



# **Department of Defense Legacy Resource Management Program**

93-1326

**A History of Fort Amador and Fort Grant - The  
Former Panama Canal Zone, Republic of Panama**

# A HISTORY OF FORT AMADOR AND FORT GRANT

The Former Panama Canal Zone  
Republic of Panama



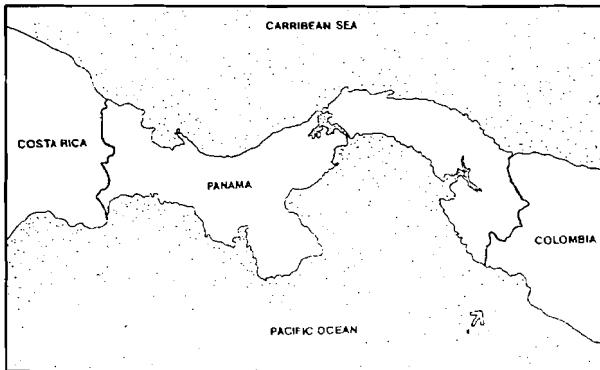
*"I want to make a town there that will be a credit to the United States government."*<sup>1</sup>

Colonel George W. Goethals, Chief Engineer of the Panama Canal, to  
Congressional members of the Committee on Appropriations, 1913.

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# Fort Amador & Grant

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This publication, a Legacy Resource Management Program demonstration project, was prepared for United States Army South (USARSO) through the Directorate of Engineering and Housing, United States Army Garrison-Panama, by Graves+Klein, Architects, Engineers of Pensacola, Florida. The purpose of the project is to document the available records and provide a brief history of Fort Amador and Fort Grant.

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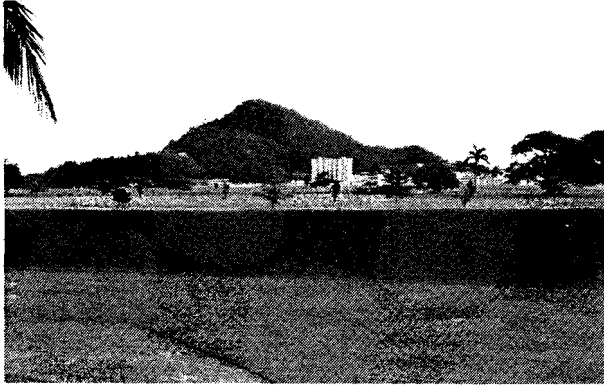
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*Cover Photograph: Fort Amador - circa 1915.*

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*A view across the golf course  
- Fort Amador*

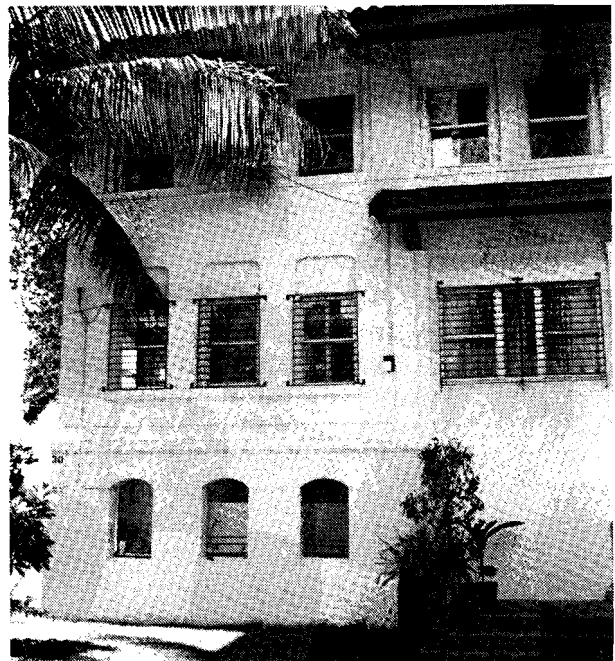


*Building #38 - Fort Amador*



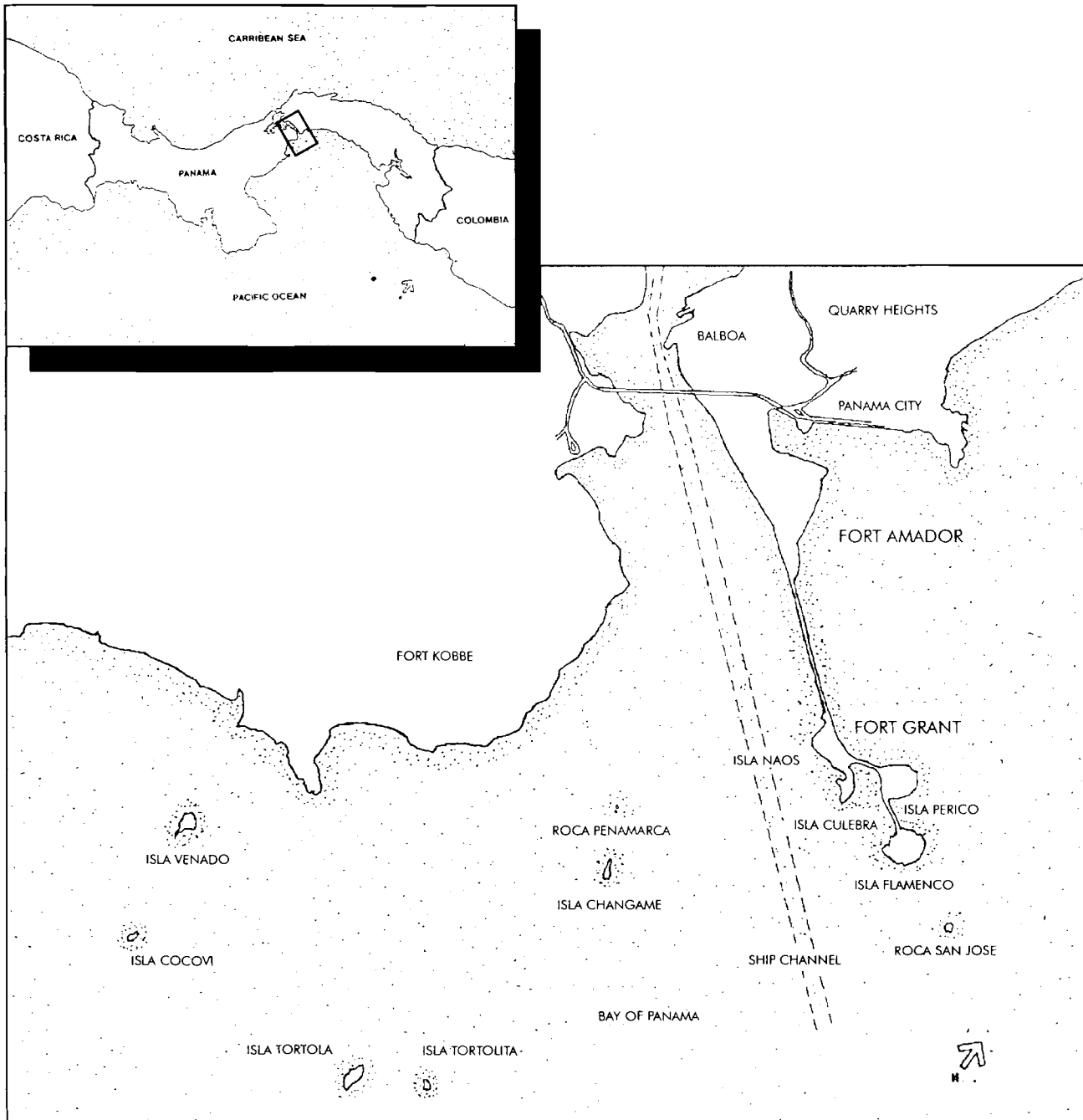
*Residential area - Fort Amador*

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*Housing - Fort Amador*

**Fort Amador, Fort Grant, the Causeway and the Islands**



# Introduction

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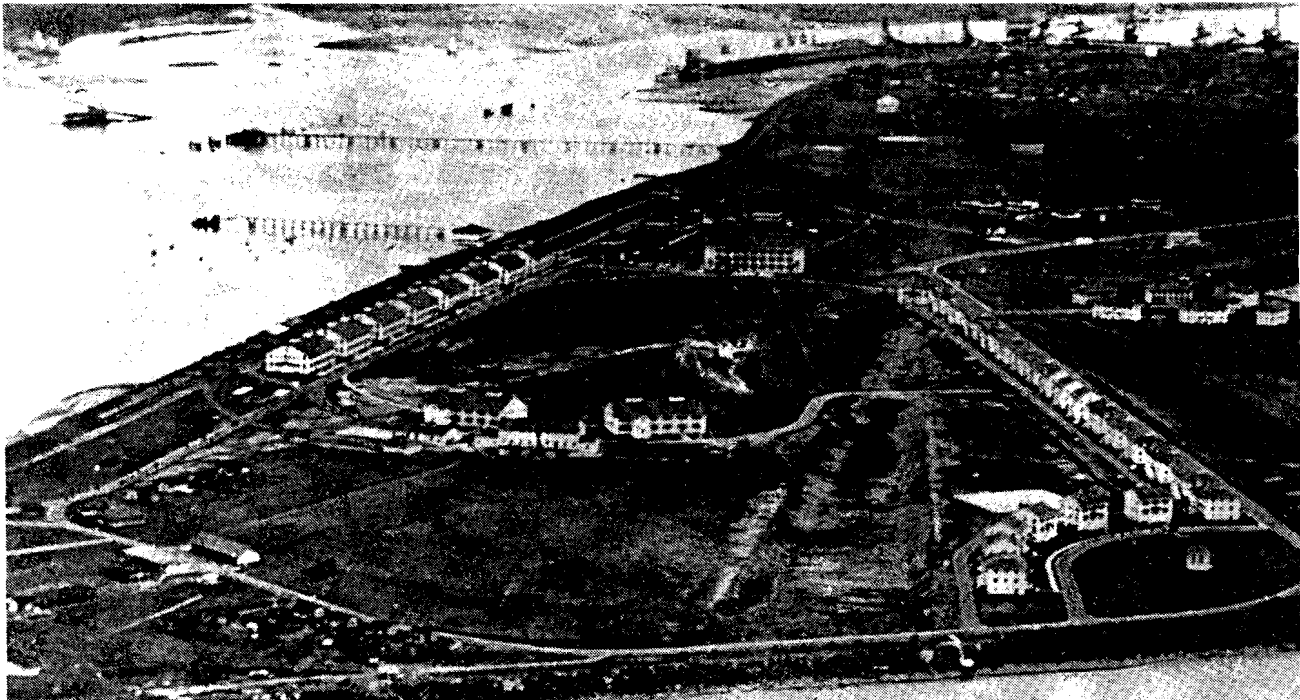
Towards the end of the construction of the Panama Canal, plans were made for the establishment of several "harbor defense installations,"<sup>2</sup> to guard the entrances to the Canal. The Pacific entrance would be protected by Forts Grant and Amador. Until World War II, when airpower began to play a significant role in U.S. defense, these Coast Artillery Posts comprised the major defense of the canal.

Long before the United States became a major presence on the Isthmus of Panama, representatives of other nations found the islands of the former Fort Grant in the Bay of Panama to be both a natural defense site and a refuge. English pirates, such as Sir Francis Drake, Captain Cook and Henry Morgan, after raiding Spanish galleons hid out on Perico or Taboga Islands, Taboga being "that favorite anchorage of buccaneers."<sup>3</sup>

In 1852, after crossing the Isthmus, Captain Ulysses S. Grant, along with a number of sick and "one company of troops to act as nurses,"<sup>4</sup> spent several days on Flamenco Island recuperating from the treacherous journey and awaiting ship passage to California.

By noon, December 31, 1999, the Panama Canal and its support and defense systems, including Fort Amador, will revert to the Republic of Panama. Following final implementation of the Panama Canal Treaty of 1977, a unique American experience will come to an end. Forts Amador and Grant will remain as a physical legacy of the United States' contribution to the cultural heritage of the Republic of Panama.

*Aerial View of Fort Amador - circa 1925*



# The Transformation

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During the construction phase, the question of whether or not the Panama Canal should be fortified was debated by the American public, Congress, and the world at large. The Treaty to Facilitate the Construction of a Ship Canal (more commonly referred to as the Hay-Pauncefote Treaty) established that “the [Panama] canal shall never be blockaded, nor shall any right of war be exercised nor any act of hostility be committed within it.” Ships of all nations were to have equal access to the canal, during both war and peacetime, and in order to guarantee equal access, the United States was “at liberty to maintain such military police along the canal as may be necessary to protect it against lawlessness and disorder.”

Having decided to fortify the Panama Canal with defense sites, a Joint Army-Navy Panama Canal Fortification Board was established by the Secretary of War on October 10, 1909. This Fortification Board, members of which included Brigadier General Arthur Murray, Chief of Coast Artillery, and Major William G. Haan, Coast Artillery (and for whom Batteries Murray and Haan at Fort Kobbe were named), presented its findings and recommendations to the Secretary of War on April 22, 1910. A second committee, which included Major-General Leonard Wood (Chief of Staff), Brigadier-General Bixby (Chief of Engineers), and Brigadier-General E.M. Weaver (Chief of Coast Artillery), testified before the House Committee on Appropriations in January of 1913.

It was recommended that the defense of the Panama Canal be two-part, including “the protection by heavy fortifications at the entrances in both oceans [and] by fieldworks about the locks and a mobile force of troops with a minimum strength of 7,000 men.”<sup>5</sup>

One of the areas specifically recommended by the Board as a defense site was “the filled area in Panama Bay, known as the Balboa Dump”<sup>6</sup> along with the adjacent group of islands in the Bay of Panama.



*Balboa ‘dump’ leading to the Breakwater, July, 1911*

In its report, the Board recommended “that ten 14-inch rifles, twelve 6-inch rifles and twenty-eight 12-inch mortars together with necessary magazines be installed at strategic points on the islands.”<sup>7</sup> It was predicted that these armaments would be “of more powerful and effective types than those installed in any other locality in the world.”<sup>8</sup>

# THE TRANSFORMATION

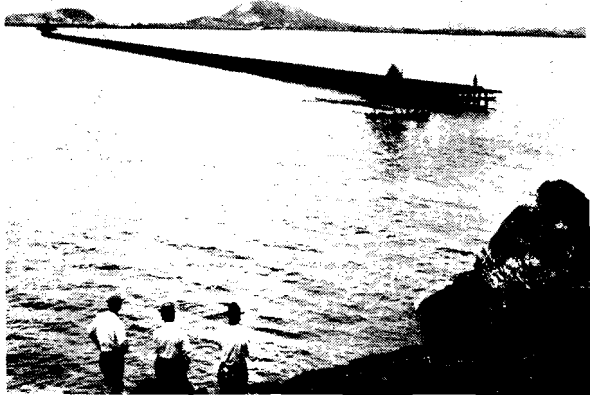
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*East Balboa and the Breakwater, June 7, 1912*

The Board went on to recommend the construction of a causeway connecting the off-shore islands of Naos, Perico and Flamenco back to Fort Amador, which itself rose out of the coastal tidal flats, and “where quarters for eight companies of Coast Artillery (872 men) were to be constructed.”<sup>9</sup>

One of the major challenges facing the engineers responsible for constructing the Panama Canal was digging the Culebra Cut (later renamed Gaillard Cut) through the Continental Divide. In addition to the mud slides, disposing of



*The Breakwater, October 19, 1912*

the excavated material from this man-made channel posed both a tremendous problem and a great opportunity.

In 1907, the “Balboa dump” was created out of coastal swampland and mangrove stands. Train loads of material excavated from the Cut, which was over ten miles away, were brought in and dumped from three main rail lines at the future site of Fort Amador. As the infill project progressed, three distinct ‘fingers’ of land mass were formed. Between the ‘fingers’ were deep trenches, which today make an interesting landscape feature at Fort Amador.

In 1908, a plan to further extend the “Balboa dump” was proposed and approved. The extension involved forming a dike, or breakwater, connecting the new mainland area with Naos Island, the first of four islands in the Bay of Panama under U.S. jurisdiction.

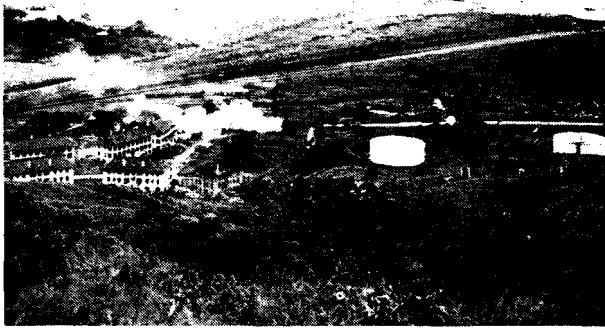
Construction of the breakwater was similar to that of Fort Amador. A single railroad line was laid, over which train loads of excavated material were brought in. Begun in 1908, the track was extended until it was connected with Naos Island in 1912.

In all, by September 1914, when the projects were completed, more than 2,141,536 cubic yards of waste from Culebra Cut had been deposited. As further protection, rock quarried from the nearby Ancon Hill [Quarry Heights] was used to protect the sloped sides of the dike.

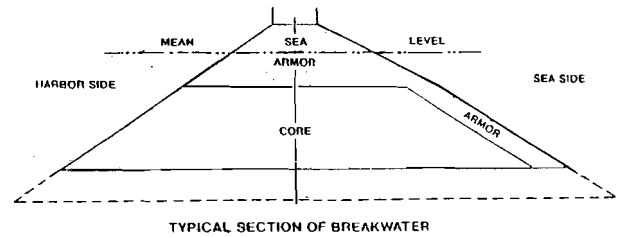


# THE TRANSFORMATION

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*The Breakwater, November 7, 1914*



In addition to creating a connected land mass for the Pacific defense sites, the breakwater provided protection to the Pacific channel entrance to the canal from the destruction caused by silt-bearing tidal currents.



*Pacific Terminal and the Breakwater, July, 1923*

# The Legal Documents

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Fort Amador and Fort Grant Military Reservations were officially “set apart and assigned to all the uses and purposes of a Military Reservation,”<sup>10</sup> and their limits were defined, by Executive order #3130 on July 25, 1919. Although their jurisdiction ultimately fell under the control of the Secretary of War, both reservations were locally “subject to the civil jurisdiction of the Canal Zone authorities in conformity with the Panama Canal Act.”<sup>11</sup>

One of the earliest naval installations set aside in the Canal area was the Balboa Naval Radio Station. The land for the installation was separated from Fort Amador “for the exclusive use of the Navy.”<sup>12</sup> The name of the naval station was changed shortly after to the Fifteenth Naval District Headquarters. Today the reservation is referred to as U.S. Naval Station - Fort Amador.

Executive order #4047, dated July 8, 1924, formally established the boundaries of the forts, which initially included about 70 acres, with later expansions resulting in a total area of about 344.78 acres.

Forts Amador and Grant were assigned names by Secretary of War Henry L. Stimson in January of 1912, in advance of construction. Fort Amador was named in honor of Dr. Manuel Amador Guerrero, the first President of the Republic of Panama, at the suggestion of the United States Minister to Panama.



*Dr. Manuel Amador Guerrero*

Seventy years old at the time of his inauguration as President, Doctor Amador was a highly respected physician dedicated to establishing a public school system in the new Republic.

Fort Grant, which included the Causeway, the attached islands of Culebra, Naos, Perico and Flamenco, and the off-shore islands of San Jose, Panamarca, Changarmi, Tortolita, Torola, Taboga, Cocovieceta, Cocovi, and Venado in the Bay of Panama, was named in honor of General Ulysses S. Grant, United States Army, and President of the United States from 1869 to 1877.

While Dr. Amador’s connection with Panama is quite clear, Grant’s is not as well known. On July 5, 1852, (then) Captain Ulysses Grant, in command of a company of the Fourth Regiment

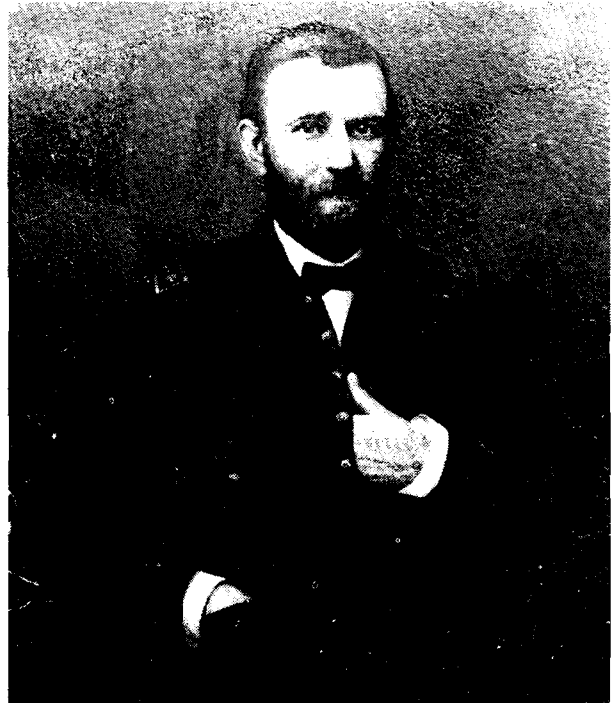
# THE LEGAL DOCUMENTS

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of Infantry, left Fort Columbus, New York, for his new duty station at San Francisco. Their route took the regiment by sea to the Atlantic coast city of Colon, where they disembarked and crossed the Isthmus of Panama to Panama City. There, a ship waited to carry the troops on the final leg of their journey to San Francisco.

Based on information filed by the accompanying U.S. Army Surgeon, Charles S. Tripler, the crossing was disastrous. First, the local contractors, who had agreed to furnish mules to the regiment once they reached the town of Cruces, attempted to renege on their agreement when a higher price was to be gained from forty-niners also making the crossing on their way to the gold fields of California. Grant is credited with renegotiating, as one of his quartermaster duties, the contract for transportation by mule to Panama City.

Then 'malignant cholera' broke out among the men, as well as the women and children accompanying them, many of whom were already weakened by 'diarrhoea.' Of the nearly 800 who started the journey, 150 died on the Isthmus.



*Ulysses S. Grant*

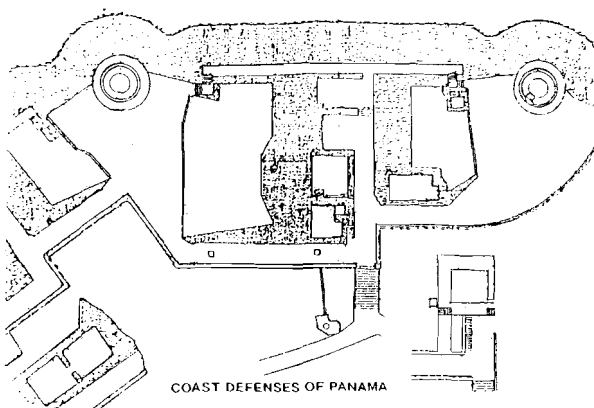
# The Fortifications

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*Drawing of typical battery fortification*

Local archivists and historians have encountered their greatest challenge in researching the early fortifications of the Panama Canal area installations. In large part this is due to Army Regulation #348, issued locally on November 18, 1918, as Panama Canal Department General Order



## *Gun Guarding Canal Entrance*

#48, “The taking of photographs or other views of permanent works of defence [sic] will not be permitted.”<sup>12</sup> This stringent level of secrecy was considered necessary by the U.S. Army Corps of Engineers and The Panama Canal which were responsible for the construction and security of the fortifications.

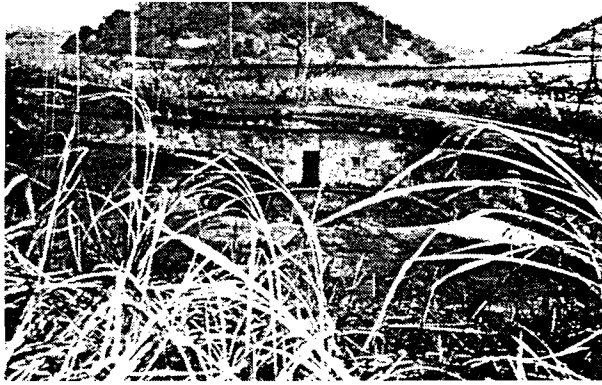
In September of 1911, while the breakwater was still under construction, fortification construction, which included batteries, gun emplacements and magazines, was begun.

The defense sites were designed to protect the Pacific entrance to the canal and the first set of locks at Miraflores against an enemy naval attack. Also, “as at any fortified place from which a fleet may have to issue in the face of an enemy’s fleet,”<sup>13</sup> the defense sites protected the clearly vulnerable ships transiting the canal until they could reach deep water.

The railroad line, which had been installed to aid in the construction of the breakwater, remained in place and was used to transport ammunition to supply the guns located on the islands’ defensive sites.

Of the eight batteries constructed at Fort Grant, three were located on Naos Island. Battery Burnside, named in honor of Major General Ambrose E. Burnside (Third U.S. Artillery), was mounted with two 14-inch rifles on disappearing carriages, and had a range of 18,400 yards. Battery Buell, named in honor of Major Gen-

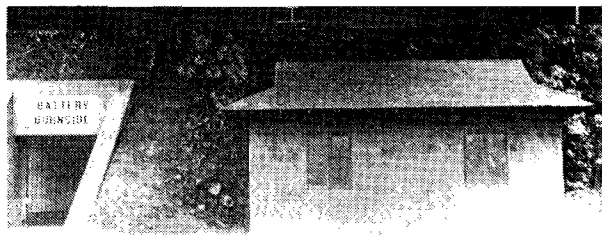
# THE FORTIFICATIONS



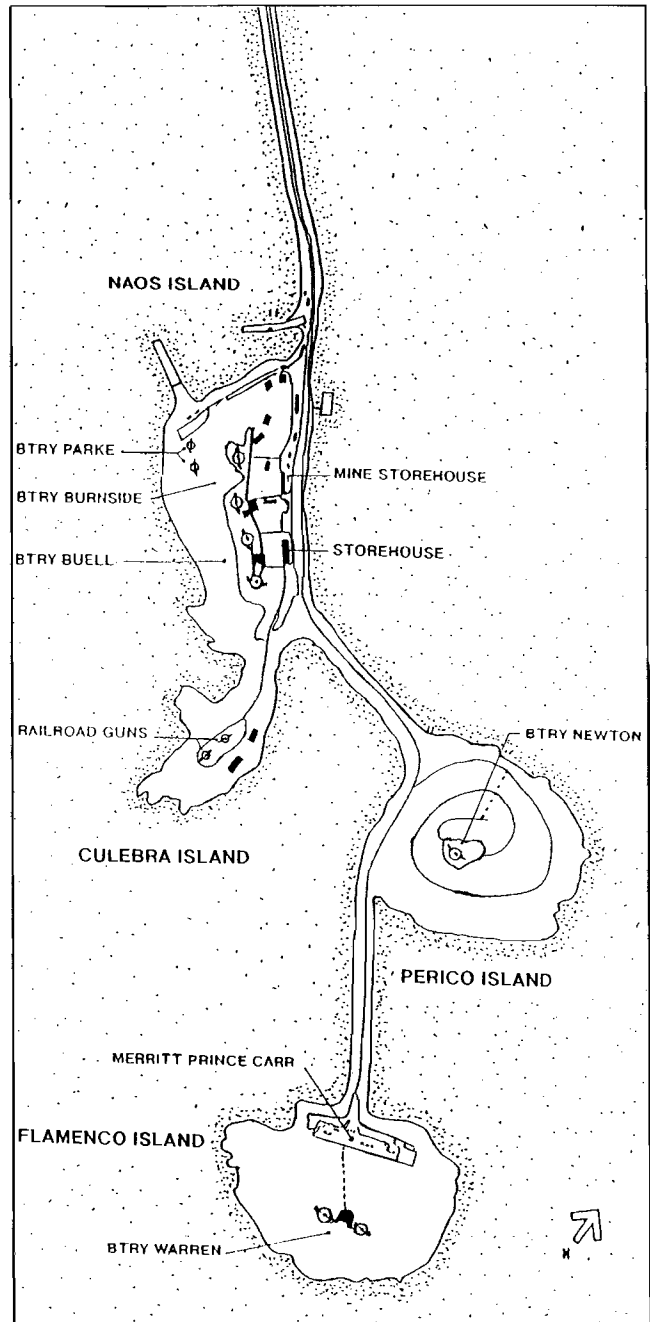
*Battery Buell, Naos Island, a typical position for disappearing carriage rifles*

eral Don Carlos Buell (Assistant Adjutant-General, U.S.A.), was mounted in the same manner as Battery Burnside. Battery Parke, named in honor of Major General John G. Parke (Corps of Engineers, U.S.A.), was equipped with two 6-inch rifles with a range of 6,000 yards.

The guns, mounted on disappearing carriages, were constructed "on an unsinkable and steady platform, and they [could] be provided with unlimited protection and accurate range-finding devices."<sup>14</sup>



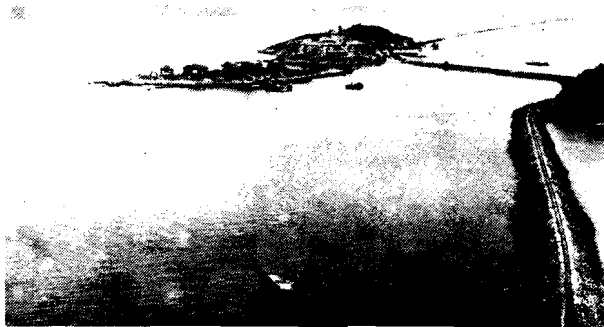
*Entrance to Battery Burnside on Naos Island*



*Fort Grant*

# THE FORTIFICATIONS

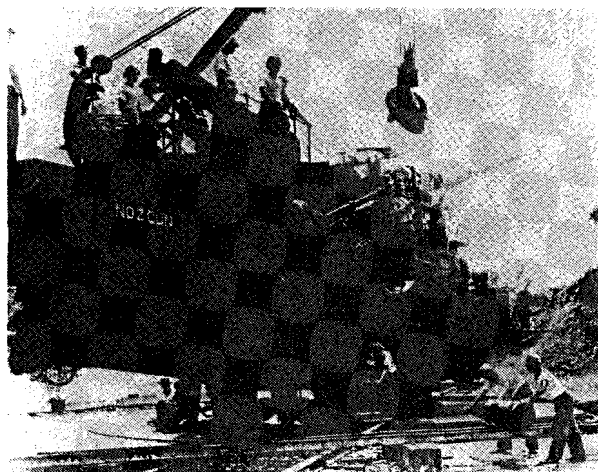
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*Culebra and Naos Islands, January 1913*

In addition to these fixed batteries, the defense sites at Naos Island were equipped with 12-inch mortars “of a new and powerful type.”<sup>15</sup>

Battery Newton, located on Perico Island, was named in honor of Major General John Newton (Chief of Engineers, U.S.A.). Battery Newton



*14-inch RWY Gun at Culebra Island, Fort Grant - 1932*

was equipped with one 14-inch rifle with a range of 18,400 yards, mounted on a disappearing carriage.



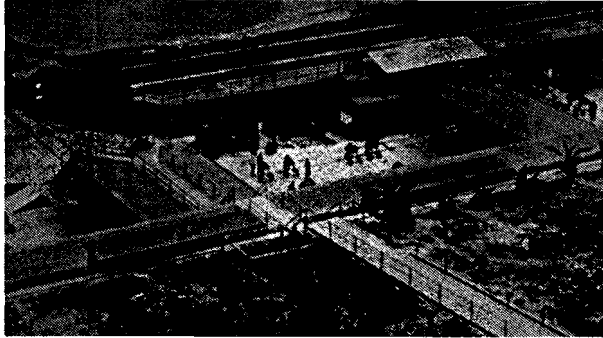
*Perico Island from Flamenco Island, January 1913*

Flamenco Island, the most heavily fortified of the islands, was equipped with four batteries. Battery Carr was named in honor of Brevet Major General Joseph Bradford Carr (U.S. Volunteers); Battery Merritt for Major General Wesley Merritt (U.S.A.); Battery Prince in honor of Brigadier General Harry Prince (U.S. Volunteers); and Battery Warren for Major General Gouverneur K. Warren (Corps of Engineers, U.S.A.).

Batteries Carr, Merritt and Prince were manned with four 12-inch mortars each. Construction of the batteries was begun in early 1912, and was completed (with equipment installed) by 1917.

# THE FORTIFICATIONS

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*Batteries Carr, Merritt and Prince*

Battery Warren was equipped with two 14-inch rifles on disappearing carriages. These rifles “commanded the entire area of seaward approach,”<sup>16</sup> with the exception of a small blind spot on Taboga Island’s southern side. The battery “included space for ammunition storage, control and plotting rooms, and a communications system. During construction of Battery



*Battery Buell tunnel entrance*

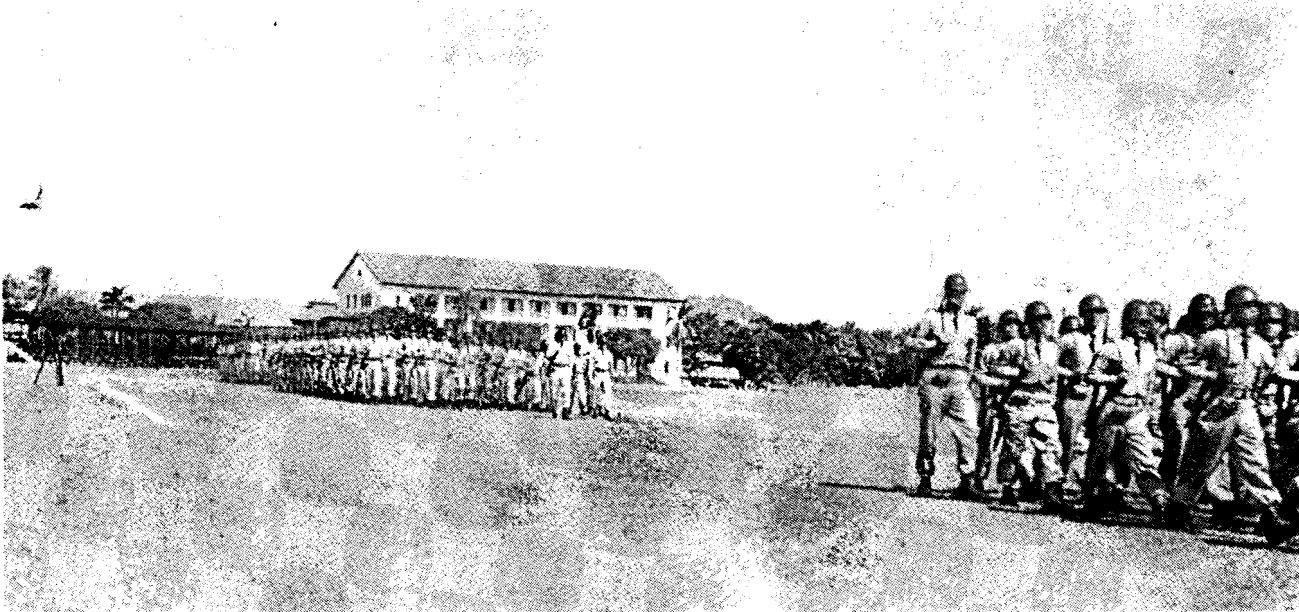
Warren, an elevator was installed in a vertical shaft which was sunk 200 feet from the summit to connect with a horizontal tunnel which entered from the mortar batteries on the north side of the island.”<sup>17</sup>

As a side note, before the construction of the batteries at Flamenco (or “Deadman’s”) Island could begin, two cemeteries located there were moved in August of 1911 to Ancon Cemetery near Ancon Hospital. Many of those buried there were “soldiers who had died of tropical diseases while making the hazardous crossing of Panama en route to posts in California.”<sup>18</sup>

Although Fort Amador’s primary function was to provide housing for the Coast Artillery units manning the fortifications at Fort Grant, two batteries were constructed on the southern tip of the post. Batteries Birney and Smith, which were identical, were mounted with two 6-inch rifles on disappearing carriages. Although ineffective against a naval attack on the Canal, they were capable of firing on small vessels, such as “a screening force, minesweepers, submarines, or landing craft.”<sup>19</sup> Construction of Batteries Birney and Smith was begun in 1913 and completed in 1917. Battery Birney was named in honor of Major General David B. Birney, U.S. Volunteers. Battery Smith was named in honor of Major General Charles F. Smith, Third U.S. Infantry. The defense of the Pacific entrance to the Panama Canal was completed with the installation of fourteen searchlights “to facilitate night firing”<sup>20</sup> at Forts Amador and Grant.

# THE FORTIFICATIONS

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*Troops at Fort Amador (1954)*

On December 22, 1913, Fort Amador and Fort Grant Coast Artillery Posts were initially manned. Among the first to arrive was the 81st Company, Coast Artillery, followed by the 45th (107 men) and the 144th (105 men) Companies on September 18, 1914. Additional troops arrived in 1915, including the 40th and 116th Companies; in 1916, the 8th, 73rd and 87th Companies arrived for duty at Fort Grant.



*MP Patrol, Fort Amador, 1923*

Although the guns were fired on a regular basis, between 1929 and 1939 “shortages of funds and personnel resulted in many of the big sea-coast guns being placed in caretaker status... In the years immediately preceding the U.S. entry into World War II all guns were rehabilitated, tested, and placed in service status.”<sup>21</sup>



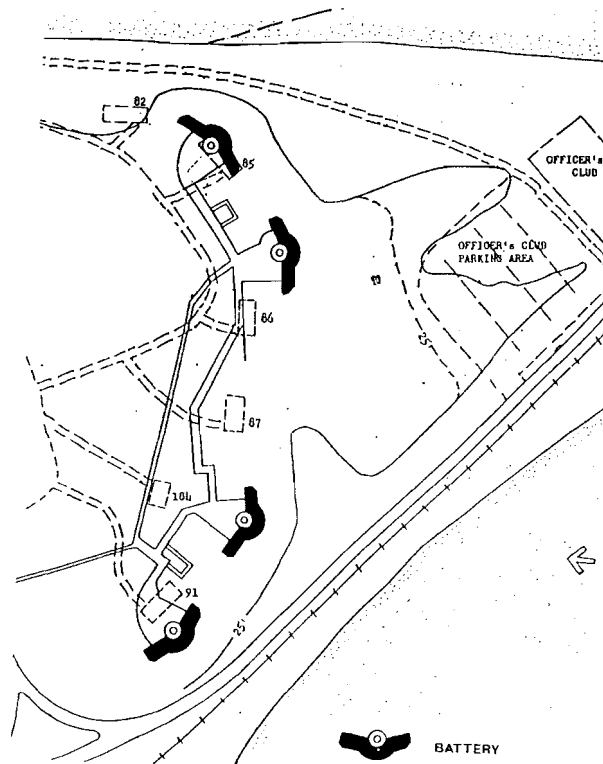
# THE FORTIFICATIONS

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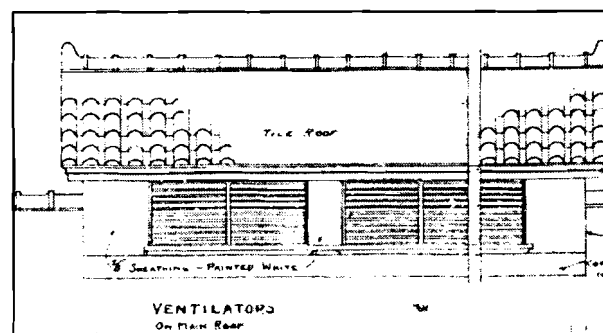
By 1939, "the growth of air power as a weapon of war forced the Panama Canal Department to increase its air defenses, thus necessitating more and bigger airdromes, and also compelled it to expand its ground defenses to provide adequate anti-aircraft artillery coverage of vital installations."<sup>22</sup> The battery fortifications at Forts Grant and Amador, planned and constructed to defend primarily against a naval attack, were deemed obsolete and plans were made for them to be dismantled and salvaged.

Battery Warren at Flamenco Island was last fired on December 8, 1944. Both guns were removed and scrapped in 1948. It was later "converted for use as a site for HAWK missiles which [were] part of the Panama Canal defenses. Much of the underground area [was] used in connection with the operation of the missile battery."<sup>23</sup>

The four guns of Batteries Birney and Smith at Fort Amador were dismantled in 1943 and disposed of. "The concrete emplacements were subsequently covered with earth and the area used for the erection of family quarters. Quarters No. 85 and No. 86 stand on the site formerly occupied by Battery Birney, while Quarters No. 87, No. 91 and No. 184 are in the general area of Battery Smith."<sup>24</sup>



*Batteries Birney and Smith*

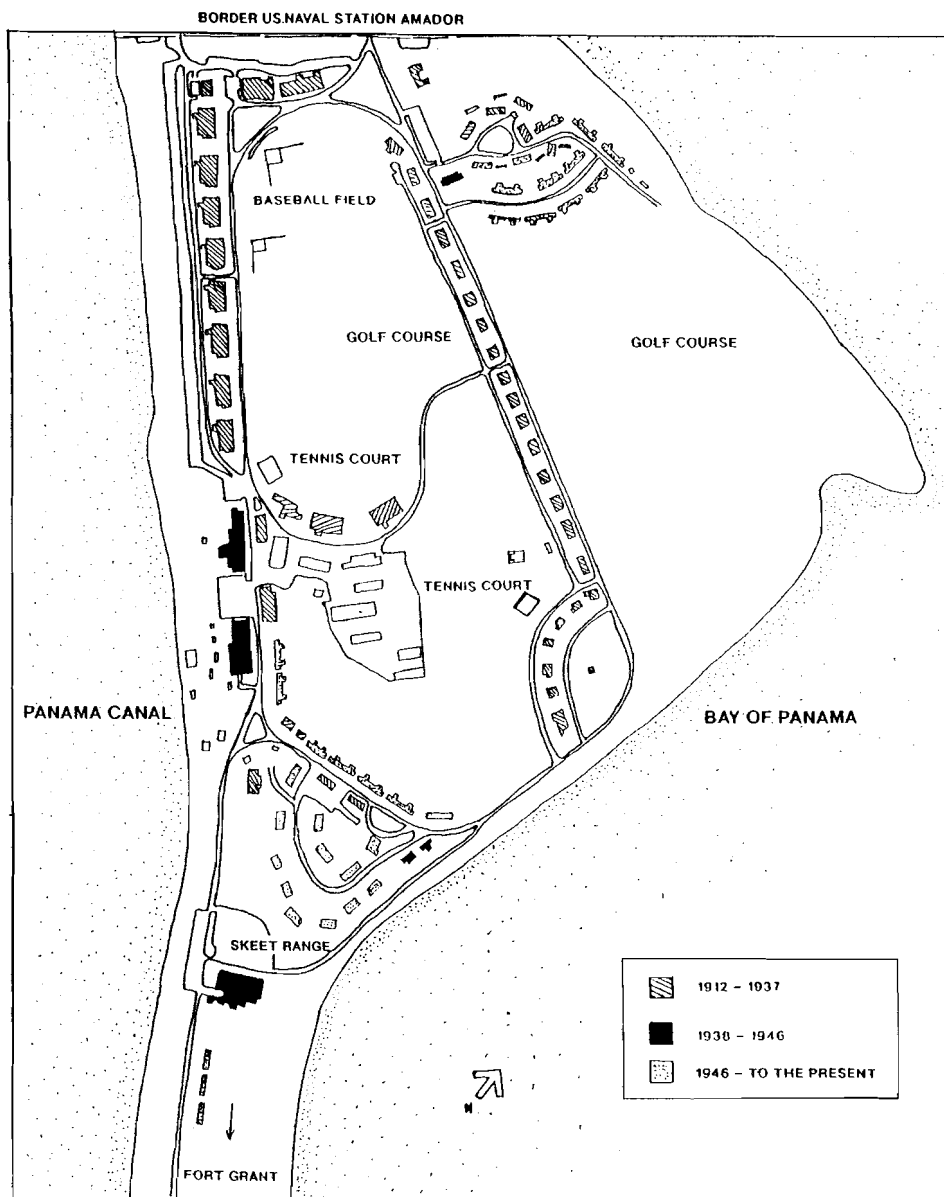


*Mine storehouse ventilator*

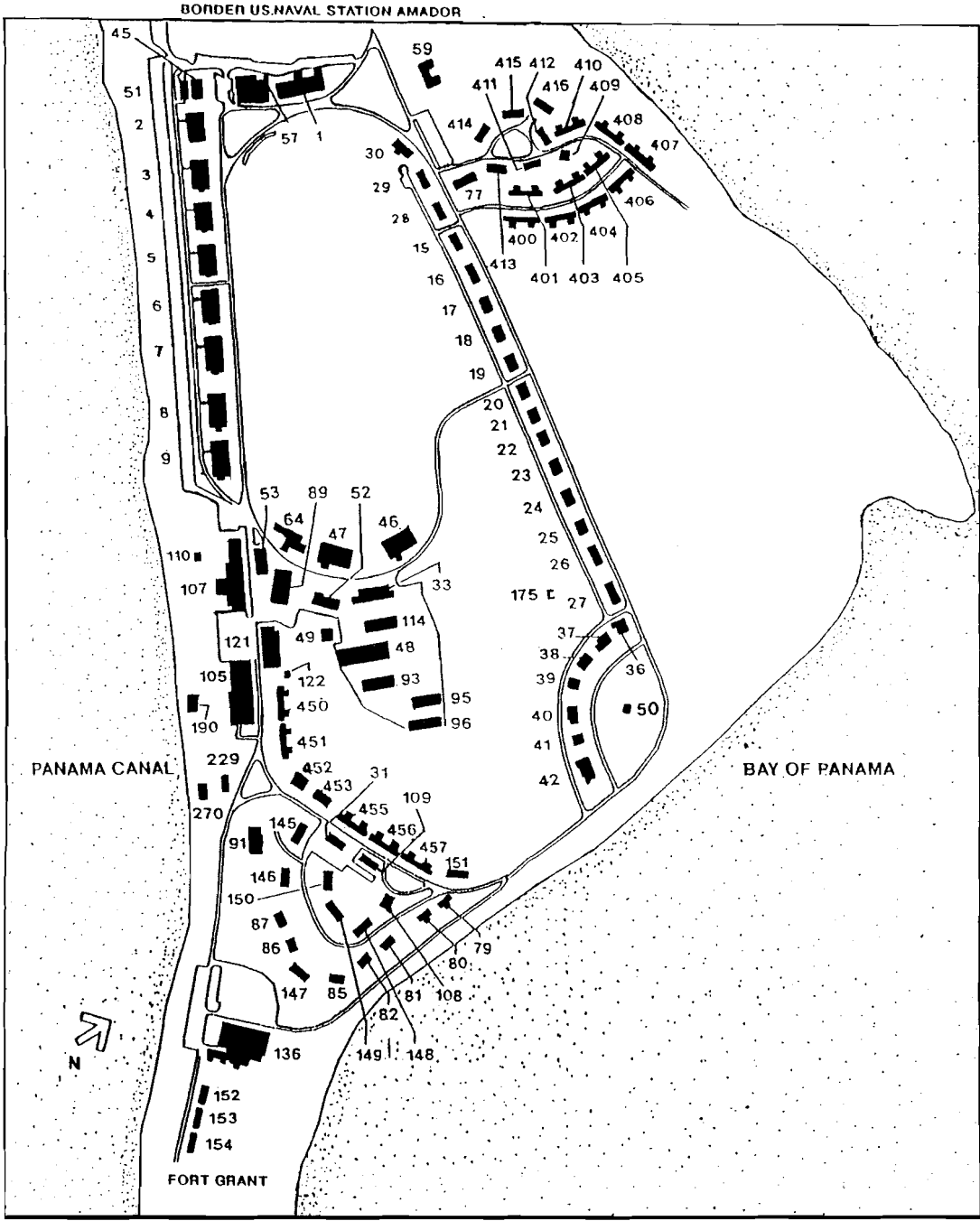
# The Buildings

## FORT AMADOR

Fort Amador construction falls into three approximate eras: the Post Canal Construction Era (1912 - 1937), the World War II Era (1938 - 1946) and Contemporary Era (1946 to the present).



*Fort Amador*



Fort Amador

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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Buildings erected to accommodate the work force during the construction of the canal were of a temporary nature. Predominant building materials, intended to last only until the completion of the Canal, included wood and sheet metal.

Following the completion of the canal, permanent communities were planned. Chief Engineer Goethals strongly believed that U.S. citizens living in the Panama Canal Zone should live in beautiful communities - communities which would contribute to the quality of life for their residents. To achieve that end, an architect was hired to prepare both an overall plan for the permanent communities - civic and military - and to design individual buildings.

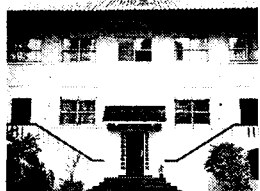
Early architectural plans for Canal Zone communities were prepared by Mr. Austin W. Lord of the New York firm of Lord, Hewlett, and Tallent. Mr. Lord, who preferred to work out of his office in New York, was assisted by several on-site Isthmian Canal Commission (ICC) architects.

Mr. Lord chose Italianate Renaissance as the primary architectural style for the permanent buildings in the Canal Zone. Details of the Italianate style include interior courtyards, large, often arched windows and verandas - features which capture breezes to cool the buildings' interiors - as well as heavily bracketed roofs. It was also a style popular in the United States in the early Twentieth Century.



*Fort Amador - Quarry Heights in background - circa 1923*

# POST CANAL CONSTRUCTION ERA (1912 - 1937)



In addition to determining the overall architectural style to be incorporated into the new structures, Mr. Lord decided on building materials - reinforced concrete with hollow concrete block stuccoed on the outside and red clay roofing tiles which would last for decades in the harsh tropical climate.

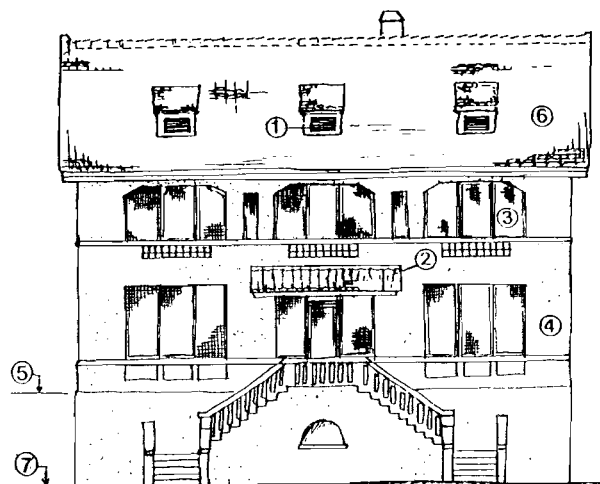


After completing the architectural plans for about a dozen individual buildings (including the Administration Building in Balboa) for the ICC, Mr. Lord removed himself from the project. Unsatisfied with the fact that Mr. Lord preferred to work out of his New York office, Chief Engineer Goethals was not disappointed with this turn of events.

The early decision regarding style and materials made by Austin Lord were continued by subsequent ICC architects.

The ICC architect, Samuel M. Hitt, was responsible for the architectural aspects of the designs at Fort Amador and other installations, while Mr. T.C. Morris, an assistant engineer, was charged with the more technical aspects of "details and designs of foundations, reinforced concrete, and analyses for size, dimensions of beams, columns, floors, etc."<sup>25</sup>

Barracks designs - for Fort Amador as well as for other installations - were also "made in accordance with types furnished by the Quartermaster Corps, United States Army; and the types of quarters were determined by a board of officers consisting of Col. William F. Blauverl, Lieut. Col. Charles F. Mason, Maj. B.T. Clayton, Maj. William E. Cole, and Capt. R.E. Wood."<sup>26</sup> The Board took into consideration the design program already formalized and approved by the ICC.



FRONT ELEVATION

### *Typical Facade with Architectural Elements Identified*

- 1) *Copper screened louvers*
- 2) *"Media Aguas"*
- 3) *Large copper screened porches*
- 4) *Reinforced concrete exterior*
- 5) *Living quarters located above ground floor*
- 6) *Clay Tile*
- 7) *Maid's Quarters, laundry and storage areas on ground floor*

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

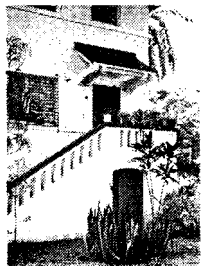
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The Isthmian Canal Commission also employed several landscape architects, the first of whom was Mr. William L. Phillips, who had "special charge of the details of townsites, streets, parks, etc."<sup>27</sup>



The design elements and construction methods at Forts Amador and Grant are typical of the excellent Post Canal Construction Era ICC architecture. Foundation and structural elements were cast in concrete due to concern for building degradation from the tropical climate and termites. Living quarters were raised to the second level with storage, maid quarters, and later, garages placed on the ground level. The solid, reinforced concrete walls also rendered the buildings rat-proof - a Sanitation Department regulation for the prevention of the spread of bubonic plague.



Sub-floors and interior partitions were also of concrete, with wood reserved for doors and window frames, media aguas, roof framing, and floors. Copper screened windows and porches allowed for air circulation within the buildings, while at the same time keeping out mosquitoes - the carriers of Yellow Fever and malaria.

Due to the heavy rains that occur in the region, intermediate roof projections, referred to locally

as 'media aguas,' served the purpose of keeping water away from windows and blocking the harsh mid-day sun from interiors.

Full-length porches allowed the off-shore breezes to circulate through buildings.

Over the years, many of these buildings have undergone alterations and additions in keeping with the times. With the advent of air conditioning, many oversized screen porches were enclosed to provide additional living areas. Casement windows were reduced in size and wood frames were replaced with aluminum. The result of many of these changes was to further remove the building occupants from the surrounding environment. While some of the alterations to these structures reflect the original design theme, others have, unfortunately, strayed from the original design intent of the Isthmian Canal Commission architects.



*Media Aguas*

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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*Buildings #1 through #9 - circa 1915*

The first of the Post Canal Construction Era buildings to be erected at Fort Amador were barracks, family quarters, the headquarters building, a wagon shed and a wood stable.

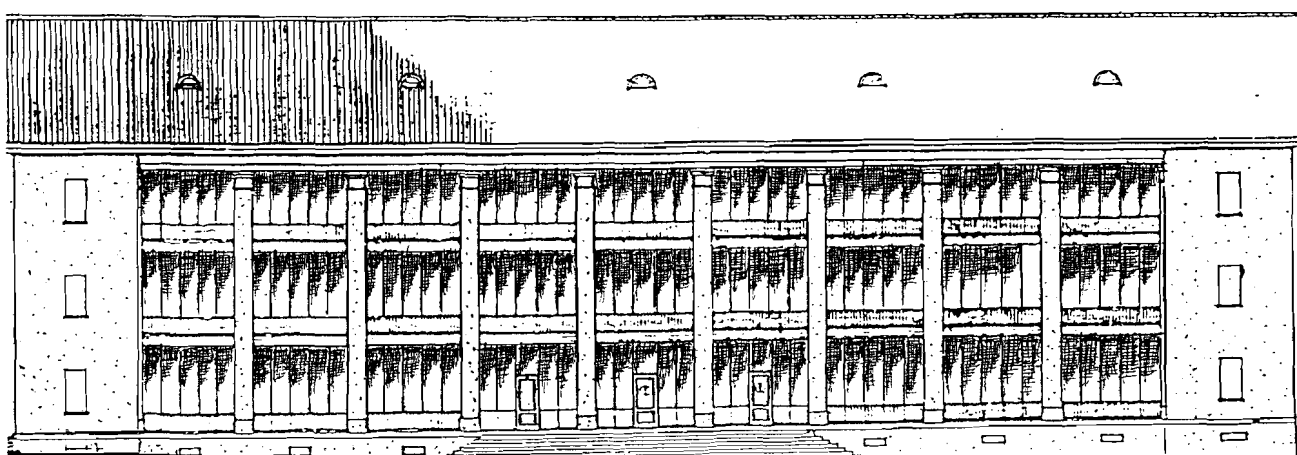
Constructed in 1915, Building #1 was Headquarters for the Coast Artillery Post. The front and rear porches were originally enclosed with copper screen.

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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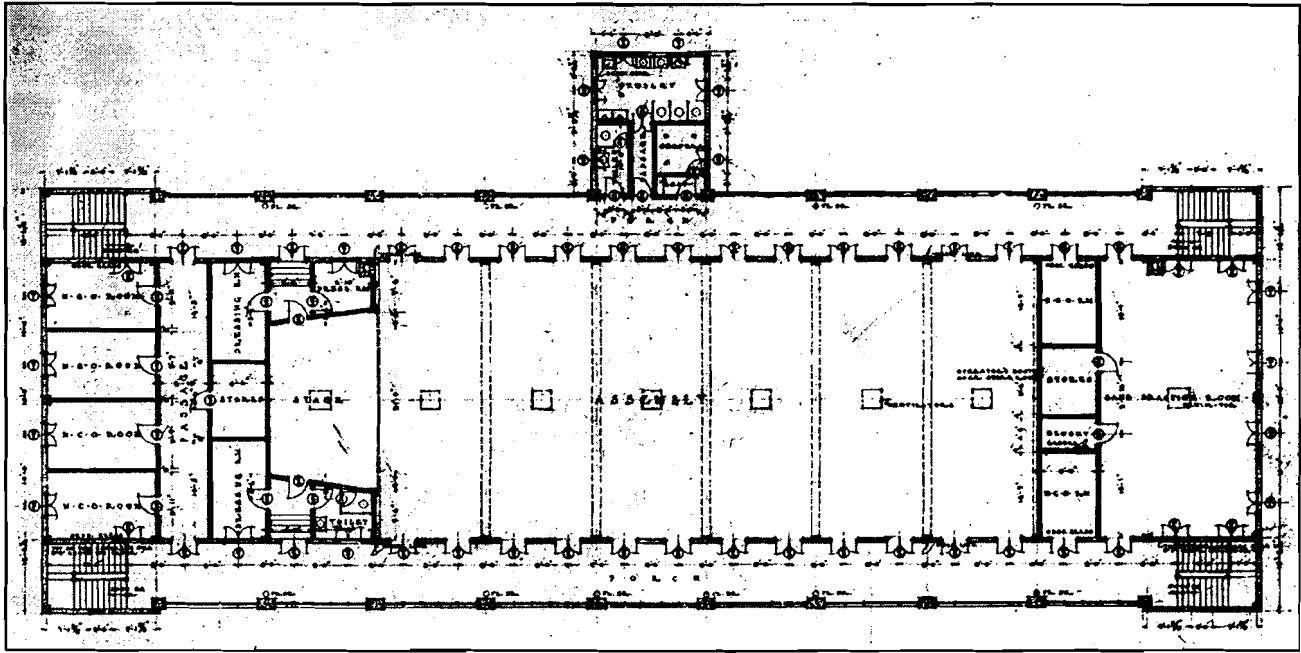
*Headquarters Building (#1) - circa 1953*



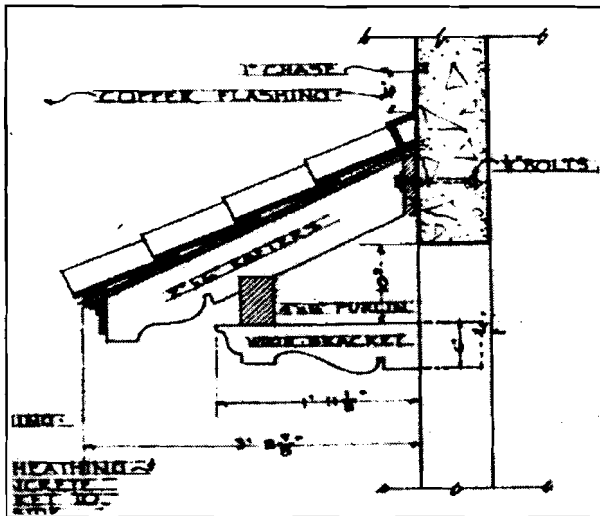
*Headquarters Building (#1), Front Elevation*



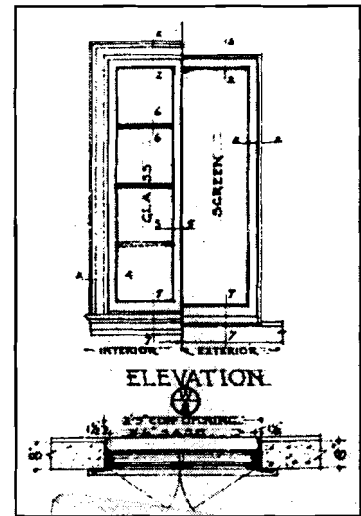
# POST CANAL CONSTRUCTION ERA (1912 - 1937)



*Headquarters Building (#1), Floor Plan*



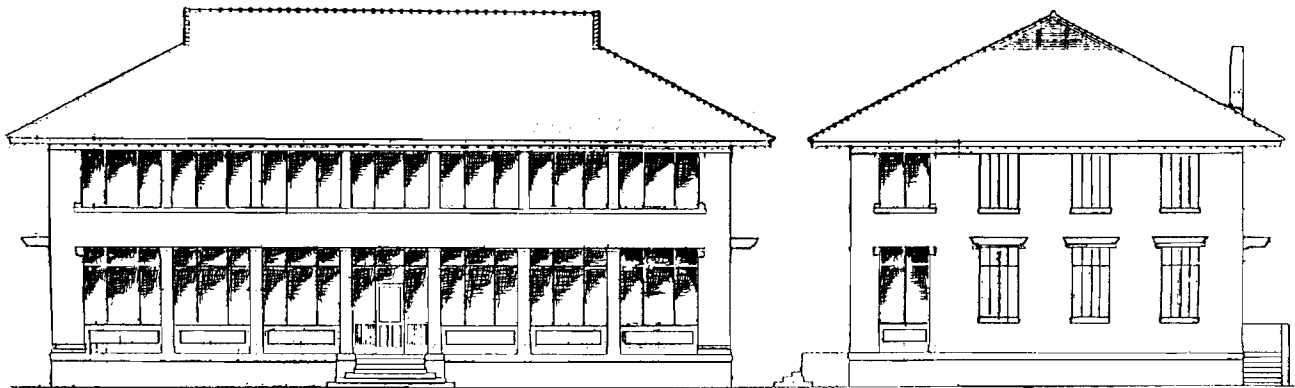
*Six-Set Lieutenant's Quarters,  
Media Agua Detail*



*Two Family Captain's Quarters,  
Window Detail*

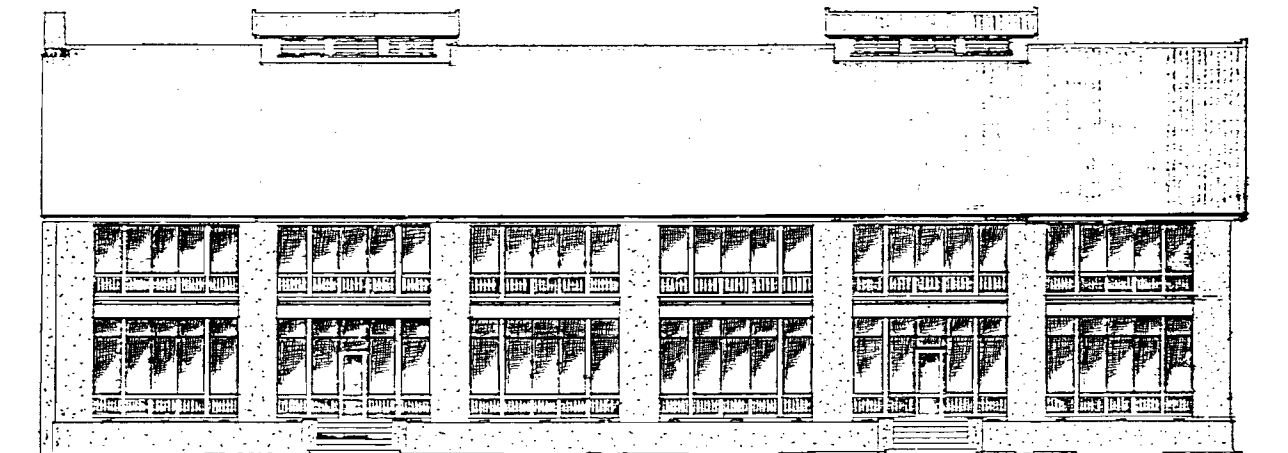
# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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Construction of the two-story band barracks building (Building #2) was begun in December of 1916, and was completed around June 30, 1917. The building contained a band practice

room, an office, and three storage rooms for instruments and music on the first floor. Sleeping quarters for thirty men were located on the second floor.

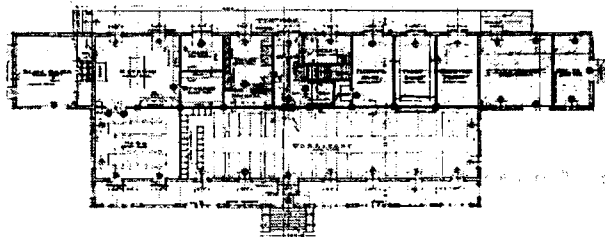


***Typical Barracks Buildings #3 through #9***

The first set of company barracks completed at Fort Amador (Buildings #3 through #9) were turned over to the Coast Artillery on September 28, 1914.

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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*Storehouse Building Plan (Building #33)*

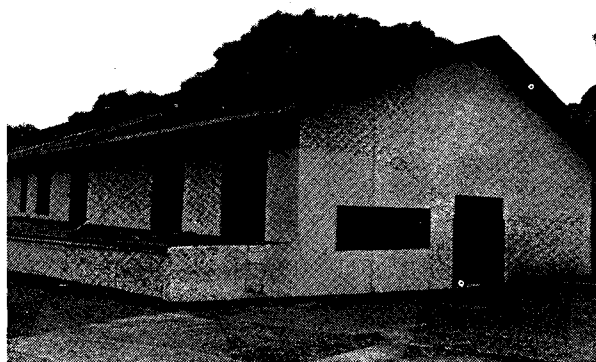


*Administration building (Building #46)*

Buildings #45, #46, #47 and #49, all constructed in 1915, were originally administrative buildings.



*Storehouse building (Building #33)*



*Warehouse (Building #52)*

Recognizing the growing use of motor vehicles, a service station was also constructed in 1921.



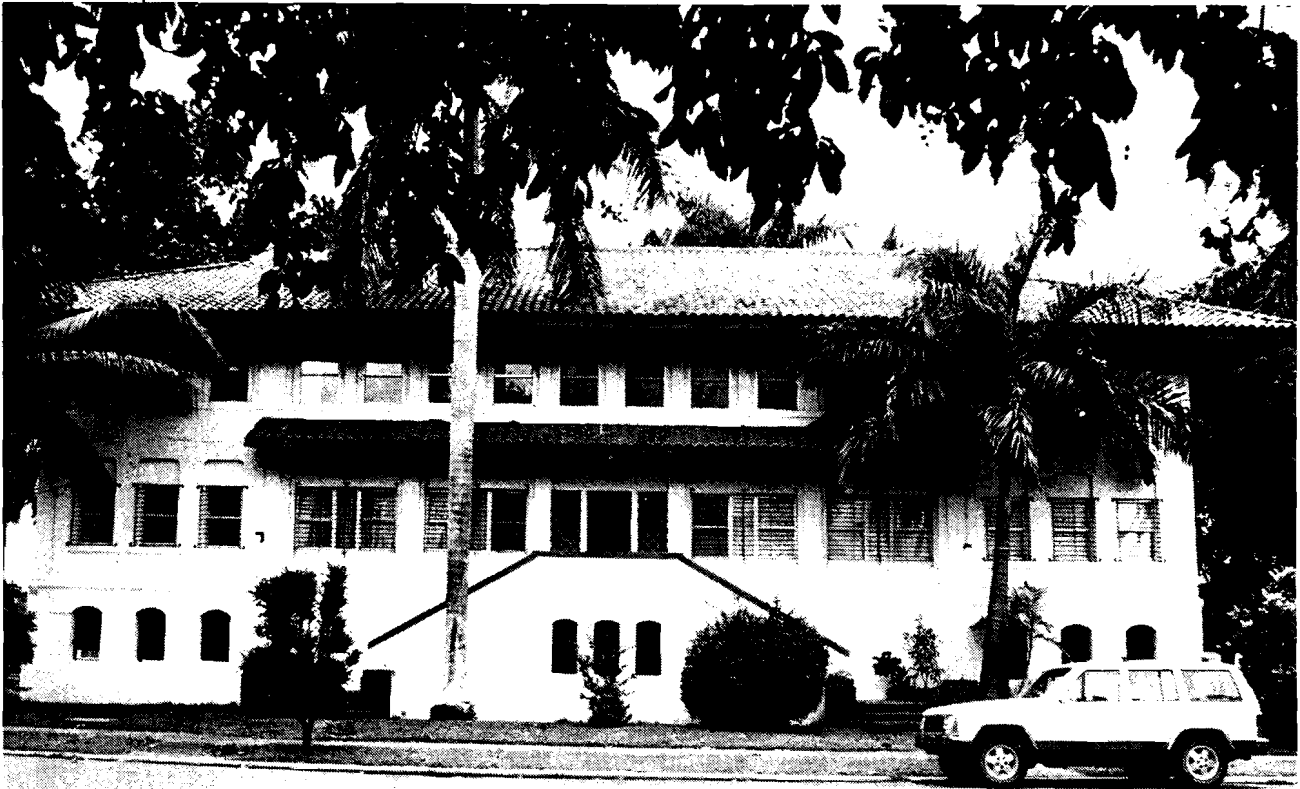
*Building #45, constructed in 1915, was an administrative building*



*Service Station (Building #53)*

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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*Six-set Lieutenants' Quarters (Building #30), Front*

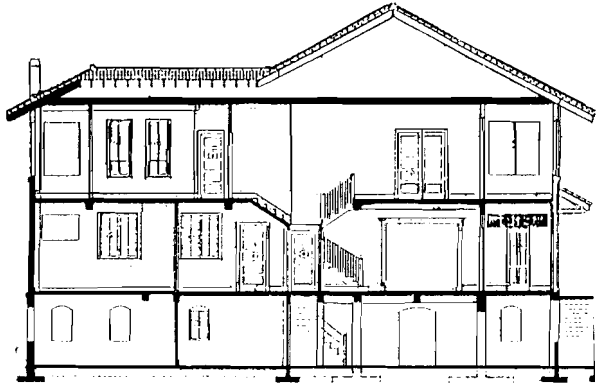
Construction of the two-story, raised Bachelor Lieutenants' Quarters (Building #30) was begun in March of 1917, and was completed around June 30, 1918.

The first floor of the Six-set bachelor officers' quarters contained a public porch and two private porches, two "Sitting Rooms," a library with

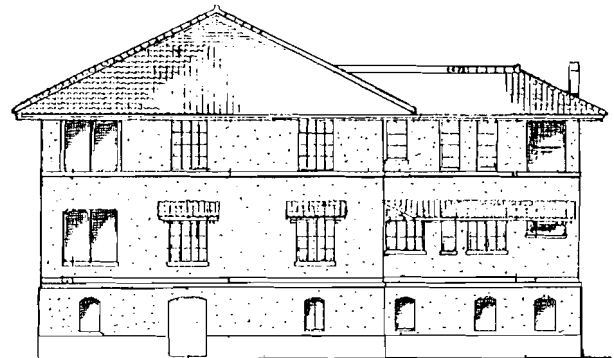
built-in bookcases, a "Billiard Room," two bedrooms, an "Alcove," a service pantry, a kitchen, and a dining room. The second floor included four bedrooms, four "Sitting Rooms" and an "Inspector's Room" with a private porch.

Originally designed to accommodate six single officers, Quarters #30 was converted sometime around 1959 into four units of family housing.

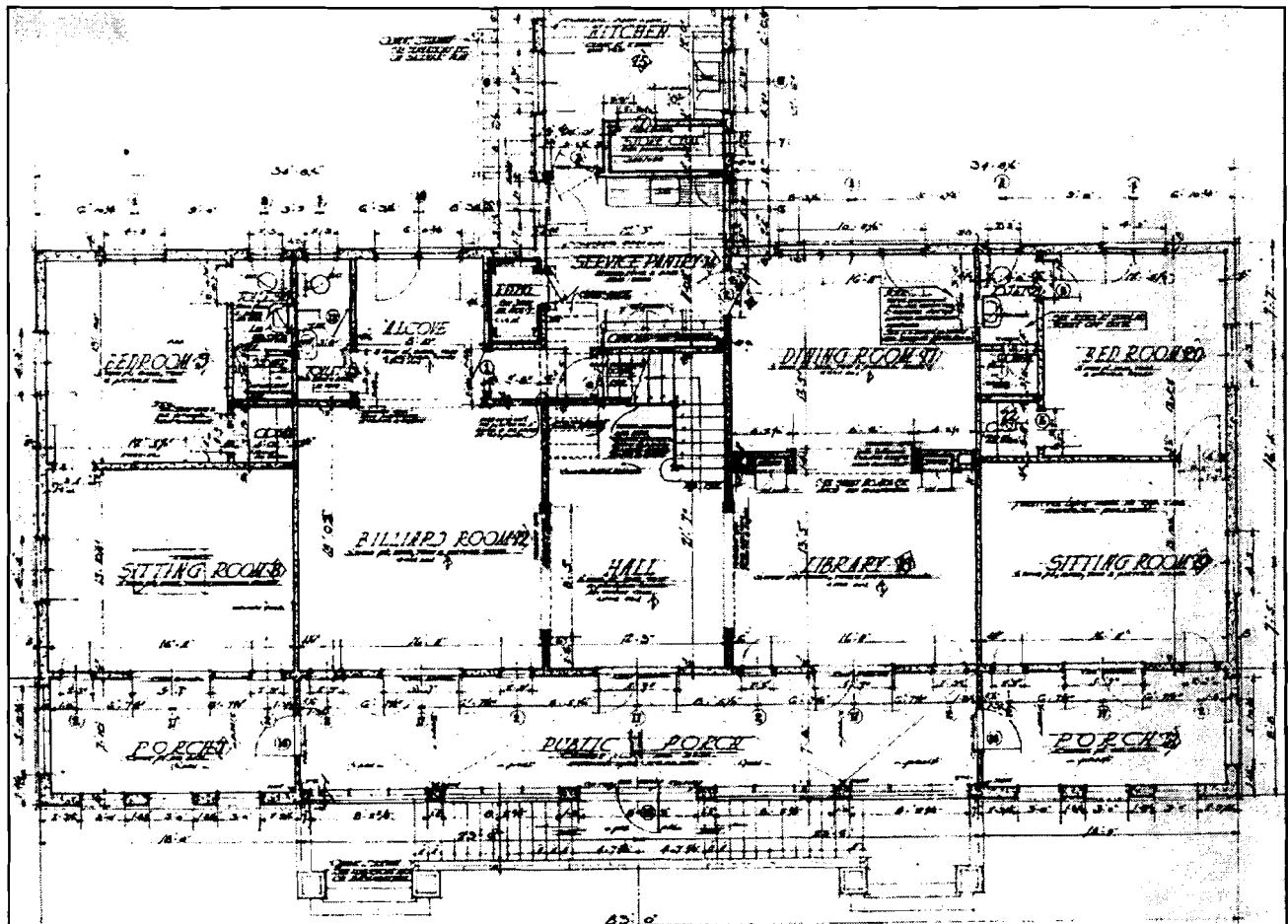
# POST CANAL CONSTRUCTION ERA (1912 - 1937)



*Six-Set Lieutenants' Quarters, Section*



*Six-set Lieutenants' Quarters, Side Elevation*



*Six-Set Lieutenants' Quarters, (Building #30), Floor Plan*

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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*Building #413*

Seven sets of four-family, two-bedroom Non-commissioned Officers quarters were completed in 1915. In the photograph example, the original porches have been infilled, and the original windows and doors have been replaced.

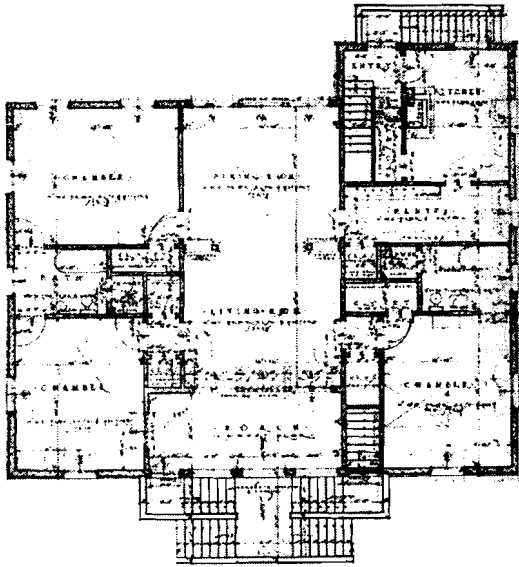
The first sets of four-family (three bedroom) Lieutenants' Quarters were begun in October of 1916, and were completed by June 30, 1918. In this photograph example also, the original porches have been infilled, and the original windows and doors have been replaced.



*Four-family Lieutenants' Quarters, Representative of Building #'s 15, 16, 26, 27, 28, and 29*

# POST CANAL CONSTRUCTION ERA (1912' - 1937)

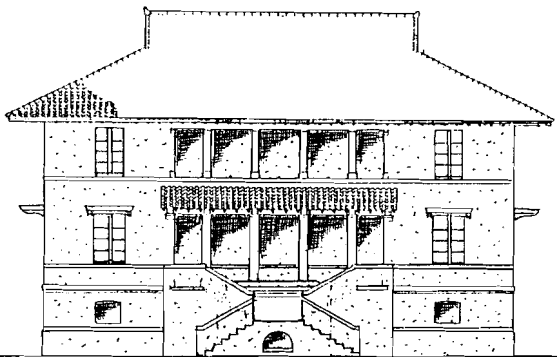
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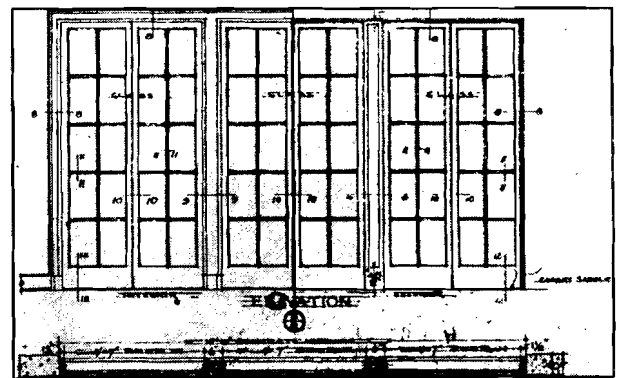
*Two-family Captains' Quarters, Floor Plan  
Building #'s 17, 18, 19, 23, 24, and 25*

The first sets of two-family (four bedroom) Captains' Quarters were begun in November 1916, and were nearly completed by June 30, 1917.

Unlike the four-family quarters, these two-family (three bedroom) quarters were divided horizontally, with one family residing on each floor. The ground, or basement, floors contained two "Chambers" and two "Trunk Rooms".

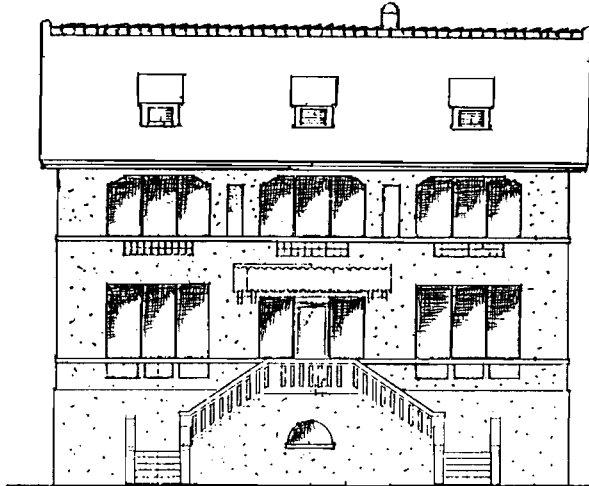


*Two-family Captains' Quarters, Front  
Elevation, Building #'s 17, 18, 19, 23, 24,  
and 25*

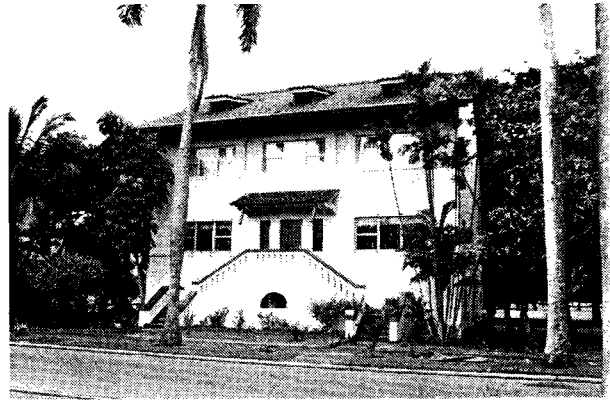


*Two-family Captain's Quarters,  
Window Detail*

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

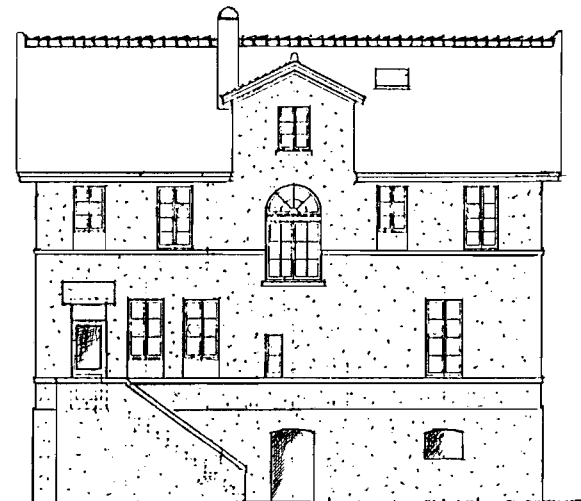


*Commanding Officers' Quarters, Front Elevation, Building #'s 20, 21, 22, 37, 38, 39, 40, 41 and 42*

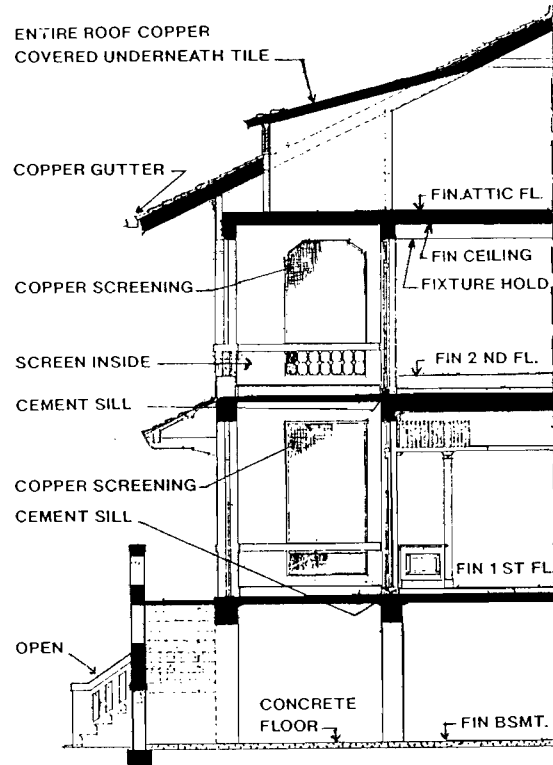


*Building #38*

The first sets of single-family four bedroom Commanding Officers' Quarters were begun in October of 1916, and were completed by June 30, 1917.



*Commanding Officers' Quarters, Rear Elevation*



*Commanding Officers' Quarters, Typical Section*



# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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***Quarters #1, Commanding General's Quarters***

Quarters #1 represents the most drastic example of alterations to a single building at Fort Amador. At an unknown date, this building was converted from a two-family Field Grade Officers' Quarters into single-family quarters, and became the official residence of the Commanding General, United States Army South (USARSO).

Following the 1979 return of Building #1 to the Republic of Panama, the Commanding General's quarters was redesignated Quarters #1.

Two sets of single-family, two-bedroom Non-commissioned Officers quarters, Building #'s 452 and 453, were completed at an unknown date, but most likely between 1917 and 1925. Unlike the other family housing units at Fort Amador, these one-story structures contain elements of the Tropical Caribbean French architectural style constructed during the Panama Canal Construction Era. The buildings are raised



***Building #452, Front***

off of the ground by wooden piers, both the interior and exterior walls of the buildings are of wood frame siding, and the roof is of corrugated iron. Quarters #453 was demolished in 1978.



***Building #452, Rear***

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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*Alligator hunters*

Administrators of the Panama Canal Zone and the military reservations located within the Zone recognized that “opportunity for diversion in the Canal Zone [was] limited. The community [was] not self-governing and lack[ed] political interests. There [was] no industrial activity outside of the canal work, and initiative and ambition [found] little outlet but in the day’s work. The employees live[d] in houses owned and controlled by the Government and [could] not develop permanent and personally owned homes in the Canal Zone.”<sup>28</sup>

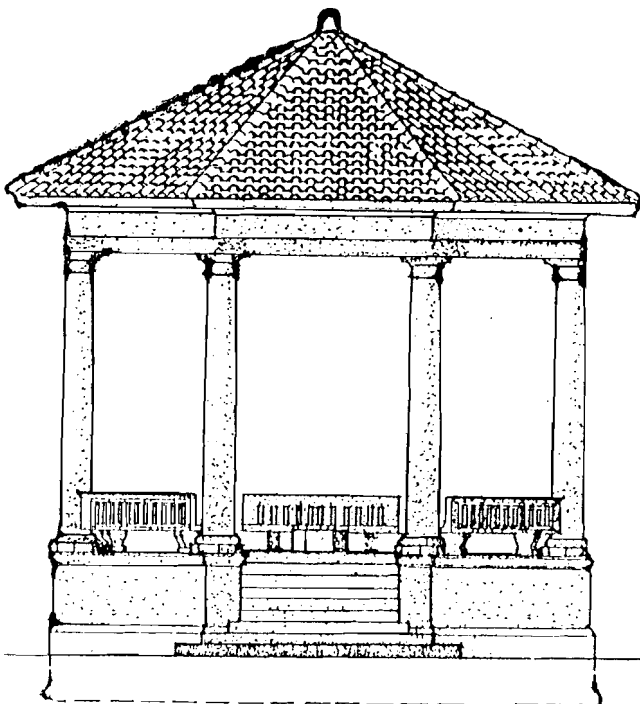
Concern for quality of life issues prompted both the Isthmian Canal Commission and The Panama Canal to construct clubhouses and other recreational facilities which were open to all U.S. citizens residing on the Isthmus. Military personnel also had access to the Army and Navy Y.M.C.A. in Balboa.



*A day at the beach*

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

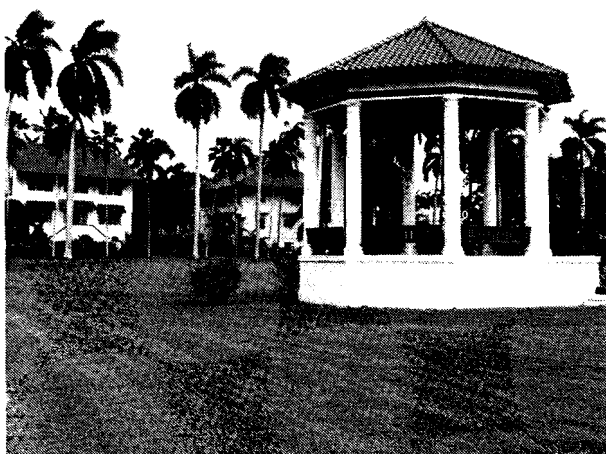
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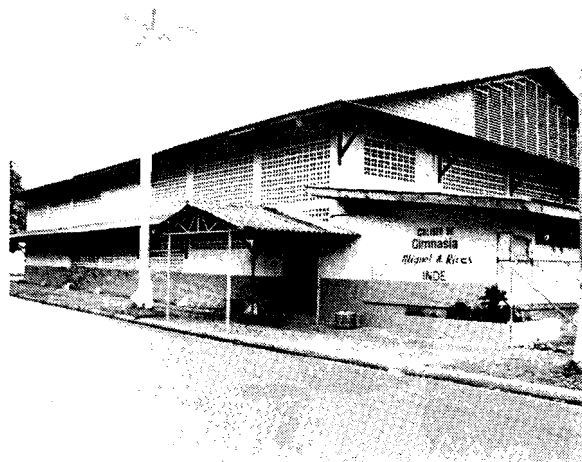
Construction of the Band Stand at Fort Amador was begun in May of 1917, and was completed by June 30, 1918. Military bands gave concerts regularly at installations and clubhouses throughout the Panama Canal Zone.

Service facilities at Fort Amador and Fort Grant included a commissary, a post exchange, a gymnasium and a theater. Schools and medical clinics were available within a few miles.

Building #57, the post gymnasium, was constructed in 1921.



*Band Stand (Building #50)*



*Gymnasium (Building #57)*

# POST CANAL CONSTRUCTION ERA (1912 - 1937)

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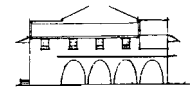
***Building #64 (former NCO Club)***

The Noncommissioned Officers' Club, constructed in 1934, was demolished after being turned over to the Republic of Panama in 1979.

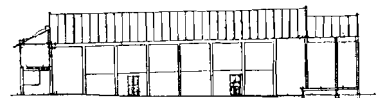
Constructed in 1932, the Post Theater included a stage and a projection booth on the second floor.



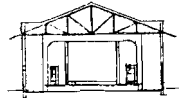
WEST ELEVATION



NORTH ELEVATION



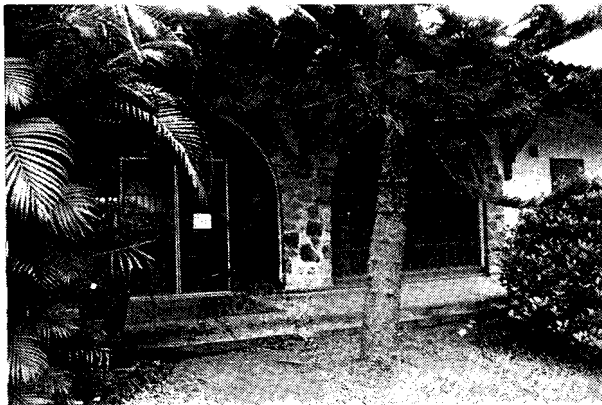
LONGITUDINAL SECTION



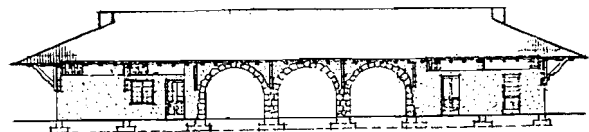
TRANSVERSAL SECTION

***Fort Amador Post Theater (Building #121)***

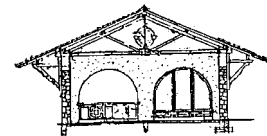
In 1936, Fort Amador's 18-hole golf course was laid out and a Club House was constructed.



***Golf Club House (Building #59)***



FRONT ELEVATION



SECTION

# WORLD WAR II ERA CONSTRUCTION (1938 - 1946)

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World War II Era construction was in reaction to the anticipated increase in the number of troops required for Canal defense. Typically constructed with wood framing, these structures were intended to last only a few decades. With a few exceptions, emphasis was placed on function rather than aesthetics.

Casa Caribe, the six-unit Distinguished Visitors' Quarters, was constructed in 1939. Typical of the World War II Era, the two-story, raised structure is of wood frame construction.



*Fort Amador Officers' Club (Building #136)*

The present Fort Amador Officers' Club was constructed in 1941 as a bowling alley.

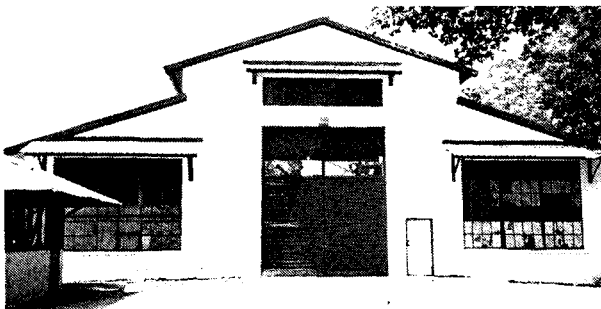


*Guest House (Building #77)*

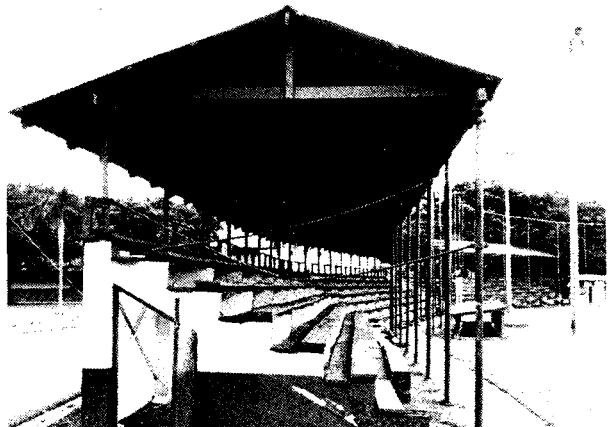
# WORLD WAR II ERA CONSTRUCTION (1938 - 1946)

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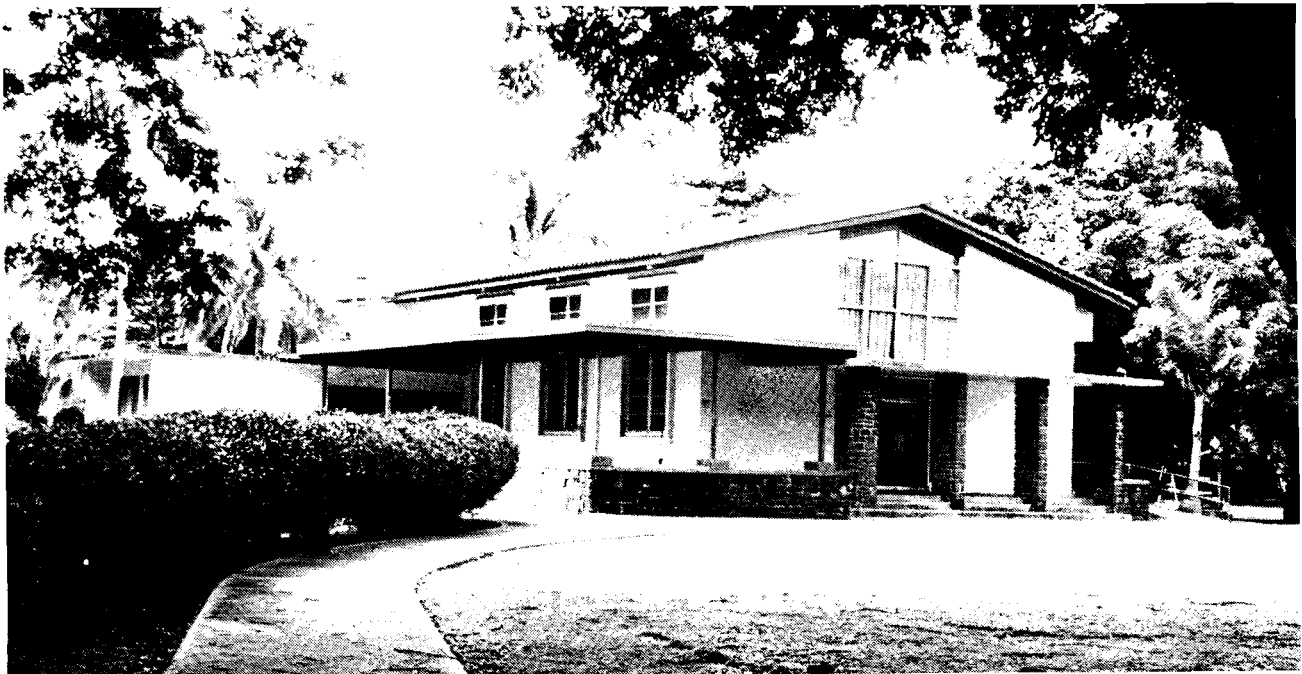
With an increasing emphasis on sports, a baseball field was laid out on the Parade Ground at Fort Amador. The baseball field was named McCardell Field in January of 1957, in honor of Major Norman C. McCardell, U.S. Army Caribbean Special Services, who died on December 7, 1956, at Gorgas Hospital at the age of 39.



*Building #105*



*McCardell Baseball Field*



*Fort Amador Post Chapel was constructed in 1945 (Building #108)*

# CONTEMPORARY CONSTRUCTION ERA (1946 TO THE PRESENT)

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Contemporary Construction Era buildings were designed by District architects and engineers of the Corps of Engineers. The design of these generic structures was intended to be international - that is, the buildings could be constructed at any military facility in the United States or in the world. Little emphasis was placed on environment or locale. The structure would protect the user from the cold climate of Alaska or the torrid heat of the Philippines - whichever were required. Purely functional, little emphasis was placed on aesthetics.

Fifteen sets of two-family, three-bedroom Capehart quarters were constructed in 1960. The Capehart quarters display a drastic departure from the previous Canal Zone architecture.

Ten sets of two-family, four-bedroom quarters were constructed in 1960. Three of these quarters are located at the beginning of the Causeway.



*Typical Capehart Quarters*



*Two-family Housing constructed in 1960*



*Street scene, Ft. Amador, September 1953*

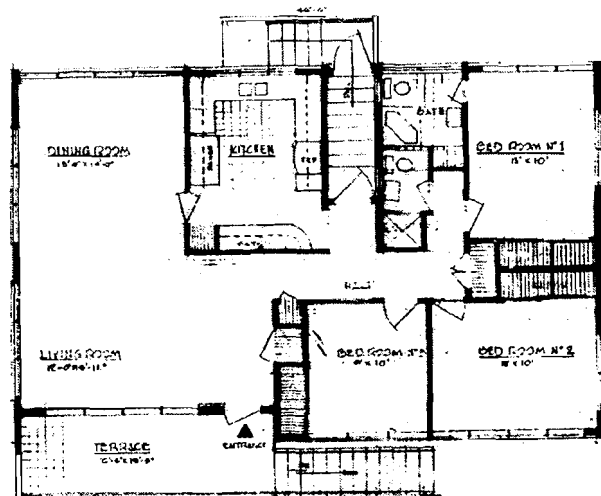
# CONTEMPORARY CONSTRUCTION ERA (1946 TO THE PRESENT)

Four single-family, three-bedroom Field Grade Officers quarters were constructed in the the 1960's. Unlike typical contemporary construction, the design of these concrete family housing units managed to successfully recapture the feeling of the Tropics. The ground floor provides space for a car and a maid's living area. The elevated living area provides an openness to the surrounding landscape.



*Building #84 Field Grade Officers' Quarters typical of building #'s 81, 82, 86, and 87*

*Building #84 Field Grade Officers' Quarters Plan typical of building #'s 81, 82, 86, and 87*



FLOOR PLAN



# The Buildings

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## FORT GRANT

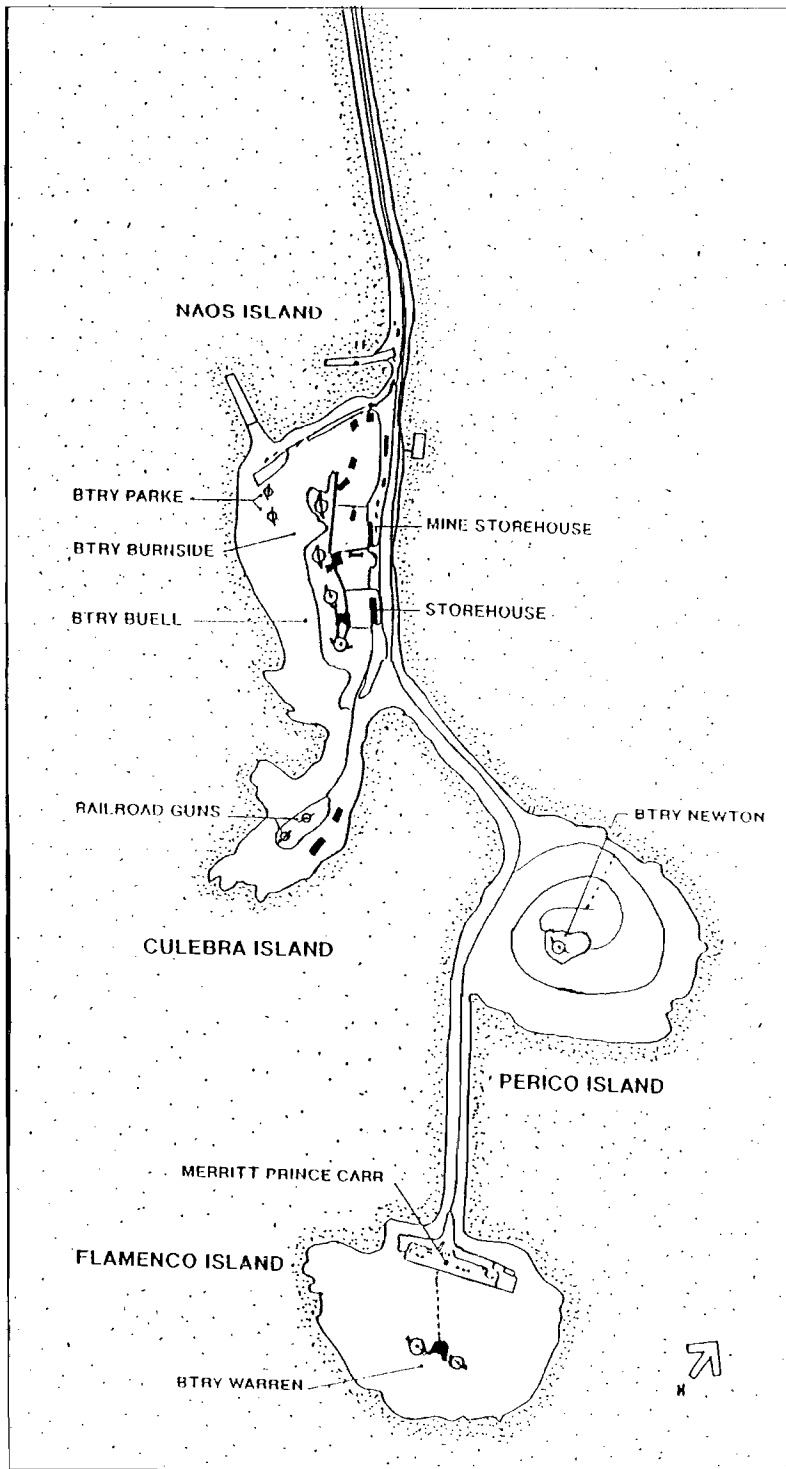
Fort Grant originally included the Causeway, the connected islands of Naos, Culebra, Perico and Flamenco, and several islands in the Bay of Panama. In addition to the defense Batteries located on the islands, several support facilities were constructed.

Legislative Enactment Number 10 provided, in 1904, for the establishment of quarantine regulations for all ports and harbors of the Panama Canal Zone. For a few years the Pacific quarantine station was located on Culebra Island. It was moved around 1915 when Forts Grant and Amador became active defense sites.



*Former Culebra Island Quarantine Station*

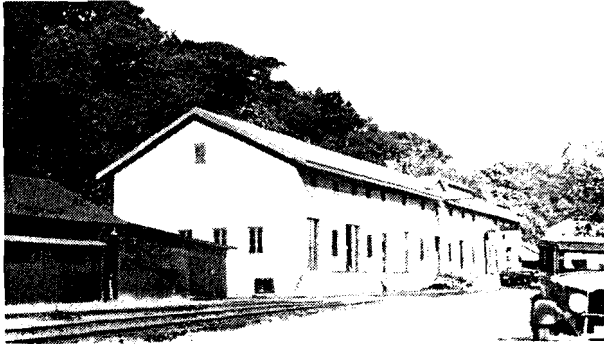
**Fort Grant**



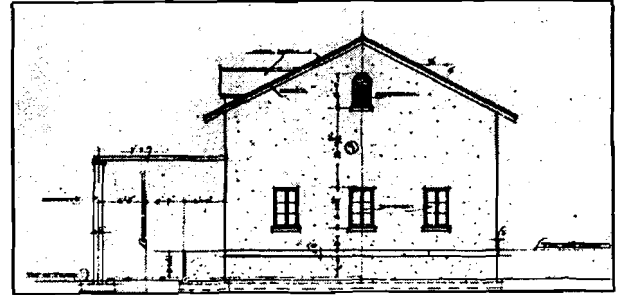
*The Causeway, 1953*

# FORT GRANT

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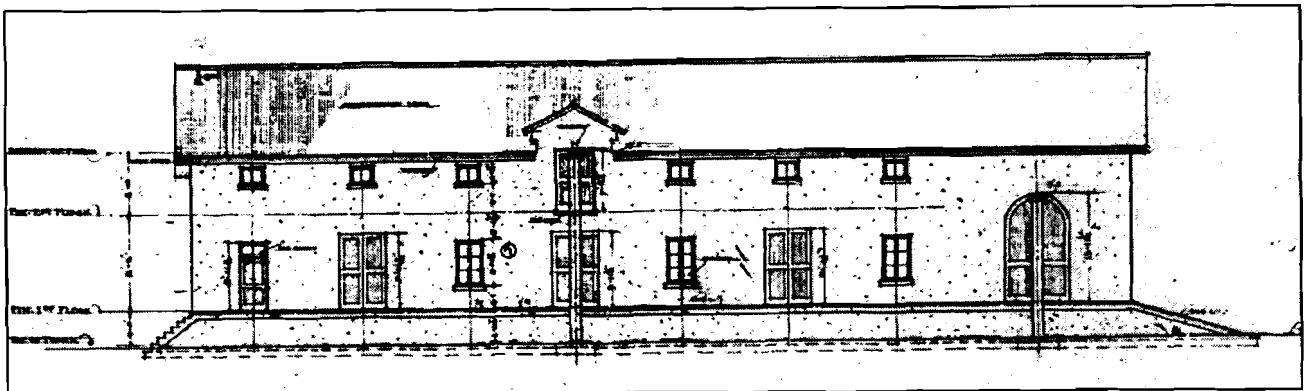


*Building #352, Naos Island*



*Storehouse Building #352 Side Elevation, Naos Island*

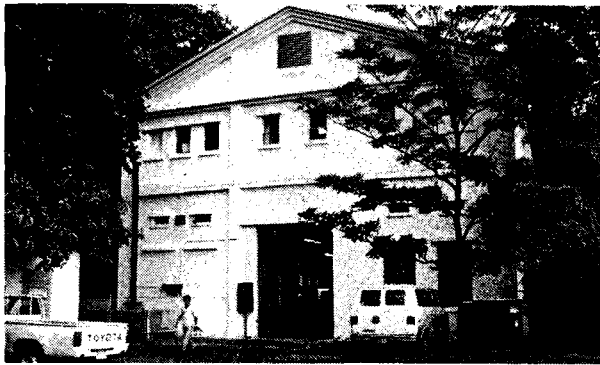
Originally an engineering storehouse, Building #352 at Naos Island currently houses offices and laboratories of the Smithsonian Tropical Research Institute.



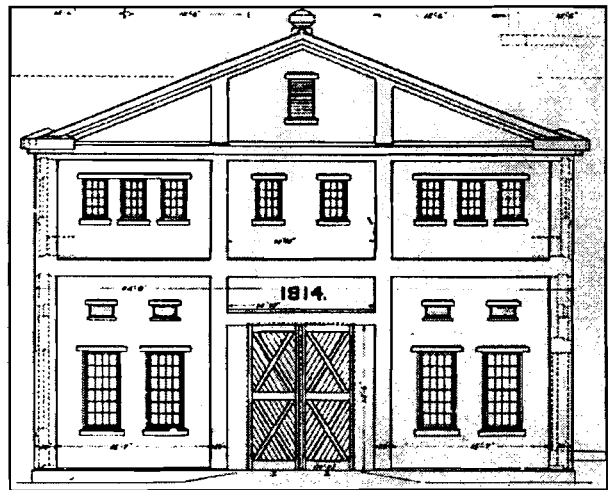
*Storehouse Building #352 Front Elevation, Naos Island*

# FORT GRANT

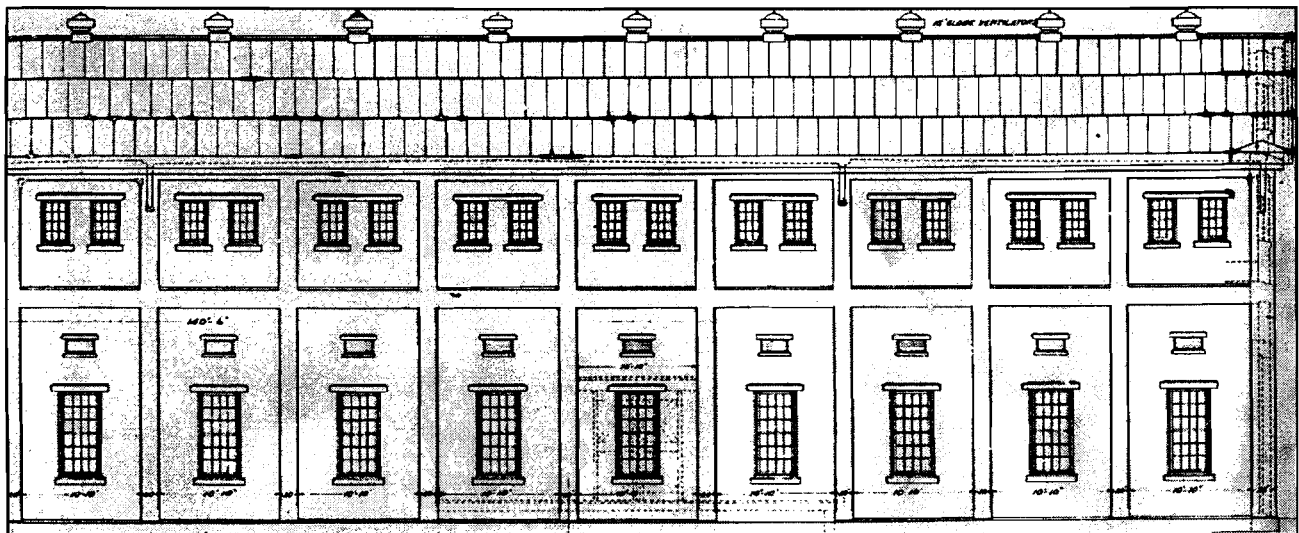
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*Mine Storehouse Building #359, Naos Island*



*Mine Storehouse Building #359 Side Elevation, Naos Island*

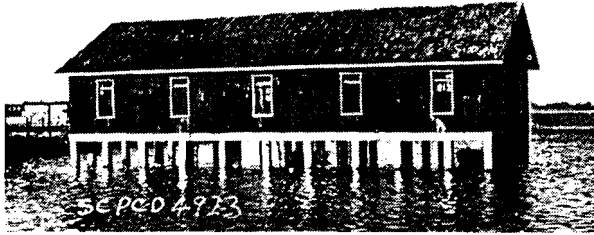


*Mine Storehouse Building #359 Partial Elevation, Naos Island*



# FORT GRANT

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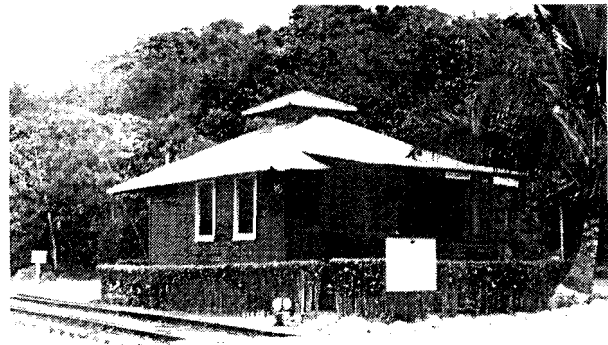


*Mine Boat House - Naos Island*



*Gas Station - Naos Island*

In addition to providing sleeping space for 150 enlisted men, the building contained a post exchange on the ground floor and a separate kitchen and toilet wing.



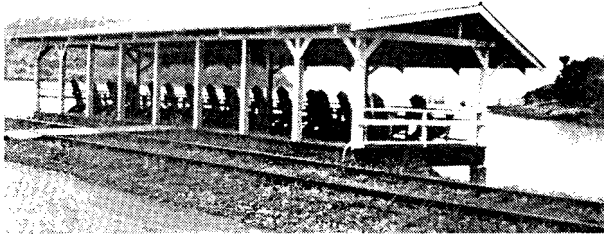
*Guardhouse Building #398, Naos Island*



*Former Barracks Building, Perico Island*

# FORT GRANT

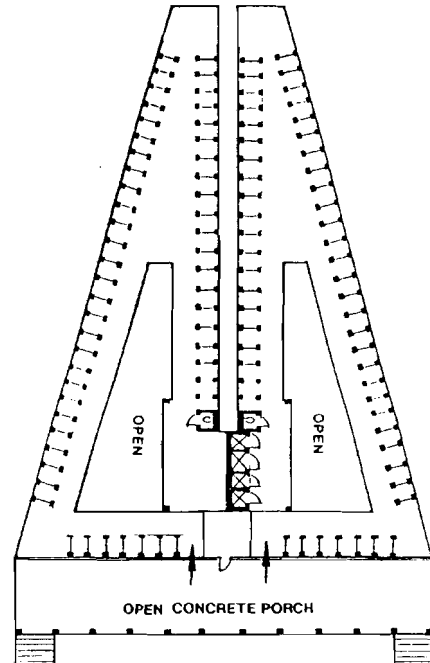
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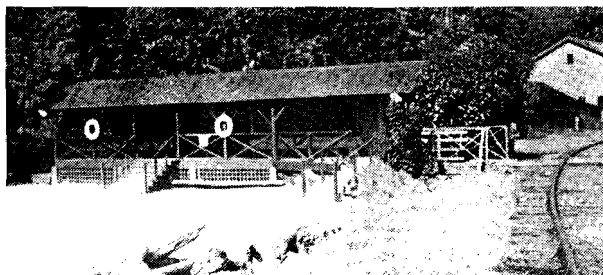
*Fort Amador Beach Pavilion*

The installations' beautiful beaches and vistas attracted visitors from other posts and communities. Recreational facilities included fishing piers, several beach houses, and swimming areas protected by shark netting.

The Fort Amador Beach Club, located on the causeway, "was a favorite eating place for high school kids who wolfed their burgers ('the best hamburgers in town'), then went for a walk on the beach before returning to class."<sup>29</sup>



*Plan of Beach House - Naos Island*



*Swimming Shelter*



*Former Beach House*

# The Landscape

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In 1912, the President sent to the Panama Canal Zone two members of the Commission of Fine Arts to evaluate the aesthetics of the canal and of the Canal Zone communities. Daniel Chester French was an American sculptor of note, whose commissions included the Lincoln Memorial in Washington, D.C. Frederick Olmstead, Jr., studied landscape architecture under his father, Frederick Law Olmstead, whose design for Central Park in New York City has been recognized internationally.

In their report dated July 26, 1913, and addressed to the President of the United States, French and Olmstead remark on the aesthetics of the Pacific entrance to the canal, and on Fort Grant in particular:

“... there are points of interest as one approaches the canal from the Pacific with which it would be unwise to attempt to compete by any structure built for artistic reasons alone. The shore



*Original streetlamp in foreground;  
View to Panama City in background*

itself, with its rugged range of mountains, is inspiring, and the islands to the south really will guard the entrance, as three of them are to be occupied by forts with heavy guns. The second one, Perico, is the most unusual and picturesque.



*View of the Causeway and Islands*



# THE LANDSCAPE

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Naturally a wooded mound, rising abruptly out of the sea, the top has been flattened for a fortress, and a spiral roadway encircling the island leads up to it from the causeway which connects this island with its neighbor, Naos.<sup>30</sup>

The report goes on to accurately predict that the causeway would “come to be a favorite drive for the people of Panama.”<sup>31</sup>

French and Olmstead disapproved of the plan to plant palm trees along the causeway, their reason being that “if the trees were planted near

enough together to shade the road effectively they would completely shut out from the ships entering or leaving the canal the view of the city...

They might also disturb the effect of the long low straight line which the causeway now makes and which is a striking note in the picture, and they would tend to make the shore continuous with the island, and thus destroy the effect of its being an island.”<sup>32</sup>

In addition to the construction of the buildings themselves, the Isthmian Canal Commission was responsible for site development at Fort Amador, including site planning, roadways, utilities, landscape and street lighting.

For aesthetic and maintenance reasons, all utilities were run underground. The streetlights were decorative cast-iron posts on top of which were mounted 14-inch polycased globes.

A large variety of native and imported planting materials have been used at Fort Amador, including: Rubber trees, Royal Palms, Banyan trees, Banana trees, Norfolk Island Pines, and Mango trees.



*Typical landscape at Amador*

# THE LANDSCAPE

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A view down Simonds Avenue exemplifies the typical planting schemes for residential areas at Fort Amador.



*Royal Palms Lining Simonds Avenue*

Many individuals and agencies provided assistance in producing this brochure, including John T. Lovo (Lieutenant Colonel, U.S. Army, Retired); Dolores De Mena, Historian, United States Army South; Julio C. Campos, Plans and Property Branch, Directorate of Engineering and Housing-Panama; Julio Cordovez, Assistant to the Chief, and Cesar Tovar, Engineering Division, Panama Canal Commission; the Panama Canal Commission Technical Resources Center; and the Smithsonian Tropical Research Institute.

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A view down Simonds Avenue exemplifies the typical planting schemes for residential areas at Fort Amador.



*Royal Palms Lining Simonds Avenue*

Many individuals and agencies provided assistance in producing this brochure, including John T. Lovo (Lieutenant Colonel, U.S. Army, Retired); Dolores De Mena, Historian, United States Army South; Julio C. Campos, Plans and Property Branch, Directorate of Engineering and Housing-Panama; Julio Cordovez, Assistant to the Chief, and Cesar Tovar, Engineering Division, Panama Canal Commission; the Panama Canal Commission Technical Resources Center; and the Smithsonian Tropical Research Institute.

# Footnotes

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# Photographs

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## Photograph Legend

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"Fort Amador - circa 1915" [PCC/423]

"A View Across the Golf Course - Fort Amador" [G+K]

"Building #38 - Fort Amador" [G+K]

"Residential area - Fort Amador" [G+K]

"Housing - Fort Amador" [G+K]

"Fort Amador, Fort Grant, the Causeway and the Islands" [G+K]

"Aerial View of Fort Amador - circa 1925" [Courtesy of USARSO Historian]

"Balboa 'dump' leading to the Breakwater, July 1911" [PCC/406]

"East Balboa and the Breakwater, June 7, 1912" [PCC/409]

"The Breakwater, October 19, 1912" [PCC/412]

"The Breakwater, November 7, 1914" [PCC/415]

"Pacific Terminal and the Breakwater, July 1923" [PCC/418]

"Dr. Manuel Amador Guerrero" [Laval, Jerome D. Images of an Age: Panama and the Building of the Canal. Fresno, California: Graphic Technology Co., 1978; Keystone-Mast Collection, University of California-Riverside]

"Ulysses S. Grant" [Painting by L. Hart Dorrage; Courtesy of the West Point Museum, United States Military Academy, West Point, New York]

"Drawing of Typical Battery Fortification" [DEH, G+K]

"Guns Guarding Canal Entrance" [Photo by Underwood and Underwood from Panama and the Canal, Willis Abbot, Syndicate Publishing Co., 1913]

"Battery Buell, Naos Island, a typical position for disappearing carriage rifles" [DEH]

"Entrance to Battery Burnside on Naos Island" [DEH]

"Fort Grant Map" [G+K]

"Culebra and Naos Islands, January 1913" [PCC/195]

"14-inch RWY Gun at Culebra Island, Fort Grant - 1932" [USARSO]

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"MP Patrol, Fort Amador, 1923" [DEH]

Batteries Birney and Smith [DEH, G+K] [Pam 870-1 (1973)]

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"Fort Amador" Map [G+K]

"Fort Amador" Map [G+K]

"Fort Amador - Quarry Heights in Background" [DEH]

"Typical Facade with Architectural Elements Identified" [G+K]

"Media Aguas" [G+K]

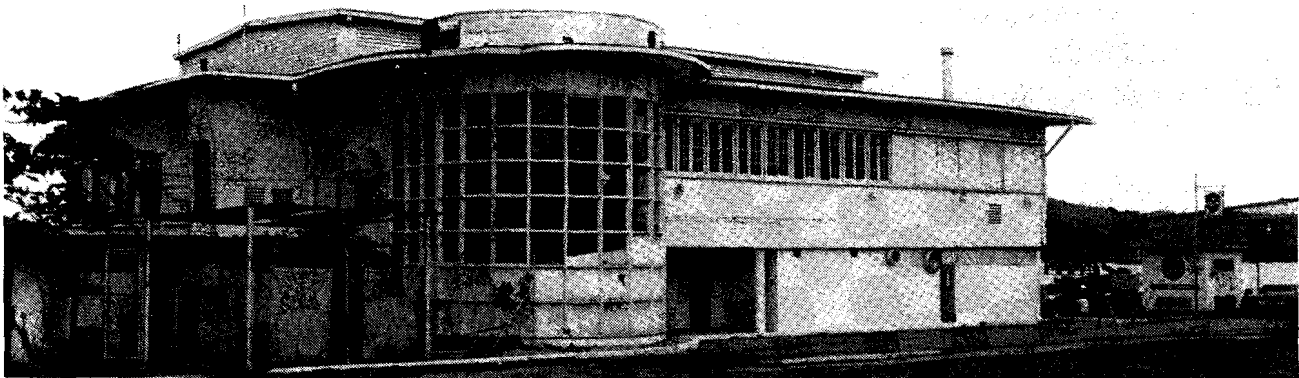
"Buildings #1 through #9 - circa 1915" [PCC]

"Headquarters Building (#1), Side Elevation" [DEH, G+K]



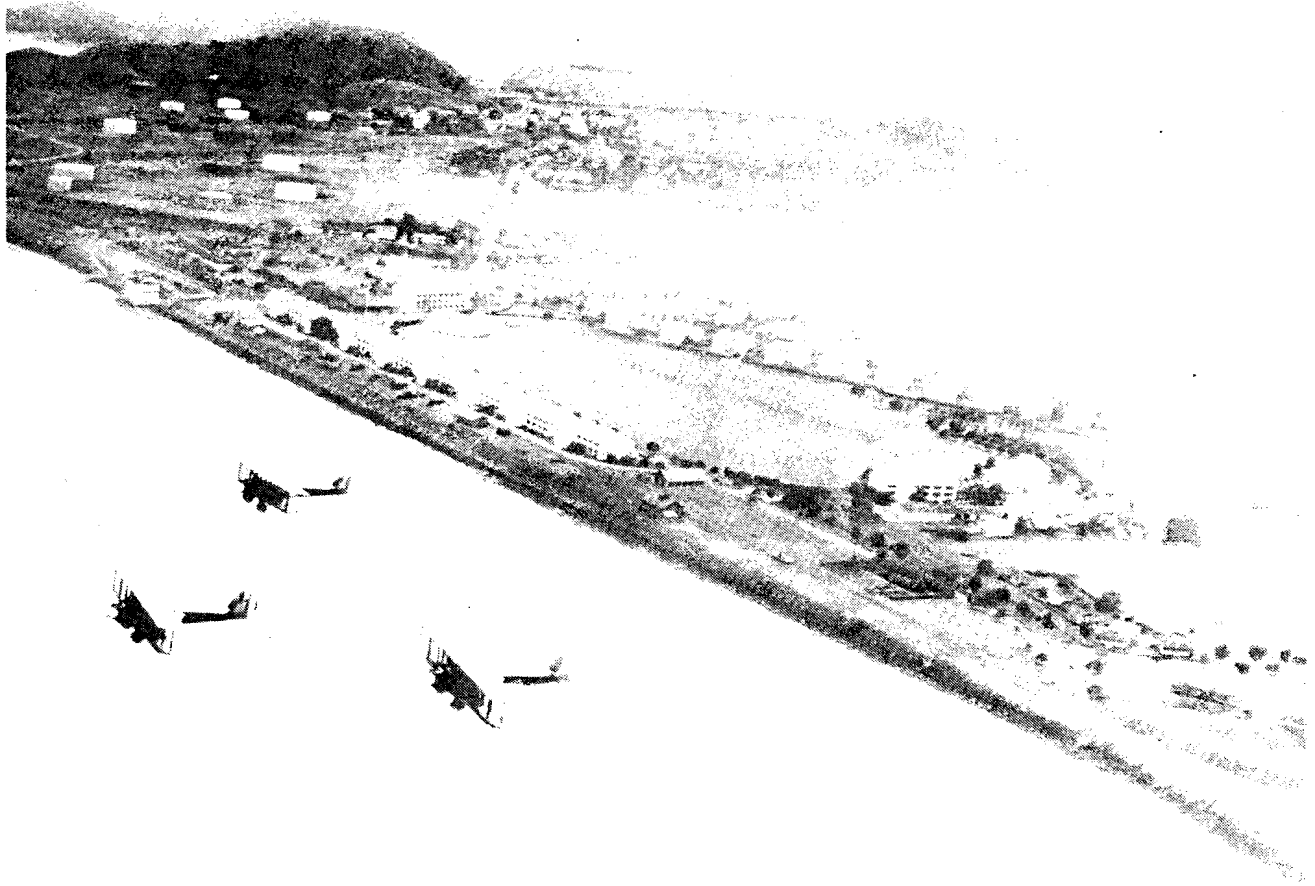
"Headquarters Building ( #1), " [DEH]	Building #'s 17, 18, 19, 23, 24, and 25" [DEH]
"Headquarters Building (#1), Front Elevation" [DEH]	"Two-family Captains' Quarters, Window Detail" [DEH]
"Headquarters Building (#1), Floor Plan" [DEH]	"Commanding Officers' Quarters, Front Elevation, Building #'s 20-22, 37-42" [DEH, G+K]
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Typical Barracks Buildings #3 through #9 [DEH, G+K]	"Quarters #1, Commanding General's Quarters" [DEH]
Storehouse Building Plan (Building #33) [DEH]	"Building #452, Front" [G+K]
Storehouse Building (Building #33) [DEH]	"Building #452, Rear" [G+K]
Administration building (Building #46) [G+K]	"Alligator Hunters" [DEH]
"Building #45, constructed in 1915, was an administrative building" [DEH]	"A Day at the Beach [DEH]
Administration building (Building #46) [G+K]	"Band Stand (Building #50) [DEH, G+K]
"Warehouse (Building #52)" [DEH]	"Band Stand (Building #50) [G+K]
"Service Station (Building #53)" [G+K]	"Gymnasium (Building #57)" [G+K]
"Six-set Lieutenants' Quarters (Quarters #30), Front" [DEH, G+K]	"Building #64 (former NCO Club)" [DEH]
"Six-set Lieutenants' Quarters, Side Elevation" [DEH, G+K]	"Golf Club House (Building #59)" [DEH]
"Six-set Lieutenants' Quarters, Section" [DEH, G+K]	"Fort Amador Post Theater (Building #121)" [DEH, G+K]
"Six-set Lieutenants' Quarters (Quarters #30), Floor Plan" [DEH]	"Fort Amador Officers' Club (Building #136) [G+K]
"Building #413" [DEH]	"Guest House (Building #77)" [G+K]
"Four-family Lieutenants' Quarters, Representative of Buildings #'s 15, 16, 26, 27, 28, and 29" [G+K]	"Building #105" [G+K]
"Two-family Captains' Quarters, Floor Plan, Building #'s 17, 18, 19, 23, 24, and 25" [DEH]	"McCardell Baseball Field" [G+K]
"Two-family Captains' Quarters, Front Elevation	"Fort Amador Post Chapel was constructed in 1915 (Building #108)" [G+K]
	"Street Scene Ft. Amador, 21 September 1953" [DEH]

"Typical Capehart Quarters" [G+K]	"Building #332 Side Elevation, Naos Island" [DEH]
"Two-family Housing constructed in 1960" [G+K]	"Building #332 Elevation/Section, Naos Island" [DEH]
"Former Culebra Island Quarantine Station" [DEH]	"Mine Boat House - Naos Island [G+K]
"Building #84, Field Grade Officers' Quarters, Typical of Buildings of #'s 81, 82, 86, and 87" [G+K]	"Gas Station - Naos Island" [DEH]
"Building #84, Field Grade Officers' Quarters Elevation, Typical of Buildings of #'s 81, 82, 86, and 87" [G+K]	"Guard House Building #398, Naos Island" [DEH]
"Building #84, Field Grade Officers' Quarters Plan, Typical of Buildings of #'s 81, 82, 86, and 87" [G+K]	"Former Barracks Building, Perico Island" [DEH]
"Fort Grant Map" [G+K, DEH]	"Fort Amador Beach Pavilion" [DEH]
"Causeway 1953" [DEH]	"Plan of Beach House - Naos Island" [DEH]
"Building #352, Naos Island" [DEH]	"Former Beach House" [DEH]
"Building #352 Side Elevation, Naos Island" [DEH]	"Swimming Shelter" [DEH]
"Building #352 Front Elevation, Naos Island" [DEH]	"View of the Causeway and Islands" [G+K]
"Mine Storehouse Building #359, Naos Island" [G+K]	"Original Streetlamp in foreground; View to Panama City in background" [G+K]
"Mine Storehouse Building #359, Side Elevation, Naos Island" [DEH]	"Typical Landscape at Amador" [G+K]
"Mine Storehouse Building #359, Partial Elevation, Naos Island" [DEH]	"Royal Palms Lining Simonds Street" [G+K]
	"Balboa Yacht Club at Fort Amador" [G+K]
	"Flying JN-4s 'Jenny' over Fort Amador" [AF]



***Balboa Yacht Club at Fort Amador***

The Balboa Yacht Club opened on May 29, 1916, with a dance for members and guests. In addition to sponsoring dances, the clubhouse held aquatic meets, swimming, canoeing and motor boat events.



*Flying JN-4s "Jenny" over Fort Amador*

Affectionately known as the "Jenny," these planes, flown by a generation of pilots, were the mainstay of the early "barnstorming" era.

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