, stabilization and mothballing may be the only way to protect it from demolition.

This building has been successfully mothballed for 10 years because the roof and walls were repaired and structurally stabilized, ventilation louvers added, and the property maintained. Photo: NPS files.

This Preservation Brief focuses on the steps needed to "de-activate" a property for an extended period of time. The project team will usually consist of an architect, historian, preservation specialist, sometimes a structural engineer, and a contractor. Mothballing should not be done without careful planning to ensure that needed physical repairs are made prior to securing the building. The steps discussed in this Brief can protect buildings for periods of up to ten years; long-term success will also depend on continued, although somewhat limited, monitoring and maintenance. For all but the simplest projects, hiring a team of preservation specialists is recommended to assess the specific needs of the structure and to develop an effective mothballing program.

A vacant historic building cannot survive indefinitely in a boarded-up condition, and so even marginal interim uses where there is regular activity and monitoring, such as a caretaker residence or non-flammable storage, are generally preferable to mothballing. In a few limited cases when the vacant building is in good condition and in a location where it can be watched and checked regularly, closing and locking the door, setting

heat levels at just above freezing, and securing the windows may provide sufficient protection for a period of a few years.

But if long-term mothballing is the only remaining option, it must be done properly. This will require stabilization of the exterior, properly designed security protection, generally some form of interior ventilation--either through mechanical or natural air exchange systems--and continued maintenance and surveillance monitoring.

Boarding up without adequate ventilation and maintenance has accelerated deterioration of this property. Photo: NPS files.

Comprehensive mothballing programs are generally expensive and may cost 10% or more of a modest rehabilitation budget. However, the money spent on well-planned protective measures will seem small when amortized over the life of the resource. Regardless of the location and condition of the property or the funding available, the following 9 steps are involved in properly mothballing a building:

Documentation

1. Document the architectural and historical significance of the building.
2. Prepare a condition assessment of the building.

Stabilization

3. Structurally stabilize the building, based on a professional condition assessment.
4. Exterminate or control pests, including termites and rodents.
5. Protect the exterior from moisture penetration.

Mothballing

6. Secure the building and its component features to reduce vandalism or break-ins. 7. Provide adequate ventilation to the interior.
8. Secure or modify utilities and mechanical systems.
9. Develop and implement a maintenance and monitoring plan for protection.

These steps will be discussed in sequence below. Documentation and stabilization are critical components of the process and should not be skipped over. Mothballing measures should not result in permanent damage, and so each treatment should be weighed in terms of its reversibility and its overall benefit.

Documentation

Documenting the historical significance and physical condition of the property will provide information necessary for setting priorities and allocating funds. The project team should be cautious when first entering the structure if it has been vacant or is deteriorated. It may be advisable to shore temporarily areas appearing to be structurally unsound until the condition of the structure can be fully assessed. If pigeon or bat droppings, friable asbestos or other health hazards are present, precautions must be taken to wear the appropriate safety equipment when first inspecting the building. Consideration should be given to hiring a firm specializing in hazardous waste removal if these highly toxic elements are found in the building.

Documenting and recording the building

Documenting a building's history is important because evidence of its true age and architectural significance may not be readily evident. The owner should check with the State Historic Preservation Office or local preservation commission for assistance in researching the building. If the building has never been researched for listing in the National Register of Historic Places or other historic registers, then, at a minimum, the following should be determined:

The overall historical significance of the property and dates of construction;

The chronology of alterations or additions and their approximate dates; and,

Types of building materials, construction techniques, and any unusual detailing or regional variations of craftsmanship.

Old photographs can be helpful in identifying early or original features that might be hidden under modern materials. On a walk-through, the architect, historian, or preservation specialist should identify the architecturally significant elements of the building, both inside and out.

Documenting a building's history and assessing its condition provide information to set priorities for stabilization and repair, prior to mothballing. Photo: NPS files.

By understanding the history of the resource, significant elements, even though deteriorated, may be spared the trash pile. For that reason alone, any materials removed from the building or site as part of the stabilization effort should be carefully scrutinized and, if appearing historic, should be photographed, tagged with a number, inventoried, and safely stored, preferably in the building, for later retrieval.

A site plan and schematic building floor plans can be used to note important information for use when the building is eventually preserved, restored, or rehabilitated. Each room should be given a number and notations added to the plans regarding the removal of important features to storage or recording physical treatments undertaken as part of the stabilization or repair.

Because a mothballing project may extend over a long period of time, with many different people involved, clear records should be kept and a building file established. Copies of all important data, plans, photographs, and lists of consultants or contractors who have worked on the property should be added to the file as the job progresses. Recording actions taken on the building and identifying where elements that have been removed are stored will be helpful in the future.

The project coordinator should keep the building file updated and give duplicate copies to the owner. A list of emergency numbers, including the number of the key holder, should be kept at the entrance to the building or on a security gate, in a transparent vinyl sleeve.

Preparing a condition assessment of the building

A condition assessment can provide the owner with an accurate overview of the current condition of the property. If the building is deteriorated or if there are significant interior architectural elements that will need special protection during the mothballing years, undertaking a condition assessment is highly recommended, but it need not be exhaustive.

A modified condition assessment, prepared by an architect or preservation specialist, and in some case a structural engineer, will help set priorities for repairs necessary to stabilize the property for both the short and long-term. It will evaluate the age and condition of the following major elements: foundations; structural systems; exterior materials; roofs and gutters; exterior porches and steps; interior finishes; staircases; plumbing, electrical, mechanical systems; special features such as chimneys; and site drainage.

To record existing conditions of the building and site, it will be necessary to clean debris from the building and to remove unwanted or overgrown vegetation to expose foundations. The interior should be emptied of its furnishing (unless provisions are made for mothballing these as well), all debris removed, and the interior swept with a broom. Building materials too deteriorated to repair, or which have come detached, such as moldings, balusters, and decorative plaster, and which can be used to guide later preservation work, should be tagged, labeled and saved.

Buildings seriously damaged by storms or deterioration may need to be braced before architectural evaluations can be made. Photo: John Milner Architects. Photo: NPS files

Photographs or a videotape of the exterior and all interior spaces of the resource will provide an invaluable record of "as is" conditions. If a videotape is made, oral commentary can be provided on the significance of each space and architectural feature. If 35mm photographic prints or slides are made, they should be numbered, dated, and appropriately identified. Photographs should be cross-referenced with the room numbers on the schematic plans. A systematic method for photographing should be developed; for example, photograph each wall in a room and then take a corner shot to get floor and ceiling portions in the picture. Photograph any unusual details as well as examples of each window and door type.

Loose or detached elements should be identified, tagged and stored, preferably on site. Photo: NPS files

For historic buildings, the great advantage of a condition assessment is that architectural features, both on the exterior as well as the interior, can be rated on a scale of their importance to the integrity and significance of the building. Those features of the highest priority should receive preference when repairs or protection measures are outlined as part of the mothballing process. Potential problems with protecting these features should be identified so that appropriate interim solutions can be selected. For example, if a building has always been heated and if murals, decorative plaster walls, or examples of patterned wall paper are identified as highly significant, then special care should be taken to regulate the interior climate and to monitor it adequately during the mothballing years. This might require retaining electrical service to provide minimal heat in winter, fan exhaust in summer, and humidity controls for the interior.

Stabilization

Stabilization as part of a mothballing project involves correcting deficiencies to slow down the deterioration of the building while it is vacant. Weakened structural members that might fail altogether in the forthcoming years must be braced or reinforced; insects and other pests removed and discouraged from returning; and the building protected

from moisture damage both by weatherizing the exterior envelope and by handling water run-off on the site. Even if a modified use or caretaker services can eventually be found for the building, the following steps should be addressed.

Structurally stabilizing the building

While bracing may have been required to make the building temporarily safe for inspection, the condition assessment may reveal areas of hidden structural damage. Roofs, foundations, walls, interior framing, porches and dormers all have structural components that may need added reinforcement.

Interior bracing which will last the duration of the mothballing will protect weakened structural members. Photo: John Milner Architects.

Structural stabilization by a qualified contractor should be done under the direction of a structural engineer or a preservation specialist to ensure that the added weight of the reinforcement can be sustained by the building and that the new members do not harm historic finishes. Any major vertical post added during the stabilization should be properly supported and, if necessary, taken to the ground and underpinned.

If the building is in a northern climate, then the roof framing must be able to hold substantial snow loads. Bracing the roof at the ridge and mid-points should be considered if sagging is apparent. Likewise, interior framing around stair openings or under long ceiling spans should be investigated. Underpinning or bracing structural piers weakened by poor drainage patterns may be a good precaution as well. Damage caused by insects, moisture, or from other causes should be repaired or reinforced and, if possible, the source of the damage removed. If features such as porches and dormers are so severely deteriorated that they must be removed, they should be documented, photographed, and portions salvaged for storage prior to removal.

If the building is in a southern or humid climate and termites or other insects are a particular problem, the foundation and floor framing should be inspected to ensure that there are no major structural weaknesses. This can usually be done by observation from the crawl space or basement. For those structures where this is not possible, it may be advisable to lift selective floor boards to expose the floor framing. If there is evidence of pest damage, particularly termites, active colonies should be treated and the structural members reinforced or replaced, if necessary.

Controlling pests

Pests can be numerous and include squirrels, raccoons, bats, mice, rats, snakes, termites, moths, beetles, ants, bees and wasps, pigeons, and other birds. Termites, beetles, and carpenter ants destroy wood. Mice, too, gnaw wood as well as plaster, insulation, and electrical wires. Pigeon and bat droppings not only damage wood finishes but create a serious and sometimes deadly health hazard.

If the property is infested with animals or insects, it is important to get them out and to seal off their access to the building. If necessary, exterminate and remove any nests or hatching colonies. Chimney flues may be closed off with exterior grade plywood caps, properly ventilated, or protected with framed wire screens. Existing vents, grills, and louvers in attics and crawl spaces should be screened with bug mesh or heavy duty wire, depending on the type of pest being controlled. It may be advantageous to have damp or infected wood treated with insecticides (as permitted by each state) or preservatives, such as borate, to slow the rate of deterioration during the time that the building is not in use.

Securing the exterior envelope from

moisture penetration

Regrading has protected this masonry foundation wall from excessive damp during its 10-year mothballing. Note the attic and basement vents, temporary stairs, and interpretive sign. Photo: NPS files.

It is important to protect the exterior envelope from moisture penetration before securing the building. Leaks from deteriorated or damaged roofing, from around windows and doors, or through deteriorated materials, as well as ground moisture from improper site run-off or rising damp at foundations, can cause long-term damage to interior finishes and structural systems. Any serious deficiencies on the exterior, identified in the condition assessment, should be addressed.

To the greatest extent possible, these weatherization efforts should not harm historic materials. The project budget may not allow deteriorated features to be fully repaired or replaced in-kind. Non-historic or modern materials may be used to cover historic surfaces temporarily, but these treatments should not destroy valuable evidence necessary for future preservation work. Temporary modifications should be as visually compatible as possible with the historic building.

Roofs are often the most vulnerable elements on the building exterior and yet in some ways they are the easiest element to stabilize for the long term, if done correctly. "Quick fix" solutions, such as tar patches on slate roofs, should be avoided as they will generally fail within a year or so and may accelerate damage by trapping moisture. They are difficult to undo later when more permanent repairs are undertaken. Use of a tarpaulin over a leaking roof should be thought of only as a very temporary emergency repair because it is often blown off by the wind in a subsequent storm.

If the existing historic roof needs moderate repairs to make it last an additional ten years, then these repairs should be undertaken as a first priority. Replacing cracked or missing shingles and tiles, securing loose flashing, and reanchoring gutters and downspouts can often be done by a local roofing contractor. If the roof is in poor condition, but the historic materials and configuration are important, a new temporary roof, such as a lightweight aluminum channel system over the existing, might be considered. If the roofing is so deteriorated that it must be replaced and a lightweight aluminum system is not affordable, various inexpensive options might be considered. These include covering the existing deteriorated roof with galvanized corrugated metal roofing panels, or 90 lb. rolled roofing, or a rubberized membrane (refer back to cover photo). These alternatives should leave as much of the historic sheathing and roofing in place as evidence for later preservation treatments.

Urban buildings often need additional protection from unwanted entry and graffiti. This commercial building uses painted plywood panels to cover its glass storefronts. The upper windows on the street sides have been painted to resemble 19th century sash.

For masonry repairs, appropriate preservation approaches are essential. For example, if repointing deteriorated brick chimneys or walls is necessary to prevent serious moisture penetration while the building is mothballed, the mortar should match the historic mortar in composition, color, and tooling. The use of hard portland cement mortars or vapor-impermeable waterproof coatings are not appropriate solutions as they can cause extensive damage and are not reversible treatments.

For wood siding that is deteriorated, repairs necessary to keep out moisture should be made; repainting is generally warranted.

Photo: NPS files.

Cracks around windows and doors can be beneficial in providing ventilation to the interior and so should only be caulked if needed to keep out bugs and moisture. For very deteriorated wall surfaces on wooden frame structures, it may be necessary to sheathe in plywood panels, but care should be taken to minimize installation damage by planning the location of the nailing or screw patterns or by installing panels over a frame of battens. Generally, however, it is better to repair deteriorated features than to cover them over.

Foundation damage may occur if water does not drain away from the building. Run-off from gutters and downspouts should be directed far away from the foundation wall by using long flexible extender pipes equal in length to twice the depth of the basement or crawl space. If underground drains are susceptible to clogging, it is recommended that the downspouts be disconnected from the drain boot and attached to flexible piping. If gutters and downspouts are in bad condition, replace them with inexpensive aluminum units.

If there are no significant landscape or exposed archeological elements around the foundation, consideration should be given to regrading the site if there is a documented drainage problem. If building up the grade, use a fiber mesh membrane to separate the new soil from the old and slope the new soil 6 to 8 feet (200 cm-266 cm) away from the foundation making sure not to cover up the dampcourse layer or come into contact with skirting boards. To keep vegetation under control, put down a layer of 6 mil black polyethylene sheeting or fiber mesh matting covered with a 2"-4" (5-10 cm.) of washed gravel. If the building suffers a serious rising damp problem, it may be advisable to eliminate the plastic sheeting to avoid trapping ground moisture against foundations.

Mothballing

The actual mothballing effort involves controlling the long-term deterioration of the building while it is unoccupied as well as finding methods to protect it from sudden loss by fire or vandalism. This requires securing the building from unwanted entry, providing adequate ventilation to the interior, and shutting down or modifying existing utilities. Once the building is de-activated or secured, the long-term success will depend on periodic maintenance and surveillance monitoring.

Securing the building from vandals, break-ins, and natural disasters

Securing the building from sudden loss is a critical aspect of mothballing. Because historic buildings are irreplaceable, it is vital that vulnerable entry points are sealed. If the building is located where fire and security service is available then it is highly recommended that some form of monitoring or alarm devices be used.

To protect decorative features, such as mantels, lighting fixtures, copper downspouts, iron roof cresting, or stained glass windows from theft or vandalism, it may be advisable to temporarily remove them to a more secure location if they cannot be adequately protected within the structure.

Mothballed buildings are usually boarded up, particularly on the first floor and basement, to protect fragile glass windows from breaking and to reinforce entry points. Infill materials for closing door and window openings include plywood, corrugated panels, metal grates, chain

fencing, metal grills, and cinder or cement blocks. The method of installation should not result in the destruction of the opening and all associated sash, doors, and frames should be protected or stored for future reuse.

The first floor openings of this historic building have been filled with cinder blocks and the doors, window sash, and frames removed for safe keeping. The security metal door features heavy duty locks. Photo: NPS files.

Generally exterior doors are reinforced and provided with strong locks, but if weak historic doors would be damaged or disfigured by adding reinforcement or new locks, they may be removed temporarily and replaced with secure modern doors. Alternatively, security gates in an new metal frame can be installed within existing door openings, much like a storm door, leaving the historic door in place. If plywood panels are installed over door openings, they should be screwed in place, as opposed to nailed, to avoid crowbar damage each time the panel is removed. This also reduces pounding vibrations from hammers and eliminates new nail holes each time the panel is replaced.

For windows, the most common security feature is the closure of the openings; this may be achieved with wooden or pre-formed panels or, as needed, with metal sheets or concrete blocks. Plywood panels, properly installed to protect wooden frames and properly ventilated, are the preferred treatment from a preservation standpoint.

This painted trompe l'eoil scene on plywood panels is a neighborhood-friendly device. Photo: NPS files.

There are a number of ways to set insert plywood panels into windows openings to avoid damage to frame and sash. One common method is to bring the upper and lower sash of a double hung unit to the mid-point of the opening and then to install pre-cut plywood panels using long carriage bolts anchored into horizontal wooden bracing, or strong backs, on the inside face of the window. Another means is to build new wooden blocking frames set into deeply recessed openings, for example in an industrial mill or warehouse, and then to affix the plywood panel to the blocking frame. If sash must be removed prior to installing panels, they should be labeled and stored safely within the building.

Plywood panels are usually 1/2"-3/4" (1.25-1.875 cm.) thick and made of exterior grade stock, such as CDX, or marine grade plywood. They should be painted to protect them from delamination and to provide a neater appearance.

These panels may be painted to resemble operable windows or treated decoratively. With extra attention to detail, the plywood panels can be trimmed out with muntin strips to give a shadow line simulating multi-lite windows. This level of detail is a good indication that the building is protected and valued by the community.

If the building has shutters simply close the shutters and secure them from the interior. If the building had shutters historically, but they are missing, it may be appropriate to install new shutters, even in a modern material, and secure them in the closed position. Louvered shutters will help with interior ventilation if the sash are propped open behind the shutters.

There is some benefit from keeping windows unboarded if security is not a problem. The building will appear to be occupied, and the natural air leakage around the windows will assist in ventilating the interior. The presence of natural light will also help when periodic inspections are made. Rigid polycarbonate clear storm glazing panels may be

placed on the window exterior to protect against glass breakage. Because the sun's ultraviolet rays can cause fading of floor finishes and wall surfaces, filtering pull shades or inexpensive curtains may be options for reducing this type of deterioration for significant interiors. Some acrylic sheeting comes with built-in ultraviolet filters.

A view showing the exterior of the Brearley House, New Jersey, in its mothballed condition Photo: Michael Mills, Ford Farewell Mills Gatsch, Architects.

Securing the building from catastrophic destruction from fire, lightning, or arson will require additional security devices. Lightning rods properly grounded should be a first consideration if the building is in an area susceptible to lightning storms. A high security fence should also be installed if the property cannot be monitored closely. These interventions do not require a power source for operation. Since many buildings will not maintain electrical power, there are some devices available using battery packs, such as intrusion alarms, security lighting, and smoke detectors which through audible horn alarms can alert nearby neighbors. These battery packs must be replaced every 3 months to 2 years, depending on type and use. In combination with a cellular phone, they can also provide some level of direct communication with police and fire departments.

If at all possible, new temporary electric service should be provided to the building. Generally a telephone line is needed as well. A hard wired security system for intrusion and a combination rate-of-rise and smoke detector can send an immediate signal for help directly to the fire department and security service. Depending on whether or not heat will be maintained in the building, the security system should be designed accordingly. Some systems cannot work below 32°F (0°C). Exterior lighting set on a timer, photo electric sensor, or a motion/infra-red detection device provides additional security.

Providing adequate ventilation to the interior

Once the exterior has been made weathertight and secure, it is essential to provide adequate air exchange throughout the building. Without adequate air exchange, humidity may rise to unsafe levels, and mold, rot, and insect infestation are likely to thrive. The needs of each historic resource must be individually evaluated because there are so many variables that affect the performance of each interior space once the building has been secured.

A mechanical engineer or a specialist in interior climates should be consulted, particularly for buildings with intact and significant interiors. In some circumstances, providing heat during the winter, even at a minimal 45° F (7°C), and utilizing forced-fan ventilation in summer will be recommended and will require retaining electrical service. For masonry buildings it is often helpful to keep the interior temperature above the spring dew point to avoid damaging condensation. In most buildings it is the need for summer ventilation that outweighs the winter requirements.

This exhaust fan has tamper-proof housing. Photo: Michael Mills, Ford Farewell Mills Gatsch, Architects.

Many old buildings are inherently leaky due to loose-fitting windows and floorboards and the lack of insulation. The level of air exchange needed for each building, however, will vary according to geographic location, the building's construction, and its general size and configuration.

There are four critical climate zones when looking at the type and amount of interior ventilation needed for a closed up building: hot and dry (southwestern states); cold and damp (Pacific northwest and northeastern states); temperate and humid (Mid-Atlantic states, coastal areas); and hot and humid (southern states and the tropics).

Once closed up, a building interior will still be affected by the temperature and humidity of the exterior. Without proper ventilation, moisture from condensation may occur and cause damage by wetting plaster, peeling paint, staining woodwork, warping floors, and in some cases even causing freeze thaw damage to plaster. If moist conditions persist in a property, structural damage can result from rot or returning insects attracted to moist conditions. Poorly mothballed masonry buildings, particularly in damp and humid zones have been so damaged on the interior with just one year of unventilated closure that none of the interior finishes were salvageable when the buildings were rehabilitated.

Portable monitors are used to record temperature and humidity conditions in historic buildings during mothballing. Photo: NPS files.

The absolute minimum air exchange for most mothballed buildings consists of one to four air exchanges every hour; one or two air exchanges per hour in winter and twice that amount in summer. Even this minimal exchange may foster mold and mildew in damp climates, and so monitoring the property during the stabilization period and after the building has been secured will provide useful information on the effectiveness of the ventilation solution.

There is no exact science for how much ventilation should be provided for each building. There are, however, some general rules of thumb. Buildings, such as adobe structures, located in hot and arid climates may need no additional ventilation if they have been well weatherized and no moisture is penetrating the interior. Also frame buildings with natural cracks and fissures for air infiltration may have a natural air exchange rate of 3 or 4 per hour, and so in arid as well as temperate climates may need no additional ventilation once secured. The most difficult buildings to adequately ventilate without resorting to extensive louvering and/or mechanical exhaust fan systems are masonry buildings in humid climates. Even with basement and attic vent grills, a masonry building many not have more than one air exchange an hour. This is generally unacceptable for summer conditions. For these buildings, almost every window opening will need to be fitted out with some type of passive, louvered ventilation.

Depending on the size, plan configuration, and ceiling heights of a building, it is often necessary to have louvered opening equivalent to 5%-10% of the square footage of each floor. For example, in a hot humid climate, a typical 20'x30' (6.1m x 9.1m) brick residence with 600 sq. ft.(55.5 sq.m) of floor space and a typical number of windows, may need 30-60 sq. ft.(2.75sq.m-5.5 sq. m) of louvered openings per floor. With each window measuring 3'x5'(.9m x 1.5 m) or 15 sq. ft. (1.3 sq.m), the equivalent of 2 to 4 windows per floor will need full window louvers.

Small pre-formed louvers set into a plywood panel or small slit-type registers at the base of inset panels generally cannot provide enough ventilation in most moist climates to offset condensation, but this approach is certainly better than no louvers at all. Louvers should be located to give cross ventilation, interior doors should be fixed ajar at least 4" (10cm) to allow air to circulate, and hatches to the attic should be left open.

Monitoring devices which can record internal temperature and humidity levels can be invaluable in determining if the internal climate is remaining stable. These units can be powered by portable battery packs or can be wired into electric service with data downloaded into laptop computers periodically. This can also give long-term information throughout the mothballing years. If it is determined that there are inadequate air

exchanges to keep interior moisture levels under control, additional passive ventilation can be increased, or, if there is electric service, mechanical exhaust fans can be installed. One fan in a small to medium sized building can reduce the amount of louvering substantially.

If electric fans are used, study the environmental conditions of each property and determine if the fans should be controlled by thermostats or automatic timers. Humidistats, designed for enclosed climate control systems, generally are difficult to adapt for open mothballing conditions. How the system will draw in or exhaust air is also important. It may be determined that it is best to bring dry air in from the attic or upper levels and force it out through lower basement windows. If the basement is damp, it may be best to zone it from the rest of the building and exhaust its air separately. Additionally, less humid day air is preferred over damper night air, and this can be controlled with a timer switch mounted to the fan.

The type of ventilation should not undermine the security of the building. The most secure installations use custom-made grills well anchored to the window frame, often set in plywood security panels. Some vents are formed using heavy millwork louvers set into existing window openings. For buildings where security is not a primary issue, where the interior is modest, and where there has been no heat for a long time, it may be possible to use lightweight galvanized metal grills in the window openings. A cost effective grill can be made from the expanded metal mesh lath used by plasterers and installed so that the mesh fins shed rainwater to the exterior.

Securing mechanical systems and utilities

At the outset, it is important to determine which utilities and services, such as electrical or telephone lines, are kept and which are cut off. As long as these services will not constitute a fire hazard, it is advisable to retain those which will help protect the property. Since the electrical needs will be limited in a vacant building, it is best to install a new temporary electric line and panel (100 amp) so that all the wiring is new and exposed. This will be much safer for the building, and allows easy access for reading the meter.

Most heating systems are shut down in long term mothballing. For furnaces fueled by oil, there are two choices for dealing with the tank. Either it must be filled to the top with oil to eliminate condensation or it should be drained. If it remains empty for more than a year, it will likely rust and not be reusable. Most tanks are drained if a newer type of system is envisioned when the building is put back into service. Gas systems with open flames should be turned off unless there is regular maintenance and frequent surveillance of the property. Gas lines are shut off by the utility company.

If a hot water radiator system is retained for low levels of heat, it generally must be modified to be a self-contained system and the water supply is capped at the meter. This recirculating system protects the property from extensive damage from burst pipes. Water is replaced with a water/glycol mix and the reserve tank must also be filled with this mixture. This keeps the modified system from freezing, if there is a power failure. If water service is cut off, pipes should be drained. Sewerage systems will require special care as sewer gas is explosive. Either the traps must be filled with glycol or the sewer line should be capped off at the building line.

Developing a maintenance and monitoring plan

While every effort may have been made to stabilize the property and to slow the deterioration of materials, natural disasters, storms, undetected leaks, and unwanted intrusion can still occur. A regular schedule for surveillance, maintenance, and monitoring should be established. The fire and police departments should be notified that the property will be vacant. A walk-through visit to familiarize these officials with

the building's location, construction materials, and overall plan may be invaluable if they are called on in the future.

The optimum schedule for surveillance visits to the property will depend on the location of the property and the number of people who can assist with these activities. The more frequent the visits to check the property, the sooner that water leaks or break-ins will be noticed. Also, the more frequently the building is entered, the better the air exchange. By keeping the site clear and the building in good repair, the community will know that the building has not been abandoned. The involvement of neighbors and community groups in caring for the property can ensure its protection from a variety of catastrophic circumstances.

The owner may utilize volunteers and service companies to undertake the work outlined in the maintenance chart. Service companies on a maintenance contract can provide yard, maintenance, and inspection services, and their reports or itemized bills reflecting work undertaken should be added to update the building file.

Sidebar

Mothballing Checklist

In reviewing mothballing plans, the following checklist may help to ensure that work items are not inadvertently omitted.

Moisture

- Is the roof watertight?
- Do the gutters retain their proper pitch and are they clean?
- Are downspout joints intact?
- Are drains unobstructed?
- Are windows and doors and their frames in good condition?
- Are masonry walls in good condition to seal out moisture?
- Is wood siding in good condition?
- Is site properly graded for water run-off?
- Is vegetation cleared from around the building foundation to avoid trapping moisture?

Pests

- Have nests/pests been removed from the building's interior and eaves?
- Are adequate screens in place to guard against pests?
- Has the building been inspected and treated for termites, carpenter ants, rodents, etc.?
- If toxic droppings from bats and pigeons are present, has a special company been brought in for its disposal?

Housekeeping

- Have the following been removed from the interior: trash, hazardous materials such as inflammable liquids, poisons, and paints and canned goods that could freeze and burst?
- Is the interior broom-clean?
- Have furnishings been removed to a safe location?
- If furnishings are remaining in the building, are they properly protected from dust, pests, ultraviolet light, and other potentially harmful problems?

- Have significant architectural elements that have become detached from the building been labeled and stored in a safe place?
- Is there a building file?

Security

- Have fire and police departments been notified that the building will be mothballed?
- Are smoke and fire detectors in working order?
- Are the exterior doors and windows securely fastened?
- Are plans in place to monitor the building on a regular basis?
- Are the keys to the building in a secure but accessible location?
- Are the grounds being kept from becoming overgrown?

Utilities

- Have utility companies disconnected/shut off or fully inspected water, gas, and electric lines?
- If the building will not remain heated, have water pipes been drained and glycol added?
- If the electricity is to be left on, is the wiring in safe condition?

Ventilation

- Have steps been taken to ensure proper ventilation of the building?
- Have interior doors been left open for ventilation purposes?
- Has the secured building been checked within the last 3 months for interior dampness or excessive humidity?

Maintenance Chart

1-3 months; periodic

- regular drive by surveillance
- check attic during storms if possible
- monthly walk arounds
- check entrances
- check window panes for breakage
- mowing as required
- check for graffiti or vandalism

- enter every 3 months to air out
- check for musty air
- check for moisture damage
- check battery packs and monitoring equipment
- check light bulbs
- check for evidence of pest intrusion

every 6 months; spring and fall

- site clean-up; pruning and trimming
- gutter and downspout check
- check crawlspace for pests
- clean out storm drains

every 12 months

- maintenance contract inspections for equipment/utilities
- check roof for loose or missing shingles
- termite and pest inspection/treatment
- exterior materials spot repair and touch up painting
- remove bird droppings or other stains from exterior
- check and update building file

Conclusion

Providing temporary protection and stabilization for vacant historic buildings can arrest deterioration and buy the owner valuable time to raise money for preservation or to find a compatible use for the property. A well planned mothballing project involves documenting the history and condition of the building, stabilizing the structure to slow down its deterioration, and finally, mothballing the structure to secure it. The three highest priorities for a mothballed building are 1) to protect the building from sudden loss, 2) to weatherize and maintain the property to stop moisture penetration, and 3) to control the humidity levels inside once the building has been secured.

While issues regarding mothballing may seem simple, the variables and intricacies of possible solutions make the decision-making process very important. Each building must be individually evaluated prior to mothballing. In addition, a variety of professional services as well as volunteer assistance is needed for careful planning and repair, sensitively designed protection measures, follow-up security surveillance, and cyclical maintenance.

In planning for the future of the building, complete and systematic records must be kept and generous funds allocated for mothballing. This will ensure that the historic property will be in stable condition for its eventual preservation, rehabilitation, or restoration.

Further Reading

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Home page logo: Appropriately mothballed historic building. Photo: NPS files.

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